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Maps of Quality of Life in Argentina Since the 19th Century

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To our families

Preface

In Argentina, unlike other countries, there has not been an extensive collaboration between Geography and History even though both have several points in common. Among them, we can mention cartography, which has a wide presence in both disciplines. The Institute of History, Geography, and Social Sciences try to overcome this compartmentalization by searching for objects of study that can be approached simultaneously by Geography and History. In this regard, the issue of quality of life stands out, which can be dealt with by various disciplines including Geography and History which has acquired an increasing interest in the last two decades.

To understand why both disciplines may be interested in this subject, it is very important to try a definition of quality of life—one of the many possible ones—which according to Velázquez (2008), it as "a measure of achievement concerning a certain level set as optimal taking into account socioeconomic and environmental dimensions that depend on the prevailing scale of values in the society and that vary depending on the expectations of historical progress." Therefore, the quality of life is more variable (and ascending) than other associated concepts, such as poverty, since the scale of values and, above all, expectations change. In other words, it has a temporal feature, in addition to the spatial one, typical of geographical science.

It should be noted that it is a much more recent concept than poverty, which already has many more years of study, but it is also possible to analyze the quality of life in the past if the appropriate indicators are available. To know and compile this information from ancient censuses and data, the indispensable knowledge of historians already accustomed to working with historical sources and documents is necessary as quality of life changes according to the different historical moments, so the contribution of History is necessary. It is here, then, where the originality of this book lies, because the study of quality of life from a temporal and continuous perspective is something that has not been done so far. Doing this job required facing several challenges. Making this study required facing many challenges: The main issue is the need to maintain a certain homogeneity in the variables used throughout the entire historical period that allows to compare and evaluate the progression of the quality of life throughout the national territory. There are fundamental dimensions that remain unchanged in the study of quality of life: health, housing, and education (with the later addition of an

environmental one). The quality of life thus constitutes an indicator of synthesis of a set of relevant socioeconomic and environmental situations that show the conditions in which the existence of the population unfolds and that serves for the formulation of public policies and the understanding of social functioning. The way to present it in this book is from an index that synthesizes and standardizes the variables of the dimensions mentioned above to promote both territorial comparison and temporal comparison. The indices are of particular interest since they serve both to inform the general public and also to provide data to agents with the ability to develop strategies for improving the population's living conditions (Tanguay et al. 2010) and, therefore, for better territorial management.

It is important to note that although the dimensions to measure the quality of life are constant, the variables that constitute them have varied throughout different historical moments. Therefore, to carry out a temporary and comparative study of the quality of life, a compromise was sought between the scale of analysis, availability of information, and existing resources. About this, it is necessary to mention the periodicity of the census survey as it is only after the 1960 census has acquired a regularity of ten or eleven years, but, unfortunately, the pandemic caused by COVID-19 has once again altered these survey periods.

Regarding the information scale, it should be noted that the book analyzes the data on a scale with a high level of detail such as the county (also called department) scale, but problems registered in the 1914, 1960, and 1970 census resulted in data available only at the provincial level for those years.

As we mentioned before, the quality of life is analyzed by various disciplines, each one defines and analyzes it according to its theoretical and conceptual frameworks and with a wide variety of methods, mostly quantitative, but there are also qualitative and mixed ones. Although this book has a historical and geographical focus, it is of interest to all those interested in the study of quality of life, in particular, because of the temporal and evolutionary focus of the publication. Likewise, by maintaining the same dimensions throughout all the chapters, it may be attractive for those that focus on more specific variables, such as education, health, and housing. Consequently, architects, educators, medicine specialists, sociologists, and economists will be able to find here relevant information on how the variables and results have evolved for the entire Argentine territory.

The conceptual evolution of the quality of life concept has been reflected with the recent incorporation of another dimension: the environment. Traditionally, the environment was considered as a field of study of natural sciences, but the processes of production and urbanization have caused disturbances in the environment that affect the quality of life of the population. And so, starting with the 2001 national census, variables related to environmental variables, such as waste collection or flooding, began to be recorded, following the precepts of the 1992 Rio de Janeiro Conference on environment and development. Therefore, the National Institute of Statistics and Census (INDEC) ability to adapt to new information requirements and the need to provide environmental data at various scales of analysis must be highlighted. This is particularly relevant given that, in many cases, environmental information is difficult to access as it is scattered in different jurisdictions; sometimes, it is usually

unavailable or cannot be compared because the spatial and temporal scales do not match. Therefore, that the census has included environmental data on the same scales of analysis as the population, housing and household information are important to progress to carry out a comprehensive study of the quality of life in modern times.

However, in our studies, the importance of the environment was already present back in the early 1990s and that is why by 1991 our indices already had incorporated this dimension, initially reduced in data, but which has been progressively expanded in later decades as new information became available. It is remarkable how environmental aspects have penetrated the study of quality of life in the last two decades, making it an even more complex task (Michalos 1997; Sirgy 2006).

Concepts that do not include it are no longer conceived, and the current quality of life cannot be understood without an environmental component. An example of this evolution is observed in the human development index (HDI) prepared by the United Nations, which is based on the integration of the components of life expectancy, income, and educational level. However, more recently, in 2017, they have created for the Argentine Republic another one called provincial sustainable development index (IDSP) that takes into account environmental variables.

As already mentioned, the main source of information has been the census with the inclusion of other variables related to health and the environmental dimensions. As the INDEC mentions, official statistics constitute an indispensable element in the information system of a democratic society that provides the government, the economy, and the public with data on the economic, demographic, social, and environmental situation. To this end, official statistical agencies must compile and provide official statistics of proven practical use impartially so that citizens can exercise their right to be informed.

The scale of analysis is at the county level, except in the cases of 1914, 1960, and 1970 census. In contrast, in the last census of 2010, information at a microscale became available, that is, at the census radius scale that corresponds to the highest possible level of desegregation. This is important since this level of disaggregation reduces the impact of the modifiable spatial unit problem that occurs when data is averaged from a larger scale to a smaller one. This averaging of data homogenizes the variables, diluting important information. But it should be noted that working with census radius requires another type of data processing since there are currently more than 52,000 spatial units. In this framework, the use of geographic information systems (GIS) is essential as it has become an indispensable tool for processing data and elaborating cartography.

As a result, the value of geography is underlined since its territorial foundation allows it to investigate the quality of life from a unique perspective, with the map serving as a key descriptive tool. Herein lies the value of Geography in determining the quality of life and its uneven geographic distribution, either through an index or a set of related characteristics. Thus, the use of geographic information systems, spatial analysis techniques, and spatial data infrastructures is critical for understanding the territorial configuration of quality of life at various scales of analysis, highlighting spatial inequalities and areas where the action is needed to improve the population's living conditions.

Chapter 1 corresponds to the historian Daniel Santilli, who approaches the quality of life in the national territory before the first national census. Thus, the work begins in 1789, with the analysis of a census on three regions of the area known back then as the Buenos Aires campaign, and continues with the study of the entire region in 1839, 1855, and 1867. For this, the author had to carry out an exhaustive review of documentation, which required a lot of time and effort and led to interesting results. It is observed that the inequality in the distribution of goods, land, and livestock registered a decrease between the end of the colony and 1839, perhaps mainly due to the destruction of wealth caused by the wars of the first half of the century. But from that year on, inequality grew due to the temporary closure of the border, the chronically scarce workforce, and for political reasons. But this poor distribution of capital does not seem to have seriously influenced income, although a fall was recorded between the end of the colony and the 1930s. But as of the following decade, the income multiplied, becoming the best demonstrative example of the capacity of Buenos Aires to attract European immigration.

The year 1869 means the completion of the first national census, the starting point for the systematization of census information, characterized by gathering information on three fundamental dimensions that will be repeated in subsequent censuses: education, health, and housing. The combined work of the historian Hernán Otero and the geographer Guillermo Velázquez in Chap. 2 of the book shows how at that time inequalities in Argentina were high, both between the large regions and between the provinces and counties. Two main reasons explain this situation. The first one is the impact of urbanization since the quality of life indices tend to be higher in cities than in provincial interiors. The second one is the expansion of the border, since leaving aside the earlier settlement areas, such as the city of Buenos Aires and its hinterland or its equivalents in Santa Fe, the processes of expansion of the internal border resulted in the increase in wealth in those areas.

The second national census was carried out in 1895 and marks the beginning of Guillermo Velázquez's collaboration with Juan Pablo Celemín from that year until the 1991 census which is analyzed in Chap. 3. It took a quarter of a century for the Second National Census to be carried out, which, unlike the previous one, already contains practically the entire territory as we know it today, with the incorporation of the Patagonian and Chaco regions. In this census, questions related to religion, fertility, property ownership, and nationality were introduced. The statistical results were published in Spanish and French and presented at the Argentine Pavilion of the Universal Exhibition in Paris. The results show that the quality of life index has a high degree of territorial heterogeneity, although the traditional urban centers show the highest values while the north and west of the country contain the lowest values. In general, the 1895 Census continued with many of the basic definitions from the preceding survey and a more complete statistical representation of people's age. The most questioned aspect of the census refers to the little attention dedicated to household and family structures, a feature that shares with the 1869 census and the following one in 1914.

Chapter 4 corresponds to the 1914 National Census and shows results consistent with the observations carried out for the previous censuses since regional inequalities

in Argentina were very high this year, both between the large regions and between the provinces. The results, which only allow analysis at the provincial level, broadly indicate that the best records of the index are located in the central strip of the country and the provinces of La Rioja and Catamarca, while the lowest values are found in the north, while Patagonia presents disparate records. It is also to highlight the importance of the progressive, but differential, consolidation of the new territories. Thus, the evolution of the northern territories (Formosa, Chaco) was different from that of the southern ones (Santa Cruz, Tierra del Fuego). In addition to this heterogeneity, the second important conclusion refers to the methodology and consists in highlighting the validity of the instruments in comparison with the first two national censuses as the radius of action for each enumerator was reduced, a fact that allowed greater control of the data.

The 1947 National Census is studied in Chap. 5 of the book. Again, the time factor comes into consideration since more than thirty years have passed since the previous census, so the results begin to show a different reality of the country, already close to the middle of the twentieth century. It collected demographic, agricultural, and economic information and implied a break with the three previous general censuses as it included the family as an observation unit. The coverage of economic aspects was expanded, by including a building census and a survey of capitalization, savings, and financial sector companies. From the territorial point of view and concerning previous censuses, inequalities persist since the most populated provinces are those that register the highest values of quality of life, while those in the north of the country have the lowest records. This pattern of spatial configuration for the vast majority of social and economic indicators is the same that will continue to be registered in the national territory in the following census.

The analysis of the 1960 National Census is in Chap. 6 of the book, and, once again, it does not offer the level of disaggregation or the same richness of variables as it is not possible to find meaningful information regarding indicators associated with education, health, or housing at the county level. For the provinces, however, data is available based on the illiteracy rate; the average number of people per dwelling, the rate of dwellings without a toilet, and even indicators referring to the comfort of homes based on the availability of a refrigerator. Regarding health indicators, although the census does not provide any relevant information at the provincial level, the Ministry of Health (DEIS) provides the infant mortality rate. All this constitutes a severe limitation for any analysis intended to indicate the spatial differences in the living conditions of the Argentine population at that historical moment. It was a de facto operation, characterized by surveying the population in the place where they spent the night of the census. It differs from the previous census that obtained data from the people who habitually reside in the home, even if they were not present at the time of the survey. Furthermore, it is important to note that this census started the computer age by making use of punched cards for information processing (Giusti 2007). The results show a very high degree of inequity between the worst and best situations. Considering the provinces, the difference between the best and worst relative situations (Buenos Aires city and Jujuy, respectively) is 8.72 points. In addition, it should be noted that these spatial differences for the vast majority of social and

economic indicators are the same as those registered in present times, with a Pampa Region with higher values (together with southern Patagonia) and with northern provinces with lower records.

Chapter 7 contains information on the sixth National Census carried out in 1970, which, like the previous one, does not have significant information regarding variables associated with education, health, or housing at the county level, but only at the provincial level. Thus, to reflect the educational situation, we resorted to Llomovate (1989 work which provides the disaggregated illiteracy rate). To evaluate the residential situation, we only have the number of houses, which allows us to calculate the average number of people per house. Finally, regarding health indicators, although the census does not provide any relevant information at the provincial level, the National Ministry of Health (DEIS) provides the infant mortality rate. In addition, it was characterized by operational limitations that delayed the presentation of results. Perhaps the only positive element to highlight is that for the first time there are ten years between this census and the previous one. From the point of view of the results, the pattern registered in 1960 with high territorial inequality is much the same. Thus, considering the provinces, the difference between the best and worst relative situation (Buenos Aires city and Jujuy, respectively) reaches 7.68 points. Broadly speaking, the central provinces and southern Patagonia register the best values while the north of the country has the lowest values.

In Chap. 8, the quality of life is analyzed based on the data from the 1980 National Census, which, unlike the previous two, once again allows the possibility of working at the county level and with a greater number of variables. These two characteristics will be maintained in subsequent censuses, allowing greater similarity in the way of processing the information, and facilitating, in turn, temporal comparison. By 1980, it was observed that the quality of life shows wide territorial contrasts among the counties of Argentina. The width of the gap is very large (1.74 the lowest value and 9.06 the highest register) and in general, it can be said that the less advanced areas for the index correspond to the north of the country, while the counties with the best values are found in the provinces of the Pampa region and southern Patagonia. This level of disaggregation highlights the existence of "enclaves" with a good quality of life in historically relegated regions, generally corresponding to the provincial capitals. Likewise, in this section the subjective and objective components of quality of life study are analyzed in more detail.

Chapter 8 belongs to the analysis of the National Census carried out in 1991. For the quality of life index, variables similar to the previous census are considered, but with the particularity of including, for the first time, an environmental dimension. For this, it was necessary to resort to different sources since the census did not yet contain data on this subject. According to the quality of life index, there is a certain similarity in the socio-spatial distribution of the living conditions of Argentines in the 1980s and 1990s due to the characteristic inertia of differentiation phenomena; however, some enclaves of "progress" located in historically marginal geographies are present. The regional analysis shows the marked difference between the opportunities offered by each territorial unit. Thus, the Northwest and Northeast, historically labor-providing

areas, are the epicenter of adversity, while the remaining Argentine regions appear in a more favorable position.

The analysis of the 2001 National Census, presented in Chap. 9, was carried out jointly by Guillermo Velázquez, Juan Pablo Celemín, Sebastián Gómez Lende, Fernando Manzano, and María Eugenia Arias, which given that the increasing complexity of the census data required a more interdisciplinary approach as it in addition to Geography, it includes Economics, Sociology, and Ecology perspectives. From the methodological point of view, the same socioeconomic variables used in the previous census are selected, but with the addition of other environmental indicators recorded in this census for the first time. Hence, variables referring to floods and the presence of garbage dumps, for example, make it possible to expand the environmental dimension of the quality of life initiated in the 1991 census. The results show a reduction in infant mortality, a strong increase in the population lacking health coverage, and slight improvements in housing conditions. These contradictory results show the precariousness of the conditions of vast segments of the population brought with it the exclusionary modernization process of the previous decade. In this context, despite the crisis, there are paradoxically improvements in most of the global indicators, although, from the territorial point of view, the same spatial configuration is maintained, with the north of the country more relegated, and with the central zones with higher values for the index. Likewise, more favorable positions are noted in the enclaves of the provincial capitals, even in the most backward regions.

In Chap. 10 is the study of the quality of life index for the last census carried out to date, corresponding to the year 2010 based on the work of the authors Guillermo Velázquez, Juan Pablo Celemín, Sebastián Gómez Lende, Fernando Manzano, Claudia Mikkelsen, and Maria Eugenia Arias. Here, the final stage of the quality of life study is reached, and the same dimensions and variables of the previous index were used. The results indicate a reduction of the population affected by low living conditions in the Argentine territory. Likewise, given that it is the last index available at present, a detailed comparison with the results of the year 2001 is shown, as well as the presentation of all the cartography related to the environmental component of the quality of life, a fundamental input for the last index. The last three chapters deepen the results obtained in 2010. Thus, Guillermo Velázquez and Santiago Linares analyze the differentiating factors of the quality of life, among which they mention migratory dynamics, centrality/accessibility, urban categories, and wealth. In the next chapter, Guillermo Velázquez, Juan Pablo Celemín, Fernando Manzano, Santiago Linares, Lorena La Macchia, Adela Tisnés, Claudia Mikkelsen proposes an analysis with a high level of detail by using the census radius as the unit of analysis (more than 52,000 spatial units). Among the most outstanding results, we have that the radius with a very low index are located mainly in the periphery of the counties with low quality of life while the radios with very high quality of life are present in counties located in the upper quartiles of the six regions of Argentina, many of which are provincial capitals. Likewise, although there are radios with very high values in all regions, the highest concentration is observed in the Autonomous City of Buenos Aires, the northern axis of the metropolitan region, and the capitals of some provinces. On the other hand, the radios with the lowest values are all located

in the north of the country. Finally, the last chapter of the book focuses on the quality of life in small towns and rural areas. It was carried out by Claudia Mikkelsen, Sofia Ares, Matias Gordziejczuk, Natasha Picone, Mariana Bruno. In this section, it is stated that the reality of the quality of life outside urban centers must be studied differentially, taking into account rural heterogeneities. To do this, they resort to a rural well-being index that shows that rural inhabitants of the Pampa area do not always have higher objective well-being than the inhabitants of other regions of the country.

In this way, the journey of the study of the quality of life of Argentina concludes, beginning in the nineteenth century, and ending in the twenty-first century. Broadly speaking, we can have an optimistic view of what the index shows us in the country since its values have gradually improved over the decades, although the territorial differences remain almost unchanged over time, with marked differences between the areas with the best quality of life and the most neglected areas of the national territory.

Finally, we want to deeply thank the National Scientific and Technical Research Council—Argentina (CONICET) for having granted us financing for the project "Socio-territorial Configuration of Argentina in times of the bicentennial" (PUE 2555/16) that allowed us to carry out this contribution, reflected in Volume I of the Historical and Geographical Atlas of Argentina. We also want to do it to the prestigious colleagues from CONICET and from different Argentine universities who trusted in our project. The cartography was in charge of Lorena La Macchia and Adela Tisnés, while the images were contributed by Luciano Di Salvo and Florencia Ramón, all of the members of the IGEHCS. We also want to express our gratitude to Dr. Jorge Rabassa, Editor of Springer's collection on Latin America, who invited us to prepare this volume.

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Chapter 1
Inequality as a Historical Problem. The Pre-statistical Stage

Daniel Santilli

Abstract Economic inequality has become topical as a result of the realization that it is continuously increasing despite the promises of change in the world and the concerns of organizations such as the United Nations. The concern has encompassed history, a science whose studies are generally based on current issues transferred to the past, in order to attempt hypotheses about the reasons for its validity today. The present work aims to investigate the vicissitudes of inequality in the pre-statistical stage of Argentina—more precisely in the region of the city of Buenos Aires, that is, prior to 1869, the date of the first national census. It starts with a census of owners from 1789, and with other tax records from 1839 to 1867, the distribution of property, other goods, production, and the relationship between wages and prices, as well as the contribution that on the subject carried out anthropometry. Finally, a description of the standard of living of the population in the period is presented.

Keywords City of Buenos Aires · Argentina · Quality of life · Distribution · Production

1.1 Introduction

Inequality has become the main one of the current social unjustness, so it is the subject of countless studies. There are periodic publications about the cause of such injustice in the different communities around the world, from big cities to small towns, where inequality causes permanent damage. Families sleeping in the street during the winter are the picture of the results of inequality and poverty. It should be a cause of reflection by societies—and by rulers mainly.

History as a field of study cannot be absent in that reflection. In fact, it is called to express inequality, and history researchers must give answers to those problems. There are many studies about inequality through time, practicing with specially

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designed methods, but also using analytic tools for current problems, adjusting them to historical sources and the original context. The food basket, the construction of series of prices and wages, and also anthropometry can be mentioned. Currently, we have found tools for this problematic issue in economic science, sociology, and demography: Gini coefficient, analysis by decile, social mobility, mortality rates, and life expectancy.

1.1.1 Periodization

We start the analysis since 1789, over a census about three areas of the Campaign of Buenos Aires. It continues with the research over the whole region in 1839, 1855, and 1867. Not only we studied inequality in wellness distribution, but also made progress in information about production assignment, wages and price ratio, income measurement methodology, population, and social mobility due to the known income level and living standard of Buenos Aires campaign inhabitants.

This work is divided into four topics: The first part expresses the situation during the colony; the second one describes inequality in exportation booming time, and the third one relates to the living standard. Then we have the fourth part—a summarized conclusion.

1.1.2 Eighteenth Century—First Pictures of Inequality

Ancient historiography attributed the original land distribution to Juan de Garay and to land grant given by successive monarchs at that time. The land was left in the hands of a few landowners with large extensions. There was land, but not enough labor to farm it. Buenos Aires was a huge land with few people, as it claims the title of an old work (Garavaglia and Gelman 1998). The land was used to provide themselves of food staples, as meat and wheat, and for a little population—around 25.000 inhabitants—in the city of the middle eighteenth century. The production of these goods was overseeing by small farmers, who provided the market of Buenos Aires. They grew up in lands that did not belong to them—their actual owners had not been interested in them as well as they had macroscale trade as their main activity. Furthermore, many properties were owned by ecclesiastical or parachurch organizations. Their lands were used for self-sufficiency or minimal trade production.

1.2 A New Paradigm in Historiography

This powerful image that contrasted with the previous ones forged by the old historiography was built from the research of old documents, made by history researchers

who had been back from exile in 1980s, after the last military dictatorship in Argentina. Many works had been published about the mentioned scholars (Garavaglia and Gelman 1998; Fradkin and Gelman 2004; Fradkin 2006; Santilli 2017). A new paradigm in historiography had born with those works. The previous model was based on the animal production as the main economic activity, and it had emerged due to the manifest abundance of cattle and the facilities about its breeding. But the Campaign of Buenos Aires minimally participated in the production of bovine hides. The exportation of leather increased at the end of the eighteenth century, using the city port and produced in littoral areas mainly (Rosal and Schmit 1999). The new historiography found that the exploitation of cattle began in the Campaign of Buenos Aires in 1820, when the Buenos Aires elite lost control of the trade and had to turn to livestock exploitation. Another side of that new model showed the supremacy of the peasant family as social organization and basic productive unit, which provided food to the whole city.

1.2.1 Land Ownership

Many works wrote in the first half of the twentieth century demonstrated the land hoarding (Cárcano 1972; Gaignard 1989) until contemporary, based on studies from the census on ranchers (Azcuy Ameghino and Marrtínez Dougnac 1989). It was our revision of this kind of census made in 1789 which allowed us to come to different conclusions in comparison with those obtained from other authors over the same source (Gelman and Santilli 2018a).

The census describes three Buenos Aires campaign counties which were representative of the whole region: Magdalena, cattle sector in the south of the campaign; Areco, an ancient settlement in the north of it; and Pilar, close to the city. We can evaluate the land and the cattle distribution, as they are mentioned in the source document.

Many cattle owners not possessed their own land, thus they related to the land differently. A range of possible interpretations is open: from renting to free occupation—allowed or not and, also, the release of animals to graze on free lands and spontaneously use of watering holes. As a fact in the census, there were 267 landowners and 475 cattle owners. It shows that land distribution was more unequal than cattle ones. The Gini coefficient for land owning was 0.9529 and that of the cattle was 0.8161, nearly 14 points below. (Gini coefficient establishes total inequality if it is equal to 1—only one owner has all the properties—and point 0 means perfect distribution—every person of the group possesses the same properties.)

Also, many landowners had not possessed any cattle. Those who possessed a large area of land—even 10,000 ha—had scanty or no head of cattle on them. They did not exploit their own lands, but gave it to small producers for free or under lease. Also, good portion of them were living in lands which were either Crown or of unknown ownership.

The distribution of wealth seemed to be balanced. In the Campaign of Buenos Aires, the decile superior, the 10% richest, accumulated 29.3% of wealth; in Great Britain, 50 years before was 43.6% and in France in 1810 was 45.6%. In Finland, in 1800, its percent was 34%. It was better only in the thirteen North America colonies, where they showed 12.6% in 1774 (Gelman and Santilli 2018a).

This information allows us to deduce that land had been an essential productive asset in order to maintain the dynamic economy of the region. Even though there was an unequal land distribution, a great amount of it was unexploited. It was not a factor of production, but either a capital reservoir or a status demonstration. This conclusion allows us to glimpse the predominance of commerce, the main activity among the inhabitants of Buenos Aires, and the most vigorous sector of the economy.

1.2.2 Food Supply in the City

The inhabitants of the city must be fed. Meat and wheat supplies were provided by small producers, who were peasant selling their products in the market or selling for other people (Garavaglia 1991; Gelman 1993; Garavaglia 1994). About tithing—a tax of 10% of its production paid by producers, mainly from agriculture, in which destiny was the maintenance of the Church—was studied by Garavaglia (1987), work that sparked a debate with other historians (Amaral and Ghio 1990), three decades ago. A later investigation (Gelman and Santilli 2017), about the income of peasants who supply the city, allowed us to observe how the production was distributed, through the tithe payment in the last stage of the colony, tax that included production and consumption.

The sources were scanty, we had never had a complete register of an entire year for the whole campaign; in compensation, we have added information about the Banda Oriental—Colonia del Sacramento and surroundings, and Montevideo, both from actual Uruguay—like Buenos Aires at that period.

1.2.3 Small Producers in Agriculture

As it was said in the introduction, the cattle preponderance in Banda Oriental was remarkable, more than in Buenos Aires, but even the presence of peasant was significant. Areco and Magdalena in Buenos Aires, where the livestock production was the main activity, were overcome by Colonia in cattle accumulation, although in the beginning of the nineteenth century, until 1804 or 1805, when the Campaign of Buenos Aires started its growth. Agriculture was widespread equally in both coasts of Rio de la Plata. Even though big producers can be found, the small production was more significant, generally disseminated, which had a particularly important number of farmers working on it. Six hundred producers who had signed up in Montevideo in 1793 were outlined, a high number, considering that total population—both city and

campaign—was 6000 inhabitants in 1780 and 14,000 in 1803 (Pollero Beheregaray 2013: 225).

1.2.4 Inequality

The results measured by the Gini coefficient were similar in both coasts of the Río de la Plata. There were only higher rates in the cattle industry in Banda Oriental. In this area, the number of cattle producers—either big or small—was higher. In contrast, Buenos Aires had lower rates in the cattle stock, which involves parity in this area, no matter how big or small the producers were. The situation was different about agriculture. Inequality rate measured by Gini coefficient was lower and like both sides of the Río de la Plata. Similar rate takes a selection of 600 cases in Montevideo in 1793 and 340 cases in Buenos Aires in 1808: 0.4261 in Montevideo and 0.3985 in Buenos Aires, nearly a quarter lower than cattle industry (Gelman and Santilli 2017).

Even though we have not been able to make a rate reflecting the income of small regional producers and including agriculture, cattle and either permanent or temporary job in rural settlements, the indicators we use allow us to infer some level of equality in income rate.

1.2.5 Inhabitants' Consumption

Later research about baskets of goods has generated promising results. From the elaboration of food baskets, based on the methodology designed by Allen (2001, 2009), it had been rebuilt the estimated minimum consumption in Buenos Aires in the colonial period. Based on primary sources detailing the provision of food, beverage, clothe, heating and cleaning products for hospitals, educational institutions, and nunneries; it was possible to reconstruct the individual consumption of the workers, pupils, and interns, discounting products needed for their main activity. These estimations are shown in the following table (Table 1.1).

1.2.6 Basic Consumption Baskets

We have two baskets ten years away from each other: 1796 and 1806. Both are constituted with a variety of goods which form the basic consumption in the treated area: meat and bread—measured in calories—provide between 72 and 78% of total minimum of calories which were estimated in 1941. The variety of products that we found in the food basket—like fish, oil, vegetables, bacon, etc., is remarkable. Some

Table 1.1 Baskets of goods of 1796 and 1806

Goods	1796					1806				
	Daily calories	% cal	Monthly cost	% $		Daily calories	% cal	Monthly cost	% $	
Oil and fat		253	13.0	0.0733	6.9		12	0.6	0.0239	1.3
Beverages		5	0.3	0.0247	2.3		1	0.1	0.0209	1.1
Some vegetables		0.4	0.0	0.0145	1.4		14	0.7	0.0197	1.1
Fish		78	4.0	0.0708	6.7		188	9.7	0.4407	23.7
Rice and other cereals		29	1.5	0.0573	5.4			0.0		0.0
Poultry		4	0.2	0.0033	0.3		29	1.5	0.0275	1.5
Spice and condiments		1	0.1	0.0108	1.0		2	0.1	0.0210	1.1
Sugar, honey, and candy		7	0.4	0.0382	3.6		0	0.0	0.0006	0.0
Beef		937	48.3	0.2043	19.3		1023	52.7	0.4739	25.5
Lamb and mutton					0.0		15	0.8	0.0035	0.2
Bacon and sausages		25	1.3	0.0662	6.3		132	6.8	0.0717	3.9
Pasta		10	0.5	0.0145	1.4		10	0.5	0.0186	1.0
Bread and biscuits		456	23.5	0.4083	38.6		490	25.3	0.6731	36.2
Legume		88	4.5	0.0521	4.9		14	0.7	0.0131	0.7
Milk and eggs		48	2.4	0.0089	0.8		0	0.0	0.0026	0.1
Fresh fruits					0.0					0.0
Raisins and dried fruit		1	0.1	0.0021	0.2		9	0.5	0.0312	1.7
Yerba	0.757			0.0080	0.8	1			0.0166	0.9
Total calories		**1941**	**100**	**1.0575**	**100**		**1941**	**100**	**1.8586**	**100**
	%					%				
Fuel and stove	16.01			0.1694	16.0	16			0.3007	16.2
Soap	4.07			0.0430	4.1	3.7			0.0682	3.7
Clothes	5			0.1266	12.0	5			0.2907	15.6
Rent	5			0.0698	6.6	5			0.1259	6.8
Individual basket				1.4664					2.6440	

Table 1.1 (continued)

Goods	1796					1806				
	Daily calories	% cal	Monthly cost	% $		Daily calories	% cal	Monthly cost	% $	
Family total	3			4.3991		3			7.9320	

Source Santilli (2020a)

of those products were imported—like sugar, some species, and yerba, which did not add calories.

The total of 1941 cal is the considered one by R. Allen, who was based on previous works of various researchers (Allen 2001, p. 430) and that he used to compared the standard of life of the population in different regions of the world. Naturally, the estimation contains such an arbitrariness that has been recognized even by the own author, in fact he has allowed critics and beneficial modifications. The following items have been evaluated with acute critical sense: the determination to use the goods which are produced in each region to consider the basket and the configuration of the family, and the incidence of the climate and geography to determine the use of clothes, fire, and heating (see *Revista de Historia Económica/Journal of Iberian and Latin American Economy History*, nº 33, especially the text of Dobado-Gonzalez (2015)). However, Santilli and Gelman (2016) have established their objections.

Beyond these discussions and relying on the displayed elaboration, it can be noticed that, although meat provided the double of the calories compared to bread, the value of this duplicated to the meat in 1796. In contrast, for 1806 the difference had been reduced to a third. That means that meat was a cheap food for the population of Buenos Aires; it took between 20 and 25% of the total cost and provided 50% of the calories. If it added clothes, cleaning, fire, fuel, and housing cost, the cost increased by nearly 50%. And if we considered a family of four persons, this cost multiplied three times. The mentioned basket corresponded to the urban consumption, most of these products had to be acquired in 'pulperías' (mini-marts), bakeries, etc. In the rural scope, the laborer also received meat and 'vicios' (yerba and tobacco), and if he had a permanent worker, he received the house too.

1.2.7 Familiar Value of the Basket

To construct the familiar value of the basket, Allen has calculated that the family was formed by an adult man, his wife—who ingested 80% of a man's consumption, and two children, which completed the arbitrary value of three. In Buenos Aires, the familiar composition of that time was greater than that Allen showed; couples had more children, but also other members resided with the nuclear family and who added incomes of work or money to the residence. Djenderedjian (2019) has

estimated alternative versions to this measurement. Anyway, the rise of the value of the total basket in those ten years is remarkable; it was 4.3991 to 7.9320—it climbed 80%. We have noticed variations in the prices in that period from the works of Cuesta (2009) and Johnson (1990).

Did the income of the inhabitants allow that consumption? And could such increase be managed? The cost of the basket must be compared with the wage of the urban workers. The result is called a 'welfare ratio' (WR) which measures how many baskets of goods can be acquired with daily, monthly, or annual wage of the labor of a bricklayer—considered unskilled labor category. This issue also has been discussed, since it could be verified—in Great Britain—that the wage was paid to contractors who, it can be presumed, they retained a part (Stephenson 2017). And, in addition, the representativeness of the bricklayer regarding all workers—since its wage depends on the demand of the construction.

According to the investigation of Johnson (1990), the wage of the labor of bricklayer would not have varied during that period. The worker perceived four 'reales' daily; if he had worked 250 days a year, he would have received $125. Compared to the value of the basket, a family could be acquiring 2.37 annual baskets and in 1796, descending to 1.31 in 1806. It means that the family maintained its ability to survive despite the fall in its purchasing power. For permanent rural laborer, who obtained meat and house from their landlords, the WR was 1.45 and 0.96, in 1796 and 1806, respectively (Table 1.6). In addition, many of the rural laborers were internal migrants who had just arrived and had not formed a family yet. These workers in turn had a small plot that they cultivated in free time. As soon as we can reconstruct the total income of these peasants and add them to those of rural workers, we will have a clearer picture of the high standard of life of Buenos Aires.

1.2.8 The Agro-exporting Boom

The revolution of May brought new economic features—mainly in Buenos Aires. The most important was the closing of the silver trade coming from Potosí and the opening of free trade. That involved limitless entrance of English merchants, whose ways of trading clashed with the old traditions of the Buenos Aires merchants whose loss of preponderance in the market in addition, the loss of the source of silver, the Potosí, now Bolivian, added to the cost of the war of independence damaged the finances of Buenos Aires. That shortage was replaced by the increase of the customs taxes, so that they became the main tax resource. Also, by the ending of the eighteenth century, the increase of the leather export from the port of Buenos Aires was remarkable, but leather production came from the Littoral Region—not from the Campaign of Buenos Aires. The native Hispanic merchants soon found out that leather production and exportation were the economic future. Then, leather production and commercialization became the main and most dynamic activity of Buenos Aires economy, joining its production up to the requirements of the European

industrial revolution in progress; hence the agro-export model had begun in Buenos Aires in the early 1820s.

1.2.9 Inequality and Standard of Life

Did that change in production and exportation had an impact on the inequality and the standard of life? And how? Comparing the price of the land to the wage is a widely used methodology, since both factors were connected. According to the theory, an improvement in the nominal wage reduces the entrance of the landowner. And inversely the increase of the price of the land indicates—in a rural economy—a decrease of the real wage since it involves a raise in the price of grains produced (Williamson 1998). In the case of Buenos Aires, the sudden increase of the price of the land initiated in the first independent decade caused by the demand of the necessary land for the livestock production was major than the increase of the laborer wage, which implied a worse situation to the laborers. Graph 1.1 shows the relation between wages and prices of land.

In 1770, the monthly wage of a laborer was $6, and the price of the land was 0.25 per ha. A laborer could buy 24 ha of land with its monthly wage. In 1799, that relation had arrived at 54.55 and, in 1809—the peak—to 68.82. The laborer, who gained $8 in the last-mentioned year, could buy almost 70 ha of land; the price of land had decreased to half—comparing to 1770. However, the laborer or small producer did not buy the land: It was an unnecessary investment as they could access it for free, or for very low cost.

Graph 1.1 Nominal salary/land price ratio (monthly laborer salary/price per ha. In 'pesos fuertes' pesos). *Source* Gelman and Santilli (2015)

1.2.10   Land Valorization

Starting from 1810, that tendency was steeply reverted, showing a secular increased in the intense process of land valuation, which implied that the price climbed to $0.84 per ha in 1825, multiplying for more than three it values from 1770. Nevertheless, until 1825 the wage had not gone down—stayed in $8—including some ascending and descending temporary variations. The inflationary process started in 1825 deteriorated in constant currency the price of work, whereas the one of the lands stayed the same, which is expressed in the relation 3.94 in 1829. In the late 1840s, the wage had partly recovered, but in the following decades had been decreasing to less than one (0.86 in 1860) (Gelman and Santilli 2015).

1.2.11   Purchasing Power of Wages

But that continuing decline did not mean a loss of purchasing power of wages, many reasons why. The expansion of the land border—which incorporated land without needing to take it off from farmers—increased manual labor demand, chronically scanty in Buenos Aires. Cattle goods produced in the Campaign of Buenos Aires destined to exportation, leathers, did not increase the price of consumed meat in the region; conversely, it diminished, because that food was a by-product of such production, increasing the offer. Therefore, the theory about an increase of the most required capital to produce—the land—would make fall the salary of workers, failed in the Río de la Plata. That proposition came from regions where the workforce was abundant and where it did not have land empty, not exploited. So, there was no way to increase production, and it was the situation of the old Europa. It cannot be applied to the fertile and unoccupied American land.

Incoming productive expansion from 1820s took place inside untapped land either side of the border whit the Indians. The agent of that expansion beyond the frontier was the 'elite' from Buenos Aires, who became cattle producers—although they never refused to see themselves as merchants. They achieved enough capital to acquire cows and had the needed influence in the state by the access to the land by various means—the most important emphyteusis (Infesta 2003). In this way, the concentration of land and cattle increased constantly in the campaign from that date until the disappearance of the border with the Indians in the 1880s.

In order to analyze this topic, we concentrate in 1839, when the governor of the province at that time—Juan Manuel de Rosas—had decreed a new way to collect the Direct Contribution (DC), which had been imposed in 1821 and taxed the land (and its improvements), livestock, and commercial capital. The objective was to improve the tax collection, due to its severe reduction after the French blockade of the port of Buenos Aires. A large census was carried out by the authorities of each jurisdiction with the details of such assets.

Table 1.2 Inequality in 1839 (based on DC)

	Land	Cattle	Total
Gini among proprietors	0.6676	0.6774	0.6621
20/20	53.5	36.9	30.3
Gini over total population	0.8893	0.9008	0.8629
10% richer	80	81.9	75
1% richer	30.7	38.3	32.3
0.1% richer	9.1	11.8	10.1

Source Gelman and Santilli (2006)

That fiscal instrument had become an exceptional balcony to examine wealth distribution in Buenos Aires. In 1838, a population census had been made, which allowed us to analyze the wealth distribution between the entire population. The result was published in 2006 (Gelman and Santilli 2006)—before the analysis of 1789 that was described in the previous section. In Table 1.2, data from the census regarding inequality is shown.

1.2.12 Inequality Among Proprietors

Inequality among proprietors was high; but the distribution of land was less unequal than that for cattle—a reverse situation than that of 1789. Great land properties were more important than great cattle flocks, since the 20% richer in the property of the land contained 53 times the 20% less rich. Anyway, the total Gini was lower than the items mentioned—as well as the 20/20. It demonstrated that there were people who did not have both capitals—only land or only cattle. That information had been already provided by Garavaglia work (1999). By analyzing inequality—including qualified to own property, married or single men and widows, among whole population—we arrive to the same verdict. From that point of view, the whole population, the property concentration was the highest: 75% of them were in the hands of 10% of the qualified ones. The greater concentration took place in cattle—38% of that was possessed by 1% of qualified those. The proportion of households which possessed wealth (in some way) was also important: 40%. Additionally, 33% of the heads of housing units were proprietors of the land. These percentages will not be repeated in the Buenos Aires rural area.

We have studied inequality in 1789 and can ask ourselves what has happened in those fifty long and intense years. Either political, social, economic, or political–economic—as say Milanovic (2017 [2016])—ups and downs have distinguished the period; so, we have to consider that many of those events and processes influenced in inequality and the standard of life that we find through time.

Unfortunately, we cannot compare the whole campaign, since the values that we have for 1789 corresponding only three counties already mentioned, though they are

Table 1.3 Evolution of inequality in 1789–1839 period

(Magdalena, Areco, and Pilar)

	Land		Cattle		Total	
	1789	1839	1789	1839	1789	1839
Gini among proprietors	0.8283	0.6295	0.6673	0.6018	0.7167	0.6078
20/20	128.9	43.4	51.5	23.9	73.7	23.9
Gini over total population	0.9529	0.8654	0.8161	0.8537	0.8452	0.8310
1% richer	65.5	23.2	24.0	26.3	29.3	24.0

Source Gelman and Santilli (2018a)

very illustrative: Magdalena, Pilar, and Areco. Because of this, we will confront only those jurisdictions in both years, considering the size that they had in 1789—already that some of them have been subdivided in 1839. In Table 1.3, we show a comparison between those two years.

In that fifty-year period, inequality among proprietors declined remarkably: 11 points of Gini coefficient. However, it decreased less among the totality of the population: 1.5 Gini points. We can see that other items speak for themselves: 20/20 reduced 50 points and the 1% richer had in 1839 a 5% less wealth. It is also evident the diminution in inequality within land possession: 9 points of total Gini, 20/20 changed from 129 to 43 and 1% richer have 40 points less. The importance of new cattle production was remarkable too, and its property concentration increased in 4 points of Gini and 2 for the 1% richer. The investment in cattle—as it had been indicated—was more important and numerous than having land, agreeing (1999).

A comparison with the whole of the campaign, that is, including all the counties and the new ones incorporated with the advance beyond the Salado, indicates that the difference was not so remarkable, but on land the decrease has been more than 6 points. In other words, including the advance of the frontier, inequality remained within the terms of that found in the oldest area.

1.2.13   Inequality and War After 1810

How we understand these numbers? On the one hand, we proved that inequality has dropped along the fifty-year period. It was possible due to Buenos Aires insertion in the raw material world trade. We can suppose—but not prove—that the war from the first independent period had destroyed wealth during the first half of the nineteenth century, as it deduces Piketty (2014) for the twentieth. While poor men put their own body at stake, the rich contributed part of their fortune, voluntarily or involuntarily, for the war. We can infer that the concentration of wealth and the increased inequality would have been growing until 1810. Then, the war would have caused a forced redistribution of wealth due to the needed compensation to the poorest sections of the population and the losses of the rich. In 1820s, cost of the war has decreased,

Table 1.4 Land distribution in 1839–1867 period

	1839	1855	1867
Gini among proprietors	0.6676	0.6593	0.6746
20/20	53.5	36.6	35.2
Gini among total population	0.8893	0.9153	0.9689

Source Gelman and Santilli (2010, 2011)

in Buenos Aires at least. With the double expansion—cattle and border—inequality began to grow until 1839, when—during the leather boom—it arrived to mentioned levels.

But we can neither confirm all these statements, nor make them last in time. In 1840, the government embargoes the lands of its opponents excluding his properties from taxes (Gelman and Schroeder 2003). Also, exemptions were made for those who remained faithful to the government, the federal party. Their benefiting were the poor and the middle class (Santilli 2008). Finally, from the decline of the government of Rosas, CD only reached land property; their payrolls ceased to have the wealth of information of 1839 (Santilli 2010b).

1.2.14   Land Ownership

Our next observatory will be in 1855, because then tax exemption was extinguished and most of the embargo's properties had been given back to their previous owners. But we could only examine the distribution of land ownership. Gini coefficient had slightly dropped among land proprietors; in the opposite way, it improved among those qualified to become proprietors, category that we call total population. Also, there was a decrease in the proportion of owners over the total population—24.7%— but nominal quantity increased to 6969 cases over 4490 in 1839 (Gelman and Santilli 2010) as population growth went over the number of proprietors.

The last viewpoint of the pre-statistical stage of land distribution in the Campaign of Buenos Aires is 1867. The tendency in Gini among proprietors has reversed: It recovered the loss of 1855 and increased until 1867, while the 20% richest remained the distance with the 20% poorest, according to Table 1.4.

1.2.15   Increase of Inequality from 1855

That quick increase among 1855 and 1867 can be seen clearly and came after the fall of the government of Juan Manuel de Rosas in 1852. We can try some political and social explanations; we only want to reiterate an obvious issue about that increase (which we have already outlined previously). While the portion of proprietors grew 2.8% per year in 1839–1867—certainly not a negligible rate—the growth of the

population rate reached 4.6% between 1839 and 55 and 4% between 1855 and 67 which can be seen as a slight deceleration. We need to recall that this demographic increase was based on intern migrations, which would have diminished after Rosas government fall, according to some appreciations (Guzmán and Santilli 2013). The increase of population over proprietors is a good reason for inequality enlargement, considering that—starting from 1852—the domination over native's land in the south of the province had been reduced, for multiple reasons.

1.2.16 Inequality and Urbanization

Another thing was the urbanization. In 1869, only two years after our research, urban population in the Campaign of Buenos Aires reached the 29.8% (INDEC 2003, pp. 90–92). According to plenty of testimonies, during late medieval times and early Modern Age in Europe, urbanization brought inequality uptick: the accumulation of wealth had grown in the cities and then generated greater differentiation in the workforce and 'skill premium' increase (Van Zanden 1995). In addition, closer in history (industrial revolution consequences), the advance of the urbanization in industrial economies meant increase of the inequality and life standard falling off in the cities. But in the region of our research, it was not the same: There were still no trace of industrialization. Also, wealth accumulation did not seem to be generated in the city or urban centers. Only a small differentiation of rural labor can be seen.

In the urban area of Buenos Aires, inequality generated by property distribution was minor than that of the rural scope in 1839: Gini among proprietors was 0.639—smaller than of the Campaign that was 0.786—fifteen points smaller than rural one. 59% of the head of the households were proprietors (Guzmán 2011). In 1855, the situation had gotten worse: Gini coefficient among proprietors was 0.786 and 0.845 among all population. Anyway, this last one continued being smaller than rural one by 7 points.

The urbanization of the province of Buenos Aires also showed a less unequal index. The size of these urbanization and their surroundings may have influenced in that index. We have not been able to make a distinction between urban and rural proprietors from the tax basis, only in some counties which had an important urban center by its closeness to central city—Quilmes and San Isidro—or for being the center of a counties with intense productive activity—San Nicolas. In Quilmes, total Gini was 0.8456, urban one was 4 points less, and rural one was 0.8656. In San Isidro, there was a bigger gap: Urban Gini was 12 points less, and in San Nicolas, the most rural of three, total Gini was 0.8966 and urban one was 0.8168. In summary, the urban was less unequal than rural scope at that time may be due to those activities that were based in rural one and rural proprietors in towns or villages, taking advantage of that way certain services of incoming urbanization.

1.2.17 Life Standard in the Independent Stage

Life standard in the period of our research can be judged either by its results—population condition in health and well-being terms—or the possibilities offered by the economy to achieve that well-being, in other words, income level. According to Amartya Sen, income means the potential to get wellness, which is subjective and depends on the decision of individuals. Sen strongly focuses on the freedom of each human being to use his income in its best way: feed improving, free time use, or goods accumulation. In summary, society must guarantee the smaller inequality about capabilities as far as possible (Sen 2001).

1.2.18 A Worthy Standard of Life

Our work needs to observe now if 1810 society had incomes that meant a worthy standard of life, in other words, if capabilities allowed to freely improve people's standard of life or it was used to accumulate. To give an answer to these questions, we will see the wage evolution on Buenos Aires population. Buenos Aires economy, based in 'peso fuerte' currency, had to adapt itself to the loss of Potosí mineral and, therefore, to the lack of that currency. Economic activity needed to expand, so paper money was issued—equivalent to one 'peso fuerte'—endorsed by the entrance of customs assessment. This parity stayed while the customs collected them; but the blockade applied by Brazil—due to the 1825 war—suspended international trade. The government decreed paper money inconvertibility in 1826, which generated its immediate devaluation (Irigoin 2003). The wages—in 'pesos fuertes'—were devaluated losing their purchasing ability, but as the paper money kept circulating and population accepted it, the effects were different. The devaluation affected imported products less than expected, though, by many reasons exposed in the work of Schmit (2016)—and very well explained. However, these products had little influence on popular consumption.

1.2.19 Wages After 1810

In this way, wages were not seriously affected by the variations of currency value. They were impacted by modifications on the price of agricultural goods—locally produced—mainly wheat, which had been increasing from half of 1830s until 1840s. The price of meat kept steady. We can deduce that people regulated theirs expenses; if bread price increased, population consumed more meat (Gelman and Santilli 2014a, b). We will return to this topic when we analyze popular food basket. Graph 1.2 speaks for itself.

Graph 1.2 Real wages. Combined prices index. *Source* Gelman and Santilli (2014b)

A widespread decline in the purchasing power of the wages from late 1820s can be appreciated. Those who suffered the most were captain and foremen of rural settlements, which means skilled staff. On the other hand, wages of soldiers and laborers decreased in a lesser degree. Wages have recovered after 1840 and even passed initial level. It can be seen in the wage of daily rural laborers, and temporary workers considered skilled labor. The wage of the soldiers has recovered in 1840s too. The higher military rank had to wait until the fall of the government of Rosas to improve their situation. The wages of administrative hierarchy were upgraded more than unskilled administrative workers after 1852 too (Barba 1999).

1.2.20   Income Level and Satisfaction of Needs

An interesting point of view to study income level and satisfaction of needs is obtained through work with baskets of goods, mentioned for the last colonial period. Baskets from 1818, 1819, 1825, 1835, and 1849 were reconstructed to check possible changes in consumption due to variations in tastes, habits, the conditions of production, and price variation. We can see there were not many changes in fifty years—considering eighteenth and nineteenth centuries. Consumption of fish has almost disappeared, and pasta had appeared. We can see temporary variations because of impermanent shortage, such as meat in 1818/19: Its price had increased due to the demand of 'saladeros' (a basic industry that produced salted meat) needs and the relative fall of bread in the basket due to the variations of its weight (that was the way for bakers to deceive the governmental control of prices over the final product). We have already mentioned variability in the price of wheat at that period. From middle

1830s, meat supply was growing, and it became a by-product of leather export, as we said; therefore, its price remained low (Santilli 2020a). Overall, the baskets conserved its composition—considering great advantage of meat firstly and bread secondly—throughout the analyzed stage. Graph 1.3 gives an unbeatable picture.

Again, the variety of products in the food basket is remarkable. In terms of R. Allen, is a respectable basket, minimum in calories, with a wide range of products.

Methodology foresees the construction of a simpler basket, called bare bone basket (BBB): If we used the BBB basket, we would choose rice, fat, and other articles consumption, where the meat reaches 81% of the total input of calories, considering that it was the food more popular and the one with the lowest price (Gelman and Santilli 2018b). We will not use the BBB in this case since we want to prove the high level of income of a worker in Buenos Aires.

As we saw previously, WR constructed with the cost of the basket and the wages from bricklayer had shown a decline in 1810s. We shall see how it evolved during the whole period of our research (Table 1.5).

Graph 1.3 Composition of baskets in calories. *Source* Santilli (2020a)

Table 1.5 Welfare ratio of Buenos Aires in 1796–1849 period (daily wage of a bricklayer worker)

	1796	1806	1818	1819	1835	1849
Annual cost of the basket	52.79	95.18	181.19	182.99	73.89	53.44
Wage of bricklayer per day	0.5	0.5	1	1	0.36	0.69
Days worked per year	250	250	250	250	250	250
Total wage	125	125	250	250	89.54	171.43
Welfare ratio	**2.37**	**1.31**	**1.38**	**1.37**	**1.21**	**3.21**

Source Santilli (2020a)

The increase of wages is evident, as well as the cost of the basket—both were deflacted—until 1835. In 1840s, the cost of the basket declined, but the salary continued to rise and that caused WR to reach a favorable level. And if we compare WR with BBB—minimum of products needed—the rate has been excellent: 1.77 in 1835 and 4.71 in 1849 (Santilli 2020a, p. 103). An alternative basket—with a more complete sequence about years—shows a similar evolution. However, it uses whole-sale prices, and it contemplates more variations about wages (Guzmán and Schmit 2020).

1.2.21 Rural Standard of Life

We aim to complete the estimate of the rural standard of life, considering that generally the rural laborer was provided with meat and housing—as it has been already mentioned—and may be a land to feed from. As it can be seen in Table 1.6, there was an equal evolution either for monthly—assumed itself as stable and unskilled but lower paid—and daily laborer—temporary and skilled. In the last case, they were not provided with housing and some days may not had received meat because they did not complete their workday, but anyway their WR was remarkably high. In the first case (monthly laborer), they were generally single man and migrants from other regions in the country. That is the reason why WR would be greater—since it is estimated with a family. Rate to single laborer would arrive to WR of 2.29 for the lowest year: 1819. About daily laborer, it may not work 250 days a year; but it may work 100 days a year. WR of 1835—1.02: the lowest of the scale—was enough to maintain the standard of life, even with family.

1.2.22 Level of Income

In summary, a good level of income can clearly be observed in the colony, which dropped in the first decade of the nineteenth century but maintained a level over survival needs, and it also stayed when the wage declined in 1820s and 1830s. Wage

Table 1.6 Rural *welfare ratio* of Buenos Aires in 1796–1849 period

	1796	1806	1818	1819	1835	1849
Annual cost of the basket	52.79	95.18	181.19	182.99	73.89	53.44
Discounting meat and housing	3.29	7.24	38.41	13.81	6.21	11.42
Rural monthly laborer wage	72	84	96	108	65.24	82.29
Welfare ratio	**1.45**	**0.96**	**0.67**	**0.64**	**0.96**	**1.96**
Rural daily laborer wage			1.6	1.6	3.5	23.13
Days worked per year	150	150	150	150	150	150
Anual wage			240	240	75.21	198.22
WR			**1.68**	**1.42**	**1.11**	**4.72**
WR on meat purchasing			**1.32**	**1.31**	**1.02**	**3.71**

Source Santilli (2020a)

boom in 1840s is certain signal, on the one hand, the prosperity of agro-exporting economy and, on the other hand, the aptitude of wage-earning sectors to negotiate favorable job conditions since there were scanty of workforce, and the political process, based in part in the consensus of common people, that was taking place in the first half of the nineteenth century in Buenos Aires (Gelman 1998, 1999; Fradkin and Gelman 2015; Santilli 2011).

1.2.23 Impact of Free Commerce

Which was the effect of market opening from a consumption point of view? Out of doubt, free trade inserted Buenos Aires in the international Atlantic market, which caused a sustained free trade exchange and of market capability to assign resources and to redistribute them assure that such opening was advantageous to the popular sectors because it allowed them to acquire products at a low price.

Our research allows us to confirm that the incidence from imported products in the basket was not relevant, although there were sugar and yerba consumption, two not industrialized products but could had taken advantage of the reduction in the price of transport. In textile products—which characterized European industrial revolution—it should have reduced prices because of the decline of the cost of production and then, a fall of terms of trade, confirmed by Carlos Newland (1998). Nevertheless, it did not happen because the inflation in Buenos Aires prevented the population to use that advantage. Therefore, not only free trade products did not lower, but on the contrary, the price of textile products increased. Rustic textile produced in Cordoba continued arriving at Buenos Aires and competed successfully with English textile until half of nineteenth century (Assadourian 1983).

So, we are not able to coincide with Salvatore (2018) among other historians and economists that popular sectors took advantage in consumption due to free trade

Graph 1.4 WR on bricklayer worker wage (1796–1849). *Source* Santilli (2020a)

Salvatore shows in his work, a social economic analysis—very tidy and intelligent—
about the government of Rosas, the preference toward native articles, and the rejection
caused by imported ones in popular markets.

The curve describing WR from income is showed in Graph 1.4. It can see a
decline in the income level at the beginning of the nineteenth century, which remained
stable until middle 1830s and improved remarkably in the following decade. This
improvement is presumably based on the increase in exports of livestock products
that occurred in the 1840s, more than the fall in the prices of imported products by
free trade. At all events, the decrease of cost of the basket took place by the low price
of meat for the reasons mentioned. Free trade allowed exporting and importing, but
exporting growth—starting from 1840—enabled remarkably improvement of wages.

However, as we have already mentioned, a good income level does not necessarily
mean a good standard of life—but it makes it easier. Although we do not have
many elements to see if that income rate meant an improvement of life standard,
something can be done. Initially, it was possible to verify that the gross rate of
mortality descended during pre-statistical period in the city of Buenos Aires, from
almost 50‰ in 1810–14 to 28 ‰ in 1850–54 (Dmitruk and Guzmán 2019).

1.2.24   Studies of Anthropometry

Anthropometry provides another way to notice the improvement in the standard of
life. This method compares heights among different series of young people ending

adolescence. It is possible to deduce if standard of life was good or bad during childhood considering variations in final height obtained at twenty years old. These studies show increase in height from every cohort who was born in the period of our research, with some variations. From 1805 to 1825, height of the recruits had increased 1.1–2.5 cm—with numbers getting better later. It is esteemed that height increase would have been 2.6–2.9 cm for the period 1780–1839 (Salvatore 2007). For the stage started in 1852, research from Salvatore indicated that height decreased more than 1 cm, but that rate was based on prisoners, different from recruits, used in the previous period. Another information mentioned by himself goes against his research: It indicates a height increase of 2.5 cm in the 1860–1895 period, but with a different social bias.

1.2.25 Education Investment

It also can be considered that population maintained a better standard of life watching the investment made in education—during childhood mainly—either public or private offer, in other words, subtracting time from work to allocate it to literacy. It can be noticed in numeracy capability too: if it is easy for people to express their age in the census survey. If their age was expressed age in numbers with zero endings, it is possible to deduce that either they have had less learning or they have forgotten them. Then, there is a lower rate of human capital. In Buenos Aires, from censuses of 1869 and 1895, it can be deduced that numeracy capability had increased for children who were born from 1820 to 1860 (Manzel et al. 2012).

1.2.26 Accumulation

Finally, another way to see the use of income is with accumulation, and it can be deduced through access to the land and, to cattle in other words, to capital valuation. Research on vertical mobility in 1839 and 1867 period shows a relative intra-generational permanence in all deciles, but scaling down in the lowest deciles. Some small cattle ranchers of 1839 acceded to the property in 1855; that possibility diminished after the fall of government of Rosas (Gelman and Santilli 2013). We can deduce once again, not only economic conditions, but also political reasons that influenced in the difficulties to have a property. It is attested in research about the county of Azul (Lanteri 2011; Infesta 1994), where land was given for border defense in 1830s; in San José de Flores (Ciliberto 2009), where the land was sold for low prices and loan facilities were provided; or land handover in coastal zones of the city—Palermo mainly (Santilli 2010a). These conditions were closed with the temporary closure of the border from 1852.

1.2.27 Comparative of Income Level

Income level in Buenos Aires, compared to other Atlantic places, is greater. WR from Buenos Aires—3.21 in 1849—was higher than either WR from London in 1850 (1.64, respectable one) or from Madrid and Paris in 1825 (1.03) (Challú and Gómez-Galvarriato 2015). And BBB from Buenos Aires—4.71—was only exceeded by the one from Massachusetts—5.70 in 1835—(Allen 2009); it also more duplicated the one from Mexico—2.16 in 1825–1849 period (Challú and Gómez-Galvarriato 2015). Buenos Aires was the best located Latin American city. We can deduce in part the economic reasons of the affluence of European immigrants to America. This is the way that O'Rourke and Williamson (2006) explain the wage convergence among Europa and America.

Although had not arrived the greatest stage of enrichment for the highest deciles yet—the gap between rich and poor was greater since, mainly through the accumulation of land—rich people had not constructed neither mansions nor palaces in Buenos Aires yet. They would start doing it at the beginning of the twentieth century, and then—when income decreased—they will sell those properties to the state, today big museums. Those will be coming times.

1.3 Concluding Remarks

We have crossed a long way through vertical inequality in Buenos Aires, in several aspects, and its consequences. We have study inequality in the pre-statistical stage before the first national census in 1869, using different methodologies and has arrived at similar results, mainly about wealth possession. Also, we tried to investigate how inequality was reflected in income distribution, considering that lack of properties was not an inhibition to obtain survival income. Then we worked with the way in which population used that income for its standard of life, either to improve, maintain, or low it.

Inequality in goods, land, and cattle distribution decreased between the beginning of the colony and 1839 may be due to the destruction of wealth caused by the wars of the first half of the century. But from 1839—together with growing use of the land as productive asset—inequality was rapidly increasing from the fall of the government of Rosas, strongly influenced by the temporary closure of the border, a greater workforce affluence, and by political reasons.

But this bad capital distribution does not seem to have influenced the income level—it stayed in a 'more than enough' level—although it had declined between the end of the colony and 1830s. However, from the following decade there was an income multiplication, calling for European immigration.

Finally, we think we have been able to demonstrate that those who received a better income invested it in their standard of life improvement: They nourished better their children—which implied low mortality rate—and improved their education. In a little

proportion, they accumulated wealth. This last one is a non-conclusive statement, due to the source's quality. So, research on horizontal social mobility is a pending subject for this covered period.

Analysis of inequality in the rest of the country is pending too. It still has not been possible to find sources, considering the level of inequality for the pre-statistical stage. There has been only one work—remarkably effective—about Cordoba in 1839—that allowed to compare it with Buenos Aires for the first half. It was published in the regardful book by Jorge Gelman, *El mapa de la desigualdad* (Map of inequality) (2011), who used information from the second half of the nineteenth century for his works about the rest of the country, whose information—such as prices and wages and the consequent basket—is been recovering to construct series that show population life standards. The progress was published recently Santilli (comp.) (2020b).

Ultimately, although there is an important progress, there is a huge pending task.

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Chapter 2
Quality of Life in Argentina in the First National Census (1869)

Guillermo Angel Velázquez and Hernán Otero

Abstract This chapter analyzes the First National Population Census of Argentina (1869) from geographical and historical perspectives. We studied its most relevant variables and also their context in order to show the quality of life at that time. Some usually disregarded variables are considered, particularly those related to education, health and housing conditions. The main objective of this work is to propose an index of quality of life that allows us to analyze the sources of the period and, at the same time, to enable future diachronic comparisons with another contexts. From the methodological point of view, statistical techniques and geographic information systems (GIS) are applied to these spatial units with the highest available disaggregating level (districts/municipalities). Results show high degree of inequality all over the country and provinces inside. They also provide relevant contributions for subsequent researches.

