Chapter 2
Cities, Regions and Population Decline

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This chapter outlines some of the key themes linking demographic change and population ageing to the long run prosperity of cities and regions. The chapter develops a particular focus on the long-run local economic impact of declines in the local working age population relative to the older non-working age cohorts, declines which are the most severe in situations of overall absolute population decline. The various dimensions of local long run economic viability in the face of population ageing and decline include the ability to provide age-related health and social care services, the long run needs for redesigning the local built environment, and the financial underpinnings of the local fiscal position. Many of these issues have been largely ignored by the academic literature within urban economics and regional science, and much more theoretical as well as empirical research is urgently required, given the fact that so many OECD nations, regions and cities are now facing these real challenges. In order to discuss these issues, the rest of the chapter is organized as follows. The next section outlines the major links between population ageing and population decline at the national level drawing on evidence from across the OECD and the European Union. We then examine these issues at the level of cities and regions, and it becomes clear that there are various differences between these interrelationships at the local level and at the national levels. In particular, the differences in these features at the urban and regional levels are seen to be greater than at the national level, with more diverse combinations of ageing and migration operating at the regional and city levels than are observed nationally. Indeed, it is the interrelationships between migration, ageing and the accumulation or depletion of local human capital flows, which is key to understanding these issues at the local and regional levels. On the basis of these arguments, we then proceed to outline the various urban policy challenges and opportunities associated

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with these demographic shifts. These centre on environmental, housing and transport issues, and are generally understood as being a combination of the compact city and smart city agendas.

2.1 National Population Ageing and Population Decline

The demographic changes which many societies are currently undergoing represent powerful forces which will fundamentally reshape the nature and structure of our societies. The two most powerful forces are the ageing of society, a force which is affecting almost every country, and in many countries also the decline of populations are also observed alongside population ageing (European Union 2015). Moreover, in the case of shrinking populations, there are actually two different types of population decline, which can affect societies and economies is rather different ways. One type is that of absolute population decline, and the second type is that declines in the working age population relative to the older non-working age population. These two trends may go hand in hand, but this is not always the case, and understanding these interrelationships is essential in order to understand the likely long-run implications of these trends. In particular, understanding the relationships between national demographic trends and the trends operating at the level of cities and regions is crucial in order to consider the long run developmental and fiscal impacts of these trends.

There are noticeable differences in the age profile of different countries (European Union 2015). Globally, the oldest average age populations are in Japan (43), Italy and Germany (both with 41), followed by 24 other European countries with average age ranges between 40 and 38 (MGI 2016). Canada, Taiwan, Norway, Slovakia, Australia, the USA, Ireland and South Korea are all slightly more youthful than other OECD countries, with average ages ranging between 37 and 34 (MGI 2016). Meanwhile, with average ages of 30 or below, populations in less developed countries such as Mexico, Brazil and India tend to be on average younger than more developed countries, except for the cases of China and Russia with average ages of 36 years (MGI 2016). Yet, at the same time as we observe different national average age profiles, we also observe different national population trajectories. Broadly speaking, countries with older populations are more likely also to be facing population decline. Countries such as Germany, Italy, Japan, Spain and Portugal plus almost all of the Eastern European former-transition economies are already facing national population decline and as a result, so are many of their constituent regions and cities. Other countries such as The Netherlands and Poland are not quite facing national population decline yet but population decline is already evident in many regions and national population growth is plateauing and will soon begin to decline. Indeed, without the recent rise in immigration during the last two decades even countries such as the UK would also be facing national and regional population decline in particular places.

