INEQUALITY OF EDUCATION OPPORTUNITIES IN EGYPT: IMPACT EVALUATION

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Abstract

The objective of this study is to examine the inequality of opportunities in education attainment. It starts first by examining inequality at all levels of the educational system in Egypt, ranging from input indicators to output, outcome and impact of education on the economic status and individuals' welfare. Then, it evaluates the inequality of opportunities in education attainment using the Human Opportunity Index (HOI). Regional gaps and factors contributing to largest inequalities are identified. Inequality of opportunities has two components; (i) the level of coverage of basic opportunities, (ii) the level to which distribution of those opportunities is restricted by circumstances of individual at birth.

الملخص

تناقش هذه الدراسة عدم تكافؤ فرص التحصيل العلمي في مصر؛ حيث تبدأ بالبحث في عدم المساواة على جميع مستويات النظام التعليمي، بداية من مؤشرات المدخلات والمخرجات إلى نواتج التعليم وتأثيره على الوضع الاقتصادي ورفاهية الأفراد. ثم تنتقل الورقة إلى تقييم عدم تكافؤ فرص التحصيل العلمي باستخدام مؤشر الفرص البشرية، مع تحديد الفجوات الإقليمية والعوامل المساهمة في إحداث الجانب الأكبر من عدم المساواة. وتجدر الإشارة هنا إلى أن عدم تكافؤ الفرص ينقسم إلى عنصرين: الأول هو مستوى تغطية الفرص الأساسية، والثاني هو مدى تقيد توزيع هذه الفرص بخصائص الأفراد عند ميلادهم.

Key Messages:

- There is a progressive building of inequalities over the primary, preparatory and secondary cycles, with circumstances beyond the individual's control explaining 4 percent of achievement at the end of primary education, 9 percent at the end of the preparatory level and 12 percent at the end of secondary level.
- School attendance among children aged 6-18 years and completion of primary education have the highest equality in circumstances, while the timely completion of secondary education has the highest inequality in circumstances.
- Circumstances, such as education of household heads and poverty are the main contributors to overall disparities between children in achievements, as measured by preparatory and secondary attainments as well as school attendance. Sector of employment of household heads and regions contribute also to overall inequalities among children in rural areas.
- Although poverty declined recently, inequality in secondary enrolment had increased. Deeper analysis on recent poverty trends points out the potential dangers that accompanied this change, namely decrease in secondary enrollment and increase in child labor, leading to more education inequality. The change may largely be due to the coping strategies, with high possible costs of the strategies.

Policy implications

Regional balance: Ensure that regional disparities in incomes, employment opportunities and educational inputs and outputs are reduced.

Education: Breaking the vicious circle between poverty and education requires addressing both supply and demand for education through providing free basic education to ensure that every child has a chance to go to school. It also needs the creation of a strong demand for education, through improving the quality of education and its high return.

Social protection Social protection is linked to improved education, health, and nutrition outcomes. Expanding access to social protection programs can help limit the 'use of negative coping mechanisms,' such as consumption rationing (i.e., eating less or spending less on education and health) or child labor.

Reduce digital gap so that children can continue to learn: Design remote learning programs that are accessible to all children and adapted for households that do not have access to broadcast or digital media. Support and train teachers and parents to effectively manage remote 'virtual' classrooms and help children learn at home, at all levels of education.

I. Introduction

"Education is the most powerful tool that can be used to change the world," (Nelson Mandela). Education is a fundamental human right, which countries have committed to uphold since they signed the 1948 Universal Declaration of Human Rights. It is also a key driver for attaining most sustainable development goals (SDGs) by 2030, whether these concern gender equality, healthy families, poverty reduction, sustainable consumption, resilient cities or peaceful societies, Antoninis et al 2016.

No country can achieve sustainable economic and social development without substantial investment in human capital. Education improves the quality of people's lives and leads to broad social benefits to individuals and society. Education raises people's productivity and creativity and promotes entrepreneurship and technological advances.

According to the United Nations, obtaining a quality education underpins many of the most basic development drivers: "When people are able to get quality education they can break from the cycle of poverty. Education, therefore, helps to reduce inequalities and to reach gender equality. It also empowers people everywhere to live more healthy and sustainable lives. Education is also crucial to fostering tolerance between people and contributes to more peaceful societies."

An equitable education system helps all students develop the knowledge and skills they need to be engaged and become productive members of society. More importantly, giving all children an equitable start would lead to better economic and social outcomes for individuals, for regions, and for our nation.

Despite many countries' concern on universal education, individuals suffer from inequality in education. Educational inequality is the unequal distribution of academic resources, including but not limited to; school funding, qualified and experienced teachers, books, and technologies to socially excluded communities. Equally important is the disparity in individuals' educational achievement, despite their equal skills and talents, due solely to the differences in their birth conditions and circumstances that are beyond their control and responsibility, which we referred to as "inequality of opportunities in education". This kind of inequality leads to major differences in the educational success or efficiency of these individuals that in turn leads to inequality in outcomes such as in employability, income and consumption, which ultimately suppresses social and economic mobility.

To retrieve all education benefits and fruits, education systems need to ensure that all students, irrespective of social background and all uncontrolled circumstances have equal access to opportunity in schools. However, policy makers should not only focus on universal access to education but also on its quality and excellence. Only when excellence and equity go hand in hand, inequality in education outcomes can be reduced. This is consistent with the proposed SDG goal "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all".

The objective of this study is two-fold: (a) evaluate inequality in all aspects of the educational system in Egypt ranging from input indicators to output, outcome and impact of education on the economic status and individuals' welfare; (b) examine the inequality of opportunities in education outcome indicators; namely, education attainment as well as education attendance among Egyptian children 6-18 years; and to identify the key circumstances that influence the existing disparities. More specifically, the study seeks answers to three main questions: (a) how large are the educational outcome gaps between children from different socioeconomic and geographic backgrounds? (b) How do these disparities evolve across levels of education and who are the most vulnerable group of children? And (c) what are the key drivers of inequality in education achievements?

To address the above questions, the study first analyzes the distribution of educational variables at different levels; we believe that inequality at each educational level leads to inequality in the level that follows. Descriptive analysis of inequality starts from examining inequality in educational inputs such as public and private expenditure on education, and moves to assess inequality in output indicators such as school dropout and enrollment rates, which leads to inequality in literacy rate, and employment. This analysis documents the relationships between educational variables and different socioeconomic and geographic backgrounds. The study then examines the impact of different circumstances on education attainment to answer the question of who is the most vulnerable group of children. Finally, the study measures the inequality of opportunities for each level of education; namely, primary, preparatory and secondary education, as well as education attendance for school age children using the HOI.