Keywords Quality of life · Argentina · Territorial inequalities · 1869 census

2.1 Introduction

Measuring the quality of life requires an indicator that synthesizes a set of relevant sociodemographic, economic and environmental situations to reflect the conditions of the population in its determined time and place. This gives it interest for the formulation of public policies and in historical cases, such as the one we are addressing now, it also allows the understanding of social functioning from a perspective of historical evolution. We go back to the 1990s as the initial impulse for quality of life studies in the Latin American context (Camargo Mora 1996; Delgado and Méndez 1996; Olave and Bodini 1995; Velázquez and García 1999), and the valuable information that is obtained from them justifies their growth, since then and in a significant way

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also for the Argentine case (Lucero et al. 2007; Mikkelsen et al. 2013; Velázquez 2001, 2008; Velázquez et al. 2014).

Despite the enormous empirical difficulties presented by the data, especially those before the statistical period, the subject has also received attention from historians. The discussions focused on the changes produced by the progressive incorporation into the Atlantic economy throughout the nineteenth century and, above all, on its effects in terms of regional and equitable disparities. Although the synchronic nature of the present study prevents us from making comparisons with previous periods, the aforementioned discussions provide interesting inputs for future comparisons of the proposed index. It should be noted that as in the aforementioned production (in particular, Hora 2010) we will use the expression "quality of life" in a broad sense, that is, as a synonym for others such as "living conditions" or "well-being". Starting from this context, the present study proposes to analyze the quality of life of the population during the First National Census of the Argentine Republic, carried out in 1869, to provide a general panorama of the socio-spatial differences that characterized the country toward the middle nineteenth century.

The use of the population census is not accidental, since it is the only source that allows achieving universal coverage of the entire territory at each historical moment. On the other hand, it should be noted that, although the censuses for the period 1869–1914 have been frequently visited, the studies carried out have prioritized their demographic use (e.g., Recchini and Lattes 1975; Torrado 2007, to mention only two reference works) or its analysis as a source in the second degree, devoted to the study of the categories of its conceptual design or the political and institutional aspects of the sociohistory of statistics (González Bollo 2014; Massé 2003; Otero 2006). Despite their contributions, these currents do not exhaust the richness of the historical surveys, since they leave out a wide set of variables of interest, particularly those related to housing and health. The need for multidisciplinarity and multidimensionality, and the few advances made in this regard so far are summarized in the Santilli (2016) dossier. From the methodological point of view, the work is based on the use of geographic information systems (GIS) for the spatial analysis of the relevant dimensions and variables and for the elaboration of a quality of life index (QLI) according to the information available and the characteristics of the historical period considered. A first element to highlight of the proposal is the use of the scale with the highest possible level of territorial disaggregation—county—(called departments or parties according to the provinces), a task that requires the survey, processing and digitization of the complex cartography of a characterized period, until the end of the century, due to the expansion of the national state toward the border areas and the concomitant creation of counties, many of them large, called upon to subdivide or disappear in later stages. These difficulties explain why the historical production carried out so far has been concentrated in larger units, such as provinces and regions (e.g., Salvatore 1998; Otero 2004). The second element of interest is the elaboration of a composite index, which synthesizes variables of all the relevant dimensions (education, health and housing), which makes it possible to reduce the collection problems derived from each one of them and to provide a completer and more multidimensional than those based on a single indicator.

Given the aforementioned problems and the possibility of statistical randomness based on the small population of some units, the main objective is to provide a comparative overview of the whole considering inter, but above all, intra-provincial differences, rather than the analysis of specific units some of which may present atypical behaviors that appeal to specific studies. The results obtained also serve as a basis for diachronic comparisons with the images obtained from the most recent censuses. Such comparisons cannot be based on the same indicators (non-existent at the county level for old periods, as is the case with infant mortality), but they can do so on equivalent indicators that aim to measure the same underlying dimensions. In summary, the proposal of a quality of life index for the analyzed period, the intra-case comparison and the interdisciplinary confluence between Geography and History constitute the central objectives of the proposal.

Since the census constitutes the basic source of the proposal, it is important to review some central aspects of its implementation to adequately contextualize its advantages and limits. The First Census of the Argentine Republic, directed by the superintendent Diego Gregorio de la Fuente during the presidency of Domingo Faustino Sarmiento (1868–1874), was carried out on September 15, 16 and 17, 1869, in compliance with the National Law 302 of that year. The results were approved by National Law 565 of 1872, with a slight increase in the figures to correct the under-reporting. The operation followed a set of criteria that allow it to be characterized as the first modern census in Argentina. These criteria include (i) the existence of a centralized body (the Office of National Statistics, dependent on the Ministry of the Interior, created in 1864 and dissolved in 1875); (ii) a unique conceptual design; (iii) the will to relieve the entire population universally and simultaneously and, above all, (iv) the absence of pre-statistical purposes (e.g., fiscal and military), typical of the previous surveys. Unlike later censuses, the 1869 census was carried out at a time when the Argentine State did not exercise total control of its territory, which is why there is a geographical duality between the territory of theoretical sovereignty (areas occupied by indigenous peoples), for which there are only uncertain estimates on the number of inhabitants, and an area of effective occupation, in which the census itself was applied (Fig. 2.1).

Following the criteria established by the international statistical congresses of the period, the 1869 census was based on the counting of the de facto population (that is, the population present at the time of the survey), carried out by direct interview (Canvasser method). The census also incorporated the river population, the Paraguayan Army of Operations and a summary estimate of Argentines abroad.

As it will be seen later, the conceptual design of the census incorporated classic variables of this type of instrument and other more innovative ones that were aimed at capturing populations in critical situations. The most questioned aspect of the census refers to the scant attention paid to family and household structures, a feature common to the first three national censuses (1869, 1895 and 1914) carried out during the so-called author statistics, in which an essentially individual statistical approach (Otero 2006). Given the conditions of the time, the level of coverage can be considered very satisfactory for the part of the territory that was surveyed (under-registration of the order of 4% against 30% of the colonial surveys and the beginning of the independent

Fig. 2.1 Provincial division. Argentina, 1869. *Source* Personal elaboration through GIS and data from 1869 National Census

period). The results, known in a fairly rapid time for the conditions of the time (1872), were ordered according to the existing territorial jurisdictions (fourteen provinces and their internal divisions), distributed in turn into four regions or "groupings" (East, West, North and Center). This classification, based on lax spatial criteria and the search for a certain symmetry of the defined groups, was inspired by the French academic geography of the period and also involved a hierarchical diagnosis from which to interpret the Argentine reality (Quintero 2004).

Despite the ups and downs mentioned, the 1869 census constitutes the first general photograph of independent Argentina and has a value that transcends the punctual nature that date suggests. The census is registered at a particular moment, the presidency of Domingo F. Sarmiento, the second of the so-called unified Republic, after the presidency of Bartolomé Mitre (1862–1868). In this sense, it constitutes a moment of transition between the long period of wars (from the Independence and civil wars to the secession of the province of Buenos Aires from the Confederation between 1852 and 1861), of devastating economic effects and the consolidation of the national State from 1880, characterized by mass immigration, the expansion of exports and public infrastructure, among other features. The importance of the eighties should not make us forget that, during the 1850s and 1860s, important significant changes also occurred, in institutional and socio-economic terms, which made further development possible. Among them, the early advance of urbanization stands out (the urban population reached 28.6% in 1869), the result of long-term internal migrations and the arrival of European immigrants. The economic changes were equally relevant, although differential according to the provinces, since traditional productive structures coexisted with more diversified economies in Córdoba, Tucumán, and Cuyo, with activities of greater capitalist development in the Litoral region, among which the estancias (i.e., huge cattle and sheep ranches) of the Buenos Aires province pampas (i.e., grassy plains), the wool boom and the beginning of cereal agriculture in the south of Santa Fe province.

2.2 Methodology

We consider that the quality of life is a measure of achievement concerning a level established as optimal, taking into account socio-economic and environmental dimensions that depend on the scale of values prevailing in society and that vary according to the expectations of historical progress (Velázquez 2001). Thus, while poverty is measured relative to a floor, quality of life is measured relative to a ceiling. To study it, it is usual to resort to the analysis of significant dimensions, among which the conditions of education, health and housing are unavoidable. A jurisdiction that had 50% alphabets in 1869, for example, would be closer to the ceiling (better relative situation), while, with that same value, in 1947 it would be closer to the floor. This explains that, in 1869, the levels and ceilings of literacy were 0.0 and 73.1%, respectively, while in 1895 they were 0.0 and 81.5% and in 1947 they were 33.0 and 94.9%.

The works by Barbeito and Lo Vuolo (1992), Bolsi et al. (2006), Celemín (2007), Connerly and Marans (1985), Delgado and Méndez (1996), Estés (1993), Halperín (1994), Longhi et al. (2013), Sterimberg et al. (2004), Tanguay et al. (2010), Torrado (2007), Velázquez (2016) and Wilkins (2003), among others, contribute to generate an appropriate framework that, as it will be seen later, must be adapted to the living conditions and the availability of information about the period, a task to which the sections that follow are devoted. The resulting index is a summary of the quality of life that, according to the comparative vocation of the study, is capable of being replicated for other historical moments. Finally, the conclusions analyze the main implications of the results achieved.

The education, health and housing variables describe an image of the living conditions of the Argentine population around 1869. Their coincidences and differences can be explained by the nature of the variables. The index derives from a compromise between the information available, the units of analysis chosen and the attempt to approximate the scale of values of society at each historical moment. At present, an index that does not consider the environmental aspects of well-being would be unacceptable, a dimension that for Argentina in 1869 was not considered because it was not yet relevant, nor was it captured by the statistical system. Another criterion that is added for the choice of components consists of incorporating variables that allow long-term comparisons with a view to the most recent periods.

For all these reasons, our proposal to estimate the quality of life in 1869 includes the variables that are reported in detail in Table 2.1. There, it can be observed that the variables have different total amplitudes. Thus, some vary between 0 and 100%, while others do between 0.49 and 0.04 per thousand, as occurs with medical doctors per inhabitant. Another element to emphasize is that some are cost variables since their increase implies a worse relative situation, such is the case of the population with diseases and overcrowding. Others, for their part, are benefit variables, since their increase corresponds to better relative situations: the literacy rate, medical doctors per thousand inhabitants and roof and tile houses. The integration of these rates was carried out by transforming them into partial index numbers, in which the extreme values are transformed between 1 and 0 to reflect the best and the worst relative situation, respectively.

For cost variables (population with diseases and people per household):

$$I = \frac{\text{Max} - a}{\text{Max} - \text{Min}}$$

where a: cost variable.

Table 2.1 Dimensions and variables for the quality of life index in Argentina in 1869

Dimension	Relative weight	Variables (final weight)	Extreme values (maximum − minimum)
Education	1/3	Literacy rate (total 1/3)	(73.11 − 0)
Health	1/3	½. Population with diseases (total 1/6)	(11.44 − 0)
		½. Medical doctors/1000 inhab. (total 1/6, provincial scale)	(0.49 − 0.04)
Housing	1/3	½. The proportion of rooftop and tile houses (total 1/6)	(100 − 0)
		½. People per houses (total 1/6)	(15.24 − 3.14)

Source Prepared by the authors based on the 1869 census, Argentina (1872)

Thus, for example, Ledesma (Jujuy) had 10.35 people per dwelling, a figure that taken to the index number gives 0.40 (which places Ledesma closer to the worst relative situation or maximum than to the minimum, whose value is 3.14).

For benefit variables (literacy rate, medical doctors/1000 inhabitants, rooftop and tile dwellings):

$$I = 1 - \frac{\text{Max} - b}{\text{Max} - \text{Min}}$$

where b: benefit variable.

Thus, for example, Tandil (Buenos Aires) had a literacy rate of 19.3%. This rate, taken as an index number, is 0.26 (which places Tandil closer to the worst relative situation or minimum than to the maximum, which is 73.11).

The formula for calculating QLI results from:

Quality of life index	
(Illiteracy index) × 2 + Population with diseases index + Medical index + Index roof and tile dwellings + People/housing index	÷ 0.6

For example, Table 2.2 indicates how the QLI is elaborated for the county of Tandil:

Table 2.2 QLI for the county of Tandil

QLI	Tandil
Population	4870
Total houses	888
% Illiteracy	19.30
Illiteracy index	0.26
% of people with diseases	0.47
Index diseases	0.96
Medical doctors per ‰	0.49
Medical index	1.00
% Roof and tile houses	5
Roof and tile index	0.05
% Overcrowding	5.48
% index	0.81
QLI 1869	5.57

Source Personal elaboration

2.3 Results

2.3.1 Education

Following a conception close to the modern concept of the population at risk, the first national census sought to detect people in critical situations, for which it included data on education and health. Regarding the first dimension, which was part of what was defined at the time as the "moral state" of the population, the main information offered by the census is that of people who can read and write, that is, literacy, although measured dichotomously and without attempting to determine degrees or levels of literacy knowledge. No other data was collected, such as, e.g., the levels of education achieved. Instead, the school population was surveyed. The results of the census showed a total of 1,800,000 inhabitants, of which only 312,000 could read and write. Diego de la Fuente (Argentina 1872) estimated that the real figure was 30% worse (218,000) and that the population under 6 years was 316,000, so the proportion of literates was approximately 14.7%. The rate showed considerable inequality between the different jurisdictions of the country (Fig. 2.2).

In the best quartile, the rate exceeds 19.02% of the literate population. The best value is registered in the city of Buenos Aires (73.11%), much higher than the rest of the units. In general, the parties close to the main city of the country have relatively high values, with San Vicente standing out with more than 40%. If we establish a threshold of 30%, this is exceeded by only twelve units, the vast majority of them located in the so-called East Grouping, nine in Buenos Aires province, one in Santa Fe province and one in Entre Ríos province. Outside of said grouping, only the capital of San Juan province is added to this select group. Within this first quartile with the

Fig. 2.2 People that could read and write. Argentina, 1869. *Source* Personal elaboration through GIS and data from the 1869 National Census

best relative situation, the broad predominance of units from Buenos Aires, from the south of Santa Fe province, and the south of Córdoba province stands out. Most of the provincial capitals also make up this group with the highest relative literacy. At the other extreme, that is, in the quartile with the worst relative situation, there are units with less than 8.13% of the literate population. The most negative situation is that of the town of Anta (province of Salta), where the proportion of alphabets is zero. In seven other units, the proportion is less than 3%; five of them are located in Santiago del Estero province (Center Grouping), while the remaining two are located in Tucumán and Salta provinces (North Grouping). In general, the worst positions largely predominate in the Northern part of the country, mainly in the provinces of Santiago del Estero, Jujuy and Tucumán. La Rioja and San Luis provinces also show a very bad relative situation in several of their counties. Half of the units (2nd and 3rd quartile) fall within the intermediate values of the distribution (between 8.13 and 19.01% of the population declare that they can read and write). It should be remembered that the census survey did not go beyond the area shown on the map, so the areas that appear in white most likely have even greater deficiencies.

The spatial heterogeneity of the aforementioned indicator should not make us forget that scene as a whole, the literacy levels of Argentina (the same happened with the schooling rate) were then among the highest in Latin America, surpassing countries such as Mexico or Brazil (Newland 1997). Given that the organization of the public education system was still very incipient (its spectacular achievements date back to this period), a substantial part of the educational offer was private (secular schools, community schools of migratory groups and confessional schools, also of literacy carried out at home or by private teachers). As Newland (1997) argued, public education depended on the provincial states and only marginally on municipal or national activity, which explains its greater development in the Litoral provinces that had greater fiscal resources. However, cases such as that of San Juan province suggest that relatively high levels of literacy could be achieved in other ways or despite having fewer resources.

2.3.2 Health

The census also provides information on the "special conditions" of the population. These include a heterogeneous set of variables, among which various forms of physical and mental disability stand out for their importance: disabled by accident, disabled by war, insane, deaf-mute, blind, cretins and population with goiter. The aforementioned categories, which can be linked to genres of the period such as medical geographies, constituted ailments with an effective impact on the population, both in terms of health and due to their potential negative effect on economic activities or even militia service. Despite the problems, the census information provides elements of interest that allow an approximation to the population's health conditions, all the more so because there are no mortality data for all the country's provinces during this period. It should be noted that the diseases included in 1869 had some

interesting variations during the 1895 census and that, except for blindness and deaf-muteness, they disappeared in the third national census of 1914, replaced by the generic and non-comparable category of "sick."

2.3.2.1   Invalid

In the case of the disabled category, the census discriminates between disabled due to accidents and disabled due to war. The warlike conflicts, endemic throughout the first half of the twentieth century (wars of independence and civil wars) continued with the confrontations between the province of Buenos Aires and the Argentine Confederation, and they reached their zenith with the deadly War of the Triple Alliance against Paraguay (1864–1870), contemporaneous with the census. Regarding disabled people due to accidents, the census records 3308 cases, representing 0.21% of the population. Territorial analysis shows that the proportion varies significantly. The case with the highest incidence is San José (province of Santa Fe) with 13.1% of its population affected. This situation is anomalous, given that the second county with the highest proportion is Caldera (province of Salta), with 3.38%. A third case exceeds 2%: Lincoln's county, in the province of Buenos Aires. If the units with more than 1% are considered, two others are added: Belgrano (province of La Rioja) and Concepción del Uruguay (province of Entre Ríos). If the observation scale is broadened, there are two areas with the greatest relative affectation of this problem: the eastern clusters of the West; that of the Center, on the contrary, shows a lower relative incidence. It is reasonable to conjecture that the observed differences do not derive exclusively from the occurrence of the events and that, perhaps, they also reflect better medical care in the central area or, in other words, that a higher proportion of the accidents that occurred in that region were not duly registered.

2.3.2.2   Invalid by War

About the disabled by war, its magnitude (8437 cases when adding all the territorial units), almost triples the previous ones and affects 0.53% of the population. It should be noted that the census report minimizes this issue since its summary table includes only 2888 disabled persons due to war. The incidence is higher in the Argentine Northwest, Mendoza province, and, above all, Buenos Aires province and the Litoral provinces. This distribution, quite different from that of the disabled by accident, is surely linked to the impact of the Paraguayan War (places of recruitment of soldiers, location of reserve troops and military hospitals, etc.), contemporaneous with the conduct of the census. There are also intra-provincial differences, mainly to the benefit of the provincial capitals, which have lower proportions of the disabled population due to military actions, probably because they recruited a lower proportion of the population because those affected enjoyed better medical care or due to a combination of both factors. The most affected county is Tres Arroyos (Buenos Aires province) where 3.45% of its population is registered as disabled by the war,

a fact that, at least partially, may be associated with the military advance of the southern border. With more than 2% of its affected population, Tala (province of Entre Ríos) and Belgrano (province of La Rioja) are included. The highest relative proportion of disabled people due to war is registered in various districts of the interior of Buenos Aires, San Luis, Jujuy and Mendoza provinces. On the contrary, the provinces of Santa Fe, La Rioja, Santiago del Estero, the city of Buenos Aires and their closest districts show low proportions. The greater randomness in the distribution of disabled people due to war would be explained by the chance of military actions, whose composition reflects, in turn, places of specific origins of the troops.

2.3.2.3 Insane

The census also registered 3674 inhabitants as insane, a figure that represents 0.24% of the country's population. Although this proportion is low, its incidence is uneven throughout the territory. The maximum record (3.86%) corresponds to the county of Tuyú in the province of Buenos Aires. The 2% barrier is surpassed by Valle Grande (Jujuy province), while two more units exceed 1%: Belgrano and San Martín towns (both in La Rioja province). Beyond these extreme cases, the insane population has a greater incidence in the Central Group (especially in the provinces of Córdoba and San Luis) and the North Group (particularly in Jujuy and Salta provinces). The proportions are also high in a large part of Mendoza and north of Santa Fe provinces. A conglomerate of five counties, relatively close to the city of Buenos Aires (such as Moreno, Merlo, Las Heras, Matanza and San Vicente counties), stands out, with values, which are probably due, at least in part, to the sending of patients from the interior to the capital of the country and its surrounding areas, regions that had more advanced health institutions, a fact verified in case studies such as that of the "Convalescence porteña", an institution dedicated to the care of insane women (Pita 2012). The area with the lowest relative proportion of insane people is the Eastern Group, particularly in the respective hinterlands of Buenos Aires and Corrientes provinces, although the first case may also be affected by the aforementioned problem of the lack of distinction between the place of occurrence and place of the usual residence of the sick persons. Outside of this grouping, other provinces such as Santiago del Estero and Catamarca also show low proportions.

2.3.2.4 Deaf-Mutes

As for deaf-mutes, the census registered 5726, that is, 0.38% of the total population. Their distribution follows a fairly clear pattern: less relative weight in the Eastern Cluster, high weight in the Northern clusters and, to a lesser extent, in the West. The Grouping of the Center is, once again, in an intermediate position. The analysis of the extreme values allows us to detect spatial continuities of great interest. The highest proportion of deaf-mutes is registered in the town of Perico de San Antonio (Jujuy province), where 4% of its population is affected. The northernmost province,

Jujuy, also exhibits a striking grouping of four contiguous counties (Valle Grande, Jujuy Capital, Perico del Carmen, and the one already mentioned) in which more than 3% of its population suffered from this problem. If the floor is lowered to 2%, more contiguous counties of the province of Salta (Orán, San José de Metán and Candelaria) are added. Outside of this epicenter, only the town of Guaymallén appears, in Mendoza province. One more cut, considering now those that exceed 1%, continues to show an overwhelming predominance of the Jujuy and Salta counties, to which is added another grouping of the units of Mendoza province.

2.3.2.5 Blind

The incidence of the blind (3182 cases representing 0.20% of the total population), meanwhile, is lower than that of deaf-mutes, but their distribution is very similar: lower relative weight in the Eastern Group, high proportion in the Northern Cluster, relatively high in the West and relatively intermediate in the Central provinces. The extreme values are registered in Belgrano and Independencia counties (both in La Rioja province), units in which the blind exceed 1% of the population. If the threshold is lowered to 0.8%, a grouping of three counties from La Rioja province emerges, adding San Martín county to the two preceding ones. Above 0.7%, two more units are added in Mendoza and Jujuy provinces.

2.3.2.6 Cretins, Stupid, and "*Opas*"

The fact that the distinctions between these diseases were the subject of arduous debate in specialized magazines during the nineteenth century, added to their high relative incidence, probably explains the creation of a unique group by the census takers. Cretinism, e.g., sometimes tended to be identified with idiocy (a form of mental retardation). The mental deficiencies admitted, in turn, differences of degree according to the importance of the delay (mentally weak, imbeciles and idiots—from less to greater severity, respectively). The name "*opa*", for its part, referred to the indigenous or mestizo population, that is, it included elements of an ethnic nature (Di Liscia 2005). The distribution of this group (3756 people who represent 0.24% of the total population) shows a greater relative weight in the North Group, especially in the provinces of Salta and Jujuy, and relatively high in the West. The extreme values are registered in the city of San Salvador de Jujuy (2.11% of its population). If the threshold is set at 1.5%, three other counties in the North of the country are added (Orán, Iruya and San José de Metán), which make up a grouping. When the threshold is lowered to 1%, another fourteen units emerge, in the North (8), in the West (5), and one in the province of San Luis. The Eastern and Central groupings show, in general, a lower proportion, except in their peripheries. Thus, near the city of Buenos Aires, low values are registered, except in the counties of San Vicente, La Matanza and Moreno. The proportions are also low in the province of Buenos Aires, except the town of Patagones in its extreme southern part. In the provinces of Entre

Ríos and Corrientes, the magnitude of this condition is also low, except for some isolated parties in their interiors.

2.3.2.7 Goiter

Lastly, the first national census registered 4605 inhabitants with goiter, reaching 0.30% of the population. Goiter is characterized by swelling in the front of the neck caused by an enlarged thyroid. Its varied etiology includes, among others, the endemic goiter produced by the lack of iodine in the diet. Given that hypothyroidism during fetal life could produce cretinism, that is, a particularly serious form of mental retardation, both diseases tended to be confused at the time (Di Liscia 2005), which must also have had an impact on their statistical uptake. The distribution, once again, mainly affects the provinces grouped in the North and West, especially the province of Mendoza. Precisely the most extreme value is located in the county of San Vicente (7.86% of the population), in the central oasis of Mendoza province. Above 4%, only the town of Iruya is added, in Salta province, while if the threshold is lowered to 3%, eight units appear (4 in the North and 4 in the West). It is important to note that the capitals of Jujuy and Mendoza provinces make up this group. In the Center Grouping, the problem is not very serious, except in San Luis province. The same occurs in the East, with very low values in the city of Buenos Aires and its surroundings, Buenos Aires province (except Tres Arroyos county), Santa Fe and Entre Ríos provinces. The only province affected by this problem within the East is Corrientes, even in its provincial capital.

2.3.2.8 Population with Diseases

If all the above are grouped into a category called population with diseases (Fig. 2.3), a procedure that allows reducing the recruitment problems evoked for each of them, the figure reaches 20,943 people, representing 1.31% of the total population. Of course, some people could have more than one disease, a fact not reported by the census, which does not substantially modify the results. According to the partial analysis, this group has a greater relative weight in the Northern and Western jurisdictions. In the center, the values are intermediate, while in the East, and especially around the city of Buenos Aires, they are low. The highest proportion of the population with diseases is registered in San Vicente (Mendoza province), with 11.44% of its population affected. Above 8%, three counties of Jujuy province are added. Another ten counties in the provinces of Jujuy, Salta, La Rioja and Mendoza surpassed the 6% barrier. A unit is only added in the East (Tuyú) by lowering the threshold to 3% of the population. The composition of this group, if this last level is considered, is 31 units from the North and West and one from the East. On the contrary, if we start from the best situations, below 0.2% there are five cases in the East, two in the center, and only one in the North. In the latter cases, moreover, the explanation may be partially linked to higher levels of underreporting.

Fig. 2.3 People with diseases. Argentina, 1869. *Source* Personal elaboration through GIS and data from the 1869 National Census

2.3.2.9 Medical Doctors

Another census indicator of the health dimension, medical doctors, is obtained from the list of professions and is usually measured by the number of them per 1000 inhabitants, data that is only available for the provincial scale (Fig. 2.4). Its distribution reflects, once again, the better position of the Litoral and very particularly of the province of Buenos Aires, where around half of the graduates were concentrated (Newland 1997). In a similar way to what was observed for education, scientific medicine coexisted in a complementary way with other forms of attention to needs, such as family and popular medicine and with other figures who, without being doctors, had some experience (e.g., physicians, sandflies and apothecaries), since the process of medicalization (creation of institutions, dissemination of therapeutics and scientific remedies, persecution of quackery, etc.) promoted by government agencies had not yet begun systematically, especially on a national scale. However, the indicator is relevant for its comparison with subsequent censuses and because it allows detecting spatial differences consistent with other dimensions analyzed.

2.3.3 Housing

In addition to the population, the first national census of 1869 surveyed the dwellings; both variables, with some variants, characterize the Argentine census tradition. The importance of this company increases if one takes into account that housing, due to its material nature and its relative ease of acquisition, is one of the dimensions that best reflects the levels of wealth and well-being of society. The census distinguished four types of houses, based on the roofing materials (roof, tile, wood and straw) subdivided, in turn, according to the number of bodies or floors. In the whole country, there were only 346 three-story roof houses, representing a very meager 0.14% of the total number of houses. As expected, its distribution was restricted to the city of Buenos Aires, the town of Belgrano, and its surroundings, plus some other parties in the provinces of Buenos Aires and Entre Ríos. There is also some exceptional case in the jurisdictions of Córdoba and Corrientes provinces. The highest proportion (2.73%) was located in Merlo, province of Buenos Aires. Predictably, the two-story rooftop houses were more numerous (2915), but quite exceptional (1.20% of the total) and their distribution followed a similar pattern to the preceding one: greater concentration in the city of Buenos Aires and surroundings, north of the province of Buenos Aires, some counties, of Entre Ríos, south of Santa Fe and the capital of Corrientes province. Outside of the Eastern Group, homes of this type only stand out in the provincial capitals of Córdoba and San Juan provinces. The highest proportion corresponds to the province of Buenos Aires (12% in Lincoln's county). Finally, the rooftop houses of a body accounted for 41,259 (16.95% of the total number of houses). Most of it was concentrated, once again, in the city of Buenos Aires, north and extreme south of the homonymous province, south of Entre Ríos and Santa Fe provinces; outside of the Eastern Group, a high relative proportion is added in the

Fig. 2.4 Medical doctors per 1000 inhabitants. Argentina, 1869. *Source* Personal elaboration through GIS and data from the 1869 National Census

West (particularly in San Juan and Mendoza provinces). The greatest weight of these dwellings is located in the capital of San Juan province (89.81%) and the neighboring district of Trinidad (85%). In addition to the cases already mentioned, only the city of Buenos Aires and the town of Belgrano exceed the 70% barrier. Above 60%, the town of Patagones is added, in the pioneering extreme south of Buenos Aires province. Finally, above 50%, the towns of Flores and Bahía Blanca (Buenos Aires province), the towns of Pocito and San Martín (very close to the capital of San Juan province) and two counties in the province of La Rioja close to the provincial capital are added. In most counties, however, this type of housing does not represent 3% of the total.

2.3.3.1 Tile Houses

Tile houses, on the other hand, were very scarce in the entire census territory and had practically no impact in proportional terms (there were only 178 two-story tile houses, which represent an insignificant 0.07% of the total). This handful of houses was more represented in the capitals of Salta and Jujuy provinces, in addition to the counties of Goya (Corrientes province) and Colón (province of Entre Ríos). In addition to factors linked to the social structure (e.g., weight of wealthy families of old tradition in the northern provinces), their distribution may also derive from the construction traditions of each region and the type of materials available, as suggested, e.g., the distribution of wooden houses, much more frequent in the provinces of Corrientes, Entre Ríos and Buenos Aires. The one-story tile houses numbered 7423 (3.05% of the total) and had a greater relative weight in the North (provinces of Salta, Jujuy, and Tucumán) and, in the East Group, only in the province of Corrientes. Precisely, the highest proportion of these dwellings (89.52%) is registered in the capital of Corrientes province. It is necessary to lower the floor to 40% for the capital of the province of Salta to be integrated, while above 30%, the toen of Caa-Catí are added in Corrientes province and the capitals of Jujuy and La Rioja provinces. These distributions reveal another important aspect: Housing, unlike other indicators, constitutes accumulative wealth that can be transmitted from one generation to another. For this reason, the earliest settlement regions necessarily have a more valuable housing stock that does not necessarily correlate with other dimensions of quality of life, as suggested by the higher concentration of better-built housing in the West of the country.

2.3.3.2 Rooftop and Tile Houses

If we group the rooftop and tile houses (Fig. 2.5), that is, the best quality houses, there were 52,121 units (21.41% of the total). This category has a greater relative weight in the city of Buenos Aires and its surroundings, north of the province of Buenos Aires, south of Santa Fe province and in the fluvial axes of the provinces of Entre Ríos and Corrientes. Outside of the Eastern Group, they also have a high

relative weight in the West (especially in Mendoza and San Juan provinces) and the central area of the province of Salta (North). The highest values are registered in the capital of Corrientes province (100%), a proportion that, given its magnitude, must be considered with great caution; above 90% the capital of San Juan province is added. If it exceeds 80%, the neighboring county of Trinidad (San Juan province) and the city of Buenos Aires are added. Above 70% the neighboring district of Belgrano also stands out, and above 60% the neighboring district of Flores and Patagones is added. Finally, the 50% barrier is also surpassed by the towns of Pocito and San Martín (San Juan province, which formed a grouping together with the capital of San Juan province), the capital of Salta province, and one county in La Rioja province. In the Grouping of the Center, on the other hand, the proportion of houses made of more solid materials is very low, except in the capital of Córdoba province.

2.3.3.3   Wood Houses

In 1869 there were, also, 1208 two-story wooden houses (0.50% of the total), which had a greater relative weight in the city of Buenos Aires and its surroundings (the towns of San Martín, Conchas and Tigre), Atlantic coast of Buenos Aires (the localities of Ajó and Tuyú) and some parts of the interior of Entre Ríos and Corrientes provinces. Outside the East, this type of housing hardly exists, proof that the availability of materials was a decisive element in a period characterized by transportation difficulties. One-story wooden houses are, of course, much more abundant: 19,453 (7.99% of the total). Its greatest relative weight is in the interior of Corrientes, Santiago del Estero (forest area) and La Rioja provinces. The highest proportion was registered in the town of Loreto (Santiago del Estero province), where 99.95% of the houses were made of wood. Above 90%, San Luis (Corrientes province) is added. Exceeding 80%, the towns of Guasayán (Santiago del Estero province) and Famatina (La Rioja province) are added. Above 70%, it also includes the town of San Cosme (Corrientes province), and, when it exceeds 50%, the towns of Empedrado, Itatí and Lomas (Corrientes province) are added as well, which form a kind of conglomerate; the same happens with the towns of Salavina and Soconcho in Santiago del Estero province.

2.3.3.4   Straw Houses

Lastly, the straw houses, a group that includes the most precarious dwellings and that refers to the classic image of the adobe ranch, eloquently illustrate the living conditions of the majority of the Argentine population in the First National Census. At the time, this type of housing reached 170,682 units, representing an overwhelming 70.11% of the total housing. Its spatial distribution is eloquent if one takes into account that, in half of the country's counties, the proportion of this type of house exceeds 83% of the total. The worst relative situation was registered in the Grouping of the Center (San Luis, Córdoba and Santiago del Estero provinces) since in a

Fig. 2.5 Roof and tile houses. Argentina, 1869. *Source* Personal elaboration through GIS and data from the 1869 National Census

large part of its units they exceed 97%. They also have a high weight in the North (Tucumán, Salta and Jujuy provinces). In the Eastern Grouping, on the other hand, this type of house has, in general, less relative weight. The exceptions are the north of Santa Fe province, the east of Corrientes province and the south of Buenos Aires province.

Seen as a whole, the analyzed distributions evoke a situation of material precariousness in practically the entire country. As Liernur (1993) has shown, for Buenos Aires, between the mid-nineteenth century and the great transformation that followed the 1880s, the city was characterized by its precarious, ephemeral, transitory or fleeting character, an aspect that is more visible in photography, cadastre and population censuses than in other historical records. This "ephemeral city", in his words, is perceptible in the wooden and sheet metal houses of the popular neighborhoods, from the family squares to the tenement houses, but also in more complex buildings and constructions and will become more evident with the great urban expansion and mass immigration of the 1880s. According to Liernur (1993), the precariousness of infrastructures resulted in the high frequency of fires and in the social and sanitary conditions that favored the great yellow fever epidemic of 1871. Argentina that emerges from the 1869 census mixes, in short, two forms of precariousness in terms of housing: on the one hand, that of the ephemeral city driven by the vertiginous economic and demographic growth, of which the city of Buenos Aires would be the paradigmatic example. On the other hand, a precariousness before the expansive process that, unlike the previous one, is associated more with a poverty of material means of a more permanent nature and with a greater impact in rural areas and the interior of the country, although it is also perceptible in the big cities. The better relative situation of Buenos Aires was perceived by De la Fuente, who, in addition to verifying that jurisdiction had "more rooftop houses than all the other states together," conjectured that if variables such as the value and extension of the properties, the rooftop and tile houses "would represent four times more than all those of the same kind in the entire republic" (Argentina 1872: IL-L). According to the same commentator, this disproportion would increase in the next census due to the greater growth of the province.

2.3.3.5 Persons per House

The census registered 1,596,975 individuals in dwellings and 243,464 houses in total, so for the census territory, the calculation indicates 6.56 persons per house (Fig. 2.6). Let us remember the weakness of the first three national censuses to capture households and families. Although there are summary indicators, such as the number of people per dwelling, this measure can be considered an indirect approximation to the degree of overcrowding (if the size of the dwellings does not differ significantly, an assumption not entirely realistic in light of the previous analysis). On the other hand, it must be borne in mind that overcrowding has cultural and historical variability since its perception as a problem and its technical operation depend on the context of each society. By way of example, the threshold that defines overcrowding is very

different depending on whether it is current or pre-transitional societies, that is, with high levels of fertility, such as that portrayed in the 1869 census. Whatever the case, the number of people per house is very unequal throughout the territory, something that is more perceptible at the county level (the provincial averages do not account for this).

Rather than differences in fertility, the decrease of which is later than the period analyzed here, the number of people per household probably reflects the presence of aggregates in the census units, differences in the complexity of family structures, above all, the levels of poverty and poverty and the impact of the migration process, both internal and European, which implies a certain degree of residential overcrowding, at least during the initial years of settlement of the immigrants. This would explain the high degree of overcrowding in the city of Buenos Aires and the locality of Barracas al Sud. On the other hand, as suggested by the data from Torrado (2007) on the city of Buenos Aires in 1869, the number of members per housing was closely associated with the socio-economic situation, since it ranged from 4.9 people, in section 20 (made up of wealthy sectors) to 7.9 people in section 1 (inhabited by modest sectors). The city as a whole, meanwhile, had an average of 6.1. If the observations on the city of Buenos Aires case were generalizable to the whole of the country, it could be postulated that the greater overcrowding of the interior would be due, at least in part, to its greater relative poverty. Overcrowding is low in the interior of the province of Buenos Aires, except in the towns of Tordillo and Tuyú. On the contrary, there is high overcrowding in two districts of the interior of Corrientes province and the town of Lomas, on the outskirts of its provincial capital. This presence of the poorest population on the outskirts of the city probably helps to explain the good indicators that the capital of Corrientes province has in the quality of housing category. In short, overcrowding in the Eastern Group occurs in very specific places. In the rest of the country, overcrowding is high in the North, Center and West, generally in the respective interior provinces, probably more associated with a higher relative proportion of aggregates and extended and composite families. Looking at the country as a whole, the most critical situations occur in the town of Barracas al Sud (15.24 individuals per household). By overcoming the barrier of 12 individuals per house, the town of Ancasti is added in Catamarca province. Over 10, two counties are incorporated in Corrientes province (the towns of Goya and Curuzú Cuatiá), one in Jujuy province (the town of Ledesma, linked to the sugar industry) and one in Córdoba province, in the town of Pocho. At the opposite extreme, that is, less overcrowding, are the districts of the city of Bahía Blanca, and the towns of Tres Arroyos, and Lincoln (on the Buenos Aires border), Pila and Salto (Buenos Aires province), and the town of Paso de los Libres in Corrientes province.

2.3.4   Quality of Life Index. Argentina, 1869

The synthesis map of the proposed index (Fig. 2.7) shows that the quality of life of the Argentine population, in 1869, was very unequal throughout the territory. The best

Fig. 2.6 Persons per house. Argentina, 1869. *Source* Personal elaboration through GIS and data from the 1869 National Census

relative situation is registered in the city of Buenos Aires and the nearby districts, except the localities of Barracas al Sud, Matanza and Merlo, which are located in a second tier. In the rest of the Eastern Group, all the parties in the province of Buenos Aires are located in the first or second quartile. The same occurs in Entre Ríos and Santa Fe provinces. In Corrientes province, on the other hand, only its capital is positioned in the first quartile, while most of its counties do so in the second and five of them, located in the extreme north and south of the province, in the third. The remaining groups are in much more unfavorable situations. The most extreme case is the North Grouping, in which all its counties are framed in the worst living conditions, with the exceptions of the provincial capitals of Tucumán and Salta and the county of Santa Bárbara in Jujuy province, which manage to be located in the third level of quality of life. The West Grouping, for its part, shows opposing situations: The central oasis of San Juan province exhibits good conditions, and that of Mendoza province does so to a lesser extent, as does the capital of Catamarca province. The rest of the provincial territories are positioned within quartiles three or four of the index. Finally, the Grouping of the Center shows quite a bit of diversity. On the one hand, the south of Córdoba province, like its capital and the head of San Luis province, is positioned in the second level of quality of life. On the contrary, the vast majority of the counties of Santiago del Estero province are located in the latter.

The gap between the best and the worst situation is high. The ranking is led by the city of Buenos Aires (8.92 points), while the worst relative situation is suffered by the town of Ledesma (province of Jujuy), which reaches only 1.99 points. Tables 2.3 and 2.4 provide the values of the fourteen provincial capitals, the fourteen provinces and the four groupings established in the census and allow us to appreciate that inequality was greater among the provincial capitals than among the provinces, a fact undoubtedly affected by the high QLI of Buenos Aires City.

2.4 Concluding Remarks

As this geographical, historical and multidimensional analysis consistently shows, inequalities in Argentina during the first national census of 1869 were high, both between large regions and between provinces and smaller units. Next, we summarize the QLI gaps between the worst and best situations at the different levels of disaggregation proposed at the beginning of the work. If the regions are considered, the difference between the best and the worst relative situation (Eastern and Northern Clusters, respectively) is 3.03 points; at the provincial level (Buenos Aires and Jujuy provinces), the amplitude increases to 4.32 points; between the counties (the town of Ledesma in Jujuy province and the city of Buenos Aires), the gap climbs to 6.93 points. Despite exceptions in San Juan, Córdoba, North of Entre Ríos and in Corrientes provinces, the greater inequality of the counties is not enough to blur the predominance of the Eastern Group, which almost doubles the values of the other three. Considering the quality of life in terms of the smallest units, the analyses

Fig. 2.7 Quality of life index. Argentina, 1869. *Source* Personal elaboration through GIS and data from the 1869 National Census

Table 2.3 Quality of life index for provincial capitals and provinces. Argentina, 1869

Provincial capitals	QLI	Provinces	QLI
Ciudad de Buenos Aires	8.92	Buenos Aires	6.96
Santa Fe	6.59	Santa Fe	5.6
Corrientes	6.19	Entre Ríos	4.96
San Juan	6.16	San Juan	4.62
Paraná	5.4	Corrientes	4.43
Córdoba	5.33	Córdoba	3.95
San Fernando del Valle de Catamarca	4.5	San Luis	3.71
San Luis	4.32	Catamarca	3.53
Salta	3.97	La Rioja	3.52
Mendoza	3.93	Mendoza	3.23
La Rioja	3.92	Santiago del Estero	3.09
San Miguel de Tucumán	3.91	Tucumán	3.3
Santiago del Estero	2.94	Salta	2.99
San Salvador de Jujuy	2.72	Jujuy	2.64

Source Prepared by the authors based on the 1869 census, Argentina (1872)

Table 2.4 Population and quality of life index according to regions

Groupings	Population	QLI
East	*823.552*	*6.12*
Buenos Aires	491.487	6.96
Corrientes	129.023	4.43
Entre Ríos	133.573	4.96
Santa Fe	69.469	5.6
Center	*358.355*	*3.65*
Córdoba	198.823	3.95
San Luis	45.538	3.71
Santiago del Estero	113.994	3.09
West	*220.416*	*3.65*
Catamarca	71.293	3.53
La Rioja	42.536	3.52
Mendoza	64.063	3.23
San Juan	42.524	4.62
North	*198.776*	*3.09*
Jujuy	30.761	2.64
Salta	67.781	2.99
Tucumán	100.234	3.3

Source Prepared by the authors based on the 1869 census, Argentina (1872)

carried out show two other elements of interest. The first is the impact of urbanization since the quality of life indexes tend to be higher in cities than in provincial interiors. The second, the influence of the expansion of the border, since—leaving aside the earlier settlement areas, such as the city of Buenos Aires and its hinterland or its Santa Fe equivalents—the favorable indicators of the Litoral provinces can be related to the processes of expansion of the internal border, a key cause, on the other hand, of the increase in wealth in those areas. The relevance of these results does not lie only in their novel approach from multiple dimensions, with an interdisciplinary approach and different spatial disaggregation—of course—but also in their consistency with the partial results and the hypotheses on Argentina of the period that has been expressed in other studies and, above all, in the degree of supplementary precision that it allows contributing to the discussions, since, as Hora (2010) argued, the information available (for the period 1850–1880) on fundamental issues as well-being and equity, it is poor and incomplete and only allows to formulate some superficial appraisals. In addition to the inequality observed at different levels, the impact of urbanization and the influence of the expansion of the border, the second important conclusion of this work refers to the methodological plane and consists in highlighting the validity of the instruments, as well as the sources used (especially national censuses). Indeed, the operational potential of geographic information systems, about which it is not necessary to insist here, makes it possible to recover historical sources of notable wealth such as nineteenth-century population censuses that, despite their repeated visits, constitute an important source of information. This first X-ray of the Argentine quality of life, the oldest available to date, also shows the potential of historical population censuses for the study of dimensions that go far beyond their exclusively demographic use.

Unfortunately, no similar sources are available for previous periods, which would have allowed very interesting retrospective comparisons. Knowing that the indicators used can be defined as incremental (that is, except for crises of enormous magnitude, they should not experience setbacks), the quality of life should tend to increase over time. The debate does not lie, of course, in this finding, but rather in knowing whether the differences between spatial units tended to increase, decrease or remain stable.

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- 24 books, 123 articles in peer-reviewed journals, 42 chapters in books by other authors, and 43 full papers.
- These 232 works have been published in different books, magazines and conference proceedings in Germany, Argentina, Austria, Belgium, Bolivia, Brazil, Colombia, Costa Rica, Croatia, Cuba, Chile, Denmark, Ecuador, USA, Spain, France, Holland , India, Iran, Italy, Mexico, Peru, Poland, Portugal, Puerto Rico, Czech Republic, United Kingdom, Sweden, Switzerland, Uruguay and Venezuela.

Evaluator of publications, projects, researchers and fellows from 26 Argentine universities, from CONICET, ANPCyT, FONDECyT (Chile), CONACyT (Paraguay), CNPQ and FAPESP (Brazil).

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Buenos Aires. Población, ambiente y territorio (Edhasa, 2012), and *Historia de la vejez en la Argentina, 1850–1950* (Prohistoria, 2020).

Chapter 3
Quality of Life by Counties and Regions in Argentina at the End of the Nineteenth Century

Guillermo Angel Velázquez and Juan Pablo Celemín

Abstract This chapter analyses the quality of life in the Second National Population Census of Argentina (1895). An index of quality of life was established from variables related to education, health and housing conditions. The main objective is to propose an index of quality of life that also allows to use the sources of the period and to enable future diachronic comparisons while using the Geographic Information Systems for their cartographic representation. The results show that the Quality of Life Index has a high degree of territorial heterogeneity, although the traditional urban centers show the highest values, while the north and west of the country contain the lowest values.

Keywords Quality of life · Argentina · Second national census 1895 · Geographic information systems · Historical geography

3.1 Introduction

This chapter analyzes the quality of life of the population around the time of the Second National Census of the Argentine Republic, carried out in 1895, with the aim of providing a general panorama of the socio-spatial differences that characterized the country toward the end of the nineteenth century. Quality of life as a summary indicator and the use of the census data as a source have been presented in a previous chapter (see Chap. 2).

On May 10, 1895, the Second Census of the Argentine Republic was conducted (National Law No. 3073). This survey collected demographic, agricultural and economic information. As it took place after territorial unification of the Argentine Republic, the coverage was greater than in the previous census. In fact, 16,816 people participated, while a team of 100 members took care of the compilation. The survey was carried out during the presidency of Mr. José Evaristo Uriburu. The so-called

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"desert" region (i.e., Patagonia) and the Chaco region were already incorporated. In this census, questions related to religion, fertility, property ownership and nationality were introduced. Statistical results were published in Spanish and French. Thus, for the Argentine Pavilion of the Universal Exhibition in Paris (1900), was presented a bilingual edition of the results (INDEC 2019).

The population registered in the entire country reached 3,954,911 people, not including the "population that was omitted from the census" without any explanation to justify it. According to González Bollo (2010), among them are Argentines abroad (50,000), those who "escaped registration" (60,000) and aborigines (30,000). By that date, the country was made up of 14 provinces (Fig. 3.1).

It took a quarter of a century to process the second census. The causes of the time delay were various like the crisis in public finances that broke out in the middle 1870s and early 1890s. Second, the censorship of Buenos Aires public opinion, which was concerned about the greater expense that would cause the automatic increase of the legislative branch, if the proportion established by the Constitution was maintained. Finally, a third cause arose as a result of the series of demographic censuses carried out in the provinces of Buenos Aires (1881), Santa Fe (1887) and Córdoba (1890) and in the capital city (1887) (González Bollo 2010). In general, the 1895 census continued with many of the basic definitions from the preceding survey, such as the way the question *age in completed years* was formulated and the use of a category *unknown age* or *no data*. However, unlike the previous census, this one proposed a more complex and complete statistical representation of age (Otero 2015). However, its most questioned aspect refers to the little attention paid to home and family structures. This is a common feature in the first three censuses (1869, 1895 and 1914) carried out during the so-called "author statistics", in which an essentially individual statistical approach prevailed (Otero 2006).

To analyze the quality of life of the population from the socioeconomic point of view we used the same framework presented in Chap. 2 of this book, adapted to the prevailing scale of values and the availability of information for Argentina in 1895.

3.2 Methodology

From the methodological point of view, the present work is based on the use of geographic information systems (GIS) for the spatial analysis of the dimensions and variables considered relevant for a Quality of Life Index (QLI) according to the information available and the characteristics of the historical period.

Like in the previous chapter, the scale with the highest level of territorial disaggregation (county) has been used. To do this, it was carried out a processing and digitization of the complex cartography of this period characterized by the expansion of the national state toward the border areas. In addition, at the end of the nineteenth century, counties and counties had been created, many of them large, called to be subdivided or disappeared in later stages. These difficulties explain why

Fig. 3.1 Provincial division. Argentina, 1895. *Source* personal elaboration from Argentina (1898)

the research so far has been concentrated in larger units, such as the provinces and regions.

Given these problems and the possibility of statistical randomness based on the small population of some units, the main objective was to provide a comparative overview mainly at intra-provincial level, rather than the analysis of specific units. Some of them, in effect, may present atypical behaviors that require particular studies.

The results also served as a basis for diachronic comparisons with the images obtained from other censuses. Consequently, such comparisons cannot be based on the same indicators (some are non-existent at the county level for old periods, i.e., infant mortality rates), but others indicators can be used as proxy variables to assess similar dimensions.

In order to provide a map of the quality of life of the Argentine population in the year of the Second Census, we have established a summary index. Thus, our proposal includes the following variables (Table 3.1):

As it can be seen in the preceding table, the different variables have different amplitudes. Thus, some vary between 18.50 and 100%, while others do between 2.84 and 0 per thousand, as occurs with medical doctors per inhabitant. It should also be emphasized that some are *cost variables*, since their increase implies a worse relative situation. This is the case of *illiteracy*, *population with diseases* and *people per household*. On the other hand, others are *benefit variables,* since their increase corresponds to better relative situations. These are *medical doctors every thousand inhabitants* and *roof and tile houses*.

The integration of these rates was carried out by transforming them into partial index numbers. In them, the extreme values are arranged between one and zero to reflect the best and worst relative situation, respectively. This is what was done, depending on the type of variable, with the following procedure:

(a) *Cost variables* (illiteracy, population with diseases, people per household).

Table 3.1 Dimensions and variables of the quality of life index Argentina (1895)

Dimension	Variables	Relative weight	Extreme values (Maximum-minimum)	Historical values (1869)
Education	Illiteracy rate	1/3	(100–18.50)	(100–26.89)
Health	Population with diseases	1/6	(9 0.10–0)	(11.44–0)
	Medical doctors per thousand inhabitants (provincial scale)	1/6	(2.84–0)	(0.49–0.04)
Housing	Proportion of rooftop and tile houses	1/6	(72.95–0)	(100–0)
	People per house	1/6	(18.26–1.59)	(15.24–3.14)

Source Personal elaboration from Argentina (1898)

$$I = \frac{\max - a}{\max - \min}$$

where a: cost variable.

Thus, for example, the City of Buenos Aires had 12.12 people per household, a figure that taken as an index number, gives 0.37 (which places this city closer to the worst relative situation or maximum, since the minimum is 1.59).

(b) *Benefit variables* (medical doctors per thousand inhabitants, roof and tile houses)

$$I = 1 - \frac{\max - b}{\max - \min}$$

where b: benefit variable.

As an example, the case of the town of Chascomús (Buenos Aires province) can be seen, which had, for that year, 43.93% of houses with roof and tile. This rate, taken as an index number, is 0.60 (which places this city closer to the best relative situation or to the maximum, since the minimum is 0%).

It can be seen, therefore, that the transformation of the variables allows the elaboration of the Quality of Life Index, which composition results from the weighted sum of the partial index numbers of each of the five selected variables.

3.3   Results

3.3.1   Education and Illiteracy

The Second Census counts a total of 3,245,911 inhabitants over 6 years of age, of which 1,766,184 could not read or write (544 per thousand). That rate, however, differed considerably between jurisdictions. Argentina had, in 1895, 14 provinces and 9 national territories, all of them divided into 373 departments or counties. Now, if other special areas (in general, border areas) are added, the number of census units reaches 395. Establishing a division into quartiles, it can be observed that the best relative situation corresponds to 25% of those units. In them, illiterates are below 525 per thousand (Fig. 3.2).

The best values regarding this indicator are recorded in Isla de los Estados, Tierra del Fuego (185 ‰), the towns of Gaiman (235 ‰) and Rawson in Chubut province (241 ‰). Then there are the county of Almirante Brown and the City of Buenos Aires with very similar values (278 and 281 ‰, respectively). Below the threshold of 300, two more units are added: the city of Río Gallegos (290 ‰) and the locality of San Sebastián (296 ‰) in Tierra del Fuego.

On the other hand, 23 units show an illiteracy rate of 400 ‰ or more, of which the vast majority are located near the city of Buenos Aires, Province of Buenos Aires (especially north of the Río Salado), the towns of Las Colonias and Rosario in Santa Fe province, and the city of Ushuaia in Tierra del Fuego National Territory. In

Fig. 3.2 Illiterate population (per thousand). Argentina, 1895. *Source* Personal elaboration from Argentina (1898)

general, the best situations are concentrated in the East Group[1] (except Corrientes province) and in the new national territories of Chubut, Santa Cruz and Tierra del Fuego. Outside of this grouping, only the capitals of the Córdoba, Mendoza and Catamarca provinces are in the quartile with the lowest illiteracy.

At the other extreme (that is, the quartile with the worst relative situation), there are units with more than 789 ‰ of illiterate population. In one of them, the county XIV (territory of the Center), this value even reaches 968 ‰. In 26 units, the proportion of illiterates exceeds 90%; seven of them are located in Santiago del Estero province (Center Grouping), while the remaining are located in the provinces of Tucumán, Salta and Jujuy (North Grouping) and in the national territories of Centro and Misiones. It can be noted, therefore, that the quartile with the worst relative position predominates widely in the north, mainly in the provinces of Santiago del Estero, Jujuy and Tucumán and in the hinterland of the national territories of Chaco and Misiones. The same occurs in the territories of the Center, Neuquén and Río Negro national territories. Thus, although half of the units fall within the intermediate values of the distribution (between 788 and 526 ‰ of the illiterate population), in general terms, the situation is worse in the northern provinces.

Finally, it is worth highlighting the case of the national territories, in which different patterns are registered, which correspond to the spatial location of their respective population. For example, in the north, the counties located on the Paraná-Paraguay fluvial system exhibit a better relative situation, as do the eastern and coastal sectors in the central and southern territories.

3.3.2 Morbidity and Health

The census provides information on specific characteristics of the population. This includes a heterogeneous set of variables, among which various forms of both physical and mental disability stand out for their importance: *disabled by accident*, *disabled by war*, *insane*, *deaf-mute*, *blind*, *idiots* and *population with goiter*. These categories constituted ailments with an effective impact on the population in terms of health and due to their potential negative effect on economic activities or even military terms.

As the complete exegesis of Di Liscia (2005) shows, the difficulties of diagnosis (it should not be forgotten that the data were collected by non-professional enumerators), added to prejudices and ethnic and gender stereotypes that negatively affect the poorest and interior natives that in many cases could have resulted in coverage biases. In addition, the distinction between the different diseases was not clear for the medical practice of the period either.

Despite the aforementioned precautions, the census information provides elements to make an approximation of the health conditions of the population in the middle of the century (Fig. 3.3). It should also be noted that the diseases included

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[1] See Table 3.4 for the regional groupings.

in 1869 had some interesting variations during the 1895 census and that except for blindness and deaf-muteness, they disappeared in the third national census of 1914, replaced by the generic and non-comparable category of *sick*.

In the case of the category *invalid*, the census discriminates between disabled by accident and by war. The warlike conflicts, endemic throughout the first half of the nineteenth century (independence, expansion and civil wars). Regarding *disabled persons due to accidents*, the census records 4340 individuals, representing 0.11% of the population. The territorial analysis shows that their quantity varies significantly from one place to another. The most extreme case is in county XI, La Pampa, with 1.27% of its population affected. Above the 1% barrier, there are towns as Nueve de Julio in Buenos Aires province and Nahuel Huapí in Río Negro (both with 1.02%). There are three areas with the greatest relative affectation of this problem: the North Group, the West Group and the northern Patagonian territories. The Litoral or East Grouping, on the other hand, is the one that shows the lowest relative values.

These regional differences may not be explained only by events that have occurred, but also by better medical care in the central zone. In other words, it is possible that a greater proportion of the accidents that occurred did not leave permanent traces there. In relation to the *disabled by war*, its magnitude (557 cases when adding all the territorial units) reaches 0.01% of the population, and its highest value is registered in county V of La Pampa national territory (0.42%). The incidence of this variable is higher on the border line between the Colorado and Negro rivers, the northern coast of the Uruguay River, the southern border of Buenos Aires province and the territories surrounding the eastern Chaco national territory. This distribution, clearly different from that of the *disabled by accident*, is surely linked to the impact of advances on the indigenous frontier, prior to the census.

There are also intra-provincial differences, mainly to the benefit of the capitals, which have lower proportions of the disabled population because of military actions. This is probably due to have recruited fewer individuals or because those affected have received better medical care or a combination of both factors. On the other hand, the greater randomness in the distribution of disabled people by war may also have to be sought in the random nature of the military actions of the combat units, whose composition reflects places of origins of the troops.

The census registered 5627 *deaf-mutes* that is, 0.14% of the total population. Its distribution follows a fairly clear pattern: lower relative weight in the East Cluster (0.06%), high weight in the North Clusters (0.51%) and the West (0.40%). The Grouping of the Center is, once again, in an intermediate position (0.11%). The analysis of extreme values makes it possible to detect spatial continuities of great interest. In this sense, it can be seen that the highest proportion of deaf-mutes (3.62%) is registered in the town of Perico de San Antonio, in Jujuy province. This province is also characterized by the grouping of four contiguous counties (Valle Grande, Jujuy Capital, Perico del Carmen and the one already mentioned), in which more than 2% of its population suffers from this problem. If extended to 1%, some contiguous counties of the Salta province (the Orán, Caldera, Cerrillos and Guachipas counties) are included, and another epicenter also appears in Mendoza province (the counties of Junín, San Carlos, Tunuyán and Luján).

Fig. 3.3 Population with diseases. Argentina, 1895. *Source* Personal elaboration from Argentina (1898)

The incidence of the *blind* (3526 cases, representing 0.09% of the total population) is lower than that of deaf-mutes, but their distribution is very similar. Thus, while the East Grouping stands out for its lower relative weight (0.05%), the highest proportion is present in the West (0.19%), and, to a lesser extent, in the North Grouping (0.16%) and in the provinces grouped in the Center (0.14%). The extreme values are recorded in the town of Silipica Primero (Santiago del Estero province), where 0.58% of its population suffers from blindness.

The census also included a category called *idiots.* The distribution of this group (3756 people, representing 0.09% of the total population) shows a greater relative value in the North Group (0.16%), relatively high in the West Group (0.13%) and considerably lower in the East (0.04%), national territories (0.05%) and Center (0.06%). The highest value is registered in the town of Perico de San Antonio, Jujuy province (0.86% of its population).

The second national census also registered 6459 inhabitants with *mumps,* which reach 0.16% of the population. Goiter (or mumps, to use the more common term) is characterized by swelling of the front of the neck due to an enlarged thyroid. Its varied etiology includes, among others, endemic goiter, produced by the lack of iodine in the diet. However, given that hypothyroidism during fetal life could produce cretinism, a particularly serious form of retardation, both diseases tended to be confused at the time (Di Liscia 2005), which must also have affected their statistical uptake. In the territorial distribution, it is noted that this pathology affected the western provinces (0.91%) and the north (0.61%) in a much greater proportion. An intermediate situation, on the other hand, is registered in the national territories (0.13%) and in the Central provinces (0.05%), while the incidence of this disease in the Eastern provinces is minimal (0.03%). The most extreme value (5.54% of the population) is located in the county of Tunuyán, Mendoza province.

The grouping of the previous variables is recorded in *population with diseases* that 16,852 people, which represents 0.43% of the total population. Of course, individuals could have more than one disease (data not reported by the census), but this does not substantially modify the results. Consequently, it is observed that the provinces with greater relative values are in the grouping of the West (0.64%) and North (0.56%). In contrast, in the center and the Litoral provinces, the values are intermediate (0.40 and 0.38%, respectively), and are strikingly low in the national territories (0.34%). The latter can be attributed to the younger demographic composition of the population that happened to occupy these spaces, to problems of under-registration or to a combination of both factors.

The highest proportion for this variable was in the county of Tunuyán (Mendoza province), with 9.10% of its population affected. Above 6%, another eight counties from the provinces of Jujuy, Catamarca, La Rioja and Mendoza are incorporated. Finally, only when considering a threshold of 1.7%, a unit is added in the East (the town of San Cosme, Corrientes province). On the contrary, if we start from the best situations, below 0.1%, there was only one case in the East, and the majority is observed in the territories (especially in the south). In the latter, however, in addition to the possible explanation because of a younger demographic structure, it is also likely that there was greater underreporting.

3.3.3 Housing

In addition to population, the 1895 census also recorded data related to housing. It is one of the dimensions that best reflects the levels of wealth and well-being of society. The census distinguished five types of houses on the basis of roofing materials (roof, tile, zinc, wood, iron and straw or adobe) subdivided, in turn, according to the number of floors (Fig. 3.4).