In general, however, problems of population ageing combined with population decline are primarily a problem facing various advanced economies such as Japan, Italy, Ireland, Portugal, Denmark, Germany and Spain, while amongst other advanced economies population ageing and population growth are still features of most of the English-speaking countries along with some of the Nordic countries. As a whole, these trends imply that the working age population of the EU (including the UK) is forecast to fall by some 6% by 2030 (The Economist 2015a), yet as we have already indicated these aggregate population figures also hide marked variations. By 2030 the working age population will fall by something of the order of 12% in Germany, Spain and Portugal, by 4% and 7% in Netherlands and Ireland, respectively, whereas it will grow by 8% and 2.3% in Sweden and the UK, respectively. During the same period, in France and Italy the working age population will remain almost unchanged (The Economist 2015a). As such, across Europe, there will be major differences in population growth and ageing between different countries, with the balance between the local working age population and the local older non-working age cohorts shifting rapidly in many countries. Demographic ageing which increases the old-age dependency ratio also increases the age-related public expenditure on services for elderly, which are forecast to increase by 4.1% of GDP across the EU and by 4.5% of GDP across the Eurozone by 2030 (OECD 2015a). Even the tax revenues in countries such as the UK which is experiencing population growth due to immigration are expected to fall because older people have higher tax exemptions (OECD 2015a), and changing these exemptions is likely to become increasingly difficult as their share of the population increases.

2.2 Demographic Transitions of Cities and Regions

The OECD-wide national age-profiles and ageing patterns, however, also hide more complex underlying demographic mechanisms, the most important of which are differential rates of population decline and population ageing at the city and regional levels (The Economist 2015b). A growing share of the global population are now resident in cities, and urban growth is also observed at the levels of both the OECD and the EU (OECD 2015b). Currently some 56% of the OECD population currently live in urban regions, while metropolitan urban areas of over 500,000 people account for 47.9% of the OECD population (OECD 2015b). Across all of the 275 OECD metropolitan urban areas of over 500,000 people the population profile will alter enormously during the coming decades change because the share of the urban population over 65 year old will increase significantly, and amongst this group those who are over 80 years old will increase the fastest (OECD 2015a). Already, the share of over 65s quadrupled between 1950 and 2010 while that of over-80 increased 14-fold, and these rates of change are expected to increase even further (OECD 2015a). Metropolitan areas are slightly younger than non-metropolitan areas, having on average have a 0.8% lower share of older people than the national average, although metropolitan areas have an ageing rate of 23.8%

(2001–2011) which is more than 25% faster than non-metropolitan areas whose ageing rate is 18.2% (OECD 2015a). Indeed, between 2001 and 2011 within all OECD metropolitan areas the older age population has increased by 23.8%, and this is three times faster than the overall metropolitan area population growth rate of 8.8% (OECD 2015a). While rural areas and smaller towns tend to have higher shares of older people, urban areas including large cities are ageing more rapidly (OECD 2015a). Large cities therefore play an important role in the geography of demographic change, and given their shares of the population and also their spatial morphology, interest in the role that large cities can play in addressing the challenges of population ageing is one of the issues underpinning the renewed interest in compact cities (OECD 2012a).

The processes of population ageing, slowing population growth and even population decline in cities and regions are due to a variety of different mechanisms, of which national population decline is just one determinant. The demographic ageing and population decline trajectories experienced by many cities and regions over recent years are in part related to national trends as well as to local conditions, and differential national population changes have heavily contributed to global changes in urban demographic trends. Since the new Millennium some 60% of the economic growth of large cities has been due to population growth, while some 40% has been due to per capita income growth (MGI 2016). Yet, these trends are now displaying a marked slowdown. Global urbanization rates are slowing down in all parts of the world due to increased ageing and the slowing down of rural-urban migration flows, such that while the overall global urban population is still increasing, it is doing so at a noticeably slower rate than in the previous decades (MGI 2016). Population ageing and lower fertility means that total global urban population level is expected to plateau sometime towards 2035 while the share of the urban population which is older than 65 is expected to increase at an increasing rate, reaching between 20% and 25% in developed countries by 2025 (MGI 2016). In contrast, in many developing countries these older-cohort shares are expected to be much lower for the coming decades (MGI 2016).