II. Data and Methodology

2.1 Data Source

To answer the above questions, the study relies mainly on raw data from the nationally representative Household Income, Expenditure and Consumption Survey implemented from October 2017 to September 2018 (HIECS 2018), carried out by the Central Agency for Public Mobilization and Statistics (CAPMAS). The sample is representative as it has been proportionally distributed on the governorate level and between urban and rural areas within each governorate. Additionally, the study relies on tabulated data from the Ministry of Education to present some indicators on the macro level disaggregated by gender, regions and governorates.

Another data source for input indicators are obtained from the Statistical Year Book of the Ministry of Education, 2019/2020.

All indicators, graphs and figures are calculated by the authors using HIECS 2017/18 and 2019/20 Surveys, unless otherwise stated.

2.2 Methodology

Human Opportunity Index (HOI)

Inequality of opportunities in the access to adequate education level is assumed to have two components: (i) the level of coverage of basic opportunities, (ii) The level to which distribution of those opportunities is restricted by circumstances of the individual at birth (World Bank 2009). We assume that the equality of opportunity is achieved when the person's chances in access to adequate education level is unrelated to circumstances or characteristics of the person at birth such as region of residence, household size, household composition, gender, age, marital status and education of household heads, etc. The Human Opportunity Index (HOI) is an instrument that allows us to detect situations of inequality between children that associated with circumstances beyond the individual's control. Therefore, it is used to evaluate factors affecting inequality in access to education; whether it is due to unequal level of coverage regardless of person's characteristics, or it is due to person's circumstances, (Armanious and Kalliny 2015).

Equality of opportunity is based on the idea of giving people equal opportunity (service) early in life, regardless of their socioeconomic background. The HOI not only carries information about the coverage rate of the service, but also how fairly the available service is distributed among

beneficiaries of different backgrounds. The HOI is a measure of the rate of global coverage, C, discounted with penalization P (the inequality of coverage across all groups of circumstances (characteristics of potential beneficiaries): HOI = C – P

Therefore, the HOI improves either by increasing access to services (the scale effect) and/or by making access more equitable (the distribution effect). The HOI range is from 1 to 100. It increases with the global rate of coverage and decreases with the differences in coverage between the different groups of circumstances.

The penalization (P) is given by P = (C * D) and D is the dissimilarity index, which measures the difference between the rates of coverage of an opportunity across different groups of circumstances. Thus, (1-D) would represent the percentage of opportunities available that are assigned correctly, (World Bank 2009);

*HOI = C – P = C *(1-D)*

The penalization (P) is zero if all the rates of coverage across all the groups of circumstances are identical, while it grows positively as the differences in coverage between groups of circumstances grow.

Computing the penalization for inequality of opportunities, P, requires the identification of all the groups of circumstances with rates of coverage below the average. We refer to these as the groups vulnerable to human opportunity. For each group vulnerable to opportunity, $k\bar{M}_k$ is the number of people who have access to a good or service, so that their rate of coverage is the same as the average, while M_k is the number of people in group *k* with access less than the average. Thus $M_k - \bar{M}_k$ is the difference in opportunities within the vulnerable group *k.* The penalization is the sum of the differences in opportunities of all the vulnerable groups (denominated the total difference in opportunities) divided by the total population (N):

$$P = \frac{1}{N}\sum_{k=1}^{v}(M_k - \bar{M}_k)$$

However, the global coverage, C, is calculated using the ***Logistic Regression Model*** utilizing all the related circumstances to assess the impact of these circumstances on each opportunity and to calculate the average (C) using the predicted probabilities.

Thus, the HOI will always improve when inequality decreases and total coverage stays the same, or total coverage increases while inequality stays the same.

Decomposition of HOI

Any difference in the HOI can be decomposed in two additive steps. The first step would be through proportional increments in the rates of coverage of all the specific groups of circumstances. In this case, inequality of opportunities would remain unchanged and the HOI would increase exclusively due to changes in the average rate of coverage. We call this type of change the scale or coverage effect. The second step would be achieved through differences in the rates of coverage of some groups, exactly compensated by a decrease in the rates of other groups, leaving the total rate of coverage unchanged. In this case, given that the total rate of coverage remains unaltered, the HOI would change only due to the reduction of the inequality of opportunities (and the penalty P). We call this type of change the distribution effect.

This study examines the differences in HOI of education achievement between urban and rural areas. Any change in the HOI could be decomposed into a scale effect, $\Delta\bar{p}$, and a distributional effect, ΔD, (World Bank 2009) as follows:

Differences in HOI= $HOI^{urban} - HOI^{rural}$.

where the scale effect (coverage effect), $\Delta\Delta\bar{p}$, and the distributional effect, $\Delta\Delta D$, are defined as follows:

$$\Delta\bar{p} = \frac{C^{urban}\left(1-D^{rural}\right)-HOI^{rural}}{HOI^{urban}-HOI^{rural}} X\ 100$$

$$\Delta D = \frac{HOI^{urban}-C^{urban}\left(1-D^{rural}\right)}{HOI^{urban}-HOI^{rural}} X\ 100 \quad = \ 100 - \Delta\Delta\Delta\bar{p}$$