In the entire country, there were only 1090 three-story *rooftop houses* ("*casas de azotea*") in 1895, representing a meager 0.20% of total housing. As expected, its distribution was restricted to the city of Buenos Aires and its surroundings, in addition to being present in the provinces of Buenos Aires, Córdoba, Santa Fe and Entre Ríos. There was also an exceptional case in the jurisdictions of Mendoza, Tucumán, Santiago del Estero, Salta, La Rioja and Corrientes provinces. The largest proportion (1.66%) was located in the City of Buenos Aires. Predictably, the two-story were more numerous (10,554), but still quite exceptional (1.97% of the total). Its distribution followed a similar pattern to the preceding one: greater concentration in the City of Buenos Aires and its surroundings, north of the province of Buenos Aires, some counties of the provinces of Entre Ríos, and south of Santa Fe, and the capital of Corrientes province. Outside of the Eastern Group, this type of housing was only found in the province of Córdoba and some provincial capitals (the capital cities of the San Juan, Mendoza, Tucumán and Salta provinces). The highest proportion corresponded to the city of Buenos Aires (11.56%).

Finally, single story *rooftop houses* accounted for 100,264 (18.70% of the total). The greatest proportion was concentrated, once again, in the city of Buenos Aires, in the north of the province of Buenos Aires, in the south of Entre Ríos and Santa Fe provinces. Outside of the East grouping, a high proportion is now added relative in the center (particularly in Córdoba and San Luis provinces) and the west (especially La Rioja, Mendoza and San Juan provinces). The greatest presence was located, in that year, in the town of Sanagasta, La Rioja province (72.22% of total homes).

In addition to those already mentioned, only the cities of Mercedes and Pergamino in Buenos Aires province exceed the 60% barrier. Above 50%, the City of Buenos Aires, the city of San Nicolás (Buenos Aires province) and the towns of Gualilán (San Juan province) and Chilecito (La Rioja province) are recorded. In most counties, however, this type of housing did not represent 4% of the total.

The *houses with tile roofs*, for their part, were scarce: 1298 with two sections and 43,079 with one Section (0.24 and 8.03% of the total, respectively). Two-story houses were more present in the city of Buenos Aires and its surroundings, north of the province of Buenos Aires, south of Entre Ríos province and Downtown Santa Fe, capital of the province of that name. Outside the coast, this type of housing is also observed in some counties of Córdoba and Santiago provinces in the Center, and Jujuy, Salta and Tucumán provinces in the North. In the national territories, the counties of Formosa and Resistencia stood out on the area of the confluence of the Paraguay and Paraná rivers.

Fig. 3.4 Roofing materials: tiles and rooftop. Argentina, 1895. *Source* Personal elaboration from Argentina (1898)

This distribution not only derives from factors linked to the social structure (wealthy and ancient families in the northern provinces, for example), but also, possibly, from the construction traditions of each region and the type of materials available. This is the case for wooden houses, which are much more frequent in the provinces of Corrientes, Entre Ríos and Buenos Aires.

On the other hand, the one-story tile houses also had a high relative weight in the City of Buenos Aires and its surroundings, the north of the province of Buenos Aires and other provinces of the Litoral region. The proportion is also high in several northern counties (mainly in Salta and Tucumán provinces), and, relatively, also in the national territories. In them, there are two well differentiated sectors, one on the Paraguay-Paraná fluvial system and the other on the northern Atlantic Ocean coast of the new Patagonian territories.

The highest proportion of these dwellings (60.88%) is registered in the city of Resistencia (Chaco national territory). Then, toward 50%, the capital of Salta province and the town of Itatí are integrated into Corrientes province, while above 40%, the capital city of Tucumán province, the town of Formosa and four counties near the capital of Corrientes province.

Grouping the *roof and tile houses* that is, the best quality houses, 156,285 units are obtained (29.16% of the total). This category had a greater relative weight in the city of Buenos Aires and its surroundings, in the north of the province of Buenos Aires, in the center and south of Santa Fe province, and along the rivers of Entre Ríos and Corrientes provinces. Outside of the East Group, a high relative presence is in the center (especially in Córdoba province) and in some sectors of the west (La Rioja and San Juan provinces). The situation in the central area of Salta province and the northern national territories, on the fluvial system of the Paraguay and Paraná rivers, also stood out. However, the highest values are registered in the city of Mercedes, Buenos Aires province (72.95%), followed very closely by the City of Buenos Aires (72.68%) and the town of Sanagasta, La Rioja province (72.22%). Above 70%, the city of Resistencia was added, in the national territory of the Chaco, and, of 60%, four units in Buenos Aires, two in Santa Fe, one in Salta, one in La Rioja and one in San Juan provinces.

In 1895 there were 696 two-story *wooden houses* (0.13% of the total that is, less than in 1869). These had greater relative value in the city of Buenos Aires, the counties of Las Conchas, San Fernando, La Matanza, the Atlantic Ocean coast of Buenos Aires province (the counties of Tuyú and General Pueyrredón) and a few other Buenos Aires counties. Outside the Eastern region, this type of housing is hardly observed, except in southern Patagonia (Santa Cruz and Tierra del Fuego national territories), where the highest relative proportion is recorded (5.77% in Ushuaia, Tierra del Fuego). Compared to single-body wood houses, the amount is considerably higher: 20,988 (3.91% of the total). Its greatest relative weight is in the hinterland of the provinces of Corrientes and Entre Ríos, the national territories of the Chaco and Formosa (all of them, forested areas). The relative proportion in the entire Patagonian territory is also high (exceeding 50% of the total in most of southern Patagonia) where the highest relative proportion was registered in the town of Puerto Deseado, Santa Cruz national territory (94.44%).

In 1895, there were 2202 two-body iron or zinc houses and 77,840 one-body houses (0.41 and 14.52%, respectively). They constituted "sumptuous buildings built with columns, braces and even iron walls, in which brick or stone is also used as an accessory (FF. CC. Stations, mechanical establishments or large trading houses)" (Argentina 1898). More than half of these constructions–not necessarily intended for housing–were located in the Province of Buenos Aires and the remaining 40% in the rest of the Litoral region. The highest relative proportion was registered in the IV county, La Pampa national territory.

Finally, the group of houses made of adobe, straw, mud, shingles and roofed with cane, brought together the most precarious dwellings, which refer to the classic image of the adobe ranch and illustrate, in an eloquent way, the living conditions of a great proportion of the Argentine population around the time of the Second National Census. This type of housing then reached 266,977 units, which represented 49.8% of the total. According to regions, the worst relative situation was registered in the West Grouping (Catamarca, La Rioja, San Juan and Mendoza provinces), with 87.3% of its dwellings in this group. The situation in the North (Tucumán, Salta and Jujuy provinces) was also very deficient, with 77.8% and in the Center (San Luis, Córdoba, Santiago del Estero provinces), with 77.4%. On the contrary, in the Litoral Grouping, this type of house had, in general, a lower relative weight (30.4%), with the exception of northern Santa Fe province and various counties of Corrientes province. The situation of the national territories was also unfavorable, since it had 68.8% of precarious housing in generic terms. However, it presented strong internal differences, and two sectors stood out for their better relative situation: the eastern littoral of the Chaco and Formosa national territories and various Patagonian counties, especially the southern ones.

Seen as a whole, the distributions analyzed evoke a situation of material precariousness in practically the entire country. As Liernur (1993) has shown for Buenos Aires province, between the middle of the nineteenth century and the great transformation that followed the 1880s, the city was characterized by its precarious, ephemeral, transitory or fleeting character. This aspect is manifested more clearly in photography, the cadastre, and population censuses than in other historical records. This ephemeral type of city was perceptible in the wooden and sheet metal houses of the popular neighborhoods, from the family squares to the tenements, but also in more complex buildings and constructions. Later, it would become more evident with the great urban expansion and mass immigration of the 1880s. Finally, the fragility of the infrastructures, maintains the architect, would result in frequent fires and in the social and sanitary conditions that concluded with the great yellow fever epidemic of 1871 (Liernur 1993).

The Argentine that emerged at the end of the 19th Century had two forms of precariousness. On the one hand, that of the ephemeral city driven by dizzying economic and demographic growth (of which Buenos Aires province would be the paradigmatic example, but not the only one). And, on the other hand, a precariousness that was prior to the expansionary process and that unlike the previous one, was associated with a poverty of material means of a more permanent nature and with

a greater predominance in rural areas and smaller cities. This phenomenon would increase in the subsequent census due to the fast growth of the Buenos Aires province.

The census registered 3,516,383 individuals in households and 536,034 houses, so the average for the total census territory is 6.56 persons per house. This measure can be considered an approximation to the level of overcrowding. On the other hand, it should be borne in mind that this indicator has cultural and historical variability, since its perception as a problem and, above all, its technical measurement, depends on the context of each society. Thus, for example, within the demographic field, the threshold that defines overcrowding is very different depending on whether we are dealing with current or pre-transitional societies, since fertility levels change and, therefore, the number of inhabitants per household.

Whatever the case, the number of people per house is very heterogeneous throughout the territory (Fig. 3.5). This, in effect, not only reflects differences in fertility (that decreases in a period after the one studied here), but especially the presence of different aggregates in the census units. Additionally, it points out the complexity of family structures and, above all, the impact of the migration process, both of internal and European nature, which implies a certain degree of residential overcrowding, at least during the initial years.

There was a high degree of overcrowding in the city of Buenos Aires (12.11 people per house) linked to the migratory process. This situation also occurred in several districts to the south of the city, in the interior of the province (particularly in the towns of Tuyú, Villegas and General Arenales, where there were more than ten people per house) and, within the Litoral region, in two counties of Santa Fe province (that is, San Martín and Constitución). In the north, overcrowded households are observed in the sugar plantations: the town of Famaillá in Tucumán province, the county of Ledesma in Jujuy province and the town of Rivadavia in Salta province. The national territories included the Quinto County in the interior of Formosa province, the town of San José in Misiones and the north-central Patagonia that is, almost the entire Río Negro and western Chubut national territories.

The most critical situations occurred precisely in the town of 25 de Mayo in Río Negro (18.26%). Then, there were the aforementioned counties of the Litoral region (four in Buenos Aires province, two in Santa Fe province), three in the North (sugar producers in Tucumán, Salta and Jujuy provinces), one in the West (the town of Santa Rosa in Mendoza province) and six in the national territories (one in Formosa, another in Misiones and four in Patagonia). All of them exceeded ten individuals per household. On the contrary, with a low level of overcrowding, several units near the city of Buenos Aires stood out (the counties of Merlo, Quilmes, Florencio Varela). This shows a certain contradiction, since in a few kilometers from the capital coexisted areas with high values for this indicator. This heterogeneity is also valid for the rest of the Province of Buenos Aires and the Litoral region.

Regarding national territories, the littoral part of Chaco and Formosa did not exhibit overcrowding problems, nor did southern Patagonia. The county with the least people per house (1.58) was the Fourteenth, in the east of the Center territory.

Fig. 3.5 Persons per house. Argentina, 1895. *Source* Personal elaboration from Argentina (1898)

3.3.3.1 Quality of Life in 1895

The QLI map shows that the quality of life for the Argentine population in 1895 was very unequal throughout the territory (Fig. 3.6). Strikingly, the best relative situation is recorded in the cities of Río Gallegos and Puerto Deseado, in the national territory of Santa Cruz (QLI 7.85 and 7.61, respectively), then in four Buenos Aires districts (the counties of Matanzas, Mercedes, San Nicolás and San Martín), while the City of Buenos Aires appears in eighth place (QLI 7.34).

Within the first quartile (best situation), all the districts near the city of Buenos Aires, the entire province north of the Río Salado, the south of Entre Ríos and the center and south of Santa Fe provinces were found. The only province from the Litoral region that showed more adverse conditions was Corrientes province. To the west, the only notable situations were a few provincial capitals (the cities of Córdoba and Santiago del Estero) and some national territories (such as Formosa, Chaco and, especially, the Patagonian ones such as Chubut, Santa Cruz and Tierra del Fuego). The remaining groupings were in much more unfavorable situations. The most extreme case was the North Grouping, in which almost all its counties were framed in the worst living conditions. An exception were the provincial capitals of Tucumán and Salta, which managed to be located in the second level of quality of life and the west of Jujuy and Salta provinces, which integrated the third level.

The West Grouping, for its part, presented conflicting situations: the oasis of the central San Juan province exhibited acceptable conditions, as well as that of Mendoza province, but to a lesser extent. The same happened in the capitals of Catamarca and La Rioja provinces. The rest of the provincial territories, on the other hand, were positioned within quartiles three or four of quality of life. Finally, in the Center Grouping there was considerable diversity. Indeed, while the south of Córdoba province, its capital city and the capital of San Luis province managed to position themselves in the second step, the vast majority of the counties of the province of Santiago del Estero were located in the latter.

Thus, the gap between best and worst situation was high ranging from the 7.85 points reached by the city of Río Gallegos in Santa Cruz national territory to the 3.00 points for the town of Famaillá in Tucumán province. Considering the fourteen provinces and capitals, plus the four groupings, the following Tables 3.2, 3.3 and 3.4 summarize the values for the index.

3.4 Concluding Remarks

Regional inequalities in Argentina were very high at the time of the Second National Census, in the large regions as well as between provinces and smaller spatial units. In this way, in a general context of material and socioeconomic conditions of precariousness—defined this in relative terms–heterogeneity clearly constitutes the predominant pattern.

Fig. 3.6 Quality of life index. Argentina, 1895. *Source* Personal elaboration from Argentina (1898)

Table 3.2 Position of the provincial capitals according to the quality of life index

Capital city	QLI
City de Buenos Aires	7.34
Santa Fe	7.32
Córdoba	7.05
Corrientes	6.84
La Plata	6.61
Paraná	6.55
San Miguel de Tucumán	6.52
Santiago del Estero	6.43
Salta	6.40
San Fernando del Valle de Catamarca	5.88
San Luis	5.85
Mendoza	5.85
La Rioja	5.82
San Salvador de Jujuy	5.41
San Juan	2.93

Source Personal elaboration from Argentina (1898)

In this sense, the results of the analysis reveal an ample range of inequity: Regarding the regions, the difference between the best and the worst relative situation (East and North Groupings, respectively) was 1.79 points; at the provincial level (Santa Fe and Tucumán) the amplitude increased to 2.42 points; while between the counties (the city of Río Gallegos in the national territory of Santa Cruz and the town of Famaillá in Tucumán province) the distance climbed to 4.85 points.

Now, when comparing them with the First National Census of 1869, a decrease in the gaps is observed. In effect, in that year, the difference between the regions was 3.03 points (East and North Groups, respectively). At the provincial level (Buenos Aires and Jujuy) the amplitude increased to 4.32 points; while between the counties (Ledesma in Jujuy and the City of Buenos Aires) the gap climbed to 6.93 points (Velázquez and Otero 2019). We can conclude that to a large extent, the quality of life should tend to increase over time unless there are very intense crises. This is what, indeed, is verified between 1869 and 1895.

Studies on wealth carried out on the basis of judicial, economic and, above all, fiscal sources (see a synthesis in Gelman 2011) suggest that, despite the crisis shared with other Latin American economies of the first half of the nineteenth century. At that time, the levels of affluence in Argentina had increased and, with them, regional and social inequalities. This would have been the product of a process of divergence induced by the uneven growth of the regions for the benefit of those located along the Atlantic Ocean coast. Following this interpretation, which constitutes an adaptation to the Latin American case of the works of Kuznets (1966) about the origins of industrialization, the first half of the century has generated and accentuated regional

Table 3.3 Position of the national provinces and territories according to the quality of life index

Province	Population	QLI
Santa Fe	397.188	6.60
Buenos Aires	921.135	6.36
Entre Ríos	292.019	6.15
Córdoba	342.106	5.79
Corrientes	239.618	5.60
San Luis	81.026	5.31
La Rioja	69.489	5.27
Catamarca	90.161	5.05
Santiago del Estero	148.578	4.98
Mendoza	116.136	4.95
Salta	118.015	4.95
Jujuy	49.713	4.74
San Juan	84.251	4.63
Tucumán	215.742	4.18
National territory	*Population*	*QLI*
Santa Cruz	1627	7.24
Chubut	3748	6.34
Formosa	4829	6.20
Chaco	10.422	6.00
Tierra del Fuego	477	5.89
Río Negro	9437	5.44
Misiones	33.163	5.08
La Pampa	25.914	4.99
Neuquén	14.517	4.85

Source Personal elaboration from Argentina (1898)

differences destined to become long-lasting phenomena. This period has also been characterized by levels of regional inequality greater than those at the end of the colonial period and the agro-export phase of the late nineteenth century and the beginning of the following century. The keys to the divergence seem to lie, therefore, in the greater expansion of the wealth of the Litoral region and, above all, Buenos Aires province, and verified by fiscal sources and statistical data of that time.

Quality of life is a different concept than wealth for at least two reasons. On the one hand, it includes a variety of dimensions, such as housing, health and education. On the other hand, the universal nature of the census perspective allows less biased analysis than those obtained from fiscal sources (which are better for diachronic analysis and for the study of social inequality). Both approaches are complementary, but they do not produce identical results as they do not measure the same thing. Thus, for example, the notable sub-regional wealth differences in Jujuy province do not

Table 3.4 Population and quality of life index according to regions

Grouping	Population	QLI
East Grouping	1.849.960	6.28
Santa Fe	397.188	6.60
Buenos Aires	921.135	6.36
Entre Ríos	292.019	6.15
Corrientes	239.618	5.60
Center Grouping	571.710	5.51
Córdoba	342.106	5.79
San Luis	81.026	5.31
Santiago del Estero	148.578	4.98
West Grouping	360.037	4.96
La Rioja	69.489	5.27
Catamarca	90.161	5.05
Mendoza	116.136	4.95
San Juan	84.251	4.63
North Grouping	383.470	4.49
Salta	118.015	4.95
Jujuy	49.713	4.74
Tucumán	215.742	4.18
National Territories	104.134	5.28
Santa Cruz	1627	7.24
Chubut	3748	6.34
Formosa	4829	6.20
Chaco	10.422	6.00
Tierra del Fuego	477	5.89
Río Negro	9437	5.44
Misiones	33.163	5.08
La Pampa	25.914	4.99
Neuquén	14.517	4.85

Source personal elaboration from Argentina (1898)

translate into the Quality of Life Index, which is, on the contrary, quite homogeneous for the entire province.

Given the quality of life in terms of smaller spatial units, the results show the progressive consolidation of the new national territories, a phenomenon that increased significantly between 1869 and the Second National Census of 1895. Finally, regarding the methodological approach, it is worth highlighting the validity of the instruments and sources used in this work. Indeed, the operational capacity of geographic information systems makes it possible to recover historical sources of considerable interest. This second "photograph" of the Argentine quality of life, one

of the oldest available, also shows the potential of historical population censuses for the study of dimensions that go far beyond its habitual demographic use.

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Chapter 4
Quality of Life in Argentina. Analysis from the Third National Census (1914)

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Abstract This article shows the quality of life in the Third National Population Census of Argentina (1914) from variables related to education, health and housing conditions. The main objective is to elaborate an index of quality of life using the sources of the period of study that allows possible future temporal comparisons with other censuses using the Geographic Information Systems for the cartographic representation. The results showed that the Quality of Life Index had a high degree of disparity in the national territory, although the traditional urban centers showed the highest values while the northern and western parts of the country contained the lowest values.

Keywords Quality of life · Argentina · Third National Census 1914

4.1 Introduction

Quality of life constitutes a synthesis indicator of a set of relevant socioeconomic, demographic and environmental variables that illustrate the conditions in which people's existence unfolds, serving for the formulation of public policies and for a better understanding of social functioning. This explains why the study on this subject that started during the 1990s in the Latin American context (Olave and Bodini 1995; Camargo 1996; Delgado and Méndez 1996; Velázquez et al. 1999) has been growing since then significantly in our country (Rofman and Marqués 1988; Velázquez 2001, 2008, 2016; Lucero et al. 2007; Mikkelsen et al. 2013).

However, despite being of interest to different disciplines, the issue has received little or no attention for certain historical periods, a fact that is explained by two

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concurrent factors. In the first place, the few connections between history and geography that unlike other intellectual contexts, have characterized the Argentine research; secondly, the enormous empirical difficulties presented by data from the past, especially those from the beginning of the Argentine statistical system. To analyze the quality of life of the population from the socioeconomic point of view we used the same framework presented in Chap. 2, adapted to the prevailing scale of values and the availability of information for Argentina in 1914. Thus, this chapter proposes to analyze the quality of life of the population by the Third National Census of the Argentine Republic, carried out in 1914, with the aim of proposing a general idea of the socio-spatial differences that characterized the country toward its first centenary of existence.

Of course, the use of the census is not accidental, since it is the only source that seeks to achieve universal coverage of the entire territory at each historical moment. It should also be noted that although the censuses for the 1869–1914 period have been frequently visited, where the studies carried out have basically prioritized its demographic use (Lattes and Lattes 1975; Torrado 2007) or as a secondary source; for example, studies that focus on its conceptual design or the political and institutional aspects of the socio-history of statistics (Mentz 1991; Massé 2003; Otero 2006; Daniel 2011; González Bollo 2014), leave out a broad set of variables of interest, particularly those related to housing and health.

From the methodological point of view, the work is based on the use of geographic information systems (GIS) for the spatial analysis of the dimensions and variables considered relevant and the elaboration of a Quality of Life Index (QLI) according to the information available and the characteristics of the historical period.

Unfortunately, the 1914 census did not offer the same level of disaggregation or the same richness of variables as its predecessors. Thus, it is not possible to find meaningful information on education, health or housing at the county level. Furthermore, housing issues were absolutely absent from the census (not even available at the provincial level). Regarding the health indicators, it is important to note that the only variable available for the provinces and national territories is the number of medical doctors. Other questions such as population with diseases or infant mortality rate were available for the 14 provinces, but not for the national territories. Regarding education, the only topic registered for the provinces and territories was illiteracy.

On June 1, the Third National Census was carried out (Law 9, 108 of 1913). It showed a population of 7,905,502 inhabitants, not counting the members of indigenous communities—18,425, approximately–, the people living in remote areas – mostly in the national territory of Formosa, with an estimated 20,000 inhabitants– and the omissions–calculated at 118,582–. The publication included demographic, agricultural and economic information. Compared with the first two national censuses, the radius of action of each enumerator was reduced, a fact that allowed greater control. A total of 79,314 people participated, including commissioners, inspectors, secretaries and enumerators. The results of the census of industries, which was surveyed within the operation, showed that, in the 20-year period since the previous census, the country had successfully begun to develop its extractive and manufacturing industries. This also showed that this sector (concentrated in the Federal

Capital of Buenos Aires city and in the Litoral—i.e., the provinces at the eastern part of the country, between the Paraná and Uruguay rivers-) had begun to expand to other regions of the country (INDEC 2019).

In accordance with the criteria established by the international statistical congresses of the period, the 1914 census was based on the count of the de facto population (that is, the population actually present at the time of the survey), while it was conducted by direct interviews (Canvasser method). This election, unlike other systems gave an important role to the enumerators that were chosen from among the "most enlightened, moral and active neighbors who know how to read and write"). Despite the long time that has elapsed since the last survey, the Third National Census did not imply any substantive break in the subject at hand, since it continued with the basic precepts of 1895 (Otero 2015).

Studies on wealth carried out on the basis of judicial, economic and especially fiscal sources (of which a synthesis appears in Gelman 2011) suggested that despite the crisis shared with the other Latin American economies of the first half of the nineteenth century, wealth levels increased in Argentina, and that this growth went hand in hand with a notable increase in regional and social inequality. According to Gelman (2011), this would have been the product of a divergence process induced by disparate growth that benefited the Atlantic coast of the country. Following this interpretation, which constitutes an adaptation to the Latin American case of the classic Kuztnez (1966) hypothesis on the origins of industrialization, the first half of the century would have generated and accentuated regional differences destined to become long-lasting phenomena and would have characterized also due to levels of internal inequality greater than those at the end of the colonial stage and the agro-export stage of the late nineteenth century and the beginning of the following century. The keys to the divergence would lie in the greater expansion of the wealth of the Litoral region, and especially Buenos Aires province, verified both by fiscal sources and by statistical data.

The census incorporated both classic variables of this type of instrument, as well as new ones that seek to count populations in critical situations and whose unexplored wealth this article tries to account for. The most questioned aspect of the census refers to the little attention paid to the household and family structures, a common feature in the first three censuses (1869, 1895 and 1914) carried out during the so-called "author statistics" in which it predominated an essentially individual statistical approach (Otero 2006).

Similar to that of the United States, the population census has had constitutional status since the enactment of the National Constitution in 1853, as it was essential to determine the number of legislative representatives corresponding to the demographic weight of each province. As González Bollo (2010) has shown, the link between population distribution and parliamentary representation in a context of greater demographic growth in the central-coastal zone motivated the opposition to the census by senators from the interior provinces that explained the delay and the unusual intervals since the last census of 1895.

For the study of the quality of life of the population, it is usual to mention its significant dimensions. From a socioeconomic point of view, it is unavoidable to

refer to the conditions of education, health and housing. The works of Bolsi et al. (2006), Celemín (2007), Connerly et al. (1985), Delgado et al. (1996), Estés (1993), Fernández-López et al. (2010), Friel et al. (2011), Longhi et al. (2013), Lucero et al. (2007), Mikkelsen et al., (2013), Olave et al. (1995), Rofman (1999), Rogerson (1999), Santos (1979), Sterimberg et al. (2004), Tanguay et al. (2010), Torrado (2007) and Velázquez (2016), among others, contribute to generating an appropriate framework that must be adapted to the prevailing scale of values and the availability of information for Argentina in 1914, as it is explained below.

4.2 Methodology

The variables that we outlined above show a preliminary image regarding the living conditions of the Argentine population in 1914. We have seen that their distribution, in some cases, is coincident while in others it is not. The coincidences and differences can be explained by the nature of the variables that, in some cases, tend to diminish or benefit the population of some territories more. Therefore, to try to provide a more comprehensive map of the population's quality of life, it is useful to propose an index-summary based on the combination of the most significant variables.

This index results from a compromise between the available information, the units of analysis used and the attempt to approximate the scale of values of society at this historical moment. For example, an index that does not take into account the environmental aspects of well-being is currently unacceptable, but such dimension for Argentina at the beginning of the twentieth century was not yet relevant nor was it intended to be captured by the National Statistical System. Another criterion for the elaboration of the index consists of incorporating variables that may be relevant over time and that allow long-term comparisons.

Following these considerations, our proposal to estimate the quality of life of the Argentine population in 1914 includes the variables that are presented in Table 4.1.

As it can be seen in the preceding table, the different variables have different total amplitudes. Thus, some vary between 1.12 and 0.15 ‰, while others do so between 66.7 and 17.8%. Another element to emphasize is that some are *cost variables*, since

Table 4.1 Dimensions and variables of the Quality of life index. Argentina, 1914

Dimension	Variables	Relative weight	Extreme values (Maximum-minimum)
Education	Illiteracy rate (population over 6 years)	1/3	(66.7–17.8)
Health	Medical doctors/1000 inhabitants	1/3	(1.12–0.15)
Material wealth and housing	Real estate owners/100 inhabitants	1/3	(25.04–2.29)

Source Personal elaboration from the 1914 Census

their increase implies a worse relative situation (such is the case of illiteracy), while others are *benefit variables* as their increase corresponds to better relative situations (medical doctors per 1000 residents and real estate owners).

The integration of these rates was carried out by transforming them into partial index numbers, in which the extreme values are transformed between 1 and 0 to reflect the best and worst relative situation, respectively. This was done according to the type of variable with the following procedure:

(a) *Cost variables* (illiteracy).

$$I = \frac{\text{Max} - a}{\text{Max} - \text{Min}}$$

where a: cost variable.

Thus, for example, the Province of Buenos Aires had 308 illiterates per thousand inhabitants, a figure that taken to the index number, gives 0.73 (which places the Province of Buenos Aires closer to the best relative situation, whose value is 178).

(b) *Benefit variables* (medical doctors/1000 inhabitants, real estate owners).

$$I = 1 - \frac{\text{Max} - b}{\text{Max} - \text{Min}}$$

where b: benefit variable.

In this case, Tierra del Fuego had 7.79% of the population owning real estate. This rate, taken as an index number, yields 0.24 (which places the town of Chascomús, Buenos Aires province, closer to the worst relative situation, which is 2.29%). The transformation of the variables allows the development of the Quality of Life Index, which results from the weighted sum of the partial index numbers of each of the three selected variables.

4.3 Results

4.3.1 Education and Illiteracy

The Third National Census was concerned with detecting people in critical situations, following a concept close to the modern idea of population at risk. Therefore, it included data on education and health. There are, however, no other data regarding the levels of education attained by the population.

4.3.2 Illiteracy

The census established that the percentage of illiteracy for the population older than 7 years was 35.1%. If we compare with previous censuses, in 1869 the average was 71% while in 1895, it was 54.4% (Fig. 4.1). That rate differed considerably between jurisdictions. In 1914, Argentina comprised the Federal Capital (Buenos Aires city), 14 provinces and 9 national territories, all of them divided into 419 counties.

Establishing a division into natural intervals, the best relative situation corresponded to the City of Buenos Aires (17.8% illiterate). Below 30.8%, only the Province of Buenos Aires and the national territories of Santa Cruz and Tierra del Fuego were found. In a second level we have the remaining coastal provinces (except the province of Corrientes which is included within the Litoral provinces), those of the Center (except the province of Santiago del Estero) and two of the Andean provinces: Mendoza and San Juan.

The worst relative situation was registered in the then new territory of Los Andes (later divided into three neighboring provinces), whose illiteracy amounted to no less than 66.7%. The situation in the provinces of Jujuy and Santiago del Estero and the national territory of Neuquén was also very bad, since in all these units illiteracy exceeded 55.5%.

4.3.3 Morbidity and Health

Unlike the two previous censuses, which provided information regarding various forms of physical and mental disability (disabled by accident, disabled by war, insane, deaf-mute, blind, cretins / *opas* and population with goiter/preserve), the 1914 census only informed the blind and deaf-mute people for the provinces and territories and the sick ones for the 14 provinces.

4.3.4 Deaf-Mutes

The census registered 7798 *deaf-mutes* that is, 99 per 100,000 inhabitants. Its distribution followed a fairly clear pattern (Fig. 4.2).

Establishing a division of the territory into natural intervals, two national territories stood out (Tierra del Fuego and Los Andes), which lacked deaf-mutes. Although both territories were very sparsely populated, this figure suffered from underreporting, especially for the remote Los Andes territory. The rate was lower (less than 114/100,000) in much of the national territory: mainly in the City of Buenos Aires, coastal provinces and the center. In the Andean zone, only San Juan had a relatively good situation, while in the northern provinces the proportion of deaf-mutes was the highest in the country: it reached the extreme of 700/100,000 in the province of Salta.

Fig. 4.1 Illiterate population, Argentina, 1914. *Source* Personal elaboration

Fig. 4.2 Deaf-mutes (per 100,000 inhabitants), Argentina, 1914. *Source* Personal elaboration

The national territories of Formosa and Misiones also suffered from this problem, but they were at the second level of severity.

4.3.5   Blind

The *blind population* constituted 6857 cases (representing 87/100,000 of the total population), so their incidence is lower than that of deaf-mutes. Its territorial distribution is asymmetric (Fig. 4.3).

On the one hand, two national territories (Tierra del Fuego and Santa Cruz) stood out for their exceptionally low values. Although both territories had a very young demographic structure and were very sparsely populated, statistical randomness may partly explain these values. The city of Buenos Aires and the provinces of Buenos Aires and Santa Fe also had relatively low values. In the central and Andean groups, the proportion of blind people increased significantly, while the northern group contained the worst proportion, with an extreme value of 271 blind/100,000 inhabitants in the province of Jujuy.

4.3.6   Population with Diseases

Next, all the diseases are grouped into a single category (Fig. 4.4), a procedure that reduces problems of capture and registration of data of the previously mentioned diseases, resulting in the total of 88,866 people. This amount includes other diseases, which represent 1127/100,000 of the total population. Of course, some people could have more than one pathology, a fact not reported by the census, which should not substantially modify the results.

In this category, when including other diseases, we find a certain contradiction when comparing the distribution of the sick with the blind and deaf-mute population. This information is provided only for the 14 provinces and not for national territories.

The highest proportion of the population with diseases was registered in the northern provinces. The most extreme cases were Salta and Jujuy (2265 and 2079 patients per 100,000 inhabitants, respectively). On the contrary, the lowest proportion is located in the provinces of Santa Fe (777/100,000 inhabitants), Mendoza and San Juan. The proportion of the sick population in the City of Buenos Aires was striking, as it was relatively high (1123/100,000). This is probably attributable to the existence of health centers, the demographic structure or the better statistical capture of the problem.

Fig. 4.3 Blind (per 100,000 inhabitants), Argentina, 1914. *Source* Personal elaboration

Fig. 4.4 Population with diseases (per 100,000 inhabitants), Argentina, 1914. *Source* Personal elaboration

4.3.7 Infant Mortality

Finally, the 1914 census provided information on a highly relevant problem such as infant mortality. Unfortunately, the data was provided only for the provinces and not for the national territories (Fig. 4.5).

First of all, we must point out that the infant mortality rate (IMR) was considerably high (119.12 ‰), even for the historical context of the time. The worst relative situation is suffered in the northern provinces (Salta, Jujuy, Tucumán), with values that exceeded 200 ‰. In the most extreme case (Salta), the IMR amounts to 237.35 ‰. On the contrary, the lowest rates are registered in the city and province of Buenos Aires (88.15 and 88.88 ‰, respectively).

4.3.8 Material Wealth and Housing

As we have pointed out, the 1914 census, despite providing information on buildings, boats and other material manifestations, did not allow us to have any data regarding housing. Not even the most basic, like the number of houses. The censuses of 1869 and 1895 had distinguished different types of housing on the basis of roof materials (roof, tile, zinc, wood, iron and straw/adobe) subdivided, in turn, according to the number of stages.

4.3.9 Real Estate Owners

This is an approximation variable of material well-being defined that shows the ratio of owners per 100 inhabitants. It should be noted, however, that the information provided did not discriminate where the properties were located or their value (Fig. 4.6).

The highest proportion of property owners is located in the center and the Andean zone. In particular, the provinces with the highest percentage were Catamarca (25.04%) and La Rioja (23.65%). These units were characterized by a historical settlement process, accompanied by a certain traditional accumulation of capital. On the contrary, the relative number of owners was very low in the north, perhaps due to the greater concentration of wealth, and in the national territories, perhaps because the historical process of western settlement and appropriation is more recent. The most extreme case was the new territory of Los Andes, with a very low average of owners (2.29%). As for the City of Buenos Aires, the proportion of owners was relatively low (11.00%), probably due to the higher relative price of real estate in the capital of the Argentine Republic.

Fig. 4.5 Infant mortality rate (per 1000/live births), Argentina, 1914. *Source* Personal elaboration

Fig. 4.6 Real estate owners, Argentina, 1914. *Source* Personal elaboration

4.3.10   Quality of Life in 1914

The synthesis map (Fig. 4.7) of the quality of life of the Argentine population in 1914 showed that it was very unequal throughout the territory. The best relative situation is registered in the City of Buenos Aires (7.94), followed by the province of Santa Cruz (6.86). It should be remembered that the provincial scale implies a higher degree of generalization, so it was probable that some counties of the province of Santa Cruz may have higher QLI than the City of Buenos Aires itself.

The coastal provinces and most of the center jurisdictions (with the exception of the province of Santiago del Estero) are located in a second level of quality of life. The same occurs with the Andean provinces. The northern provinces (except the province of Tucumán) suffered adverse situations. The same happens with the territories located in the northernmost part of the country. The most extreme case is the Territory of Los Andes, whose population suffered from the worst living conditions in the country in all indicators (QLI 0.00).

If we consider the southern territories, the situation is very diverse: on one hand, we have the territory of Santa Cruz, which exhibited a satisfactory index; in contrast, the territory of Neuquén, where the indigenous population was confined, suffered from the worst relative situation in the region and one of the worst in the country (QLI 2.38). The gap between the best and worst situation is high. The *ranking* was headed by the City of Buenos Aires (7.94 points), while the worst relative situation is recorded in the Territory of Los Andes, which reaches only 0.00 points that is, it coincides with the worst relative situation in the three indicators of the index.

When comparing the 14 provinces and territories, the LQI values for 1895 and 1914 were as follows (Tables 4.2, 4.3 and 4.4).

4.4   Concluding Remarks

This study shows very consistent inequalities in Argentina that were very high around the time of the Third National Population Census, both among the large regions (groupings) and also among provinces. They were probably more so among smaller units (counties), but the information available did not allow us to go beyond the provincial/territorial scale. In a general context of precarious material and socioeconomic conditions (defined in relative terms for Argentina in the beginning of the 20th Century), heterogeneity was clearly the rule.

The degree of inequity is greater than it could have been assumed, since the gap between the worst and best situations is very large. Considering the regions, the difference between the best and worst relative situation (Eastern and Northern Groups, respectively) is 2.32 points; at the provincial level (provinces of San Luis and Jujuy), the amplitude increases to 3.58 points. Between counties, the gap would have been even greater.

Fig. 4.7 Map of quality of life, Argentina, 1914. *Source* Personal elaboration

Table 4.2 Comparison of the LQI values for 1895 and 1914

1895	Population	LQI	1914	Population	LQI
Santa Fe	397,188	6.60	San Luis		5.45
Buenos Aires	921,135	6.36	Córdoba		5.17
Entre Ríos	292,019	6.15	Catamarca		4.88
Córdoba	342,106	5.79	Buenos Aires		4.69
Corrientes	239,618	5.60	Mendoza		4.53
San Luis	81,026	5.31	La Rioja		4.50
La Rioja	69,489	5.27	Santa Fe		4.38
Catamarca	90,161	5.05	San Juan		4.19
Santiago del Estero	148,578	4.98	Entre Ríos		3.83
Mendoza	116,136	4.95	Tucumán		3.57
Salta	118,015	4.95	Salta		2.49
Jujuy	49,713	4.74	Corrientes		2.41
San Juan	84,251	4.63	Santiago del Estero		2.08
Tucuman	215,742	4.18	Jujuy		1.87

Source Personal elaboration

Table 4.3 QLI in the territories

1895	Population	QLI	1914	Population	QLI
Santa Cruz	1627	7.24	Santa Cruz	9948	6.86
Chubut	3748	6.34	Chubut	23,065	4.98
Formosa	4829	6.20	Land of the Fuego	2504	4.61
Chaco	10,422	6.00	La Pampa	101,338	3.74
Tierra del Fuego	477	5.89	Chaco	46,274	2.46
Río Negro	9437	5.44	Missions	53,563	2.38
Missions	33,163	5.08	Río Negro	42,242	2.34
La Pampa	25,914	4.99	Formosa	19,281	1.49
Neuquén	14,517	4.85	Neuquén	28,866	1 12
			Los Andes	2487	0.00

Source Personal elaboration

Table 4.4 Population and Quality of life index according to regions (Groupings)

1895	Population	QLI	1914	Population	QLI
Eastern Groupings	1,849,960	6.28	Eastern grouping	5,314,047	5.38
Center grouping	571,710	5.51	Western Grouping	576,932	4.51
Western grouping	360,037	4.96	Central grouping	1,113,416	4.47
Northern grouping	383,470	4.49	Northern grouping	550,491	3.06

Source Personal elaboration
The provinces of each Grouping are presented in Chap. 3

Quality of life is, of course, a different concept from wealth, and this for at least two reasons. On the one hand, it includes material dimensions, such as housing, and social ones, such as health and education. On the other hand, the universal nature of the census allows comprehensive research, less biased than those based on fiscal sources (superior, on the other hand, for diachronic analysis and for the study of social inequality). Both approaches are complementary but, of course, they do not produce identical maps, since they measure different things (for example, the notable differences in sub-regional wealth in the province of Jujuy do not translate into the Quality of Life Index, which is quite homogeneous for the entire province).

Considering the quality of life in terms of smaller units, the study registered another interesting fact: the importance of the progressive, but differential, consolidation of the new territories. Thus, the evolution of the northern territories (such as Formosa and Chaco) was different from that of the southern ones (Santa Cruz and Tierra del Fuego). In addition to the heterogeneity, the second important conclusion refers to the methodological level and consists of highlighting the validity of the instruments and sources. Indeed, the operational potential of geographic information systems, about which it is not necessary to insist here, makes it possible to recover historical sources of notable importance such as the population censuses of the early twentieth century that provided extensive amounts of information.

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Chapter 5
Quality of Life in Argentina. Analysis from the Fourth National Census (1947)

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Abstract The present work shows the quality of life in the Fourth National Population Census of Argentina carried out in 1947 from variables related to education, health, and housing conditions. The main objective is to elaborate an index of quality of life that using the sources of the period of study that allows future temporary comparisons with other censuses, using the geographic information systems for its cartographic representation. It is observed that the Quality of Life Index has higher values for the traditional urban centers together with southern Patagonia, while the north and west of the country contain the lower values in a downward path from the most favored areas.

Keywords Quality of life · Argentina · Fourth National Census 1947

5.1 Introduction

In order to present the panorama of the socio-spatial differences that characterized the country toward the middle of the twentieth century, this chapter analyzes the quality of life of the population during the Fourth National Census of the Argentine Republic (1947). Quality of life as a summary indicator, the census as a source, and the use of geographic information systems (GIS) have been presented in previous chapters (see Chap. 2).

The Fourth General Census of the Nation (decrees - laws No. 10784/43 and 24833/44) was carried out on April 19, 20, and 21 in the areas located south of

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parallel 42, and on days 10, 11, and May 12, north. It was carried out under the presidency of Juan Domingo Perón, 33 years after the previous census of 1914. It collected demographic, agricultural, and economic information and implied a break with the three previous general censuses, since it included the family as an observation unit. In turn, it expanded the coverage of economic data, by incorporating a building census and a survey of capitalization, savings companies, and the financial sector. The census offers a significant set of information for the analysis of the quality of life of the population at the county level. In this way, it takes up the tradition of the 1869 and 1895 censuses, unfortunately, discontinued in 1914.

The census population reached 15,893,827 inhabitants, while it was estimated that some 161,938 people were left out of the survey. As part of this operation, the Agricultural Census was also developed. On the other hand, from this moment on, began the use of the computer for the processing of census data. Thus, 20 card punching machines and six sorting machines were used, with a staff of about 180 employees. About 300,000 census takers worked in the survey, mostly teachers and public employees (INDEC 2019).

However, the 1947 census brought rather modest developments in the measurement of age. However, it should be noted that the increase in the proportion of the elderly—clearly visible in comparison with previous censuses—is explicitly mentioned with the specific term *aging*. This fact was in line with the conceptualization of the phenomenon made by the French demographer Alfred Sauvy in 1928 (Sauvy 1976) and popularized, since then, by countless authors. This phenomenon, the census can be linked to three basic factors. Firstly, the fall in the birth rate, which was correctly identified as "the main modifying factor in the age distribution of the population"; secondly, with the lengthening of the half-life, produced by the improvements that have occurred in matters of general mortality but, above all, in infant mortality; and, finally, the effects of overseas immigration that "accentuate, when it exists, the effects of denatality" (Argentina 1952).

Finally, it should be remembered that the population census has had constitutional status since the sanction of the Argentine Magna Carta in 1853 as it is essential to determine the number of representatives that corresponds to each province according to its demographic weight.

The bibliographic framework referring to the study of the population's quality of life from the socioeconomic point of view (which can be consulted in Chap. 2) has been adapted to the prevailing scale of values and the availability of information for Argentina from 1947.

The Argentine Republic in 1947 was made up of the Federal Capital, 14 provinces, and 10 national territories. All of them were divided, in turn, into 460 departments or counties (Fig. 5.1).

The regional division proposed by the national statistical system as in 1947 was as follows:

- Litoral region: City of Buenos Aires, Province of Buenos Aires, Santa Fe, Entre Ríos, Corrientes, and the national territories of Misiones, Chaco, and Formosa;
- Northern region: Tucumán, Salta, Jujuy, and Santiago del Estero;

Fig. 5.1 Political Division. Argentina (1947). *Source* Personal elaboration

- Central region: Córdoba, San Luis, and La Pampa;
- Andean region: Catamarca, La Rioja, San Juan, Mendoza, and Neuquén; and
- Patagonia region: national territories of Río Negro, Chubut, Santa Cruz, Tierra del Fuego and the so-called military zone of Comodoro Rivadavia, later on subdivided and incorporated into the provinces of Chubut and Santa Cruz.

5.2 Methodology

From the combination of the most significant variables on the living conditions of the Argentine population, it was established a summary index already presented in a previous chapter (see Chap. 2). For this context, the Quality of Life Index (QLI) includes the following variables (Table 5.1) for the year 1947:

As it can be seen in the preceding table, the different variables have different total amplitudes and are *cost variables*, given that their increase implies worse relative situation.

That is why the integration of these rates was carried out by transforming them into partial index numbers, with extreme values between 1 and 0 to reflect the best and worst relative situation, respectively. This was done, depending on the type of variable, with the following procedure:

(a) *Cost variables* (i.e., Illiteracy)

$$I = \frac{\text{Max} - a}{\text{Max} - \text{Min}}$$

where a: cost variable.

Thus, for example, if the number of illiterates in the City of Buenos Aires (5.7 per thousand inhabitants) is taken to an index number, the result is 0.99. This value places the City of Buenos Aires closer to the best relative situation, whose value is 5.1, than to the worst, whose value is 67.

Table 5.1 Dimensions and variables of the Quality of life index

Dimension	Variables	Relative weight	Extreme values (maximum-minimum)
Education	Illiteracy rate (population over 14 years old)	1/3	(67–5.1) (66.7–17.8)
Health	– Disease rate / 100,000 inhabitants – Infant mortality rate	1/6 1/6	In 1947 (15,095.72–41.32) In 1947 (176.4–39.4)
Housing	Persons per house	1/3	(1.65–31.75)

Source Personal elaboration based on Argentina (1952)
Argentina (1947)

The transformation of the variables allows, therefore, the elaboration of the Quality of Life Index. Its composition results from the weighted sum of the partial index numbers of each of the three selected variables. Thus, based on the proposed index, the synthesis map shows that the quality of life of the Argentine population in 1947 was highly asymmetric throughout the territory.

The IV Census includes the following characteristics related to health: blind, deaf, idiot, insane, disabled, chronically ill, and disabled due to work accidents. Based on this information, it is possible to calculate both the rate for the population affected by each of these problems and the total rate per 100,000 inhabitants. Additionally, for this historical moment, there are vital statistics from the National Ministry of Health (DEIS) at the provincial level. Therefore, it is possible to include the infant mortality rate (IMR) for the same census year (1947).

For education, the census does not yet show the population that no longer studies, so the only relevant information to analyze this dimension is that of illiterates.

Regarding housing indicators, the census does not consider this variable at all. However, we have managed to access the Unpublished Housing Census of 1947 which records in its Table VI the number of houses at the county level.

5.3   Results

5.3.1   Education and Illiteracy

The Fourth Census was concerned with detecting people in critical situations, following a concept close to the modern notion of *population at risk*. To do this, it included data on education and health. This survey establishes that the average illiteracy for the population over 14 years of age was 13.6% (Fig. 5.2). If it is compared with previous censuses, it can be observed that in 1869, 1895, and 1914, these were 71%, 54.4%, and 35.4%, respectively, although for those older than 7 years.

Now, as it is shown in the previous figure, the illiteracy rate in 1947 differed considerably between the different jurisdictions. Of these, the lowest rate was recorded in the city of Ushuaia, Tierra de Fuego national territory (5.1%), and the county of Vicente López, in the province of Buenos Aires, located in the northern part of Greater Buenos Aires (5.2). Below, the 6 points were also included the counties of Güer Aike, Magallanes, and Puerto Deseado in the Santa Cruz national territory, the city of Comodoro Rivadavia in the homonymous military zone, and the City of Buenos Aires. This shows, on the one hand, the dichotomy between the more residential areas of Greater Buenos Aires and, on the other hand, the positive selectivity with respect to the migratory process in Southern Patagonia.

By establishing a division into quartiles, the best relative situation (Q1) corresponded to the whole of Greater Buenos Aires City, center of the Province of Buenos Aires, southern Patagonia, as well as the center of Santa Fe and Córdoba provinces. In this Q1, some provincial capitals of the northern zone (Tucumán and Salta provinces),

Fig. 5.2 Illiteracy rate. Argentina (1947). *Source* Personal elaboration on the basis of Argentina (1952)

the Litoral area (the city of Posadas, in the then national territory of Misiones), and the Andean region (Catamarca, La Rioja, San Juan, and Mendoza provinces) were also included.

In contrast, while the highest illiteracy rate was recorded in the county of Santa Victoria, Jujuy province (67.0%), another nine units were also above 50%. They were from the northern regions, the counties of Valle Grande (Jujuy province) and Molinos (Salta province), from the Litoral, the county of Guaraní (Misiones province); from the central area, the county of Chical Có (then the national territory of La Pampa); from the Andean zone, the county of Catán Lil (then the national territory of Neuquén); and, from Patagonia, the counties of El Cuy and Ñorquinco (then the national territory of Río Negro), and Telsen and Castro-Gastre counties in the then Comodoro Rivadavia Military Government).

The worst relative situation corresponded to the fourth quartile (Q4), in which the vast majority of the counties of the northern zone, the northern coast, the interior of the mountain range, and northern Patagonia were found. Between both extremes, there were transition zones, with some with atypical records such as Patiño in the center of the then Formosa national territory.

5.3.2 Morbidity and Health

The 1947 census registered 15,886,797 inhabitants. Among them, it counted: 14,266 blind (89.80 / 100,000 inhabitants), 7297 deaf-mutes (45.93/100,000 inhabitants), 8163 idiots (51.38/100,000 inhabitants), 35,184 insane (221.47/100.000 inhabitants.), 24,699 disabled (155.47/100.000 inhabitants), 8,368 chronically ill (52.67/100.000 inhabitants), and 440 disabled by work accident (2.77/100.000 inhabitants). In sum, a total of 98,417 people with these diseases (619.49/100,000 inhabitants).

These figures represent progress when compared to the 1914 data, but unfortunately in that census, only the blind and deaf were recorded for the provinces and territories, and the sick only for the provinces. In that year, Argentina had 7,554,886 inhabitants. Of them, 6857 were blind (87/100,000 inhabitants); 7798 were deaf-mute (99/100,000 inhabitants) with a total of 88,866 sick people (1127/100,000 inhabitants). Although progress on problems such as blindness seems practically nil, we should not rule out the possibility of underreporting. The deaf-mutes, on the other hand, have experienced a significant reduction, as well as the population with diseases, especially when taking into account the comparison with the 1914 census that refers only to the 14 provinces and not to the country as a whole.

Next, we will map and analyze this situation for 1947 (Fig. 5.3):

In 1947, there were 14,266 *blind persons* (89.80/100,000 inhabitants). This proportion is almost equivalent to that of the previous census. Regarding its territorial distribution, we can point out a certain degree of randomness in relation to other variables. The highest incidence of blind people was registered in the city of Dolores, Buenos Aires province (1117.2/100,000 inhabitants) at the 500 limit, Sobremonte

Fig. 5.3 Blind population. Argentina (1947). *Source* Personal elaboration on the basis of Argentina (1952)

(Córdoba) stands out while eight more counties with more than 300 were found: Santa Catalina, Humahuaca, and Valle Grande (Jujuy province), Molinos (Salta province), Avellaneda, Sarmiento and Silipica (Santiago del Estero province), and General Lamadrid (La Rioja province).

In the worst situations are observed throughout the entire national territory, although with a certain predominance in the northern and Andean areas, in northern Patagonia, and the interior of Santiago del Estero and Córdoba provinces. In contrast, several counties with little population (22 units) stand out, with no blind people in the statistical records. At the top of 20/100,000 inhabitants limit, seven units were found, while at the 30/100,000 limit, another six counties appeared. Likewise, the proportion is low in the southern sector of the Littoral region and in southern Patagonia. Probably, the younger population structure helps to explain, at least in part, this rather low incidence.

According to the census, *deaf-mutes* totaled 7297 cases throughout the territory (45.9/100,000 inhabitants), that is, there had been a substantive improvement compared to 1914. However, the worst relative situation was registered in the counties of Guachipas and Caldera, Salta province (440.1 and 423.9/100,000 inhabitants, respectively). Then, above the threshold of 300 were the counties of Cerrillos (Salta province), Figueroa (Santiago del Estero province), and Guaraní (the then national territory of Misiones), and after 200, another twelve counties, almost all of the north and Andean region, except the county of Baradero in Buenos Aires province and the counties of Pico Truncado and Lago Argentino in Santa Cruz national territory (Fig. 5.4).

In the Q4 (25% with the worst situation), the population most affected by this problem is located in the north and Andean zone, although also in some counties in all other regions, including Greater Buenos Aires. In contrast, due to the relatively low number of cases (55) sparsely populated counties did not have deaf-mutes. On the 10/100,000 inhabitants limit, 5 units were found, while below the 15/100,000 inhabitants limit, another 11 counties.

Most of the Q1 spatial units (better relative situation) are located in the south of the Litoral and Patagonia. The rest of the territory presented different situations.

This national census registered a total of 8163 people classified as *idiots*, which represented a rate of 51.38/100,000 inhabitants. The county with the highest proportion was Vecino (or General Guido) in the province of Buenos Aires, with a rate of 339.1/inhabitants (Fig. 5.5). Above 200, the counties of Luján de Cuyo (Mendoza province), Castro Barros (La Rioja province), and San Antonio (Jujuy province) were recorded, three units very close to their respective provincial capitals. Above 150, the counties of Chicoana and Guachipas (Salta province), Arauco (La Rioja province), Trancas (Tucumán province), and Cañuelas (Buenos Aires province) were included. The proximity to the corresponding provincial capitals is also observed here, except for the town of General Guido.

Extending the analysis to the entire Q4 (higher proportion of the idiot population), it is noted that this disease, although it was quite random in its distribution, was linked to the presence of establishments intended to treat it, that was located near the capitals. However, there was also a high relative weight in the entire province of

Fig. 5.4 Deaf-mute population. Argentina (1947). *Source* Personal elaboration based on Argentina (1952)

Fig. 5.5 Idiot population. Argentina (1947). *Source* Personal elaboration based on Argentina (1952)

San Luis, various counties in the north and the Andean area, the Litoral region, and near Greater Buenos Aires. Finally, 57 units with a scarce population did not register cases of idiocy.

Those identified as *insane* were, in 1947, 35,184 inhabitants, representing 221.5/100,000 of the population. The unit with the highest value was the town of Luján (Buenos Aires province), with an unusual rate of 14,716/100,000 (Fig. 5.6). This is explained because there, in the town of Open Door, the Domingo Cabred National Neuropsychiatric Colony was located.

Above the 5000 barrier, the town of Tercero Arriba was found in Córdoba, which also had an establishment. Then, with values higher than 1000, the counties of Lomas de Zamora and Dolores (both in Buenos Aires province) were located. Extending the situation to the Q4, this problem had a greater relative weight in the northern and the Andean areas, but its incidence was high, in turn, in the city of Buenos Aires and several counties close to Greater Buenos Aires. On the other hand, given the small number of cases, there were 28 counties with a scarce population located in all the regions that did not register values for this indicator.

The 1947 Census recorded 24,699 *invalids* (155.5/100,000 inhabitants). Of these, the largest number was in the county of Dolores, in Buenos Aires, with a rate of 2052/inhabitants. Above the 500 value, the counties Baradero and Almirante Brown (Buenos Aires province) were located, while, exceeding 300, 10 more units were added, that were located in the northern and the Cordilleran areas (Fig. 5.7). Considering the whole of Q4 (25% with the highest relative proportion of disabled people), numerous units appeared in the central area of the country.

Regarding the lowest values, there were 16 counties that did not register population with this disease. On the other hand, in Q1 (lower relative proportion), a particular distribution is shown, since units from the Littoral and from Patagonia exhibited low rates.

The IV Census counted 8368 *chronically ill patients*, that is, 52.7/100,000 inhabitants. The county with the highest proportion was General Rodríguez in Buenos Aires province, whose rate climbed to 8945.7/inhabitants because the Sommer National Hospital (Fig. 5.8), dedicated to treating patients with this condition, was located there. Above 1000, the counties of Dolores (Buenos Aires province) and Punilla (Córdoba province) were found; in the latter case, due to the properties of its climate and environment, which favored the recovery of patients with this type of ailment. Over 100, there were thirteen more units: seven in Buenos Aires province, three in the then national territory of La Pampa, one in Córdoba (Capital city of the province of such name), one in the city of Corrientes, and one in the city of Salta (in both cases, the capital city of those provinces).

Finally, when considering Q4, it is observed that the chronically ill people were distributed quite randomly among the different regions. For the same reason, there were 143 units with a relatively small population that lacked records on this disease.

In 1947, an attempt was made to statistically capture a relevant variable regarding health and work, such as the *population disabled by occupational accidents*. This effort, based on the figures, seems to have been under-recorded, since the total amount recorded is only 440 people (2.8/100,000 inhabitants).

Fig. 5.6 Insane population. Argentina (1947). *Source* Personal elaboration based on Argentina (1952)

Fig. 5.7 Invalid population. Argentina (1947). *Source* Personal elaboration on the basis of Argentina (1952)

Fig. 5.8 Chronically ill population. Argentina (1947). *Source* Personal elaboration based on Argentina (1952)

The unit with the greatest severity was Lake Buenos Aires, in the then Santa Cruz national territory, given that its rate reached 615 (Fig. 5.9). Then, over 100, were the counties of Curacó (in the then national territory of La Pampa), Dolores, and General Lamadrid (both in Buenos Aires province), while the rest of Q4 extended to specific areas of the territory, among which the interior of the national territory of Chaco and Santiago del Estero province stood out, like some counties of Salta and Tucumán provinces and the center of the national territory of La Pampa. In all these cases, the common denominator was the presence of forestry activity.

Being the variable with the least number of affected, 367 units did not record any disabled due to work accidents. This situation, we insist, has more to do with underreporting than with the lack of incidence of this problem, which is very easily confused with or concealed by other types of conditions.

We grouped the population *with diseases*, a procedure that would allow, in principle, to reduce the problems of uptake and statistical randomness. Consequently, the final number would reach 98,417 people in 1947, that is, 619.5/100,000 inhabitants. This shows a clear decrease in the rate compared to the previous census (1914). And although some people could have more than one disease (data that the census does not report), that does not substantially affect the results.

Thus, it can be seen that, at that time, the unit with the highest proportion of people *with diseases* was the county of Luján in Buenos Aires province, with 15,095.7/100,000 inhabitants (Fig. 5.10). Then, there were the counties of General Rodríguez (which happens to be a neighbor to the county of Luján, with a rate of 9638.4/100,000 inhabitants) and Dolores (5838.6/100,000 inhabitants), both in Buenos Aires province; and thirdly, the province of Córdoba (5406/100,000 inhabitants). Above a thousand, there were, in total, only thirteen more units.

The Q4 group (relative worst situation) was widely spread throughout the northern and the Andean zones, as well as in units of the northern fluvial systems (Misiones national territory and Corrientes province) and the center (mainly in San Luis). The city of Buenos Aires and several of the Greater Buenos Aires counties did not escape this situation either, probably due to the concentration of health facilities for patients with a certain severity.

Thus, by integrating the entire population with diseases into the same group and consequently increasing the number of cases, there are only two counties with a very small population that did not register cases (the Isla Martín García, in the Río de la Plata, just in front of the city of Buenos Aires and the Isla de los Estados, in Tierra del Fuego National Territory). Furthermore, the Q1 as a whole showed a high relative weight in Patagonia, probably due to its younger demographic structure and, although not as clearly, in the northern part of the Littoral (national territories of Chaco and Formosa), probably for the same reason.

The 1914 census had also recorded information of great relevance to measure health: infant mortality rate (IMR). Unfortunately, as it has been said, this information was published only for the provinces, but not for the territories. The maximum and minimum values at that time were 237.4 per thousand for Salta province and 88.2 per thousand for the city of Buenos Aires. In 1947, however, this information was

Fig. 5.9 Disabled by work accident. Argentina (1947). *Source* Personal elaboration on the basis of Argentina (1952)

Fig. 5.10 Population with diseases (total). Argentina (1947). *Source* Personal elaboration based on Argentina (1952)

not collected in the census, but the series of infant mortality rates at the provincial level since 1944 are available, supplied by the DEIS (National Ministry of Health).

With these data, it can be established that, for 1947, the jurisdiction with the lowest IMR was the City of Buenos Aires (39.4 per thousand) (Fig. 5.11), followed by the Province of Buenos Aires and the national territory of Santa Cruz (although the national territory of Formosa also appeared integrating this group, this was probably due to the high level of underreporting for this variable). On the contrary, the worst relative situation was registered in the national territory of Neuquén (176.4 per thousand) and, to a lesser extent, in Río Negro and Chubut national territories in Patagonia, the province of San Juan in the Andean region, San Luis province in the center, and Salta and Jujuy provinces in the north.

5.3.3 Housing

As previously mentioned, the 1947 census had not released data on households, not even the total amount. We obtained this information from the housing census of the same year, which, however, was not published either. The problem about this indicator is not new. The first censuses, of 1869 and 1895, had distinguished types of residence on the basis of roof materials (roof, tile, zinc, wood, iron, and straw/adobe) subdivided, in turn, according to the number of floors. However, the 1914 survey, despite providing information on buildings, boats, and other material manifestations, did not include data on houses, nor their quantity by province.

Regarding the obtained data and considering the relationship between population and households as an approximation to the degree of overcrowding, it is noted that the lowest levels (less than 4.63 people per house) were registered in the interior of the province of Buenos Aires, the center of Santa Fe and Córdoba (Fig. 5.12). The same happened in most of Greater Buenos Aires, coastal counties of Patagonia, and some isolated sectors in Misiones, Salta, and Jujuy. On the other hand, the reverse situation was exhibited in much of the north and mountain range zone (with higher fertility rate and presence of extended and compound households) and in the rest of Patagonia.

All these variables constitute the inputs for the Quality of Life Index that is presented below (Fig. 5.13).

