

# Chapter 3

## Income Inequality, Socio-Economic Status, and Residential Segregation in Greater Cairo: 1986–2006



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**Abstract** Greater Cairo is a primate, monocentric metropolis with significant socio-economic disparities among its population and neighborhoods. This chapter examines the relationship between income inequality, the welfare regime, centralized governance, settlement type, housing policies, occupational status, and socio-economic segregation. Using data from the 1986, 1996, and 2006 censuses, we report the dissimilarity index to demonstrate the distribution of residents in the Greater Cairo Region by occupational status, we show patterns of socio-economic segregation based on the distribution of the population by categories of occupations across census tracts and employ the location quotient to compare the concentration of the top/bottom groups in each census tract relative to the city average. The results show that growing economic inequality does not necessarily result in greater socio-economic segregation. The results also suggest that social class contributes to residential clustering. While the poorer strata of the Greater Cairo Region were pushed to the periphery and the older urban core, affluent inhabitants were more likely to settle voluntarily in segregated enclaves to isolate themselves from the general population.

**Keywords** Greater Cairo · Socio-economic status · Residential segregation · Housing policies · Income inequality

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### 3.1 Introduction

Urbanization and social inequality have been on the rise in Egypt since the mid-1970s when President Anwar Sadat (1970–1981) initiated a series of reforms beginning with the 1974 *infitah* (open-door) policy to reduce state welfare spending and expand the private sector through state support and foreign direct investment (Ben Nefissa 2011: 180). In 1991, under President Hosni Mubarak (1981–2011), Egypt adopted the Economic Reform and Structural Adjustment Program with the support of the World Bank, European Union, and African Development Bank (ADB 2000). These neoliberal policies contributed to the urbanization of the Greater Cairo Region (GCR) and increased social inequality in several ways. Reduced state welfare funding and agricultural mechanization encouraged economic migrants to seek work in the GCR. Some Egyptians emigrated to neighboring Gulf countries to work in the booming oil sector. They sent remittances to their families who, in turn, invested in land and construction to satisfy an increased housing demand (Sims 2010; El Kadi 2009). At the same time, the state withdrew from social housing construction and engaged in land speculation of its own, leaving a largely unregulated private market to provide housing for the growing population of the GCR. Housing demand pushed speculators to build on the urban periphery, turning large tracts of productive (and scarce) agricultural land into densely built, informal housing settlements, which are now home to poor and middle-income Cairenes alike (UNCHS 1993; Sims 2010). International real estate investment concentrated in the GCR's central business district and along the Nile's "Gold Coast", as well as in a series of new satellite cities that catered to mobile, urban elites.

In 1979, the government adopted a deliberate urban decentralization strategy to relieve some of the congestion and pollution brought about by the urbanization of GCR (Tadamun 2018). By 2008, the development of new urban communities, such as the 6th of October City and Sheikh Zayed City, set apart from the urban fabric on the desert plains, had transformed the GCR from a compact, monocentric metropolitan region into a discontinuous, polycentric, dispersed urban structure (Taubenböck et al. 2009). This rapid expansion has provided opportunities for higher income Egyptians to leave central Cairo. At the same time, poorer communities have concentrated in undesirable, underserved, and often unsafe areas, also known as "poverty pockets," where chances of upward mobility and opportunities are limited (Tadamun 2018). This chapter explores the factors that have influenced the socio-economic spatial divisions in GCR. A city's socio-spatial division is a function of many factors including context, institutional power, welfare regimes (Arbaci 2007), ethnicity, commodification of housing, and people's residential preferences (Marcinčzak et al. 2015). Research from the United States and Western Europe has shown that economic inequality can result in (socio)economic segregation, the uneven spatial distribution of households based on income, occupation and/or educational attainment (Burgess 1925; Massey 1979b; Schteingart 2001). Singerman and Amar (2006) show that, in addition to economic inequalities, social inequalities reinforce socio-spatial segregation. Several authors including Gilbert (1992) have suggested that social class is

replacing ethnicity as the basis for the social urban geography. While many studies have looked at poverty in Egypt (e.g., World Bank 1990; Korayem 1994; El-Laithy 1996; Sabry 2010), poverty in relation to spatial justice and unemployment in the GCR (Shawkat 2013; Nassar and Biltagy 2016; Tadamun 2018), and the patterns of low-income housing in GCR (Harris and Wahba 2002), no rigorous research has been conducted on the intersection of economic inequality and residential segregation of socio-professional groups in the GCR.

This work focuses on post-socialist Greater Cairo (1986–2006) as a monocentric city and uses occupation as an indicator of social status to study the distribution of socio-economic groups across the region. Using Marcińczak’s et al. (2015) approach with publicly available data, we answer the following questions: To what extent is there residential segregation of occupational groups in the GCR? Can socio-economic inequality explain residential segregation? To what extent can the welfare regime and the characteristics of housing provision explain segregation trends in the GCR?

## 3.2 The Social Geography of GCR

With the exception of its recent history, the GCR had a compact, monocentric urban structure that followed Burgess’s (1925) concentric zone model that theorizes how economic and political forces influence the distribution of social groups within the city. The model suggests that cities evolve in successive rings around the central business district (CBD). The first ring, widely visible in the developing world, is made up by deteriorating housing formerly occupied by higher income families and is called the “zone of transition”, or what Stokes (1962) refers to as “slums of despair.” This zone is followed by three successive rings of housing ranging from high-density poor-quality working class housing, to lower density high-quality housing for the elite. Change occurs in this model through the invasion-succession process in which a group of people or type of land use arrives and comes to dominate an area previously occupied by another group (Kendall 2013).