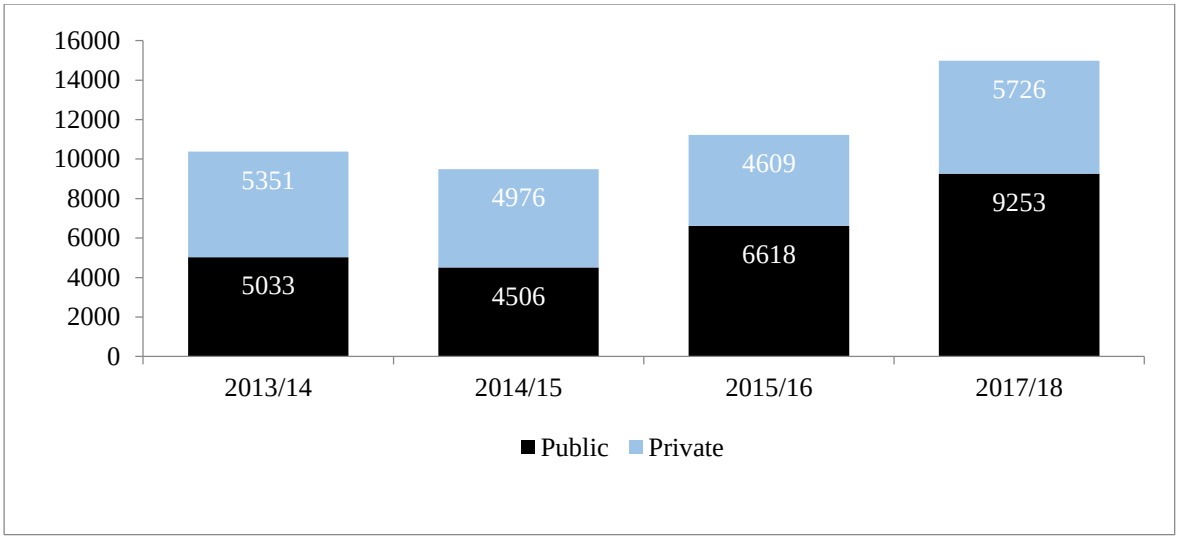
III. Inequality in Input Indicators[1]

Public and Private expenditure on education increased over time. Regarding the resources of education (input indicators), the data shows that over the past five years, the government has increased its acclamation on educational expenditure as shown in Figure 1. Public spending includes both direct expenditure on educational institutions and educational subsidies to households administered by educational institutions. Private expenditure is recorded net of public

[1] Figures in this section are derived from the Ministry of Education Yearbook 2019/20.

subsidies that educational institutions may receive. However, education expenditure is only the first step and is not necessarily translated into a better educational system.

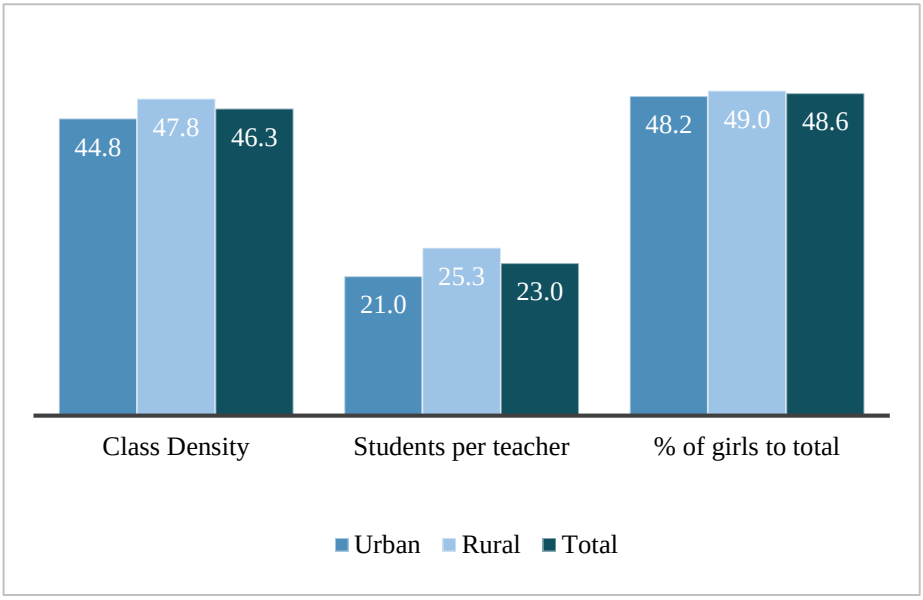
Figure 1. Public and Private Expenditure on Education, in Millions at Constant Prices (2014/15=100)



Unfortunately, public spending on education cannot be disaggregated by gender or by location. However, inequality in three input indicators are examined; namely, class density, ratio of total number of students to total number of teachers and percent of girls to total number of students. These variables are examined across Egypt's governorates as well as between Urban-Rural areas.

Classroom density reached 46 students per class, with the largest density in Giza followed by Qalyubia, while the least density is in Aswan.

Fig 2. Output Indicators by Urban/Rural, 2019-2020



Classroom density affects student's achievements, quality of the educational process in class, the quality of physical learning environment, the extent to which student attitudes are positive and the extent of them exhibiting behavior conducive to learning, Smith and Glass 1979. No improvements can be traced in terms of class density over the period 2015-2020. In fact, classroom density has increased across public and private schools and in both urban and rural areas by about five students per classroom. In 2019/20, class density reached 46 students per classroom with 45 and 48 students per class for urban and rural areas, respectively. Public schools have 10 students more per classroom compared to private schools, reflecting gaps in quality of education between public and private schools. As a result, large disparities exist in the quality of education received by different income groups, as children from middle class and affluent are more likely to go to private schools, see Table 1.

Table 1. Trends in Class Density

Year	All			Private			Public		
	All Egypt	Urban	Rural	All Egypt	Urban	Rural	All Egypt	Urban	Rural
2020/2019	46.26	44.79	47.8	33.85	33.94	33.11	48.38	48.46	48.31
2019/2018	44.89	43.46	46.39	33.18	33.32	32.03	46.81	46.76	46.85
2018/2017	43.74	42.61	44.91	32.72	32.86	31.59	45.46	45.63	45.31
2017/2016	42.76	41.89	43.66	32.39	32.52	31.28	44.31	44.67	44.01
2016/2015	42.08	41.49	42.7	32.69	32.88	30.96	43.43	43.94	43.01

Source: Ministry of Education Yearbook, 2019/20.

Data also show large inequalities between governorates as illustrated in Figure 3. In metropolitan areas, Alexandria schools have the highest classroom density, where it reached 48 students per classroom, while this figure decreased to 42 students per classroom in Cairo. Qalyubia and Gharbia schools have the greatest classroom density in Lower Egypt (around 50 and 49 students per classroom respectively), while Giza schools have the greatest density in Upper Egypt and in total Egypt (52 students per classroom).

However, having a low classroom density is not necessarily translated into a good quality of education, since there are other factors that affect the quality of education such as equipped laboratories, educational devices and infrastructures, ratio of qualified teachers and students to teacher ratio.