As already mentioned, in cities or regions where the size of the older age non-working cohort is growing relative to that of the local working-age population, the relative costs of the local provision of health and social care public services will be increasing. Moreover, these increases will be at precisely the same time as the potential revenues which can be locally generated to provide such services will be falling. Today, these adverse demographic shifts, whereby the size of the local economically active population is falling relative to the size of the local older dependent population, are evident in slowly-growing cities, but they are most marked in cities and regions facing absolute population decline. The reason is that as well as changes in household size and composition, one of the key drivers of population decline in the economically-active age cohorts, is out-migration. Out-migration tends to be higher in economically weaker cities. Moreover, out-migration is also dominated by the more highly-skilled and younger cohorts, so the greater are the local population outflows, the lower will be the local human capital base and also the more rapidly will the remaining population be ageing. This

is a toxic demographic combination. In contrast, cities experiencing the in-migration of younger and more highly skilled cohorts, tend to also experience a growth in their local human capital base and a local population which is ageing much more slowly. These are relatively benign demographics, and are typical of many prosperous and global cities. In addition, some rural areas face population ageing and a declining local economic base due to the out-migration of younger and more educated workers, while other rural areas exhibit population ageing while experiencing population inflows of older and high net-wealth or high income households seeking high amenity locations. The effects of migration in the former group of rural areas are again toxic, whereas in the latter group of rural areas the economic injections associated with the in-migration of older cohorts means that the overall effects are less toxic, and rather more benign than in the former case. Importantly for our purposes, rural regions in general tends to exhibit population ageing relative to many urban areas, while different urban areas tend to exhibit very different population ageing and population growth trajectories.

Academic research in urban economics is almost entirely focused on growing cities. Yet, nowadays not only are there many shrinking cities facing the types of toxic demographics described above, but indeed the number of these shrinking cities will also increase in the coming decades. Since the new Millennium, 6% of the world's large cities of over 500,000 inhabitants have experienced population decline (MGI 2016) and these trends are likely to become more pronounced, especially in rich countries. Some 17% of the large cities in advanced economies are expected to face population decline by 2025 while 61% of large cities in the developed regions will face declines in the number of young adults (MGI 2016). However, across the developed world these demographic patterns are uneven. One-third of Europe's large cities were facing population decline prior to the 2008 global financial crisis, and this share is now slowly increasing with cities in Southern and Eastern Europe being especially vulnerable to these trends (MGI 2016). Meanwhile, almost half of Japan's large cities are facing population decline while population decline amongst US cities is more less evident, and is largely confined to cities in the older 'rustbelt' industrial areas of the Mid-West and the North East. As a whole, the population of the USA is still growing relatively rapidly, and annual US urbanization rates are still more than double what they are in Europe (MGI 2016).

This issue of differential out-migration and in-migration also has other spatial-demographic implications. The larger the country, then in general the greater is the range of alterative opportunities for interregional migration. As such, as well as differences between countries, there are also significant variations in ageing profiles within countries. The age profiles of different cities within countries can vary enormously, and in general these differences tend to be larger in large population countries than in small population countries. In the USA the range of average age profiles of different cities spans 21 year age differences (MGI 2016), in China it is 12 years, in Spain and Russia it is 10 years, 9 years in South Korea, in the UK and France the differences in average age between cities span 7 years, in Germany, Canada, Italy and Japan it is 6 years, while in small population countries such as

Sweden, The Netherlands, Belgium, Denmark, Switzerland, Hungary the age range across cities typically only spans 3 or 4 years (MGI 2016). In very small countries with populations below 5 million people, the average age range between cities is typically only 1 or 2 years (MGI 2016). Indeed, the average city age range across the whole of the EU is only 12 years, which is the same as that for China as a whole, and markedly lower than the USA (MGI 2016). These average age ranges are for cities of over 500,000 inhabitants. However, following the interregional migration arguments outlined above, if we were also to include the small towns and rural areas then the average age range for each country would increase. This is because these small town and rural areas display the highest average age profiles, and the upper age range for each country will increase markedly in the larger countries which include many such areas.

