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Abstract

In Egypt it is estimated that the majority of the country's 40 million urban residents, which include 11 million young people, live in informal urban areas. Previous studies have demonstrated that there is considerable diversity in informal areas in terms of physical characteristics and basic infrastructure, yet there has been much less research assessing access to health and social services in informal areas. Young people growing up in informal areas are a particularly vulnerable group, and their access to such services is critical for their wellbeing and human capital development. In this paper, we use a mixed methods approach to assess different dimensions of youth access to health, education and cultural/recreational services across informal areas of Greater Cairo. Results from the Survey of Young People in Egypt – Informal Greater Cairo showed that youth perceptions of the geographic accessibility and affordability of services was generally high, but perceptions of service quality were considerably lower. There was also inequality in perceptions of the geographic accessibility of services by neighborhood-level wealth status, particularly for education and health services. A more in-depth case study of service access in informal areas of Shubra el Kheima, which is part of Greater Cairo, highlighted that concerns about service quality in informal areas should be contextualized within young people's broader sense of marginalization and neglect of the area. We conclude that policy towards upgrading of informal areas in Cairo needs to adopt a more comprehensive and participatory approach that addresses health and social services as well as basic infrastructure.

Keywords:

JEL Classifications:

1. Introduction

Goal 11 of the Sustainable Development Goals (SDGs) aims for the development of inclusive, safe and sustainable cities for all. With the continued rapid pace of urbanization in many Low and Middle Income Countries (UNDESA 2018), urban development is critical not only for achieving the SDGs, but also for overall population wellbeing. The breadth of the SDG 11 targets, which include slums upgrading, access to basic services, environmental protection, and inclusive public spaces, speak to the range of challenges facing urban development in Low and Middle Income Countries (LMICs). Urban populations are often advantaged in terms of their access to employment opportunities, services and other resources (Cotton 2013). Yet in many LMICs the growth of urban space has occurred in an irregular, unplanned manner, resulting in the formation of slums or 'informal settlements.' In addition to posing a challenge for sustainable urban development, the growth of slum areas has contributed to economic, social and health inequalities within countries (Elsey et al. 2016) as well as within urban conglomerations themselves (Tadamun 2015). Some population groups within slums, including young people, are also particularly vulnerable to poor health, social and economic outcomes as a result of living in informal or slum areas (Kabiru et al. 2012; Burns and Snow 2012).

In Egypt, the focus of this paper, it is estimated that the majority of the country's 40 million urban residents – including 10.8 million young people – live in settlements defined as informal (CAPMAS 2017; Khalil et al. 2018). Previous studies have demonstrated that there is considerable diversity in Egypt's informal areas in terms of physical characteristics and basic infrastructure (Khadr, el Dein, and Hamed 2010; Tadamun 2015), as well as in the socioeconomic profile of informal residents, many of whom do not fall into the poorest wealth quintiles yet nevertheless often suffer from bias against slum areas (Roushdy et al. 2016). Yet, to the best of our knowledge, no previous studies have examined access to health and social services across informal areas. This is an important gap in the literature on slums and urban development policy in Egypt, as access to quality basic services, including health, education and other social services, can play an important role in mitigating vulnerability among populations living in slum areas (Kabiru et al. 2012; Cotton 2013; Elsey et al. 2016; Lilford et al. 2017).

Globally, there is little literature that adopts a unified framework to understanding access to services in informal urban areas; most studies focus on single services and use different or undefined measures of access. Literature on services in informal areas of Egypt (Hassan 2012; Khalifa 2015; Tadamun 2015) and elsewhere (Abbott 2002; Corburn and Sverdlik 2017; Devkar et al. 2017) has also focused primarily on basic infrastructure services, such as water, electricity and sanitation, and has paid less attention to health and social services, despite the importance of these services for equity, health and human capital development. In this paper, we adapt a conceptual framework originally developed to understand different dimensions of access to healthcare (Peters, Garg, Bloom, Walker, Brieger, and Hafizur Rahman 2008) to the case of young people's access to health, education and cultural/recreational services in informal areas of

Greater Cairo. We begin by exploring young people's perceptions of different dimensions of service access across informal areas using a representative survey of young people in informal areas of the Greater Cairo Region (GCR). Our results indicate that there are inequalities across informal areas with different neighborhood wealth profiles in young people's perceptions of access to health, educational, and cultural/recreational services. Yet overall, young people viewed public services, particularly health and education, to be geographically accessible and of low cost, but poor quality. In order to better interpret our findings on young people's perceptions of service access, we also present a more in-depth case study of informal areas of Shubra el Kheima, which is located in the northern part of the GCR. The case study points to the need to consider young people's concerns about the low quality of services within the general sense of marginalization of their neighborhoods. We argue that current approaches to slums upgrading in Egypt need to look beyond basic infrastructure and take a more comprehensive view of the services available to young people and their households in informal areas in order to promote sustainable urban development.

2. Background

2.1. The growth of informal areas and its contribution to urban inequality

Globally, slums are areas that are characterized by high population density, insecure land tenure, poor access to basic amenities, and higher poverty rates than the population living in formal urban areas. The United Nations definition of a slum includes the following characteristics; (i) inadequate access to safe water, (ii) inadequate access to sanitation and infrastructure, (iii) poor structural quality of housing, (iv) overcrowding and (v) insecure residential status (UN-HABITAT 2003). The term "slums" has also been increasingly used to refer to settings where individuals living in poor and degrading conditions, where they suffer from deprivation, and often are stigmatized (Stephens 2012).

As of 2014, 881 million people, or almost one third of the global urban population, were living in slums. The growth of slums globally has been driven by the combination of rapid urbanization and population increase, coupled with lack of economic growth and increasing urban to rural migration (Ezeh et al. 2017). These dynamics of slum growth also apply to the case of Egypt, where slums are more accurately termed informal areas or, colloquially, *ashwaiyyat* meaning "haphazard" or "unplanned." In Egypt, the challenges of population growth and migration to urban areas were also compounded by inefficient urban development and housing policies that led, among other issues, to tightness in urban housing markets (El-Batran and Arandel 1998; El Araby 2003). In response to the shortage of affordable housing stock, urban residents adopted a variety of coping mechanisms, including extensions to existing housing units in inner city neighborhoods, construction of new housing on land zoned for agriculture, construction of housing on desert land officially belonging to the state, and even conversion of Cairo's cemeteries into residential areas (Khadr, el Dein, and Hamed 2010; Khalifa 2015). As all of these

forms of housing construction are illegal, all urban areas developed through these forms of expansion are considered "informal," although the characteristics of these areas vary widely.

Cairo, the Egyptian capital where the majority of the economic activities, central bundle of services and governmental bodies are concentrated (General Organization for Physical Planning, 2014 2014; Ministry of Housing, Utilities, and Urban Development 2016), has historically been a main destination for internal migration.[6] Whereas informal urban expansion began in Cairo during the 1960s, it was during the 1970s and 1980s that it picked up. One estimate states that, by the end of the 1990s, 53% of Greater Cairo's surface was informal areas, housing over 60% of its residents (Mekawy and Yousry 2012). Defining and measuring informal areas in Cairo has been complex, however, resulting in numerous different estimates of the extent of informalization of the city.[7] Recent estimates indicate that informal areas represented 38% of the total urban area of Egypt, and 32% of the area of the GCR in 2013 (Ministry of Housing, Utilities, and Urban Development 2016). Furthermore, informal settlements in GCR have double the average urban population density of the city, at almost 80,000 residents per square kilometer (Khadr, el Dein, and Hamed 2010).

Although the history of Egypt and Cairo's informal area development is somewhat distinct from patterns of slum formation in other LMICs, the contribution of unplanned residential growth to urban inequality is a concern in Egypt as in other contexts. Globally, the growth of slums has contributed to deepening social and health inequalities, and exacerbation of poverty in many LMICs (Elsey et al. 2016). Hundreds of millions of people living in slums or informal settlements are exposed to increasing vulnerability and lack access to basic and social services, facilities and amenities that are necessary to overcome poverty and deprivation (Burns and Snow 2012). Furthermore, slums are often stigmatized, which is expressed in different violations of their residents' rights, such as exposure to eviction and displacement, in addition to deprivation from access to services (Ezeh et al. 2017; Pierce 2017).

In Egypt, few studies have directly aimed to assess the relationship between informal areas and urban inequality. Yet studies using different methodologies have consistently shown that, contrary to popular opinion, poverty does not in fact concentrate in informal areas of Cairo (Tadamun 2015; Roushdy et al. 2016). For example, data from the recent Survey of Young

[6] The urban Greater Cairo Region (GCR) has 17.2 million inhabitants (CAPMAS 2017), an estimated 50% of whom live in informal settlements according to the Informal Settlements Development Facility (Khalil et al. 2018). The Greater Cairo Region (GCR) urban population includes 4.7 million youth (CAPMAS 2017).

[7] Defining informal areas in Egypt is complex, and there have been several different efforts made. The Informal Settlements Development Facility (ISDF), established in 2008 as the official government body in charge of informal areas development, divides informal areas into two categories: unplanned and unsafe. Unplanned areas are defined as "areas that were not subject to detailed plans, land subdivision plans nor compliant with planning and building laws and regulations" (Khalifa 2011). Unsafe areas are further classified according to a four-class system, according to the severity of risk in terms of: (i) life threatening conditions (Grade 1), (ii) unstable buildings (Grade 2), (iii) poor public health (Grade 3), and (iv) instability of tenures (Grade 4). A mapping conducted in 2008-2009 and based on this classification identified 404 unsafe areas across Egypt (Khalifa 2011).

People in Egypt surveys show that young people residing in informal GCR tend to concentrate in the third and fourth wealth quintiles; using national wealth quintiles, the lowest and highest wealth quintiles were both underrepresented in informal areas of the GCR as compared to formal ones (Roushdy et al. 2016). Nevertheless, a number of studies have shown deficits in health and social outcomes in Egypt's informal areas, including infant and under five mortality rates (Mberu et al. 2016), and adolescent and young people's health and education outcomes (Roushdy et al. 2016). That these deficits exist despite the lack of a clear correlation between poverty and informal areas suggests the importance of considering nonmonetary aspects of poverty and relative deprivation in understanding the factors contributing to health and socioeconomic outcomes among young people in informal areas.

2.2. Access to basic services in informal areas

These deficits in health and socioeconomic outcomes among informal residents highlight the importance of access to a comprehensive set of quality basic services as a means to improve population wellbeing, alleviate poverty and reduce urban inequities. Yet although a range of basic, health and social services are vital for community development and wellbeing (Pierce 2017), most informal areas upgrading programs in Egypt (Hassan 2012; Khalifa 2015; Ministry of Planning, Monitoring, and Administration reform 2018) and globally (Corburn 2017; Devkar et al. 2017; Corburn and Sverdlik 2017; Turley et al. 2013) focus one or more of the basic infrastructural services, such as housing, water, sanitation, waste management, and electricity.[8] By comparison, health, education, and other social services have been relatively neglected in the discussion on development of slums areas.