Students to teacher ratio reached 23 with marked disparities between urban and rural areas and between governorates. Giza has the highest rate while Port Said has the least rate. Data concerning students to teacher ratio in 2019/2020 show that on average this rate reached 23 students per teacher as shown in Figure 2. There is a significant difference in student to teacher ratios between urban and rural areas, where the ratio reached 21 and 25 students per teacher in urban and rural areas, respectively. Giza has the highest ratio (34 students per teacher) followed by Beheira and Fayoum schools where the ratio reached 27 students per teacher, which are above the national average of 23. The lowest ratio is found in Port Said (14 students per teacher) and frontier governorates. Concerning the percentage of girls to total students, Figure 2 shows that the percentage reached 48.6 percent, with no significant difference between urban and rural areas and between governorates.

Figure 3. Class Density by Governorates, 2019-2020

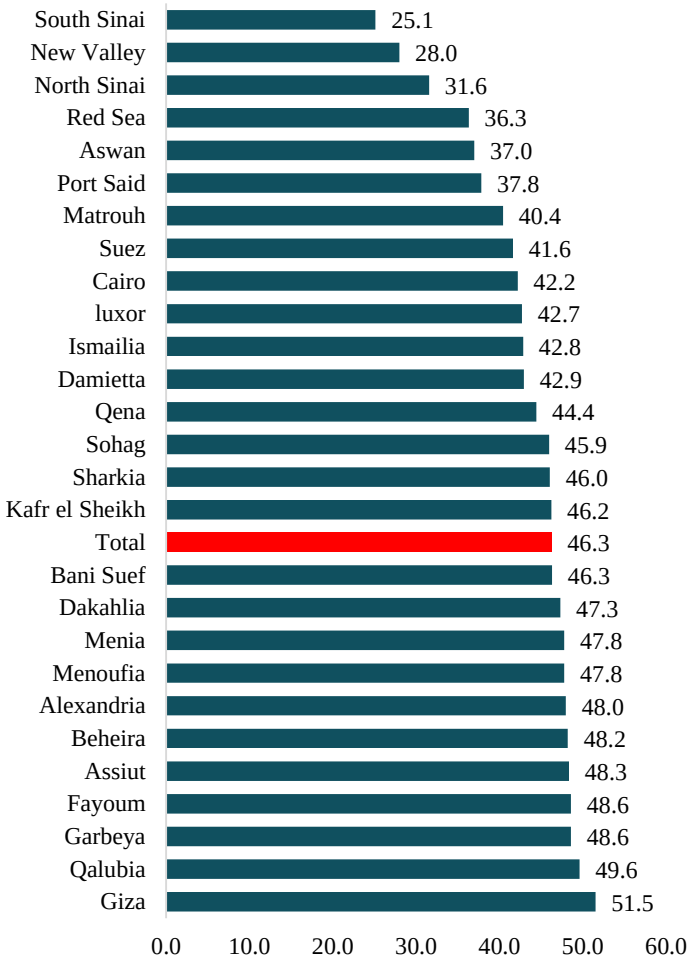
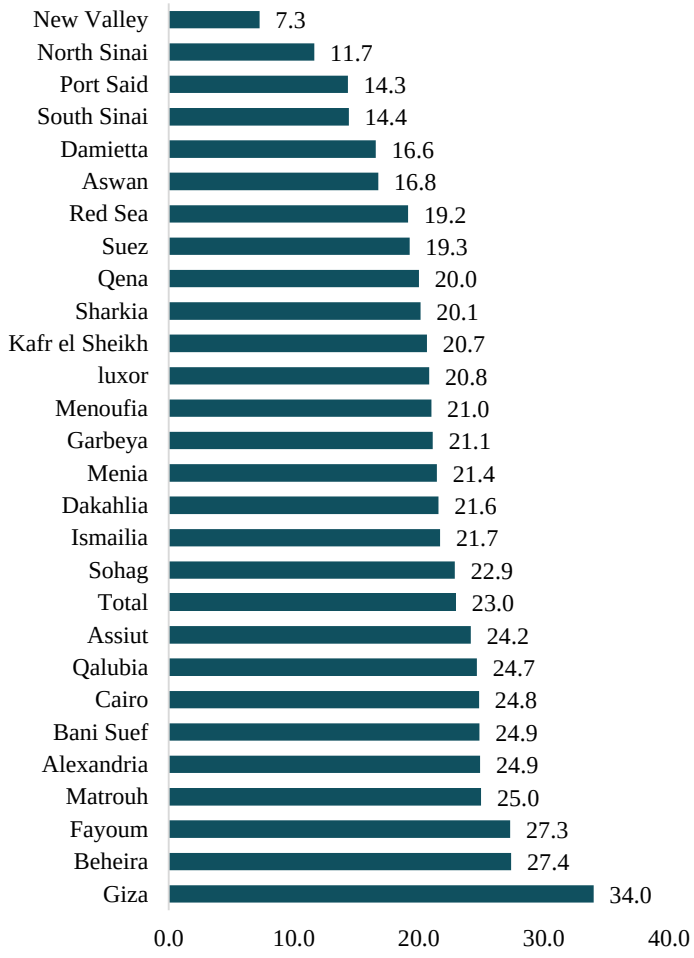
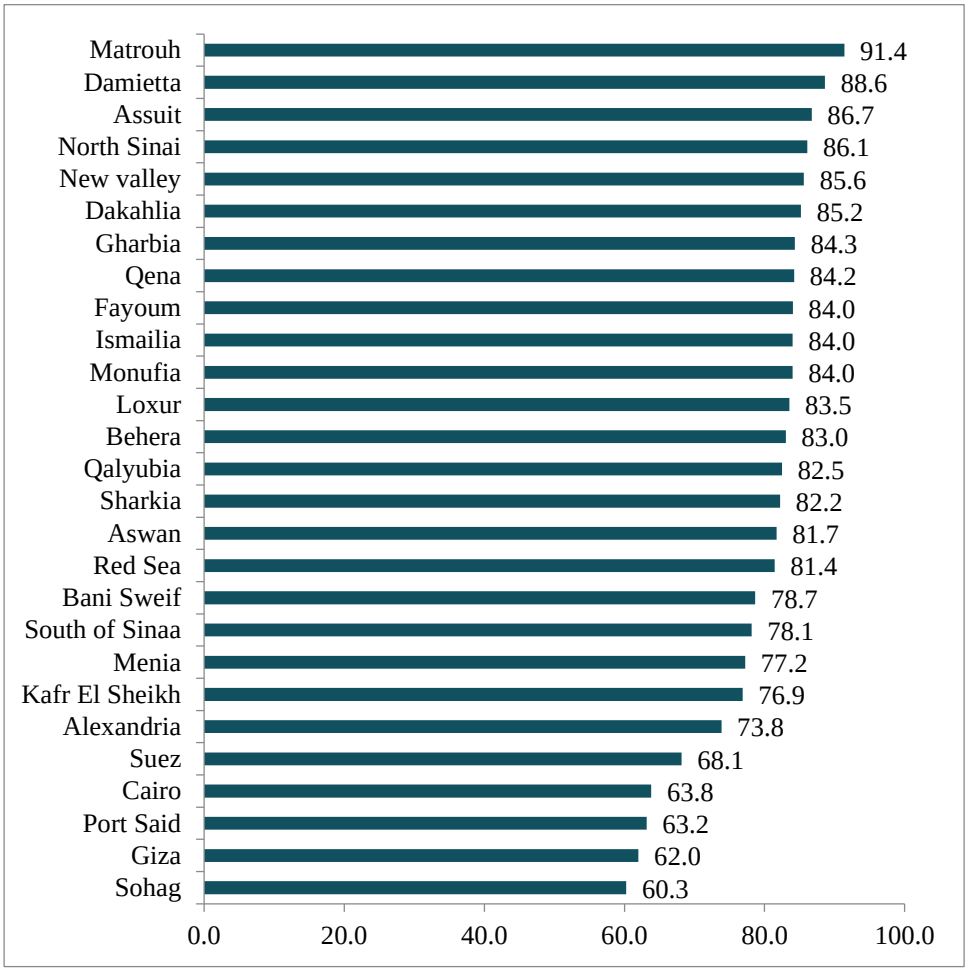