An important criticism of Burgess’s model is that many settlements on the periphery of contemporary megacities are not higher class neighborhoods, but what Stokes calls “slums of hope”<sup>1</sup> which are problematic, but not as dire as the inner-city “slums of despair”. While the differentiation between slums in the urban core and those in fringe areas looks outdated and prejudiced, authors like Harris and Wahba (2002) confirm its usefulness and validity for the GCR.

Rural–urban migration has been a dominant force in shaping the socio-spatial structure of the GCR. The limited availability of publicly subsidized housing and the high cost of formal market-rate housing forces lower income residents to live in either older, affordable neighborhoods often with substandard housing or in informal

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<sup>1</sup>In this instance, we apply Stokes’s use of the word “slum” to the informal settlements, or *ashwaiyaat*, of Cairo although they are technically dissimilar. See footnote 2 below.

**Table 3.1** Summary statistics for the GCR, 1986–2006

	1986	1996	2006
Population	8,666,478	12,600,000	15,628,325
Residential buildings	1,108,250	1,387,388	1,751,742
Housing units*	3,432,070	4,923,790	7,107,363
Owned units (%)	35.3	49.1	52.7
Rented units (%)	44.6	44.5	41.4
Other (%)	16.0	6.0	6.0
Population of informal settlements (%)	49.0	43.2	43.1
Vacant residential buildings (%)	15.4	7.0**	10.1**
Share of managers and professionals (%)	21.1	25.8	25.0
Gini index	NA	33.7	37.8

Source World Bank 2007, CAMPAS 1986, 1996 and 2006

\* Housing units converted into workplaces are not included.

\*\* As defined in the 1996 and 2006 censuses, “vacant” did not include vacant apartments within a partially used block of apartments and is therefore severely undercounted.

settlements<sup>2</sup> built on illegally occupied land (Harris and Wahba 2002). Informal housing is the only option for rural migrants of limited means, and low-income families who have little, if any, education and support themselves through the informal economy (Sabry 2010). The influx of migrants resulted in a fragmented pattern of planned settlements, where government regulations and planning prevail, and informal settlements, where land markets are unregulated (Sobreira 2003).

### 3.3 GCR as a Case in Point

Greater Cairo is Egypt’s primate city and it continues to grow rapidly (Jefferson 1989). With a population of over 20 million people as of 2016 (CAPMAS 2016), the GCR accounts for 22% of Egypt’s 95.8 million people, 50% of Egypt’s commercial activities, more than 40% of the country’s public investments, 43% of public-sector jobs and 40% of private-sector jobs (UH-HABITAT 1993; Ben Nefissa 2011; Sims 2010). The population of the GCR increased by almost 7 million people between 1986 and 2006 (see Table 3.1). Population densities of inner-city districts declined while densities in peripheral districts increased, often in the form of unplanned urbanization (El-Kadi 1987 in Fahmi and Sutton 2008). By 2006, 53% of residents owned their homes and only 5.1% of the households lived in publicly built or financed dwellings (Sims et al. 2008 in Sims 2010).

<sup>2</sup>Informal settlements or *ashwaiyyaat*, which translates to ‘haphazard’, generally refer to unplanned and unregulated communities. These also include typical slum areas of deep poverty, dilapidated housing, and limited service availability.

Informal settlements are a dominant typology in GCR's housing landscape. Home to low- and middle-income Cairenes alike, official estimates show that 43% of housing in the GCR is in informal settlements (CAPMAS 2006), but this is likely an underestimation (Sabry 2010). The slums of Cairo, the dilapidated, make-shift, poorly serviced, and unsafe neighborhoods, house Cairo's poorest residents and are scattered throughout the city. El-Laithy (2001) estimates that the incidence of poverty in the GCR was about 8.4% in 2000, a 2004 World Bank study estimates poverty rates at 4.6%, but as with the extent of informal settlements, poverty rates are likely to be underestimated (Sabry 2010).

Vacancies are another dominant feature of the GCR's housing market. In 1986, there was a 15% residential vacancy rate in the GCR in part due to the refusal of owners to rent their apartments under rent-control laws (Raymond 2001). By 2006, official figures show that 10.1% of the housing units in the GCR were vacant flats (CAMPAS), but this number is more due to a change in the definition of "vacant" than improvements in the vacancy rate (see note to Table 3.1). Unofficial estimates put the figure at more than 30% (Moussa 2007) as landlords, especially in the higher income neighborhoods of the GCR, were unable to find renters who can afford "normal" market rents (Fahmi and Sutton 2008).

Importantly, explaining the spatial distribution of residents has been approached in various ways by different scholars. While some studies focus on individual preferences (e.g., Lewis et al. 2011), others concentrate on one or more dominant factors such as polarization of the social structure, institutional power, and economic inequality (Marcinićzak et al. 2015). In this study, we examine how income inequality, welfare regime politics, the centralized system of urban governance, settlement type, and housing policies contribute to the GCR's socio-spatial division.

### 3.4 Factors Influencing Residential Segregation in GCR

As stated above, to explain geographies of socio-economic residential segregation in Greater Cairo, this study employs a multifactor approach and takes conventional indicators that have been frequently used in previous studies, such as income inequality and socio-economic/occupational status (Darden et al. 2010; Marcinićzak et al. 2015; Massey 1979a), welfare regime politics (Arbaci 2007), centralized urban governance (Brown and Chung 2008; van Kempen and Murie 2009), settlement type (Parham 2012), and housing policies (Reardon and Bischoff 2011).