As can be seen in the map, the best relative situation was recorded in the city of Buenos Aires (9.65), followed by two spatial units of Santa Cruz: Magallanes and Güer Aike (9.45 and 9.41, respectively). The rest of Q1 included a large part of Buenos Aires, central Córdoba, Santa Fe, and southern Patagonia (sectors of Santa Cruz and Tierra del Fuego). In contrast, the worst situation was observed in Independencia (La Rioja) and Santa Victoria (Jujuy), the only jurisdictions below 5 points (4.59 and 4.99, respectively). To a lesser degree, it also extended to most of the four northern provinces (Tucumán, Salta, Jujuy, Santiago del Estero), north of the Litoral (Chaco and, above all, Corrientes), Andean sectors of San Juan and Neuquén, west of La Pampa and northern Patagonia (a large part of the national territories of

Fig. 5.11 IMR by province. Argentina (1947). *Source* Personal elaboration based on Argentina (1947)

Fig. 5.12 Persons per house. Argentina (1947). *Source* Personal elaboration on the basis of Argentina (1952)

Fig. 5.13 Quality of Life Index. Argentina (1947). *Source* Personal elaboration based on Argentina (1952)

Río Negro and Chubut). Finally, below the six-point barrier were another eighteen jurisdictions, all of them located in the north or in the cordilleran zone.

Considering the "natural divisions" established by the census, it is noted that the Littoral Region was excessively heterogeneous. Thus, the privileged situation of Buenos Aires, the center of Santa Fe and Córdoba, stood out, which contrasted with the very poor conditions of Corrientes or the west of Chaco. Now, in the northern zone, the situation was much more homogeneous and adverse. In effect, the four provincial units that made it up had a large predominance of counties with low quality of life.

Regarding the central region, there is considerable diversity in their quality of life. Although the best situation was that of Córdoba, followed by San Luis and La Pampa, in the case of the latter, the more humid east has a much better situation compared to the drier west (much more relegated regarding their living conditions). For its part, the Andean region presented, in general, bad situations. The most obvious exception was Mendoza, mainly in its central oasis. Finally, the Patagonia region showed contradictory situations; much better in the southern zone (Tierra del Fuego, Santa Cruz, and Comodoro Rivadavia) than in the north (Chubut and Río Negro).

It can be concluded, therefore, that the gap between the best and worst situations was high with the city of Buenos Aires scoring 9.65, while Independencia in La Rioja reached only 4.59 points.

Now, comparing the fourteen provinces and the ten territories, the QLI values for 1947 are as follows (Tables 5.2, 5.3, and 5.4):

Table 5.2 Position of the provinces according to the Quality of life index. Argentina (1947)

1947	Population	QLI
Buenos Aires	4,271,437	9.07
Santa Fe	1,682,375	8.85
Córdoba	1,491,327	8.59
Mendoza	598,231	8.38
Entre Ríos	787,302	8.20
La Rioja	111,746	8.11
Catamarca	147,204	8, 07
San Juan	261,229	7.94
Tucumán	593,371	7.90
San Luis	165,546	7.75
Santiago del Estero	479,473	7.56
Corrientes	535,758	7.42
Salta	290,826	7.03
Jujuy	166,700	6.39 (gap 2.68)

Source Personal elaboration based on Argentina (1952)

Table 5.3 Position of the territories according to their Quality of life index. Argentina (1947)

1947	Population	QLI
Santa Cruz	24,582	9.25
Military Zone Comodoro Rivadavia	51,898	8.90
Tierra del Fuego	5029	8.86
Misiones	246,396	8.59
La Pampa	169,400	8.31
Formosa	8,540,675	8.26
Chaco	430,555	7.80
Río Negro	134,350	7.54
Chubut	58,856	7.33
Neuquén	86,836	6.65 (gap 2.60)

Source Personal elaboration based on Argentina (1952)

Table 5.4 Average situation of the regions (groupings) according to their index quality of life. Argentina (1947)

1947	Population	QLI
Litoral region	13,276,870	8.86
North region	1,530,370	7.46 (gap 1.40)
Central region	1,826,273	8.49
Andean region	1,205,246	8.10
Patagonia region	274,715	7.93

Source Personal elaboration based on Argentina (1952)

5.4 Concluding Remarks

Regional inequalities in Argentina, with respect to the well-being of the population, were important at the time of the Fourth General Census of the Nation. In that year (1947), the gap between the provinces reached 2.68 points. This difference is similar to that observed in national territories, with a variation between extreme cases of 2.60. The most populated provinces were those with the highest quality of life values (Buenos Aires, Córdoba, and Santa Fe), as opposed to those in the north. In this sense, it should be noted that these spatial differences, for the vast majority of social and economic indicators, are the same as those observed today. Furthermore, in the operational aspect, the capacity of the geographic information systems stands out as a valuable tool to process and map historical census data.

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Chapter 6
Quality of Life in Argentina in 1960

Guillermo Angel Velázquez and Juan Pablo Celemín

Abstract Quality of life is a category of growing academic interest in recent years. Different disciplines try to address it from their perspectives and methodology. However, there is very little scientific production related to its study for contemporary historical periods. In this context, the present work proposes to elaborate an index of quality of life for the provinces of the Argentine Republic with variables used in the 1960 national census, which were represented cartographically from a geographic information system, obtaining as a final product a map of the index at issue. The results show a wide territorial disparity of this, given that the provinces of the Pampean region reveal much more favorable values than those registered in the northern part of the country.

Keywords Quality of life · 1960 census · Index summary · Geographic information system

6.1   Introduction

Quality of life constitutes an indicator of synthesis of a set of socioeconomic and environmental situations, relevant to describe the conditions in which the daily life of people unfolds. In this way, it is of interest both for the formulation of public policies and for the understanding of social functioning. Studies on this concept, begun during the 1990s in the Latin American context (Olave and Bodini 1995; Camargo Mora 1996; Delgado and Méndez 1996; Velázquez and García 1999), have grown significantly in the field of geography (Rofman and Márques 1988; Velázquez 2001, 2008, 2016a; Lucero et al. 2007; Mikkelsen et al. 2013). However, despite its obvious relevance, the issue has received little or no attention for historical periods. This fact is explained by two concurrent factors: the insufficient connections between

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history and geography in our country and the empirical difficulties presented by data from the past, even the relatively recent one.

Quality of life research is not the exclusive preserve of a particular scientific discipline. In fact, it has a degree of complexity that makes it difficult to reach a consensus on its area of study. However, in Argentina, quality of life studies is generally carried out by geographers and is mainly based on a spatial approach (Buzai and Baxendale 2006). Consequently, this territorial base allows geographic science to make a difference with respect to other disciplines involved in the study of quality of life, such as economics or psychology. Its ability to carry out analysis on the spatial configuration of different variables is enhanced with the use of tools, such as geographic information systems that enable the representation of the variables and indices associated with quality of life.

In Argentina, numerous articles have been published mapping quality of life indices at different scales of analysis (Lucero et al. 2015; Mikkelsen and Velázquez 2019; Velázquez 2010, among others). They have served as a reference when selecting dimensions, variables and weights.

From this context, this work analyzes the quality of life of the population toward the fifth national census of the Argentine Republic, surveyed in 1960, seeking to provide a general panorama of the socio-spatial differences that characterized the country in the mid-twentieth century, using geographic information systems (GIS) to map the results. With them, the spatial analysis of the dimensions and variables considered relevant is carried out, as well as the elaboration of a quality of life index (QLI), according to the available information and the characteristics of the considered historical moment.

The use of the population census as a secondary source of information is not, of course, accidental. In effect, it is a database that allows universal coverage of the entire territory at each historical moment (with the exception of the old censuses, which registered certain territorial limitations, as mentioned by Otero 2007). Unfortunately, the 1960 census does not offer the same level of disaggregation or the same richness of variables as its predecessors. Therefore, it is not possible to find meaningful information regarding variables associated with education, health or housing at the county level, although it can be found at the provincial level.

Thus, to reflect the educational situation, there is illiteracy rate. To assess the residential situation, there is the average number of people per room, the rate of houses without a toilet and indicators referring to the comfort of homes based on the availability of a refrigerator. Finally, although the census does not provide any relevant health information at the provincial level, it is possible to obtain the infant mortality rate through the Department of Health Statistics and Information of the Ministry of Health.

The fifth census of the Argentine Republic was developed by the National Directorate of Statistics and Censuses during the presidency of Arturo Frondizi (1958–1962). In it, the population was surveyed in the place where they spent that night (census de facto), instead of obtaining data on those people who habitually reside in the home, even if they are not present at the time of the survey (census legal). This has made it possible to simplify the census tasks during the operation, helping

to reduce the levels of omission or duplication of individuals. Additionally, the day of the census was established as a holiday, with the purpose of reducing any type of transfer or movement of the inhabitants, in order to facilitate the census takers to locate and interview the entire population in a single visit. Finally, it is important to note that this census begins the modern computer age, by making use of punched cards to process information (Giusti 2007b, a).

In 1960, Argentina was organized administratively with the Federal District of Buenos Aires city, twenty-two provinces and a national territory (Tierra del Fuego). All of them divided into 486 departments or counties (Fig. 6.1).

For the study of the quality of life of the population, it is usual to resort to the analysis of significant dimensions. Thus, from the socioeconomic point of view, it is unavoidable to refer to the conditions of education, health and housing. The works of Barclay (1962), Bolsi et al. (2006), Celemín (2007b, a), Connerly and Marans (1985), Delgado and Méndez (1996), Estés (1999), Fernández-López et al. (2010), Friel et al. (2011), Halperín (1994), Lo Vuolo and Barbeito (1992), Longhi et al. (2013), Lucero et al. (2007), Mikkelsen et al. (2013), Olave and Bodini (1995), Rofman and Márques (1988), Santos (1979), Sterimberg et al. (2004), Torrado (2007), Velázquez (2016b), among others contribute to generate an appropriate framework. This, in turn, must be adapted to the prevailing scale of values and the availability of information for Argentina in 1960, which is outlined below.

6.2 Methodology

Despite the aforementioned advances in national statistical systems and the constant innovations in the methodological and conceptual designs for measuring the living conditions of the population, the formulation of a QLI with a certain generalization or universality is not yet a fully resolved issue. In fact, it depends upon numerous factors, such as historical processes, scale of values of society, expectations, individual and collective experiences, income, level of education, public accessibility, environmental issues, scale of analysis, adjustment of the available information, georeferencing and validation of the results.

Based on our own experiences and widely discussed research in specific areas, we have used socioeconomic variables (education, health and housing) to measure the well-being of the population of Argentina. Other methodological works (Marinelli et al. 2000, 2005; Cepeda and Velázquez 2001; Celemín 2010), based on all the available census variables and through a strictly mathematical selection procedure (such as multivariate analysis), have yielded results very similar to those obtained for the Argentine in the eighties, nineties and the beginning of the twenty-first century (Velázquez 2001, 2008). The same occurs with the assignment of weights, which remains the same in each dimension. In it, each of its three components (education, income and life expectancy) has the same level of weighting. In addition, it should be mentioned that this simplification in the selection of variables and weighting allows comparative analysis with other quality of life indices after the 1960 census that

Fig. 6.1 Division by provinces and regions of Argentina in 1960. *Source* Personal elaboration based on Velázquez et al. (2007) and Velázquez (2008)

Table 6.1 Dimensions and variables of the quality of life index. Argentina, 1960

Dimension	Variables	Relative weight	Extreme values (máximum–minimum)
Education	Illiteracy rate (population over six years)	1/3	24.20–3.20
Health	Infant mortality rate	1/3	125.10–40.40
Housing	• Overcrowding (persons per house) • Rate of house without toilet	1/6 1/6	5.4–4.0 50.13–0.69

Source Personal elaboration

use the same variables. Therefore, our proposal to estimate the quality of life of the Argentine population in 1960 includes the dimensions and variables that are detailed in Table 6.1.

As indicated in the preceding table, each variable has a different total amplitude. Thus, some range between 125.10 and 40.40 ‰, while others do between 50.13 and 0.69%. The integration of these rates was carried out by transforming them into partial index numbers, in which the extreme values reflect the best and worst relative situation on a scale from one to ten. This was done, depending on the type of variable, with the following procedure:

$$I = \frac{\max - a}{\max - \min}$$

where *a*: cost variable.

With this, it is observed, for example, that the province of Buenos Aires had 5.6 illiterates for every 100 inhabitants, a Figure that when taken as an index number gives 0.89 as a result. This places it closer to the best relative situation, whose value is 3.2.

6.3   Results

6.3.1   *Education*

The fifth national census was concerned with detecting people in critical situations, following a concept close to the modern notion of population at risk. To do so, it included data on education. However, no other surveys were made regarding the levels of education attained by the different segments of society.

In Fig. 6.2, it is observed that, in 1960, the average illiteracy for the population over six years of age was 8.5%, while in previous censuses the percentages were 13.6 and 35.9 for 1947 and 1914, respectively.

Fig. 6.2 Illiteracy rate. Argentina, 1960. *Source* Personal elaboration

As can be seen, the illiteracy rate differed considerably between the different jurisdictions. Thus, establishing a division into quartiles, the best relative situation corresponds to the City of Buenos Aires (3.2% illiterate). Below 8.2%, there are also, on the one hand, the provinces of Buenos Aires, Córdoba and Santa Fe in the Pampas (or Pampean) Region and, on the other, Santa Cruz and Tierra del Fuego in Patagonia. Also, there are the three provinces of Cuyo (Mendoza, San Juan and San Luis), another of the Pampas region (La Pampa) and two of the northern area (La Rioja and Catamarca).

In contrast, the worst relative situation is registered in Jujuy, whose illiteracy reaches 24.2%. Also, the situation of the Northeast provinces and Santiago del Estero, as well as the province of Neuquén, is very bad, since in all these units, illiteracy exceeds 19%.

6.3.2 Health

The Ministry of Health, through the DEIS, provides information on a highly relevant problem, infant mortality. Its importance lies in the fact that it is an indicator of the health of children and of the population as a whole. It also documents the socioeconomic conditions the accessibility and quality of the health service systems at the time (Finkelstein et al. 2016). The national registry of the infant mortality rate (IMR) dates from 1911, but measurements began to be discriminated at the provincial level only after 1944.

First, we must point out that the IMR is relatively low (59.7 ‰), as reported by the National Institute of Statistics and Censuses, for the 1960–1965 period (INDEC-CEPAL-CELADE 2004) for the Latin American context (120.1 ‰) (Escudero and Massa 2006), but with important variations within the national territory. The worst relative situation is presented in the province of Jujuy (125.1 ‰), accompanied by other northern provinces (Salta and Catamarca), Patagonia (Río Negro and Neuquén) and San Luis with an IMR that exceeds 94.9 ‰. Other units, such as Formosa or Santiago del Estero, register remarkably low values (due to a strong statistical underreporting), but they should also be part of this group.

On the contrary, the lowest rates are observed in the Federal Capital (City of Buenos Aires) and Santa Fe province (40.4 and 52.1 ‰, respectively). The rest of the Pampas region and southern Patagonia also show relatively low values (Fig. 6.3). Also, according to Recchini and Lattes (1975), the gross reproduction rate (total number of daughters and sons at the end of reproductive life) in 1960 was 1.5.

6.3.3 Housing

The fifth national census recorded information on housing (the previous data from the 1947 census had not been released). Thus, as an approximation variable to residential

Fig. 6.3 Infant mortality rate. Argentina, 1960. *Source* Personal elaboration

overcrowding, it is possible to calculate the number of people per house. It is worth clarifying that it is an approximation, because the size and number of rooms in homes can differ significantly throughout the territory and between different social groups. In addition, the census presents only the number of inhabitants, unlike those after 1991, which also provide information on the number of people per room.

For this analysis, the ratio was taken as it appears, which means that it does not respond to a threshold, where the higher the measure, the greater the level of overcrowding. It is observed that the lowest number of people per house is registered in Santa Cruz (4.02). The provinces of Buenos Aires, Santa Fe and La Pampa (in the Pampas region), and Río Negro and Tierra del Fuego (in Patagonia) also show a good relative situation, since they are below 4.3. On the contrary, overcrowding is high in various northern provinces (Santiago del Estero, Tucumán, Catamarca, Formosa and Corrientes) and in San Juan. Indeed, in all these units, there are more than 5.3 people per house. The most extreme case is that of Tucumán, whose average is 5.4 (Fig. 6.4).

In general, this problem is associated with fertility differentials, which are higher in the north and are aggravated, in turn, by the limited availability of resources. Thus, for example, the lack of a toilet—which reflects a material deficiency—is registered in a high proportion for the homes in that region. The most extreme case is that of Jujuy, where more than half of the households (50.13%) do not have it.

On the contrary, this deficiency is considerably lower in the Pampean region and, to a lesser extent, also in Patagonia. The City of Buenos Aires stands out for having practically no homes without a toilet (0.69%) (see Fig. 6.5).

One of the peculiarities of the fifth national census was to have surveyed the availability of certain electrical appliances in homes (kitchen, washing machine and refrigerator). For the present analysis, the proportion of households with a refrigerator is used, given its importance for the conservation of food.

Despite the fact that the climate increases the need for refrigeration for food, there is a less relative presence in the warmer north of Argentina. Indeed, in the majority of the provinces of that region, less than 14% of the homes had a refrigerator. The case of Tierra del Fuego is also peculiar: A territory that in other variables shows a good relative situation but here, probably because it is the coldest territory in the country, registers only 6.35% for this indicator. On the contrary, the highest proportion of houses with this appliance is registered in the City of Buenos Aires (82.60%), while the units that follow (Buenos Aires and Santa Fe) do so in considerably lower quantities (43.64 and 39.15%, respectively) (Fig. 6.6).

Thus, the transformation of the variables enables the elaboration of the quality of life index, whose composition results from the weighted sum of the partial index numbers of each of the variables of the three selected dimensions. As can be seen in Fig. 6.7, the synthesis map based on the proposed index shows that the quality of life of the Argentine population in 1960 was highly unequal throughout the territory.

The provinces of the Pampas and southern Patagonian regions tend to be in the range of the highest values of quality of life, between 7.43 and 9.64 points for the QLI. The best relative situation is registered in the Federal Capital (9.64 points), followed by the province of Buenos Aires (8.93 points) and the national territory

Fig. 6.4 People per house. Argentina, 1960. *Source* Personal elaboration

Fig. 6.5 Houses without a toilet. Argentina, 1960. *Source* Personal elaboration

Fig. 6.6 Houses with a refrigerator. Argentina, 1960. *Source* Personal elaboration

Fig. 6.7 Quality of life index. Argentina, 1960. *Source* Personal elaboration

of Tierra del Fuego (8.78 points). It should be remembered that the provincial scale implies a high degree of generalization, which is why it is probable that some parties or counties in Buenos Aires or other provinces may have QLI values greater than those of the city of Buenos Aires itself.

By contrast, the worst relative welfare situation is in the north. In particular, the province of Jujuy shows a very unsatisfactory performance in almost all indicators and only reaches a QLI of 0.92 points. Likewise, San Luis and some Patagonian provinces (Neuquén and Río Negro) present meager records for this index.

Consequently, the gap between best and worst situation is to be high. Thus, while the city of Buenos Aires (Federal Capital of Argentina) has 9.64 points, Jujuy has 0.92 points. Comparing the 22 provinces, the Federal Capital and the national territory of Tierra del Fuego, Antarctica and the South Atlantic Islands, the QLI values for 1960 are the following (Table 6.2).

6.4   Concluding Remarks

The fifth national census, in an approximate way, shows the quality of life of the population of the Argentine Republic from a summary index elaborated according to the available information and the characteristics of this historical moment. As the results obtained indicate, regional inequalities in 1960 in the country were very high. This is observed, particularly, among the smaller units (departments or counties), but unfortunately for this census, the data is only available at provincial or territorial scale.

However, the degree of inequality between the provinces can be seen when considering the difference between the best and worst relative situation (Capital Federal and Jujuy, respectively), which is 8.72 points. In addition, it should be noted that these contrasts at a spatial level—for the vast majority of social and economic indicators—are the same as those registered today: The Pampean region has higher values (together with southern Patagonia), and the provinces of the north have the lowest records. Finally, we also want to highlight the operational potential of geographic information systems, given that they enable to recover historical sources of considerable value, such as the population censuses of the mid-twentieth century. This radiography of the Argentine quality of life has also evidenced the importance of population censuses for the study of dimensions that go far beyond the demographic use.

Table 6.2 Quality of life index by province in Argentina in 1960

Administrative unit	Population	QLI
City of Buenos Aires	2,966,634	9.64
Buenos Aires	6,766,108	8.93
National territory of Tierra del Fuego	7,955	8.78
Santa Fe	1,884,918	8.29
Santa Cruz	52,908	8.15
Córdoba	1,753,840	7.64
La Pampa	158,746	7.42
Mendoza	824,036	6.52
Entre Ríos	805,357	6.45
Misiones	361,440	5.33
Chubut	142,412	5.26
San Juan	352,387	5.16
Formosa	178,526	4.78
La Rioja	128,220	4.51
San Luis	174,316	4.49
Río Negro	193,292	4.10
Santiago del Estero	476,503	3.93
Tucumán	773,972	3.81
Chaco	543,331	3.25
Corrientes	533,201	3.25
Catamarca	168,231	3.11
Neuquén	109,890	2.50
Salta	412,854	2.37
Jujuy	241,462	0.92 (gap: 8.72)

Source Personal elaboration

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Chapter 7
Quality of Life in Argentina in 1970

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Abstract Quality of life is an indicator that seeks to reflect the synthesis of a set of socioeconomic, demographic and environmental relevant situations. Consequently, the present work proposes an index of quality of life from different sources of data for the provinces of the Argentine Republic for the moment of the Sixth National Population Census carried out in the year 1970. In spite of the limitations that this census presents, the regional inequalities in Argentina were very high since the degree of inequality is important between the different jurisdictions. If the extreme values of the index are taken, the difference between the best and worst relative situation (City of Buenos Aires and Jujuy province, respectively) reaches 7.68 points.

Keywords Quality of life · Argentina · Census of 1970

7.1 Introduction

Quality of life is an indicator that synthesizes a set of relevant socioeconomic, demographic and environmental variables that illustrate the people's living conditions, thus serving for the formulation of public policies and for the understanding of social functioning. A more detailed analysis of the concept is found in Chap. 2 and in the previous one corresponding to the year 1960. Starting from this framework, this text proposes to analyze the quality of life of the population at the time of the Sixth National Census of the Argentine Republic, carried out in 1970, with the aim of proposing a general idea about the socio-spatial differences that characterized the country fifty years ago.

Unfortunately, the 1970 and 1960 censuses do not offer the same level of disaggregation or the same richness of variables as their predecessors. For this reason, it is not possible to find meaningful information on education, health or housing at

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the county level. At the provincial level, however, certain data is available. Thus, to reflect the educational situation, we use the work of Llomovate (1989) that provides the disaggregated illiteracy rate for that scale. To evaluate the residential situation, we only have the number of houses, which allows to calculate the average number of people per house. Finally, regarding health indicators, although the census does not include any relevant at the provincial level, the data of the Ministry of Health of the Nation (DEIS) provides the infant mortality rate. Consequently, these considerations constitute a severe limitation regarding the living conditions of the Argentine population in 1970.

Given that the census constitutes the basic source of this work, it is important to review some aspects of its implementation, a necessary task to properly contextualize its advantages and limitations. The Sixth Census of the Argentine Republic, carried out exclusively for the population and housing dimensions during the General Onganía dictatorship, was not processed until 1977, through a small sample of 2%. This reflects, on the one hand, the negative effect of the political processes of the decade, and, on the other, the social and economic decline reflected the statistical production. Likewise, it presented operational limitations, since the expensive—it should be noted—optical readers that were incorporated for the census processing did not work and the capture technology could not correctly interpret the handwriting of the Argentine teachers (census takers), confusing, for example the digits "1" and "7" (Giusti 2007).

In 1970, Argentina was made up of the Federal Capital, 22 provinces and one national territory (Tierra del Fuego), all of them divided into 487 counties or departments (Fig. 7.1).

7.2 Methodology

The variables that we review show a preliminary image on the living conditions of the Argentine population in 1970. The coincidences and differences can be explained by the nature of the variables, which tend to have costs or benefits for the population depending the province in which they live. Therefore, to try to provide a more comprehensive map of the population's quality of life, it is useful to propose an index summary based on the combination of the most significant variables.

Following these considerations, our proposal to estimate the quality of life of the Argentine population in 1970 includes the variables presented in Table 7.1:

As can be seen in the preceding table, the variables have different total amplitudes. Thus, some vary between 152.6 and 37.3 ‰, while others do between 20.9 and 2.6%.

The integration of these rates was carried out by transforming them into partial index numbers, in which the extreme values are transformed between 1 and 0 to reflect the best and worst relative situation, respectively. This was done according to the type of variable with the following procedure:

Fig. 7.1 Provinces of Argentina, 1970. *Source* Personal elaboration based on the regional classification of INDEC for the Fifth National Census of 1960

Table 7.1 Dimensions and variables of the quality of life index, Argentina, 1970

Dimension	Variables	Relative weight	Extreme values
Education	Illiteracy rate	1/3	(20.9–2.6)
Health	Infant mortality rate	1/3	(152.6–37.3)
Housing	Overcrowding (persons per house)	1/3	(4.82–3.22)

Source Personal elaboration

$$I = \frac{\text{Max} - a}{\text{Max} - \text{Min}}$$

where *a* is the cost variable.

Thus, for example, the Province of Buenos Aires had 5 illiterates for every 100 inhabitants, a figure that, taken to the index number, gives 0.87 (which places the Province of Buenos Aires closer to the best relative situation, whose value is 2.6, rather than to the worst relative situation, with 20.9% illiterate rate).

The transformation of the variables allows the elaboration of the quality of life index, the composition of which results from the weighted sum of the partial index numbers of each of the variables of the three selected dimensions.

7.3 Results

7.3.1 Education

The sixth national census lacks information regarding the education of the population. The work by Llomovate (1989) establishes that the average illiteracy for the population over 15 years of age is 7.4%. Comparing with previous censuses, we have that they were 8.5% in 1960 and 13.6% in 1947, although the comparison is not strict, since before 1970 the rate was calculated for those over 7 years of age.

Establishing a geographical division (Fig. 7.2), the best relative situation corresponds to the City of Buenos Aires (2.6% illiterate). Below 7.2% are also located the provinces of Buenos Aires, Córdoba and Santa Fe in the Pampas region and Santa Cruz and the National Territory of Tierra del Fuego in Patagonia.

In a second level, we have the three provinces of Cuyo (Mendoza, San Juan and San Luis), another one of the Pampas region (La Pampa) and two of the northern region (La Rioja and Catamarca). The worst relative situation is registered in Chaco, whose illiteracy amounts to no less than 20.9%. The situation in the Northeast and Santiago del Estero provinces is also very bad, since in all these spatial units, illiteracy exceeds 16%.

Fig. 7.2 Illiteracy rate, Argentina, 1970. *Source* Personal elaboration

7.3.2 Health

The data provided by the Ministry of Health (DEIS) informs on a highly relevant problem such as infant mortality. These statistics only began to be discriminated at the provincial level after 1944. First, we must point out that the infant mortality rate (IMR) is considerably high (48.1 ‰), even for the historical context of the time.

The worst relative situation is suffered in Jujuy province (152.6 ‰, surpassing its own record from 1960, probably due to the lower under-recording). Northern provinces (such as Salta and Chaco), as well as Patagonian (Río Negro, Neuquén) and San Juan in the Cuyo region also make up the group with the greatest deficiencies, since in all of them the IMR exceeds 83.6%. Other units such as Formosa or Santiago del Estero register remarkably low values (due to a strong statistical underreporting), but they should also integrate this group based on the information from previous and subsequent censuses. By contrast, the lowest rates were recorded in the province of La Pampa and Buenos Aires (37.3 and 42.4 ‰, respectively) (Fig. 7.3).

7.3.3 Housing

The Sixth National Census only provides information on the total number of rooms. It should be noted that the previous census (1960) also included information on public utilities and availability of certain electrical appliances (refrigerator, kitchen, washing machine, etc.). As an approximation variable to the degree of residential overcrowding, we can then calculate the number of people per room. We clarify once again that this is only an approximation, because the size and number of rooms in homes can differ significantly in various social and territorial contexts.

The lowest number of persons per house is registered in the City of Buenos Aires (3.22). Buenos Aires, Santa Fe and La Pampa (in the Pampean region) and Chubut and Santa Cruz (in Patagonia) also show a good relative situation, since they are located below 3.66 people per household (Fig. 7.4). On the contrary, overcrowding is of particular magnitude in various northern provinces (Tucumán, Salta, Formosa, Corrientes), in the Cuyo region (San Juan), and it is also beginning to appear as a problem in Patagonia (Neuquén). In all these units, there are more than 4.44 people per house. The most extreme case is that of Corrientes, since the average reaches 4.82 people per house.

This problem is almost exclusively associated with differential fertility aggravated, in turn, by the lack of health resources. At this time, the processes of mobility are included, which explain the increase in overcrowding in Neuquén.

Fig. 7.3 Infant mortality rate, Argentina, 1970. *Source* Personal elaboration

Fig. 7.4 Persons per house. Argentina, 1970. *Source* Personal elaboration

7.3.4   Quality of Life in Argentina in 1970

The synthesis map based on the proposed index (Fig. 7.5) shows that the quality of life of the Argentine population in 1970 was very unequal throughout the territory. The provinces of the Pampas region and southern Patagonia tend to be located in the first level of quality of life. The best relative situation is registered in the City of Buenos Aires (9.85), followed by Buenos Aires (8.79) and La Pampa (8.68). It should be remembered that the provincial scale implies a degree of generalization, for which it is probable that some counties of Buenos Aires or other provinces may have a QLI greater than those of the City of Buenos Aires itself.

The worst relative situation is registered in the north. Particularly in the province of Jujuy, which shows a very unsatisfactory performance in almost all the indicators, so it only reaches a QLI of 2.17. Only one Patagonian spatial unit (Neuquén) also shows low values.

The gap between the best and the worst situation is high. The ranking is headed, as we said, by the City of Buenos Aires (9.85 points), while the worst relative situation is present in Jujuy, which reaches only 2.17 points. It should be noted, however, that this same gap was even greater in 1960 (9.64 versus 0.92 points).

Comparing the 22 provinces, the City of Buenos Aires (CABA) and the National Territory of Tierra del Fuego, Antarctica and the South Atlantic Islands, the QLI values for 1970 are summarized in Table 7.2.

7.4   Concluding Remarks

Regional inequalities in Argentina were very high at the time of the Sixth National Population Census. They were probably more so among smaller units (counties), but the information available does not allow to go beyond the provincial/territorial scale. In addition, it is worth mentioning the operational limitations of this census and the limited scale of analysis, which does not allow a disaggregated study, a procedure that would provide much more relevant information. Despite this, an index summary was developed that shows the quality of life of the population in the national territory by considering variables related to education, health and housing. The most relevant result is the degree of inequity, which registers a very large gap between the worst and best situations. Considering the provinces, the difference between the best and the worst relative situation (City of Buenos Aires and Jujuy province, respectively) reaches 7.68 points. Broadly speaking, the central provinces and southern Patagonia have the best values, while the north of the country has the lowest values.

Fig. 7.5 Quality of life index, Argentina, 1970. *Source* Personal elaboration

Table 7.2 Quality of life index by province, Argentina, 1970

Jurisdiction	Population	QLI
CABA	2,972,453	9.85
Buenos Aires	8,774,529	8.79
La Pampa	172,029	8.68
Santa Cruz	84,457	8.16
Santa Fe	2,135,583	7.96
Córdoba	2,060. 065	7.68
Tierra del Fuego	15,658	7.60
Chubut	189,920	6.40
Entre Ríos	811,691	6.21
San Luis	183,460	6.20
Mendoza	973,075	5.63
Catamarca	172,323	5.56
La Rioja	136,237	5.09
Río Negro	262,622	4.79
Tucumán	765,962	4.60
San Juan	384,284	4.28
Misiones	443,020	4.07
Santiago del Estero	495,419	3.94
Formosa	234,075	3.42
Neuquén	154,570	3.11
Chaco	566,613	2.84
Corrientes	564,147	2.61
Salta	509,803	2.49
Jujuy	302,436	2.17

Source Personal elaboration

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Chapter 8
Quality of Life in Argentina in 1980

Guillermo Angel Velázquez and Juan Pablo Celemín

Abstract A quality of life index (QLI) is an indicator that seeks to show in summary form a set of socioeconomic, demographic, and environmental variables considered relevant at a given historical moment. In this context, the purpose of this work is to elaborate a QLI from different data sources for the provinces of the Argentine Republic at the time of the National Population Census carried out in 1980. The varied cartography obtained shows important territorial inequalities for the provinces of the country. On the one hand, the places with the best quality of life are the Autonomous City of Buenos Aires, some districts in the North of the Metropolitan Area and the province of Buenos Aires plus capitals of provinces located in relatively more developed regions (the Cuyo and Patagonia regions), other Pampean areas (Córdoba and Santa Fe provinces) and their adjacent areas. On the other hand, the lowest values are in structurally poor regions in the Northern portion of the country.

Keywords Quality of life · Argentina · 1980 census · Regional inequalities

8.1 Introduction

This research reflects the quality of life of the Argentine population in 1980 as the *result* of a process, but at the same time as a *generator* of new processes. Before starting to build and analyze this index, we need to define two concepts that, precisely during the eighties, will begin to differentiate: quality of life and poverty. And this because, although they point to closely related phenomena, they have significant differences between them.

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Table 8.1 Combinations of poverty according to income and UBN

Income	Satisfaction of basic needs	
	Without UBN	With UBN
Sufficient	Non-poor (1)	Only UBN (4)
Low	Vulnerable (2)	UBN and vulnerable (5)
Insufficient	Poor below the PL (3)	NBI and low LP (6)

Source Velázquez (2001)

Poverty is a measure of deprivation of those who do not reach an established minimum threshold. These thresholds can reflect conjunctural situations (poverty line—PL) or structural (index of population with unsatisfied basic needs—UBN), while the poverty line method consists of comparing the income per equivalent adult with the PL that arises from defining and valuing a basic basket of goods and services. Households with incomes less than the amount established by this "line" are called poor, as are the people who live in them. Those households in which the disposable income per equivalent adult exceeds it by 50% are vulnerable and those that are above this amount are "non-poor."

Lastly, the UBN method consists of comparing the situation of each household with a group of specific needs: (1) overcrowding, (2) inadequate housing, (3) sanitary conditions, (4) school attendance and (5) subsistence capacity. For each of them, rules are established that define the minimum below where the specific need is considered unsatisfied. The households with at least one unsatisfied need are considered poor, as well as the population that resides in them. LP and NBI can be combined to reflect six possible situations (Table 8.1).

Thus, group 1 includes those who satisfy their basic needs and have sufficient income, while group six includes those who do not satisfy their basic needs and whose income does not allow them to access the minimum consumption (basic basket of goods and services). The rest of the groups (2–5) reflect various mixed situation between LP and NBI.

Quality of life, on the other hand, is a measure of achievement with respect to a level established as optimal, taking into account socioeconomic and environmental dimensions that depend on the scale of values prevailing in society and that vary according to expectations of historical progress. More on, this subject can be found in Chap. 2.

We can say then that if poverty is measured with respect to a "floor," the quality of life is measured with respect to a "roof." While the poverty floor is relatively fixed, since it points to the satisfaction of basic needs, the quality of life roof is more variable—and ascending—as the scale of values and especially expectations change. Nor should we confuse quality of life with standard of living, since the latter expression usually refers to the level of consumption, that is, the acquisition of goods and services—in many luxury cases—and the increase in consumption does not necessarily imply better quality of life.

It is important to insist with the criterion of expectations for the definition of quality of life levels, since not always—or rather almost never in today's Argentina—the

passage of time implies objective improvements. Rather, it shows a greater degree of contradiction between what is expected (or desired) and what is achieved (or what the system allows to achieve), a mismatch that increases social fragmentation. Therefore, there is the problem of *subjectivity* and *objectivity*.

Given that the conceptualization of quality of life is both social and individual, factors such as age, gender, level of education, socio-occupational condition and location, among others, will significantly influence the conceptual scheme of each person. The concept of quality of life that, from a certain point of view, we can assimilate to "daily life." It is based on each of the inhabitant's conceptions, a subjective quality of life. Each assessment will focus, to a large extent, on their *own* experiences, the environment and the culture of each person. This kind of self-diagnosis can take part in "objective" elements such as provision of services, infrastructure, landscape, etc. However, factors such as memories, associations, affective ties, ideologies and beliefs, among others, will always be present in the perceptions—sometimes with greater weight.

We consider that the subjective dimension should be *compared*, but not *assimilated* with the objective; that is, subjective elements should not be included in a quality of life summary index. In studies carried out for the city of Tandil (Velázquez and García 1999), we were able to verify that many subjects with an "optimistic" perspective of their own reality quickly reconsider their assessment when seeing a map that shows them living in an area that is far below of the city average for a quality-of-life index. They immediately wonder—mixing indignation and amazement—why is my neighborhood so below average? Does "reality" hurt, deny, annoy…? In other words, the gaps between "measurement" and "perception" of quality of life can reflect situations of similarity and contradiction. In turn, the latter may be the result of poor measuring instruments or the subjective elaboration (collective imagination) of social groups that, in the face of harsh reality, "build" defense mechanisms that allow them to escape, at least partly, of that adversity.

Quality of life can also be distinguished between *public* and *private.* In general, the first refers to macro-aspects, linked to environmental and accessibility issues, while the second depends on micro-indicators, associated with the level of income, the composition of the family group or the level of education.

For an analysis with a detailed scale (e.g., a city), it is possible to consider the weight of both dimensions (public and private) for the determination of quality of life levels by sectors and social groups. Thus, in a city, low-income sectors in general will be affected *privately* because their means do not allow them to have adequate housing, reach a certain level of education, or feed themselves adequately, but, additionally, low-income sectors located in the urban periphery are disadvantaged *publicly* because their accessibility to certain goods or services is less than that of those who reside in the city center. As it is known, the opportunity to use goods and services is the inverse of their accessibility.

In the case of studies like the present one, in which the scale of analysis is more global (all the counties of the provinces of Argentina), we should privilege the weight of the private component, since it is more feasible to be captured with the available information.

8.2 Methodology

The sources for measuring the differences in the quality of life of the Argentine population in the eighties are not numerous. The most important is the National Census carried out in October 1980 by the INDEC and the Vital Statistics of the Ministry of Health and Social Action of the Nation, since both cover the entire national territory, although with an availability of information inverse to that of scale of analysis. This means that many of the existing variables for studying the country as a whole are not for the provincial scale (24 units), much less for the counties level (more than 500 units) or for more detailed scales such as fraction or census radius. This sort of "paradox of geographic information" makes *the most interesting data available only for uninteresting scales,* and, as the level of spatial analysis increases, the data "evaporates." Although in some cases it is possible to obtain details, the reliability of these is also variable. This means that in an analysis such as the present one, a compromise must be sought between the scale of analysis, the availability of information and the existing resources. The intersection of the three elements has led us to choose the county scale, understanding that it constitutes a step forward with respect to the provincial analysis, but that it is still clearly insufficient to capture many social–regional realities.

There is an additional problem for measuring the quality of life differentials of the Argentine population: the use of "artificial" territorial units such as counties, which usually do not necessarily reflect the social–territorial reality. This phenomenon, typical of geography and geographic information systems, is known as the "modifiable spatial unit problem" (MAUP). In other words, the division of the territory and the resulting groupings are not neutral. This means that inequalities can be covered up, but cannot be "created."

In summary, the formulation of an index to measure the quality of life of the population is a question that has not been resolved, since it depends on numerous factors such as: historical processes, society's scale of values, expectations, individual and collective experiences, private issues (income, level of education) and public issues (accessibility, environmental issues), scale of analysis and its adjustment with the available information.

For our study of the quality of life of the Argentine population in the eighties we have considered socioeconomic dimensions (education, health and housing). These dimensions will be composed of variables with different weights based on their explanatory value and level of reliability. Although we cannot reflect it in a global index disaggregated by political–administrative spatial units (counties), we must point out that the different variables have different weight according to the social groups that we consider. Probably in the low-income strata, the "basic" issues are given more weight, while in the high-income strata the weight of "superfluous" factors increases.

Finally, there are dimensions that, although they are being increasingly valued by Argentine society (such as the environment or security), we have not considered them yet because the existing data for this historical moment has severe deficiencies,

particularly due to under-registration. Also, in the case of other aspects of undoubted weight such as food or mental health, the sources available for Argentina in the eighties are still scattered and precarious.

Based on census data, other statistical sources and previous research works (Velázquez 2001, 2008, 2016a, b), we have created a map that covers all counties of the Argentine Republic in 1980, whose main purpose is to determine the differentiation levels of the population's living conditions.

As we have already stated, the adjusted definition of an "objective" quality of life index is not a simple or universally valid task. Based on our own experiences and widely discussed work in specific areas, mainly within the framework of the Latin American Network for Urban Quality of Life (Torrado 1992; Rofman 1988; Reboratti et al. 1982; Olave et al. 1995; Marinelli et al. 1999; Celemín et al. 2015; Camargo Mora 1996; Velázquez and García 1999, 1996; Velázquez et al. 2014), we have used the socioeconomic dimensions of education, health and housing to determine levels of quality of life for the Argentine population. Other methodological works (Marinelli et al. 1999; Torcida et al. 1999), using strictly mathematical selection procedure, had very similar results to those obtained for the Tandil case (Velázquez and García 1996). Below we will explain the indicators selected for each of the dimensions.

8.2.1   Education Dimension

- Percentage of population that no longer attends and that reached incomplete primary level (elaborated from Table 10 of the 1980 census).
- Percentage of the population that no longer attends and that reached a complete university or tertiary level of education (elaborated from Table 10 of the 1980 census).

The importance of both variables lies in their power to discriminate the extremes of the educational pyramid. Although the primary cycle is formally compulsory in Argentina, its non-compliance shows various situations of adversity: early insertion in the labor market, little family cultural heritage, etc., all of which tend to feed back a vicious circle that diminishes the possibilities of development and social promotion of vast sectors of the population. On the other hand, those who complete their university studies have been able to delay their entry age to the labor market and are more represented among the middle and upper social sectors, mainly urban, since accessibility is a decisive factor for education opportunities. Once achieved, and despite the process of devaluation of the "educational credentials," the university title will be a very important element for the expansion of "horizons," for the increase of opportunities and, especially, for the insertion in the labor market, a decisive factor in the genesis of the social structure and, therefore, in living conditions.

8.2.2   Health Dimension

- Infant mortality rate (IMR) according to the mother's place of residence for the years 1980, 1981 and 1982 (Ministry of Health, Directorate of Statistics. For cases in which it was not possible to obtain reliable departmental information, we have chosen to use provincial data).

The IMR constitutes one of the fundamental indicators of the level of health of a population, since it is affected by a series of variables that have a strong social determination. Beyond the action of the health system, the socioeconomic factors that most affect IMR are the mother's educational level and the father's occupational stratum. In other words, in an adverse socioeconomic context, the multiplication of health establishments or human resources can reduce the IMR, but only to a certain extent, since the social structure will also determine the most vulnerable sectors.

The availability and reliability of information is inconsistent. For 1980, 1981 and 1982 reliable departmental information is only available for the Province of Buenos Aires, and, according to our own experience, even the most "reliable" data has important errors and omissions.

8.2.3   Housing Dimension

- Percentage of substandard housing—renting rooms, precarious, ranch or other (prepared from Table 25 of the 1980 census).
- Percentage of overcrowding—people per occupied house—(elaborated from Table 23 of the 1980 census).

The proportion of substandard housing (rental rooms, precarious, ranches or others) reflects the magnitude of the residential deficit suffered by an important part of the Argentine population. This proportion is very diverse throughout the territory and differs significantly between social contexts. Unfortunately, the information refers to the number of houses and not the number of residents in this type of dwelling. It should be noted that the affected population is larger due to the higher relative fertility of the sub-alternized social groups.

The ratio of persons per house is an approximation of the degree of overcrowding. The 1980 census only considers this variable without taking into account the size of the house or the number of rooms. This constitutes a strong limitation that causes distortions, mainly in "micro"-level comparisons. Thus, for example, in 1980 the southern area of the City of Buenos Aires (La Boca, San Telmo, Barracas), which was more popular, had a low average number of people per house, while the northern area (Palermo, Recoleta, Belgrano), better positioned economically, was listed as "more crowded," with a high number of people per house. As we will see, this survey problem from the 1980 census is not as strong when considering larger units of spatial analysis.

Table 8.2 Dimensions and variables for the quality of life index. Argentina, 1980

Dimension	Variable	Partial weight	Total weight
Health	Infant mortality rate	1/3	1/3
Housing	Deficient housing	1/6	1/3
	Persons per house (overcrowding)	1/6	
Education	Less than primary education	1/6	1/3
	University education	1/6	

Source Personal elaboration

After this brief description of the relative situation of each variable, we will explain how we will use this information to construct an index that covers the aspects that we have considered separately.

The first step in the elaboration of the quality of life index is the transformation of the rates into partial index numbers, which was carried out under the following procedure, according to the type of variable:

Variables whose increase implies a worse relative situation (population with level from less to primary education, average number of people per household, proportion of substandard housing and IMR).

$$I = \frac{\text{Max} - a}{\text{Max} - \text{Min}}$$

where a: cost variable.

Variables whose increase implies a better relative situation (population with a university education level or higher).

$$I = 1 - \frac{\text{Max} - b}{\text{Max} - \text{Min}}$$

where b: benefit variable.

Once the variables have been transformed, it is possible to the quality of life index.

The relative weight of each component in the proposed index is as follows (Table 8.2).

8.3   Results

8.3.1   Health

The IMR is much higher in the North as shown in Fig. 8.1, with extreme values in the cases of the provinces of Salta and Chaco (49.9 and 49.5 per thousand for the

three-year period, respectively). These values would be even higher if we consider some counties in particular. Jurisdictions such as Córdoba, Mendoza or Neuquén appear with low rates, but surely, they hide internal differences. This can be clearly seen in the Province of Buenos Aires, which exhibits a wide spectrum of values with lower rates in the first ring of the Buenos Aires suburbs while other parts of the province resemble the most neglected jurisdictions of the country.

8.3.2 Housing

The average number of people per house (Fig. 8.2) shows high rates in the north of the country, as well as in northern Patagonia. In the case of the first two regions, this is associated with the high fertility of their population, while for Patagonia, it is more linked to their positive migratory balances. The situation in Greater Buenos Aires shows a certain degree of overcrowding in some suburbs.

The proportion of substandard housing is very high in the north of Argentina (Fig. 8.3). This situation also shows up with high values in the marginal areas of the other regions (Patagonian plateau, western Pampas and areas far from the main Cuyo region oases). Various counties in the suburbs of Buenos Aires do not escape this problem either.

8.3.3 Education

The proportion of the population that did not finish the primary level is very high: It exceeds 80% in several counties (Fig. 8.4). As a persistently repeating image, the North also appears to be in a very unfavorable situation, particularly in those areas outside the provincial capitals and intermediate cities. The position of the Patagonian plateau and areas located outside the main urban centers is also very bad. Within the Pampean and Cuyo regions, the difference between the central areas and their respective peripheries is also clear. The only region with low levels is Greater Buenos Aires, especially the first and second ring around the core of the city, favored by the accessibility to the educational establishments. It should be noted that the best-positioned counties have, in some cases, a lower proportion of the population with a low level of education than they will reach during the 1990s.

Regarding the level of higher education (both tertiary and university), it is relatively low (Fig. 8.5). This population group exhibits its lowest levels in the North, especially outside the main urban areas. The proportion is also very low in the Patagonian plateau, western Pampas and areas far from the main oases of the Cuyo region.

Fig. 8.1 Infant mortality rate. Argentina, 1980–82. *Source* Personal elaboration from DEIS

Fig. 8.2 Persons per house. Argentina, 1980. *Source* Personal elaboration from the 1980 Census

Fig. 8.3 Substandard houses. Argentina, 1980. *Source* Personal elaboration from the 1980 National Census

Fig. 8.4 Population without primary education. Argentina, 1980. *Source* Personal elaboration from the 1980 National Census

Fig. 8.5 Population with complete university/tertiary education. Argentina, 1980. *Source* Personal elaboration from the 1980 National Census

8.3.4   Quality of Life in 1980

The map that we present below shows the results of our quality of life index for Argentina in 1980 (Fig. 8.6).

The differences between the northern regions, historically the most neglected areas of the country, are evident with respect to the Pampas region and Greater Buenos Aires. The Cuyo and Patagonian regions are, on the other hand, at an intermediate level. In all cases, however, there are strong internal differences.

The best counties for the quality of life index for that date were concentrated in Greater Buenos Aires: the Autonomous City of Buenos Aires, Vicente López, San Isidro, Tres de Febrero, to which four more counties from the Province were added. Outside the Pampean region, only the capital county in Mendoza (Cuyo) and Ushuaia in Tierra del Fuego (Patagonia) are in the best situation. The worst were the most marginal of the North, including the Puna in Salta (La Poma), Jujuy (Susques and Santa Catalina), the west of Formosa (Ramón Lista and Bermejo) and its extension in Salta (Rivadavia), in addition to two from the province of Chaco (General Guemes and Almirante Brown).

When adding progressively the rest of the spatial units, we observe that including 6% of the cases, other counties in Buenos Aires are among the best cases and Tierra del Fuego is completed with the inclusion of Río Grande. Among the worst cases appears in a county in Corrientes province (Concepción).

Grouping 8%, Buenos Aires continues to add counties among the best situations and two provincial capitals also show up: Córdoba and San Juan. The town of Godoy Cruz is also included as part of Greater Mendoza. The group of the worst continues in the North, but incorporating more provinces: Santiago del Estero, Catamarca and Tucumán.

Gathering 10%, we have Buenos Aires adding more counties among the best situations, while Punilla from the province of Córdoba is included. Those with a low quality of life already include all the provinces of the North of the country, except Misiones, whose counties still do not appear in either of the two groups.

Adding to 12% of the counties, we have new counties in Greater Buenos Aires, among the best cases (GBA): San Martín and Morón and the rest of Buenos Aires. In the North, the "spreading" of bad performing spatial units continues to increase.

Including 14%, the best cases continue to increase in Buenos Aires and the worst cases continue their trend in the North, but an extra-regional case is added: Ñorquín in the interior of Neuquén province.

Up to 18% of cases, the tendency indicated so far continues: better situation in some counties of Greater Buenos Aires and Buenos Aires city, some provincial capitals (Mendoza, Córdoba) and worse situations in the interior of the North.

Integrating 20% of the counties appears Cafayate (Salta), the first of the North located among the best. Among the best cases are Rosario (Santa Fe), Corpen Aike (Santa Cruz) and Maracó and Capital (La Pampa). Among the worst, there is another county in Neuquén (Catán Lil) and then another county in Misiones (Belgrano).

Fig. 8.6 Quality of life index. Argentina, 1980. *Source* Personal elaboration based on the 1980 National Census

Gathering 38% of the units, the tendency continues, but appear among the worst Chicalcó (La Pampa), Gastre and Languiñeo (Chubut) and 9 de Julio (Río Negro), the latter in the arid Patagonian plateau. By integrating 46%, new counties of Santa Cruz (Lago Argentino and Güer Aike) show up among the best and the first badly positioned county appears in the Pampean region and in Buenos Aires (Carmen de Areco).

Adding to 50% appears, among the best cases, the capital county (San Luis). Among the best, San Rafael county appears in Mendoza province, and, later, the counties of Escalante and Biedma (Chubut province). The North meanwhile continues to expand the area and population affected by poor living conditions. Grouping 60% of the cases, another county of the Northeast shows up among the "best": the Capital in Santiago del Estero. Also, here two counties of Entre Ríos (Uruguay and Paraná) are incorporated.

It is necessary to gather 70% of the cases so that the county of Pilar, of the Great Buenos Aires, shows up among the badly located. Another exception is also incorporated, as it is located in the Northwest region: Yerba Buena (close to the capital of Tucumán).

Just including 84% of the cases, the capital of La Rioja will appear among the best, while it will be necessary to wait until 94% for a case of the Northeastern region to show up among the best: the capital county of the province of Misiones.

Finally, dividing the country into two halves according to their quality of life in 1980 we have that of the Argentines who lived in better condition, were concentrated in the City of Buenos Aires, some districts of the northern Metropolitan Area and Buenos Aires, and progressively incorporating provincial capitals located in relatively more developed regions (Cuyo and Patagonia), other Pampas areas (Córdoba, Santa Fe), and their adjacent areas and, finally, enclaves (provincial capitals or particularly dynamic sites) situated in structurally poor region located in the North of Argentina.

8.4   Concluding Remarks

Quality of life is an object of analysis of increasing interest to different disciplines, each one from its own scientific position. However, there is a lack of its territorial study and, even more so, from a recent historical perspective. That is why this study proposes to know the living conditions of the population at the time of the 1980 census. The importance of this type of study lies in the fact that it allows a temporal analysis to be carried out and to determine whether the quality of life has improved or worsened in a specific period.

For 1980, we observe that the quality of life index shows wide territorial contrasts in the counties of Argentina. The width of the gap is very large (1.74 the lowest value and 9.06 the highest register). Broadly speaking, we can say that the areas most lagged with respect to the index correspond to the north of the country, while the counties with the best values are found in the provinces of the Pampean region

and southern Patagonia. It is also to highlight the existence of "enclaves" with a good quality of life in historically relegated regions, generally corresponding to the provincial capitals.

Finally, the importance of geographic information systems for this type of analysis is highlighted, since with the elaboration of various maps permit us to analyze the spatial distribution of the variables of the index on a scale with a high level of territorial disaggregation. Thus, enclaves with differential performance in relation to neighboring spatial units can be found, supporting the elaboration of new hypotheses and lines of research.

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Chapter 9
Quality of Life and Fragmentation in the Argentina of the Nineties

Guillermo Angel Velázquez and Juan Pablo Celemín

Abstract The Argentina of the nineties is, to a great extent, the product of the peculiar form of accommodation of the local hegemonic groups that, through the different stages of economic and social history, have managed to subalternize vast "popular" sectors based on development models, generally led *from* central countries. The greater or lesser functionality of the "comparative advantages" and the degree of autarchy or openness of the national system with respect to the centers of power have precisely determined the definition of these stages. In this particular framework and considering a weighted combination of socioeconomic and environmental indicators, we have tried to approximate the magnitude and incidence of some differentiating factors in the living conditions of the Argentine population. The regional analysis highlights the marked difference between the opportunities offered by each territorial unit. Thus, the northern regions, historically labor-providing areas, are the epicenter of adversity, while the remaining Argentine regions appear in more favorable position. From the methodological aspect, the principal novelty of the quality of life study in 1991 is the incorporation for the first time of an environmental dimension, which will continue to be used in future indices.

Keywords Quality of life index · Argentina · Socioeconomic dimension · Environmental dimension · 1991

9.1 Introduction

We consider the Argentine Republic an economic-social formation at the national level, with a predominance of the capitalist mode of production. Such training appears

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backward, peripheral and, above all, contradictory in terms of its level of economic and social development with respect to the international context. It is also politically, economically and socially dependent, understanding dependency as an integration strongly subordinated to the euphemistically called model of "interdependence" (and more recently of "globalization") in which one of the parties is subordinate (or globalized).

The Argentina of the nineties is, to a great extent, the product of the peculiar form of accommodation of the local hegemonic groups that, through the different stages of economic and social history, have managed to subalternize vast "popular" sectors based on development models, generally led *from* central countries. The greater or lesser functionality of the "comparative advantages" and the degree of autarchy or openness of the national system with respect to the centers of power have precisely determined the definition of these stages.

The demographic and economic evolutions of Argentina, together with the phenomena of geographic distribution of the population and economic activities, are, to a large extent, a reflection of what was indicated in the preceding paragraph. The same occurs with the transfer of income between the different sectors of economic activity, the generation of employment and the socio-territorial appropriation of the resources generated from these activities. All this determines strong differences in the quality of life of the population, which constitute, in turn, another feedback element of pre-existing inequalities, leading to a true process of fragmentation.

In other words, the quality of life is the *result* of a process, but at the same time, it is the *generator* of new processes. Thus, around 40% of the Argentine population does not enjoy minimum living conditions, but if we consider the range of young ages (under twenty years old), this percentage increases to almost half of the respective group, due to differences in fertility among various social groups.

The formulation of an index to measure the quality of life of the population is a question that has not been resolved, since it depends on numerous factors such as: historical processes, society's scale of values, expectations, experiences individual and collective dimensions, private (income, level of education) and public issues (accessibility, environmental issues), scale of analysis and its adjustment with the available information. To deepen the concept of quality of life and its objective and subjective aspects, we recommend seeing Chaps. 2 and 7. The main novelty of this chapter in the study of quality of life is the importance of incorporating an environmental dimension.

9.2 Methodology

For our analysis, we have considered socioeconomic dimensions (education, health and housing) and physical-environmental dimensions (risk of flooding, seismicity and volcanism, frequency of tornadoes and soil erosion). These dimensions will be composed by variables with different weights based on their explanatory value and their level of reliability. Although we cannot reflect it in a global index disaggregated

by political-administrative spatial units (counties), we must point out that the different variables have different weights according to the social groups that we consider. Probably, in the low-income strata, the "basic" issues are weighted more, while in the high-income strata the weight of "superfluous" factors increases.

Finally, there are dimensions that, although they are increasingly being valued by Argentine society (such as security), we have not considered them yet because the information available for this historical moment suffers from severe deficiencies, particularly due to underreporting, and could show results far from reality. Also, in the case of other aspects of undoubted weight such as diet, mental health or perception, the sources available for Argentina in the nineties are still scattered and precarious to try to incorporate them into a national scale.

From census information, other statistical sources and previous research works, we have created a map that covers all the counties of the Argentine Republic in the last two census dates, 1980 and 1991, whose main purpose is to differentiate levels of the population's living conditions.

As we have already stated, the adjusted definition of an "objective" Quality of Life Index is not a simple or universally valid task. Based on our own experiences and on previous research works widely discussed in specific areas, mainly within the framework of the Latin American Network for Urban Quality of Life, we have used, on the one hand, the socioeconomic dimensions of education, health, housing and, on the other, the environmental conditions and the attraction of the landscape to determine levels of quality of life of the Argentine population.

In other methodological works (Marinelli et al. 1999; Torcida et al. 1999), starting from all the available census variables and using a strictly mathematical selection procedure, results are very similar to those obtained for the Tandil case (Velázquez and García 1996). Next, we will explain the indicators selected for each of these dimensions and for each case.

9.2.1   Education Dimension

- Percentage of population that no longer attends an educational institution and with a level of education attained below complete primary (prepared from table p13-d of the 1991 census).
- Percentage of the population that no longer attends an educational institution and with a full university level of education (prepared from table p13-d of the 1991 census).

The importance of both variables lies in their power to discriminate the extremes of the educational pyramid. Although the primary cycle is formally compulsory in Argentina, its non-compliance shows various situations of adversity: early insertion in the labor market, little family cultural heritage, etc., all of which tend to feed back a vicious circle that diminishes the possibilities of development and social promotion of vast sectors of the population. On the other hand, those who complete

their university studies have been able to delay their entry age to the labor market and are more represented among the middle and upper social sectors, mainly urban, since accessibility is a decisive factor for education opportunities. Once achieved, and despite the process of devaluation of the "educational credentials," the university title will be a very important element for the expansion of "horizons," for the increase of opportunities and, especially, for the insertion in the labor market, a decisive factor in the genesis of the social structure and, therefore, in living conditions.

9.2.2 Health Dimension

- Infant mortality rate according to place of residence of the mother for the years 1994, 1995 and 1996. (Ministry of Health, Directorate of Statistics). These are the closest years available to the beginning of the 1990s at the county level and the average of the three years is taken to reduce the random oscillations inherent to this rate.
- Percentage of the population without health coverage or mutual insurance (prepared from Table 7d of the 1991 census).

The IMR constitutes one of the fundamental indicators to establish the level of health of a population, since it is affected by a series of factors that have a strong social determination. Beyond the action of the health system, the socioeconomic factors that most affect IMR are the mother's educational level and the father's occupational stratum. In other words, in an adverse socioeconomic context, the multiplication of health establishments or human resources can reduce the IMR, but only to a certain extent, since the social structure will also determine the most vulnerable sectors.

The availability and reliability of the information is variable. Thus, the county rates for the province of Santiago del Estero for 1994 or those for Buenos Aires province for 1996 are not available, and underreporting and random oscillations of this rate are evident in some counties. The information on health coverage complements that of IMR, indirectly reflecting the proportion of the population "contained" in the health system and in the economic structure.

9.2.3 Housing Dimension

- Percentage of population residing in dwellings that lack a toilet for exclusive use. (Prepared from Table v6-d of the 1991 census).
- Percentage of overcrowded homes, considering those that exceed two people per room. (Prepared from Table v8-d of the 1991 census).

The consideration of such a basic element as the toilet highlights the lack of equipment in the homes. This element depends on the individual situation of the

family and the home and, unlike others such as water provision, is independent of its location with respect to an established water or sewage network. This consideration of a specific element (and more reliable in its measurement) was not possible with the information from the 1980 census.

The ratio of people per room highlights a quantitative aspect: the deficiency of the dwelling in relation to the number of inhabitants. Although the census criteria in 1991 established a threshold of three people per room to determine overcrowding, we have chosen to lower this threshold to two people per room. Thus, for the census, a married couple with four children residing in a two-bedroom house would not be overcrowded, while, according to the criteria we have established, it would be.

9.3 Environmental Problems and Attraction of the Landscape

Argentina is a country characterized by great diversity of environments and singular richness in natural resources. Both may act to the detriment or benefit of the population's quality of life.

Within these environments, there are problems associated with natural dynamics that negatively affect the population, which manifest as natural disasters and disturbances that affect the society that lives in that environment:

- Population residing in areas with flood problems (Made from maps of flood risk areas, cited by Di Pace 1992).
- Population residing in areas with different coefficients and scales of seismicity (Prepared from a seismicity map in Argentina from the *Total Atlas of the Argentine Republic*, 1982).
- Resident population in areas affected by tornadoes (Made from maps of natural hazards in Argentina, edited in 1996 by Geosistemas).
- Resident population in areas with soil deterioration (Prepared from the soil erosion map of the FECIC, 1988).