The lack of attention to improvement of social services in slums is particularly critical because evidence suggests that there are great disparities in access to health and social services within and between cities, with slums and informal areas suffering the greatest deprivation (Galea and Vlahov 2005). In slums, services are often either lacking or are of low quality, which acts as a significant barrier towards accessing services (Galea and Vlahov 2005; Pierce 2017). In the absence of quality public provision of services, households in informal or slum areas may also end up paying more for alternative services than higher-income households in areas that are well served through the public system (Pierce 2017). There are also substantial nonfinancial barriers to service access related to the social and physical environment in informal areas, including lack of safety, transportation, discrimination, distance to service points and political or institutional factors (Galea and Vlahov 2005; Pierce 2017).

[8] Surveys have shown that coverage of basic infrastructure services in Cairo's informal areas, including water, sewage and electricity, is high. The percentage of households with connections to the sewage system and drinking water pipes in informal urban areas is near universal, 99% and 98% respectively (Roushdy et al. 2016). Garbage disposal on the other hand is a considerable public health threat in informal urban settlements. Provision of basic services also suffers from a range of quality and consistency issues, leading to dissatisfaction among many informal residents (Roushdy et al. 2016; Khalil et al. 2018).

The general disadvantages faced by informal areas in terms of service access notwithstanding, slums are often assumed to be similar units that will respond to the same interventions (Lilford et al. 2017). A number of studies, however, including several from Egypt, have shown variation in access to basic infrastructural services across areas that are categorized as slums or informal (Daniere and Takahashi 1999; Khadr, el Dein, and Hamed 2010; Tadamun 2015). Assessing differences in access to services across slums is important for developing appropriate, targeted interventions for different areas, rather than assuming a one size fits all approach to slums upgrading.

2.3. Disadvantaged urban youth

In addition to inequality in service access across slum areas, different population groups within slums may face inequities in access to quality services based on gender, age, income, ethnicity or other considerations (Kabiru et al. 2012; Parikh et al. 2015; Pierce 2017). Young people growing up in slums are one such population that are particularly vulnerable. The vulnerability of young people in slums is rooted in structural forms of deprivation, poverty and powerlessness on their part or that of their primary caregivers (Burns and Snow 2012). Addressing this vulnerability of young people in slums areas – in part through provision of quality social and health services – is particularly important because these ages are transition periods, where young people develop their capacities and establish the bases for later life outcomes (Patton et al. 2016; Hogan and Astone 1986). If young people are not provided the necessary means to gain these capacities, this has negative impacts on themselves, their families, and the community, whereas investments in this age group can have large positive impacts (Patton et al. 2016; Sheehan et al. 2017).

Few studies have assessed young people's access or perceptions of access to health, education or social services in slums or informal areas. Recently, an exercise conducted by 40 researchers for prioritizing urban health research themes in Africa highlighted the need for information about vulnerable communities within slums, including the disabled, the elderly, and young people, in addition to exploring means for their engagement in needs assessment and interventions (Oni et al. 2016). The results of studies that have tried to understand the impacts of growing up in informal neighborhoods emphasize the importance of considering inequalities across youth. For example, a recent study by Mmari and colleagues (2014) conducted in slum areas in five countries explored the perceptions of adolescents on their health priorities, and the social and built environment of their neighborhoods. They found that those with poor perceptions about their neighborhoods had comparatively worse health outcomes, albeit with variations. These variations suggest that not all slums or neighborhood-level factors have the same effect on adolescent health across disadvantaged urban spaces. The study did not assess their perceptions about the access to health or other social services. To the best of our knowledge, there have been no prior studies in Egypt on young people's access or perceptions of access to services in informal areas.

3. Methods

3.1. Conceptual framework

The study of service access in slum areas has been complicated by a lack of conceptual clarity around access, and consequently the different definitions used to define the term (Daniere and Takahashi 1999). In addition, research on access to services in slums has tended to focus on obstacles to accessing single services rather than the range of services needed to support individuals' and households' welfare (Pierce 2017). Many studies also employ single measures of service access – such as distance or cost – whereas the broader literature demonstrates that barriers to service access in informal areas are multifaceted (Daniere and Takahashi 1999; Galea and Vlahov 2005; Pierce 2017).

One recent study that proposes a unified framework for understanding barriers to service access in slums is that developed by Pierce (2017), who categorizes barriers to service access into economic, spatial (geographic) and social (discrimination).[9] However, this categorization does not place much emphasis on distinguishing between the quantity and quality of service provision. This is an important limitation in the context of Egypt, whereas previous research has demonstrated that quality of services is often the more relevant concern (Roushdy et al. 2016; Khalil et al. 2018). We therefore rely on a framework developed by Peters et al. (2008) for conceptualizing access to healthcare, and apply this framework across the three types of services (health, educational and cultural/recreational) addressed in our analysis. The advantage of this framework is that it conceptualizes access to (health) services by defining different dimensions of access – in other words, breaking down what we actually mean by "access" – rather than by conceptualizing different barriers to access.

Under the Peters et al. framework, access is conceptualized according to four domains: 1) Geographic accessibility, the distance or travel time to the service delivery point; 2) Financial accessibility, the cost of services relative to population ability to pay; 3) Availability, having the appropriate service, including needed equipment, material or personnel, available when people need it; and 4) Acceptability, or the responsiveness of the service to sociocultural expectations of the population. The first two dimensions correspond closely to the spatial and economic barriers identified by Pierce, whereas the concepts of availability and acceptability capture both the element of discrimination and broader concerns about service quality and suitability for the local population. By structuring our analysis around this conceptualization of what access means, we are able to better identify not only barriers to service access, but also how the manner in which the service is provided may influence utilization and satisfaction.

[9] Pierce also includes institutional barriers (based on the lack of legal status of slums) and political barriers (lack of effective local representation). However, we do not examine these factors as they are not relevant in the Egyptian context, where slums areas are recognized and categorized by the ISDF (Khalifa 2011), and the government is highly centralized such that local administrative units have little allocative power (Sims 2012).

3.2. Analysis of service access across Greater Cairo

In the first part of our analysis, we apply the Peters et al. framework to analyzing different dimensions of youth access to health, education and cultural/recreational services in informal areas of the GCR. We do so using the 2016 Survey of Young People in Egypt – Informal Greater Cairo (SYPE-IGC), which captured 2,942 young people aged 15-29 from 2,991 households located in about 164 informal urban areas in the Greater Cairo Region. The SYPE-IGC is representative at the level of the three governorates that comprise the GCR: Cairo, Giza and Qalyubeyya (for more information on the SYPE-IGC see Roushdy et al. 2016).

A full module of the SYPE-IGC was devoted to measuring the availability, cost and quality of a large list of services under each of the education, health and cultural/recreational service sectors. The education services included kindergarten, primary, preparatory, and general and vocational secondary education, as well as literacy classes. Under health services, SYPE-IGC asked about governmental health centers, family planning centers, local and private hospitals, and religious or NGO clinics. Finally, the cultural and recreational services covered youth centers, sports grounds/gyms, and cultural/arts centers. Young people were also asked about any problems they experienced in accessing each of the listed services.

Table A1 in the Appendix shows how we measure the four dimensions of service access under the Peters et al. (2008) framework using the SYPE-IGC questions. Geographic accessibility is measured from a group of questions on whether each service is available inside the neighborhood, outside the neighborhood but near, or outside the neighborhood and far. Financial accessibility is measured from a second set of questions on how young people perceived the cost of each service, with the answer options being free, low, acceptable, or high. Finally, we proxy service acceptability through a question on the quality of each service, which provided young people with four options to choose from: good, average, bad and do not know. We further measure different dimensions of availability, acceptability and financial and geographic accessibility from a question that asked young people about the main problems they experienced in accessing each type of service. The answer choices were different for each type of service; the choices and which dimension of access we mapped them to are presented in Table A2 in the Appendix. Respondents could also state that they did not face any challenges accessing the service.

An important point regarding all of the service accessibility measures in the SYPE-IGC is that they capture young people's *perceptions*, rather than objective measures based on distance, costs or standard measures of service quality. We are thus only able to partially capture the dimensions of the Peters et al. framework, which merges both supply- and demand-side factors of service access (Peters, Garg, Bloom, Walker, Brieger, and Rahman 2008). There is an element of access as conceptualized in the framework, and particularly acceptability, that is inherently about the subjective expectations and perceptions of users in relation to the service. However, a more

complete analysis would ideally compare these perceptions to other, objective measures, which are not available in our study context. Although this is an important limitation of the analysis, as discussed above, previous studies have noted the importance of youth perceptions of their neighborhood environment for their other outcomes (Mmari et al. 2014).

We present descriptive analyses of differences in young people's access to the various services by neighborhood wealth level. To do so, we develop a neighborhood-level wealth index to investigate the existence of any inequality in the distribution of services along our four dimensions of access. The neighborhood-level living standard is measured by averaging the wealth index value of all the households residing inside each neighborhood.[10] We then grouped the communities into three wealth groups, based on the three quantiles of the developed neighborhood-level wealth index distribution: poorest, middle and richest.[11] Similarly, neighborhood-level measures of the availability, cost and quality of each of education, health and cultural/recreational services were developed based on the mode of (or the most frequently) reported response of youth residing in each neighborhood.

To further examine inequality in the availability of services across informal areas of the GCR, we summed up the neighborhood-level measures of geographic service availability to develop an index of the total number of services available inside the neighborhood under each of the formal education, health and cultural/recreational sectors. Hence, the formal education index (which includes only primary, preparatory, general secondary and vocational secondary schools) varies from 0 (no schools) to 4 (all four types of schools), the health index varies from 0 to 5, and the cultural and recreation index varies from 0 to 3.

3.3. Case study of Shubra el Kheima

In order to help interpret the results from our analysis of the SYPE-IGC and examine in more detail the nature of different barriers to service access among young people in the context of informal areas, we also present a case study of informal areas in Shubra el Kheima, a part of the Greater Cairo Region located in Qalyubeyya governorate. In the case study we rely on a range of data sources, including official government statistics on poverty rates and availability of services, secondary literature on the area's history and characteristics, data from a qualitative study conducted with young people in Shubra el Kheima in 2016, and an analysis of the SYPE-IGC for respondents in this area. For the latter data source, it is important to note that the SYPE-IGC data

[10] During the SYPE-IGC sample design, the informal areas of each governorate were geographically sorted and then divided into enumeration areas primary sampling units (PSUs) that each contained around 100 households. Hence, large informal areas may have been divided into two or more PSUs. In the neighborhood-level wealth and services accessibility analysis of this paper, we define the neighborhood as the PSU, in order to approximately fix the number of households in the unit of the analysis (or neighborhood).

[11] Household living standards are measured in SYPE-IGC using a wealth, or asset, index, which is constructed using factor analysis based on household asset ownership and housing conditions (for more information see Roushdy et al. (2016)).

is not representative at the level of Shubra el Kheima, since this is a more disaggregated level than the governorate.[12] We therefore interpret the data in a more qualitative manner, in terms of the key problems highlighted by youth and how these do or do not differ from the overall analysis of SYPE-IGC, rather than reporting detailed percentages.