#### 3.4.1 *Income Inequality*

According to World Bank studies, the Gini coefficient of income for Egypt was 30.1 in 1995 and rose to 31.8 by 2015. According to the 1997/98 UNDP report on Egypt, the Gini index for Cairo governorate in 1995 was 33.7 (Abu-Lughod 2004) and jumped to

40.0 by 2016 making the metropolis the most unequal area in the country (CAPMAS 2016). As compared with other cities in developing countries such as Johannesburg, South Africa (Gini index of 72.4), Cairo's Gini index is modest. However, one might argue that Egyptians base their perceptions of inequality on the gap between their expectations for the government and the government's performance rather than on the gap between their own income and the income of others.

### ***3.4.2 Welfare Regime Politics***

It is argued that the type of welfare regime influences social segregation (Murie and Musterd 1996 in Musterd and Ostendorf 1998). Differences in welfare state arrangements mediate global economic pressures, thus contributing to significant local differences (Musterd and Ostendorf 1998). Using Fenger's (2007) classification of welfare states, Egypt falls into the post-socialist developing welfare type (Fenger 2007) with the highest expected levels of segregation (Arbaci 2007). According to the World Bank estimates, Egypt has a high mortality rate, low life expectancy, high inequality, high inflation, and low state social spending on health and education. For example, the infant mortality rate was 19.4 per 1,000 births in 2016, while life expectancy was 71.5 years. The unemployment rate and inflation rate were 21.4% and 13.8%, respectively.

### ***3.4.3 Centralized Urban Governance***

Urban governance in Egypt is highly centralized (Ben Nefissa 2011; Tadamun 2018). Officials appointed by the President at the governorate level allocate public money and set priorities for urban planning, services, and development. The governance structure allows for significant corruption which encourages skilled persons to engage in socially unproductive activities (i.e., extracting bribes) and reduces economic output (Tanzi and Davoodi 1997, as cited in Ghalwash 2014). In other words, centralized governance implies that personal connections matter and service delivery and the quality of neighborhoods are tied to those connections, thus reinforcing existing spatial inequalities. It also leaves lower income households with little opportunity to engage in the decision-making process about their communities, reinforcing spatial inequalities among neighborhoods.

Further complicating the governance of the GCR is that it includes five autonomous provincial governorates: Cairo, Giza, and Qalyubia, 6th October and Helwan, for which there are no GCR level coordinating government bodies, hindering the development of coordinated plans and policies for the urban agglomeration as a whole (Ben Nefissa 2011), and this lack of coordination prevents the government from addressing the spatial inequality of the GCR region in a meaningful way. This

poorly coordinated metropolitan planning leads to differences in opportunity structures (e.g., differences in housing segments in different parts of the GCR), thus contributing to socio-spatial segregation (van Kempen and Murie 2009).

### 3.4.4 Settlement Types: Formal and Informal

Perhaps the most influential factor of socio-economic segregation in GCR is settlement type, where higher income groups are over-represented in planned areas and middle- and lower income groups are over-represented in informal unplanned areas. Cairo's first planned area, the nineteenth-century CBD, is situated between the old city, located about 2.5 km east of Nile, and the so-called "Gold Coast", a narrow strip of the most valuable real estate in the CBD that extends from Qasr El-Nil to the south and Zamalek Island to the north. From the CBD, formal Greater Cairo expanded along both sides of the Nile as well as along railroads that extended from the Ramses Railroad Station in downtown north through Shubra El-Kheima, south to Helwan, and east to Suez (UNCHS 1993). In the early 1900s, several affluent, planned suburbs were established including Zamalek Island west of downtown, Heliopolis, 10 km east of downtown, and Maadi, 12 km to the south. Over the early twentieth century, the urban fabric of GCR filled in the gaps between downtown and these suburban enclaves. The south-eastward development of the city was hindered by the great cemetery of Cairo and the Muqattam Hills (see Fig. 3.1).

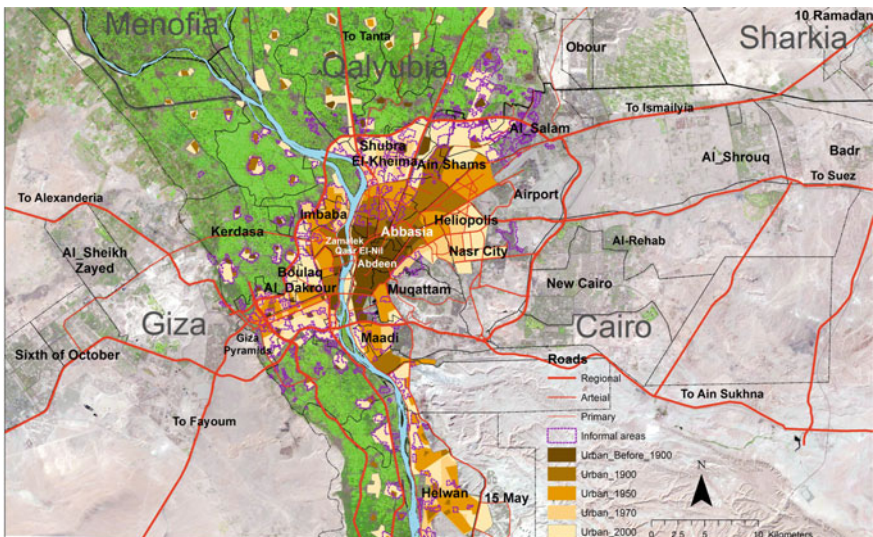


Fig. 3.1 Urban evolution of Greater Cairo from before 1900 to 2000



Beginning in the 1960s, the GCR experienced heavy urbanization as a result of migration from rural areas driven by job opportunities. Newcomers were mostly young single men with modest needs, which encouraged them to share rented units or rooms in the older neighborhoods with a deteriorating housing stock, aka, the “slums of despair.” After accruing considerable savings, some migrants bought land and built informal settlements well beyond the formal areas on the peripheral farmlands to the north and west of the city where land was cheap (Fahmi and Sutton 2008; Kipper and Fischer 2009). Increased migration and urbanization during the 1980s and 1990s stimulated further demand for housing—a demand which planned areas could not accommodate—and informal settlement expansion pushed land prices on the urban periphery incrementally higher (Kipper and Fischer 2009). Meanwhile, the government exacerbated the housing crisis by encouraging both speculative land acquisition and investing in large-scale, for-profit luxury housing (Salma and Shawkat 2017; Tadamun 2018).