Rather than the urban level, if instead we consider the sub-urban context, then we see that on average the core central parts of OECD metropolitan urban areas display an age structure which is typically 1.1% younger than the urban hinterland areas although there are many differences between countries. Over recent decades there has been a widely observed trend for younger and more highly educated people to move into city centres, and these inflows also give rise to greater local fertility rates (EU and UN Habitat 2016), and these trends are particularly marked in capital city metropolitan regions. At the same time, across the OECD cities suburban commuting areas tend to grow faster in general than core urban areas (Veneri 2015). Differential population ageing and population at the sub-urban level can be caused by either out-migration or by sub-urbanisation, both of which in turn can be partly driven by de-industrialisation and its effects on unemployment, mobility, fertility and also the viability of the local government to provide public services (OECD 2012b). In general, at the sub-urban level, the mix of these different forces means that the rate of growth of older people in core metropolitan urban areas tends to be higher in larger cities, as relatively fewer of these older age cohorts leave the central city locations, whereas the growth of older people in the hinterland areas tends to be highest in medium sized cities for the same reasons (OECD 2015a). However, the latter effect is more pronounced than the former effects. The result is that across the OECD 275 metropolitan urban areas with over 500,000 inhabitants the hinterland population growth of older people—at 28.3%—outpaced that of the core metropolitan areas of 22.6% by more than one quarter between 2001–2011 (OECD 2015a). This is the broad OECD-wide picture, with larger cities ageing relatively more slowly than smaller towns and rural regions, and with large city centres ageing more slowly than hinterlands. On the other hand, however, in Mediterranean cities inner-city populations are generally older than suburban populations (OECD 2015a), suggesting that the demographic geography of these cities display rather different characteristics to those more typical of northern Europe and the rest of the OECD.

As well as population ageing, population growth and population decline at both the urban and sub-urban levels, we also observe age-related changes in household formation and household composition patterns. In many OECD countries more than 20–35% of people aged over 65 are now living alone, and therefore appropriate

housing as well as accessibility to services and infrastructure become increasingly important for an ageing society (OECD 2015a). Meanwhile, some 76% of older people across the OECD own their own homes including those still paying mortgages, with 15% being tenants and 9% paying subsidised rents (OECD 2015a). Indeed, in many OECD countries such as the UK, older age groups tend to be wealthier on average than younger age groups because housing is the major store of wealth. On the other hand, some parts of Europe are rather different to other parts of the OECD, with many of Europe's richest countries exhibiting home-ownership levels well below the OECD average and also displaying the lowest shares of home ownership amongst the elderly (OECD 2015a). Therefore, simple typologies which assume that older people generally hold greater housing wealth and typically in suburban areas, do not reflect the variety of patterns evident across the OECD regarding age-related sub-urban location patterns and household age-related wealth holdings. This also implies that there are likely to be no simple 'off-the-shelf' or 'one-size-fits-all' urban policy solutions aimed at fostering prosperity and economic viability in the context of population ageing and population decline, which are applicable in all cases. In all likelihood policy actions will need to be tailored to the context.

2.3 Policy Challenges, Actions and Options

Standard discussions in politics and media regarding the public policy challenges associated with societal ageing tend to focus on increasing the pension age, which in most OECD countries is currently expected to increase in the short to medium term from 65 to 67 years of age. Given that many wage structures depend on overall career progression paths, Mincer (1974) type equations (Heckman et al. 2003) suggest that the marginal productivity of retirement age workers is often very low after netting out their current wages, relative to much younger workers, whose marginal productivity tends to be relatively much higher than their current wages. In the face of accelerating marginal demographic change around the current retirement age, small increases in the retirement age are therefore unlikely in many cases to be sufficient to ensure that pensions remain at current or previous levels. Indeed, ongoing demographic change involving both ageing and relative declines in the working age population suggest that the pensionable age will need to be increasingly pushed up over coming decades. Yet, the efficacy of increasing the retirement age by just a couple of years, as is widely advocated in many countries, is primarily a product of the fact that this is politically feasible within the timeframe of short electoral cycles, whereas larger pension-age increases become largely infeasible in current climate, even though the marginal productivity of many retirement age workers is so low. In the long-run, however, ongoing and indeed accelerating demographic change means that in reality larger pension-age increases may eventually be needed in many contexts, allied with policy interventions which are aimed at increasing the marginal productivity of older workers (Munnell and Sass 2008).