The qualitative data we draw on comes from in-depth interviews with 15 young people aged 18-29 that were conducted in 2016. Half of the interviews were with young men (7) and half with young women (8), of a variety of educational backgrounds and employment statuses. Interviewees were contacted with the help of a local NGO in the Shubra el Kheima area. The interviews covered a wide range of topics related to life in informal areas, including the characteristics of the neighborhood, its benefits and challenges, security issues, social relationships within the community, and comparison with neighboring areas, as well as several vignettes that probed youths' views on discrimination and stigma towards young people such as themselves living in informal areas. In this paper, we analyze the interviews narratively, contextualizing the responses directly related to service provision within young people's overall discussions about life in their communities.

4. Youth perceptions of access to health, education and cultural/recreational services across Informal Greater Cairo

4.1. Geographic accessibility of services

The SYPE-IGC revealed that basic education services were quite commonly available inside young people's informal neighborhoods. Over 78% of young people reported the availability of kindergartens and primary schools inside their neighborhood, and 64.9% reported the availability of preparatory schools. General secondary (42.2%) and vocational secondary schools (30.3%) were relatively less reported inside the informal neighborhoods, meaning that it is more likely that youth need to take transportation to reach their schools once they reach the secondary level (Figure 1). Correspondingly, far distance was mentioned as a challenge in accessing secondary education by about 8% of young people, but less than 3% of young people for lower levels of education (Table A7).

Young people's perceptions of the geographic accessibility of health and recreation services inside their neighborhoods was more varying by the type of service point. Young people considered government health centers (59.7%), clinics related to a religious or a non-profit organization (58.0%) and family planning centers (53.9%) to be the most geographically accessible health services. In contrast, only 31.6% of youth reported that there were public hospitals and 40.6% reported that there were private hospitals inside their neighborhoods. Cultural and recreational services were likewise reported to be much less common in young

[12] There were 20 PSUs in the SYPE-IGC from within Shubra el Kheima kism 2, within which 241 eligible youth aged 15-29 were surveyed in the SYPE-IGC. Our analysis is based on the responses of these youth.

people's neighborhoods. A little over half of young people reported the accessibility of youth centers and sports grounds or private gyms in their neighborhoods, and under 20% said that there were culture and arts centers (Figure 1).[13] The distance to the service point was not commonly mentioned as a main challenge young people faced in utilizing health or cultural/recreational services (Table A7).

Although geographic accessibility of services was quite high for educational and most health services from the perspective of individual youth, aggregated at the neighborhood level, there were still substantial gaps in accessibility. As shown in Table 1, according to young people's responses, only 27.7% of the informal neighborhoods of Greater Cairo had schools for all formal education levels (primary, preparatory, and general and vocational secondary education) inside the neighborhood. Similarly, relatively few neighborhoods were reported to have all five health services (18.5%), or all three cultural and recreational services (14.1%) examined in the SYPE-IGC. It is also worth noting about a tenth of informal neighborhoods did not have any formal educational or health service points, and nearly a third had no access to any cultural or recreational services.

In addition, Table 1 points to the existence of a clear inequality in the geographic accessibility of services by neighborhood wealth status, particularly for education and health services. Whereas 37.5% of the richest neighborhood had all four levels of formal education schools inside the neighborhood, only 20% of the poorest neighborhoods did. Also, the poorest neighborhoods were almost twice as likely (14.4%) to have no access to any formal schooling services in the neighborhood as compared to their richest counterparts (7.8%). The inequality in the distribution of the education services was most pronounced at the preparatory and secondary levels (Figure 2A); 52.9% and 39.4% of the richest neighborhoods had general and vocational secondary schools inside the neighborhood, respectively, as compared to only 34.2% and 22.4% among the poorest neighborhoods.

Despite the almost equal presence of governmental health centers and religious or NGO health services across neighborhoods of different wealth statuses, other health services varied substantially by neighborhood wealth level (Figure 2B). For example, only 25.1% and 27.0% of poor neighborhoods had local hospitals and private hospitals, respectively, inside the neighborhood, compared to 38.5% and 57.8%, respectively, among the richest neighborhoods. This contributed to an overall wealth gradient in the geographic accessibility of health services (Table 1); although the percentage of neighborhoods with no health services was fairly consistent across the neighborhood wealth index, young people in the poorest neighborhoods were considerably less likely to report that four or five of the health service types were available inside

[13] Across service types, there were only minor differences in perceptions of the availability of services by gender. There was some variation across the three governorates comprising GCR (Table A3 and A4 in the Appendix), but the governorate-level analysis likely masks greater differences between areas within governorates.

the neighborhood. Although geographic accessibility of cultural/recreational services was much lower overall, young people in the poorest neighborhoods were also considerably more likely to report that none of the services were available inside their neighborhood (Table 1).

Table 1: Geographic accessibility of services by type and neighborhood wealth

	Neighborhood Wealth Index			
Total number of services available	**Poorest**	**Middle**	**Richest**	**Total**
Education services				
0	14.4	11.1	7.8	11.0
1	18.2	14.7	7.9	13.5
2	33.1	29.0	30.5	30.8
3	14.4	20.1	16.3	17.0
4	20.0	25.2	37.5	27.7
Health services				
0	10.3	8.9	9.8	9.6
1	21.3	19.8	19.2	20.1
2	23.0	20.9	12.7	18.8
3	28.4	21.1	16.5	21.9
4	6.1	11.9	14.9	11.0
5	11.0	17.4	26.9	18.5
Cultural and recreational services				
0	35.7	26.2	23.5	28.4
1	32.9	37.7	35.4	35.3
2	17.2	21.7	27.6	22.2
3	14.3	14.4	13.5	14.1
Number of neighborhoods	97	100	101	298

4.2. Financial accessibility of services

Turning to financial accessibility, the cost of most education, health and cultural and recreational services was perceived as acceptable by young people in the SYPE-IGC. Except for private hospitals, health services were the most frequently reported services by young people (over 98%) as having acceptable, low or no cost (Table A5). The one exception was the cost of private hospitals, which was considered to be high by about two-thirds of young people. Similarly, over 80% of young people reported that the cost of each education service was either acceptable, low or free, as well as the cost of youth centers and cultural/arts centers. By contrast, the cost of sports grounds/gyms was reported as high by about a third of young people (Table A5). Given that services were widely perceived to be of low cost, perhaps unsurprisingly there was no clear variation in perceived affordability of educational or health services by neighborhood wealth level (results not shown). Cost was also not mentioned as a main challenge in accessing services, except for private hospitals. On the other hand, the cost of group lessons (extra-curricular

tutoring) was noted as a main challenge in accessing the preparatory through secondary levels of education (Table A7). These results generally show a clear difference between publicly provided and privately provided services in Egypt, as well as the role of informal or shadow payments for education services, a point we return to in the discussion.

4.3. Acceptability (quality) of services

In contrast to the high reported rates of geographic accessibility and affordability of services, many young people had negative perceptions about the quality of the services in their neighborhoods (Table A6). It was apparent that perceived quality ran opposite to the cost dimension of accessibility, with higher cost being associated with better perceived quality of service. Thus, perceptions of quality were generally low for low-cost public services and somewhat higher for the more expensive privately offered services. In terms of education, the quality of kindergarten services, which are generally provided by the private sector, was the most frequently listed as good by young people (29%), followed by that of primary education, then preparatory and secondary education. Vocational secondary education had the lowest reported levels of quality, with fewer than 10% of young men and women considering them of good quality.

Similarly, the majority of young people reported an average or a bad quality for local hospitals (over 74%), governmental health centers (over 63%), religious or NGOs clinics (over 62%) and for family planning services (over 45%). The private hospitals, which were the most expensive service according to young people (Table A5), were considered of good quality by 43% young people. Although higher than the other types of health services, this indicates that many young people were still not satisfied with the quality of (relatively expensive) private hospital services. Young people, and particularly young women, were not very familiar with the quality of many of the cultural and recreational services; three quarters of young women did not know about the quality of cultural and arts centers, and over 50% could not report on the quality of either sports grounds/gyms or youth centers (Table A6). This is indicative of the degree to which young women are generally marginalized in terms of accessing leisure and sports activities, even those existing within their neighborhoods or nearby areas. Sports grounds/gyms, which were also considered to be the most expensive recreational service, were perceived as of a good quality by only 24% of young men, followed by youth centers (17%) and cultural and arts services (10%).

Surprisingly, as Figure 3 demonstrates, there was not a clear gradient in the perceived quality of the available services across the three neighborhood wealth groups. Even among young people in the wealthiest neighborhoods, perceptions of service quality were low overall. This may reflect poor quality of services across informal areas, even the relatively better off ones, or differential expectations of young people in better off areas.

4.4. Availability of services

Young people's low perceptions of the quality of services in their areas was also reflected in their discussions about the main challenges they faced in accessing the different services, almost all of which were related to service availability (having the right type of service available to those who need it, when they need it).[14] In terms of education, the most commonly mentioned challenge with lower levels of education (kindergarten and primary) was lack of teachers (Table A7). By the preparatory and secondary levels, young people more frequently noted the poor level of teachers, as well as the cost of tutoring, which was discussed above. From the primary through secondary levels, crowding in the classroom was also frequently noted as a challenge.

The challenges young people mentioned in accessing public health services (government health centers, family planning centers, and local hospitals) were also nearly all related to availability of staff and needed medical supplies, including lack of doctors, lack of medicine and medical equipment, and long wait times (Table A7). Poor treatment by staff (an element of acceptability) was also mentioned by 10-15% of young people for most types of public health services. Although the challenges in terms of staff and equipment availability were mentioned, to a lesser degree, for religious and NGO clinics, young people did not mention interpersonal treatment as a problem in these clinics. In contrast, as noted above, cost was overwhelmingly mentioned as the main challenge of private hospitals. The two main issues mentioned in accessing sports-related services were also related to availability: the lack of trainers in youth centers and sports grounds/gyms.[15] The lack of services for girls was also mentioned by 10% of young women as a problem in accessing youth centers.

5. Case study of youth access to services in Shubra el Kheima

The results from the SYPE-IGC demonstrated that although there is a wealth gradient in the geographic accessibility of services in informal areas of Cairo, young people generally perceive health and education services to be present and free or low cost, but of poor quality. Although the same was true for cultural and recreational services, the large percentage of young people who did not know about these types of services also suggests that they do not play a large role in young people's lives or experiences in their communities.

In order to better understand the context of young people's perceptions about the services available in their neighborhoods, we now turn to a case study of Shubra el Kheima. Shubra El Kheima is a city located in Qalyubia Governorate, which is part of lower Egypt. Although Shubra el Kheima is independently one of the largest cities in Egypt, with the process of urban

[14] Not all young people had experience using the services mentioned; hence, a missing response was quite prevalent in this question.