### 3.4.5 Housing Policies

National housing policy has had a significant influence on socio-economic segregation in the GCR. The vestiges of the socialist era policies reinforce historic disparities in the urban fabric while present day policies create new ones. As can be seen in Fig. 3.2, during the 1940s, the Egyptian government adopted rent-control legislation

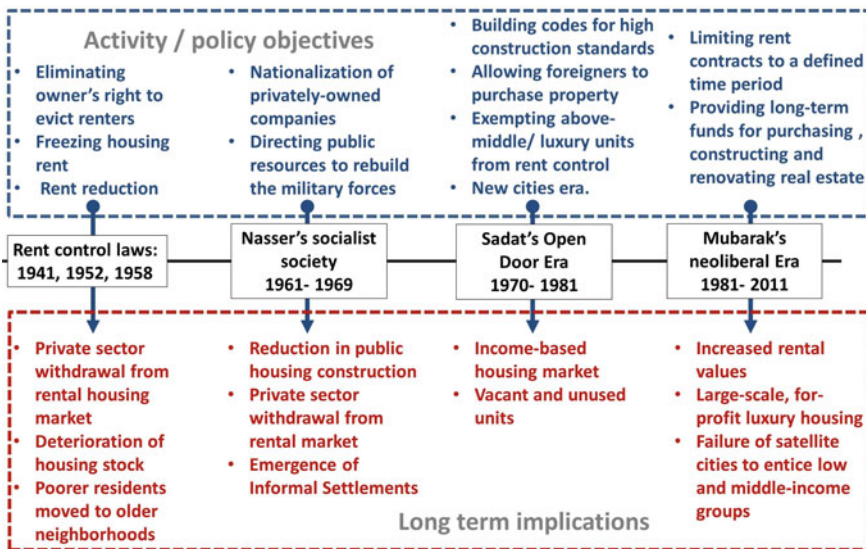


Fig. 3.2 National Housing Policies and Their Influence on Spatial Segregation, 1941–2011 (Source authors based on The World Bank (2007); Fahmi and Sutton (2008))



to reduce rents for lower income families. Freezing rent prices discouraged private investors to supply formal housing for rent. Furthermore, insufficient rent revenues discouraged private owners to maintain existing housing units and this, in turn, led to a deterioration of the housing stock. With the industrialization policy under the state-sponsored socialism of the Nasser era, specifically in the 1950s, the government reduced rents gave renters the right to complain about maintenance and partially provided subsidized housing to the poor. During the 1960s, the state vastly reduced the construction of public housing and infrastructure gave tenants the right to inherit rental units, and directed most of the national income to military purposes. This policy widened the gap between supply and demand, further encouraged informal development, and contributed to the deterioration of rental stock (World Bank 2007; Fahmi and Sutton 2008).

In 1979, the government adopted a strategy to relieve central Cairo of congestion and pollution by supporting the construction of car-dependent, planned “new urban communities” in the desert, a policy that continues today (Hegazy and Moustafa 2013). In these formal areas, the government prohibited microeconomic activities such as retail shops, workshops, and street kiosks which generate employment and investment opportunities for lower income residents (Sims 2014). Low- and middle-class families could neither afford the cost of housing nor the cost of commuting such long distances, thereby ensuring that the satellite cities would be elite spaces within the expanding region (Sims 2014; Salma and Shawka 2017; Tadmun 2018). The government has tried to support subsidized social housing projects (*Iskan Igtema’ey*) in the new urban communities for low- and middle-income households, but because of bureaucratic opacity (Sims 2014), and income requirements that exceed the average incomes of even upper middle-class households (Salma and Shawkat 2017), this program has contributed to further socio-economic segregation in the city (Tadmun 2018).

Given the high costs of subsidized housing and the exclusionary nature of the new urban communities, low- and middle-income residents relied on the informal private sector for housing and the only available land on which they could build was the agricultural land that surrounds the city. Unfortunately, the informal private sector was unable to satisfy the increasing housing demands of the population due to rising construction costs, the incessant inflation of land prices (UN-HABITAT 1993), and the large devaluation of the Egyptian pound over the period from 1989 to 1991 (Mohieldin and Kouchouk 2003). Ultimately, the informal private sector withdrew from its key role as the main supplier of affordable housing for lower income groups and focused on higher end housing (Salma and Shawkat 2017). As of 2016, GCR had about 4.7 million vacant housing units, which is roughly equivalent to the *total* number of housing units in 1996 (CAPMAS 1996, 2016).

### 3.5 Landscape of Residential Segregation in GCR, 1986–2006

This study relies on publicly available data from the General Office of Physical Planning (GOPP) and the Central Agency for Public Mobilization and Statistics (CAPMAS). As information aggregated to the tract level, we use census tracts to define the *shiyakha*, or neighborhoods. Tract boundaries for the selected study periods are nearly unchanged and do not require data harmonization for pre-2006 census tracts.