Flooding is a serious problem in many regions of Argentina. The mainly affected areas are close to rivers, low watersheds and depressions crossed by rivers. Flood and non-flood units were digitized in one layer. Each with 1 and 0. Then the population was calculated for each county affected by an operation of *layers* (layering).

Seismicity and the associated effects of volcanism occur almost exclusively in the Andes and foothills of western Argentina. Areas can be differentiated according to their frequency and intensity. These types of units have been vectorized in a layer, attending to those characteristics that were handled as an attribute. Then the degree of incidence of such units of the seismic layer on the population of the affected areas of each county was calculated.

The areas with the highest frequency of tornadoes appear mainly in the east of Córdoba and the northwest of Buenos Aires provinces. For this work, the tornado

zones were digitized, and they were characterized with gravity attributes according to their frequency and intensity. Finally, the degree of incidence of said layer units was calculated with respect to the population of the affected areas.

The deterioration of the soils is a very old problem and studied from many approaches. From the different source maps, the most serious problems have been vectorized for different reasons: water erosion, wind erosion and salinization. Different gravity values were assigned to these three types of units, with the strongest values corresponding to water and wind erosion (4 and 3, respectively), assigning less weight to soils lost by salinization. The layers of these units and that of the counties were superimposed to calculate the incidence of these deteriorations in the population.

The elements of the landscape also behave as attractive factors that improve the quality of life of the population; hence, in the assessment of quality of life, we have considered it important to try to address in some way the attributes of the landscape in each unit of analysis. Given the difficulty of recreating a methodology for analyzing the landscape as a receptor attribute of tourism and place of residence, we have considered the existence of summer and weekend homes (prepared from tables v13-d of the 1991 Census, by provinces and counties). This variable is taken as an indirect measure of the degree of attraction exerted by the counties located in a given landscape. Although it is difficult to generalize situations, a high proportion of this type of housing implies the existence of positive elements with regard to the morphology of the landscape, a benign climate and other resources that make up the tourist potential.

After this quick description of the relative situation of each variable, we will explain how we will use this information to construct an index that covers the aspects that we have considered separately.

The first step in the elaboration of the Quality of Life Index is the transformation of the rates into partial index numbers, which was carried out according to the following procedure, according to the type of variable:

Variables whose increase implies a worse relative situation (environmental problems, population with less than primary education level, population residing in crowded homes, population without social work, population without exclusive use toilet and deficient housing and IMR).

$$I = \frac{\text{Max} - a}{\text{Max} - \text{Min}}$$

where a: cost variable.

Variables whose increase implies a better relative situation (population with a university education level and summer or weekend houses).

$$I = 1 - \frac{\text{Max} - b}{\text{Max} - \text{Min}}$$

Table 9.1 Dimensions and variables for the Quality of Life Index

Dimension	Variable	Partial weight	Total weight
Health	Population without health coverage	15	35
	Infant mortality rate	20	
Housing	Houses without toilet	20	30
	Overcrowding	10	
Environment	Summer homes	5	20
	Environmental problems	15	
Education	Less than primary education	10	15
	University education	5	

Argentina, 1991

where b: benefit variable.

Once the variables have been transformed, it is possible to create the Quality of Life Index (Table 9.1). The most important component of the index is the health dimension, followed by housing, environmental and educational variables. The relative weight of each component in the index proposed for the 1990s is as follows:

Weighing the relative weight of each variable, we have determined a Quality of Life Index whose theoretical value can reach between 0 and 10 to reflect the worst and best situation, respectively.

9.4 Results

9.4.1 Health

There are high rates for the IMR (more than 25 per thousand) in large sectors of the north of the country. Also, to a lesser extent, in the second and third crown of the Buenos Aires suburbs and in the Patagonian plateau (Fig. 9.1). The population without social health coverage (Fig. 9.2) also reaches high percentages in the north (more than 56%), showing more satisfactory values in the Pampean region and some cities in the interior. Although one rate reflects health results (infant mortality) and the other a potential to prevent or face contingencies, both tend to coincide closely, identifying vulnerable (and affected) sectors with regard to their health.

9.4.2 Housing

The proportion of overcrowded households in the north of the country and Patagonia, especially in the north, includes more than half of the households. In the case, this

Fig. 9.1 Infant mortality rate. Argentina, 1991. *Source* Personal elaboration based on the 1991 National Census

Fig. 9.2 Population without health coverage. *Source* Personal elaboration based on the 1991 National Census

is related to their high fertility, while in the case of Patagonia, it is the product of the strong migratory process, not accompanied at the same rate by the construction and expansion of houses. The situation in Greater Buenos Aires shows overcrowding in the second crown of suburbs. Within the City of Buenos Aires and in most of the Pampas region, overcrowding levels are low (Fig. 9.3).

The lack of a toilet is also very high in the north of the country, including more than 60% of the dwellings. The same occurs in the marginal areas of the other regions (Patagonian plateau, western Pampas and areas far from the main Cuyo region oases). In general, there is a clear correspondence between the most overcrowded areas and those that lack a toilet (Fig. 9.4).

9.4.3   Environmental Problems

Argentina has a diverse and complex environmental problem, so we will only try a very limited and preliminary approximation that, in general terms, we will consider representative. Considering the combination of risk of flooding, seismicity, tornadoes and loss of soil, we see that the pampa region, more specifically the depressed pampa and the Paraná River valley, appear to have a high level of environmental problems. There are also problems in some mountain ranges in the Cuyo region, mainly affected by seismicity, which takes place mainly in the provinces of San Juan and Mendoza.

For the 1990s, the presence of summer or weekend houses is important throughout the Atlantic coast of Buenos Aires and in the south of Entre Ríos provinces, since they are areas located near the main emission centers. The same thing happens in counties near provincial capitals that also have tourist attractions. It is worth highlighting the cases of the Iguazú Falls and the southern lakes in the Patagonia (Fig. 9.5).

9.4.4   Education

Regarding the population that did not complete basic studies, once again the northern regions appear in a very unfavorable situation, especially in those areas located outside the provincial capitals and intermediate cities. The position of the Patagonian plateau and the areas located outside the main urban centers is also very bad. Within the Pampeana and Cuyo regions, the difference between the central areas and their respective peripheries is also clear. The only region with low levels is Greater Buenos Aires, probably because accessibility contributes to complying, at least, with basic and compulsory education (Fig. 9.6).

The population with a university education level reaches its lowest levels in the North of the country, especially outside the main urban areas where the universities are located (Fig. 9.7). But this phenomenon is repeated in all regions, even in Greater

Fig. 9.3 Overcrowded households (more than two people per room). Argentina, 1991. *Source* Personal elaboration based on the 1991 National Census

Fig. 9.4 Population in houses without a toilet. Argentina, 1991. *Source* Personal elaboration based on the 1991 National Census

Fig. 9.5 Summer houses / end of week. Argentina, 1991. *Source* Personal elaboration based on the 1991 National Census

Fig. 9.6 Population without complete primary level. Argentina, 1991. *Source* Personal elaboration based on the 1991 National Census

Buenos Aires, where the difference in the educational level achieved by the population of Buenos Aires and the districts of the first ring of the suburbs contrasts sharply with those of the second crown.

9.4.5 Quality of Life in 1991

The following map shows our Quality of Life Index for the 1990s (Fig. 9.8).

The differences between the northern regions are evident, historically the most neglected areas of the country, with respect to the Pampeana region and Greater Buenos Aires, with the Cuyo and Patagonian regions at an intermediate level. In all cases, however, there are strong internal differences.

Perhaps, the peculiarity of the nineties is the greater fragmentation due to the emergence of "enclaves" with good quality of life in historically relegated regions. The main ones are: Castro Barros, where the small town of Anillaco is located, which became famous for being the birthplace of the former provincial governor and then president Carlos Menem, Valle Viejo (Catamarca), the Capital County in San Luis, another case from Catamarca (Fray Mamerto Esquiú) and the capital districts of Catamarca and La Rioja.

Finally, it is interesting to observe the processes of divergence or unmasking of territorial units that did not adequately show internal differences. This is particularly observable in those counties that were divided during the last intercensal period.

9.4.6 QLI Comparison 1980–1991

Quality of life maps in Argentina show a high level of differentiation in both decades. Here we propose to examine whether during this period, there were processes of divergence or convergence in the living conditions of the population. We will use a simple comparison between some relevant indicators (Table 9.2).

The table gives that the different quality of life indicators has behaved differently during the period considered.

Considering the educational dimension, we see that for the basic level of schooling, there has been convergence, since in 1980, the gap between the best and worst situation (the counties of Adolfo Alsina in Buenos Aires and Santa Victoria in Jujuy) was 23.3 to 1, while that in 1991, the same gap decreased to 8.4 to 1 between Santa Victoria (Jujuy). On the other hand, if we take into account the level of university education, the fragmentation increased. If, in addition to the census figure, we could take into account the effectiveness of schooling, we would surely come to the conclusion that the extension of basic education in a context of fragmentation causes its quality to differ significantly between different social and geographical contexts.

Taking into account the health dimension, we can observe that there has been a very modest convergence in the infant mortality rate. It is probably associated more

Fig. 9.7 Population with complete university level. Argentina, 1991. *Source* Personal elaboration based on the 1991 National Census

Fig. 9.8 Quality of Life Index. Argentina, 1991. *Source* Personal elaboration based on the 1991 National Census

Table 9.2 Quality of life indicators in Argentina in 1980 and 1991

Dimension	Indicator	1980	1991
Education	Level of education below primary	23.3	8.4
	Level of university education	10.9[a]	13.1[a]
Health	Infant mortality rate[b]	200.0[c]	184.2
Housing	Housing	26.5	20.2
Quality of life	Quality of Life Index	5.2	18.5

(a) This of the maximum values, since the minimums are 0
(b) Maximum rates observed
(c) Estimated rate for the county of Susques (Jujuy)
Relationship between the best and worst situation (best /worst)

with the small reduction in fertility (and therefore in the risk of infant death) in the most vulnerable groups, accompanied by greater accessibility to health centers (rural–urban migration) than with objective improvements in the socioeconomic conditions.

Here we see that the gap between the counties with the highest and lowest proportion of substandard housing narrowed slightly between 1980 and 1991. This can be linked to the construction of housing units in border areas far from the large urban centers.

Considering these variables in isolation from the dimensions of education, health and housing could lead us to think that in Argentina, there would have been convergence between 1980 and 1991. Unfortunately, it is not possible to make a strict comparison of all the variables included in each case.[1] However, we clearly see that *the Quality of Life Index shows an Argentina much more fragmented in 1991 than in 1980.* While in 1980, the relationship between the best quality of life situation and the worst (city of Buenos Aires and the La Poma in Salta or Susques counties in Jujuy) was 5.2 to 1 in 1991, this same gap between Coronel Rosales (Buenos Aires) and Chicalcó (La Pampa) expanded to 18.5 to 1.

9.5 Concluding Remarks

With of the predominance of the capitalist mode of production and the beginning of its financial stage, Argentina in the 1990s already exhibits a high degree of social and territorial fragmentation. This exacerbates the gaps in the population's quality of life, which become a feedback element for pre-existing inequalities.

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[1] Thus, for example, there is no information on social coverage in 1980 or on infant mortality for the county level in some provinces. The criteria of overcrowding and precariousness of the dwellings are different in 1980 and 1991. In 1980, those who have attained tertiary and university studies, etc., are included in the same category.

As we have pointed out, quality of life is the result of a process, but at the same time, it is the generator of new processes. Thus, around 40% of the Argentine population did not enjoy minimum living conditions at the beginning of the nineties, but if we consider the range of young ages (under twenty years of age), this percentage increases to almost half of the respective group, due to the differences in fertility and mortality between social groups.

Given that the Quality of Life Index constitutes a weighted combination of socioeconomic indicators and that, since the 1990s, environmental problems are also included (incorporated in the 1994 Constitutional Reform), we have tried to approximate the magnitude and incidence of some differentiation factors in the living conditions of the Argentine population.

These differences are the product of secular processes of socioeconomic and territorial divergence, aggravated in recent decades by successive adjustment plans, the deepening of transnationalization and the mechanisms of the entrenched neoliberal economy that enhance the differences between winning and losing social groups.

Although a first general analysis shows a certain degree of similarity in the socio-spatial distribution of Argentine living conditions between the 1980s and 1990s—due to the characteristic inertia of the territories and their societies—some of the emergence of some enclaves of "progress" located in historically marginalized geographies. The regional analysis highlights the marked difference between the opportunities that each region offers to its residents. The regional analysis highlights the marked difference between the opportunities offered by each territorial unit. Thus, the northern regions, historically labor-providing areas, are the epicenter of adversity, while the remaining Argentine regions appear in more favorable position. This, however, should not lead us to a regionalism in uncritical terms, since within these regional formations, the same mechanisms of socio-territorial differentiation that operate on a national scale are reproduced, defining minority social groups with growing privileges and social groups increasingly removed from the supposed benefits of "modernity."

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Chapter 10
Quality of Life in 2001

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Abstract This chapter proposes the elaboration of a Quality of Life Index for Argentina for the beginning of the twenty-first century. This index is elaborated starting from a pondered combination of socioeconomic indicators (education, health and housing) and physical environmental variables (flood risk, earthquakes, volcano, frequency of tornado and land erosion). The spatial unit analysis is the regions of the country. The results show how the most consolidated regions of the country (Pampean, Cuyo, Patagonia) have a better performance than the historically relegated regions in the north of the country. Also, this chapter proposes a comparison with the previous Quality of Life Index of 1991. This analysis indicates that during this period (1991–2001), there was an increment of fragmentation process in the Argentine territory, giving as result a tiny minority of winners in front of an overwhelming majority of losers.

Keywords Quality of life index · 2001 · Argentina · 1991–2001 comparison

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10.1 Introduction

Based on census information, other statistical sources and previous research, we have created a geographic information system (GIS) that covers all departments (i.e., counties) of the provinces of the Argentine Republic in all census years. In this chapter, we will deal with the 2001 Census, to inquire about the levels of living conditions of the population. The theoretical and conceptual aspects of quality of life are presented in the previous chapters, in particular Chap. 2. The Ninth Census 2001 of the Argentine Republic was carried out between Saturday 17 and Sunday November 18, 2001 during the presidency of Fernando de la Rúa. As is the tradition in this country, it was a de facto census or in fact, it consists of taking a census of the people present in the dwelling at the time of the census, including those who do not habitually reside in the home, but who "spent the night" there. At that historical moment, the country was in a deep economic depression and that, a month later, would result in a crisis that seriously affected both government and society in general, lasting several years.

The 2001 Census was carried out responding to the need to have a statistical base for the knowledge of the sociodemographic reality of the country, taking into account the international recommendations on the matter. According to the provisions of national law No. 17622/68, the National Institute of Statistics and Censuses (INDEC) was empowered to exercise the superior direction of all censuses and official statistical activities carried out in the national territory. The Provincial Statistical Directorates (DPE) were responsible for conducting the census in their respective jurisdictions.

The planning of the 2001 Census began at the end of 1995. At that time, the INDEC, the DPE and qualified users began to evaluate the quality of the information from the 1991 National Population and Housing Census, which determined the main guidelines to be followed in order to the completion of the 2001 Census.

After the diagnostic stage, four general pilot tests, two conceptual design tests, an experimental census and three validation surveys were carried out that tested the functional organization of the census, the methodology to be used, the preparation of the survey, the processing and the dissemination of data.

Between 1995 and 2000, INDEC had the support of the Japanese International Cooperation Agency (JICA) in the development of pilot tests and applications related to data geo-referencing. Starting in 1996, the 2000 Census project was designed in MERCOSUR plus Chile and Bolivia, within the framework of which the National Statistical Institutes elaborated conceptual and methodological aspects related to the production and exploitation of census data for comparison purposes.

The instance that gave rise to legality and gave impetus to the tasks of this census was the approval of decree 913 of the National Executive Power (PEN), in August 1998, which ordered the realization of the then-known National Population, Household and Housing Census of the year 2000 declaring it, moreover, of national interest.

The purpose of the designation of the census year was to guarantee international comparability, required by the United Nations Statistical Commission and to comply with the provisions of decree 3110/70, regulating National Law No. 17622/68, which stipulates that the National Population, Family and Housing Censuses must be carried out in our country in the years ending in zero.

During the year 2000, it was decided to transfer the execution of the census to October 2001 and to call it, from then on, the 2001 National Population, Household and Housing Census (decree 727/90 of the National Executive Branch–PEN-). The following year the date of the survey was moved again by decree 1154. In this instance, it was determined that the census operation would take place on November 17 and 18, 2001, declaring those dates a national holiday (INDEC 2021).

10.2   Methodology

The index is composed of the following dimensions and variables, similar to those used in previous censuses.

10.2.1   Education Dimension

- Percentage of the population aged fifteen or older that no longer attends an educational institution and has reached an education below complete primary (prepared from Table 7.8 of the 2001 Census).
- Percentage of the population aged 15 years that no longer attends an educational institution and has reached a complete university education (prepared from Table 7.8 of the 2001 Census).

The importance of both variables lies in their power to discriminate the extremes of the educational pyramid. Although the primary cycle is formally compulsory in Argentina, its non-compliance evidences various situations of adversity: early insertion into the labor market, scarce family cultural heritage, distance from educational establishments, etc., which tends to feed back a vicious circle that it diminishes the possibilities of development and social promotion of vast social sectors. In contrast, those who complete their university studies have been able to delay their age of entry into the economically active population and are better represented among the middle and upper social sectors, mainly urban, since accessibility is a decisive factor when establishing the educational opportunities. Once achieved, and despite the process of devaluation of the "educational credentials", they be a very important element, among other factors, for the "horizons", for the increase of opportunities and especially for the insertion in the labor market, a decisive factor in the genesis of the social structure, and therefore, in the conditions of life.

10.2.2   Health Dimension

- Infant mortality rate according to the mother's place of residence, available for the years 2000, 2001 and 2002. (Source: Ministry of Health of Argentina, Directorate of Statistics). As for the 1990s, these are the closest years available to the 2001 Census at the county level. The average of the three years is also taken into consideration to reduce the random oscillations typical of this rate.
- Percentage of the population without coverage by social work, private or mutual health plan (prepared from Table 6.3 of the 2001 Census).

The infant mortality rate (IMR) constitutes one of the fundamental indicators to establish the health of a population, since it is affected by a series of factors that have strong social determination. Beyond the action of the health system, the socioeconomic factors that most affect IMR are the mother's educational level and the father's occupational stratum. In other words, in an adverse socioeconomic context, the multiplication of health establishments or human resources can reduce the IMR, but only to a certain extent, since the social structure also determines the most vulnerable sectors.

Information on social coverage complements that of IMR, reflecting the proportion of the population "contained" in the economic or solvent structure. This segment has to public and private health care, including dependent workers and those with sufficient income to meet the costs of a private health plan.

10.2.3   Housing and Equipment Dimension

- Percentage of population residing in households that have a toilet without flushing or do not have a toilet. Prepared from Table 4.6 of the 2001 Census.
- Percentage of the population in overcrowded households, considering as such those that exceed two people per room. Prepared from Table 4.8 of the 2001 Census.

The lack of such a basic element as the toilet highlights the lack of equipment in their homes. This element depends on the individual situation of the family and home, and unlike others such as water or sewerage provision, it is independent of its location with respect to an established network.

The ratio of people per room shows a significant feature: the deficiency of the house in relation to the number of residents. Although the census criterion in 2001 established a threshold of three people per room to determine overcrowding—since it is intended to measure poverty—we have chosen to lower this threshold to two people per room in order to measure quality of lifetime.

10.2.4 Environmental Risks and Attraction of the Landscape Dimension

Argentina is a country characterized by great diversity of environments and singular wealth in natural resources. Both may act to the impairment of the population's quality of life.

Within these environments, there are problems associated with the natural dynamics that negatively affect the population, which are revealed as natural disasters and alterations that affect the society that lives in this environment. Among them, the following were considered:

- Population residing in areas with flood problems. Made from maps of flood risk, cited by Di Pace 1992.
- Population residing in areas with different coefficients and scales of seismicity. Prepared from the seismicity map in Argentina of the Total Atlas of the Argentine Republic, 1982.
- Resident population in areas affected by tornadoes. Made from maps of natural hazards in Argentina, edited in 1997 by Geosistemas.
- Resident population in areas with soil deterioration. Prepared from the FECIC soil erosion map, 1988.
- The explanation of the variables that make up these areas are those presented in the previous chapter on quality of life in 1991.

After this quick and synthetic description of the relative situation of each variable, we explain how we use this information to build an index that covers the aspects that we have considered separately.

The first step in the elaboration of the quality of life is the transformation of the rates into partial index numbers, which was carried out according to the following procedure, according to the type of variable:

Variables whose increase imply a worse relative situation (environmental problems, population residing in crowded homes, population without health coverage, population without a toilet for exclusive use and IMR).

$$I = \frac{\text{Max} - a}{\text{Max} - \text{Min}}$$

where a: cost variable.

Variables whose increase imply a better relative situation (Population with university education level)

$$I = 1 - \frac{\text{Max} - b}{\text{Max} - \text{Min}}$$

where b benefit variable.

Once the variables have been transformed, it is possible to elaborate the Quality of Life Index. For this purpose, we have used all the preceding aspects and considering

Table 10.1 Evolution of socioeconomic indicators in Argentina, 1991–2001

Dimension	Variables	Partial weight	Total weight (%)
Education	Less than primary education (%)	10	15
	Complete university education (%)	5	
Health	Infant mortality rate	20	35
	% Population without health coverage	15	
Housing	% Population without toilets	20	30
	% Overcrowding	10	
Environment	Environmental problems	15	20
	% Summer houses	5	
Total			100

Source Personal elaboration

the advances made in previous works (Velázquez and García 1996, 1999) and their correspondence with other alternative statistical procedures for the selection and weighting of the variables (Marinelli et al. 1999; Torcida et al. 1999; Cepeda et al. 2004), we have established differential weights for each partial index according to its relative importance.

The most important component are the health variables, followed by housing, environmental risks and educational variables. The relative weight of each element is presented as follows Table 10.1).

Weighing the relative weight of each variable, we have determined a Quality of Life Index whose theoretical value can reach between 0 and 10 to reflect the worst and the best situation, respectively.

10.3   Results

10.3.1   Education

The education of the Argentine population shows a strong diversity.

The proportion of the population that did not finish primary school is more fragmented during the 1990s (see coefficient of variation in Table 10.2). Although, in general terms, there is a certain rise in basic schooling, there are, on the one hand, counties with more favorable situations, whereas on the other, some places increased their educational deficit (Fig. 10.1).

As during the 1990s, the northern regions have very unfavorable situations, especially in a wide area of contact between both regions. The situation of the northern Patagonian plateau and the area located outside the main urban centers is also very adverse. In the Pampean and Cuyo regions, the difference between the central part and their respective peripheries is also quite clear. The only region with low and medium

Table 10.2 Statistical synthesis of the educational dimension

	1991	2001
Population with less than primary education		
Argentine population	22.08	17.90
Q1	7.44–25.27	5.98–20.04
Q4	41.13–62.17	43.33–67.11
5 worst	S. Victoria (62.2)	R. Lista (67.11)
	Bermejo (60.7)	Gastre (65.61)
	Chical Co (60.3)	S. Victoria (62.18)
	S. Catalina (58.9)	Ñorquinco (61.97)
	Iruya (58.9)	Bermejo (61.38)
5 best	Capital Federal (7.44)	C. A. de Buenos Aires (5.98)
	Ushuaia (8.95)	Vicente López (6.23)
	Belgrano (J.) (9.00)	Ushuaia (7.87)
	Río Grande (12.3)	San Isidro (8.11)
	Capital district (Mendozaprovince) 12.93	Capital district (SanJuan province) (9.13)
Worst Pampean region	Chical Co (60.3)	Chical Co (58.38)
Worst MRBA	Pilar (23.73)	F. Varela (20.98)
Best northeast region	Capital district (Corrientes province) (21.2)	Capital district (Corrientes) (16.75)
Best Northwest Region	Belgrano (Jujuy province) (9.0)	Capital district (Catamarca province) 11.22
Sigma	11.35	12.10
Mean	33.37	27.69
Median	31.77	29.61
Variation coefficient	34.01	43.69
Population with university education		
Population of. Argentina	3.81	4.39
Q1	00.00–00.71	00.00–00.85
Q4	02.01–13.09	02.71–14.22
5 worst	Villa Grande (0)	Rinconada (0)
	Miter (Santiago del Estero) (0)	Limay Mahuida (0)
	Limay Mahuida (0)	Jiménez (Santiago del Estero) (0.10)
	Mártires (0)	Figueroa (0.10)
	Susques (0.1)	Silipica (0.11)
5 best	Capital district (Mendoza province) (13.1)	Capital district (Mendoza province) 14.22

<div align="right">(continued)</div>

Table 10.2 (continued)

	1991	2001
	La Plata 9.8	Argentine Antarctica (14.19)
	Yerba Buena (9.4)	Autonmous district of the City. Buenos Aires (12.95)
	Capital district (San Juan province) (8.8)	Vicente López (12.09)
	General Roca (Córdoba province) (8.2)	San Isidro (11.45)
Worst Pampean Region	Limay Mahuida (0)	Limay Mahuida (0)
Worst MRBA	Merlo (0.8)	Florencio Varela (0.72)
Best northeast	Capital district (Corrientes province) (5.14)	Capital district (Corrientes province) (4.76)
Worst northwest	Yerba Buena (9.4)	Yerba Buena (9.68)
Sigma	1.55	1.80
Media	1.68	2.12
Median	1.37	1.80
Variation coefficient	92.26	84.91

Source Personal elaboration

levels continues to be the Greater Buenos Aires Metropolitan region (MRBA), probably because its better accessibility to schools contributes to complying, at least, with basic and compulsory education.

Although the increase, in general terms, in basic schooling seems auspicious, it is likely that it tends more to reflect greater containment in the formal education system than improvements in the achieved results. Added to the well-known phenomenon of devaluation of educational credentials is the increasingly welfare role that public schools assumed in an attempt to mitigate some of the results produced by the deepening of the neoliberal adjustment during the 1990s.

Between 1991 and 2001, despite the adjustment and reduction in the educational budget, several universities were created in different parts of the country and the offer of "virtual degrees" began (through the Internet), thus increasing the opportunity of education for some sectors of the population. This phenomenon, together with the greater narrowness and competitiveness increasingly restricted labor market, brought with it a growth in the university population between 1991 and 2001.

For this reason, the respective map in 2001 (Fig. 10.2) also reaches its lowest levels in the northern region the country, even with a higher concentration than that recorded during the 1990s.

In addition to the scarce conditions provided by the social structure, the access to university studies in the northern portion of the country is almost exclusively restricted to the provincial capital cities, thus managing to escape from the meager regional figures. This link with the location of the universities is duplicated in all regions, including the Greater Buenos Aires Metropolitan region, between the

Fig. 10.1 Population without primary education. Argentina, 2001. *Source* Personal elaboration based upon the 2001 Argentine National Census

Fig. 10.2 Population with university education level. Argentina, 2001. *Source* Personal elaboration based upon the 2001 Argentine National Census

Autonomous City of Buenos Aires and the counties of the first and second belts around the Greater Buenos Aires.

In the Pampean region, there is also a gradation from the center to the periphery of the region, showing very low values for this variable in the western Pampas and lower values in the north of the Entre Ríos and Santa Fe provinces. In the Cuyo and Patagonia regions, the educational fragmentation has contradictions between the urban area and the counties, where subsistence activities predominate (see Table 10.2).

10.3.2 Health

Health levels vary substantially in Argentina. In general, the infant mortality for the triennium 2000–2002 (Fig. 10.3) is almost as fragmented as that of the early 1990s.

We also have high rates (more than per thousand) in large sectors of the northern part the country. Unlike the 1990s, a greater number of counties with low values appear in both regions. In some cases, the decrease experienced unequivocal evidence of underreporting problems. There is also a certain decrease in sectors of the Patagonian plateau, probably related to random oscillations or underreporting in vital statistics. Likewise, the second and third belt of the Buenos Aires City suburbs partially mitigate the adverse situation of the early nineties, most likely due to the action of the public health system.

The San Juan province counties also exhibit high rates, as well as some corresponding to the San Luis province. A similar situation is reflected in the Northern region, Entre Ríos and Santa Fe provinces and in the lowland pampas (i.e., "Pampa Deprimida" of the province of Buenos Aires).

The population without health coverage (Fig. 10.4) continues to reach very high percentages in the northern regions (around 90% of the total in some cases).

The reasons given for the early nineties have been maintained, consolidated and sharpened at the beginning of the new millennium: the high proportion of the population with very low paying jobs persists in an area with a high proportion of peasant population and growing urban marginality. Self-employment and occasional "changas" (i.e., non-permanent work paid per day, or even per hour) were almost completely replaced by assistance plans that are virtually the only alternative for subsistence. This transforms what could once have been characterized as a "reserve army" into a marginal mass, given the intergenerational transfer of assistance in both regions of the north of Argentina, in a context also characterized by high levels of fertility. A small handful of cities in the Northwestern region that, at the dawn of the past decade, still managed to escape from this general picture ended up falling due to the explosive growth in their respective urban peripheries. In contrast, the exceptional situation that several counties of La Rioja province had reached so far, begins to extend to Catamarca province as well.

In the country, in general, health coverage is also very unsatisfactory (see Table 10.3). The next two quartiles show that 75% of Argentina's counties have almost

Fig. 10.3 Infant mortality rate. Argentina, 2000–2002. *Source* Personal elaboration DEIS. Ministry of Health, Argentina

Fig. 10.4 Population without health coverage. Argentina, 2001. *Source* Personal elaboration based upon the 2001 Argentine National Census

44% of their residents without this benefit. Only the city of Buenos Aires, along with some districts of the first belt of the Great Buenos Aires suburbs, some segments of the Pampean region of Buenos Aires, Santa Fe and Córdoba provinces and, to a much lesser extent, La Pampa and Entre Ríos provinces are below this proportion, as well as in Patagonia, particularly in Santa Cruz and Tierra del Fuego provinces and three coastal counties in Chubut and Río Negro provinces. Finally, the Cuyo region (provinces of Mendoza, San Juan and San Luis) shows reasonable values only in its provincial capital cities.

Although one rate reflects results (infant mortality) and the other (health coverage) a potential to prevent contingencies, both tend to coincide closely, identifying vulnerable (and affected) sectors regarding their health. Contrary to what could be expected of a country that has advanced in its demographic transition, Argentina has increased its infant mortality in some jurisdictions and particularly in some social groups. On the other hand, the public health system, in addition to suffering successive budget cuts, faces the growing demand of patients from the impoverished or "flexible" middle class who lack sufficient income, formal work and health coverage.

10.3.3   Housing and Equipment

The housing situation is also very asymmetric. During the inter-census period 1991–2001 (Table 10.4), within the framework of a logic of economy adjustment and "withdrawal" of the State, housing and infrastructure have increasingly become merchandise. This produced a worsening of the housing situation in Argentina. Therefore, the National State intervention in the real estate market was significantly reduced, thus affecting particularly the middle class. The transformation of the Banco Hipotecario Nacional (i.e., the National Mortgage Bank) into a wholesale bank left these middle sectors without their traditional financing tool.

The deterioration of the existing housing was then added to a dichotomization process, whereby there are, on the one hand, tiny and deficient units destined for low-income sectors, while, on the other hand, luxury construction, destined to solvent demand from high-income agents.

Consequently, the proportion of the population in overcrowded households (more than two people per room) continues to show the worst relative situation in the northern regions (Fig. 10.5).

The constitution of younger family units, in a context of high relative fertility and scarcity of means contributed to the persistence of this problem. The Patagonian region continues to show problems of overcrowding; with Neuquén province having almost the same values as during the 1990s, while in the region the situation has improved slightly. In the Cuyo region, the opposite occurs: there are greater problems of overcrowding, especially between the San Juan province oasis and central Mendoza province.

The Pampean and Metropolitan regions of Buenos Aires clearly show the social fragmentation of the territory. The relatively favorable context that they presented

Table 10.3 Statistical synthesis of the health dimension

Infant mortality rate

	1994–1996	2000–2002
Population of Argentina	22.0; 22.2; 20.9	16.6; 16.3;16.8
Q1	00.00–15.4	00.00–11.83
Q4	25.7–184.2	19.92–82.61
5 worst	Chical Co (184.2)	Villa Grande (82.61)
	Curaco (166.7)	Susques (61.5)
	Rinconada (81.2)	Rinconada (51.0)
	Antofagasta (81.0)	Belgrano (J.) 48.9
	Susques (78.6)	Santa Catalina (48.26)
5 best	Lago Argentino (2.9)	Tulumba (1.6)
	General Arenales (4.7)	Paclín (3.2)
	Valcheta (5.3)	La Viña (4.1)
	Roque Pérez (6.5)	Los Lagos (4.5)
	Lácar (7.6)	Trenel (4.7)
Worst Pampean region	Chical Co (182.0)	General Lavalle (41.4)
Worst MRBA	Pilar (27.6)	Ezeiza (19.8)
Best northeast	G. Alvear (Corrientes province) (11.1)	Libertad (8.0)
Best northwest	Atamisqui (Santiago del Esteroprovince) (8.1)	Paclín (Catamarca province) (3.2)
Sigma	14.43	08.67
Mean	22.21	16.86
Median	19.50	15.66
Variation coefficient	64.97	51.42

No health coverage

	1991	*2001*
Population of Argentina	37.76	48.05
Q1	04.74–36.89	21.20–43.81
Q4	56.56–90.01	63.17–88.39
5 worst	Miter (90.01)	Bermejo (88.4)
	Ischilin (89.11)	Rivadavia (Salta province.) (88.4)
	Chical Co (87.24)	Miter (Santiago del Estero province) 85.8
	Bermejo (84.20)	Ramón Lista (85.4)
	Ramón Lista (84.60)	Figueroa (83.6)
5 best	General Alvarado (4.74)	Corpen Aike (21.2)

Table 10.3 (continued)

Infant mortality rate

	1994–1996	2000–2002
	Corpen Aike (10.80)	Coronel Rosales (21.7)
	Caseros (Santa Fe province) (20.40)	Trenque Lauquen (24.3)
	Güer Aike (20.59)	Magallanes (26.0)
	Sanagasta (20.66)	Autonomous City of Buenos Aires(26.2)
Worst Pampena region	Chical Co (87.24)	Chical Co (80.0)
Worst MRBA	Pilar (49.96)	Moreno (65.5)
Best northeast	Formosa city, Province of Formosa (37.89)	Capital district (Misiones province) (51.1)
Best northwest	Sanagasta (20.66)	Sanagasta (30.1)
Sigma	14.61	13.70
Media	47.29	53.79
Median	44.78	52.22
Variation coefficient	30.89	25.47

Source Personal elaboration

in the early nineties was changed by another, much more adverse, in which parties appear losing positions and even located in the worst relative situation. The position of the parties on the periphery of the Buenos Aires suburbs is particularly adverse.

The proportion of the population in households without a toilet is very high in Argentina (Fig. 10.6). The rural population and the urban peripheries constitute two groups in which this deficiency has greater weight. That is why the hinterland of the northern regions, with a high component of peasant population and urban peripheries in constant growth, is the sites that best demonstrate this issue. The values in the northern Patagonian plateau are also high.

The Cuyo region shows more diversity. The capital of San Luis province experiences improvements but, as during the nineties, some counties of San Luis province are in the worst relative situation. The capital cities of Mendoza and San Juan provinces also have a lower proportion of the population without a toilet. In both cases, however, there is a clear increase in its urban peripheries and especially in San Juan province, in the hinterland area of the province.

The Metropolitan region shows a strong degree of fragmentation. Whereas the city of Buenos Aires and a sector of the first belt of the suburbs show low rates of population lacking a toilet, the population of almost the entire second and third belt exhibits higher proportions, reaching, in some cases, almost half of their respective population.

The Pampean region, despite having a relatively satisfactory situation, also exhibits gradation toward its periphery, including the western Pampas, Northern

Table 10.4 Statistical synthesis of the housing dimension

	1991	2001
Overcrowding (% population in households with more than 2 people/room)		
Population of Argentina	27.20	29.15
Q1	06.30–23.39	8.17–23.46
Q4	44.27–83.84	43.57–85.42
5 worst	Roque Lista (83.84)	Roque Lista (85.42)
	Rivadavia (72.02)	Bermejo (Formosa province.) (72.39)
	Graneros (69.18)	Rivadavia (Salta province) (72.18)
	Bermejo (63.43)	Matacos (63.11)
	Figueroa (63.26)	San Miguel (Corrientesprovince) (61.90)
5 best	Bolìvar (6.30)	Puán (08.17)
	Pehuajó (7.72)	Vicente López (09.96)
	General Pueyrredón (8.81)	Corpen Ayke (10.66)
	Autonomous City of Buenos Aires (9.67)	Hucal (10.80)
	Vicente López (11.24)	Guaminí (12.03)
Worst Pamepan Region	Chical Co (46.18)	Garay (51.94)
Worst MRBA	Pilar (42.82)	Presidente Perón (45.17)
Best northeast	Mercedes (26.90)	Monte Caseros (27.25)
Best northwest	Chilecito (24.99)	Cochinoca (18.88)
Sigma	12.71	12.60
Mean	34.44	34.29
Median	34.49	33.82
Variation coefficient	36.90	36.74
Households without a toilet		
Population of Argentina	21.86	16.86
Q1	04.77–16.99	01.78–11.58
Q4	59.65–96.41	46.41–96.70
5 worst	Santa Victoria (96.41)	Roque Lista (96.7)
	Roque Lista (95.79)	Santa Catalina (94.57)
	Santa Catalina (95.48)	Rinconada (94.26)
	Iruya (93.85)	Figueroa (93.36)
	Silipica (92.37)	Bermejo (92.86)
5 best	Monte Hermoso (4.77)	Corpen Aike (1.78)
	Vicente López (5.18)	Vicente López (2.42)

Table 10.4 (continued)

	1991	2001
	Pellegrini (7.04)	Saavedra (2.45)
	Saavedra (7.27)	Coronel Rosales (2.64)
	Coronel Dorrego (7.32)	Autonomous City of Buenos Aires (2.65)
Worst Pampean Region	Chical Co (83.12)	9 de Julio (SantaFeprovince) (55.33)
Worst MRBA	Pilar (20.67)	Presidente Perón (42.09)
Best northeast	Capital district (Corrientes province) (29.05)	Capital district (Corrientes province) (19.08)
Best northwest	Capital district (Catamarca province) (22.33)	Castro Barros (9.98)
Sigma	24.10	23.16
Mean	39.03	30.99
Median	34.29	22.79
Variation coefficient	61.75	74.73

Source Personal elaboration

region, Entre Ríos and Santa Fe provinces and the Salado-Vallimanca fluvial-lacustrine basin of the Pampean lowlands.

10.3.4 Environment

Argentina's environmental risks are very complex, so we only attempt a very limited and preliminary approximation that, in general terms, we consider as representative of the situation of both decades.

Considering the combination of flood risk, seismicity, volcanism, tornadoes and soil (Fig. 10.7), we see that the Pampean region, specifically the "Pampa Deprimida" counties and the Paraná river valley, has environmental problems. They are also present in some mountain areas of the Cuyo region, mainly affected by seismicity, mainly in the San Juan and Mendoza provinces.

The presence of summer or weekend houses is important in those counties that have tourist attractions, large cities and provincial capitals. For this reason, there is a high relative proportion of these recreational dwellings throughout the Atlantic coast of Buenos Aires province, the shallow lakes and lagoons in the "Pampa Deprimida" and the southern area of the Entre Ríos province. Also, the Pampean region and Sierras de Córdoba mountainous region stand out.

In Patagonia, it is worth highlighting the cases of the southern lakes and the Río Negro province beaches. In the Cuyo region, there are some replacements of this function by the residential units in the two large oases (Mendoza and San Juan

Fig. 10.5 Overcrowding. Argentina, 2001. *Source* Personal elaboration based upon the 2001 Argentine National Census

Fig. 10.6 Population in households without a toilet. Argentina, 2001. *Source* Personal elaboration based upon the 2001 Argentine National Census

Fig. 10.7 Environmental problems. Argentina, 2001. *Source* Personal elaboration based upon the 2001 Argentine National Census

provinces), whereas this type of housing persists in the mountain range, especially in San Juan province and in the mountainous portion of northern San Luis province.

In northwestern Argentina, several counties stand out in the valleys, whereas an increase in these dwellings is also observed in various sectors of the La Rioja and Catamarca provinces. In northeastern Argentina, only the vicinity of Corrientes-Resistencia twin cities and the fluvial axis of the Paraná River stand out (Fig. 10.8).

The degree of similarity between the results obtained for both decades is remarkable. In both cases, the differences between the northern regions, historically the most neglected region of the country, with respect to the Pampas and the Greater Buenos Aires, followed by the Cuyo and Patagonian regions at an intermediate level is remarkable. In all cases, however, there are strong internal differences. Table 10.5 shows the evolution of the socioeconomic variables at the national level for the period 1991–2001 while Table 10.6 indicates the Quality of Life by regions for the same period.

10.3.5   Northeast Region

In this region, there were the lowest levels of quality of life in Argentina at the beginning of the nineties (regional average 5.13). The socioeconomic variables were, along with environmental risks, those that had incidence in the final values. Higher levels were only recorded around the four provincial capital districts, on the axis of the Paraná River, and in the southeast of Corrientes province.

In 2001, the QLI of the region is 5.38 and none of the counties in the region improved their relative situation. The province of Formosa remained unchanged, whereas two Chaco province counties (Chacabuco and Comandante Fernández) fell by a quartile. The same occurs with three Misiones province counties (El Dorado, Leandro N. Alem and Concepción) and two from Corrientes province (Curuzú Cuatiá and Monte Caseros). In other words, the bad situation of the region during the nineties not only persisted but it was consolidated and worsened.

10.3.6   Northwest Region

This region was another one with very low quality of life values in the 1990s (regional average 5.81). Longitudinal internal differences were observed that could be associated, on the one hand, with the morphology of valleys and foothills with a higher population concentration and better living conditions. On the other, there were the mountainous and western Chaco province sectors with a predominance of a dispersed rural population and worse records for the QLI. The biggest peculiarity, however, is that in a regional context with very low rates, specific enclaves appearing in Catamarca and La Rioja, provinces with acceptable living conditions.

Fig. 10.8 Quality of life index. Argentina, 2001. *Source* Personal elaboration based upon the 2001 Census

Table 10.5 Evolution of socioeconomic indicators in Argentina, 1991–2001

Year	Less than primary education (%)	University or higher education (%)	Infant mortality rate	% Population without health coverage	% Overcrowding	% Population without toilet
1991	22.08	3.81	21.7	37.76	27.20*	21.86
2001	17.9	4.39	16.6	48.05	29.15	16.86

Source Personal elaboration

*This data from 1991 corresponds to % of households, not of people

Table 10.6 Quality of Life Index by regions, 1991 and 2001

Region	1991	2001	Difference
Northwest	5.81	6.23	0.42
Northeast	5.13	5.38	0.25
Cuyo	6.56	7.04	0.48
Pampean	6.79	7.19	0.40
Metropolitan region of Buenos Aires	6.81	6.92	0.11
Patagonia	6.90	7.54	0.64

Source Personal elaboration

In 2001, the region continued to constitute, as a whole, an area with a low Quality of Life Index (6.23), but more fragmented in the previous decade as the already mentioned "longitudinal" differences increased during the inter-census period. That is the case of one county in Jujuy province (San Antonio) and four counties in Salta province (La Caldera, Cerrillos, Guachipas and Cafayate), which improve their relative position.

Even more remarkable are the cases of Catamarca and La Rioja provinces. In Catamarca province, six counties (Santa María, Andalgalá, Ambato, El Alto, Capayán and Ancasti) increased by one quartile and another one (Paclín) did so by two quartiles. In La Rioja province, seven counties gained one position (Vinchina, Sanagasta, Coronel Varela, Independencia, Chamical, General Ocampo and General San Martín) and two advanced two positions (San Blas de los Sauces and Famatina). In La Rioja, the native province of the former president of the 1990s, only one county (General Lamadrid) fell one quartile.

In the region, the situation remained as bad or even worse compared to the 1990s. Among the places that lost positions, the province of Tucumán stands out (whose own provincial capital fell one position along with Burruyacú and Río Chico). The same occurred with three counties from Jujuy province (Ledesma, Palpalá and Humahuaca) and one from Santiago del Estero province (La Banda).

10.3.7 Cuyo Region

In this region (index value of 6.56 in the 1990s), specifically in the provinces of San Juan and Mendoza, the situation of the oases, with better living conditions, contrasted with the provinces. In San Luis province, all the quality of life graduations were observed, generally decreasing toward the provincial periphery. The spatial variability presented, in general, correspondence with the most urbanized areas, where there is a concentration of population and educational services.

In 2001, this region reached a global value of 7.04 but continued to differentiate internally. Among the most winning provinces, Mendoza province should be counted, in which four counties (Lavalle, Maipú, Junín and Malargüe) advanced one position and none of them fell. In San Luis province, one county improved (Coronel Pringles) and another one (General Pedernera) worsened by one position. The province of San Juan, finally, was the unequivocal loser in this process, experiencing strong setbacks in two counties (Santa Lucía and 25 de Mayo) and a slight increase in only one of them (Zonda county).

10.3.8 Pampean Region

In this region (with a regional average of 6.79 in the 1990s), conditions generally worsened toward the borders of the region. We can distinguish three sectors: (a) the central area, with greater relative development, which include the Buenos Aires province, except the "Pampa Deprimida" lowlands, (b) Santa Fe and Córdoba provinces, with higher values and (c) a relatively peripheral area (La Pampa and Entre Ríos provinces).

In 2001, the regional QLI reached 7.19 points, although a large part of its territories lost positions, particularly in numerous counties of the province of Buenos Aires located in the Río Salado fluvial basin (the county of General Lavalle dropped two positions, a unique case in the country) and along the provincial borders. The central-south corridor of Entre Ríos province also suffered setbacks. On the other hand, the highest promotions were verified in La Pampa province (five counties earned one position).

10.3.9 Metropolitan Region

In the Metropolitan Region (index value of 6.81 in the 1990s), four clear sectors were observed at the county level: (a) the city of Buenos Aires and the first belt of suburban districts with higher values of quality of life, (b) the contiguous sector (second belt) with intermediate conditions, (c) the third belt with the worst values and (d) a discontinuous area that is undergoing processes of urban speculation, with

"country villages" (that is, closed neighborhoods of high-income families), with higher levels of contradiction and social fragmentation.

At the beginning of the new millennium, the regional QLI reached 6.92, but the situation was more fragmented. On one hand, the counties located to the south and west of the suburbs fell back, including some of those located in the first belt such as Avellaneda, Lanús and Lomas de Zamora. Moving in the same direction, the retreat is even stronger. In the entire Metropolitan region, there are no counties that improved their situation.

10.3.10 *Patagonia*

Finally, in this region (regional average 6.90 in the 1990s), the situation of Tierra del Fuego and Santa Cruz provinces showed more favorable figures than those of the region, from Neuquén, Chubut and Río Negro provinces. In 2001, the regional QLI increased to 7.54. Despite being the region that experienced the greatest number of promotions (16 counties), this image of contradiction and fragmentation persisted in 2001, showing the coexistence of bright and opaque geographies (Table 10.7).

10.4 Concluding Remarks

The analysis of the 2001 continued with the dynamics established with the 1991 census, considering, in addition to the usual socioeconomic variables, others of an environmental nature. The use of this broader approach to quality of life follows the precepts of the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992, Brazil, which it postulated that human development cannot be considered without taking into account the environmental context of societies. The National Institute of Statistics and Censuses takes note of this situation and includes a relevant variable for cities such as the collection and waste service. It is to highlight this inclusion since, for the first time, an environmental variable is surveyed, simultaneously with the socioeconomic ones, on the same spatial and temporal scale. Therefore, given the increasing complexity of the census data, it is required a more interdisciplinary approach as the index is now related to geography, economy, sociology and urban ecology. From the methodological point of view, the same socioeconomic variables used in the previous census are selected, but with the addition of other environmental indicators recorded in this census for the first time. Hence, variables referring to floods and the presence of garbage dumps, for example, make it possible to expand the environmental dimension of the quality of life initiated in the 1991 census. The results show a reduction in infant mortality, a strong increase in the population lacking health coverage and slight improvements in housing conditions. These contradictory results show the precariousness of the conditions of vast segments of the population brought with it the exclusionary modernization process

Table 10.7 Statistical synthesis of the quality of life index

QLI		
	1991	2001
Q1	00.44–04.95	02.74–05.43
Q4	06.71–08.15	07.22–08.44
5 worst	Chical Co (0.44)	Ramón Lista (2.74)
	Curacó (1.41)	Villa Grande (2.86)
	Rinconada (2.62)	Rinconada (2.96)
	Ramón Lista (2.71)	Bermejo (2.98)
	Santa Catalina (2.73)	Santa Catalina (3.10)
5 best	Coronel Rosales (8.15)	Coronel Rosales (8.84)
	General Alvarado (8.07)	Monte Hermoso (8.51)
	Corpen Aike (7.93)	Corpen Aike (8.45)
	Autonomous City of Buenos Aires (7.79)	Río Grande (8.45)
	General Pueyrredón (7.77)	Autonomous City of Buenos Aires (8.28)
Worst Pampean region	Chical Co (0.44)	Garay- Chical Co (5.10)
Worst MRBA	Pilar (5.57)	José Carlos Paz (5.50)
Best northeast	San Fernando (Chaco province) (6.29)	Capital district (Misiones) (6.58)
Best northwest	Castro Barros (La Rioja province) (7.31)	Castro Barros (La Rioja province) (8.09)
Sigma	01.18	01.22
Mean	05.80	06.29
Median	06.02	06.53
Variation coefficient	20.34	19.39

Source Personal elaboration

of the previous decade. In this context, despite the crisis, there are paradoxically improvements in most of the global indicators, although, from the territorial point of view, the same spatial configuration is maintained, with the north of the country more relegated and with the central zones with higher values for the index. Likewise, more favorable position is noted in the enclaves of the provincial capitals, even in the most backward regions. From a geographical point of view, it is observed that the north of the country continues to be the most lagging region, particularly

the northeast, which registers slight improvements compared to 1991. On the other hand, the northwest region shows more substantial improvements in said period. The rest of the country also shows notable improvements, with the exception of the Metropolitan region, whose performance increases very slightly. It is in this sector, with the characteristics of a megalopolis, where there are numerous internal contradictions, with northern counties with high quality of life values, while others from the south and west have vast sectors of the population living in very poor conditions. Finally, it is important to mention the improvements in the Pamepana region, Cuyo and, especially, Patagonia in addition to the northwest region previously mentioned. The quality of life gap between regions increases in this period since it goes from 1.77 to 2.16, with the same regions in extreme situations: northeast and Patagonia.

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Chapter 11
Quality of Life in Argentina in 2010

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Abstract This chapter proposes the development of a quality of life index for Argentina's population. This index is obtained from the weighted combination of socioeconomic (education, health and housing) and environmental (nature-based recreational resources, socially constructed recreational resources and environmental problems) indicators. The unit of analysis is 510 counties (belonging to 23 provinces) and 15 communes of the Autonomous City of Buenos Aires City (CABA). It is also proposed a comparison with the previous index of the year 2001 to be able to know the evolution of the quality of life in the last years. The results show clear progress in socioeconomic indicators during the first decade of the century; however, the level of regional inequality remains high.

Keywords Quality of life in 2010 · Argentina · Intercensal comparison · Territorial differences

11.1 Introduction

On October 27, 2010, in the year of the Argentine National Bicentennial, the tenth National Population Census was carried out, Homes and Houses of the Argentine Republic, in compliance with the constitutional mandate. After the 1991 and 2001 National Censuses, the normative precept of carrying out the population censuses in the years ending in "0".

This information is essential to define from the Federal State the public policies of the next ten years, in areas such as health, education, work, social integration,

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infrastructure and public works. It also constitutes an important source of information for the private sector and for academic research. It was the first census in Argentina in which the data on indigenous and Afro-descendant descendants was expanded. The provisional results by sex and county and province were released on December 17, 2010, while the final results were published on September 1, 2011.

This chapter continues the framework of the last two censuses (1991 and 2001), and it shows the possible highest level of spatial desegregation: 510 counties, belonging to 23 Argentine provinces and 15 communes of the Autonomous Buenos Aires City (CABA). This Quality of Life Index (QLI) is based basically on two main dimensions: a socioeconomic one and an environmental one. The socioeconomic dimension embraces those indicators related to education, health and housing. The environmental dimension considers those indicators which refer to environmental problems as well as to the degree of attraction of "natural-based" landscapes and "socially constructed" amenities. In addition, since these are the latest data available, to deepen its territorial and temporal characterization, we propose a comparison with the 2001 QLI, since both have a similar structure, with the two dimensions mentioned above. The theoretical and conceptual aspects were already presented in the previous chapters.

11.2 Methodology

The index is composed of the following dimensions and variables, similar to those used in previous censuses:

11.2.1 Socioeconomic Dimensions

Education

- % of the population with levels of instruction below complete primary education (Table 7.8 2001 Census and p 29 in 2010 Census).
- % of the population with a complete university educational degree (Table 7.8 2001 Census and p 29 in 2010 Census).

Health

- % of Infantile Mortality Rate (IMR) according to the mother's residence place (Ministry of Health).
- % of the population without health coverage/insurance or private or mutual plan of Health (Table 6.3 2001 Census and p 29 in 2010 Census).

Housing

- % of the population that resides in housings with lack of exclusive use of toilets (Table 4.6 2001 Census and p 40 in 2010 Census).
- % of overcrowding, considering as such those houses with more than 2 people in each room (Table 4.8 2001 Census and H 9 in 2010 Census).

11.2.2 Environmental Conditions and Landscape Attractions

Environmental problems

- Use of pesticides in agriculture Ombudsman's Office. Children's Environmental Atlas 2009).
- Participation of industry and mining in GNP (INDEC 2003).
- Pollution/Noise/Traffic (Municipal information/field trips/urban size).
- Hazardous locations (Municipal information/field trips/satellite imagery).
- Locations with negative externalities (Municipal information/field trips/satellite imagery).
- Crime rate every 10,000 inhabitants (National Directorate of Criminal Policy 2008).
- Percentage of the population living in settlements (INDEC 2001 Census. 2004, unpublished data).
- Percentage of the population living near garbage dumps (less than 300 m) (INDEC 2001 Census. 2004, unpublished data).
- Seismicity and Volcanism (Chiozza et al. Atlas Total de la República Argentina, 1987).
- Tornadoes (Geosistemas. Mapas de Riesgos Naturales en la Argentina 1997).
- Flooding (INDEC 2001 Census. 2004, unpublished data).
- Climatic discomfort (IRAM. Clasificación bioambiental de la República Argentina 1996).
- Nature-based recreational resources (Municipal information/field trips/satellite imagery)
- Beaches
- Resorts by streams, rivers and lakes
- Thermal water centers
- Presence of ice and snow for winter activities
- Relief (from a geographic perspective it is the variation in height of a land surface).
- Lakes, small lakes, lagoons, rivers and streams
- Parks and green spaces
- Socially constructed recreational resources (Municipal information/field trips/satellite imagery).
- Urban aesthetics/urban patrimony
- Cultural centers
- Shopping infrastructure
- Sport centers

After this quick and synthetic description of the relative situation of each variable, we explain how we use this information to build an index that covers the aspects that we have considered separately.

The first step in the elaboration of the quality of life is the transformation of the rates into partial index numbers, which was carried out according to the following procedure, according to the type of variable:

Variables whose increase implies a worse relative situation (environmental problems, population residing in crowded homes, population without health coverage, population without a toilet for exclusive use, and IMR).

$$I = \frac{\text{Max} - a}{\text{Max} - \text{Min}}$$

where a: cost variable.

Variables whose increase implies a better relative situation (Population with university education level)

$$I = 1 - \frac{\text{Max} - b}{\text{Max} - \text{Min}}$$

where b: benefit variable.

Once the variables have been transformed, it is possible to elaborate the Quality of Life Index. For this purpose, we have used all the preceding aspects and considering the advances made in previous works (Velázquez and García 1996, 1999) and their correspondence with other alternative statistical procedures for the selection and weighting of the variables (Marinelli et al. 1999; Torcida et al. 1999; Cepeda et al. 2004), we have established differential weights for each partial index according to its relative importance.

The most important components are the health variables, followed by housing, environmental risks and educational variables. The relative weight of each element is presented as follows in Table 11.1.

Considering the relative weight of each variable, we have determined a Quality of Life Index (QLI) whose theoretical value can reach between 0 and 10 to reflect the worst and the best situation, respectively.

11.3 Results

11.3.1 Education

Comparing the situation between 2001 and 2010 (with the same intervals), the proportion of the population that did not complete their basic education continues to show

Table 11.1 Dimensions and variables for the quality of life index

Dimension	Variables	Partial weight (%)	Total weight (%)
Socioeconomic dimension			
Educational	Degree below complete primary	10	20
	University degree	10	
Health	Infant mortality rate	10	20
	Pop. without health insurance	10	
Housing	Lack of exclusive use of toilets	10	20
	Overcrowding	10	
Environmental dimension			
Environmental quality index	Nature-based resources	10	40
	Socially constructed resources	10	
	Environmental problems	20	
Total			100

Argentina, 2010

notable differences, although these have decreased significantly (Figs. 11.1a and 11.1b).

The Northwest and Northeast regions of the country present the most unfavorable situation, especially in a wide transition zone between the two regions. Likewise, the situation of the northern Patagonian plateau and areas located outside the main urban centers is negative.

In the Pampas and Cuyo regions, there is also a clear difference between the central areas and their respective peripheries; that is, the western pampas and the crossing areas, respectively. The same occurs in Patagonia, where the central plateau presents a more adverse educational panorama than the coast or the mountain range. The only region with more acceptable levels continues to be the Greater Buenos Aires Metropolitan region (MRBA), probably because its better relative accessibility makes it easier to complete basic schooling.

At the provincial level, the cases of Chaco and Río Negro provinces stand out, which managed to reduce their proportion of the population without basic studies by more than six points. This panorama is repeated in most of the jurisdictions where the achievements have been significant, exceeding four points. The most modest results were observed, on the other hand, in the Autonomous City of Buenos Aires (CABA), where the registered improvements barely exceeded two points. Other provinces where progress has been relatively scarce are Tucumán, Buenos Aires, Santa Cruz and Tierra del Fuego, where the need to improve this situation is evident.

As a result of the significant increase in the educational budget during the 2001–2010 period, several universities were created in different parts of the country,

Fig. 11.1a Population with incomplete primary education Argentina, 2001. *Source* Personal elaboration based on the 2001 Census

Fig. 11.1b Population with incomplete primary education, Argentina, 2010. *Source* Personal elaboration based on the 2010 Census

and at the same time began the offer of *virtual degrees* (via the Internet), which expanded access to education and opportunities to vast sectors of the population. This phenomenon, together with the competitiveness of the labor market, implied a considerable increase in the proportion of the population that reached a university degree between the two censuses. In 2001, for example, two counties (Rinconada in Jujuy province and Limay Mahuida in La Pampa province) lacked university graduates (i.e., they did not even have a doctor, a veterinarian, or an agronomist). In 2010, this no longer occurred in any county or commune of Argentina.

Once again, the northern regions of Argentina show the worst relative situation due to two factors: on the one hand, the social structure generates, for the vast majority of the population, scarce conditions to access university studies; on the other hand, the presence of universities in the north of the country continues to be quite restricted outside the provincial capitals and the main cities.

This association with the location of the universities was repeated very strongly in all regions in 2001, including in Greater Buenos Aires, where the difference between the educational levels reached by the population of the north of CABA and the first and second belt counties of the suburbs of Greater Buenos Aires City. However, in 2010 the situation changed completely, due both to the expansion of the budget and the creation of universities in various parts of the suburbs and to the expectations of upward social mobility derived from the changes that occurred during the last decade, as evidenced by the growing proportion of *first-generation* college students (Figs. 11.2a and 11.2b).

In the Pampas region, the number of university graduates also grew ostensibly, although a sort of gradation from the center to the periphery still persists—but to a lesser extent—showing lower values of the university population in the western Pampas and the north of Córdoba and Santa Fe provinces. In Cuyo and Patagonia regions, the educational fragmentation of society and territory was very evident in 2001, due to the deep contradiction between urban areas with the presence of agents linked to dynamic processes and counties with a predominance of subsistence activities. In 2010, however, the situation improved markedly, especially in the most densely populated areas.

At the provincial level, the largest increases in university graduates were found in CABA, Tierra del Fuego, Neuquén, Mendoza and Córdoba: All of them exceeded three points. As we have already pointed out, the notable increase in university graduates corresponds, to a large extent, to the expectations of progress of a large part of the Argentine population and to the notable increase in the budget for the sector during this period. However, despite the growth in territorial coverage, educational opportunities in this area continue to be asymmetric, given that those who live near university centers continue to be the main beneficiaries.

Fig. 11.2a Population with university education level. Argentina, 2001. *Source* Personal elaboration based on the 2001 Census

Fig. 11.2b Population with university education level. Argentina, 2010. *Source* Personal elaboration based on the 2010 Census

11.3.2   Health

Although in general terms both maps of infant mortality (IMR) rate are very fragmented, undoubtedly the advances verified during the last intercensus period were significant, especially among the groups that registered the highest IMR at the beginning of this century. In fact, the national IMR decreased from 16.6 to 11.9 per thousand between 2001 and 2010.

Considering the 2000–2002 triennium, the highest rates corresponded to vast sectors of the Northwest region–especially toward the west, outside the most densely populated valleys– and the Northeast region –mostly in the interior areas, more distant from the provincial capitals. Other subregions also exhibited high rates, such as the Patagonian plateau, the western and depressed Pampas, the Cuyo crossings away from the oases, as well as the south and west of the Buenos Aires city suburbs. At the provincial level, the jurisdictions that improved the most were Corrientes, Chaco and Misiones provinces, which reduced their IMR by eight or more points.