[15] Very few young people, the majority of whom were men, reported problems related to using the cultural and recreation services. This was in part due to a high percentage of youth reporting that they did not know about these services.

expansion it has become a part of Greater Cairo Region. Geographically the area is situated in the northern part of GCR (Figure 4), and is connected by an extensive road network as well as metro and other forms of public transportation to the rest of the GCR. Typical of informal areas on the outskirts of Cairo, Shubra el Kheima is extremely dense, with a population of 1,275,037 inhabitants in an area of 30.1 kilometers squared (42,360 inhabitants per square kilometer) (Ministry of Housing, Utilities, and Urban Development 2017).

5.1. History and growth of Shubra el Kheima

In the past Shubra el Kheima was a small village called Shebro, a Coptic word meaning "the hill." Its name was changed to Shubra el Kheima because there was a tent that people put to know the rising of the Nile water (Rizk 2015). Originally an agricultural area located about 30 kilometers North of Cairo, by the 1930s Shubra el Kheima had begun to be affected by the growth of the textile industry in Egypt, and by the 1940s it had become a major center for the textile industry due to its proximity to Cairo, location in a traditionally cotton-producing area, and access to the Cairo – Alexandria railway line. The area continued to experience industrial growth in the 1960s, and was considered third after Cairo and Alexandria in terms of the number of factories and workers (Bulbul and Neguib 2000). Focusing on the garment industry, one World Bank report noted the mixed nature of Shubra el Kheima's industrial sector in the early 2000s, with large numbers of relatively small establishments that shaped the economic and workforce profile of the area, as well as a few very large public conglomerate industries (Bulbul and Neguib 2000). Although the area continues to host an industrial cluster, today, the main economic activity in Shubra el Kheima is commerce, construction and services, which comprise 63% of economic activity in the city, with industry comprising 34% and agriculture 2.6% (Ministry of Housing, Utilities, and Urban Development 2017).

The industrialization and growth of Shubra el Kheima has resulted in a rapid transformation of the area from agricultural to urban over the past 40-plus years. In 1950s and 1960s, the government instituted a program to provide housing for the workers of public sector factories by building housing blocks near to the factories. The policy was stopped in the early 1980s, when the last expansion of the public housing estates took place. The factories also attracted many people to buy lands and build their own houses in the area, as private companies did not provide housing for their workers. The combination of demand for housing, strict laws for evicting tenants and the eventual halt of public housing projects contributed to the expansion of unplanned areas based on the rate of conversion of land from agricultural to residential usage. The growth of these areas was particularly rapid in the 1970s with rural to urban migration; during this time, Shubra el Kheima was the fastest growing housing area in the GCR (Bulbul and Neguib 2000). The urbanized area increased from 619 acres in 1960 to 2,356 acres in 1985, 3,856 acres in 2000 and to 4,617 acres in 2012, an increase of 76.9 percent annually over the period 1960- 2012 (Rizk 2015).

Since the 1940s Shubra el Kheima has thus primarily been inhabited by workers and their families, who were drawn to the industrializing area. The population of Shubra el Kheima has correspondingly experienced a rapid growth in the past 40 years. In 1976, the population was 394,223, and nearly doubled to 714,594 by 1986. A decade later, in 1996, the population had increased to 870,776, by 2006 it reached 1,025,569 (Rizk 2015). As noted above, the current population is over 1.2 million, a growth rate of 1.2% annually since 1976 (Governorate of Qalyubeyya n.d.).

5.2. Characteristics of the neighborhood and basic infrastructure

Shubra el Kheima city is divided into two districts (kisms): Kism Shubra El Kheima 1 (481,936 inhabitants) and Kism Shubra El Kheima 2 (679,578 inhabitants) (Governorate of Qalyubeyya 2018). Data from 2013 put the poverty rate (percent of the population that is poor) at 24% in Kism 1 and 26% in Kism 2 of Shubra el Kheima; analyses of poverty across the GCR have shown that while poverty rates are highest in the southern parts of the city, due to population density, the northern parts of Cairo and southern parts of Qalyubeyya governorate (which includes Shubra el Kheima) actually have the highest number of poor (Tadamun 2015). As of 2007, the combined city of Shubra el Kheima has the largest number of informal areas in Qalyubeyya governorate by the ISDF classification and contains 20 informal areas, including 15 in Kism 2 and five in Kism 1 (Table 2). In addition, there are 12 unsafe areas under the high pressure electricity network which represent 80% of unsafe areas in Qalyubeyya with a total capacity of 3,423 housing units (Governorate of Qalyubeyya Environmental Affairs Office 2007).

Table 2: Informal areas in Shubra el Kheima

District	Number of informal areas	Estimated area (km^2)	Number of families (2005)	Population density (residents/km^2; 2005)
Kism 2	15	16.0	113,261	35,332
Kism 1	5	3.3	71,253	106,456

Source: Environmental Assessment of Qalyubeyya Governorate (Governorate of Qalyubeyya Environmental Affairs Office 2007)

As shown in Table 3, the majority of households in Shubra el Kheima have been connected with the public basic infrastructure services of electricity, water, and sanitation. This represents an improvement in coverage rates; according to the 1996 census, 84% of households in the area were connected to the electricity network, 72% to the sewage system and 88% to the public water system (Bulbul and Neguib 2000). However, previous studies indicate that there are continued problems with the quality of these services. For instance, the sanitation network in Shubra el Kheima is not only for the liquid residues, but also includes garbage (solid waste). In combination with the increased population density in the city, this causes a cracked water pipes and infiltration of sewage to the underground and pollution of groundwater and the soil. There are also problems related to water pressure in the highest floors in the houses, where the pressure

of the system is not sufficient for water to reach the higher floors (Rizk 2015). These problems with the quality of basic infrastructure provision in Shubra el Kheima are similar to those noted in other informal areas of Cairo (Khalil et al. 2018).

Table 3: Basic infrastructure coverage in Shubra el Kheima

District	Water connection	Sewage connection	Electricity connection
Kism 1	96	95	97
Kism 2	95	94	95

Source: Egypt Census 2006 (CAPMAS 2006) cited in Rizk (2015)

The qualitative participants' discussions of the characteristics of their neighborhood similarly highlighted the poor quality of basic infrastructure despite the high coverage of the public systems. Many participants used their knowledge of other formal urban areas or areas that are of higher socioeconomic status as a reference for their comparisons when they mentioned their perceptions of their neighborhoods in Shubra El Kheima. Compared to these other areas, participants characterized their neighborhoods as chaotic, and less planned or organized. Most basic services are available, but lack in terms of quality and consistency. While most houses are connected to the water, sanitation and electricity networks, services are often interrupted, as water supply could be intermittent and power suffers from frequent cuts. Participants also noted that sanitation networks are old, and sewage often leaks into the surface of the narrow road, in a manner that obstructs movement of individuals and requires manual intervention. Other issues mentioned included lack of public transportation, and ineffective trash collection from the streets that contributed to the accumulation of garbage. This increased participants' concerns about pollution and sickness. Some had safety concerns due to poor building standards, as they feared that many buildings could collapse due to their bad foundations that did not follow safety standards. Others noted that part of the neighborhoods lack proper lighting during the night, which caused safety and security concerns.

5.3. Health and social services

Data from the SYPE-IGC, which again are not representative at the level of Shubra el Kheima but can provide a qualitative picture of youth views on service availability, indicated that young people's perceptions of the geographic and financial accessibility of education, health and cultural/recreational services, as well as the quality of those services, were very similar to the overall perceptions of SYPE-IGC respondents. The area thus seems typical in terms of youth perceptions of service access on the level of informal areas. By comparing the SYPE-IGC results with other sources of data about services in the area, we can thus gain a better understanding of the factors that may shape young people's perceptions of access to these different services.

Official data show that there are 298 public schools in Shubra el Kheima, with an overall student ratio of 51.4 students per class and 27.1 students per teacher. The schools include 102 primary schools, 65 preparatory schools, 27 secondary schools, and 74 public pre- primary schools

(Governorate of Qalyubeyya 2018c). Although the SYPE-IGC results generally showed fairly high levels of perceived geographic accessibility of schools, participants in the qualitative still thought that schools were too far from students' homes. However, as with the quantitative, the primary concerns regarding education were in terms of quality and hidden costs. Participants noted that tutoring places a high financial cost on households and costs increase as students passes higher grades. In the schools, teachers may give higher priority for students who are enrolled in their private tutoring sessions, either in informal private centers or in home based private tutoring. Students could be exposed to violence, mistreatment, discouragement, use of bad language and abuse from teachers in public schools, and sometimes even during the private tutoring lessons. The prevalence of tutoring acts as a barrier for those enrolled in secondary education who want to get into universities. Participants expressed that the community has general expectations that students from the area do not have the same chances to join high status faculties in comparison to students from other areas, if they would be able to pursuit university education at all.[16]

Very few participants thought that the quality of education in public schools was acceptable. Furthermore, they said that public schools lack enough resources to solve different issues. The classes are crowded, buildings are aesthetically repellant, and they are not clean. School administrations were said to not be responsive to complaints about their appearance, cleanliness or safety. Participants also said that there is a lack of supervision of students. Therefore, they may not attend regularly, or engage on outside activities, and some could be exposed to more violence. On the other hand, a few participants gave examples of teachers who provide quality education for the students and empathize with them, going extra miles to help them pass to the next grade and obtain terminal certificates that could help them with better employment opportunities. As for private schools, they provide higher quality education, at much higher costs.

In terms of health services, there is one public hospital in Shubra el Kheima, which has 120 beds, one central hospital, which has 41 beds, and one health insurance hospital, which has 468 beds. There are also 61 private hospitals in Shubra el Kheima.[17] At lower levels of the healthcare

[16] In Egypt, students are assigned to university faculties based on their grades in the general secondary school exam.

[17] The government is the main provider of health services in Egypt, and mostly by the Ministry of Health and Population (MOHP). Other providers include quasi-governmental institutes such as the Curative Care Organization (CCO), and Health Insurance Organization (HIO) that are autonomous yet in practice they operate under the MOHP. Furthermore, there private healthcare providers, and non-governmental organizations (Ministry of Health and Population, El-Zanaty and Associates, and ICF International 2015). Public hospitals are general hospitals that contain all medical specialties, and are open to the public. They are at a higher central level in comparison to district hospitals; the latter serve populations between 50-100 thousand in a designated area, and they refer patients to general hospitals. Public hospitals should generally contain more than 200 beds (Ministry of Health and Population, El-Zanaty and Associates, and ICF International 2015). Health insurance hospitals operate under the quasi-governmental/parastatal Health Insurance Organization and serve a more limited population. The scope of coverage includes government employees, some private sector employee pensioners, widowers, students of school age, and

system, there are ten health centers and 19 family planning centers (Governorate of Qalyubeyya 2018b). Participants in the qualitative mentioned that primary healthcare units and centers provided basic services at low cost, yet services do not include the treatments. Drugs and treatments are not always available at the nearby pharmacies, and sometimes they are costly. Hospitals also lack needed equipment and specialties and participants thought that they provide more of a primary level of care. Inpatient care is lacking, and usually all beds are occupied, thus patients are referred or had to seek care in other hospitals. Furthermore, physicians are not always available. These results were again consistent with the challenges SYPE-IGC respondents mentioned in accessing healthcare services, which were primarily about the availability of medicine, equipment and staff.