The urban agglomeration of the GCR is comprised of the whole governorate of Cairo and, except for some scattered towns, urban Giza, and urban Qalyubia (Harris and Wahba 2002). In 1986 there were 486 tracts, with an average population of about 5,500 each. In 1996, the number of tracts increased to 509 with an average population of about 7,000, and in 2006, there were 553 tracts with a mean population of 8,250. In order to control for differences in tract sizes and populations, we standardize the data by transforming counts into rates/ratios. Z-scores are also used for normalizing scores on the same scale.

We use occupational data from the 1986, 1996, and 2006 censuses to study socio-economic segregation in the GCR. The 1996 and 2006 data include the nine occupational categories as defined by the International Standard Classification of Occupations (ISCO) and the 1986 census includes seven, where the lowest three elementary occupations are merged into one category. To mirror socio-economic disparities at a micro-scale, we adopt the aggregation method of Marcińczak et al. (2015) in which the original ISCO classifications are grouped into three socio-spatial categories: top, middle, and bottom. Managers (1) and professionals (2) comprise the top socio-economic category. Associate professionals (3), clerks (4), and service and sales workers (5) form the middle socio-economic category. Skilled agricultural, forestry, and fishery workers (6); craft and related trades workers (7); plant and machine operators and assemblers (8), and elementary occupations (9) fall into the bottom socio-economic group (see also Azhdari et al. 2018). Following Marcińczak's (2015) method, we then find the percentage of employed residents in each tract that fall into the high, middle and low group to classify the census tracts of GCR into six categories: high, middle-to-high, mixed, low-to-middle, low, and polarized (see Table 3.2).

While occupational status is a major indicator of income, prestige, educational attainment, and health-related behaviors, it is an insufficient and sometimes unreliable indicator of socio-economic status (SES) on its own. A disadvantage is that job status as well as skill and education requirements for certain types of employment change over time. For example, a teacher may have had a higher social status in 1986 than in 2006. Moreover, income and lifestyle, as indicators of occupational status, are context-sensitive and subject to cultural preferences (Berkman and Macintyre 1997; Marcińczak et al. 2015). Finally, SES indicators often exclude individuals engaged exclusively in the informal economy as their activity is not captured in government data sets (Krieger et al. 1997). This is particularly problematic in the GCR where

**Table 3.2** Tracts types according to shares of socio-spatial groups

Tract Occupational Status Category	Top (%)	Middle (%)	Bottom (%)
High	$\geq 50$	$< 30$	$< 30$
Middle-to-high	25–49	25–49	$< 25$
Middle	$< 30$	$\geq 50$	$< 30$
Mixed	25–49	25–49	25–49
Low-to-middle	$< 25$	25–49	25–49
Low	$< 30$	$< 30$	$\geq 50$
Polarized	$\geq 30$	$< 25$	$\geq 30$

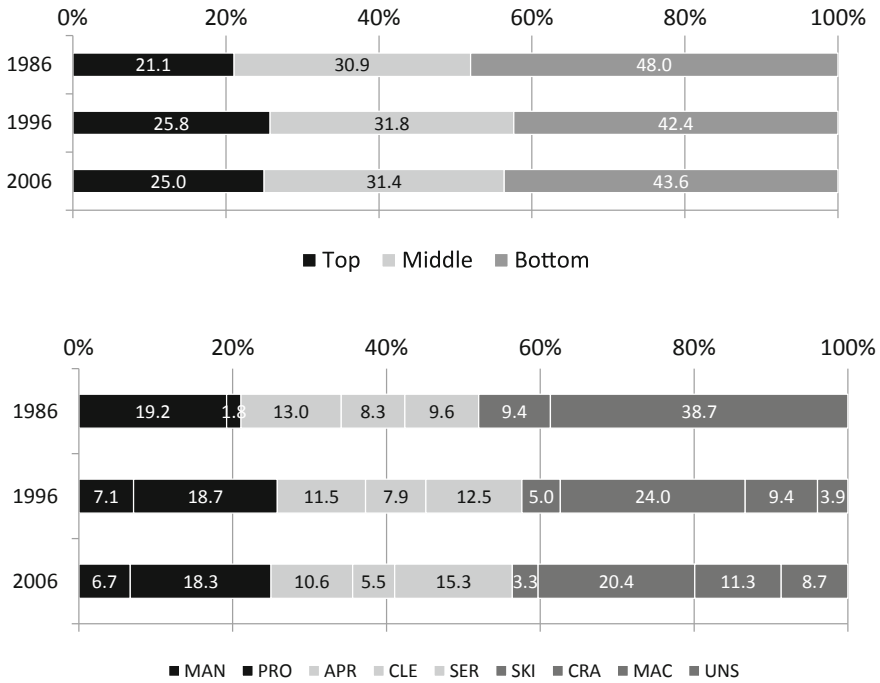
Source adapted from Marcińczak et al. (2015)

informality is widespread and undercounted (Sabry 2010). Taking this possible limitation of the data into account, we use occupational composition statistics as they are the most reliable available indicator of SES at the *shiyakha* level within publicly available datasets.

We investigate patterns of socio-economic segregation at two stages. We use the dissimilarity index ( $D$ ) for all occupational groups to measure the overall evenness in spatial distribution of each occupational group as compared to the rest of the population. Because socio-economic segregation is commonly lower than ethnic segregation, Marcińczak et al. (2015) consider values between 0.2 and 0.4 as moderate and above 0.4 as high. In the second stage, location quotient (LQ) is employed to compare relative concentrations of the top and bottom ISCO categories in a tract against the metropolitan concentration.