Figure 4. Students per Teacher by Governorates, 2019-2020



The percentage of qualified teachers in total teachers shows large disparities between governorates, reflecting gaps in the quality of education provided. It ranged from 91 percent in Matrouh to 60.3 percent in Giza. Sohag, Giza and Port-Said exhibited the smallest percentage. It is worth noting that Giza demonstrated the largest class density, and students per teacher ratio and the lowest percentage of qualified teachers, pointing to deteriorated education inputs compared to other governorates.

Figure 5. Ratio of Qualified Teachers, 2019/2020



Source: Ministry of Education Yearbook, 2019/20.

IV. Inequality in Output Indicators

4.1 Inequality in Dropout Rates

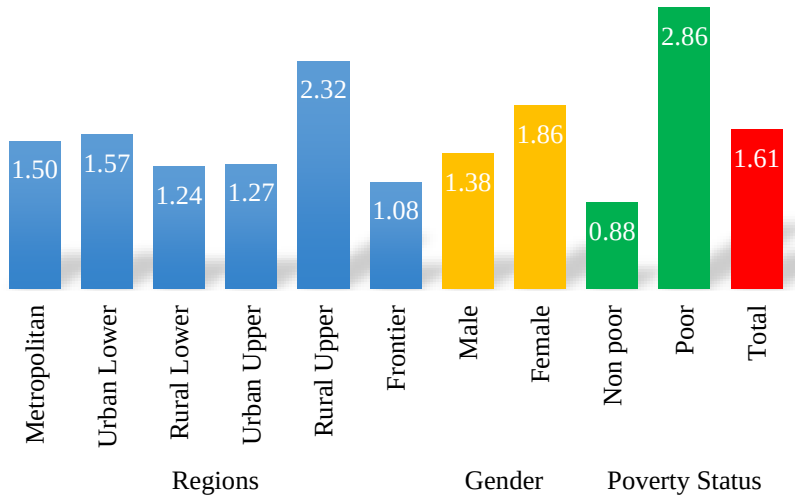
Among the most important rates that display the quality of education are the dropout rates in basic and secondary education. Dropping out of the educational system is a serious individual, familial, educational and social problem. It is a complex process influenced by a large number of factors. Family and socio-economic needs is the main reason for children to drop out of school. Students belonging to low-income groups are more likely to drop out of school as they may have to work to support their families. Some children may need to stay at home to take care of their siblings while parents go out to work. Failure to complete basic education not only limits future

opportunities for children but also represents a significant drain on the limited resources that countries have for the provision of basic education.

The dropout rate is defined as the percentage of students leaving the educational system without completing the grade in which they study (out of school) in the total number of students enrolled.

The dropout percentage in basic education schools is limited, although significant gaps are observed between poor and non-poor and between regions. Overall, data of HIECS 2017/18 show that 1.6 percent of children aged 6-14 years drop out of basic schools. Although this percentage seems small, it is still significant given that this is the compulsory basic form of education. Furthermore, while the dropout percentage is small, the gap in dropout rates between different segments of society is significant.

Figure 6. Dropout Rates in Basic Education by Characteristics



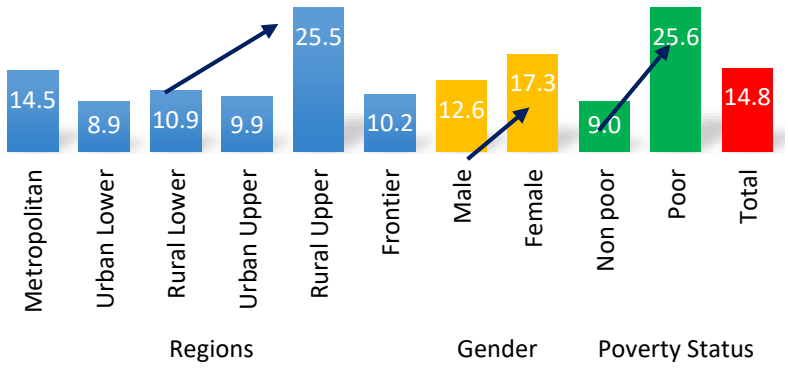
Although basic education is free in Egypt, the dropout rate among the poor is more than 3 times the rate among the non-poor as shown in Figure 6. There are a number of other expenses that need to be factored in when calculating the total cost of schools, such as the cost of transportation, clothes, equipment and personal expenses, miscellaneous fees, and other incidentals. All of these can add up significantly to the expenditure of households. Accordingly, it is not surprising that non-poor parents can afford to send their children to school, as opposed to making them help with work chores. This shows that the government can reduce dropout rates by alleviating economic burdens suffered by the poorest segment of society.