These pension-age headline types of discussions, however, hide many of the more subtle and difficult aspects of demographic change which relate variously both to the specifics of demographic profiles and also the geographical features of these changes. In particular, the ability of a region or city to provide for its ageing population depends crucially on the balance between the size of the local post-working age cohorts and the size and dynamism of the local younger working-age cohorts. The issues relating to the long term provision and funding of age-related local public services, public goods and public infrastructure become both complex and differentiated according to the geography-demography intersection. Cities or regions with a dynamic and youthful local labour force will generally be better equipped to provide age-related social and healthcare services than regions facing out-migration of the young and highly educated. Yet, these demographic and ageing-related interregional differences also pose fundamental challenges to the movements towards greater governance devolution and decentralisation which are nowadays evident in many countries. It is well known that the relationship between governance decentralisation and economic growth is rather weak (Ezcurra and Rodriguez-Pose 2013), although there is much stronger evidence that regional inequalities tend to be lower in more decentralised (Ezcurra and Pasqual 2008) and higher quality (Ezcurra and Rodriguez-Pose 2014) political and governance systems. Civic engagement also tends to be higher in more decentralised societies. Yet, an Achilles Heel in the widespread place-based policy momentum which is building in many countries and which is aimed at increasing the decision-making power and autonomy of local, city and regional actors, is that markedly different inter-city or inter-regional demographics can also hinder or even undermine the long term fiscal viability of devolution. The reason is that there will been major asymmetries in terms of the geography of long-term ageing-related service-provision costs and also the long-term underlying financial and fiscal liabilities (Carbonaro et al. 2016), which will put enormous pressure on the national pooling of risks. These local financial pressures will be especially strong in localities where demographic ageing is also associated with population decline and also falling household sizes. Larger numbers of elderly citizens are living alone nowadays and these new household formation patterns also pose challenges in terms of both health and social care-related service provision and also new modes of urban design.

Obviously, in each case the specific impacts of population change on local areas will differ according to the type of location, the needs of the population, and the existing demographic structures (OECD 2012a). However, in general, ageing population and smaller households will require changes in infrastructure provision, changes in urban design and development, and changes in the provision of services, with policies increasingly focusing on quality of life and wellbeing issues (OECD 2015a). Providing for these older age groups as well as younger smaller household groups also poses different architectural and infrastructure re-design challenges at different spatial scales, ranging from metropolitan-wide urban transport systems, to city health infrastructure, to neigbourhood level retail provision, all the way down to the re-design of individual streets and houses. The challenges associated with providing tailored public services for older age cohorts and the appropriate redesign

of housing and public infrastructure facilities also depends on the financial resources of older age groups, and here age-related housing affordability is an important issue. In principle these challenges will be relatively greater in societies and regions in which older age groups are relatively poorer than younger age groups while they ought to be relatively easier to address in societies or localities where older age groups are in general wealthier than younger age groups, because of the greater ability of the older age groups to access alternative resources and services. However, across countries and regions these patterns also heavily depends on the form of housing tenure enjoyed by the occupants.

The compact city logic (OECD 2012b) is emerging as a key theme in finding ways to address these ageing-related challenges, and in particular in its ability to facilitate a so-called 'smart city' agenda. Although originally emanating from planning and environmental arenas, many of the compact city actions increasingly involve 'smart growth' (Ingram and Hong 2009) types of agendas, whereby new technologies in areas such as health, energy, mobility, and communications are integrated and trialed within more experimentalist approaches to urban policy schemes. These pilot actions and interventions also involve modern forms of monitoring, evaluation and analysis in order to track the progress of such policy experiments (Ruth 2015). Indeed, demographic change not only provides excellent opportunities for such a policy logic, but indeed it requires such approaches, given that so many of these challenges are new and emerging, and involve the adding of layers of complexity to policy arenas not previously experienced in the earlier eras of overall population growth.

The need for smart policy innovation focused on the elderly cohorts in a compact city setting tends to aim at two principal sets of priorities, namely enhancing spatial mobility and social engagement. Enhancing both spatial mobility and social engagement is essential in order to foster healthy living amongst elderly cohorts, but realising these aspirations and ambitions is also contingent on other built-environment features. In particular, providing for the spatial mobility and engagement possibilities for these older age groups along with their desire as far as possible for independent living is very much also contingent on other wealth-related matters. If ways can be found to unlock the wealth tied up in housing assets, via for example systems of re-financing, this will make the provision of services for older age groups relatively easier to provide. However, other alternative mechanisms, such as capturing some of the non-earned spillover effects of local house price rises via taxation, raise sufficiently complex and contentious political economy considerations that such approaches are often eschewed by decision makers, even though they could capture enormous benefits for the local communities.