### 3.6 Spatial Distribution of Occupational Groups

The composition of the workforce in the GCR has shifted modestly between 1986 and 2006. The bottom occupational category made up nearly half of the workforce in 1986 and fell to about 44% in 2006 while the top occupational group increased from 21 to 25% over the same time period. The middle occupational category remained unchanged at 31%. Unskilled workers form the smallest share of jobs in the GCR, whereas most of the economically active populations of the city are from the bottom socio-economic group (CAPMAS 1986, 1996 and 2006). Also, 25% and up to 30% of residents are in the top and middle occupation categories, respectively. Furthermore, the three broad categories of workers are unevenly distributed in the three censuses. Overall, occupational structure between 1986 and 2006 implies that the bottom of the labor market (i.e., low-skilled jobs) is relatively shrinking while the top and middle are growing (Fig. 3.3 left).



**Fig. 3.3** Distribution of occupational groups and change over time

Research on the occupational structures of mostly western cities has shown tendencies of labor forces in advanced capitalist societies toward either social polarization (Sassen 1991), where growth in both high-income and low-income occupations is accompanied by a decline in middle-income occupations or professionalization, where significant growth in high-income and middle-income technical jobs and professional jobs balance out a stagnation or decline of middle- and low-income, semi- or unskilled jobs (Hamnett 1994, 1996). This data suggests that the GCR has not experienced either social polarization or professionalization.

Looking at the individual occupational categories, the GCR has seen a significant expansion of service and sales workers between 1986 and 2006, from 9.6 to 15.32%, due to the expansion of the tourism sector in Egypt (Richter and Steiner 2008). This was offset by the loss of skilled agricultural, forestry, and fishery jobs (9.3 to 3.3%) over the same period due to the expansion of informal settlements into agricultural land. While the combined manager and professional categories grew between 1986 and 2006 (21.1–25%), the supporting occupations—clerks and associate professionals—declined from a combined 21.3–16.1%, contrary to what is expected in the social polarization/professionalization literature (see Pratschke and Morlicchio 2012). As expected with the liberalization of the economy, craftsmen and trade workers have declined from 24 to 20.3% between 1996 and 2006, but traditional industrial jobs and unskilled labor have increased (Fig. 3.3 right).

**Table 3.3** Indices of dissimilarity (multiplied by 100) between occupational groups in GCR

1986										1996										2006									
MAN	PRO	APR	CLE	SER	SKI	CRA	MAC	UNS		MAN	PRO	APR	CLE	SER	SKI	CRA	MAC	UNS		MAN	PRO	APR	CLE	SER	SKI	CRA	MAC	UNS	
	14	21	22	26	73	35	35	33																					
24		26	28	35	75	43	43	41		10										23	24								
20	42		9	16	70	23	22	30		20	21	8								20	21	8							
31	48	19		14	69	22	21	30		28	31	18	18							28	31	18	18						
29	48	19	17		65	14	16	22		77	78	74	76	74						77	78	74	76	74					
56	69	52	49	45		66	61	63		42	45	28	31	25	65					42	45	28	31	25	65				
							15	24		41	44	25	29	25	62	12				41	44	25	29	25	62	12			
40	59	24	21	18	45			27		34	36	23	24	20	65	18	18			34	36	23	24	20	65	18	18		

MAN = managers; PRO = professionals; APR = associate professionals; CLE = clerks; SER = sellers and service workers; SKI = skilled agricultural, forestry, and fishery workers; CRA = crafts men; MAC = machine operators; UNS = unskilled workers

NOTE The last three lower ISCO categories in the census of 1986 are grouped in the CAPMAS dataset

**Table 3.4** Indices of dissimilarity (multiplied by 100) between top, middle and bottom groups in GCR

	1986	1996	2006
TOP - MID	26	27	24
TOP - BOT	43	42	43
MID - BOT	21	20	25

Tables 3.3 and 3.4 summarize dissimilarity indices for all original ISCO occupational categories as well as between the Top, Middle, and Bottom groupings for the years 1986, 1996, and 2006. Overall, the results of DIs indicate that the top and bottom social categories are more spatially separated than the middle socio-economic categories in GCR. Moreover, the DIs for managers and professionals fluctuated slightly but in general remained steady, whereas the level of residential separation of skilled workers rose sharply between 1996 and 2006. Furthermore, those in middle and elementary occupations increased slightly in general.

### 3.7 Neighborhoods' Leading Specializations

In this research, we employ LQ data at the scale of the *shiyakhat* to understand each tract's demographic distinctiveness. LQ for managers and professionals ranged from 0.03 to 3.75, and those for the bottom group varied from 0.07 to 2.21 (Fig. 3.4).

LQs for managers and professionals were found in relatively similar proportions in 1986 and 2006. The easternmost neighborhoods, as well as tracts on the western bank of the Nile River, had the highest values accounting for over twice the metropolitan share of top social class employment. These are the areas where the most educated and highly skilled people are located. On the other hand, bottom occupational groups are largely concentrated in fringe areas in Giza and Qalyubia. Specifically, they clustered