Figure 6 also shows that girls dropped out more often than boys, and children born in rural Upper Egypt were more likely to drop out than those born in any other region. The dropout rate

differs across governorates, with the highest rate recorded in Matrouh (4.3 percent) and the lowest rate in Sharkia (0.3 percent) and Kafr El-Sheikh (0.4 percent).

The dropout rate increased significantly in secondary schools, where it reached almost 15 percent. Females, poor students and those in rural Upper Egypt have the highest rates. Figure 7 shows the dropout rate among secondary school children aged 15-17 according to different characteristics. The figure shows that the dropout rate increased significantly to 14.8 percent with marked differences between different segments of population. Among regions, Lower Egypt and urban Upper Egypt have dropout rates below the national level, while rural Upper Egypt has a dropout rate almost twice the national average. This is probably due to the large agricultural economy, characterized by labor intensity and poorer regions, thus putting pressure on children to drop out. The dropout rate among poor children reached 25.6 percent, almost three times the rate among non-poor children. Female students are more likely to drop out from secondary schools than male students, with rates that reached 17.3 percent and 12.6 percent, respectively.

Figure 7. Dropout Rates in Secondary Education by Characteristics

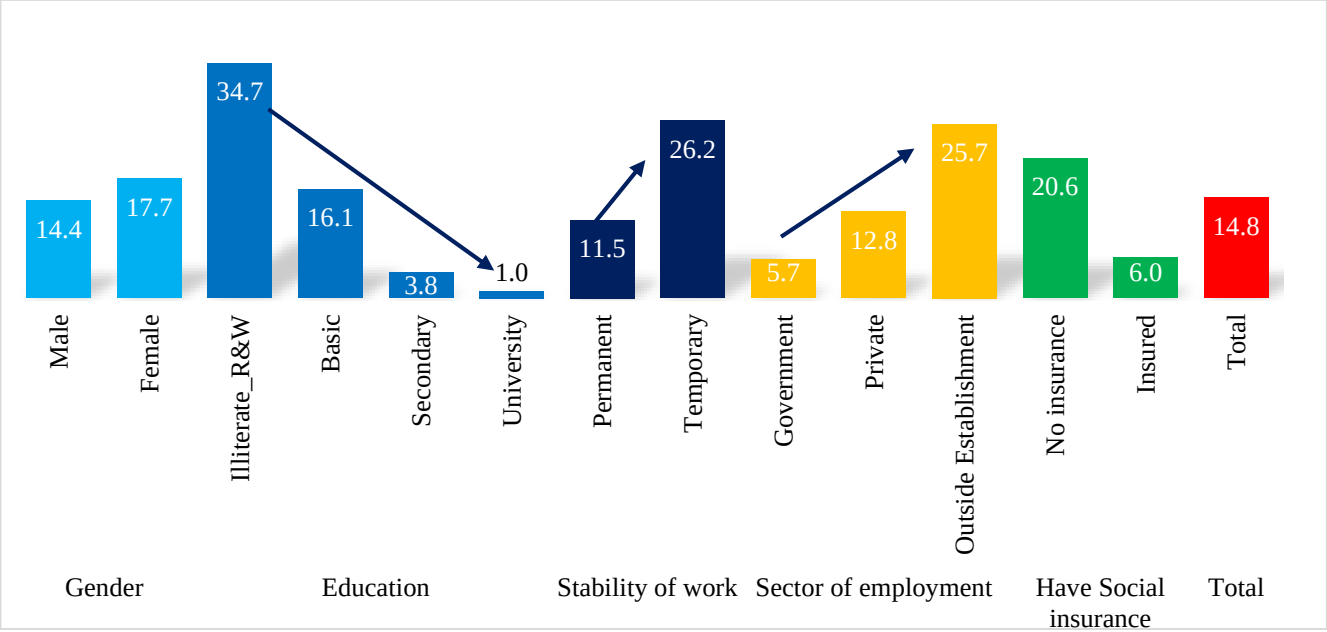


Children with educated household heads, with household heads employed in permanent jobs and with social insurance are less likely to drop out of secondary schools. Marked disparities in secondary schools' dropout rates are observed according to household head characteristics. Children with illiterate household heads are more likely to leave schools before completing secondary education, estimated at more than one third of children (34.7 percent). This percentage decreased significantly to 3.8 percent among children with heads having secondary education and to only 1 percent among those having heads with university education.

Stability of work of household heads affects significantly the continuation of the study, where dropout rate among secondary school children reached 11.5 percent among those with household heads having permanent jobs, while this figure increased to 26.2 percent among children with

household heads having temporary or casual jobs. Moreover, children whose household heads work outside establishments are least likely to complete secondary education (25.7 percent), compared to those with household heads who work in the government sector. The link between sector of employment of the household head and secondary school dropouts can be explained by work stability; the more unstable the work of the household head, the more likely their children are to drop out from secondary schools. Households whose heads have government jobs are financially stable and have social insurance and hence their children do not leave schools to reduce expenditure on education or to seek work to increase household income. Figure 8 illustrates that children with household heads who work in the private sector are more likely to leave school before completing secondary education compared to those with household heads who work in the government sector. The private sector has more informal jobs and more temporary jobs with no social insurance, leading to financial instability. This result is also confirmed by noting that the dropout rate reached 20.6 percent among those with household heads who have no social insurance, while this rate declined to only 6 percent among those with household heads participating in social insurance schemes.

Figure 8. Dropout Rates in Secondary Education by Household Heads Characteristics



4.2 Inequality in Enrollment Rates in Basic Education

School enrolment can be thought of as the interaction of two factors: Supply and demand. In other words, low school attendance is in part due to family decisions regarding the opportunity cost of schooling. Even when schooling is free, many families cannot afford other expenses, such as uniforms and textbooks, or poor children need to get a job instead of going to school (demand for schooling). Moreover, sometimes there isn't a school nearby, or proper local infrastructure (supply of schooling). Neither side should be neglected when analyzing school attendance patterns.

The public education system in Egypt consists of three levels: the basic education stage for the age group 4 –14: Kindergarten for two years followed by primary school for six years and preparatory school for three years. Then, the secondary school is for three more years, for ages 15 to 17, while the secondary vocational track could last for 3–5 years. Education is compulsory for 9 academic years between the ages of 6 and 14. Moreover, all levels of education are free in government schools.