Participants also had poor perceptions about the quality of care provided by public hospitals, as in the SYPE-IGC, and provided a heavy critique of healthcare providers' low capacities and mistreatment of patients. According to the participants' opinions, healthcare providers ignore patients for long durations after which they receive only basic care. Participants mentioned that there is a lack of proper clinical management; physicians usually provide diagnosis on the spot without sufficient investigations or testing, if any at all. In some occasions, they mistreat or abuse patients, scream at them, or ignore them altogether. One participant in particular expressed very negative views about physicians, as she thought that due to the large numbers of patients, and the low availability of health facilities, physicians consider patients' lives as cheap, less important and somehow replaceable. Sometimes care is obstructed until routine procedures related to payment or insurance or completed. Therefore, a parent had to be present to take care of these procedures. Participants mentioned the lack of accountability mechanisms as one of the factors that allow healthcare providers to act indifferently or provide less than optimum care.

In comparison to their negative perceptions of public health facilities, participants said that private clinics and hospitals were more available. They provide personalized care of higher quality, yet they are extremely costly. There was also a perception of inequality among participants due to the better care provided by the physicians in their private clinics, as compared to the care provided by the same physicians when they are working inside the public hospitals.

Finally, Shubra el Kheima has 18 youth centers and four sports clubs as well as 17 public gardens (Governorate of Qalyubeyya 2018a). However, it was clear from the discussions of the qualitative respondents that the majority did not use the public spaces that do exist and these spaces did not factor into their usual social or recreational activities. Social and recreational activities that were mentioned by young men included visiting friends, hanging out in coffee shops or in the streets. One participant mentioned going occasionally to the gymnasium and two

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neonates. In 2002, eligible beneficiaries were estimated at 30 million out of Egypt's the total population (Ministry of Health and Population, El-Zanaty and Associates, and ICF International 2015).

played soccer; one inside a public club, the other in a private one. Young women also mentioned visiting relatives and friends as part of their social activities, yet they barely mentioned outdoor activities inside their neighborhoods. Local markets were mentioned as places that female participants might frequent. Only one participant mentioned going to a nearby public park. Many mentioned visiting other sites for leisure activities, but all were outside Shubra El Kheima. The lack of awareness or use of public spaces inside the area among the qualitative participants is consistent with the findings of the SYPE-IGC that many young people did not have opinions on the accessibility of cultural and recreational services in the area, or in other informal areas of the GCR, likely because these are not services that they have considered using.

5.4. Service access in context

Although young people expressed a high level of dissatisfaction with the quality of health and education services in Shubra el Kheima, it was also clear from their discussions about their communities that they did not see the improvement of service provision in and of itself as a main priority for the neighborhood. Rather, their primary concerns were with insecurity, marginalization and overall neglect of their neighborhoods. These are all dimensions of the neighborhood that are likely to affect young people's perceptions of services and service utilization, but also reflect broader social, political and economic concerns about their residential areas.

One of the main themes that emerged from the interviews in general was young people's perceived sense of insecurity and fear in their area. There were many occasions of exposure to physical violence, break-ins and drug use in the communities. Young women in particular mentioned there are times or specific areas where they lack sense of security or safety, such as at night, and remote or dark areas that are less populated or have male gathering places such as coffee shops. This lack of a sense of security could affect young women's access to more distant services, such as higher education or health services.

Participants also criticized the lack of security response to drug use and incidents of violence, saying that the authorities barely respond to complaints of citizens, and often do so in an untimely way, so community members usually depended on themselves to solve conflicts. Faced with a general lack of intervention in the neighborhood, the community initiated different solutions that built on the existing social networks inside each area. Despite the sense of insecurity, most of the participants perceived a sense of a close community with tight social networks. People know each other, visit and show support in the different occasions, and try to solve common issues together. Some participants gave examples of small-scale community initiatives that tried to deal with problems in services that should be publicly provided, such as trash collection and purchasing clean water. However, the sustainability of these initiatives was unclear and they may pose additional costs for residents.

Another factor underlying much of young people's discussion of their neighborhood was a sense of stigma and discrimination, resulting in neglect of the development of their area. There was a deep sense of inequity when young people compared the status of services offered outside Shubra el Kheima, and those inside, especially in the cases of education and health services. Participants expressed their desire for high quality services that are fair and comparable to those provided in other areas.

Many participants mentioned corruption inside the different facilities, which created a need of bribery or being highly connected to service providers as necessities to access the services., One of the consistent factors mentioned across services was related to lack of accountability in public service provision; the absence of response from governmental authorities, lack of consistent application of regulations or law enforcement, low accountability over front-line service providers, and lack of coordination with community members. In sum, although participants perceived the government as the main actor responsible for improving living conditions and services inside their neighborhood, they had little faith in governmental authorities, low expectations about the quality of the available services, and did not think there was any reason that this would change soon.

5. Discussion

The vision of sustainable urban development laid out in the SDGs is one of holistic development that addresses the social, environmental, health and economic dimensions of urban development in addition to basic infrastructure needs. Sustainable urban development is also central to several other SDGs related to equality, poverty, and addressing deficits in education, health and other outcomes affected by basic services. In Egypt, as well as many other LMICs, the development of informal or slum areas is critical to achieving this urban development agenda, as well as to addressing vulnerability among youth and other segments of the urban population.

As the majority of literature on services in informal areas of Egypt has focused on basic infrastructure, in this paper we aimed to explore youth perceptions of access to different types of health and social services. Using a framework that distinguishes different dimensions of service access, we find that young people generally perceived health and education services to be geographically accessible and affordable but to be of low quality. Our finding that quality was a main concern among young people is consistent with other studies that have noted service quality to be a key challenge in informal areas in general (Khalil et al. 2018) as well as on a systemic level of education in Egypt (Assaad and Krafft 2015; Elbadawy 2015; Sieverding, Krafft, and Elbadawy 2017).

The types of quality concerns that young people expressed about health and education services were wide-ranging. Complaints about health services tended to concentrate in the domain of availability, indicating that although health facilities may be present in their neighborhoods,

young people do not see these facilities to be adequately equipped or staffed to meet their needs. Poor interpersonal treatment by providers was also an important concern, which has been noted in healthcare provision in numerous LMIC contexts. In education, young people's concerns over quality ranged from poor interpersonal treatment, lack of facilities, distance to higher levels of education, and consistently the costs of private tutoring. Public education is guaranteed as free by the Egyptian constitution. However, the low quality of the public education system, among other factors, has contributed to the development of an extensive parallel system of paid private tutoring that effectively advantages the wealthy who can invest in tutoring (Assaad and Krafft 2015). Our results agree with other research in suggesting that the parallel tutoring system is an important part of (perceived) educational quality that contributes to (perceived) inequality in the educational system.

Young people's perceptions of service cost and quality are also illustrative of a divide between public and private service provision. This was particularly apparent in the relatively higher, although by no means entirely positive, assessment of the quality of private hospitals as compared to public health facilities. The question of parallel systems and shadow costs also came up in young people's discussions of health services, although in a different manner than with education. Most of the services in governmental health facilities in Egypt are free, while some are offered for user fees (Rashad and Sharaf 2015). Yet out of pocket expenditures constitute 57% of health expenditures (Saleh et al. 2014). This indicates that, as with education, substantial private expenditures parallel the ostensibly free public system. In the case study of Shubra el Kheima, participants noted the cost of medications and treatments that had to be procured from the private sector because they were not available in the public sector, as well as the issue of doctors providing different standards of care in their private versus public practices. Such differential standard of care in private practices parallels the issue of private tutoring, which is often provided by young people's own teachers (Sieverding, Krafft, and Elbadawy 2017). The duality in the quality of publicly and privately provided services – even when offered by the same provider – was an important part of young people's sense of inequality and marginalization of their neighborhoods.

Our findings also indicated that young people in informal areas do not frequently use, and do not have much knowledge of, cultural and recreational spaces in their neighborhoods. It is difficult to say the degree to which this is due to the low accessibility and quality of public spaces, other social constraints (such as lack of hours for women), or young people's own habits and preferences regarding social activities. However, given the importance of public space both to the SDGs agenda for sustainable cities, and for other outcomes such as physical activity and community engagement, this is a deficit in service provision in informal neighborhoods that, while often overlooked in the focus on other services, also plays an important role in overall community wellbeing.

Finally, our findings regarding a neighborhood-level wealth gradient in service accessibility are mixed. There was a wealth gradient in perceived geographic accessibility of services when viewed from the perspective of the sector (education, health). A recent study of services across the GCR based on geographic data also found inequalities in service distribution. The authors noted that, while resources should be devoted to placing services in the most deprived neighborhoods from a planning perspective, in reality spending on local programs tends to be higher in more privileged areas of the city (Tadamun 2015). On the other hand, we found no wealth gradient in perceived cost or quality of services, which is likely related to the formally free nature of public services and the systemic issues with service quality across Cairo and the country. Perceptions of service quality may also vary according to expectations, and if expectations vary systematically by wealth level, this could mask other differences in perceived service quality.

Egypt's most recent Voluntary National Review of the SGDs in 2018 shows slow but positive progress in the reducing number of unsafe and unplanned slums. The review also addresses slums upgrading, primarily from the perspective of basic infrastructure (Ministry of Planning, Monitoring, and Administration reform 2018). However, in addition to the vision of holistic urban development contained in the SDGs, the SDGs highlight the need for participatory urban planning that engages with civil society and community. There is little evidence of such approaches being adopted; although residents of informal neighborhoods do take some community-based measures to address gaps in service provision (see also Khalil et al. 2018) these were not within the framework of systematic community engagement with the public authorities that should be providing those services. Young people also did not express much hope or sense of personal investment in any upgrading efforts that might be made in their areas. In order to achieve more sustainable urban development in Cairo's informal areas, more participatory approaches that engage young people are thus needed, in addition to a more comprehensive view that addresses critical gaps in health and social services along with basic infrastructure.