Although the starting conditions (2001) were very adverse and, therefore, progress might seem easier to achieve, the reality is that the mere demographic transition cannot by itself explain this phenomenon. In fact, at the beginning of the twenty-first century, Argentina exhibited a very high IMR in relation to other indicators (particularly, a relatively high life expectancy at birth). On the contrary, the reduction of this serious problem was due both to the implementation of active policies associated with maternal and child care and to the general improvement of socioeconomic and habitat conditions (provision of water drinking water, waste disposal) and an increase in the level of education, mainly for new mothers. The reproductive health policies implemented in those years will surely help to reverse the historic intergenerational transfer of poverty in both northern regions, marked by their high fertility levels (Figs. 11.3a and 11.3b).

In 2001, the population without social health coverage reached very high percentages in a large part of the north of Argentina, to the point that most of their counties exceeded the 63% threshold. In 2010, economic growth and other factors meant that this proportion fell to about half. However, both regions are still characterized by the persistence of important layers of the population with low-level jobs, a high percentage of the peasant population and remnants of urban marginality. Self-employment and occasional trades are complemented by various public assistance programs that, although they contribute to improving conditions compared to 2001, are still insufficient to improve the well-being of the population, especially in the most isolated areas (Figs. 11.4a and 11.4b).

In the rest of the country, health coverage was also very unsatisfactory in 2001, the year in which almost 44% of the inhabitants of 75% of the counties of Argentina (382 units) lacked this benefit. In 2010, on the other hand, the proportion decreased to 205 counties, while 320 counties or communes reached the *best situation* (with the same intervals of 2001). In this sense, some communes of CABA, the northern suburbs of the Greater Buenos Aires city, Santa Cruz and Tierra del Fuego provinces and certain parts of the south of Buenos Aires province stand out, especially for the

Fig. 11.3a Infant mortality rate. Argentina, 2000–2002. *Source* Personal elaboration based on DEIS. Ministry of Health

Fig. 11.3b Infant mortality rate. Argentina, 2009–2011. *Source* Personal elaboration based on DEIS. Ministry of Health

Fig. 11.4a Population without social health coverage. Argentina, 2001. *Source* Personal elaboration based on the 2001 Census

Fig. 11.4b Population without health coverage. Argentina, 2010. *Source* Personal elaboration based on the 2010 Census

low percentage lacking health coverage (less than 15%). At the provincial level, all jurisdictions improved their situation, notably the cases of Río Negro, Corrientes, Buenos Aires, Santa Cruz and Córdoba, which registered improvements of more than 12 points. On the contrary, the most modest advances corresponded to La Rioja province (less than three points).

Although the starting point for this period (2001) was very adverse, the active policies deployed in order to increase the population's social and pension coverage made it possible to partially reverse the legacy of the previous neoliberal decade. Other factors that operated in this regard were the reduction in poverty (it reached peaks of 50% in 2001, while in 2010 it was below 10%) and the increase in purchasing power, which allowed some self-employed and professionals to opt for prepaid health plans. All these circumstances also contributed to reducing the overload of the public health system which, in some of the most populated centers, however, continues to prove insufficient to satisfy the needs of the population.

11.3.3   Housing

During the 1990s, the neoliberal logic fostered the reduction and withdrawal of the State; consequently, housing and infrastructure became commodities. Specifically, factors such as the ostensible reduction of State intervention in the real estate market, the conversion of the Banco Hipotecario Nacional (National Mortgage Bank) into a wholesale bank, the privatization and foreignization of the banking system in general, high interest rates and the speculative rationality of the financial sector acted to the detriment of the middle class, which was stripped of its traditional financing tools. As a result, the housing situation in Argentina worsened, as shown in the map of the resident population in households without a toilet for 2001 (Fig. 11.5a).

Subsequently, the implementation of policies aimed at establishing significant improvements in the infrastructure of the rural population's homes and the urban peripheries—that is, the two groups with the highest levels of relative deprivation—determined that this indicator decreased drastically between 2001 and 2010 (Fig. 11.5b). In this way, the interior of the Northeast and Northwest–two regions with a high component of peasant population and urban peripheries in the process of consolidation–improved their situation, although it does not stop exhibiting nuclei strongly affected by this problem. The Patagonian plateau and the periphery of the MRBA, for their part, have experienced substantial improvements compared to the beginning of the intercensus period.

At the provincial level, Chaco, Corrientes, Misiones, Formosa and Jujuy, which had started from an adverse relative situation, have benefited from a substantial decrease in the population lacking a toilet (more than ten points) during the last intercensus period. Other jurisdictions, on the other hand, did the same to a modest measure, and some have even experienced almost no improvement, such as CABA and Tierra del Fuego. A plausible explanation for this phenomenon points to the conception of housing as a commodity still in our country, which limits or blocks

Fig. 11.5a Population in households without a toilet. Argentina, 2001. *Source* Personal elaboration based on the 2001 Census

Fig. 11.5b Population in households without a toilet. Argentina, 2010. *Source* Personal elaboration based on the 2010 Census

the attempts of the most vulnerable sectors to obtain better living conditions through access to basic services or the repair of their very poor residences.

During the neoliberal decade, another intrinsic feature of the subordination of housing policy to the logic of the market was the growing dichotomization of supply, which was divided between the low production of tiny and deficient units destined for low-income sectors and the dynamization of the sumptuary construction oriented to satisfy the solvent demand of groups with high purchasing power. This situation has not undergone substantial changes during the last intercensus period. As a result, the proportion of the population in overcrowded households (more than two people per room), although it decreased slightly between 2001 and 2010, continues to show the worst relative situation in the northern regions (Figs. 11.6a and 11.6b). The constitution of young family units, in areas where high relative fertility, scarcity of resources and the aforementioned commercialization, evidently perpetuate (and even aggravate) this housing deficit.

Another case worth highlighting is that of Patagonia, which still continues to show overcrowding problems. This is noticeable in Neuquén—although with less magnitude than in 2001—while in the rest of the region the situation has improved slightly due to two factors: the moderation in the rate of migratory growth, which increased the degree of residential consolidation, and the alternatives generated by the national and provincial governments to mitigate this problem. Also, in the Cuyo region, overcrowding problems persist, with the epicenter in the area between the San Juan oasis and the center of Mendoza province and the crossing areas in general. Again, the scarcity of resources in a context of high relative fertility establishes a structural limitation to overcoming this situation.

The Pampean region exhibits, in general terms, a good relative situation, except for the area of contact with the MRBA and some sectors of the Atlantic coast linked to seasonal economic activities. The MRBA clearly shows the social fragmentation of the territory, revealing high levels of overcrowding in the southern communes of CABA and worse conditions in the western and southern suburbs.

At the provincial level, Jujuy, Salta, Formosa and Chaco provinces, which had started from an extremely adverse situation in 2001, have clearly improved their situation, since in all of them the population affected by this problem decreased more than five points. On the contrary, this housing deficit worsened in the provinces of Santa Cruz and Tierra del Fuego and CABA, in the first two cases due to a highly receptive migratory dynamics of the population—which in turn increases the already high preexisting pressure on land and housing tenure–and in the latter as a result of the absolute validity of a rationality based on the commercialization of housing and real estate speculation. Finally, it is important to note that this problem is inherent in most large and intermediate cities (over 50,000 inhabitants), especially those inserted in dynamic globalized activities such as agribusiness, mining or tourism.

Fig. 11.6a Overcrowding. Argentina, 2001. *Source* Personal elaboration based on the 2001 Census

Fig. 11.6b Overcrowding. Argentina, 2010. *Source* Personal elaboration based on the 2010 Census

11.3.4 Environmental Problems

Use of pesticides in agriculture

With the expansion of the agricultural frontier and the advancement of transgenic agriculture, the intensive use of pesticides has become a serious threat. The national consumption of pesticides increased, between 1991 and 2012, from 39 to 335 million liters per year, applying an average of 12 L per hectare. With an average exposure dose of 8 L per inhabitant, fumigations affect 12 million people—30% of the Argentine population— (REDUAS 2013).

According to the Map of Environmental Risk of Children due to Pesticides presented by the National Ombudsman's Office (2009), the counties with the highest risk–medium, high and very high–of pesticide contamination correspond to a large extent to the Chaco plains and the Pampas (Fig. 11.7). According to the decreasing order of toxicity established according to crops (cotton, potatoes, soybeans and corn), the greatest risk is concentrated in cotton counties of the center-south of Chaco province, the core zone of the soybean monoculture (south of Santa Fe and northwest of Buenos Aires provinces), corn counties and soybean farmers from the center of Córdoba and parts of the southeast of Buenos Aires province specialized in potato production. Likewise, many of the areas with medium values surround the areas affected by high percentages, thus covering almost all of the aforementioned provinces and part of Entre Ríos and La Pampa provinces. The lowest measurements correspond to the limits of the agricultural frontier (south of San Luis and Salta provinces).

Due to the bias of the study carried out—which is not based on the annual volume of fumigations, but on the acute oral Lethal Dose 50 of the active principle of the pesticides applied to each crop–the map in a way makes invisible the greater relative risk associated with the productions that occupy the most surface area and require the greatest number of pesticides: soybeans and corn. As a result, both the effects that chronic cumulative exposure to sublethal doses can have on the health of the population (hormetic effect) and the role of inert substances or adjuvants, often more dangerous than the active principle itself, are ignored.

Even so, soy is the crop that makes the greatest contribution to the Pesticide Contamination Index: It is present in almost all counties with medium, high or very high risk. Although the serious situation in Chaco province could be attributed to the greater relative toxicity of the cotton pesticide package, in recent years this crop has resigned a large part of its area in favor of soybeans.

Finally, the isolated cases of high values of Santiago del Estero and Tucumán provinces allow us to foresee the future appearance of new counties outside the Chaco-Pampean plains, in a framework of increasing development of biotechnologies and transgenic events aimed at producing intensive crops in the use of pesticides adaptable to areas traditionally not associated with this type of exploitation.

Participation of industry and mining in the Gross Geographic Product (GGP)

The information for this variable was processed from INDEC records that break down the Gross Geographic Product (GGP) at the provincial level. The only exception was the information provided by the Department of Statistics of the province of Buenos Aires, which disaggregates the contribution of industrial activity by county. In both cases, the two economic activities with the greatest environmental impact were considered: industry and mining.

The link between the demographic component and industrial activity is well known, since logistics plays a fundamental role in the design, production, distribution and final price of products. For this reason, historically the industry was located in spaces close to large urban centers (Fig. 11.8). As a result, the MRBA and the neighboring counties concentrate on the highest values, highlighting municipalities such as Ensenada, Campana, General San Martín and Pilar, included in the vast Gran La Plata-Rosario industrial corridor. In the interior of the province of Buenos Aires, average values are also observed in some counties with important cities such as General Pueyrredón (Mar del Plata), Bahía Blanca, Olavarría and Tandil.

Consequently, the other most populated jurisdictions in the country (Córdoba and Santa Fe provinces) have medium–high records, followed by Mendoza province with medium–low values. The province of Neuquén is also in this category—the only exception from a demographic point of view—due to the great relative weight of hydrocarbon production activity.

It is important to note that the map does not reflect the environmental risk associated with metalliferous mega-mining in the provinces of Catamarca, Jujuy, San Juan and Santa Cruz, due to two factors: the GGP data analyzed here date from 2003, when there were few operations, and the aggregation of information at the provincial level, which liquefies the relative weight of the activity and prevents discriminating its incidence at the counties level.

Pollution, noise, congestion

Regardless of its high spatial and temporal variability within cities, *acoustic pollution* is one of the main afflictions of large urbanizations, as it causes a differential impact on people's health by generating hearing and cardiovascular disorders, stress, irritability, sleep disturbances and financial expenses (to carry out acoustic protection and insulation measures) (Marcos 2005).

To know the spatial distribution of this phenomenon in the country we resort to a *proxy variable*, that is, a substitute indicator that is supposed to be correlated with another that is not available (by cost or because it does not exist). Due to the significant increase in the number of vehicles and the absence of road infrastructure and improvements in public transportation of the main cities, a close correlation between this type of pollution and the demographic component is expected. Following this criterion, we carry out a standardization of the counties, taking up the classification of Vapñarsky and Gorojovsky (1990) and the 2010 Census data (Fig. 11.9).

Following this framework, the spatial distribution of this variable reflects the population structure of the country and the macrocephaly characteristic of its urban network. Thus, the parties of the MRBA stand out with the maximum value for this problem. Below we find only three counties corresponding to large cities (Rosario,

Córdoba and Mendoza), while the category of large Intermediate Size Agglomerations (ISA) is made up of 8 counties, mostly provincial capitals, with the exception of Berisso, Ensenada and General Pueyrredón (Mar del Plata). Then there are 118 intermediate ISAs and 128 minor ISAs. The rest of the counties (223, almost half of the national total) are made up of small towns and rural populations, where the deficiencies of the public transport system have led to a substantial increase in the number of mopeds (especially in the north), a fact also observed in larger cities.

We consider that this variable begins to be a problem of increasing magnitude in the intermediate ISas, reaching its maximum expression in the metropolis of Buenos Aires city, where the high demographic density enhances the phenomenon.

Hazardous locations

All the variables analyzed so far present a certain spatial contiguity in their distribution. However, dangerous locations tend to refer to specific cases—power plants, nuclear research centers, petrochemical complexes, military establishments, embankments, dams, certain infrastructure works, areas affected by "environmental liabilities"—and also to fewer threatening factors such as large fast communication routes close to cities (Fig. 11.10).

The first ones are located in particular locations. Such is the case of the Atucha I and II nuclear power plants (near the town of Zárate, Buenos Aires province), Río Tercero Reservoir (Tercero Arriba, Córdoba province) or the Ezeiza Atomic Center, near Buenos Aires city; the petrochemical poles of Berisso, Ensenada and Bahía Blanca; or specific cases such as silo explosions in San Lorenzo (Santa Fe province), oil spills in various places, such as Rincón de los Sauces (Pehuenches county, Neuquén province), construction on steep slopes in Comodoro Rivadavia (Escalante county, Chubut province), environmental liabilities related to metalliferous and uranium mining in Mendoza, Jujuy and Patagonian provinces. Other counties, such as San Fernando (Chaco province), have embankments to protect the urban area of Resistencia from flooding, works that, in addition to representing a danger, tend to aggravate the situation of the population that remains outside the design. The numerous military installations present in our territory, in addition to generating urban barriers, are also dangerous for daily life.

On the other hand, diverse routes of fast communication affect the security of several cities. High values are recorded in large urban centers and in medium or small towns that, due to their location, are crossed by dangerous routes. However, it should be noted that this type of problem is not yet relevant in Argentina, except in a few cases.

Locations with negative externalities

Other infrastructures have some type of negative environmental impact on those who reside nearby, such as penitentiary units, ports, silos, warehouses, electricity transformer stations, barriers, terminals, industrial poles, oil complexes, thermoelectric plants and dams, among others, that appropriate public space and fragment it. They can also involve displacement (and often leakage) of dangerous products and annoyances of varying degrees, even leading to compulsive population relocation

depending on the needs of the infrastructure plan. These problems are common, for example, in port cities—Bahía Blanca (Ingeniero White) and Mar del Plata (General Pueyrredón), petrochemical centers—Gran La Plata, Comodoro Rivadavia—and agro-industrial complexes—Gran Rosario. The populations of cities near productive activities such as sugar mills (Tucumán) or fruit centers (Alto Valle del Río Negro and Neuquén) are also seasonally affected (Fig. 11.11).

Other activities generate negative externalities for the rest of society. Such is the case of oil and mining- which tends to make real estate prices and other sensitive assets inaccessible for most wage earners—the historic housing solutions in the form of *monoblocks* or other types of residential and infrastructure projects, and some activities with marked seasonality—mass tourism—or with programmed expiration –various industrial promotion regimes. Although in general these phenomena can be more of a "nuisance", in some cases they can reach significant levels and generate territorial conflicts—for example, water infrastructure in the south of Mendoza province that aggravated the water deficit in the west of the Pampas. Other more particular cases, such as the Center for Experimentation and Launching of Self-Propelled Projectiles in the Mar Chiquita district, make it difficult for the inhabitants of the area to circulate.

As in the previous variable, these are specific issues, without spatial contiguity with varying degree of impact on the local population, except in special cases.

Crime rate

Contrary to what is often assumed, the magnitude of a jurisdiction is not clearly related to its crime rate per 100,000 inhabitants), but rather to its quantity. The National Directorate of Criminal Policy (2008), dependent on the Ministry of Justice and Human Rights of the Nation, provides valuable data at the county level that allow an approach to the criminal reality of the country (Fig. 11.12).

However, it is necessary to clarify that this variable is usually strongly underreported, since only a proportion of crimes are declared. The propensity to report is associated, on the one hand, with the population's degree of coverage by insurance policies and, on the other, with the degree of trust in agents and institutions. Certainly, it seems likely that in adverse socioeconomic contexts the level of underreporting is higher, as in high-income sectors, due to the negative connotation that this type of events could have on the perception of their environment.

As a result of this heterogeneity, the highest crime values cover demographically and economically very unequal areas, such as the province of Mendoza, a large part of Santa Cruz province, some counties of Salta and Jujuy provinces, and only one of the province of Santa Fe. Based on the aforementioned correlation with population size, high average values stand out in some counties of the Patagonian coast and in the interior of some provinces (mainly Salta, Santa Fe, Buenos Aires, San Luis and Neuquén) with little demographic weight. On the contrary, areas with a greater media presence associated with crime—such is the case of the MRBA—register medium and low values (with the exception of the Autonomous City of Buenos Aires), like the rest of the country.

Fig. 11.7 Use of pesticides in agriculture. Argentina. *Source* Ombudsman's Office. Children's Environmental Atlas (2009)

Fig. 11.8 Industry and mining participation in the gross domestic product (GDP). Argentina, 2010. *Source* Argentina. INDEC (2003)

Seismicity and volcanism

A great variety of geological processes are present in Argentina and can affect the population and its activities. Of the natural hazards phenomena, our country only lacks tsunamis. Therefore, there is a very broad field of study that is poorly covered. Mapping these natural disasters is essential for land use planning and prevention (González and Bejerman 2004).

The cases of seismicity are mainly located in areas close to the mountain range and the foothills (Fig. 11.13). We can find vulnerable areas in counties of the provinces of San Juan, Mendoza and Neuquén. They are also present, to a lesser extent, in Salta and Jujuy provinces and in the south of the country, in the provinces of Chubut and Santa Cruz. The sector furthest from the mountain range that can also suffer this type of phenomenon is located in the Córdoba mountains. Despite the fact that earthquakes of some intensity are registered rather frequently, in recent years they have not caused significant damage.

On the contrary, volcanic activity has had an impact on the regional economies of Patagonia in the last twenty years. The ashes of the Hudson (1991), Puyehue (2011) and Calbuco (2015) volcanoes, located in Chile, have caused significant damage not only in their immediate surroundings—the towns of Los Antiguos, San Martín de los Andes, Villa La Angostura and San Carlos de Bariloche, among other cities—but also in the rest of the country, as they affected commercial air activity.

Tornadoes

Tornadoes are one of the most intense atmospheric phenomena, due to the danger they pose to human life and the extent of the material damage they can cause. They have been observed on all continents with the exception of Antarctica, although the vast majority occur in North America, more precisely in the USA. Argentina and southern Brazil also stand out as affected by tornadoes (Goliger and Milford 1998; Brooks et al. 2003).

Schwarzkopf (1982) delimited the geographical distribution of tornadoes in Argentina between latitudes 25 and 40 °S. The maximum frequencies were found in the center and north of the country, and with less intensity they can occur in the rest of Buenos Aires, Santa Fe and Entre Ríos provinces (Goliger and Milford 1998, based on the Schwarzkopf cartography, 1982). The amount of 646 strong wind events were identified between 1930 and 1987, of which 12% had an intensity of F3 or more in the previously delimited area (Matsudo and Salio 2011). In addition, a probable occurrence of 10 events per year has been suggested. (Goliger and Milford 1998), and the possibility that they occur in other sectors, with the exception of Patagonia and the Andean Mountain range (Lima Nascimento and Doswell 2006). The same authors suggest a potential link between climate change and the increase in very strong storms and tornadoes, a warning that requires better documentation and greater monitoring of this phenomenon in South America (Fig. 11.14).

Houses in flooding zones

Fig. 11.9 Pollution, noise and congestion. Argentina, 2010. *Source* Municipal information/terrain/urban scale

Fig. 11.10 Hazardous locations. Argentina, 2010. *Source* Municipal information/terrain/urban scale

The proportion of households settled in flooded zones is highly variable in Argentina. The counties with the worst situation are concentrated in the NW, basically in areas of the Saltan Chaco, the Salta and Jujuy river valleys, the south of Tucumán and the Santiago del Estero fluvial diagonal. In all cases, the situation of extreme poverty exacerbates the difficulties generated by the floods (Fig. 11.15).

The Northeast also presents well marked flood problems, especially in the Paraná River (especially its left bank), the Iberá estuaries (Corrientes province), southern sector of Chaco and the west of Formosa provinces. Here the presence of houses with high vulnerability and recurrent floods is repeated.

Contrary to the Cuyo region—with its arid conditions has a lower proportion of houses with this problem—the Pampean region gathers vast segments subject to flooding in various sectors: (a) the depressed pampas; (b) the south of Entre Ríos province, especially in the delta area; (c) the area of the submeridionalis in Santa Fe; (d) some counties of the Chaco environments of Santa Fe province; (e) the south of Córdoba province; and (f) Chical Có (La Pampa province). Once again, in these areas, flood problems aggravate a critical structural situation with regard to the living conditions of its inhabitants.

In the MRBA, the greatest presence of households affected by this problem is concentrated in the Matanza river basin—particularly in the counties of Lomas de Zamora and Presidente Perón (both with more than 30% of their homes in such condition), as well as in the basins of the Reconquista River—to the west, specifically in the counties of José C. Paz (with a third of households in flooded areas)—and Luján—to the northwest, and especially in Tigre (where 36% of their households suffers from this situation).

Finally, the predominant aridity characteristics in Patagonia determine that this problem only occurs occasionally: Picún Leufú (Neuquén province), and Tehuelches and Rawson (Chubut province) are the affected counties.

Houses in settlements

Like other environmental problems, settlement presents various territorial situations (Fig. 11.16). Due to its characteristics of poverty and marginality, the Northwest region shows a high incidence of households in this condition, with an epicenter in the Saltan Chaco—especially on the border with Bolivia, extending until reaching the central Salto-Jujeños valleys—and all the provincial capitals, in all cases surrounded by poor urban peripheries (also including those of La Rioja and Catamarca provinces). Despite its state of extreme poverty and subsistence, some sectors of the Northwest, such as the Puna region, do not show such a significant presence of settlements.

The Northeast also constitutes a region with a high presence of households in settlements, although this problem is more serious in the periphery of the respective provincial capitals. In the Cuyo region, on the other hand, there are two clear situations: on one hand, the problem of the provincial capitals (Greater San Juan and Greater Mendoza); on the other, the worst relative situation of the population outside the oases. San Luis province deserves a separate comment, since it exhibits a lower proportion of the population in settlements due to the provincial housing policy. Only

Fig. 11.11 Locations with negative externalities. *Source* Municipal information/terrain/urban scale

Fig. 11.12 Crime rate (10,000 inhabitants). Argentina, 2008. *Source* National Directorate of Criminal Policy (2008)

in General Pedernera (one of the counties most affected by industrial promotion), this problem does acquire some relevance.

The Pampas region generally shows low values in this indicator, with the exception of three specific cases: (a) the large cities of Córdoba and Rosario, which, together with the capital of Santa Fe, have urban peripheries that increased significantly during the 1990s; (b) some particularly critical areas, such as Concordia (Entre Ríos province) or Ramallo (Buenos Aires province); and (c) the extreme south (Villarino and Patagones counties in Buenos Aires province, Caleu Caleu county in La Pampa province), with a high proportion of immigrants from neighboring countries.

In the MRBA, the average number of homes in settlements is high in almost all the districts, except the Autonomous City of Buenos Aires, and the counties of Vicente López and Tres de Febrero. All the remaining municipalities exhibit adverse situations, especially in the west and south axes, where problems of employment, income, social fragmentation and inequity, real estate speculation and commercialization of public services evidently contribute to explain the proliferation of these types of settlements.

Finally, in Patagonia the proportion of households linked to this problem is relatively low. Adverse meteorological conditions (cold, wind) must be added to the more favorable socioeconomic conditions –in comparative terms—that restrict the location of precarious settlements. In this context, housing problems tend to manifest themselves more in terms of overcrowding (small or shared dwellings) than precarious self-construction that seeks ownership through regularization. Only a couple of mountain counties (such as Loncopué and Futaleufú) and of the high tablelands (Mártires and Sarmiento) appear in relatively bad situations. However, the provincial capitals, although they do not express extreme values, also show the presence of this type of problem.

Houses near garbage dumps

This category includes those homes located less than 300 m from garbage dumps (Fig. 11.17). This problem is common in vast sectors of the Northwest, among which the following stand out: (a) the area of contact with the Northeast (Chaco Salteño and its extension); (b) the central valleys of Salto-Jujeña region, more densely populated; (c) sectors of the Puna region and the international border with Bolivia; (d) the majority of the province of Tucumán; (e) the west of Catamarca province; (f) the center and south of La Rioja province; and (g) vast sectors of Santiago del Estero province. The coexistence of a privileged minority with a marginalized majority determines that a high proportion of the Northwest population is compelled to reside in such conditions and, in some cases, seeks to supplement its economy with the recycling of waste. To this, it must be added the existence of large urban peripheries lacking services, all within a framework characterized by large sectors of the population with low levels of education and peasant tradition.

In the Northeast, the number of houses in this condition is also high, especially in Formosa province –where most of its counties exhibit a relatively poor situation—Corrientes province—where there is a high incidence of houses with this serious problem—and the center-east of Chaco province. The presence of garbage

dumps in the vicinity of the urban peripheries of this region is certainly a predictable phenomenon, although it is surprising in typically rural contexts such as the interior of Formosa and Corrientes provinces.

In the Cuyo region, the variable acquires special ruthlessness in the peripheries of its main oases (Greater Mendoza and Greater San Juan), while the Pampean region shows a low relative proportion of houses near garbage dumps: This problem is mainly concentrated in its periphery—south and west of La Pampa province, north of Entre Ríos province.

As it might be expected, this problem reaches considerable magnitude in the MRBA, both in terms of the proportion and the amount of the population involved in numerous counties. The southeastern axis Buenos Aires-La Plata cities presents a succession of jurisdictions in a serious situation, as well as the south of the suburbs, especially La Matanza, Esteban Echeverría and Presidente Perón counties. Toward the west, on the other hand, the counties adjacent to the Autonomous City of Buenos Aires are less affected, while the problem is evident in more distant jurisdictions, such as Merlo and Moreno counties. In the northern axis, only Vicente López county shows a low presence of garbage dumps, a proportion that grows significantly as distance from the Autonomous City of Buenos Aires increases, until reaching high figures in Escobar and the northwestern districts (Pilar, Malvinas Argentinas, and José C. Paz counties). In summary, in the MRBA the garbage dumps constitute empirical evidence of the increase in social fragmentation induced by the sociospatial coexistence of the consumption patterns of high-income sectors and the exclusion of broad layers of the population with fewer resources.

Lastly, in Patagonia the proportion of households near garbage dumps is relatively high in Neuquén province, especially in its provincial capital (county of Confluencia). Other affected counties correspond to the tableland area (Valcheta and Mártires counties), as well as an extremely valued tourist area in the country, such as Lago Argentino and the Perito Moreno Glacier in the Glacier National Park.

Climate discomfort

The latitudinal amplitude and the variety of reliefs favor a great diversity of climates in Argentina. According to IRAM (1996), the most unfavorable situations correspond to the very hot and very cold areas of the country (Fig. 11.24). The former is mainly concentrated in the northern provinces (Formosa, Chaco, Santiago del Estero), to which are added the north of Santa Fe and Córdoba provinces and the northwest of Salta province, where summers present extreme high temperatures. The coldest conditions are located, as is to be expected, in a large part of southern Patagonia, where the harsh winters restrict certain activities of the population. In both (very hot and very cold), the need for energy consumption is also necessary to mitigate the absence of comfort, especially in those houses that lack adequate thermal insulation.

The next category is the one with the greatest spatial variability and comprises the high average values typical of Misiones and the north of Corrientes provinces–favored by altitude–as well as the highland counties of Córdoba province and some mountainous areas. This also includes some counties of northern Patagonia, as well as

part of Córdoba and San Juan provinces, the north of Entre Ríos province, and juris-
dictions located west of the Salta and Jujuy river valleys, whose residents generally
suffer from seasonal discomforts.

The more temperate zones can be divided into two sectors: the warm temperate
in the center of the country and the cold temperate that includes part of Río Negro
province and the center and south of Buenos Aires province, the Pampas and Mendoza
province. Finally, a temperate enclave is present in the Salta and Jujuy river valleys
and in the eastern counties of Catamarca province (Fig. 11.18).

Summary index of environmental problems

In general, environmental problems do not register extremely high values for the 12
used variables, since the category with the greatest problems is between 2.31 and
3.76 points (Fig. 11.19). There we find two groups: (a) the largest cities (MRBA
and the most populated provincial capitals), where the correspondence between the
demographic component and the magnitude of environmental problems is evident,
and (b) specific locations linked to economic activities, such as those counties of Salta
and Neuquén provinces, associated with oil production and Santa Fe municipalities
linked to agro-industrial production.

The second category (1.77−2.30) comprises the agricultural nucleus of the
country, which includes the rest of Santa Fe province, a large part of the province of
Córdoba, the north of Buenos Aires province and some central and southern counties
of the same districts. Also, in this category we find various places that, throughout the
country, reveal particular local situations, such as mining in San Juan and Catamarca
provinces, and hydrocarbon exploitation in Patagonia. The same happens in the north
of the country, especially in Salta and Formosa provinces. The two remaining cate-
gories cover the rest of the country, generally sparsely populated areas without major
polluting production processes.

Naturally Based Recreational Resources (NBRR)

Argentina has a great diversity of NBRR that can contribute to greater or lesser
extent to the daily well-being of its residents. While its appropriation and enjoyment
are clearly differential according to social groups, we have established values that
privilege accessibility for the vast majority of the population. Next, we will show the
relative weight of each of these resources in each county.

Beaches

The vast Atlantic coastline has, from Punta Rasa (outer limit of the Río de la Plata
estuary) toward the south, a succession of coastal beaches of different qualities. The
Atlantic coast of Buenos Aires province, mainly for climatic reasons and geographic
location, is one of the most valued. However, there is some level of heterogeneity
linked to other factors (location, facilities, quality of water and sand, etc.). In general,
the beaches closer to the MRBA are overcrowded during the summer time, except
in those cases where an attempt is made to "scare away massive tourism" with
"exclusive" prices (such as the Pinamar, Cariló and Mar de las Pampas beaches).

Fig. 11.13 Seismicity and volcanism. Argentina, 2010. *Source* Chiozza et al. Total Atlas of the Argentine Republic (1987)

Fig. 11.14 Tornados. Argentina, 2010. *Source* Geosystems. Maps of Natural Hazards in Argentina (1997)

The busiest beaches are in Mar del Plata, although there is great heterogeneity between the sectors destined to popular uses and the more "exclusive" niches. The privatization of public space, which denotes strong inequalities in the possibility of enjoyment of these spaces of leisure and recreation. Further south, the beaches are not so crowded during the summer break and are less contaminated. However, they tend to suffer from other negative elements (particularly wind and the occasional presence of jellyfish), while others are relatively inaccessible to the resident population.

The Patagonian coast also has several beaches endowed with an important variety of settings (a more "natural" environment, a greater presence of fauna, less crowding, etc.). In contrast, they have negative factors such as wind, tidal amplitude and cold. The northernmost beaches of the Río Negro coast allow a more prolonged during the season—the case of Las Grutas stands out and, to a lesser extent, Playas Doradas (both in the town of San Antonio Oeste) -, but with overcrowding during the summer. Other noteworthy cases are the beaches in the vicinity of the city of Viedma (El Cóndor Spa).

In Chubut province, the city of Puerto Madryn stands out, followed by beaches near Rawson (Playa Unión) and Comodoro Rivadavia (Rada Tilly). The beaches of Santa Cruz in general—the estuary of Puerto Deseado, Puerto San Julián, Puerto Santa Cruz, Commander Luis Piedrabuena—are more attractive as a scenic resource than for other recreational uses due to its latitude, and the low temperature of its waters make them less enjoyable that beaches in the northern coastline of Argentina (Fig. 11.20).

Resorts on the banks of rivers, lakes, ponds or dams

The different types of resorts constitute another highly appreciable recreational resource for the residents of each district due to different factors, such as the accessibility, the quality of the water and the surrounding park, its aesthetics, the quality and quantity of facilities, sports activities, frequency and intensity of the wind, the temperature of the water, its public or restricted character, the degree of overcrowding and the length of the season.

The axes of the Paraná and Uruguay rivers (mainly in Entre Ríos and Corrientes provinces) stand out for the quality of their spas and the length of the season (more than four months a year). The Banco Pelay, Ñandubaysal, Santa Ana and Paso de la Patria are the most renowned, among others. Another area where this resource is important is in the Córdoba Mountain ranges, endowed with streams and attractive natural settings—especially the counties of San Alberto and Tercero Arriba–whereas different Buenos Aires province counties have public and free spas, generally located very close to or directly inside the municipal areas. Other relatively notable resorts correspond to certain areas of San Luis, Santa Fe, Misiones, Santiago del Estero and Chaco provinces.

In other areas, their presence is scarcer in the Northwest and mountain areas, the scarcity of water (and thaw characteristics) limits the existence of these resources, while in Patagonia the climate tends to decrease the intensity and availability of resorts (Fig. 11.21).

Fig. 11.15 Flooding index. Argentina, 2010. *Source* Argentina. INDEC. National Census 2001 (Unpublished information 2004)

Fig. 11.16 Population in precarious settlements. Argentina, 2010. *Source* Argentina. INDEC. National Census 2001 (Unpublished information, 2004)

Thermal water centers

In Argentina, hydrotherapy has been, until relatively recently, almost exclusively related to health problems and the elderly. However, as of the 1990s, it has been recognized as a recreational resource for the general population. This is probably due to the recent revitalization of the Río Hondo complex in Santiago del Estero province—historically the most important thermal center—and, above all, the relatively new offers of thermal springs in Entre Ríos province, similar to those in neighboring areas of the Uruguay Republic, discovered between the decades of 1960 and 1980s, with a traditional playful conception. In fact, Entre Ríos is the province which has the largest number of these thermal water centers, among which stand out those located in the town of Federación (Chajarí and Federación) and, to a lesser extent, in the towns of Concordia, Concepción del Uruguay and La Paz. In several provincial locations, hydrotherapy has become a resource of economic relevance.

In the mountain area there are also important thermal water centers—such as Cacheuta (Mendoza province), Pismanta (San Juan province), Copahue (Neuquén province), De Reyes (province of Jujuy)—that, unlike the previous ones, are usually more restricted by their price and location−particularly the last two. Other noted thermal water centers are present in Rosario de la Frontera (Salta province), Comandante Fernández (Chaco province), Médanos, Carhué, Necochea, Tapalqué, General Belgrano and San Clemente del Tuyú (Buenos Aires province). In a second place, these thermal centers are located in towns such as Larroudé and Guatraché (La Pampa province), Gualeguaychú and Victoria (Entre Ríos province), Balde (San Luis province) and in various mountain ranges. In these cases, the facilities, overcrowding or inaccessibility to the resident population restrict its relative valuation. Finally, there are unexploited thermal resources or scarcely accessible, which makes it difficult to value them (Fig. 11.22).

Presence of ice and snow for winter activities

The seasonal presence of snow or ice can be a severe problem or a slight upset, but it is also necessary to practice winter sports. In certain contexts, this practice may be relatively widespread, while in others it is still an elitist activity. To value it from the resident's point of view, we have adopted the following criteria: accessibility, quality and quantity of the resource, quality and quantity of the facilities, duration and regularity of the season and aesthetics of the surrounding landscape.

Chiefly, some Andean counties of Mendoza province stand out, such as Luján de Cuyo, Tupungato, Tunuyán, San Carlos, Malargüe), Río Negro province (San Carlos de Bariloche), Neuquén province (Lácar), Chubut province (Futaleufú), Santa Cruz province (Lago Buenos Aires and Lago Argentino) and the province of Tierra del Fuego (the city of Ushuaia). They all have abundant snow and ice during a good part of the year, which makes possible the relative popularization of winter sports and activities, not so frequent in the rest of the national territory.

In a second place, there are also mountain counties that, for various reasons (inaccessibility, less importance of the resource, etc.), allow the sporadic practice of these activities. Finally, in the third term are those districts where snow and ice

Fig. 11.17 Population living near open dumps. Argentina, 2010. *Source* Argentina. INDEC. National Census 2001 (Unpublished information 2004)

are rather occasional phenomena, that is, where they do not yet constitute valued recreational resources (Fig. 11.23).

Relief

In eastern Argentina, the presence of mountains, mountain ranges, hills, canyons, cliffs or other remarkable landforms constitutes a scenic resource that, although it can be considered a limitation (in terms of production, circulation, settlement, etc.), also implies a permanent landscape that allows various recreational practices. Considering its distance and its accessibility to the resident population, the landscape value, the presence of vegetation cover, the fauna and flora, the sporting possibilities it presents and its magnitude, the map takes to a numerical scale the quantification of the perception of this resource to the resident population. Thus, many locations in the Northwest have this resource in situ, while in other mountainous areas (fundamentally, some counties from the Cuyo region) distance favors contemplation more than direct activities. In the Patagonian localities, the situations vary. In addition to the cordilleran area, the Sub-Andean Sierras stand out (also in the Northwest region) and the so-called Sierras Pampeanas (Córdoba and San Luis provinces). The assigned score to the hills of Sierras de Tandil and Sierra de la Ventana is not so much related to its height (which is scarce), but their location amidst a vast plain area provides some geographic contrast. Something similar happens, although to a lesser extent, on the tablelands of Misiones provinces, which also breaks the monotonous relief of its surroundings (Fig. 11.24).

Lakes, ponds, lagoons and water courses, creeks and streams

To assess the magnitude of these natural resources, we will take into account its accessibility, aesthetics, sporting possibilities, water quality, biodiversity, the existence of waterfalls and the surrounding context (particularly, the existence of coastlines or riverbanks). Numerous lakes, ponds, reservoirs, swamps, rivers, streams, lagoons and estuaries exist throughout the national territory, among them the valleys of the Paraná and Uruguay rivers (the area that was previously known as "Mesopotamia"), the Buenos Aires ponds and lakes, the valleys of the Colorado, Negro and Chubut rivers (which break the aridity of non-Andean Patagonia), various sectors of Córdoba and San Luis ranges, and some Patagonian and Cuyo mountain ranges, and, to a lesser extent, the Northwest.

In contrast, and due to its aridity and the absence of allochthonous water courses, three sectors show a high lack of these resources: The Patagonian plateau, the western Pampas and the western sector of the Northwest. Other areas in this situation are the southeast of Chaco province, the center-south of the province of Buenos Aires and the vast majority of the MRBA, although here the deficit is associated with the low magnitude of resources that restrict recreational use by the community. In the case of the MRBa, these restrictions are compounded by the pollution and intervention—ducting, rectification, diversion and general mistreatment—of lakes and waterways (Fig. 11.25).

Parks, green spaces, riverbanks, coastlines and biomes

Fig. 11.18 Climate discomfort. Argentina, 2010. *Source* IRAM. Bioenvironmental classification of the Argentine Republic (1996)

Fig. 11.19 Index of environmental problems. *Source* Personal elaboration based on the 12 variables mentioned in the text

Fig. 11.20 NBRR. Beaches, Argentina. *Source* Municipal information/terrain/urban scale

Argentina has forests, jungles, flora and/or fauna reserves, planned green spaces (parks, squares, riverbanks) of different degrees of importance. To evaluate the relative incidence as a recreational resource, we will consider factors such as its accessibility, its magnitude, the landscape value, the quality and quantity of the facilities, and overcrowding.

Although aridity explains the general absence of these resources in Patagonia, the west of the Pampas and the west of the Andes, there are exceptions to this rule, such as the lower valleys of the Colorado, Negro and Chubut rivers, as well as various sectors of Mendoza province in Cuyo, all of them associated with the culture of irrigation, the enhancement of green spaces and the preservation of fauna. In the Northeast, by contrast, these resources are of greater importance in comparative terms. Despite the inexorable advance of certain production activities, important and diverse green spaces that, inhabited by a rich fauna, are accessible to the population.

Finally, in the Pampean region its relevance is variable, both as a function of the magnitude of the resource and the demands of the local population. In this sense, it is unavoidable the role of various municipalities in the creation and management of green spaces (Fig. 11.26).

Predominant natural-based recreational resource

After analyzing each resource in itself, it seems illustrative to define which is the predominant (or most relevant) resource in each county; thus, it is possible to define a kind of typology.

The map shows that beaches constitute the preponderant NBRR mainly in parts of the Atlantic Ocean coast, except for a few counties—Villarino and Patagones (Buenos Aires province) and the city of Ushuaia (province of Tierra del Fuego)— with very cold beaches. Then, resorts emerge as the main NBRR in the interior of Buenos Aires province and a couple counties of the Córdoba province, where they contribute to mitigate the summer heat and emerge as the main destination for its inhabitants.

Thermal centers such as Carhué (Buenos Aires province), Cacheuta (Mendoza province), Río Hondo (province of Santiago del Estero) and Comandante Fernández (Chaco province) also make up the main recreational resource for the local population. On other places (especially in Entre Ríos province), the thermal centers dispute with the waterways and river spas the destination for the resident population. While the snow and the ice are present and important, as NBRR, in some sectors of Argentina tend to remain in the background with respect to others. Relief, for its part, is a very widespread resource, largely present in the west and on "enclaves" in the center and east of the country (the Tandil and Ventana ranges, and the Sierras Pampeanas).

Lakes, ponds, lagoons and streams are characteristically noticeable in the corridors of the Paraná and Uruguay rivers, as well as in the Río de la Plata estuary, the Colorado and Negro rivers and the Patagonian mountain lakes. In the Cuyo region and the province of Córdoba instead, these resources are fundamentally associated with dams. Finally, green spaces make up the most widespread recreational resource. In some cases, they are really remarkable (remnants of the forests in Misiones and Chaco provinces, natural reserve areas in the Iberá wetlands), and in most of the

Fig. 11.21 NBRR. Resorts on the banks of rivers, lakes, ponds or dams. Argentina. *Source* Municipal information/terrain/urban scale

counties are the only leisure alternative in mainly monotonous surroundings. In many towns, the squares and city parks (sometimes not even green) constitute the largest (and often the only) location of everyday recreation (Fig. 11.27).

Fig. 11.22 NBRR. Thermal centers. Argentina. *Source* Municipal information/terrain/urban scale

Summary index of NBRR

From the valuation of the seven recreational resources of natural base, a summary map (Fig. 11.28) can be generated whose first group (7.46 at 9.95 points) includes a set of counties with the highest rating: the Quebrada de Humahuaca and several picturesque towns of the Northwest; extensive sectors of the Andes ranges and the Sierras Pampeanas in the Cuyo region and Central Argentina; numerous Andean and coastal Patagonian counties; Misiones and northern Corrientes provinces and some riparian sectors of the Northeast; the river corridors of Entre Ríos province, and the south of Buenos Aires province in the Pampean region. Within the MRBA, the only notable sector is the Paraná River delta.

The set most devoid of these resources (0.60−3.65 points) includes an extensive wedge interposed between the Northwest and Northeast, without singularities in terms of relief and vegetation; the Cuyo counties of Lavalle and Santa Rosa (Mendoza province), and Gobernador Dupuy (south of San Luis province), crossing sectors configured as mere places of passage; an extensive area of the Patagonian plateau of Río Negro province, and the west of the Pampas, the north of Buenos Aires province and a significant part of Santa Fe province, which have relatively few natural resources. The most extreme case is, however, the MRBA, which for the most part achieves meager scores regarding the NBRR presence in relation to the extremely high demand from its millions of residents. The rest of the Argentine territory is characterized by intermediate figures.

Socially Constructed Recreational Resources (RRSC)

For the evaluation of the RRSC, we start from the assumption that each place usually possesses several attributes that can be valued in relation to the resident population. In this case, as they are reproducible resources, they are classified into categories and a score is assigned to them, establishing the respective average. Unlike the RRBN, it was possible to obtain qualitative information from different jurisdictions that was standardized on a 0–10 range.

Aesthetics and urban heritage

This variable tries to reflect the image that the city presents –or the group of cities that make up each county—in the most visible spaces; plus, specifically, in its central residential areas, and the most relevant public places. It is also considered if the profile of the rest of the city affects considerably that of the most visible area. Another element that impacts on urban aesthetics is the presence of relevant patrimony features (public and private buildings, notable infrastructure works) and the state of conservation of the infrastructure (streets, sidewalks). This variable is related, on the one hand, to the urban scale. Generally, the great icons of urban identity are associated with its size, although urban history and the social structure of the city and its area of influence are also important.

The MRBA highlights the Autonomous City of Buenos Aires−national capital— and the northern axis counties that, more favored in their socioeconomic characteristics than other areas of the suburbs, provide a better relative general image in this

Fig. 11.23 NBRR. Presence of ice and snow for winter activities, Argentina. *Source* Municipal information/terrain/urban scale

regard. On the contrary, suburbs located in the southern and western periphery exhibit very different situations due to the lack of relevant urban features, with decaying infrastructure (especially in the periphery) and the feeling of little urban consolidation. Finally, a significant proportion of the suburban districts exhibit an intermediate situation based on certain relevant heritage elements, mixed residential areas and urban infrastructure in the process of consolidation.

Within the Pampean region, some intermediate cities stand out with good urban aesthetics and infrastructure according to its scale. On the contrary, several small towns provide a sense of negligence, even in their more visible parts, lacking noticeable elements in terms of aesthetics and urban heritage. However, most small towns and villages in the Pampean are in an intermediate situation, with great segmentation between their respective centers and peripheries.

In Patagonia, on the other hand, the best relative situation corresponds to the majority of the coastal and mountain cities of Santa Cruz, Tierra del Fuego and Neuquén provinces—which, despite its relatively little urban history, has experienced certain process of entrenchment—whereas small towns (especially in the area of the tablelands of Chubut and Río Negro provinces) still provide a feeling of provisionality. Cuyo is a region historically characterized by its great care of urban aesthetics and heritage, especially in central areas of the three provincial capitals. On the contrary, toward the periphery, and very especially in several small towns (especially those located in passing areas), the image is more negative.

In the Northwest the situation is very diverse. While the central areas of their provincial capitals show (with certain variations) better conditions, their peripheries configure a diametrically opposite image, except in the case of residential usage. Another of the typical features of this region is that it has several small towns endowed with considerable aesthetics, a product of its rich urban history, such as those of the Quebrada de Humahuaca and, to a lesser extent, the Puna region. On the contrary, the peoples of the plains (from the eastern sector) have fewer attributes and still present many basic deficiencies in its infrastructure.

Finally, in the Northeast the centers of the four provincial capitals are relatively more consolidated, a situation that is reversed in their respective peripheries. Due to the relatively peasant character of its social structure, this region presents an important profusion of small towns where the situation is not homogeneous; the greatest deficiencies are found in the west of Formosa and the interior of Chaco and Corrientes provinces (Fig. 11.29).

Cultural centers

This variable includes the offer of cinemas, theaters, museums, libraries, spaces for artistic expression and educational establishments of hierarchy (particularly, universities). In all cases, not only their quality and quantity are addressed, but also its accessibility (in time and cost) for the resident population, characteristics that vary depending on the urban scale, sociocultural aspects of its residents, their purchasing power and the nature of the market.

Within the MRBA, the CABA is, par excellence, the cultural capital of the country: It concentrates the most varied and sophisticated offers that can be found in South

Fig. 11.24 NBRR. Relief, Argentina. *Source* Municipal information/terrain/urban scale

America. This does not, of course, mean that the opportunity to use these services are the same for all residents in the region. On the contrary, a simple look at the map corroborates that in the periphery of the MRBA, despite the efforts made in recent years, the cultural offer is scarce (and even a luxury) for the inhabitants of various counties.

Within the Pampean region, only some intermediate-large cities have cultural centers of a certain hierarchy, while in the vast majority of its intermediate cities and large towns predominate basic offerings. Small towns, for the most part, have virtually no options in this aspect.

In Patagonia, cultural centers are largely concentrated in the provincial capitals—although in Santa Cruz and Chubut provinces they are not still in the hierarchy that they should have—and disappear fairly quickly toward the provincial hinterlands—especially in Chubut and Río Negro provinces. Identical situation is repeated in Cuyo region (especially in Mendoza province), with the deficit in the interior of San Juan and San Luis provinces. The Northwest has a relatively large offer of cultural centers. Its main cities (the provincial capitals) stand out and, to a lesser extent, many of the towns of the Andean zone with significant activities depending on the urban scale.

Finally, in the Northeast, although the situation is quite diverse, the scheme is repeated.

where the provincial capitals concentrate a large part of the cultural supply and the hinterland remains with certain deficiencies (Fig. 11.30).

Shopping infrastructure

This category includes the grouping of businesses and entertainment areas of a certain level and in turn specialized in various items, such as shopping centers or malls. It is considered, very especially, their quantity and hierarchy in relation to the resident population. Directly related to the urban scale, the basically private origin of this offer confers it a market logic, even though its regulation is (or should be) public.

The region with the greatest offers in this category is undoubtedly the MRBA, and once again the CABA and the northern axis counties stand out—mainly those with the largest purchasing power-. Far from meaning that the resource is available to everyone, large areas of the region (especially in the southern axis) have very poor scores, while in the rest of the MRBA there are mixed situations. The Pampas region shows good conditions in only a few cities intermediate-large located more than 300 km from the national capital; so, they partially escape the logic of pendolar movements made by the metropolitan solvent sectors and that subtracts them from the local market of their respective communities. Intermediate cities, especially those located outside the influence of the national capital, have reasonable shopping and entertainment centers, but they do not reach the hierarchy of the first group. Finally, a substantive portion of the units in the region lacks, to a large extent, this type of amenities (this is the case of the Buenos Aires depressed pampa and the west of the Pampas).

In Patagonia, very few cities reach remarkable levels, a situation which generally manifests itself in localities associated with international tourism (such as Ushuaia) or regional/national (San Carlos de Bariloche), or they operate as regional capitals

Fig. 11.25 NBRR. Lakes, ponds, lagoons and waterways, Argentina. *Source* Municipal information/terrain/urban scale

(Neuquén). On a second level are located several provincial capitals (such as Viedma, Río Gallegos, Rawson) and also intermediate cities such as Comodoro Rivadavia or Río Grande, where demographic figures and economic resources would merit larger recreation resources. Finally, very large areas of the region almost completely lack this type of offer, especially the towns in the tablelands and in some mountain ranges.

In the Cuyo region, the three provincial capitals stand out, mainly Mendoza, which acts as a regional center for commerce and, to a lesser extent, for recreation. In San Juan and San Luis provinces the contrast between a few cities and the rest; in the first case, the central oasis stands out, and in the second, the axis of route 7 and the mountain tourist circuit.

Although in the Northwest the six provincial capitals present good conditions in this regard, San Miguel de Tucumán stands out as a regional capital, seconded by the central axis, where the movement of people and goods is facilitated by the tourism in the Quebrada de Humahuaca and other regional attractions. Finally, the areas of the region excluded from this tourist circuit, particularly those with a strong peasant presence, still have very scarce and not very diversified commercial facilities.

In the Northeast, localities and counties with commercial offers are very scarce and where the few solvent sectors tend to practice almost regularly extra-local consumption. As a result, the main offers are restricted to some provincial capitals and Puerto Iguazú, the latter by virtue of the international impact of its famous waterfalls and its strategic position in the Triple Border Point (Argentina, Paraguay, Brazil). In general, few localities reach a second level; these are configured as service providers for relatively large rural areas (Fig. 11.31).

Sport centers

The possibility of practicing physical exercise with a certain regularity and intensity is a need of increasing recognition for the well-being of the population. Consequently, the availability of public sports centers with free access or accessible to residents is a key issue. In addition to the variety and hierarchy of the sports activities that can be carried out, here it is also evaluated the quality of the facilities, their adaptation to local environmental conditions and their accessibility by the local residents.

The MRBA has a great diversity of offers, mainly in the counties of the north of the suburbs and CABA. Despite this, in practice, distances, lack of information and the alienation of large urban centers relativize this situation. In a second level are located several municipalities of the suburbs, while some districts (mainly those in the southern zone) still lack relevant proposals for daily recreation.

The Pampas region has significant conditions only in its large-intermediate cities, which are located, in general, in a second level (some even closer to a third). There are, however, several cases of small towns or large towns that have been very active in this regard, which allows an interesting offer of sporting activities. This is unfortunately not the prevailing situation, rather the opposite, because various localities (particularly in the province of Buenos Aires) have very restricted options, perhaps because of the argument that sports centers "are not necessary" or "they are not justified."

Fig. 11.26 NBRR. Parks, green spaces, riverbanks, coastlines and biomes, Argentina. *Source* Municipal information/terrain/urban scale

In Patagonia, these proposals become essential due to the difficulty of practicing outdoor activities for much of the year, especially to the south. In this case, the different weight and interest is evident in the provincial capitals that concentrate these activities. The capitals have been, in general, more favored by the greater allocation of sporting and infrastructure budgets. Outside of these areas, resources are drastically diminishing, and this is reflected in the scarce (or very scarce) supply in vast sectors of the region.

In the Cuyo region, the best conditions are also concentrated in the provincial capitals and sectors of the cordilleran area, while the crossing areas virtually lack sporting facilities. Although in the Northwest there is the possibility of practicing activities outdoors all year round, a shortage of proposals is often the norm outside of provincial capitals and a few cities due to meager resources intended for this type of activities. Broadly speaking, the Northeast shares the same climatic characteristics and the same sociospatial logic of distribution of their sport facilities (Fig. 11.32).

Summary index of the RRSC

The mean (or average) relative value of these (Fig. 11.34) four socially constructed recreational resources allows us to generate a summary map whose first group (6.76 to 9.50 points) includes a set of counties with the maximum valuation where the MRBA stands out, mainly CABA head and the north axis counties. The Pampas region includes in this group only four Buenos Aires province cities, one from Entre Ríos province, two from Santa Fe and three from Córdoba provinces. In Patagonia, only five cities (three of them province capitals) reach this level, a situation that in Cuyo region includes the three capitals and three Andean counties, while in the Northwest and Northeast it is concentrated exclusively in the ten provincial capitals. This undoubtedly obeys the reproducible nature of the SCRR and the selective allocation of public and private resources.

In contrast, the group most devoid of these resources (0.63−3.38 points) covers: (a) the periphery of the MRBA; (b) much of the depressed Pampas and the west of the Pampas; (c) large areas of the Patagonian plateau; (d) the crossings parts of Cuyo region; (e) sectors far from the central corridor of the Northwest, such as the Puna region and the degraded forested sector to the east; and (f) hinterland of Chaco, Formosa and Corrientes provinces in the Northeast. Once again, the cause of this uneven distribution is the combination of the market logic associated with these RRSCs, the scarce economic resources, the small size of the urbanizations and the isolation. Finally, intermediate endowments are observed in the rest of the Argentine territory, that in some cases are complemented between neighboring jurisdictions (Fig. 11.33).

Quality of Life index (2001–2010)

As it was seen in Table 11.1, the 29 variables are grouped into 9 macrovariables. Thus, NBRR includes 11 recreational variables (7 natural-based and 4 socially constructed), and EP gathers 12 variables related to environmental problems.

Combining the previous analysis of the socioeconomic and environmental dimensions and its corresponding indicators, the comparison of quality indices of life

Fig. 11.27 Predominant natural-based recreational resource, Argentina. *Source* Municipal information/terrain/urban scale

Fig. 11.28 Index of NBRR, Argentina. *Source* Municipal information/terrain/urban scale

Fig. 11.29 SCRR. Aesthetics and urban heritage, Argentina. *Source* Municipal information/terrain/urban scale

between 2001 (Fig. 11.34) and 2010 (Fig. 11.35) shows eloquent advances (Table 11.2).

Fig. 11.30 SCRR. Cultural centers, Argentina. *Source* Municipal information/terrain/urban scale

Fig. 11.31 SCRR. Shopping infrastructure, Argentina. *Source* Municipal informa-
tion/terrain/urban scale

Fig. 11.32 SCRR. Sport centers, Argentina. *Source* Municipal information/terrain/urban scale

Fig. 11.33 Index of socially constructed recreational resources, Argentina. *Source* Municipal information/terrain/urban scale

Fig. 11.34 Quality of Life in Argentina, 2001. *Source* Personal elaboration

Fig. 11.35 Quality of Life in Argentina, 2010. *Source* Personal elaboration

Table 11.2 Quality of life in 2001 and 2010. Index, number of counties and population involved

QLI	2001		2010	
	Pop. (Thousands)	N. Counties	Pop. (Thousands)	N. Counties
Very low (2.35–4.72)	3329.4	132	536.5	27
Low (4.73–5.64)	10,870.4	132	2661	76
Medium (5.65–6.27)	11,934.3	129	8515.5	117
High (6.28–8.56)	10,087.9	117	28,324.3	305

Source Personal elaboration

In 2001, while more than 3.3 million Argentines resided in the 25% of the counties characterized by very low indices of quality of life, 10.1 million resided in the 25% of counties with the best conditions.

The situation in 2010 improved markedly: the group affected by the worst relative situation was reduced to just 27 units with over half a million inhabitants. The other extreme—that is, the group of those who live in counties with high quality of life—increased in 2010 to 28.3 million people concentrated in 305 units. As a result, the number of Argentines residing in environments with better living conditions almost tripled during the last intercensus period.

How was this change distributed regionally? In other words, where are located and how many Argentines escaped from the most adverse living conditions and, in contrast, where are located and how many managed to reach the best relative situations? In order to respond to these questions, we have prepared the following chart (Table 11.3).

In the Northwest, the population with very low quality of life fell dramatically between 2001 and 2010: It fell to less than one-sixth. The same thing happened, though to a lesser extent, in the counties involved in this situation. On the other hand, if at the beginning of the intercensus period the population with high quality of life barely exceeded 300,000 people, this figure would multiply by 10 in 2010. Likewise, the territorial coverage of this situation was expanded: It comfortably tripled compared to 2001.

In the Northwest, the population with very low quality of life also decreased substantially, plummeting to less than a fifth of the initial figures. The same happened in the many counties that at the beginning of the period were included in that serious condition. Concomitantly, while in 2001 it was not possible to include any of the counties of this region for the category of high quality of life, in 2010 there were 14 counties in such a condition, which brought together almost 2 million inhabitants.

In the Cuyo region, the four counties with a very low quality of life of 2001 were no longer in such condition in 2010. It is important to note, however, that although this reveals a more favorable socioterritorial context, by no means it allows extrapolating this situation to all the inhabitants of the region. On the other hand, the population with a high quality of life, which in the base year barely exceed 800,000 people, tripled in 2010, as the number of counties included in this category more than quadrupled.

Table 11.3 Number of counties and population in QLI category by region

QLI	Northwest Region			
	2001		2010	
	Pop. (Thousands)	N. Counties	Pop. (Thousands)	N. Counties
Very low (2.35–4.72)	1,188.1	49	1841	14
High (6.28–8.56)	311.1	12	3022.4	41
QLI	Northeast Region			
	2001		2010	
	Pop. (Thousands)	N. Counties	Pop. (Thousands)	N. Counties
Very low (2.35–4.72)	1,971.6	62	350.9	12
High (6.28–8.56)	0	0	1795.8	14
QLI	Cuyo Region			
	2001		2010	
	Pop. (Thousands)	N. Counties	Pop. (Thousands)	N. Counties
Very low (2.35–4.72)	34.7	4	0	0
High (6.28–8.56)	852.3	7	2558	30
QLI	PAMPAS (Pampean) Region			
	2001		2010	
	Pop. (Thousands)	N. Counties	Pop. (Thousands)	N. Counties
Very low (2.35–4.72)	115.2	10	1.5	1
High (6.28–8.56)	6388.7	73	11,866.5	149
QLI	Metropolitan Region of Buenos Aires (MRBA)			
	2001		2010	
	Pop. (Thousands)	N. Counties	Pop. (Thousands)	N. Counties
Very low (2.35–4.72)	0	0	0	0
High (6.28–8.56)	4185.9	4	7077.6	28
QLI	PATAGONIA			
	2001		2010	
	Pop. (Thousands)	N. Counties	Pop. (Thousands)	N. Counties
Very low (2.35–4.72)	19.7	7	0	0
High (6.28–8.56)	1586.9	21	2003.9	37

Source Personal elaboration

In the Pampas region, the resident population in counties with very low quality of life declined so dramatically between 2001 and 2010 that by the end of the intercensus period the number of counties affected by this situation is reduced to a tenth, and began to include in that interval only 1502 inhabitants belonging to a single county (Chical Có, La Pampa province). In addition, both the population and the counties with high quality of life practically doubled their figures in the same period, including almost 12 million people in the region.

Although the MRBA did not register counties and cities with very low quality of life in 2001, it is convenient to relativize such a situation; since the categories are always built based on the comparison with the rest of the country, this in no way does it implies that various social groups do not suffer from this severe problem. No county or commune was affected by very low quality indices of life in 2010, while the population with a high quality of life –which at the beginning of the period exceeded 4 million people—increased, although without duplicating the figures. Regarding territorial coverage, the expansion was not as significant as simple unit comparison might suggest (28 against 4), given that the CABA was divided into 15 communes between 2001 and 2010.

Finally, in the Patagonian region, the population residing in counties with very low quality of life regressed to the point of disappearing during the analyzed period, showing a contextual or territorial effect that does not mean that there are also no inhabitants who still suffer from very adverse living conditions. In contrast, both the population with high quality of life and the territorial coverage of such a situation expanded between 2001 and 2010, experiencing an increase of 500,000 people and almost doubling the number of involved counties.