The success of many social innovations at fostering greater social engagement are critically dependent on the ability to enhance local stakeholder engagement in local policy-making. As such, finding ways to improve the engagement of older people in employment, voluntary and community activities is essential in order both to promote policy-related benefits as well as helping to overcome social isolation (OECD 2012a). Even fostering entrepreneurship amongst the elderly is also a potential option, including the provision of specialist sources of finance

(OECD 2012a), although as yet this is a very under-researched area. Yet, whichever schemes or technologies are prioritised, in order to encourage ageing-related technical, infrastructural and social innovations it is also essential to raise awareness of the nature and scale of the local ageing and demographic issues, so that public awareness can begin to act as a catalyst for spurring a policy agenda (OECD 2012a).

2.4 Conclusions

This chapter has examined the impact of population ageing and demographic decline on cities and regions across the OECD and European Union. The interrelationship between local economic development and demographic transitions are seen to be far more complex at the local level than at the national levels, because of the differential impacts of migration on the supply of local human capital. The different regional demographic trajectories imply very different long run fiscal futures for regions and cities and these differences pose real challenges for devolution agendas. At the same time, the demographic challenges also lead to opportunities for urban redesign approaches, centering on the compact city and smart city programmes. Many of these issues have been largely ignored in the urban economics and regional science literatures, and much more work on these issues is urgently required.

References

Carbonaro G, Leanza E, McCann P, Medda F (2017) Demographic decline, population ageing and modern financial approaches to urban policy. Int Reg Sci Rev (forthcoming). See http://irx.sagepub.com/content/early/2016/11/08/0160017616675916.full.pdf?ijkey=B4y4nT9DFTYW10e&keytype=finite

European Union (2015) The 2015 EU Ageing Report: underlying assumptions and projection methodologies. European Union Publications Office, Brussels

European Union and UN Habitat (2016) The state of European cities 2016: cities leading the way to a better future. European Commission, Brussels

Ezcurra R, Pasqual P (2008) Fiscal decentralization and regional disparities: evidence from several European Union countries. Environ Plan A 40:1185–1201

Ezcurra R, Rodriguez-Pose A (2013) Political decentralization, economic growth and regional disparities in the OECD. Reg Stud 47(3):388–401

Ezcurra R, Rodriguez-Pose A (2014) Government quality and spatial inequality: a cross-country analysis. Environ Plan A 46:1732–1753

Heckman JJ, Lochner LJ, Todd PE (2003) Fifty years of mincer earnings functions, NBER research working paper, no 9732. National Bureau of Economic Research, Cambridge, May

Ingram GK, Hong Y-H (2009) Evaluating smart growth: state and local policy outcomes. Lincoln Land Institute, Cambridge

MGI (2016) Urban world: meeting the demographic challenge. McKinsey Global Institute, October. http://www.mckinsey.com/global-themes/urbanization/urban-world-meeting-the-demographic-challenge-in-cities

Mincer J (1974) Schooling. Experience and earnings. Columbia University Press, New York
Munnell AH, Sass SA (2008) Working longer: the solution to the retirement income challenge. Brookings Institution Press, Washington
OECD (2012a) Demographic change and local development: shrinkage, regeneration and social dynamics. Organisation for Economic Cooperation and Development, Paris
OECD (2012b) Compact city policies: a comparative assessment. Organisation for Economic Cooperation and Development, Paris
OECD (2015a) Ageing in cities. Organisation for Economic Cooperation and Development, Paris
OECD (2015b) The metropolitan century. Organisation for Economic Cooperation and Development, Paris
Ruth M (2015) (ed) Handbook of research methods and applications in environmental studies. Edward Elgar, Cheltenham
The Economist (2015a) Free exchange: the force assaulting the Euro, 6 June
The Economist (2015b) Urban planning: Rus in Urbe Redux, 30 May
Veneri P (2015) Urban spatial structure in OECD cities: is urban population decentralising or clustering. OECD regional development working papers, 2015/13. Organisation for Economic Development and Cooperation, Paris