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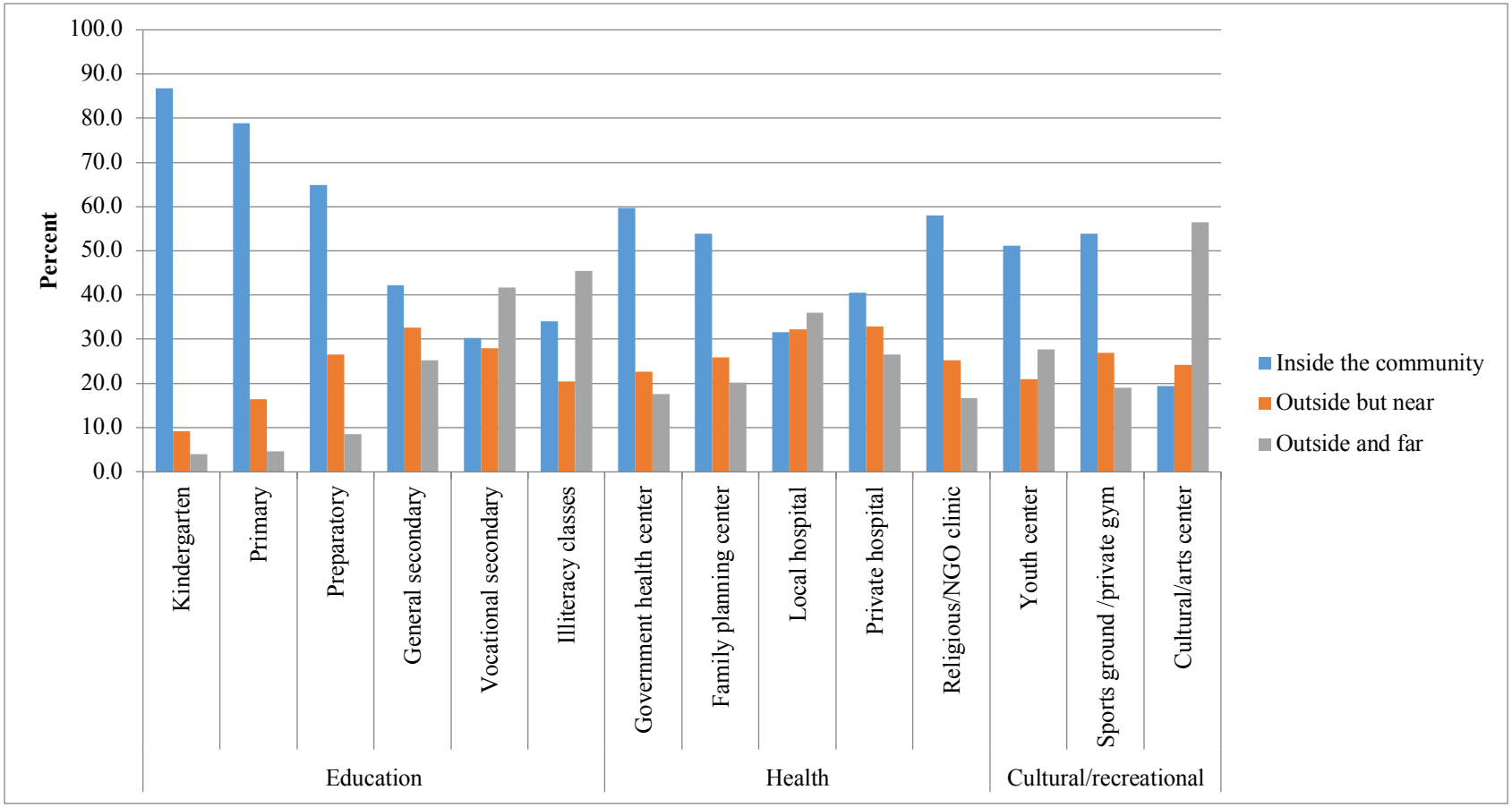
Figures

Figure 1: Youth perceptions of the geographic accessibility of different education, health and cultural/recreational services in their informal neighborhoods, 2016



Source: Authors' calculations from SYPE-IGC 2016

Figure 2A: Neighborhood level geographic accessibility of education services, by neighborhood wealth status

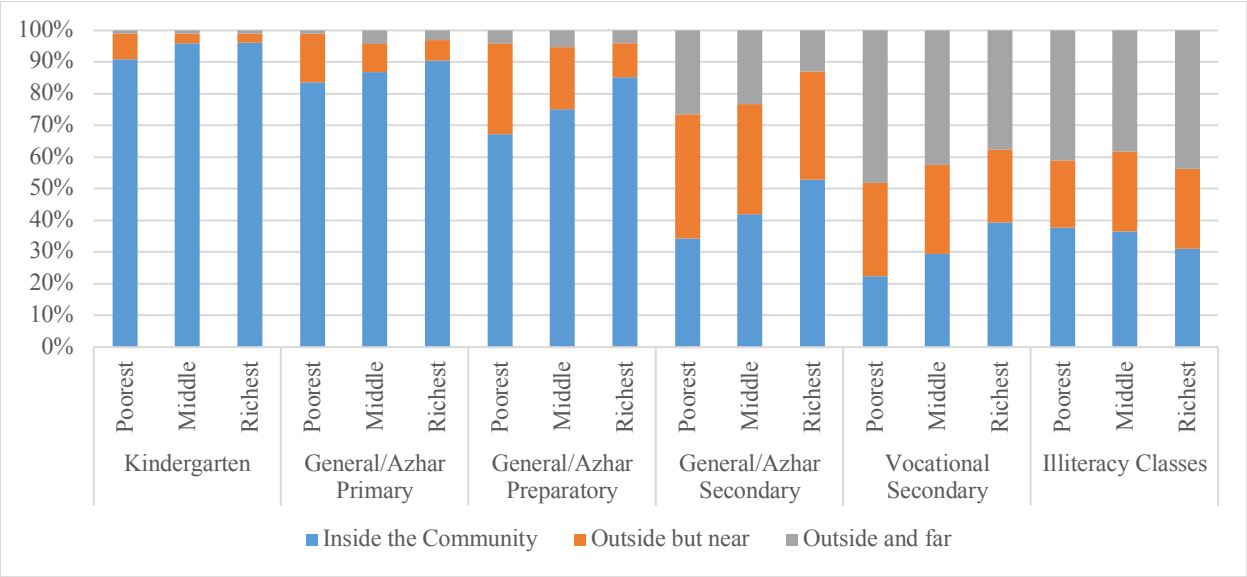


Figure 2B: Neighborhood level geographic accessibility of health services, by neighborhood wealth status

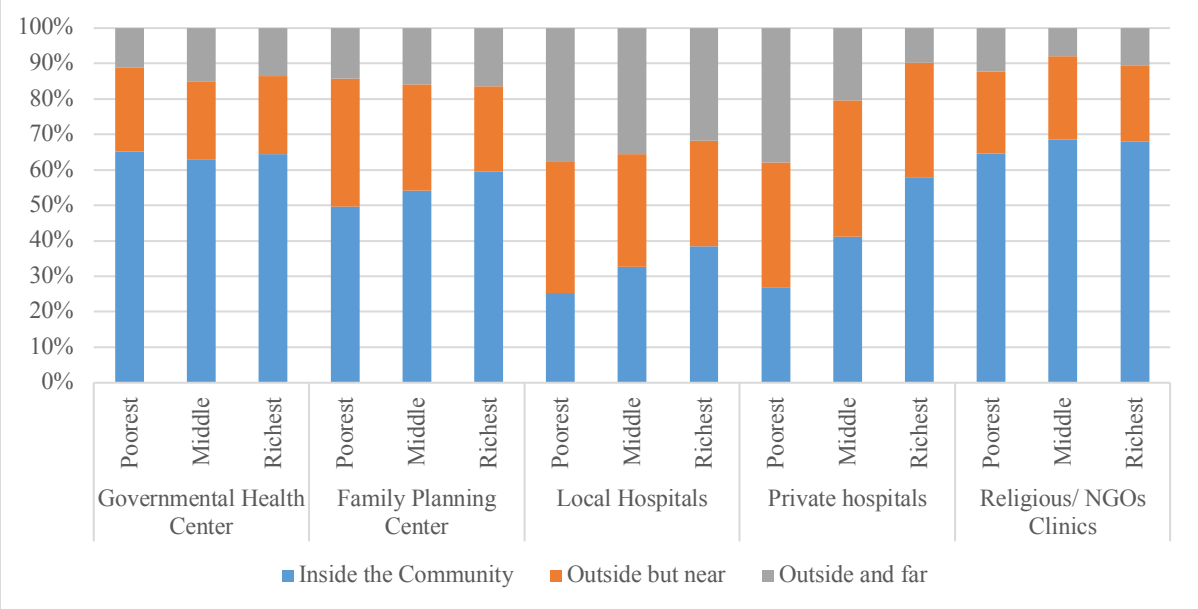
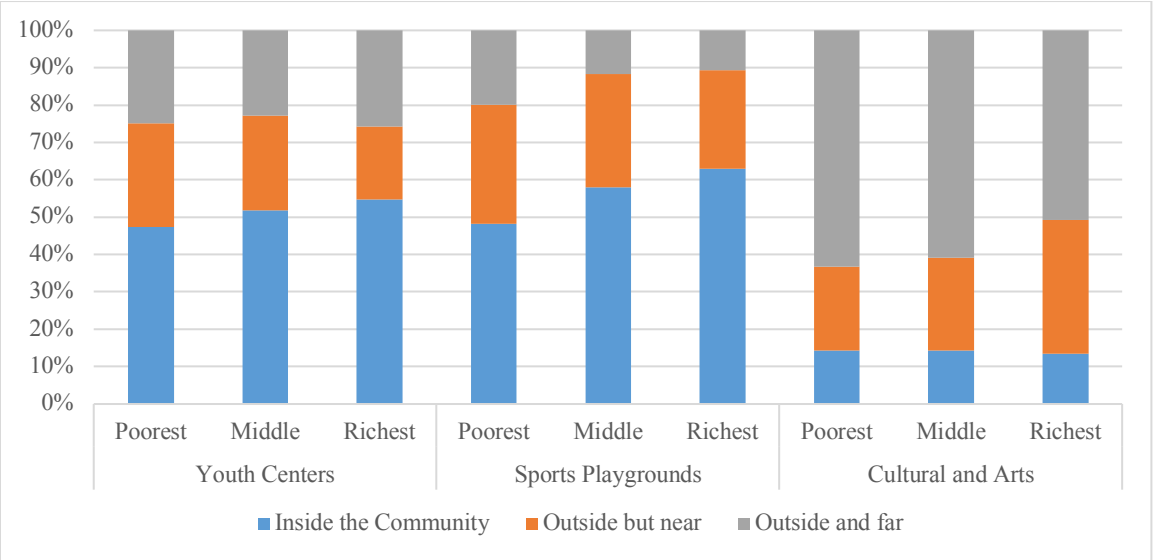


Figure 2C: Neighborhood level geographic accessibility of cultural/recreational services, by neighborhood wealth status



Source: Authors' calculations from SYPE-IGC 2016

Figure 3A: Neighborhood level acceptability (quality) of education services, by neighborhood wealth status