11.4   Concluding Remarks

Transformations experienced by Argentina during the first decade of the twenty-first century show undoubted achievements but still exhibit some inconsistencies, regarding the population's well-being along the National Territory. Therefore, we can see the glass "half full" or "half empty" but, from either perspective, progress seems obvious. We observe a substantial improvement in Education and Health indicators while, as far as Housing is concerned, those achievements were more modest. From a territorial point of view, the greatest advances were registered, generally, in delayed rural areas. In addition, the north of the country continues to lag behind the rest of the regions despite improving its performance. Likewise, the county analysis allows us to observe enclaves of both high and low levels of living conditions in all regions.

We must note, in this respect, the usefulness of comparable desegregated Socioeconomic and Environmental Information variables which allow us to observe and quantify both, the success and limitations of the policies implemented by the government in the last ten years, becoming an essential tool for planning Argentina's future. While the indicators used for the socioeconomic dimension remain stable throughout the study of quality of life, the environmental dimension has increasingly resorted to more variables since its initial incorporation in 1991.

Given that this is the last index developed and thinking about the future study of the quality of life in Argentina, it is necessary to highlight two elements that must remain in future research: First, is the presentation of data disaggregated at interesting scales that enable visualizing the internal variations of the index; that is, databases with information at the county level and at the census radius scale. Secondly, is the

survey of environmental variables during the census, in particular those related to issues related to urban problems, such as waste management and flooding.

Also, this type of research, accompanied by a fundamental tool like the Geographic Information System, can map and statistically materialize something as intricate as an index of quality of life and, at the same time, measure its spatial and temporal variability. Likewise, it is worth highlighting the progressive incorporation of the Index into national spatial data infrastructures that allow all types of public to view the maps and tables in an interactively way through the maps thus democratizing the access to the information.

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Chapter 12
Quality of Life Differentiating Factors: Migratory Dynamics, Centrality/Accessibility, Urban Categories and Geographical Gross Product

Guillermo Angel Velázquez and Santiago Linares

Abstract All the maps that we show in the previous chapter, referring to the degree of well-being or quality of life of the Argentine population in 2010, implicitly have explanatory factors. Therefore, in this chapter, we will consider the relationship between the well-being of the population and a series of factors that, in the form of maps, can contribute to the explanation of the found differences. In this sense, they constitute clues that explain the inequalities in the living conditions of the Argentine population. These are migratory dynamics, centrality/accessibility, urban categories, and generation of wealth. In general terms, the results indicate that there is a correlation between medium-size cities and positive factors.

Keywords Quality of life · Urban category · Factors

12.1 Relationship Between Well-Being and Migratory Dynamics

To analyze the link between migratory dynamics and the population's well-being, we have carried out a regrouping of the provinces based on the first factor. Migration is defined as the geographical movement that subjects make through a specific limit, to establish a new permanent or semi-permanent residence. As a concept, it must be included within a larger notion: territorial mobility, that is, the various forms of displacement, which can be periodic or alternating, of provisioning, educational, work, recreational, or residential. Throughout the 20th. century, it is possible to point

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out that there has been an important shift in the approach to mobility, as it ceased to focus on international migration and began to deal with an extensive set of new forms of mobility. As Bankirer affirms, "In general, lower volume and higher frequency of transfers seldom definitively characterize spatial mobility at the beginning of the 21st. century" (Bankirer et al. 1999).

If we think that the population's well-being may have some kind of relationship with the demographic dynamics (expelling or receiving), we must carry out a regrouping of the spatial units to study whether there are significant differences.

In this case, our input for the calculation (input layer) is the map of the degree of the well-being of the population in 2010 and our product (target layer) will be that of the different provinces grouped into four categories, according to their migration growth rate (MGR). To carry out the calculation, the quality of life indices must be weighted according to the base population of each county, to adequately establish the value of the well-being index for each of the categories of demographic dynamics.

The information on migrations between 2005 and 2010 allows us to define four groups of provinces (Fig. 12.1):

1. Those expelling provinces (TCM −6.90 to −5 per thousand per year): Formosa in the Northeast and the Autonomous City of Buenos Aires in the Metropolitan area.
2. The second group includes the slightly expellers provinces (MGR −4.9 to 0 per thousand per year): almost all the provinces of the Northwest (Jujuy, Salta, Tucumán, Santiago del Estero, and Catamarca), a large part of those of the Northeast (Chaco, Corrientes, and Misiones), the Cuyo region (San Juan and Mendoza provinces) and Entre Ríos province.
3. The group of slightly receiving provinces (MGR 0.1 to 9.9 per thousand per year) is the widest and includes quite heterogeneous provinces. In the Pampas region, it includes the provinces of Buenos Aires, Santa Fe, Córdoba, and La Pampa. It also includes most of the Patagonian provinces: Neuquén, Río Negro, and Chubut. And, they also include San Luis and La Rioja provinces.
4. Finally, the strongly receiving group (MGR 10 to 41 per thousand per year) is limited to southern Patagonia: the provinces of Santa Cruz and Tierra del Fuego.

The image that we could have before linking this typology of migratory growth with the well-being of the population was relatively clear, associating the expelling areas (type 1 and 2) with low levels of quality of life and the receiving areas (3 and 4) with higher levels.

This preliminary image did not correspond to reality, as we can see in Table 12.1, which shows us how the welfare index varies concerning the migratory dynamics.

Table 12.1 shows that the Quality of Life Index is relatively asymmetric between the different categories of population growth since the coefficient of variation amounts to 7.38%. The relationship, although tenuous, appears clearly: as the migratory balance increases (whether negative or positive), the level of well-being of the population improves.

Fig. 12.1 Migratory growth rate. Argentina, 2005–2010. *Source* Personal elaboration based on the 2010 Census

Table 12.1 Relationship between migratory dynamics (2005–2010) and quality of life (2010)

MGR (per thousand)	Population (thousands)	QLI	IMR	%not health	%no toilets	% crowded	%pop < primary	%pop university	EQI
10 to 41	400	7.30	8.81	17.61	1.23	24.69	8.52	7.52	7.10
0.1 to 9.9	24,779	6.61	11.30	33.90	1.78	26.30	11.37	6.57	6.42
−4.9 to 0	11,388	6.42	12.74	43.54	4.85	33.22	18.45	5.29	7.16
−12 to −5	3438	7.47	9.95	23.70	2.00	19.77	6.38	19.24	6.78
Standard deviation		0.51	1.70	11.42	1.62	5.56	5.26	6.45	0.34
Mean		6.95	10.70	29.69	2.47	25.99	11.18	9.66	6.87
Coefficient of variation (%)		7.38	15.87	38.46	65.81	21.39	47.04	66.83	4.94

References: *QLI*: quality of life index; *IMR*: infantile mortality rate 2009–2011; *%nothealth*: percentage of the population without health insurance; *%notoilets*: percentage of the population without toilets; *%crowded*: percentage of the population in crowded homes (more than 2 people/room); *%pop < prim*: percentage of the population with an educational degree below primary school; *%popuniv*: percentage of the population with a university degree; *EQI*: Environmental quality index (Velázquez and Celemín 2013).

Discrimination level (standard deviation/mean) = 0.51/6.95 = 7.38%

Source personal elaboration based on 2010 Census, DEIS, and EQI.

Thus, the strongly receiving group shows the best relative situation. The strong expeller group is very homogeneous, and the demographic weight of the Autonomous City of Buenos Aires (CABA in Spanish language acronym) explains this result.

The reasons for the expulsion of the population in the CABA are related to the real estate market and the replacement of the residential function by the commercial, financial, and administrative one. In contrast, Formosa province is a structurally population-expelling province basically due to the vulnerability of its economy.

The groups with weak reception or emission show lower levels of quality of life.

This situation does not correspond to that of previous intercensal periods, in which there was a certain relationship between reception and better living conditions (and vice versa), which tended to increase pre-existing inequalities.

12.2   The Link Between Well-Being and Centrality

Since the 18th. century, models of differentiation in land use have been proposed based on theories arising from the spatial economy and geography. The most classic are those of Von Thünen and Lösch-Christaller. The first considered an isolated city and postulated that the most profitable uses (residential, dairy, and horticultural, at that time) were located closer to the center, where the value of the land (considered as merchandise) was higher, while the least profitable (extensive livestock and cereal crops) tended to be located on the periphery. The second model took into account the urban system as a whole and argued that there was a relationship between the hierarchy of cities and their area of influence, so that, in anisotropic space, cities of higher hierarchy tended to be more distanced between yes by forming equilateral triangles and –by combination– hexagons. Inside these hexagons, the intermediate cities, closer to each other, had smaller areas of influence, repeating this pattern until reaching the small towns in which the area served was minimal, as well as the distance between them. This hierarchical system assumed that daily needs were met in the nearest town; the most sporadic requirements (which implied weekly or monthly trips), in small or intermediate cities, and the most specific (medical attention, formalities, exceptional purchases) could only be carried out in large cities.

The formulation of models of social differentiation about the distance from urban centers (viewed as centers of power and decision) is more recent. Various versions begin in the mid-twentieth century with the theories of structural dualism, originating in North American sociology, which contrasts the urban as "modern" or "developed" and the rural as "traditional" or "underdeveloped." The "enclave" is no longer only the foreign company with high productivity and complex technology, but also the city is beginning to be seen as a modernizing structure, capable of radiating innovation and development toward traditional rural areas. "… The adoption of a certain form of organization of the production and consumption process is being proposed that is more profitable for the main economic groups already favored by the maintenance of the existing forms. To this, the theory of structural dualism is finally reduced"(Rofman 1974: 94).

The theory of cumulative circular causation (Myrdal) maintains that as the socioeconomic process unfolds, the mere operation of market forces generates a progressive distancing between privileged and non-privileged nations or regions. The process becomes cumulative over time, since the extraction of resources from poor to rich areas, through international trade and investment, is increasing and is caused by the same bases on which the expansion of capitalism is based on a world scale. The surplus subtraction mechanism between regions arises from the conditions that the model historically imposed on the less developed regions. It is clear, then, that, within this perspective, the basic contradiction would exist between regions (not between social groups) and the others would be subordinated to them.

Far from ascribing to these theories (of which, however, we believe some elements are redeemable), we will try to approach a measurement of the level of differentiation that this factor exerts in the Argentine case. For this, we will carry out a corridor or buffer analysis, starting from the Autonomous City of Buenos Aires (CABA), which, in addition to being the national capital, exercises a considerable degree of primacy in the Argentine urban system.

Our input layer is the quality of life map of the population at the county level in 2010, and our product (target layer) will be the different corridors or buffers, whose living conditions we intend to size. The information aggregation criterion is the proportionality of the affected area of each jurisdiction, duly weighted by its respective base population. In this way, the resulting aggregation (target layer) will have to reconstruct the initial information (input layer) with the highest possible degree of accuracy.

By tracing imaginary buffers around the CABA, the national capital and undisputed head of the primacy of the Argentine urban system, we can measure the levels of well-being of the resident population in each of these corridors (Table 12.2).

As we move away from the Autonomous City of Buenos Aires, the living conditions of the population worsen, particularly concerning socioeconomic indicators and within the first 40 km.

Beyond this radius, with increasing distance, various situations appear. Between 40 and 100 km, there is a recovery in the well-being index, despite the high level of social differentiation, since peripheral settlements coexist with privileged sectors that try to seclude themselves in gated communities and neighborhoods, whose residents, in many cases, practice pendular movements toward the capital. Between 100 and 500 km, the Pampas region is predominantly included, hence the quality of life index continues to rise. Between 500 and 1000 km are mainly Cuyo and the Northeast, regions of different signs regarding their overall quality of life, which results in a decrease in the index in this ring.

Finally, after 1000 km, the Northwest and the Patagonian region are mostly found, again regions that are very different in their living conditions and that have little in common, except their distance from Buenos Aires.

When discriminating the index according to components, the educational dimension, especially the university population, is the one that is most affected by the distance factor. The gradient is almost shocking in the first 40 km, but it also shows

Table 12.2 Analysis of corridor (buffer) by distance intervals selected from the CABA, according to well-being criteria (2010)

Distance to center from Buenos Aires (km)—2010	Population (thousands)	QLI	IMR	%not health	%no toilets	% crowded	%pop < primary	%pop University	EQI
0–10	3576	7.44	8.89	21.48	0.96	17.42	4.98	18.05	6.38
10–20	3905	6.61	11.15	32.74	1.61	24.09	9.03	8.50	5.76
20–30	3191	6.05	12.47	41.12	2.32	32.90	12.11	4.00	5.43
30–40	2071	5.90	13.33	44.17	2.44	36.23	13.11	3.44	5.39
40–50 (a)	777	6.31	13.13	38.17	2.15	31.39	11.35	7.36	5.74
50–100	1433	6.70	12.28	30.91	1.56	25.16	9.94	9.38	5.95
100–500 (b)	7561	6.92	10.75	29.61	1.28	22.70	12.35	6.23	6.70
500–1000 (c)	11,314	6.63	12.01	40.28	3.66	29.47	16.35	6.64	7.00
>1000 (d)	6290	6.53	12.32	39.83	4.76	33.61	15.80	5.60	7.08
Standard deviation		0.46	1.37	7.20	1.21	6.13	3.47	4.33	0.65
Mean		6.57	11.81	35.37	2.30	28.11	11.67	7.69	6.16
Coefficient of variation (%)		7.00	11.63	20.37	52.71	21.79	29.77	56.36	10.58

References: *QLI*: quality of life index; *IMR*: infantile mortality rate 2009–2011; *%nothealth*: percentage of the population without health insurance; *%notoilets*: percentage of the population without toilets; *%crowded*: percentage of the population in crowded homes (more than 2 people/room); *%pop < prim*: percentage of the population with an educational degree below primary school; *%popuniv*: percentage of the population with a university degree; *EQI*: Environmental quality index (Velázquez and Celemín 2013).

Notes (a) This belt leaves out the district of La Matanza, which corresponds approximately to the third belt of the suburbs. (b) It roughly includes the Pampean region. (c) Includes approximately the Cuyo region, part of the NEA, and the arid Diagonal. (d) Approximately encompasses Patagonia, NOA, and the rest of the NEA.

Discrimination level (standard deviation/mean) = 0.58 / 6.77 = 8.60%

Source personal elaboration based on 2010 Census, DEIS, and EQI.

the differences between the population of the Pampas region and that of the heterogeneous rest of the country. Basic schooling, despite its compulsory nature, is also variable according to its distance from the CABA.

The housing dimension, particularly the lack of a toilet, is also affected by distance. The increase among the first four distance intervals persists but is much less than in the previous decade. Overcrowding also increases with distance, although to a lesser extent than in 2001.

The health dimension is also sensitive to distance from Buenos Aires. The lack of health insurance exhibits a greater gradient than in 2001, given that at that time there was a strong deficit in all cases. The IMR, on the contrary, tends to converge with distance. This is shown by the respective coefficients of variation (15.09 in 2001 and 11.63 in 2010).

Finally, the EQI changes in the opposite direction to that of the other indicators: in general, a better relative situation is recorded as the distance from Buenos Aires increases (Fig. 12.2).

12.3 Association Between Well-Being and Urban Categories

The existence of a certain relationship between urban scale and well-being has been widely discussed in the framework of the Latin American Network of Researchers in Urban Quality of Life (Velázquez and García 1999; Camargo Mora 1996). As it is known, population agglomeration initially has positive effects by establishing a market "threshold" that makes possible the appearance of "packages of urban functions", which facilitate the viability and reduction of costs, the provision of services and infrastructure, and so on.

But beyond a certain point, the population increase does not add new functions, since the relationship between size and urban structure is not linear but rather a logistic curve, and begins to generate problems typical of diseconomies (increase in real estate values, costs prohibitive for the supply of essential goods such as drinking water, cost, and transportation time) and negative externalities (urban violence and environmental risks). For this reason, all the available evidence allows us to affirm that, in principle, there would be a better quality of life in intermediate cities.

In this sense, the study of the dynamics of this type of urban configuration has received special interest recently, not only because of its greater relative growth in the last inter-census periods in Argentina, and in several countries of the region, but because of its greater sustainability and the possibility of providing greater well-being to its residents.

To explore the relationship between well-being and urban scale, we have established a typology of the counties according to the hierarchy of their most important city or the agglomerate of which they form part. To carry out this classification, we have processed information from the 2010 Census.

Fig. 12.2 Corridor analysis by distance intervals to the national capital. *Source* a personal elaboration

Table 12.3 Urban categories in Argentina (2010)

Hierarchy (thousands)	Size (inhab) of counties	Population	Number
1 Metropolis and big cities	>1,000,000	16,507	49 (15 communes)
2 Major intermediate cities	400,000–999,999	6828	28
3 Medium-sized intermediate cities	50,000–399,999	7541	60
4 Small intermediate cities	20,000–49,999	4593	94
5 Large towns	2,000–19,999	4465	245
6 Small villages and rural pop	1–1999	183	49

Source personal elaboration (REDATAM) based on the 2010 Census

The established categories (Table 12.3) were proposed in the classic work by Vapñarsky and Gorojovsky (1990).

The 49 units (counties, parties, and communes) that have metropolis and large cities (Buenos Aires, Rosario, and Córdoba) are located exclusively in the Pampean region.

At next level (major intermediate cities) 28 counties are located. This urban hierarchy has a greater regional distribution. The historic capitals of Cuyo and Northwest, Mendoza and Tucumán, had already reached this level in 1991 and by 2001 they also achieved it, in the same regions, San Juan and Salta. In 2001, other cities acquired the category of higher intermediates: Corrientes and Resistencia in the Northeast, Neuquén in Patagonia, and Santa Fe and Paraná in the Pampean region.

The subsequent category includes the 60 counties with medium-sized intermediate cities (50,000–399,999 inhabitants). This scale has become a dynamic element of the Argentine urban system in recent decades, and its distribution is much more widespread throughout the different regions.

Counties with small cities (94) and large towns (245) are much more numerous. The absence of some urban functions, particularly with education and health, added to the narrowness of the labor market, the lack of perspectives, the imposition of urban culture by the mass media—among other factors—translate into, in general, in a much lower dynamism, especially in the case of the towns.

Finally, 49 counties in Argentina do not have any locality that exceeds the urban threshold of 2,000 inhabitants. They are characteristic of regional spaces where traditional activities such as extensive cattle ranching and other subsistence practices are practiced.

Our previous hypothesis is that well-being varies about the urban hierarchy in proportion to the size of the population. But, this is valid up to a certain point, in which problems of diseconomies of agglomeration begin to arise; in other words, there would be an optimal urban scale, beyond which the increase in population does not imply a proportional growth of the services and opportunities available, but rather gives rise to a series of problems (pollution, urban insecurity, cost and transport time, and so on).

To determine the relationship between the urban scale and their respective degrees of well-being, we have carried out a regrouping of the counties according to their urban category. The quality of life indices has been weighted by the base population of each jurisdiction to adequately establish the value of the index in each category (Table 12.4).

We see that the urban scale modifies the levels of quality of life, although the difference it implies decreased compared to 2001 (coefficient of variation 11.35% in 2001 and 8.92% in 2010). The index reaches its maximum value for counties with large agglomerations of intermediate size (ATIS) (in Spanish) (400,000–999,999 inhabitants). In second place are the counties with medium ATIS and, in a third level, the large cities. This is consistent with our previous hypothesis that establishes the existence of an optimal human scale since different negative factors operate above and below it.

This is probably due to the behavior and weighting of the components of a composite index such as the one we use in this work. In the case of the urban scale, we see differential actions.

Considering the health dimension, the infant mortality rate (IMR) presents small differences concerning the urban scale and decreases compared to 2001 (coefficient of variation 17.94% in 2001 and 7.35% in 2010). This reduction is linked to improvements in the socio-sanitary system—availability of personnel, establishments, and equipment—and also to the reduction of inequities in the respective educational levels.

The lack of health coverage is lower in large and medium cities, while it increases considerably in small cities, towns, and, especially, in the rural population. This variable clearly shows that, despite advances in various aspects, the deterioration in social and working conditions persists in traditionally rural and village contexts, in which the degree of informality and exploitation is even greater.

Regarding the housing dimension, the lack of a toilet has a strong impact in favor of intermediates and large cities, while it is increasingly absent as one descends the urban scale, particularly when going from categories 4–5 and, very especially in category 6 (rural population), where more than 50% of the population lacks this device. The toilet is an essential comfort element, but it requires certain minimum characteristics (availability of water, division into rooms, solid construction, etc.) that are not yet found in many Argentine homes.

The proportion of overcrowding is higher in rural, village, and small-town populations than in large and medium cities. This is related, on the one hand, to rural and urban fertility inequalities. On the other hand, despite the differences in the respective real estate markets, the greater purchasing power and consumption patterns of the urban population lead city families to increase the number of rooms (not necessarily their size) to try to escape the overcrowding. Probably, if in the definition of "overcrowding" we had the possibility of including the green spaces available in the house and its surroundings, this situation would change.

The educational dimension is the one that shows the most variable with the urban scale. In the first place, the educational deficit (population with an education level lower than primary) is observed in direct relation to the urban scale, since, despite the

Table 12.4 Relationship between urban category and quality of life (2010)

Urban category—2010	Population (thousands)	QLI	IMR	%not health	%no toilets	% crowded	%pop < prim	%pop univ	EQI
Metropolis and Big cities (>1,000,000 hab)	16,507	6.68	11.26	33.33	1.71	26.42	9.45	9.30	6.06
2 Major intermediate cities (400,000–999,999)	6828	7.03	11.28	34.31	2.15	26.60	10.71	8.95	7.28
3 Medium-sized intermediate cities (50,000–399,999)	7541	6.79	12.09	34.11	2.59	27.21	13.02	6.36	6.94
4 Small intermediate cities (20,000–49,999)	4593	6.41	11.56	39.70	3.67	29.54	18.75	3.90	6.56
5 Large towns (2000–19,999)	4465	6.03	12.43	44.25	5.73	33.04	22.59	3.00	6.21
6 Small villages and Rural population (<2,000 hab)	183	5.47	13.57	53.62	12.23	39.86	29.18	1.54	6.19
Standard deviation		0.57	0.88	7.94	3.97	5.25	7.68	3.21	0.48
Mean		6.40	12.03	39.89	4.68	30.45	17.28	5.51	6.54
Coefficient of variation (%)		8.92	7.35	19.90	84.78	17.23	44.41	58.31	7.40

Discrimination level (standard deviation/mean) = 8.92%

References: *QLI*: quality of life index; *IMR*: infantile mortality rate 2009–2011; *%nothealth*: percentage of the population without health insurance; *%notoilets*: percentage of the population without toilets; *%crowded*: percentage of the population in crowded homes (more than 2 people/room); *%pop < prim*: percentage of the population with an educational degree below primary; *%popuniv*: percentage of the population with a university degree; *EQI*: Environmental quality index (Velázquez and Celemín 2013).

Source personal elaboration based on the 2010 Census, DEIS, and EQI.

compulsory nature of this level of instruction, the difficult accessibility conditions, the need for early incorporation to the labor force and the scarce family cultural heritage—among other factors—explain the high proportion of school dropouts in rural and village contexts.

Second, the university population has an even closer relationship with the urban scale. University students represent an extremely low proportion in rural and small-town contexts. On the one hand, its social structure does not provide greater opportunities to increase the level of education for the majority of its population and, on the other, these areas lack educational offerings of this level. Large and medium cities, on the other hand, tend to have university campuses—although with diverse offerings and quality, depending on their scale—which allows a greater proportion of their population to aspire to this level; all this, of course, within the limits imposed by the social structure.

Environmental quality works in favor of ATIS, followed by towns and, finally, large cities and metropolises. This is linked to the higher incidence of environmental problems in the latter and the greater relative availability of recreational resources in the former.

As we pointed out, intermediate cities can count on the positive effects that are generated from a market floor without suffering the typical problems of diseconomies and negative externalities, both of socioeconomic and environmental nature, that are generated beyond a certain ceiling of urban sustainability.

In short, below a certain urban scale, the lack of certain means, goods, services, and expectations that can only be achieved and satisfied with a certain quantity of population affects the living conditions of the population. Above this scale, environmental problems seem to diminish the chances of enjoying a good quality of life. Even the solvent segments of the big cities, despite the comfort or the standard of living that they show daily, do not stop suffering from deficiencies in other areas (Fig. 12.3).

12.4 Correspondence Between Well-Being and Geographical Gross Product

Let us remember that the geographical gross product (GGP) is an estimate of the wealth generated, that is, of the total amount of final goods produced and services provided regardless of whether they have been consumed or accumulated—in a jurisdiction (in our case, the provinces) and a determined period, generally a year, taking a base monetary unit.

This explanatory factor from the field of economic dynamics has some limitations that we will briefly review:

- The estimate is made based on recordable transactions of goods and services, that is, those that can be accounted for in the formal economy. This supposes a certain number of non-formal economic activities and others that are not taken

Fig. 12.3 Urban category. Argentina (2010)

into account but that mostly obey barter and subsistence transactions; or also services that, instead of being contracted with third parties, are performed by the same actors and, therefore, are not included in the national accounts.

- The GGP is not equal to the income received by local production factors, since part of the wealth generated in one area can (and usually) be partially received in others. The reverse situation, that is, the wealth generated extra-regionally and which is perceived in the analyzed region, is not reflected in the product either; therefore, provinces with a certain value of GGP could receive a higher or lower income than it and our calculations would not allow us to measure this aspect of the economic dynamics.
- Likewise, considering the portion of wealth perceived in the area (whether of local or extra-regional origin), there is a marked difference in the level of income effectively appropriated by each of the different social groups residing in it (social distribution of income), which is determined by the national social structure and its adjustment at the regional and local scales.
- Finally, let us point out that the base monetary unit, which is usually the US dollar, is almost always taken for granted, without properly clarifying the base year to which it refers; therefore, it can lead to different measurements of the same reality.

With all these caveats and others that could be formulated, we will try to link this wealth generated with the levels of well-being of the actors who generated it. To do this, we will classify the Argentine provinces according to their GGP in 2010. The quality of life indices have been weighted by the base population of each county and regrouped according to the categories of PBG, to adequately establish the value of the index in each one of them.

The four groups of provinces that result from considering the national average for the GGP as a base = 100 according to quartiles in 2010 are:

1. A first group characterized by a high GGP per capita (index 81.3 to 437.1). It includes four Patagonian hydrocarbon-producing provinces (Tierra del Fuego, Santa Cruz, Chubut and Neuquén), CABA and the province of Santa Fe. As we have already pointed out, except in the cases of CABA and to a lesser extent Santa Fe These are areas with a high generation of wealth about the base population, without implying the real appropriation of that wealth by the groups residing there.
2. The second group comprises the provinces with medium–high GGP (index 65.0 to 81.2): most of the Pampas (Buenos Aires, La Pampa, and Córdoba), two of Cuyo (Mendoza and San Luis), and Catamarca (the only Northwest province included in this group due to mining activity).
3. Among the provinces with medium–low GWP (index 40.0 to 64.9), we find Río Negro (the only Patagonian province not included in the first group), only one Pampean province (Entre Ríos), one from Cuyo (San Juan), two from Northwest (La Rioja and Santiago del Estero), and one from Northeast (Corrientes).
4. Finally, the group with low GGP (index 28.2 to 39.9) includes almost all of the Northeast (Formosa, Chaco, and Misiones provinces) and the Northwest (Jujuy, Salta, and Tucumán provinces).

The image that we can form a priori, before linking this typology of wealth generated with the quality of life of the population, is relatively clear: "rich" areas (group 1) are associated with high levels of quality of life and " poor"(group 4), with lower levels.

This preliminary perception largely corresponds to reality, as we can see in Table 12.5, which shows us how the quality of life index and its associated variables change concerning the CGP.

In the first place, the table shows that the degree of well-being differs between the different categories of GGP since the coefficient of variation amounts to 6.62%. There is, however, a noticeable decrease, since that same coefficient amounted to 12.81% in 2001; in other words, there is less correspondence between GPP and quality of life, which could be related to a greater territorial redistribution of wealth in 2010.

If we look at the amount of population included in each group, we see that the majority of Argentines (almost 22 million) are located in group 2, with medium–high GGP. Only a minority (more than 7 million) reside in the high-GGP group. The relationship is very clear: as the GGP increases, so does the degree of well-being. Therefore, four groups can be clearly distinguished from one extreme with a high GGP and QLI of 7.24 to the other with a low GGP and QLI of 6.20.

Analyzing separately the behavior of the components of the well-being index (health, housing, education, and environmental quality), we see that the environmental risk is the one that is less variable, although it shows a worse situation in the areas with the highest GGP. They follow the health indicators (IMR and health), which vary in the general sense of the index, that is, they improve about the increase in the GGP. Concerning the housing indicators, especially the availability of toilets, greater relative variability is observed, the worst position coinciding with the areas with the lowest GGP. Finally, the educational dimension is the one that shows the greatest variation with the GGP: in the contexts with greater relative wealth, the proportion of university students doubles that of the areas with low GGP (in 2001 it was four times higher), while the magnitude of those who did not complete their primary studies is more than double in the areas with less relative wealth concerning those with high GGP (in 2001 it tripled it).

In short, despite all the caveats made regarding the difference between generated wealth and perceived wealth and the asymmetries inherent in the distribution of income in peripheral and globalized capitalism, the relationship between GGP and quality of life remains clear. Contexts with little generation of wealth are adverse to improving the living conditions of the population. It is important to note, however, that the differences decreased significantly compared to those calculated for 2001. As we have pointed out, this fact is most likely reflecting a greater degree of territorial redistribution of the generated wealth (Fig. 12.4).

Table 12.5 Relationship between GGP per capita (2010) and quality of life (2010)

GGP per cápita (2010)	Population (thousands)	QLI	IMR	%not health	%no toilets	% crowded	%pop < prim	%pop univ	EQI
Low (28.2 to 39.9)	6023.0	6.20	13.94	46.16	5.93	36.26	19.75	4.83	7.07
Medium–low (40.0 to 64.9)	4756.0	6.49	12.18	42.88	4.27	32.51	17.91	5.16	7.18
Medium–high (65.0 to 81.2)	21,792.0	6.57	11.55	34.67	1.84	26.53	11.51	6.57	6.41
High (81.3 to 437.1)	7546.2	7.24	9.32	25.27	1.42	21.14	8.45	12.72	6.78
Standard deviation		0.44	1.91	9.33	2.12	6.66	5.32	3.68	0.34
Mean		6.63	11.75	37.25	3.37	29.11	14.40	7.32	6.86
Coefficient of variation (%)		6.62	16.24	25.06	63.04	22.86	36.90	50.24	5.03

References: *QLI*: quality of life index; *IMR*: infantile mortality rate 2009–2011; *%nothealth*: percentage of the population without health insurance; *%notoilets*: percentage of the population without toilets; *%crowded*: percentage of the population in crowded homes (more than 2 people/room); *%pop < prim*: percentage of the population with an educational degree below primary; *%popuniv*: percentage of the population with a university degree; *EQI*: Environmental quality index (Velázquez and Celemín 2013).
Discrimination level (standard deviation/mean) = 0.44 / 6.63 = 6.62%
Source personal elaboration based on Provincial Directorates of Statistics, 2010 Census, DEIS, and EQI.

Fig. 12.4 Geographical gross product. Argentina (2010). *Source* personal elaboration based on Provincial Directorates of Statistics and Censuses 2010

12.5 Urban Categories According to Regions

Until now we have considered the incidence of different factors (demographic growth, centrality, accessibility, GGP, etc.) on individual quality of life. At this point, we will try to go one step further by raising the result of the interaction between two components: the urban category and regional differentiation.

Although urban categories establish differentiation in the quality of life, cities are not found in a vacuum, but rather in specific territories, each of which has its specificities. Not all regions have cities of all categories. Thus, as we can see in Table 12.6, the RMBA is itself a city, the Pampean region has agglomerates of all categories and the remaining regions do not have large cities.

As we can see, this interaction better discriminates the respective quality of life indices (coefficient of variation 10.15%). Table 12.6 shows that the best combination corresponds to the average Patagonian intermediate cities (index 7.29), while the worst is the one suffered by the rural population of Northeast, Northwest, and Cuyo (indexes 5.11, 5.35, and 5, 55, respectively). The marginal nature of certain regions, as they are also associated with smaller urban categories, leads to very low quality of life indices. In other words, the regions provide a contextual effect that increases the inequalities in the quality of life between the different urban hierarchies.

As we know, this result comes from the weighted combination of a series of representative indicators of the dimensions of education, health, housing, and environmental quality, which constitute the index and which have a determined behavior based on the intersection between urban scale and region.

The action of the health system, differences in income, educational level (particularly maternal), social structure, and other factors that intervene in infant mortality, as well as fertility level, spacing, birth weight, availability of drinking water, services, and basic social infrastructure—both in housing and in context—differ significantly

Table 12.6 Relationship between urban category and quality of life according to regions (2010)

Urban Hierarchy	Region						Total
	Northwest	Northeast	Cuyo	Pampean	Metropolitan Region of Buenos Aires (RMBA)	Patagonia	
1				7.22	6.56		6.68
2	6.82	6.76	7.11	7.25		6.88	7.03
3	6.51	6.32	6.96	6.89		7.29	6.79
4	6,15	5.74	6.54	6.72		7.06	6.41
5	5.58	5.35	6.19	6.48		6.67	6.03
6	5.35	5.11	5.55	5.87		5.77	5.47
Total	6.32	6.00	6.90	6.93	6.56	7.03	6.65

Source Personal elaboration
Discrimination level (standard deviation/mean) = 0.65/6.40 = 10.15%

Table 12.7 Relationship between urban category and IMR according to regions (2010)

Urban Hierarchy	Region						Total
	Northwest	Northeast	Cuyo	Pampean	Metropolitan Region of Buenos Aires (RMBA)	Patagonia	
1				10.87	11.35		11.26
2	12.92	13.86	10.08	10.99		8.49	11.28
3	13.09	17.79	11.48	11.07		9.09	12.09
4	12.61	13.79	9.96	10.67		8.09	11.56
5	14.50	14.72	11.54	10.93		8.85	12.43
6	13.59	18.57	8.90	17.12		10.01	13.57
Total	13.27	15.01	10.57	10.93	11.35	8.81	11.60

Source Personal elaboration
Discrimination level (standard deviation/mean) = 2.75/12.02 = 22.90%

in each region and, within them, in each urban category (coefficient of variation of 22.90%).

Table 12.7 shows that infant mortality presents relative variability depending on the urban hierarchy and the region. This interaction reflects that the urban scale may imply different results depending on the context, but it also shows that the different regions are not at all homogeneous, but have important internal differences.

The worst regional situation for infant mortality is in the Northeast and the best is in Patagonia. On the other hand, the highest IMR is registered in towns and the rural population (category 6) and the lowest in large cities. Given the interaction of the aforementioned factors, the worst cross between the region and urban category is that of the rural population of the Northeast, whose IMR is the highest (18.57 ‰). The intermediate cities of the Northeast and the rural population of the Pampean region also show adverse situations (IMR of 17.29 and 17.12 ‰, respectively).

In contrast, the best relative situation corresponds to the small Patagonian intermediate cities (IMR of 8.09 ‰). The remaining Patagonian categories are also in relatively favorable situations, as well as the Pampean and Cuyo ATIS, all of them favored by the factors indicated at the beginning of this point (action of the health system, level of education, social structure, etc.), which contribute to explain its lower infant mortality.

Another important variable of the health dimension is the absence of health insurance, a situation that reflects not only vulnerability but also shows segments of the population that suffer from precarious labor insertion.

The lack of health insurance is a scourge that had increased substantially during the 1990s in Argentina. This deterioration was associated with the growth of unemployment and the proliferation of work modalities euphemistically called "flexible", which implied a greater degree of business impunity for the exploitation of workers.

Table 12.8 Relationship between urban category and lack of health insurance according to regions (2010)

Urban Hierarchy	Region						Total
	Northwest	Northeast	Cuyo	Pampean	Metropolitan Region of Buenos Aires (RMBA)	Patagonia	
1				30.50	33.93		33.33
2	34.98	45.10	36.72	29.07		32.94	34.31
3	43.96	45.04	36.63	29.12		23.26	34.11
4	47.44	53.32	44.14	31.89		33.51	39.70
5	52.57	58.05	47.20	33.73		34.81	44.25
6	57.54	46.77	51.27	43.63		46.11	53.62
Total	43.84	50.53	38.65	30.63	33.93	29.08	35.68

Source Personal elaboration
Discrimination level (standard deviation/mean) $= 9.36/40.86 = 22.92\%$

This situation improved considerably between 2001 and 2010, but there is still a long way to go in this regard.

Table 12.8 shows that as the urban scale descends, the proportion of the population without social coverage increases. Despite the gains that are part of the agricultural sector, workers in this sector (rural population and small towns) are the ones who suffer the greatest job insecurity, since more than half of the respective population still lacks health insurance. On the other hand, we see that the region with the greatest problems is the Northeast, in which more than 50% of its population lacks social coverage.

The crossing of both categories reflects extremely problematic situations among the population of the large towns of the Northeast, rural of the Northwest, and Cuyo, with percentages of deprivation close to 60% in some cases. The situation of those residing in large towns is also very bad in the three mentioned regions.

In contrast, the best relative situation corresponds to the Patagonian and Pampean regions. In the interior of the Patagonian region, the position of residents in medium-sized and large intermediate cities appears more favorable. In the case of the Pampas region, large and intermediate middle cities show better circumstances. Also, in both regions, the condition of residents in towns and rural areas is comparatively worse, although without reaching the extremes of the Northwest, Northeast, and Cuyo.

Turning to the housing indicators, it must be taken into account that, during the 1990s, within the framework of the logic of adjustment and withdrawal of the state, there was growing commercialization.

In principle, the decrease in the income levels of the great majority of the population made it considerably difficult for most of the middle-class segments to access their own homes. This sector was also affected by the restructuring of Banco Hipotecario Nacional and the increase in interest rates by private banks. Low-income sectors,

Table 12.9 Relationship between urban category and lack of toilet according to a region (2010)

Urban Hierarchy	Region						Total
	Northwest	Northeast	Cuyo	Pampean	Metropolitan Region of Buenos Aires (RMBA)	Patagonia	
1				1.39	1.78		1.71
2	3.16	3.22	2.07	1.19		2.06	2.15
3	4.72	4.43	2.71	1.35		1.74	2.59
4	5.20	7.87	4.68	1.51		3.08	3.67
5	9.68	9.88	5.72	1.89		3.02	5.73
6	13.68	6.22	21.46	8.89		6.19	12.23
Total	5.57	6.47	2.94	1.45	1.78	2.17	2.67

Source Personal elaboration

Discrimination level (standard deviation / mean) = 4.55 / 5.14 = 88.60%

for their part, continued to have some type of access to popular housing, especially after provincial intervention and particularly in some provinces (San Luis, La Pampa).

The deterioration of the existing houses was then added to a dichotomization of the supply: on the one hand, tiny and deficient units were destined for low-income sectors; on the other hand, luxury construction was boosted, aimed at the solvent demand of high-income groups.

This table did not change significantly between 2001 and 2010; however, it is variable depending on the different urban categories and regions.

Table 12.9 shows that the lack of a toilet shows great relative variability depending on the urban hierarchy and the region (coefficient of variation 88.60%). This interaction reflects, once again, that the urban scale may imply different results according to the context, but it also shows that the different regions are not homogeneous at all, but have important internal differences.

About the urban hierarchy, the best relative situation corresponds to the large cities and middle cities. As the urban scale descends, the deficit increases, but there is a very significant increase among the rural population: more than 12% lack this essential element.

The regional context with the greatest lack of toilets is the Northeast, followed by the Northwest. In contrast, the most favorable relative circumstances appear in the Pampas, Metropolitan, and Patagonian regions.

The cross between the urban category and the region shows that the worst situation is that of the rural population of Cuyo, where 21.46% lack a toilet in their homes. The outlook for the rural population of the Northwest is also very bad. The other extreme, with fewer deficiencies, is that of the resident population in Pampean and Patagonian ATIS.

Table 12.10 Relationship between urban category and overcrowding according to regions (2010)

Urban Hierarchy	Region						Total
	Northwest	Northeast	Cuyo	Pampean	Metropolitan Region of Buenos Aires (RMBA)	Patagonia	
1				24.28	26.87		26.42
2	31.45	32.58	25.53	21.99		27.08	26.60
3	35.74	33.92	25.95	22.32		25.29	27.21
4	39.68	37.57	31.19	23.29		27.50	29.54
5	42.45	40.90	34.85	24.12		28.91	33.04
6	42.76	44.42	34.66	33.34		31.88	39.86
Total	36.59	36.40	27.27	23.16	26.87	26.65	27.75

Source Personal elaboration
Discrimination level (standard deviation/mean) = 6.72/31.50 = 21.33%

Within the housing dimension, another important variable is overcrowding, that is, the analysis of the deficiency in the available space available to adequately accommodate its inhabitants.

Table 12.10 shows that this problem also varies according to the different regions and urban scales of Argentina (coefficient of variation 21.33%). In general, the difficulties of overcrowding increase as the urban hierarchy decreases. As we have already pointed out, despite the advanced state of fertility transition in Argentina, there are still differences between the rural and urban populations, which tend to explain the larger size of families and, therefore, the greater overcrowding in the context of rural. Likewise, although the cost of housing increases as the urban hierarchy increases, the greater purchasing power and consumption patterns typical of this population lead city families to make more of an effort to increase the number of rooms (not necessarily their size) to try to escape the siege of daily overcrowding.

Based on these considerations, the result is relatively predictable: the rural populations of the Northeast and Northwest are those that present the greatest overcrowding scores. More than 40% reside in households with more than two people per room. This problem reaches a lower relative proportion in the Pampas, Cuyo, and Patagonian middle cities. Although the metropolitan region shows intermediate levels, it does not escape this issue. On the contrary, it is aggravated by the context of this region, particularly about building density, lack of availability of extra-residential public spaces, and habitat indicators in general.

If we analyze the educational dimension, we see that, at the base of the pyramid, the process of increasing basic schooling in Argentina persists. At the other end of the educational pyramid, between 2001 and 2010 the budget was substantially increased and several universities were created in different cities of the country. Likewise, the growing offer of virtual careers (including postgraduate degrees) expanded the opportunity of access to various sectors of the population. The proportion of students

Table 12.11 Relationship between urban category and poor schooling according to regions (2010)

Urban Hierarchy	Region						Total
	Northwest	Northeast	Cuyo	Pampean	Metropolitan Region of Buenos Aires (RMBA)	Patagonia	
1				9.21	9.50		9.45
2	10.98	12.19	11.40	9.03		12.51	10.71
3	13.52	18.30	14.90	11.83		9.52	13.02
4	19.61	29.82	19.97	14.27		13.50	18.75
5	25.72	34.01	21.54	16.31		16.81	22.59
6	29.95	33.12	31.16	21.02		31.88	29.18
Total	16.63	24.10	14.25	11.87	9.50	12.14	12.95

Source: Personal elaboration

Discrimination level (standard deviation/mean) $= 8.27/18.58 = 44.50\%$

without a university family tradition is significantly higher, which is in line with the social mobility of the decade.

Table 12.11 shows that, despite the increase in basic schooling, variations are depending on the urban hierarchy and the region (coefficient of variation of 44.50%). This interaction reflects, as we have already pointed out, that the urban scale may imply different results depending on the context, but it also indicates that the different regions are not at all homogeneous, but rather have important internal differences.

The deficiency in schooling increases as one moves down the urban hierarchy. This clearly shows the asymmetries in the possibility of accessing this basic service for Argentines residing in rural areas or even in some large towns. Factors such as low family cultural heritage, early insertion in the market labor, traditional social structure, etc., explain these differentials. In large cities and intermediate cities, on the contrary, the basic education system is usually more accessible.

The most deficient regional context, concerning basic education, is that of the Northeast and, to a lesser extent, that of the Northwest. Both regions constitute, also in this aspect, the periphery of Argentina. On the contrary, the best basic educational coverage is achieved in the Metropolitan Region of Buenos Aires, clearly favored by its greater relative accessibility.

When crossing regions and urban hierarchy, we see that the RMBA is only displaced from the first place by the cities and large middle cities of the Pampas. These large middle cities show a good relative situation in all regions.

The interaction of adversities causes the towns and rural sectors of the Northeast, as well as the rural areas of Cuyo and Northwest, to have a very high proportion of the population with poor education. A separate paragraph deserves the plight of the rural population of Patagonia—a supposed space of "modernity" in some aspects—which is subject to extreme conditions of isolation, and not only due to the

Table 12.12 Relationship between urban category and university population according to regions (2010)

Urban Hierarchy	Region						Total
	Northwest	Northeast	Cuyo	Pampean	Metropolitan Region of Buenos Aires (RMBA)	Patagonia	
1				10.70	9.00		9.30
2	7.88	8.31	8.91	10.25		7.78	8.95
3	5.44	5.91	6.50	6.51		7.66	6.36
4	2.59	2.65	3.37	4.67		7.90	3.90
5	1.67	1.75	2.71	4.00		5.39	3.00
6	1.27	1.51	1.09	2.05		2.65	1.54
Total	4.87	4.47	7.09	7.39	9.00	7.28	7.33

Source: Personal elaboration
Discrimination level (standard deviation/mean) $= 3.01/5.19 = 58.09\%$

natural environment: isolation is also a form of insertion into the dominant mode of production.

At the upper end of the educational pyramid, there is a greater relative variation (58.09%) between the different urban hierarchies and regions (Table 12.12).

The proportion of university students increases relative to the urban hierarchy. While they are almost absent in the rural and small-town population, they exceed 6% of the total in cities and large middle cities. The effect of the urban scale is clear: on the one hand, more and more diversified supply; on the other hand, greater information and accessibility within the framework of a more complex social structure, which drives these types of aspirations.

In line with the image of adversity that other variables present, the areas with the lowest proportion of university students are the Northeast and the Northwest. On the contrary, the metropolitan region is the one with the best relative situation in this regard.

When crossing a region and urban category, we can see that the large cities and large middle cities of the Pampas are those with the highest proportion of university graduates, which exceeds the metropolitan region. It seems that a diversified educational offer, within the framework of a relatively large urban scale (although not the largest) and in a relatively developed regional context, produces better results than in a gigantic city, although it has the largest offers.

The interaction of factors means that the rural populations of Cuyo, Northwest, and Northeast have a very low proportion of university graduates. Once again, the rural population of Cuyo leads this hardship area.

Finally, environmental quality (Table 12.13) works against large cities (greater environmental problems) and is in favor of intermediate ones (due to the virtuous

Table 12.13 Relationship between urban category and environmental quality according to regions (2010)

Urban Hierarchy	Region						Total
	Northwest	Northeast	Cuyo	Pampean	Metropolitan Region of Buenos Aires (RMBA)	Patagonia	
1				7.30	5.79		6.06
2	7.18	7.52	7.48	7.27		6.84	7.28
3	7.24	7.25	7.57	6.76		7.34	6.94
4	7.08	6.94	7.41	6.66		7.38	6.56
5	6.69	6.68	7.04	6.36		6.89	6.21
6	6.69	5.83	6.90	6.67		6.33	6.19
Total	7.04	6.90	7.29	6.72	5.79	6.88	6.69

Source Personal elaboration
Discrimination level (standard deviation/mean) $= 0.45/6.94 = 6.48\%$

relationship between recreational resources and the resident population). The environmental quality index decreases as the urban scale decreases: although the environmental problems are minor, so are the recreational resources.

The region with the highest environmental quality is Cuyo, followed by the Northwest and Northeast. As for the worst environmental conditions, they are observed in the RMBA.

When comparing environmental quality with urban scale by region, we see that the best situation is registered in the intermediate cities of Cuyo. The rest of the intermediate ones also have satisfactory indexes. The most adverse circumstances are located, in addition to the aforementioned RMBA, in the rural populations of the Northeast and Patagonia.

12.6   Concluding Remarks

In the previous chapter, we have shown how during the first decade of the XXIst. century the quality of life has improved substantially, mainly with regard to the dimensions of education and health. There is also some progress in the socially constructed recreational resources dimension. These improvements had greater relative weight in the territories that had started from relatively more unfavorable situations, thus generating a process of certain convergence between the resident population in different regions of the country. This does not mean that quality of life differentials do not persist. They do so, but to a lesser extent than those shown in the years 2001, 1991, and 1980. Regarding the most significant factors of differentiation, the migratory

dynamics, unlike what has been observed in the past, it does not show a significant relationship with quality of life. Centrality and accessibility continue to be a consistent factor, favoring Argentines who reside near provincial or regional capitals and disfavoring the most isolated population. The urban scale is also an unavoidable factor: intermediate cities are the most propitious scenario for greater well-being; above this scale, large cities suffer from environmental problems and other problems inherent to the agglomeration diseconomies that tend to affect their quality of life; on the other extreme, as the urban scale descends, some environmental problems also diminish, but so do recreational resources and socioeconomic conditions, thus penalizing those Argentines who live in small towns and the dispersed rural population. Another factor that was traditionally very strong is the generated wealth: in general, the regions with greater wealth coincided with the areas of greater relative well-being. However, this relationship has been partially blurred in Argentina in 2010. On the one hand, traditionally "poor" provinces have improved their performance in this regard and, on the other, due to greater state action, "poor" contexts have received proportionally greater resources, which has contributed to mitigating adversity and narrowing pre-existing gaps. The crossing of categories also shows that Argentines who live in intermediate cities and in the most favored regions (Patagonia and Pampeana) are clearly in a better situation than those who reside in small towns and the rural dispersed population. The results generate some optimism regarding what future quality of life maps could look like. The situation is considerably different from what we had found in previous studies, particularly with respect to the quality of life in the year 2001.

Acronyms

CFI: Consejo Federal de Inversiones. Federal Investment Council.

DEIS: Dirección de Estadística e Información de Salud. Health Statistics and Information Directorate.

INDEC: Instituto Nacional de Estadística y Censos. National Institute of Statistics and Censuses.

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Chapter 13
Geography and Quality of Life in Argentina. Analysis According to Census Radius (2010)

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Abstract The level of disaggregation of territorial analysis is vital for the evaluation of the quality of life of the population from a geographical perspective. Consequently, the use of counties, districts or communes (525 units) has amply demonstrated its usefulness in overcoming the generalization implied by studies at the provincial level (24 units). On the other hand, the adaptation of the county QLI at census radius (52,408 units) scale shows that the counties, although they are useful, have various degrees of fragmentation within them. This must be taken into account in academic research and in the formulation of public policies. Thus, the radius scale allows observing enclaves of high quality of life in the traditionally neglected regions of

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the country, while in areas with high quality of life, radius with low values are also present. This information would be missing at the county level.

Keywords Quality of life · County and census radius scale · Argentina

13.1 Introduction

Interest in quality of life (QoL) is not new (Lucero et al. 2007). From Aristoteles and Marx to contemporary philosophers, there has been reflection and debate on issues related to happiness, pleasure and health. However, its use and scientific-methodological systematization is recent.

Henao Espinosa (2000) affirmed that, in an embryonic way, the classical economy of the nineteenth century had dedicated some lines to the ambivalent issue of happiness as an expression of the possibility of consuming and having somewhat sumptuous comforts. This came to permeate, broadly speaking, the essence of welfare economics. However, the sketch and the incipient elements of what is understood today by quality of life originate from bourgeois modernity at its peak, liberal in nature, and are limited to typically urban environments.

The notion of QoL began to be included in the language with the ideals of the welfare state, after the Second World War, in a context where reorganization and the restoration of international order prevailed. This state model promoted the increase in the consumption of goods and services with an intense application of Keynesian policies oriented to this end. The justification for its implementation was that, with the increase in the demand for goods, job sources would be expanded or new ones would be generated, guaranteeing full employment and greater consumption to reach a higher standard of living.

But, in the mid-sixties of the twentieth century, the scheme began to manifest its unfeasibility. Indeed, it had been alienating to humans and, in turn, had led to serious environmental damage (Vigil 1994). This is how, faced with the consequences of industrialization, the need to measure this reality through objective data arose. Thus, the detailed study of the construction of social indicators and their dissemination both in the public and academic environments began. The inclusion of the term in the first monographic journal in the USA, Social Indicators Research, in 1974 and in Social Abstracts, in 1979, contributed to its theoretical and methodological diffusion.

According to Chacón (1998), between the end of the seventies and the middle of the eighties of the twentieth century, the studies on QoL went through a stage of disillusionment and disappointment. Along these lines, Leva (2005) warned that the development and improvement of objective indicators provoked the process of differentiation between these and the quality of life. The expression begins to be defined, therefore, as an integrative (multidimensional) concept, which refers to both objective conditions and subjective components.

Now, the most important problem at present, Chacón (1998) said, is the need to deepen the studies around a theoretical-methodological approach capable of

combining conditions and lifestyles, and value systems in an objective and perceptual way. In it, the processes of self-evaluation or, better, self-definition of well-being should be considered.

In this sense, the 1990s were one of consolidation and international recognition for the study of the QoL. Its objective of identifying structural changes and social trends was facilitated by the process of increasing democratization of statistical information and interest in institutional transparency, which became an instrument for the evaluation and control of political decisions. At present, however, the approaches focus their concern on balancing the resource of the statistical indicator and the establishment of various numerical indices as subjective measures of perceptions of quality of life (Leva 2005, p. 30).

The term QoL is widely used both in everyday language and in different scientific disciplines. However, it is important to note that there are multiple conceptualizations proposed to detail it, which, furthermore, increase in parallel with its use and complexity. The variety of components that it concentrates and the impossibility of attending to all of them necessarily leads to the selection of certain aspects. Thus, this expression has come to be used in an almost massive and naive way, ignoring the complexity that characterizes it.

With its use, some notions usually appear that, sometimes, are assimilated to the concept of quality of life. This must be taken into consideration, since due to their conceptual, theoretical and methodological nature, they are substantially different (Velázquez 2008). Therefore, a first step to understand is to distinguish it from similar concepts, such as living condition, standard of living, well-being or poverty.

In general, it can be said that QoL comprises, first of all, the material base on which life develops; second, the natural and built environment in which the human being develops; and, ultimately, to all the relationships that result from the activities carried out, be it work or other types of socio-political and cultural relationships. Consequently, it is an evaluative concept.

The term life condition is, on the other hand, descriptive in nature, and refers to economic aspects, in as much as it contemplates consumption aimed at satisfying needs. From this perspective, Alarcón (2001) indicated that living conditions depend on a large number of factors. Indeed, there is a set of basic needs that must be covered to guarantee subsistence; but there are others that arise with the development process and are essential to function socially.

Now, the standard of living of individuals, knowledge from the economy, refers to aspects of a monetary nature. In it, the idea of consumption of goods and services is contemplated, and purchasing power becomes a mechanism that allows personal development to be achieved.

The third concept is that of well-being, which, as Camargo Mora (1999) pointed out, presents two different characterizations throughout the twentieth century. At first, it is approached from a mainly quantitative perspective, associated with the set of economic policies and processes after the Second World War. In this "welfare state" or welfare state, well-being is linked to the implementation of economic and social policies, which give greater relevance to the sustained consumption of goods

and services as the engine of the economy. In that sense, it resembles the idea of condition and standard of living.

More recently, its meaning reaches another explanation, more humanistic (in the sense of well-being). Thus, based on the postulates of Sen (2000) on human development and quality of life, it is given a broader meaning. Well-being is, from this perspective, linked to the capabilities, opportunities and advantages of individuals.

Another concept, often associated with the idea of QoL as its opposite, is that of poverty. This refers to a measure of deprivation that includes those who do not reach an established minimum threshold, which may reflect conjunctural or structural situations. While poverty is measured with respect to a "floor", the QoL does it in relation to a "ceiling". This floor is relatively fixed, since it aims to satisfy basic needs. On the contrary, the ceiling of the quality of life is more variable (and ascending), since the scale of values and, above all, expectations, change (Velázquez 2001). Consequently, quality of life can be defined as a measure of achievement with respect to a level established as optimal. For this, the socioeconomic and environmental dimensions depending on the prevailing scale of values in society must be taken into account and, in turn, consider that they vary depending on the expectations of historical progress (Velázquez 2001).

The empirical works that address the study of QoL seek to make their contributions to the study of the living conditions of the population so that agents with decision-making capacity adopt the necessary measures for its improvement (Celemín et al. 2015). One of the ways is through the development of indices, which synthesize a large amount of information and whose purpose is to inform both the general public and those who design these strategies (Tanguay et al. 2010).

The main limitation for its realization is the accessibility, availability and reliability of statistical data; in particular, those that describe characteristics on an urban or municipal scale. In addition, the aggregation and simplification of information with the objective of scientific dissemination reduces the analytical power of the results, but, in turn, makes a large amount of summarized data visible to all strata of society.

13.1.1   Approach to the Study of Quality of Life from Different Disciplines

As detailed by Lucero et al. (2007), the first sketches on the QoL were carried out by economists critical of the capitalist system in its industrial phase under the Fordist technological paradigm. From these approaches, the QoL was considered a category based on indefinite progress and economic rationality. Towards the sixties and seventies of the twentieth century, the concept is taken up by disciplines that address the environmental perspective. In those years, both in Europe and in the USA and in Latin America, numerous movements emerged that proclaimed the return to a "clean, safe and wise" nature, due to the growing urban environmental problems.

Likewise, under the scientific view of health, the term QoL is frequently used to define the objective of medical and psychological treatments and diagnoses in which it is not only sought to eliminate a disease, but to improve the daily experience of patients (especially in terminally ill, with degenerative, chronic conditions or with motor or mental disabilities). Tonon (2005), from the field of political science, clarified that, to refer to QoL, one must start from the theory of well-being. This relates QoL with the social structure and considers the participation of each subject as a member of a community essential.

Finally, the literature reviewed leads us to affirm that a univocal understanding of QoL cannot be reached through interdisciplinary research, but, adopting the expression of Harvey (1979) regarding urbanism, it is possible to arrive at an understanding of the contributions of each discipline through a QoL study.

Architects include this concept in their research, especially associating it with habitat, housing, equipment and urban planning. In this framework, Abalerón (1987) states that the QoL is constituted from the degrees of excellence in the provision of goods and services, and the contentment or discontent (according to the value scales) of each individual or group, in relation to the influence of the outside.

For its part, the geographical approach starts from a spatial and territorial basis, which allows it to establish differences with respect to other perspectives involved in the study of this dimension. Through its ability to perform an analysis on the spatial configuration of different variables, it achieves a mostly empirical approach. Thus, one of the characteristics for which geographic science stands out is the elaboration of cartography. With it, the analysis is taken to the territory, resorting to different scales that allow from the study at the national level (Velázquez et al. 2013).

In this context, the present work aims to know the quality of life from an index, the QLI. This was prepared previously (Velázquez 2016; Velázquez and Celemín 2013) at the county and census-radio scale (the highest possible level of territorial disaggregation, 52,408 units for 2010), highlighting the most extreme situations. This index is not exempt from certain methodological restrictions. In effect, while different national, provincial and municipal organizations periodically elaborate indicators to know the socioeconomic context of their corresponding jurisdictions, environmental variables have other scales of analysis and differential characteristics, which pose challenges when making environmental information compatible with socioeconomic information.

13.2 Methodology

In a first analysis, 525 units of the entire national territory are considered: each of the 510 parties or counties and the 15 communes of the Autonomous City of Buenos Aires (CABA). The weighting of each variable of the Quality of Life Index (QLI) is explained in detail in Velázquez (2016) and is summarized below in Table 13.1.

The integration of these data was carried out by transforming them into partial index numbers. In them, the extreme values oscillate between 1 and 10 to reflect the

Table 13.1 Dimensions, variables and relative weights of the quality of life index (QLI) (Argentina 2010)

		Socioeconomic and environmental variables	Partial weight (%)	Total weight (%)
Socioeconomic dimension: socioeconomic quality index (SQI)	Households	Pop. without toilet (SE_1)	10	20
		Pop. overcrowding (SE_2)	10	
	Health	IMR (SE_3)	10	20
		Pop. without health insurance (SE_4)	10	
	Education	Educational degree below primary (SE_5)	10	20
		University degree (SE_6)	10	
		Total		60
Environmental dimension: environmental quality index (EQI)	Recreational resources natural-based (RRNB)	Average score of seven variables (A_1)	10	20
	Socially constructed recreational resources (SCRR)	Average score of four variables (A_2)	10	
	Environmental problems (EP)	Average score of twelve variables (A_3)	20	20
		Total		40
QLI	Total			100

worst and the best relative situation, respectively. This was done, depending on the type of variable, with the following procedure, where b is the cost variable:

$$I = \frac{\text{Max} - b}{\text{Max} - \text{Min}} * 10$$

In the case of profit variables, the same formula subtracted from 1 was applied.

On the other hand, the cartography was carried out through a geographic information system, and the intervals were defined according to quartiles.

13.2.1 Socioeconomic Dimension of Quality of Life

The variables of the socioeconomic dimension show fundamental aspects related to the living conditions of the population, such as housing, health and education. The ones selected for this study are detailed below.

Households:

- Percentage of population in overcrowded households, considering as such those that exceed two people per room (SE1), and
- Percentage of the population that resides in households that do not have a toilet for exclusive use or that have a flush, named as no toilet (SE2).

In both cases, the data were available at the census radius scale and were obtained from the last census carried out by INDEC (2013). On the other hand, it should be clarified that, as there are no reliable data that allow distinguishing homes with a high degree of comfort, only variables that reflect minimum satisfaction requirements were included.

Health:

- Percentage of population without coverage by social, private or mutual health plan (SE3), available at the radio sampling scale. This variable discriminates better than the consideration of the sole presence of hospitals, health units or human resources destined for health and, additionally, it allows to show the existence or not of job insecurity, and
- Infant mortality rate (IMR), that is, the number of live births and deaths before the first birthday, for every thousand inhabitants of this age group, according to the mother's place of residence (SE4). This variable is available at the county level. The data were obtained from the Directorate of Health Statistics and Information (DEIS in Spanish), depending from the Ministry of Health. To reduce the random oscillations inherent to this rate, the arithmetic mean of the three pericensal years (2009–2011) was considered as a value.