Net enrollment in primary schools is almost universal (94 percent) with the highest rate in Lower Egypt and the lowest rate in Metropolitan regions. Disparities between governorates are observed where the rate ranges between 90 and 97 percent. Over the past decade, enrollment in primary schools has increased with nearly all children enrolled in primary schools. Data of HIECS 2017/18 show that the national net enrollment rate[2] reached 93.7 percent, meaning that about 6 percent of primary school age children are repeating grades or have entered primary school late, or do not enter school. Slight differences are observed between regions, with Lower Egypt having the highest rates (95 percent), while Metropolitan regions having the lowest rate (91 percent). While these numbers seem promising, they only reflect the number of children in primary schools, not their quality and are significantly less than that in other developing countries that have full enrollment rates for primary schools.

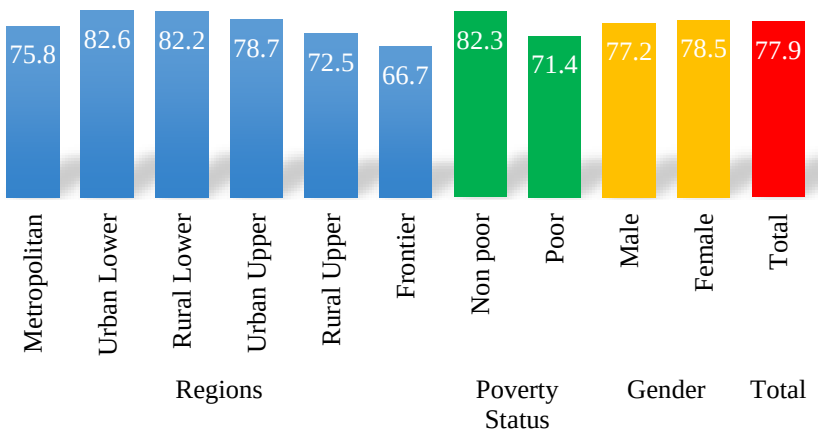
There are some disparities between governorates regarding net enrollment in primary schools. Assiut, Alexandria and Souhag governorates have the lowest net enrollment rates (90 percent), while on the other hand, Sharkeya and Kafr El sheikh have the highest rates (97 percent). Concerning gender, there is limited disparity in primary education between males and females. Net

[2] Net primary enrollment rate: Number of students in the age group (6-11 years) enrolled in that level, relative to total population in that age group.

enrollment for both genders is about 94 percent. Similarly, between urban and rural areas there is no significant difference regarding primary school enrollment.

Enrollment rates decreased among preparatory schools (78 percent). Non-poor children and those in Lower Egypt have the highest net enrollment rates. Regarding net enrollment rates in preparatory schools, the data show that only 78 percent of children aged 12-14 are enrolled in preparatory schools. While there are important observed regional differences in preparatory enrollment rates, surprisingly children living in Lower Egypt do better in terms of access to preparatory education than those living in urban governorates. Lower Egypt has the highest enrollment rate of about 83 percent compared to 76 percent among children in urban governorates (Metropolitan) and 73 percent among children in rural areas in Upper Egypt. Frontier governorates have the least enrollment rates at 66.7 percent. As expected, household size has a great impact on net enrollment, where enrollment rate decreased significantly for larger household size. Moreover, data show that there is no marked gender disparity, where females have a higher enrollment rate by only 1.3 percentage points. Due to financial and cultural reasons, poor people are less likely to be enrolled in preparatory education, where net enrollment in preparatory schools among non-poor children reached 82 percent compared to only 71 percent among poor children (see Figure 9).

Figure 9. Preparatory Net Enrollment Rate by Characteristics



Disparities between governorates regarding preparatory enrollment are somewhat similar to those of primary education, although the gaps are wider. Kafr El-Sheikh clearly has the highest enrolment rate of 89 percent, about 11 percentage points above the national average. Assuit has the least preparatory enrollment rate of 68 percent, 10 percentage points below the national average. Fayoum, Alexandria and Giza have preparatory enrollment rates less than the national rate.

Net enrollment witnessed an increase during the period of 2015-2018 by about 5 percentage points for both primary and preparatory education, where 2015 primary enrollment rate reached 89.2 percent and 2015 preparatory net enrollment reached 72.2 percent. The gap between the poor and non-poor still persisted, especially in preparatory education.

4.3 Inequality in Enrollment Rates for Secondary Education

The general secondary stage includes 3 years of education, while the secondary vocational track includes 3–5 years. Efforts are underway with the support of multilateral organizations to make the general and vocational secondary system less rigid and provide equal opportunities to students of various wealth quintiles in the two tracks to go for higher education. This is also being implemented by the World Bank-led secondary enhancement project in Egypt. Students in the vocational track study more trade-oriented skills than those in general secondary schools.

Net enrollment in secondary education is much less than in basic education and the gap between different segments in society becomes wider. In spite of the stratification, the Ministry of Education's primary goal at the secondary education level is to prevent illiteracy. Unlike in primary and preparatory schools, enrollment in secondary schools is not only much lower, but also has a greater disparity gap among different groups of society. The overall net enrollment rate among secondary schools is 67 percent, 10 percentage points less than net enrollment in preparatory education.

There is a widespread perception of injustice within the Egyptian society that the chances to acquire good education differ vastly among socioeconomic and geographic groups, particularly in secondary education since basic education is obligatory. Several features of the Egyptian education system may have contributed to the perceived inequities. The distribution of public resources and availability of secondary schools tend to be skewed towards higher education and youth from disadvantaged backgrounds have very little chance of availing themselves to benefit from such public outlays. Youth from the most privileged backgrounds (from urban areas, having educated household heads, top wealth quintile) almost always attend secondary schools, while those from most disadvantaged backgrounds (from rural areas, lower wealth quintile…) have less chance of doing so.

Results of the survey show that the gap between regions, governorates and poverty became wider regarding secondary school enrollment. The most privileged children are from non-poor

groups, who live in urban areas particularly in Lower Egypt, while the most deprived children are from the poor groups, who live in rural Upper Egypt.