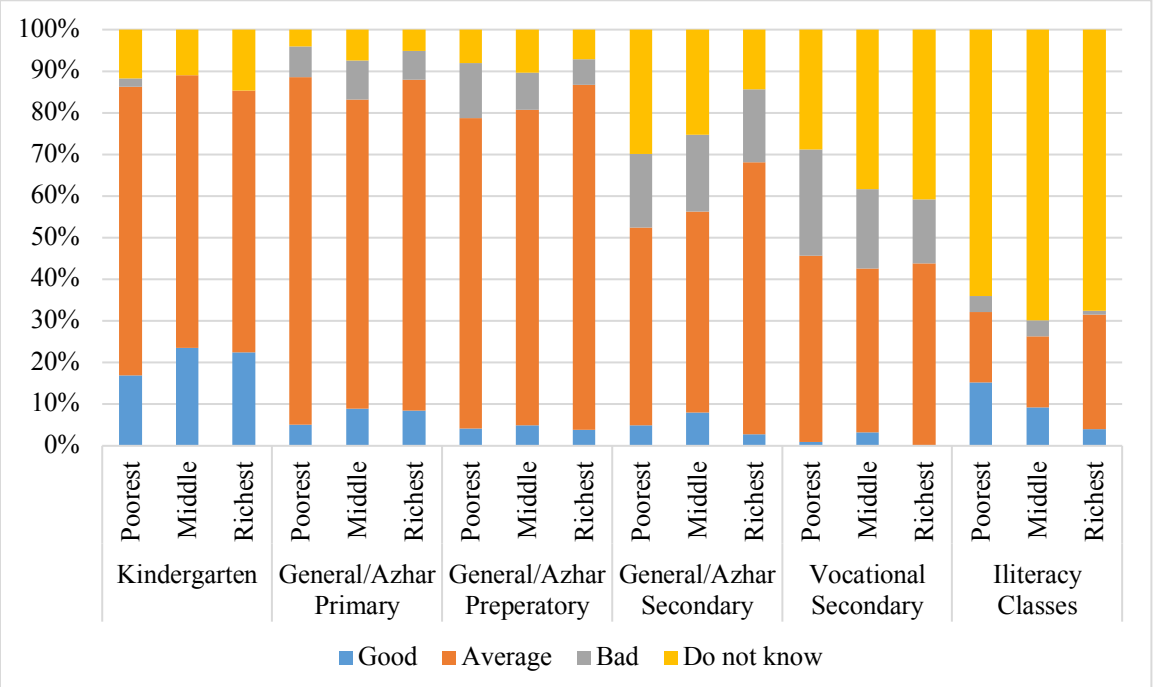


Figure 3B: Neighborhood level acceptability (quality) of health services, by neighborhood wealth status

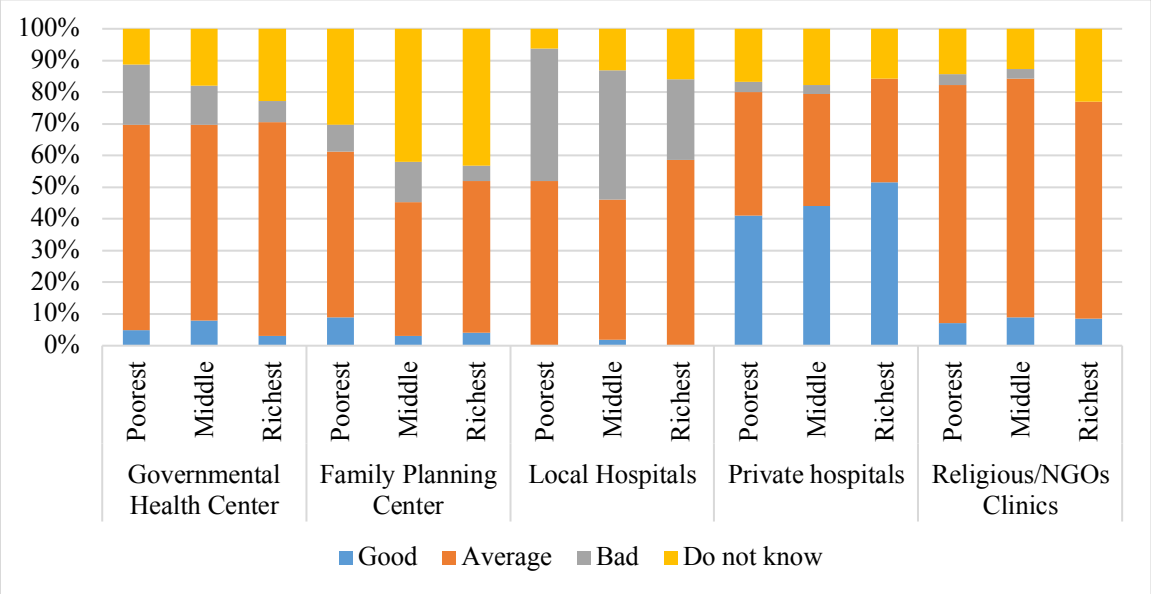
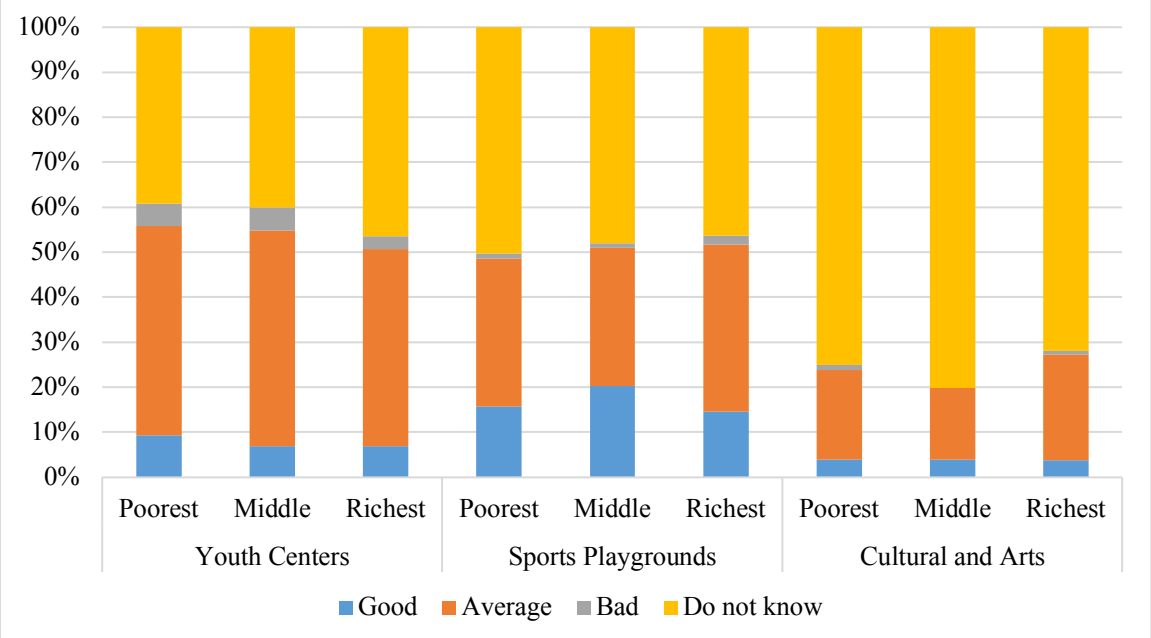
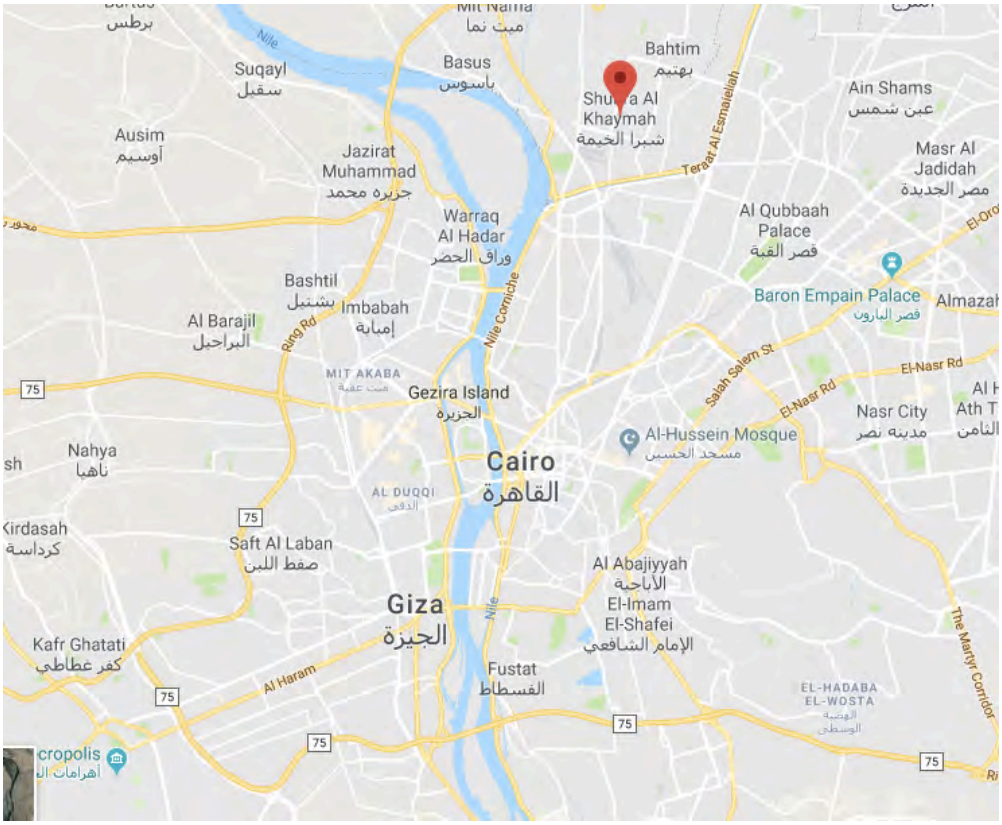


Figure 3C: Neighborhood level acceptability (quality) of health services, by neighborhood wealth status



Source: Authors' calculations from SYPE-IGC 2016

Figure 4: Location of Shubra el Kheima within GCR



Source: GoogleMaps

Appendix 1

Table A1: Measures of service access according to the Peters et al. (2008) framework in the SYPE-IGC

Question	Dimension of access			
	Geographic accessibility	**Availability**	**Financial accessibility (affordability)**	**Acceptability**
Is the service inside the neighborhood, outside the neighborhood close by, or outside the neighborhood but far?	X			
How do you view the quality of this service? (Good, average, bad, or do not know)				X
How do you view the cost of using this service? (High, acceptable, low, or free)			X	
What are the most important challenges you face in using this service? (Selected answer choices)	X	X	X	X

Table A2: Mapping of answer choices regarding challenges faced in using different services to the Peters et al. (2008) framework