As it can be seen, here too it is not possible to accurately measure the maximum conditions. However, the worst can be inferred from the deficiency variables of the minimums selected for the index. In both cases, the action or inaction of public bodies could partially solve the deficiencies shown in relation to health.

Education:

- Percentage of the population aged fifteen or over that has already dropped out of school and whose highest level of education attained is less than complete primary (SE5), and
- Percentage of the population aged fifteen or over that has already reached a full university or postgraduate level of education, as maximum variable (SE6).

In both cases, the data were available at the census radius scale and were obtained from the last census carried out by INDEC (2013).

13.2.2 Environmental Dimension of Quality of Life

As with QoL, environmental problems are increasingly present in society. Fernández (2000) defined them as the manifestation of a deficiency (reduction or lack) of rationality between expressions of the natural system and the social system. These problems affect people's quality of life, both on a global scale (climate change) and on a local scale (presence of garbage dumps). That is why there is a growing demand on the part of society to face and solve them.

However, as Carballo (2005) argued, environmental information sources do not exist or are scattered or are not comparable or accessible, which poses an additional challenge when preparing a QLI. The present work proposes, consequently, the incorporation of an environmental dimension with different variables to make up for this information deficiency. The index considers positive environmental aspects, such is the case of scenic and recreational resources. These, in turn, can be naturally based or socially constructed, since, as amenity resources, they are part of the daily routine and affect the well-being of the population (Celemín and Velázquez 2011).

To complete this dimension, an observation matrix and an exhaustive survey on the presence, relative magnitude and distance with respect to the resident population were created for each of the territorial units analyzed.

It is important to clarify that, during a five-year period, each scoring assignment was consulted with local researchers and with on-site visits by our own researchers. The result was the elaboration of a matrix similar to that used in an environmental impact assessment, based on the knowledge of the specialist when assigning weights and weights to each of the variables. The details can be consulted in a work referring to environmental quality in Argentina (Velázquez and Celemín 2013).

The availability of the municipal Web pages for all the units worked as a statistical approximation and was enriched with other sources, which are mentioned, for each variable, in Table 13.2.

Given that information at the county level is easier to obtain than that of the census tract, in some cases, it is necessary to adapt both. In the QLI components, it was carried out as follows (see Table 13.3).

13.3 Results

Figure 13.1 shows the QLI result for Argentina on a county scale and Fig. 13.2, at census radius level.

To carry out a first analysis of both maps, the most extreme cases in the QLI values will be taken. Considering those radius with QLI < 1, eleven rays are observed. In them, 6855 people resided in 2010 with remarkably low values of quality of life, as can be seen in Table 13.4.

Table 13.2 Environmental variables and their sources of information

Recreational resources	Socially constructed
Natural-based	Recreational resources
(RRNB) (A_1)	(SCRR) (A_2)
(Municipal information, field or satellite images)	(Municipal or land information)
Presence, quality and accessibility to:	Presence, quality and accessibility to:
1. Beaches	1. Aesthetics and urban heritage
2. Spas on the banks of rivers, lakes, lagoons or dams	2. Cultural centers
3. Thermal centers	3. Shopping and entertainment centers
4. Snow or ice (possibility of recreational activities)	4. Sports centers
5. Relief (landscape)	
6. Lagoons and water courses (landscape)	
7. Parks and green spaces (recreation)	
Environmental problems (EP) (A_3)	
1. Use of pesticides in agriculture (Defensoría del Pueblo 2009)	7. Precarious settlements. Percentage of population residing in slums (INDEC 2004a, b)
2. Participation of industry and mining in the GGP (INDEC 2003)	8. Garbage dumps. Percentage of population residing within three hundred meters of an open-air dump (INDEC 2004a, b)
3. Pollution, noise or congestion (municipal, field or urban information)	9. Seismicity and volcanism (Chiozza y Figueira 1987)
4. Dangerous locations (municipal information, field or satellite images)	10. Tornadoes (Geosistemas 1997)
5. Locations with negative externalities (municipal information, land or satellite images)	11. Flooding (INDEC 2004a, b)
6. Insecurity. Crime rate per ten thousand inhabitants (Dirección Nacional de Política Criminal 2008)	12. Climate discomfort (IRAM 1996)

Source Personal elaboration

For the most part, the radius with QLI values < 1 corresponds to counties with a low QLI (Q_4) and a very small population. In general, they belong to provinces and counties of northern Argentina.

In contrast, Table 13.5 gives those radios that stand out for the exceptional situation in their living conditions. Considering those units with QLI > 9, 884 radii with 1,791,329 inhabitants resided in 2010.

In this case, the vast majority of the units are included in counties Q_1 (25) or Q_2 (4) of the six regions of Argentina: Northeast, Northwest, Cuyo, Pampas, Metropolitan and Patagonia, many of which are, in turn, provincial capitals. In this sense—and to

Table 13.3 Adaptation of the QLI components by county to the census radius

County scale (525 units)			Census radius (52,408 units)	
		Socioeconomic and environmental variables	Available (yes or no)	Alternative proposal
Socioeconomic dimension socioeconomic index	Households	Population without toilet (SE_1)	Yes (total)	
		Population overcrowding (SE_2)	Yes (total)	
	Health	IMR (SE_3)	No	Application of county rates to radius
		Population without health insurance (SE_4)	Yes (sampling)	
	Educación	Educational degree below primary (SE_5)	Yes (total)	
		University degree (SE_6)	Yes (total)	
Environmental dimension environmental quality index (EQI)	Recreational resources natural-based (RRNB)	Average score of seven variables (A_1)	No	Application of county rates to radius
	Socially constructed recreational resources (SCRR)	Average score of four variables (A_2)	No	Application of county rates to radius
	Environmental problems (EP)	Average score of twelve variables (A_3)	Three available by fractions (flooding, precarious settlements and garbage dumps)	Application of fraction scores to radius Use of the three variables as proxy

highlight the relevance of the analysis by radius—although the Northeast does not have any county among the first QLI units, it does have smaller units with extremely high values and such is the case of a privileged radius of the capital city of Corrientes province.

Although there are radius with very high values in all regions, their highest concentration is observed in the Authonmous City of Buenos Aires, the northern axis of the metropolitan region and the capitals of some of the provinces, regardless of

Fig. 13.1 QLI at the county level (Argentina 2010). *Source* Personal elaboration

Fig. 13.2 QLI at the census radius scale (Argentina 2010). *Source* Personal elaboration

Table 13.4 Distribution of census radius with very low quality of life by quartiles

Province	County	Quartile value	Radii QLI < 1	Observations
Formosa	Bermejo	Q_4	1	Periphery, border with Paraguay
Corrientes	San Miguel	Q_4	1	On the Paraná River area. Subsistence fishing
	Berón de Astrada	Q_4	2	Idem
	San Cosme	Q_3	1	Idem
	Lavalle	Q_4	1	Idem
	Goya	Q_4	1	Idem
Santiago del Estero	Choya	Q_4	3	In the Ambargasta and Grandes salt flats, bordering Catamarca and Córdoba Provinces
Tierra del Fuego	Río Grande	Q_1	1	Border with Chile

their general situation. Indeed, it may happen that their capital cities constitute an exception and, some radius, an exception within the exception.

To carry out a second analysis of map n ° 2 (by radius) and its degree of correspondence with map n ° 1 (by counties), the worst and best counties will be considered in relation to the QLI. Thus, based on the behavior of their respective census radius, internal differences can be analyzed, as shown in Tables 13.6 and 13.7.

All the radios included in the ten counties with the lowest quality of life, all located in the Northeast of Argentina (NEA) and in the Northwest of Argentina (NOA), are classified as Q_4. Although the differences between the ranges of values of the radius can reach slightly more than four points, all of them are included in the lowest quartile. This indicates a certain degree of homogeneity and territorial contiguity in the most adverse contexts.

In Table 13.7, it can be seen what happens in the reverse case, that is, in the ten counties that lead the quality of life positions nationwide.

The ten counties with the highest QLI are more fragmented and heterogeneous and are found in all regions of Argentina, except the NEA. The unit that heads the list (Mendoza capital city) has 23.3% of its radios included in Q_4. Other cases with relatively high socio-territorial fragmentation are Yerba Buena in the province of Tucumán and General Pueyrredón in Buenos Aires province. In both cases, despite having the highest QLI in their region (NOA or Pampas), they, respectively, have 12.3% and 9.2% of their radius in Q_4.

However, the three parties that are in the MRBA exhibit, paradoxically, a lower degree of fragmentation. This is due to the fact that the weight of the radios with Q_4 in its territory is 2.3 in Vicente López, 6.0 in San Isidro and 4.4 in the Authonomous City of Buenos Aires. Finally, it is in the Patagonian units where greater equity is observed. Indeed, although Ushuaia in Tierra del Fuego has 6.9% of its radios in Q_4,

Table 13.5 Distribution of census radius with a very high quality of life

Province	County	Quartile value	Radii QLI > 9	Observations
Salta	Capital	Q_1	8	Six to the north and two to the west of the capital. Private neighborhood area
Tucumán	Yerba Buena	N	2	Both to the east. They are part of the urban area of the city of San Miguel de Tucumán
	Capital	Q_2	2	Both to the northeast, in prominent sectors of the urban plant
Corrientes	Capital	Q_2	1	Featured sector north of the urban plant
Santa Fe	Capital	Q_1	41	Radius relatively central and fairly clustered together
	Rosario	Q_1	33	Two sectors: central radius to the north and close to the Paraná River area (recreational resource)
Entre Ríos	Paraná	Q_1	2	Urban. North of the city of Paraná, near the Paraná River
Córdoba	Capital	Q_1	76	Three sectors: central, northeast and south
	Punilla	Q_1	3	Close to the towns of La Cuesta and Carlos Paz
	Santa María	Q_1	1	To the north of the town of Altagracia
San Juan	Capital	Q_1	16	Thirteen in the center and three to the west
	Rivadavia	Q_1	1	Contiguous to the previous three
Mendoza	Capital	Q_1	22	In the center, north and west

Table 13.5 (continued)

Province	County	Quartile value	Radii QLI > 9	Observations
	Las Heras	Q_1	1	Adjacent to the north of the provincial capital
	Luján de Cuyo	Q_1	8	To the north, near the county of Capital
San Luis	Capital	Q_1	5	Two to the north and three to the west, close to the center
Buenos Aires (inside)	Colón	Q_2	1	East of the city (prominent neighborhood)
	Pergamino	Q_2	1	South of the city (prominent neighborhood)
	Adolfo Alsina	Q_1	1	To the north, near the town of La Pala
	General Pueyrredón	Q_1	25	Eighteen in the center and south of the city of Mar del Plata. Seven isolated to the north
	Pinamar	Q_1	6	Two north and four south, all in town
	La Plata	Q_1	3	Close to the center of the city
Buenos Aires (axis north of metropolitan region)	Tigre	Q_1	16	Private neighborhoods
	San Fernando	Q_1	1	In the town of Beccar
	San Isidro	Q_1	47	Most in the center and north, close to the river. Some in the west (gated communities)
	Vicente López	Q_1	21	Axis of Avenida del Libertador (Libertador Avenue), town of Olivos and some residential units to the west

Table 13.5 (continued)

Province	County	Quartile value	Radii QLI > 9	Observations
Buenos Aires city	Authonomous city of Buenos Aires	Q_1	512	Outstanding grouping in commune two, which extends toward fourteen and one. Another minor grouping in thirteen, and two isolated cases in commune six
Río Negro	Adolfo Alsina	Q_1	6	Residential area on the coast of the Río Negro
	San Carlos de Bariloche	Q_1	22	Predominance to the west, an area of particular natural-based recreational resources

Table 13.6 Composition according to quartiles of the 10 counties with the lowest QLI

Province	County	QLI	% radius Q_1	% radius Q_2	% radius Q_3	% radius Q_4	QLI per radius (maximum)	QLI per radius (minimum)
Formosa	Ramón Lista	2.84	0	0	0	100	3.81	1.44
Formosa	Bermejo	2.95	0	0	0	100	4.84	0.10
Salta	Rivadavia	3.18	0	0	0	100	4.83	0.91
Santiago del Estero	Figueroa	4.02	0	0	0	100	4.88	2.51
Formosa	Matacos	4.19	0	0	0	100	5.23	0.97
Santiago del Estero	Mitre	4.19	0	0	0	100	4.51	1.94
Santiago del Estero	Avellaneda	4.20	0	0	0	100	5.08	2.31
Chaco	Independencia	4.23	0	0	0	100	4.84	3.10
Santiago del Estero	Atamisqui	4.28	0	0	0	100	5.64	2.32
Chaco	General Güemes	4.37	0	0	0	100	6.51	1.87

Table 13.7 Composition according to quartiles of the ten counties with the highest QLI

Province	County	QLI	% radius Q_1	% radius Q_2	% radius Q_3	% radius Q_4	QLI per radius (maximum)	QLI per radius (minimum)
Mendoza	Capital	8.16	64.4 (47)	4.1 (3)	8.2 (6)	23.3 (17)	9.76	4.89
Buenos Aires	Vicente López	8.06	88.0 (302)	6.1 (21)	3.5 (12)	2.3 (8)	9.36	5.32
Tierra del Fuego	Ushuaia	7.95	84.7 (61)	5.5 (4)	2.8 (2)	6.9 (5)	9.32	4.34
Buenos Aires	San Isidro	7.94	75.7 (240)	13.6 (43)	4.7 (15)	6.0 (19)	9.57	4.24
Santa Cruz	Lago Argentino	7.91	70.4 (19)	22.2 (6)	7.4 (2)	0 (0)	9.16	6.70
San Juan	Capital	7.82	63.1 (89)	22.0 (31)	12.1 (17)	2.8 (4)	9.19	4.83
Tucumán	Yerba Buena	7.79	49.3 (36)	21.9 (16)	16.4 (12)	12.3 (9)	9.21	4.71
Ciudad de Buenos Aires	Authonomous city of Buenos Aires	7.74	82.3 (2926)	11.6 (411)	1.7 (62)	4.4 (156)	9.72	4.39
Neuquén	Los Lagos	7.71	52.8 (9)	41.2 (7)	5.9 (1)	0	8.87	6.84
Buenos Aires	General Pueyrredónn	7.60	63.0 (563)	16.3 (146)	11.5 (103)	9.2 (82)	9.69	3.30

both Lago Argentino in Santa Cruz and Los Lagos in Neuquén lack radios in that position.

13.4   Concluding Remarks

The scale of territorial analysis is crucial for the evaluation of the quality of life of the population from a geographical point of view. In this sense, the use of counties, districts or communes (525 units) has amply demonstrated its usefulness in overcoming the generalization implied by studies at the provincial level (24 units). On the other hand, the adaptation of the county level QLI by census radius (52,408 units) reveals that the counties, although they are useful, may have varying degrees of fragmentation within them. This must be taken into account in academic research and in the formulation of public policies.

The publication of this information on the CONICET (National Research Council of Argentina) Web site (QLI.conicet.gov.ar) has been consulted by around 800,000 users during the first week (October 7–14, 2019). This fact shows the interest and

the need to carry out studies related to the quality of life of the population with this disaggregation scale. In this sense, although the results presented here are preliminary, given that the most extreme situations were examined, it is herein considered that they reveal a series of findings, which are summarized below:

(1) Radius with a very low index is generally found on the periphery of counties with low QLI (subsistence economies, extreme isolation and particularly adverse physical environments). There are also some units included in counties with other situations, but their confirmation should be examined based on the possible statistical randomness derived from the use of such small units.

(2) On the other hand, radios with very high QLI are included in counties Q_1 or Q_2 of the six regions of Argentina, many of which are, in turn, provincial capitals.

(3) Although there are radius with very high values in all regions, the highest concentration is observed in the Authonomous City of Buenos Aires, the northern axis of the metropolitan region and the capital cities of some provinces. This, regardless of their general situation, in which their capital cities constitute an exception and, some radius, "an exception within the exception".

(4) All the radios included in the ten counties with the lowest QLI (the northern regions) are classified as Q_4 and show a certain degree of homogeneity and territorial contiguity.

(5) On the contrary, the ten counties with the highest QLI are more fragmented and heterogeneous and are found in all regions of Argentina (except the Northeastern region).

(6) Of them, the most privileged and with the greatest fragmentation (abrupt gradients of quality of life in a few kilometers) are found in Cuyo, the Northwest and the Pampas regions (in that order). Then, while the metropolitan region exhibits an intermediate situation, in the Patagonian region, these counties are less segmented.

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Chapter 14
The Well-Being of Rural Population

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Abstract Heterogeneous, overlapping rural worlds coexist with variable degrees of visibility and well-being in Argentina. The structural particularities of the houses, the styles of settlement of the population (dispersed or grouped) and the present and past productive systems have left their marks in the current rural territory. The distribution and possibility of access to diverse facilities (drinking water, sanitation, electricity, communications, etc.) evidence convergent territorial configurations. Within them, there are manifestations of power confrontations and the centrality of certain actors who, though transformed and camouflaged throughout historical development, are always present in the dynamics of the rural territory. Demographic dynamics is also relevant in the analysis of these rural worlds, since from the mid-twentieth century, census data show a continuous decline in rural population in each measurement, according to volume and also to proportion, especially of those that live dispersedly. Overall, the inhabitants of rural Argentina have been considered mere economic actors, being their social, sanitation, educational and communication deficiencies made somehow invisible. In other words, the productivity approach or influence of agricultural production on national income has prevailed from a macroeconomic perspective, and, in general, there have been little observation of the living conditions of rural people. In this sense, this chapter aims to show the territorial inequalities of Argentine rural population in relation to their well-being, based on the implementation of a synthetic measurement called the Argentine Rural Welfare Index (ARWI). The contribution of this index lies in the possibility of knowing and appreciating the levels of satisfaction with respect to fundamental dimensions to the development

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of rural population life at the highest level of disaggregation of the spatial information currently available, census radii. The ARWI contributes to realizing that, in comparative terms, rural inhabitants of the Pampean area do not always enjoy greater objective well-being than the inhabitants of the Cuyo, Patagonia and Northern areas.

Keywords Territory · Rural · Well-being · Argentina · Inequalities · Living conditions

14.1 Introduction

Heterogeneous, overlapping rural worlds coexist in Argentina, with varying degrees of visibility and well-being. The constructive peculiarities of the houses, the ways of settlement of the population (dispersed or grouped) and the present and past productive systems have left their marks on the current rural territory. Likewise, the disposal and possibility of access to infrastructures (drinking water, sanitation, electricity, communications, etc.) give evidence to diverse territorial configurations. There appear struggles for power within them and the supremacy of certain actors that, although they change throughout the historical evolution, are always present in the dynamics of the rural territory. Since the mid-twentieth century, census data show in each measurement continuous declines in rural population, in volume and proportion, especially those living in the scattered countryside. The explanation of this process, which some have referred to as "rural exodus" (Reboratti 1972), is complex.

The incorporation of technological innovations (improved seeds, direct sowing, agrochemicals and precision agriculture) partially explain the loss of jobs, so the escape route has been mobility to medium-sized cities or small towns with the purpose of reaching employment in other jobs or having part-time rural jobs with residence in nearby towns. For their part, agricultural producers, hand in hand with improvements in the means of communication and transport, also move their residences to agglomerations of various sizes. From there they travel to their farming developments (EAP) daily or when it is required.

Middle cities not only become the place of settlement of rural producers and ex-workers, but also shelter new actors such as rentiers and contractors. Many of them arise from changes in the size and forms of tenure of production units. In fact, one of the strategies for the conversion of small- and medium-sized producers has been their transformation into rentiers with the appearance and increase of accidental contracts, leasing and the concentration of production in a few hands. Other capitalized producers, but with economic difficulties in sustaining production units, became contractors for planting, spraying and harvesting services.

Each of the above issues is linked to the advancement of global industrial or rural agriculture. One of the keys to this modality is that the producer stops manufacturing self-sufficient and becomes dependent on inputs provided by industry and external services.

Scientific agriculture is on a par with large transnational or national companies, which capital is not necessarily of agricultural origin. These companies are increasingly concentrated (Gorenstein and Ortiz 2016) and affect rural subjects and their way of acting in the territory (producers, processors, collectors and distributors), support institutions (suppliers of inputs and agricultural machinery, banks and research centers) and coordination mechanisms (governments, associations of industries and markets).

The Argentine agricultural sector, to a lesser or greater extent, is going through this process, which is also characterized by the disappearance of a significant number of farms, the deterioration of the living conditions of rural families and environmental conditions. All of them being effect of the industrial agriculture model imposed from the deepening of neoliberal policies since the 1990s. As Teubal (2001), Domínguez and Sabatino (2006) and Gorenstein and Ortiz (2016) sustained, this set of transformations is based on the advance of soybean cultivation and the technological package that accompanies it, at the expense of livestock and typical cereals, of a set of traditions, the cornering of the original population, the loss of biodiversity and the fragility of ecosystems. In this context, scenarios of resistance that question production as a means of obtaining material goods emerge and mainly the life genres that have been generating and transforming in each territorial cut over time (Claval 1999).

The situation of the rural population is affected, more clearly than in urban population, by regional differences and the different genres of life associated with the histories, traditions, local productions, with territorial identity and general characteristics of each region. According to this, Blanco, Alegre and Jiménez state:

> The strategies developed by different social groups or the individuals that make them up are composed of proposals with varying degrees of effectiveness in coping with or improving the conditions derived from the restrictions to which they are subjected. These include self-production of food, temporary or permanent migrations, combination of different income sources, demographic and occupational strategies (Blanco et al. 2010: 3–4)

In general, the inhabitants of rural areas of Argentina were considered mere economic actors, turning somehow invisible their social, sanitation, educational and communicational shortcomings, among other aspects. That is to say, the productivity view or the weight of rural production in national incomes from a macroeconomic perspective prevailed, and, in general, there were few views on the living conditions of rural inhabitants (Cerdá and Salomón 2017; Mathey 2007; Krapovikas and Garay 2017).

In this sense, the objective of this chapter is to show the territorial inequalities of the Argentine rural population in relation to their well-being, based on the implementation of a synthesis measure named the Argentine Rural Well-being Index (ARWI). To do this, firstly the methodological aspects are detailed, then each of the dimensions that make up the ARWI is analyzed, and later, this summary measure is presented. Finally, the conclusions and discussions on the results and data sources are reported.

14.2 Methodology

In order to evaluate the well-being of the Argentine rural population, we worked with multivariate analysis techniques to achieve a synthesis measure named the Argentine Rural Well-being Index (ARWI). It summarizes the situation of the indicators contained in the dimensions selected for operationalization, namely education–employment, sanitation, housing, communication–connectivity and environment. The units of analysis on which the ARWI is applied are the 13,734 census radiuses in Argentina which comprised rural population in 2010. The rural population in this census measurement is 3,541,042 inhabitants, constituting the basis on which the rural well-being index is applied.

For the analysis of the first four dimensions, the data source used is the 2010 National Population, Household and Housing Census. For the environmental dimension, on the other hand, information from specialized literature, the Ombudsman of the Nation (2010) and INDEC (2010) was used.

The notion of well-being resembles the idea of living conditions in that it considers the satisfaction of basic and material needs associated with the implementation of social and economic policies (Lucero 2008). Thus, given the theoretical approach chosen and the idea-concept of well-being that guides this work, benefit variables were selected, i.e., those that in their highest scores represent the best situations.

With this type of variables, the original data matrix (ODI) was designed and then transformed into an index data matrix (IDM). Next, the values of the IDM were standardized on omega scores, applying the following formula:

$$I = \frac{\text{Max} - a}{\text{Max} - \text{Min}}$$

The variables of the environment dimensions were transformed into benefit values prior to their integration into the index.

From the dimensions considered, the elaboration of the ARWI was achieved in a range from 0 to 10 points, where 0 refers to the worst situations and 10, to the best.

The use of geographic information systems (GIS) for information processing made it possible to geo-reference, manage and recreate situations involving socio-spatial information, facilitating the achievement of thematic maps and synthesis cartography. The selected dimensions were mapped forming layers of information which combined and resulted in the ARWI. Class intervals were performed using quantiles, so that "each class on the map has the same number of spatial units" (Buzai and Baxendale 2006: 232).

The indices obtained correspond to the national total and to each space unit (radius), except in the environmental dimension, in which the spatial units were districts or departments due to the impossibility of accessing information referring to census radiuses.

Table 14.1 shows the dimensions and variables retrieved from the above data sources, as well as their corresponding indicators.

Table 14.1 Dimensions, variables and indicators of ARWI 2010

Dimension	Variable	Indicator (percentages)	Source
Education–employment	Achieved highest level of education Activity condition	– Population aged 20–59 years with complete secondary level (SEC) – Population aged 26–59 years with complete non-university upper level (TERC) – Population aged 26–59 years with full university level (UNIV) Employment rate: employed population and population aged 14 and over	INDEC. National Census of Population, Households and Housing 2010, processed with Redatam +Sp"
Sanitation	Water provision inside the house	– Population in households with water connection within the house (with water) – Population in households with water supply with motor pump (with pump)	INDEC. National Census of Population, Households and Housing 2010, processed with Redatam +Sp"

(continued)

14.3 Well-Being in Rural Argentine Territories

14.3.1 Education–Employment Dimension

Education and work contribute to improving the well-being of the rural population, insofar as both measurements provide tools that allow subjects to participate in social life (Lucero 2008). Indeed, formal education not only increases cultural capital and the probability of entering the labor market, but also contributes to the control of household health conditions and to the use of information and communication technologies (Sabuda 2008).

Employment, on the other hand, participates in the construction of people's identity and is a fundamental aspect for obtaining material and intangible goods, such as health care and pension contributions (Mikkelsen et al. 2018). While access to

Table 14.1 (continued)

Dimension	Variable	Indicator (percentages)	Source
Housing	Overcrowding Materials quality	– Population in households without overcrowding (two or fewer people per quarter) – Population in dwellings with one household – Population in households with INMAT-1: resistant and solid materials on the floor and ceiling, with ceiling – Population in households with toilet or latrine	INDEC. National Census of Population, Households and Housing 2010, processed with Redatam +Sp"
Communication–connectivity	Computer Telephony	– Population in households with computers – Population in households with cell phone – Population in households with landline telephone	INDEC. National Census of Population, Households and Housing 2010, processed with Redatam +Sp"
Environment	Pollution Danger Garbage Weather	– Pesticide pollution – Seismicity and volcanism – Flooding and tornadoes – Presence of garbage dumps – Climate unrest index	Ombudsman of the Nation (2009) Chiozza et al. (1987) INDEC. National Census of Population, Households and Housing 2010, processed with Redatam +Sp" Geo-systems (1997) IRAM (1996)

Source Authors' elaboration

goods and services does not guarantee the achievement of a certain level of well-being, having a job can make it possible to cross the poverty line and access better living conditions. During the last decades, the progressions of increasing globalization impacted on different areas of daily life, such as education and work. In this sense, technological innovations changed manufacturing procedures and, consequently, industrial relations. Thus, new jobs were created, others were eliminated, and changes emerged in the characteristics of jobs and in the qualifications demanded by employers (Bensusán et al. 2017). In this context, the lack of decent work opportunities persists, which is one of the sustainable development goals for the 2030 Agenda, defined as the creation of quality jobs for the entire working-age population (United Nations 2018).

In the agricultural sector, the main changes in labor markets were the decrease in the number of permanent workers and the increase in the temporary labor force (Neiman 2010). This process is linked to flexible production, based on the growing outsourcing of work and the increase in job insecurity through seasonal unemployment, the weakening of the wage proportion, social lack of protection, low wages, job instability, part-time hiring, staff turnover and their mobility (Neiman 2010; Bensusán et al. 2017).

Education systems also underwent transformations in recent years, linked to the transfer of educational establishments to provincial and municipal governments, accompanied by changes and reconfigurations in academic structures. Since 1993, educational reforms were established to increase the number of years of compulsory schooling and expand the diversity of educational modalities, according to the different student realities and in order to guarantee social inclusion and better access to education at all levels (SICE 2017).

In the early 1990s, compulsory formal education was limited to the initial and primary levels (8 school years over all). After almost two decades, the obligation was extended to the secondary level and to one more year of initial level (14 full years of schooling).

Educational modalities comprise technical-professional, artistic, special, permanent education for young people and adults, rural, intercultural bilingual, in house, in hospital and in contexts of confinement. In addition, in the rural area of the province of Buenos Aires, it is possible to find educational systems that allow to supplement education with the development of local communities, such as the Educational Centers for Total Production (CEPT).

For the particular case of the ARWI, and in order to embrace the spectrum of the different educational levels that allow to reach the maximum level of education, three indicators have been considered which refer to the variable maximum educational level achieved. They are: *percentage of population aged 20 to 59 with complete secondary level, percentage of population aged 26 to 59 years with complete higher non-university level and percentage of population aged 26 to 59 with complete university level.*

The consideration of the middle level for inclusion in the ARWI lies in its mandatory nature—established in the regulations since 2006—and in its goal of training

young people and adolescents for the exercise of citizenship, work and continuity in study (National Education Law No. 26,206/06).

In general, as the level of instruction in formal education increases, so does work productivity and value added. The population with higher education levels is employed in formal sectors of the economy with better working conditions in terms of health care, pension contributions, paid holidays, among other rights. On the contrary, the population inserted in the informal sector of the economy generally develops activities that are not recognized, protected or regulated by the authorities (Lucero 2008).

The opportunities for people to obtain an occupation according to their expectations are reduced by an increase in unemployment. This situation generates individual, family and community limitations that go beyond the simple absence of a remunerated occupation. Therefore, with regard to activity status, the employment rate (i.e., the percentage of the employed population in relation to the population aged 14 and over) was considered as an indicator. Through this indicator, it is possible to estimate the imbalance between labor supply and available labor. It also allows comparison with other countries and consideration of multiple occupations.

Although both dimensions, the educational and the labor, deserve a detailed treatment, there are studies aimed at knowledge about the quality of life in rural and peri-urban spaces in Argentina in which the treatment of both dimensions was proposed together. In particular, the contributions of Ortiz de D'Arterio et al. (2008, 2009) are clear, based on cases from the province of Tucumán, where education and employment indicators were grouped to analyze the private domain of households or the socioeconomic characteristics of heads of households. For its part, ECLAC (2019) considers both dimensions as central axes to achieve inclusive social development, with education being the fundamental link for labor inclusion and increased productivity (ECLAC 2020). Based on this background and in the absence of census data on labor aspects at the scale of census radiuses, it was considered appropriate to work together the educational and labor dimensions.

The analysis of this dimension makes it possible to infer the situation of vulnerability in which the rural population finds itself with regard to education and, to a lesser extent, employment. Table 14.2 shows the performance of each of the indicators that make up the education–employment dimension, according to the ARWI ranks.

The first appraisal we can make is that the rural population is concentrated in the "low" values (35%) and "very low" (30%), and only 35% are at "high" levels (24%) and "very high" (11%). In addition, it is clear that, as the range of the index increases, the level of education and employment increases. However, even in the "very high" category, the percentages of the population with secondary, higher non-university and university education are below the national average. At the national level, indicators show that 26.5% of the population aged 20–59 years has complete secondary level, 8.9% with complete non-university higher education and 9.7% with a complete university level (INDEC 2010).

The employment rate presents a better relative situation because it exceeds the national average (60.8%) in the highest ARWI ranges ("high" and "very high"). This

Table 14.2 Average of the *education–employment* dimension indicators, according to ARWI categories

ARWI ranges	Average population aged 20–59 with complete secondary level	Average population aged 25–59 with complete higher non-university education	Average population from 25 to 59 with complete university level	Average employed population	Total rural population and percentage
Very low	7.1	2.1	0.7	48.2	1,076,361 (30%)
Low	12.7	3.4	1.9	57.7	1,234,737 (35%)
High	17.2	4.7	3.5	64.8	832,521 (24%)
Very high	20.6	6.0	6.1	70.2	397,423 (11%)
					3,541,042 (100%)

Rural population of Argentina, 2010
Source Authors' elaboration

shows that the active population living in rural areas is mainly employed; otherwise, in most cases they migrate to urban areas. It should be noted that this percentage of the population aged 14 years or over who are working exceeds the proportion of the adult population that has accessed formal education (at the three levels considered), in all ranges of the index. This denotes the predominance of low-skilled employment of the resident population in rural areas. Thus, the jobs of greater valorization are performed by professionals residing in localities with the capacity to make daily transfers to working areas. In addition, this situation is enhanced by the difficulties in accessing education in rural areas. Figure 14.1 depicts the distribution of the sub-index conforming to this dimension.

The "very low" values correspond to 25% of the spatial units that concentrate 30% of the rural population. These are located mainly throughout the provinces of Santiago del Estero and Tucumán, in the northwest of the provinces of Córdoba and San Luis, in the southeast of La Rioja province and, in a more fragmented way, in the provinces of Salta, Jujuy and Catamarca. Northeast Argentine (NEA) also presents critical situations.

In the case of Santiago del Estero, Chaco and Formosa, provinces that have been affected by the advance of the agricultural boundary, mainly because of the cultivation of soybeans which replaced traditional crops, such as cotton. This meant the simplification of work and the consequent decrease in the demand for labor, which increased both the number of jobless and the shift or cornering of the original populations (Barbetta et al. 2009).

Fig. 14.1 Rural population of Argentina, *education–employment* sub-index. *Source* Authors' elaboration based on INDEC, NCPH&H (2010)

For their part, Catamarca and La Rioja provinces present unfavorable structural contexts that were not able to be reversed in recent decades. In the case of Catamarca province, dependence on mining generates enclaves that, due to their characteristics, do not produce positive effects outside their circuit and affect, in the first instance but not exclusively or circumscribed to, rural communities due to water and air pollution.

The provinces of Salta, Jujuy and Tucumán recorded a decrease in traditional crops such as sugar cane and tobacco, but in recent decades, they were fortified after the upgrading of citrus for increasingly demanding export markets. The labor force, unlike other times, is accomplished by subjects who are not peasants in origin, lacking family tradition and living on the periphery of provincial capital cities (Aparicio and Benencia 2016).

However, the impact of this category is much lower in the Pampas region and in Patagonia. There appear census radiuses with "very low" value in isolation in the provinces of Río Negro, Neuquén, Chubut and Buenos Aires, establishing a fragmented distribution pattern.

In a less critical situation, 25% of the spatial units are positioned with their sub-index located in this range, which comprises 35% of the rural population. The areas with "low" value are presented as interspaces between the units with very low figures of the provinces of the northwest, northeast, the Cuyo region and the northern zone of Patagonia. In the Pampas region, they are distributed in a dispersed way without representing a defined pattern.

In a better situation, 25% of the space units housing 24% of the rural population are listed. Its distribution pattern is equally dispersed, but it presents a higher density of spatial units in the Pampas region, more precisely in the province of Buenos Aires, in the south of Santa Fe and in Córdoba provinces and in the east of La Pampa province.

The last 25% of the spatial units represent the smallest proportion of the population (remaining 11%) and they are where the ARWI is located in the range of very high values. These units are concentrated in provinces of the Pampas and Patagonian regions.

Again this category appears in the province of Buenos Aires in a fragmented way, concentrating toward the southwest and west of the province and, with less impact, in the Salado river basin, in the south of Santa Fe and Córdoba provinces and the eastern portion of La Pampa province. In Patagonia, it dominates the provinces of Santa Cruz, Tierra del Fuego and southern Chubut.

In the rest of the country, units with figures in the "very high" category of the subscript appear in a dispersed manner in the provinces of Salta, Formosa, Chaco, Corrientes, Misiones, Entre Ríos and Neuquén and compressed in the west of the provinces of Mendoza and San Juan and in the south of Jujuy province. Since they are the territories that are in a more critical situation, the provinces of Santiago del Estero, Tucumán and Catamarca have almost no units in this category.

In summary, the spatial distribution of the education–employment sub-index shows a better situation in the south of the Patagonian region and in the Pampas region. In the latter, although the areas with numbers located in the range of "high" and

"very high" are concentrated, the territorial configuration is fragmented, alternating with units that exhibit values "low" and "very low".

With regard to the indicators, we can mention that the percentage of the rural population with a higher level of education is low. On the other hand, the employment indicator appears more auspicious in relative terms.

When looking at the distribution of educational indicators, there are no great territorial inequalities. Therefore, despite the progress made in education following the reforms and the expansion at the national level of middle- and higher-level institutions, the percentage of the rural population that completes these levels is low. Beyond the analysis carried out, it is possible to point out that the lack of secondary and higher education would be linked to the difficulties of access, either due to the state of the roads or the inclement weather, together with the scarce presence of educational institutions. However, it is important to make clear that, given the age range considered, these indicators may improve in the future. As for the level of employment, although it presents a more favorable situation in relation to educational indicators, it defines the territorial inequalities in greater proportion.

14.3.2 Sanitation Dimension

The provision or supplying in the territory of facilities and services that promote health—for the maintenance of good hygiene conditions and for the reduction of potential diseases or disorders—is a key aspect in the assessment of the well-being of the population in general and of the rural population in particular. Given the limited financial, administrative and technical capacity that generally troubles sanitation service providers in rural areas and the low socioeconomic levels that characterize a large part of the inhabitants of these areas, the provision of this type of services is a challenge for the governments of the least developed countries, including the Latin American nations (Carrasco Mantilla 2011).

On this occasion, in order to evaluate the sanitation dimension, those indicators considered representative of a well-being situation were included: percentage of the population in households with water connection within the house and percentage of the population in households with a motor pump water supply. These indicators are the result of previous debates and research processes that led to claim that, at present, to measure the well-being of the rural population:

> [a] central indicator is the possibility of access to water, since [...]it is a service that in cities generally comes from a public network [...]. On the other hand, the best condition in the countryside is that it come from a well and be obtained by means of an automatic pump (Mikkelsen 2007, p. 40).

As Cáceres and Rodríguez-Bilella (2014) sustained, water is a key element for the satisfaction of the basic needs of society, a decisive factor for human development and a fundamental aspect to guarantee a dignified life. However, the United Nations (UN) report on the Millennium Development Goals set for 2015 revealed that, despite

improvements in access to safe drinking water, a large proportion of the world's population still lacks a piped water supply, so further work must be done in this regard in view of the 2030 Agenda. Within this group, the situation in rural areas is even more committed.

For the specific case of this population, the dispute over water that is established between the productive function and the need for human consumption must be taken into account. Indeed, under a global framework of expansion of agrarian capitalism, Svampa and Antonelli explained:

> It is precisely in rural areas where competition for water intensifies, since direct human use increasingly competes with intensive agricultural or industrial production such as open-pit mining (Svampa and Antonelli 2009, in Cáceres and Rodríguez-Bilella 2014, p. 360).

The analysis of the ARWI sub-index (see Table 14.3) reveals that Argentina does not elude these problems, although in this case we can consider that the large territorial extension of the rural area and the low density of inhabitants make it impossible to expand sanitation networks. However, guaranteeing access to quality water within rural housing by means of a motor pump is understood as a fundamental objective to which state policies must aim, in relation to education, regarding the importance of consuming this good safely.

As shown in Table 14.3, the "very low" range of the ARWI assembles, in the sanitation sub-index, more than half of the Argentine rural population (55.1%). Within this group, only 32.8% of the population held water connection within the house in 2010, and 11.2% was supplied by motor pump.

The site of the 5602 spatial units that represent this condition takes place mainly in extra-Pampean areas. It should be noted, however, that several of the worst situations are found in segments of the province of Buenos Aires, corresponding there to the districts of Azul, Coronel Dorrego, Coronel Pringles, San Nicolás and Villa Gesell.

For its part, the "low" range of the ARWI gathers, in the sanitation sub-index, 23.1% of the Argentine rural population. In short, it is upsetting that, by 2010, three quarters (75.2%) of the rural population of Argentina were far from the possibility of accessing water in the most appropriate way.

Table 14.3 Average of the *sanitation* dimension indicators, according to ARWI categories

ARWI ranges	Average population in households with water connection within the house	Average population in households with motor pump water supply	Total rural population and percentage
Very low	32.8	11.2	1,951,581 (55.1%)
Low	80.5	15.8	819,780 (23.1%)
High	73.2	41.4	190,404 (5.4%)
Very high	88.9	76.7	579,277 (16.3%)
			3,541,042 (100%)

Rural population of Argentina, 2010
Source Authors' elaboration

In the specific case of the "low" range, it is about 2110 census radiuses whose location, although coincident with the "very low" ARWI areas, stands out in the south of the Patagonian region (provinces of Chubut, Santa Cruz and Tierra del Fuego) and the Cuyo and Northwest regions.

High values bring together the lowest proportion of the population (5.4% of the rural population of Argentina in 2010) and of spatial units (855 census radiuses). In relation to the previous interval, there is here a significant jump in the average population in households with motor pump supply of water, which ranges from 15.8% in "low" to 41.4% in "high". On the contrary, in the average population in households with water connection within the house, there is a decrease of 7%, since it varies from 80.5% for the "low" range to 73.2% for "high".

It is the census radiuses of the inner Pampean (central and northern provinces of Entre Ríos, Santa Fe and Córdoba; central and southern Provinces of Buenos Aires and La Pampa) and Patagonia (Santa Cruz, Tierra del Fuego, Neuquén and northern Río Negro) regions which characterize this range. They are merged with isolated spatial units in provinces such as Corrientes and Mendoza.

Finally, the "very high" range of the ARWI puts together 16.3% of Argentina's rural population in the sanitation sub-index for 2010. Within this group, 88.9% of the population owned water connection within the house and in 76.7% water was provided by means of a motor pump.

In this case, it involves 5167 space units concentrated mostly in the Pampas region, which presents environmental conditions that allow physical access to water, compared to other regions with greater aridity. In any case, as can be seen in Fig. 14.2, cartography does not fail to show the pattern of territorial distribution characteristic of the Argentine Republic where, in general, the Pampas region stands out from the rest for its best well-being conditions.

14.3.3 Housing Dimension

Homes must protect their inhabitants from weathering, as well as provide thermal comfort and protection against substances or vectors that denote health risks. A home that does not meet the minimum requirements, in terms of materials, dimensions and sanitation, is associated with higher morbidity and mortality rates. In this way, the unsanitary conditions in the houses affect the health of their inhabitants in a negative way.

Thus, inadequate sanitation favors gastrointestinal diseases, while overcrowding contributes to the transmission of diseases, such as tuberculosis, and it is related, in turn, to domestic violence. Cracked walls, especially in adobe and straw dwellings, are favorable to the accommodation of insects that contribute to the transmission of Chagas disease (American trypanosomiasis). Finally, the lack of safe fuel for cooking and heating, as well as poor ventilation, contribute to poisoning and the aggravation of respiratory diseases (World Health Organization 1990).

Fig. 14.2 Rural population of Argentina, *sanitation* sub-index. *Source* Authors' elaboration based on INDEC, NCPH&H (2010)

For these reasons, to evaluate the housing dimension, the following variables defined by INDEC were selected (recovered from https://www.indec.gob.ar/ftp/cua dros/poblacion/glosario_censo2010.pdf):

- *Population in households with toilet or latrine: refers to the availability of a space enclosed by walls that rise from the floor to the ceiling, or by partitions (wall that rises from the floor to a height of two meters), used by the home for the evacuation of excreta. The bathroom or latrine may be inside or outside the dwelling and be for the exclusive use of the home or shared with other households;*
- *Personal overcrowding: that is, the percentage of the population in households without overcrowding, considering that the members of a household do not suffer it if the ratio between people and rooms is less than or equal to two (two or fewer people per room);*
- *Overcrowding of households: it refers to the cohabitation in a house of more than one household (*Lentini and Palero 2009*), meaning the person or group of people (relatives or not) who live under the same roof and share the expenses in food; and*
- *Quality of materials (INMAT): represented by the percentage of population in households with INMAT-1. This variable refers to the quality of the materials with which the houses are built (main material of the floors and ceilings), taking into account the solidity, the resistance and the capacity of insulation, as well as its completion. The modality included in the calculation of the ARWI is Quality I. The houses that are classified like this have resistant and solid materials both on the floor and on the ceiling and have ceilings.*

In the rural population as a whole, similarly to the previous dimension, the housing dimension shows values that are progressively deteriorating from the province of Buenos Aires to the rest of the country. With the analysis of the sub-index of this dimension and its components, based on the ARWI, the peculiarities detailed below were identified (Table 14.4).

The "very low" range affects 30.5% of the country's rural population. The space units where the population shows the worst housing conditions are found primarily in the provinces of Salta, Jujuy, Catamarca, Santiago del Estero, Chaco, Formosa, west and northeast of Corrientes and in the north of Misiones province. Outside the so-called Norte Grande, there are also notable shortages in the Paraná Delta (a portion of the Pampean region). In Patagonia, some sectors of central and northern Neuquén are affected by very low values, as well as a large part of the rural areas of Chubut province.

Within the set of "very low" ARWI, the weight of the indicators referring to the availability of toilets and the quality of the construction materials are of particular concern, since both are considered essential for the improvement of health. They prevent contamination by latrines, insect bites or other vectors transmitting diseases. In this sense, the quality of the construction materials not only creates the isolation and protection with respect to weather conditions, but also takes care of the residents of vectors such as vinchuca (*Triatoma infestans*) or mosquitoes transmitting diseases such as dengue (*Aedes aegypti* mosquito).

Table 14.4 Average of the *housing* dimension indicators, according to ARWI categories

ARWI ranges	Average population with latrine	Average population with INMAT1 households	Average population in households without overcrowding	Average population in households without personal overcrowding	Total rural population and percentage
Very low	79.7	8.7	85.9	53.9	1,081,051 (30.5%)
Low	92.0	27.6	84.7	71.1	1,236,186 (34.9%)
High	97.1	53.7	87.5	82.0	830,448 (23.5%)
Very high	98.9	70.0	93.0	87.7	393,357 (11.1%)
					3,541,042 (100%)

Rural population of Argentina, 2010
Source Authors' elaboration

In the remaining categories of the ARWI, the values in the indicators of the sub-dimension increase, which accounts for a sign of improved well-being. The greatest differences can be seen in the quality of materials and in the overcrowding of households.

As for the latter, we observe that between the values 'very low' and 'very high' the indicator is multiplied by eight, that is to say that the population in houses with suitable materials is a very sensitive indicator in the determination of well-being. In this sense, although it triplicates between ARWI "very low" and "low", according to data, 70% of the rural population still lives in housing with inadequate materials in relation to the shelter and protection that they can afford to their inhabitants.

In relation to household overcrowding, the lowest value is multiplied by 1.6 in the category corresponding to the highest ARWI. Thus, almost half of Argentina's rural population is overcrowded within households, which denotes either a housing deficit or the survival of cultural patterns around extended and multigenerational households (Quilodrán 2008).

The third indicator is the presence of toilet. Here are important differences between the "very low" ARWI (79.7%) and the "low" (92%), but then the distances are reduced, suggesting the extension of this service in rural dwellings. It should be borne in mind, however, that the indicator refers to the presence of any type of toilet (including latrines). Therefore, this does not allow a complete approach to the sanitary condition, which differs greatly between a latrine located outside the house and a bathroom with water installation and adequate excreta disposal.

On the other hand, while there is significant variation between the extremes ("very low" and "very high" ranges), the quality of the materials denotes average numbers

(70%) even in the high value of the ARWI, as an invitation to pay greater attention to the housing problems of rural Argentina.

What was analyzed can be seen in Fig. 14.3.

14.3.4 Communication–Connectivity Dimension

One of the greatest difficulties that still persists, in general, discerning or segregating rural spaces from urban ones is the possibility of being telecommunicated or connected. This is an issue that influences the well-being of the rural population, whether grouped or dispersed, since it is clearly related to the opportunities of access to essential services (health and education), to daily movements for the supply or the carrying out of formalities and to the capability for socialization and exchange. As Sili, Guibert and Bustos Cara explained:

> Urban areas always experienced a greater presence of fixed telephony, due to its lower cost and the feasibility of the installation. On the contrary, in rural areas, especially in the countryside, fixed telephony was always more expensive. It was only in the nineties that the appearance of mobile telephony implied a drastic change. (Sili et al. 2015, p. 84).

On the other hand, in the World Bank report of 1995, it is stated:

> Information is fundamental to the social and economic activities that constitute the development process. Telecommunications, as a means of sharing information, are not only a link between people, but a link in the chain of the development process itself (Heather Hudson 1995, quoted by Richardson 1997)

Telephone communication, whether by fixed line or by cell phone, holds significant limitations due to the lack of networks covering all rural areas. Despite the progress made in telecommunications, there are still real "white zones", as defined by rural people, who must apply countless strategies in order to attain a mobile phone signal. In this regard, it is interesting to reflect on communication as a right, even framed in the 2030 Agenda. In this regard, Kenny, Navas-Sabater and Qiang warned:

> ICTs (Information and Communication Technologies) provide access to information that can create opportunities to generate income, improve access to basic services or increase the impact of education and health interventions. ICTs also give the poor a voice to demand support and reforms from the government (Kenny et al. 2000).

The coverage of mobile telephony throughout the national territory by the companies committed to this service shows a clear concentration in urban centers. It is manifested especially in provincial capitals and, above all, in the Pampas area, leaving vast sectors of the national territory still without coverage.

The condition of the roads, the general lack of maintenance (with differences according to counties, districts and provinces) and even the lack of transportation routes limit accessibility and the connection between places. In this regard, Sili et al. claimed:

Fig. 14.3 Rural population of Argentina, *housing* sub-index**.** *Source* Authors' elaboration based on INDEC, NCPH&H (2010)

People who have access to greater mobility have better opportunities to meet their needs; on the contrary, those with a reduced mobility capacity are forced to satisfy them with the few goods and services existing in rural areas, a situation that reproduces a model of inequality (Sili et al. 2015, p. 74).

Not only roads and routes deserve special mention in this section, but also railways, with a central role in the national historical past and a strong impact on the rural environment after their disaffection. The railway tracks currently behave like real roughness (Santos 2000), effective forms-content that left signs of their presence and importance in pursuit of connectivity and communication.

Gaignard (1989) described that, until the mid-twentieth century, the Pampas scheme was simple, there was a dense network of railways that structured the space with centers in Rosario, Paraná, Buenos Aires and Bahía Blanca. This scheme repeated approximately throughout the national territory where the railway actually arrived. In these central points, it was the warehouseman-collector who directed the marketing of the products. The space of exchange was the train station, in which this may or may not have given rise to the formation of rural villages and perhaps to cities later. This homogeneous scheme, linked by the railway and telegraph networks, became more complex toward the 1950s and 1960s when, as Teubal explained:

the post-war model or regime of accumulation, called Fordism in the central countries and Import Substitution Industrialization (ISI) in Latin America, seem like coming to an end, either because it tended to run out, or because it was entering a crisis (Teubal 2001, p. 56).

At that time, in some rural fragments, roads replaced the railway; the radio, the telephone and the cell phones to the telegraph; the bank, the cereal companies and the cooperatives to the warehouse-keeper. In others, however, the removal of the railroad meant depopulation, lack of opportunities, closure of educational establishments and formation of true "ghost towns".

In an attempt to characterize the situation of connectivity and communication in rural areas through the construction of the ARWI, the following indicators have been included: percentage of the population in households with cell phones, percentage of the population in households with landline telephone and percentage of the population in households with computers. The averages of these for each range are expressed in Table 14.5.

In the first instance, INDEC reported that by 2010, 86% of the rural population owned a cell phone, while only 12% owned a landline. With regard to the third variable, it can be observed that 21% of the rural population of Argentina had access to the use of computers in their homes, devices that currently allow for activities of interaction, educational, banking, medical, learning, administrative and recreational, among many others. This outcome, however, does not guarantee Internet connection, but simply the possession of the equipment.

The connectivity dimension shows in its territorial distribution, according to the ranges designed for the ARWI, that 40% of the rural population is located in the "low" range in terms of the possibility of communication and connectivity. Thus, 3946 space units, or 24 per cent of the total radiuses, are included in this situation. Then, in second place, stands the "high" range, which comprises 25%. With a difference

Table 14.5 Average of the *communication–connectivity* dimension indicators, according to ARWI categories

ARWI ranges	Average population with cell phone	Average population with landline telephone	Average population with computers	Total rural population and percentage
Very low	37.8	32.6	68.4	765,439 (22%)
Low	40.4	40.2	71.2	1,405,908 (40%)
High	43.8	48.1	74.9	872,858 (25%)
Very high	46.5	54.3	77.5	496,837 (14%)
				3,541,042 (100%)

Rural population of Argentina, 2010
Source Authors' elaboration

of three percentage points, followed by "very low", gathering 2484 radiuses and, finally, with 14% appears the "very high" range, which represents 3984 spatial units, that is, 29% of the total.

Cell phones have become widespread global goods used massively. However, this massiveness is restricted in certain cuts in rurality, which territorially correspond to conditions of isolation, difficulty in access and extreme situations of habitability, as with landline telephony.

Thus, consistent with the information analyzed, it can be observed that, on average, only 37.8% of the rural population included in the very low values of the communication and connectivity dimension have access to cellular telephony. Therefore, 62.2% of the population, on average in this range, does not have access to this service, since in general they are in conditions of isolation due to distances or severe environmental conditions.

As the value of the sub-index rises, the possibility of access to mobile telephony also increases, although not as much as might have been anticipated. Bear in mind that, in the last range of the index comprising the population in the "very high" range, only 46.5% own a cell phone.

Regarding landline telephony, it can be said that it is barely present in rural areas due to the high cost of installation and maintenance. In fact, only the population between "high" and "very high" shows an average value of 48.1% and 54.3%, respectively, in terms of the possibility of having such a service.

It should be noted that at the global and national levels the use of landline telephony has widely decreased compared to mobile telephony. In 2015, Grosz reported: "Landline phone use falls 45%, but people keep their lines" (Grosz 2015).

Of the three indicators considered, access to the use of computers is the highest in proportions of population with such advantage, due to the fact that its "very low" percentage is 68.4%.

The truth is that these three services not only imply owning them because of the facilities they grant to the development of modern life, but they also indirectly exemplify the possibility of access in relation to purchasing power, and even more

so with the communication infrastructure that is available to the rural environment. In this sense, if the variables considered could be added to the presence of roads and routes in suitable conditions that facilitate access and circulation, as well as the possibility of Internet connection, they would surely add greater complexity to the analysis. Indeed, as Sili, Guibert and Bustos Cara mentioned, "of the total number of roads in Argentina, approximately 89% are dirt or gravel roads, directly linked to the rural world, since they constitute access to agricultural holdings and the most inhospitable rural areas" (2015, p. 78).

The synthesis of the communication and connectivity dimension that brings together the three aforementioned indicators can be seen in Fig. 14.4. Its spatial design shows the advantage of the Pampas provinces with predominance of "high" and "very high" values, a northern territory with supremacy of "low" and "very low" values, especially in the mountain ranges and close to the Atacama plateau, the mountains, the Chaco province "Impenetrable" forest and Misiones province. In Patagonia, it shows an arrangement dominated by "very low" to "low" values, especially in Río Negro and Chubut provinces, although with isolated areas in "very high" values over the mountain range, the coast and the Upper Rio Negro Valley.

14.3.5   Environment Dimension

The environment dimension refers to those threats that can affect the rural population, either of natural or anthropogenic origin. Among the first, the probability of affection by seismicity phenomena, volcanism, tornadoes and floods was selected, besides the climatic effect on people's comfort. On the other hand, with regard to the threats arising from the activities of society, pesticide contamination and proximity to garbage dumps were taken into account.

The pesticide contamination index was obtained from data from the Ombudsman's Office (Defensor del Pueblo de la Nación 2010). This aspect is essential to rural areas since pesticides are widely used in areas of intensive agricultural production and have very significant negative impacts on the health of the population.

With regard to garbage dumps, although the largest proportion of waste is generated in urban areas, the final garbage disposal sites are generally located in areas of urban or rural periphery. Therefore, knowing the percentage of nearby households (less than 300 m) to garbage dumps is relevant, to identify whether the rural population is affected by this fact.

Natural threats refer here to the spatial distribution of danger generated by natural phenomena that particularly affect the rural population. Firstly, seismicity and volcanism were analyzed, i.e., areas affected by earthquakes or volcanic phenomena. In Argentina, the areas with the greatest occurrence of these phenomena are located in the Andes Mountains, particularly in the Cuyo region. On the other hand, tornadoes have a great impact especially in the central area of the country, with very intense local effects, particularly with regard to material losses. In addition, the recurrent floods not only have a negative impact on the general living conditions of the rural

Fig. 14.4 Rural population of Argentina, *communication–connectivity* sub-index. *Source* Authors' elaboration based on INDEC, NCPH&H (2010)

population, but also on the productive economic activities that take place in those areas. The areas most affected by these phenomena are the northeast and center of the country.

Finally, the great climatic diversity of our country, explained by its latitudinal development and orographic variations, generates situations of extreme heat and cold. This produces favorable conditions for the presence of indices of climatic unrest due to heat (in the north of the country, particularly the northeast) or cold (in the Patagonian region, especially the extreme south of the Argentine territory) that affect the population.

With all this information, the environment dimension of ARWI was built for the whole country at departments scale. In Fig. 14.5, you can see the achieved result: The values "very high" and "high" of the dimension are located in the mountain areas, in the center (especially in Córdoba and Santa Fe provinces), in the north and to the west of Jujuy and Salta provinces.

As it can be seen on the map, the worst conditions are located in the center, particularly associated with the condition of pesticide contamination, the proximity of garbage dumps and the danger of flooding and tornadoes. In the north and northwest, high rates of climate unrest are combined with threats related to earthquakes and volcanism as well as to the population exposed to floods.

Patagonia expounds areas very affected by climatic unrest due to cold and the presence of dangers associated mainly with volcanism in the vicinity of the Patagonian Fuegian Andes. The Cuyo area, on the other hand, although it devises low index values, is affected by the danger of earthquakes and supports cold weather unrest in the areas near the Central Andes.

The intermediate situations with respect to this dimension are located mainly in the northern center of the country, particularly in the northeast, where the main cause of a fall in the index is the recurrence of floods and the presence of fumigation for agricultural production.

The areas with the best environmental conditions are located in the center-west of the country. This is because the climatic conditions are favorable in this area and lack other negative externalities (such as the presence of garbage dumps, affection for any of the threats analyzed, etc.). In the case of Mendoza province, despite being an active seismic zone, the absence of other troubles generates favorable conditions on average.

It is important to remark that the central area of Patagonia also displays high values in the calculated index, but this does not imply ignoring the presence of other problems such as desertification (Secretariat of Environment and Sustainable Development of the Nation 2019), which could not be analyzed at the level of the analysis units discussed here.

Fig. 14.5 Rural population of Argentina, *environment* sub-index. *Source* Authors' elaboration based on INDEC, NCPH&H (2010)

14.4   Summary: The Argentine Rural Well-Being Index (ARWI)

The Argentine Rural Well-being Index (ARWI) presents, as shown in Fig. 14.6, a territorial distribution that continues, in general, with the patterns observed within each of the dimensions and sub-indices presented.

The values included in the "very high" range of the ARWI concentrate their occurrence especially in the Pampas region, although within this there are, in turn, islands of deterioration that draw attention to the south banks of the Salado River in Buenos Aires province, as well as the Paraná river delta. The figures in the "high" range are an enveloping wedge of the previous ones, with some prominence in Santa Cruz and La Pampa provinces. The values in the "low" category extend throughout the national layout, although their spatial concentration stands out particularly in the Patagonia and Cuyo regions. For its part, northern Argentina and central Patagonia are an expression of the worst situations of the ARWI. Thus, it can be said that, on average, the 3,541,042 rural inhabitants contribute 5.4 points in the ARWI, a fact that as a whole position them within the range of high values. With regard to the sub-dimensions education and employment, sanitation and environment, on average rural residents congregate in the range of "high" values. The housing dimension, on the other hand, falls within the set of "low" values, and finally, communication–connectivity meets the group of "very low" values. Therefore, broadly speaking, it is these last two dimensions, housing and communication–connectivity which deserve to be taken into account for the implementation of policies that contribute to the improvement of the well-being of the rural population.

14.5   Concluding Remarks

The purpose of this chapter was to analyze territorial inequalities of the well-being of the rural population, implementing an objective measure such as the Argentine Rural Well-being Index (ARWI). The contribution of this index lies in the possibility of knowing and appreciating the levels of satisfaction with respect to fundamental dimensions for the development of the life of the rural population at the highest level of disaggregation of the spatial information available today, i.e., the census radius.

The distribution pattern of the sub-indexes and the ARWI itself coincide with what was expected. Clearly, the social, economic and political processes of recent decades have reflected differences in the living conditions of the rural population, which remain in the territory over time and that, as it is believed, require specific and continuous policies be reversed or reduced. In this sense, given that inequalities are conditioning the future of the rural population, we consider that evaluating them in their smallest spatial detail is essential for the management, comparison and targeting of policies that contribute to improving the well-being of all rural inhabitants of Argentina.

Fig. 14.6 Rural population of Argentina, ARWI, 2010. *Source* Authors' elaboration based on INDEC, NCPH&H (2010)

Although it is commonly found, according to the treatment of space units such as provinces and departments or districts, that the Pampas region has better indicators than the "extra-Pampean world", the evaluation of the ARWI at the scale of the census radiuses was extremely useful. In fact, it helped to elucidate that, in comparative terms, the rural inhabitants of the Pampas area do not always exhibit greater objective well-being than the inhabitants of the Cuyo, Patagonian and northern regional areas.

Nevertheless, with regard to technical aspects and data sources, developing an index covering the whole of rural Argentina at the census radiuses level involved instrumental difficulties. On the one hand, those derived from the large volume of data worked and, on the other, by the impossibility of accessing information that is understood to be relevant and representative of life in rural areas.

In addition, epistemological obstacles had to be overcome due to the background and position of the research group, as well as the territorial registration of its members. At this point, it is interesting to observe the attempts to select indicators that were representative of the cultural heterogeneity of Argentina; however, the data sources had important limitations. Thus, the bibliographic contributions and the direct knowledge of the territory and its inhabitants were fundamental to reflect on the historical, social, economic and cultural characteristics that build the genres of life in each region, which have no representation in the official statistics of strong urban and Pampean bias. From now on, moving forward with the contribution of other subject areas and researchers established in other latitudes will be fundamental in order to reduce such a "Pampean-centric" tendency.

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