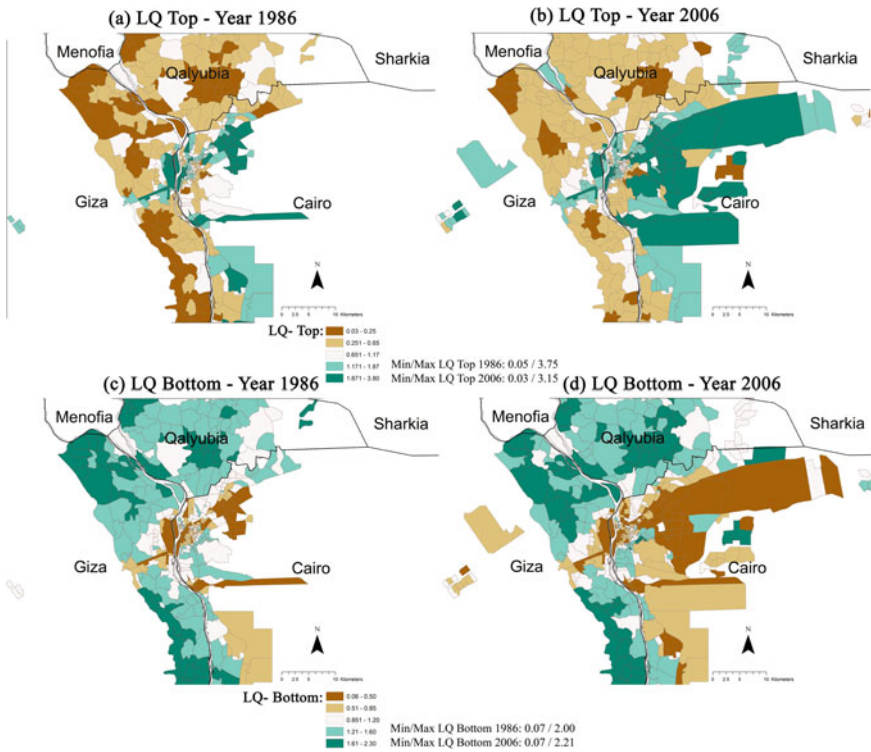


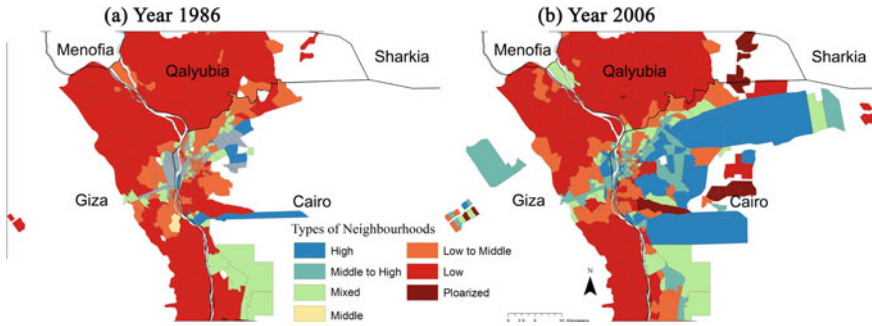
Fig. 3.4 Location quotient maps for the Top and Bottom occupational groups in GCR

to the North, adjacent to the industrial area of Shubra El-Kheima, to the South, in the industrial areas of Helwan and Tora, to the west, for example in Kerdasa and Markaz Al-Giza, and to the east, in Mansheit Nasser over the Muqattam hills. Interestingly, such areas are less urbanized and largely informal.

### 3.8 Patterns of Socio-Economic Intermixing

The classification of tracts by shares of different socio-economic groups shows a geography of neighborhood socio-economic intermixing in the GCR (see Fig. 3.5 and Table 3.5). The results of this analysis confirm that the spatial segregation of the city is predominantly a result of formal/informal settlement patterns, policy, and mobility. First, the number of exclusively high SES neighborhoods and low-SES neighborhoods are increasing due to the expansion of the city into formal, newly constructed settlements in the eastern desert (new high SES tracts) and into informal settlements on the periphery of the urban fabric (new low-SES tracts). Second, the percentage of the population in the low-to-middle category has declined significantly





**Fig. 3.5** Classification of neighborhoods by socio-economic composition in the GCR

**Table 3.5** Percentages of population in tracts by socio-economic composition

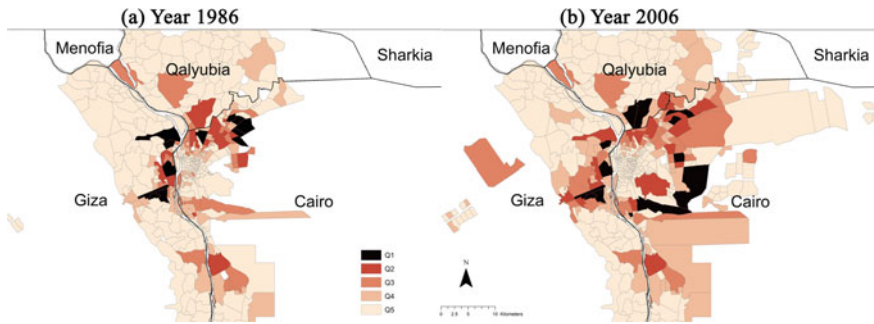
	1986	2006	1986–2006 (change)
High	2.44	6.77	4.33
Middle-to-high	11.14	11.77	0.64
Middle	0.23	0.0	−0.23
Mixed	15.03	16.74	1.71
Low-to-middle	38.81	29.98	−8.83
Low	32.31	33.05	0.73
Polarized	0.05	1.70	1.65

between 1986 and 2006. Third, the polarized neighborhood type in which higher class professionals intermingle with lower class professionals has appeared in newly constructed areas.

Overall, low and low-to-middle SES tracts are the most common tract types, housing more than 60% of the GCR’s residents. In both 1986 and 2006, low-SES tracts were located on the urban fringe where land and housing are cheaper and informal settlement patterns dominate. These are the areas where predominantly poor rural migrants and newcomers working at the urban core settle. Low-to-middle tracts were incrementally closer to the CBD than low tracts. There are also some smaller pockets of low-SES tracts surrounding downtown that were more prominent in 1986 but lessened by 2006.