	Corresponding answer choices to the question "What are the most important challenges you face in using this service?		
Dimension of access	**Healthcare**	**Education**	**Culture/recreation/ sports**
Geographic accessibility	distance	distance	distance
		lack of appropriate transportation	
Availability	long waiting times	lack of teachers	unavailable for girls / no designated times for girls
	insufficient number of physicians and nurses	poor physical condition of the school	lack of playgrounds/ books/ services
	lack of medicines	poor quality of facilities/equipment	lack of trainers
	lack of medical equipment	crowded classrooms	lack of libraries/ computers
	doctors are absent most of the time	schools for males only	
		schools for females only	
Financial accessibility (affordability)	expensive / charging of unnecessary services	cost of group tutoring	expensive
	patients are requested to purchase needed medical materials		
Acceptability	poor treatment (interpersonal)	weak teaching skills of the teachers	poor treatment (interpersonal)
	no female doctor available	poor administrative practices	
		the school is not safe	
		the way to school is not safe for girls	

Table A3: Youth perceptions of the geographic accessibility of education services by governorate of residence, 2016

	Governorate			
	Cairo	Qalyoubia	Giza	Total
Are kindergartens available?				
Inside the neighborhood	86.4	93.4	84.2	86.8
Outside the neighborhood but near	8.9	6.2	11.3	9.2
Outside the neighborhood and far	4.7	0.4	4.5	4.0
Are general/ Azhar primary schools available?				
Inside the neighborhood	78.7	84.4	76.4	78.9
Outside the neighborhood but near	15.3	15.1	19.2	16.4
Outside the neighborhood and far	6.0	0.5	4.3	4.7
Are general/ Azhar preparatory schools available?				
Inside the neighborhood	65.9	64.0	63.3	64.9
Outside the neighborhood but near	24.5	32.8	27.4	26.6
Outside the neighborhood and far	9.6	3.2	9.3	8.5
Are general/ Azhar secondary schools available?				
Inside the neighborhood	41.6	43.9	42.4	42.2
Outside the neighborhood but near	32.1	38.8	30.4	32.6
Outside the neighborhood and far	26.3	17.2	27.2	25.2
Are vocational secondary schools available?				
Inside the neighborhood	25.7	38.1	35.1	30.3
Outside the neighborhood but near	26.4	33.9	27.8	28.0
Outside the neighborhood and far	47.9	27.9	37.1	41.7
Are literacy classes available?				
Inside the neighborhood	29.8	36.4	40.9	34.0
Outside the neighborhood but near	18.6	27.9	20.2	20.5
Outside the neighborhood and far	51.5	35.6	38.9	45.5
Total sample	1,800	470	670	2,940

Source: Authors' calculations from SYPE-IGC 2016

Table A4: Youth perceptions of the geographic accessibility of health and recreation services by governorate of residence, 2016

	Governorate			
	Cairo	Qalyoubia	Giza	Total
Are governmental health centers available?				
Inside the neighborhood	54.1	63.9	68.5	59.7
Outside the neighborhood but near	25.2	20.1	19.3	22.7
Outside the neighborhood and far	20.7	16.1	12.2	17.6
Are family planning centers available?				
Inside the neighborhood	48.7	51.4	65.4	53.9
Outside the neighborhood but near	26.2	32.9	21.7	25.9
Outside the neighborhood and far	25.1	15.7	12.9	20.2
Are local hospitals available?				
Inside the neighborhood	27.3	31.2	40.4	31.6
Outside the neighborhood but near	33	43.3	25.1	32.3
Outside the neighborhood and far	39.7	25.5	34.4	36
Are Private hospitals available?				
Inside the neighborhood	37.9	39.9	46.4	40.6
Outside the neighborhood but near	30.1	39.4	34.9	32.9
Outside the neighborhood and far	32.1	20.7	18.8	26.5
Are clinics related to a religious or a non-profit organization available?				
Inside the neighborhood	54.9	48.6	69.1	58
Outside the neighborhood but near	22.8	42.5	20.8	25.3
Outside the neighborhood and far	22.3	8.9	10.2	16.7
Are youth centers available?				
Inside the neighborhood	44.3	65.8	56.9	51.2
Outside the neighborhood but near	22.2	15.2	21.9	21
Outside the neighborhood and far	33.5	19.0	21.2	27.7
Are sport playgrounds/private gyms available?				
Inside the neighborhood	48.1	55.2	64.8	53.9
Outside the neighborhood but near	25.4	34.1	26.2	27
Outside the neighborhood and far	26.5	10.6	9.1	19.1
Are cultural and arts centers available?				
Inside the neighborhood	15.0	20.5	27.3	19.4
Outside the neighborhood but near	21.4	32.4	25.1	24.2
Outside the neighborhood and far	63.6	47.1	47.6	56.5
Total sample	1,800	470	670	2,940

Source: Authors' calculations from SYPE-IGC 2016

Table A5: Youth perception of service cost (financial accessibility), 2016

		Youth perception of cost				
Type of service	Service	High	Acceptable	Low	Free	Total
Education	Kindergarten	13.8	70.7	15.3	0.2	100.0
	Primary	6.5	58.7	28.9	5.9	100.0
	Preparatory	8.0	58.3	27.7	6.1	100.0
	General secondary	12.7	56.7	26.3	4.3	100.0
	Vocational secondary	9.9	58.3	27.1	4.7	100.0
	Illiteracy classes	5.0	35.6	22.6	36.8	100.0
Health	Government health center	5.3	59.6	29.3	5.8	100.0
	Family planning center	5.1	53.8	32.9	8.2	100.0
	Local hospital	5.8	51.0	35.4	7.8	100.0
	Private hospital	66.9	27.2	5.6	0.4	100.0
	Religious/NGO clinic	8.4	66.5	22.9	2.2	100.0
Cultural/recreational	Youth center	12.0	68.7	17.7	1.6	100.0
	Sports ground /private gym	34.7	53.6	11.0	0.7	100.0
	Cultural/arts center	14.2	62.4	15.2	8.2	100.0

Source: Authors' calculations from SYPE-IGC 2016

Table A6: Youth perceptions of the acceptability (quality) of services, by gender, 2016

	Male	Female	Total
What do you think about the quality of kindergartens			
Good	26.5	31.3	28.7
Average	51	47.6	49.4
Bad	2.3	3.3	2.8
Do not know	20.3	17.8	19.1
What do you think about the quality of primary education			
Good	14.8	12.2	13.6
Average	63.5	57.9	60.9
Bad	12.9	18.3	15.4
Do not know	8.8	11.6	10.1
What do you think about the quality of preparatory education			
Good	11.4	8.6	10.1
Average	62.1	58.1	60.2
Bad	15.7	17.8	16.6
Do not know	10.9	15.6	13.1
What do you think about the quality of general secondary			
Good	11.8	10	10.9
Average	47.2	44.5	45.9
Bad	17.3	19.1	18.1
Do not know	23.8	26.5	25
What do you think about the quality of vocational secondary			
Good	7	5.1	6.1
Average	42	37	39.7
Bad	19.7	17.7	18.8
Do not know	31.3	40.2	35.4
What do you think about the quality of literacy classes			
Good	11.6	12.7	12.1
Average	23.5	20	21.9
Bad	6.1	3.7	5
Do not know	58.8	63.7	61
What do you think about the quality of governmental health centers			
Good	13.5	12	12.8
Average	51.2	50.4	50.8
Bad	11.8	16	13.7
Do not know	23.6	21.6	22.6
What do you think about the quality of family planning centers			
Good	10.7	12.4	11.5
Average	37	45.7	41
Bad	8	10.6	9.2
Do not know	44.3	31.4	38.3
What do you think about the quality of local hospitals			
Good	6.5	6.7	6.6
Average	42.8	39.4	41.2
Bad	31.7	35.1	33.2
Do not know	19.1	18.8	18.9
What do you think about the quality of private hospitals			
Good	43.4	42	42.8

Average	29.9	31	30.4
Bad	4.6	3.6	4.1
Do not know	22.1	23.4	22.7
What do you think about the quality of religious or NGO clinics			
Good	18.4	14.5	16.6
Average	58	58	58
Bad	4.7	4.4	4.6
Do not know	18.9	23.2	20.9
What do you think about the quality of youth centers			
Good	17.3	9.7	13.8
Average	44.7	31.5	38.6
Bad	6.9	5.8	6.4
Do not know	31.1	52.9	41.2
What do you think about the quality of sports grounds/gyms			
Good	23.7	18.8	21.4
Average	38.3	25	32.1
Bad	2.7	1.5	2.1
Do not know	35.3	54.8	44.3
What do you think about the quality of cultural and arts centers			
Good	10.2	6.3	8.4
Average	23.6	18.3	21.1
Bad	2.3	1.1	1.7
Do not know	64	74.4	68.8

Source: Authors' calculations from SYPE-IGC 2016

Table A7: Main challenges young people report in accessing different services, 2016

Education

	Kindergarten	Primary	Preparatory	General secondary	Vocational secondary	Literacy classes
Lack of teachers	9.7	9.3	6.8	5.8	4.5	4.6
Poor condition of buildings	1.9	4.3	4.0	2.2	2.7	0.6
Crowded classrooms	4.0	26.5	21.5	11.7	9.0	1.9
Lack of equipment	1.2	1.6	5.6	5.3	4.5	1.2
Group tutoring costs	0.9	7.1	10.0	14.3	6.5	0.9
Poor level of teachers	4.3	9.2	12.4	7.5	7.6	2.7
Poor administration	5.8	4.8	3.7	4.0	5.6	3.4
Distance	0.7	1.3	2.2	5.7	6.8	1.7
No problems	51.3	25.2	19.4	16.3	14.7	20.4
Other	1.2	0.4	0.5	1.1	1.9	0.7
Missing	19.0	10.5	13.8	26.2	36.1	62.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

Health

	Government health centers	Family planning centers	Local hospitals	Private hospitals	NGO/religious clinics
Lack of doctors/nurses	13.0	7.3	13.0	2.0	7.2
Lack of medication	11.8	5.4	10.6	1.5	5.5
Lack of medial equipment	7.1	5.7	7.3	5.0	5.5
Doctors are often not there	3.2	4.3	4.0	1.8	3.8
No female doctor	1.0	1.3	0.7	0.6	1.0
Long waiting times	8.2	7.4	11.6	4.7	9.2
Distance	2.2	1.8	5.8	3.5	2.9
Poor treatment	5.5	5.6	11.0	1.4	1.6
No problems	23.7	21.5	13.3	23.6	37.4
Other	1.8	2.0	3.7	32.9	4.5
Missing	22.6	37.6	19.1	23.0	21.3
Total	100.0	100.0	100.0	100.0	100.0

Cultural/recreational

	Youth centers	Sports grounds	Cultural/arts centers
Distance	3.3	2.4	2.7
Poor treatment	2.3	1.5	1.2
Lack of playgrounds/books/serv	7.7	2.6	1.1

ices			
Lack of trainers	7.8	6.7	2.7
Lack of library/computers	1.3	0.8	3.6
Lack of services/times for girls	2.9	1.7	1.0
Cost	3.1	4.7	1.2
No problems	28.0	33.0	16.8
Other	0.4	0.9	0.1
Missing	43.0	45.7	69.6
Total	100.0	100.0	100.0

Source: Authors' calculations from SYPE-IGC 2016