In 1986, high and middle-to-high SES tracts were clustered around the CBD on both sides of the Nile and along the northeastern rail line, and by 2006, dominated the sprawling, low-density tracts of the eastern desert, including the new urban communities of Al-Rehab, Al-Shrouq, and New Cairo. These areas correspond to the GCR’s formal parts.

Absent in 1986, polarized SES tracts appeared in 2006. Studies from North America and Europe show that such neighborhoods are a consequence of growing income inequality and an outcome of gentrification (Galster and Booza 2007 in Marcińczak et al. 2015). This is not the case in the GCR. The polarized tracts are in



**Fig. 3.6** Location of the top occupational group in GCR

areas where lower income households may find affordable housing before services to the region are improved and higher income households with access to private transportation can take advantage of the suburban characteristics of the area. These areas are also sites of newly constructed, poorly serviced housing for residents displaced by construction projects in the deteriorated, inner portions of the city (Tadamun 2018).

These results reinforce the above analysis that socio-economic segregation is taking place in the GCR, where residents at opposite ends of the socio-economic spectrum are occupying areas increasingly distant from one another. There are higher concentrations of high and middle-to-high SES tracts downtown and along the highways that stretch into the eastern desert. Low and low-to-middle tracts dominate the informal periphery. Mixed and middle-to-high SES tracts are increasingly concentrated around the urban core, suggesting some hints of early stages of gentrification.

In order to further illuminate the spatial location of the top occupational group we divide the total number of people in the top group in the whole GCR in five quintiles, with a color scheme that goes from dark brown (for the first quintile) to light brown (for the fifth quintile) (Fig. 3.6). The results show how many tracts we need to make up the first 20% of the top group; and then to the next 20%, and so on. The fewer the tracts we need to get to the top 20%, the more spatially concentrated the group is.

In this study, neighborhoods with higher numbers of the top group are almost nonexistent over a period of several decades neither in older districts, slums of hope, nor in the peri-urban areas; rather, the first 20% of the top group live in very few neighborhoods nearby major urban centers and on the outer urban periphery, which means that the group is very spatially concentrated.

For example, in 1986, the first 20% of the top group were concentrated in twelve neighborhoods westwards and north-eastwards of central Cairo. In 2006, more clusters of upscale districts have been highlighted in all directions, particularly eastward in the desert land around the city, forming a donut shape with GCR's lowest quintile living in the older housing stock of the center, a pattern consistent with Burgess's monocentric model (1925). Today, these clusters have an ever-growing number of

upscale venues such as expensive shopping malls and supermarkets that target only individuals with higher purchasing power.

### 3.9 Conclusions

This chapter examined the role of income inequality in explaining socio-economic residential segregation in the GCR. Using occupational data from 1986, 1996, and 2006 censuses, we measured metropolitan and neighborhood segregation indexes based on shares of SES. To study the dominant occupations in specific neighborhoods, we computed LQs to top and low social classes. Results from our study lead to several conclusions that are discussed in the light of the three questions that guided the analysis.

The first question asked: to what extent is there residential segregation of occupational groups in the GCR? While the overall scale of segregation under neoliberalization is on the low side, the profile of socio-economic intermixing reveals that the poorest groups were more segregated from the wealthy minority than from the middle-income residents. Specifically, the Dissimilarity Index between top and bottom groups was 0.43 in 2006. This level is much higher than those found in North American and Western European cities (mostly range between 0.1 and 0.35) (see, e.g., White 1987; Marcińczak et al. 2015).

In addition, the local patterns of socio-economic intermixing also demonstrate that GCR is highly segregated. The dominance of large clusters of low and high SES tracts reveals a sharp socio-spatial division. Likewise, LQ values show that specific occupational groups are strongly represented in some tracts than others. Overall, it may be true, as Sims (2010: 3) has argued, that ostentatious wealth coexists “side by side with extreme poverty”.

The answer to the second question—“Can socio-economic inequality explain residential segregation?”—is that while socio-economic inequality is a prerequisite for socio-economic segregation, the link between the two variables is modest. In other words, greater economic inequality does not necessarily result in clear-cut socio-spatial divisions. Although this is in line with the results seen in Eastern European cities, we acknowledge inherent limitations in our dataset in terms of selected study periods and focusing exclusively on one single case.

Third, we asked: To what extent can the welfare regime and the characteristics of housing provision determine segregation trends in the GCR? The answer is that both the welfare regime and housing policies contribute in residential settlement patterns. There is much evidence that the Egyptian government reduced expenditures on education and social protection and on building public housing. Neoliberal policies aimed to optimize government revenues but steered residential segregation as well. The chronic lack of adequate and affordable housing in many parts of the city has resulted in the concentration of low-income households in undesirable and sometimes dangerous locations where land is cheap and jobs are scarce.

In spite of their bad conditions, the inner city housing stock, as well as informal settlements at the urban fringe, contains about 40% of GCR population (CAPMAS 2006). Low-income households were in favor of these areas because of two reasons: the advantages of affordability and geographic location nearby jobs. Put differently, searching for a decent affordable price for all residents resulted in some intriguing trends in patterns of socio-economic segregation. However, we acknowledge the contextual factor which makes GCR atypical of other cities in the global south. Continued socio-economic polarization may threaten social cohesion, stability, and security.

Finally, we acknowledge that occupational status may be insufficient and sometimes unreliable indicator of socio-economic status (SES) on its own. Additional indicators such as educational level may well be added to explore the relationship between social class and residential segregation further. We also hope to replicate the analysis using the final 2016 census findings when CAPMAS releases them.

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