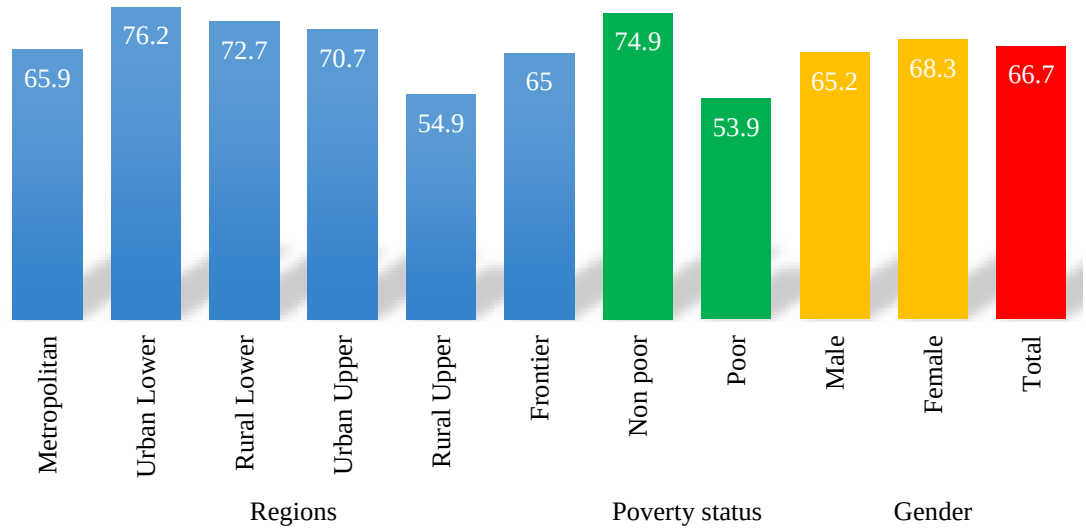
The lowest net enrollment rate for secondary education is among children aged 15-17 in rural Upper Egypt and then among metropolitan region. Also, the rate among the non-poor is 1.4 times that of poor children. Data show that the lowest secondary school enrollment rates are in rural Upper Egypt, where the rate only reached 55 percent. Despite the fact that metropolitan areas exhibited higher education outcomes, it has a lower net enrollment rate than most other regions (66 percent). Low net enrollment rate in metropolitan areas is not only a result of high prices on education services but is also a result of available employment opportunities, which might tempt families to drop their children from school in order to seek employment. Another reason for this is that metropolitan areas attract internal immigration from poor families in Upper Egypt, which increases the number of poor children not enrolled in secondary schools.

Concerning gender, the gender gap is larger in secondary education favoring girls than in primary or preparatory education. Net enrollment rates in secondary school are higher for females by 3 percentage points. This might be attributed to the fact that some families, out of poverty, drop their children from school in order to seek employment.

At the secondary school level, the income disparity is the most significant. The net enrolment rate at secondary schools among non-poor children is 1.4 times that of poor children (75 percent vs. 54 percent, respectively). This is one of the most significant disparities in the enrollment rate in secondary schools. This is unfortunately not a surprising figure because as children get older and gain an ability to work they are put under financial pressure to leave school and exchange for work.

Concerning disparities among governorates, results show that Matrouh and Assuit have the least rates with only 41 percent and 51 percent, respectively. Kafr El-Sheikh and Sharkia have the highest net enrollment rates among secondary schools with 81 percent and 80 percent, respectively.

Figure 10. Secondary Net Enrollment Rate by Characteristics



V. Inequality in Outcome Indicators

5.1 Inequality in Attainment Rates at Different Levels

This section deals with the main factors affecting inequality in education attainment[3] among children at different levels. Educational outcomes are one of the key areas influenced by family incomes. It is well documented that poverty decreases a child's readiness for school through aspects of health, home life, schooling and neighborhoods.

Children from low-income families often start school already behind their peers who come from more affluent families. However, international interventions have shown that the effects of poverty can be reduced using sustainable interventions.

[3] Educational attainment refers to the highest level of education that an individual has completed during a specific age.

Education attainment decreases by 10 percentage points when we move from primary to preparatory to secondary levels. Significant differences exist between the poor and non-poor in all educational levels. Overall, survey data show that only 61.6 percent of poor children aged 15-18 completed preparatory education, while this percentage increased by 19 percentage points (81 percent) among non-poor children. A similar result is observed regarding secondary education achievement among youth aged 18-21, where the gap between poor and non-poor youth reached 17 percentage points.

Figure 11. Education Attainment by Poverty Status

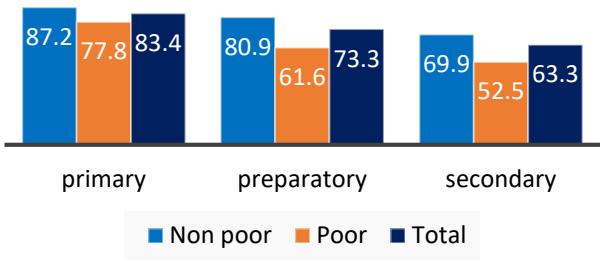
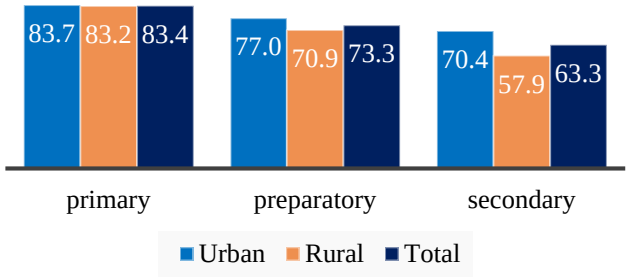


Figure 12. Education Attainment by Residence

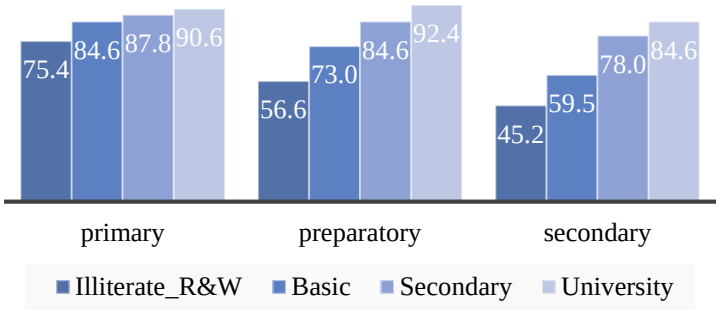


Regarding place of residence, it is worth noting that the urban-rural gap in education achievement is much wider among secondary level than primary or preparatory levels. Figure 12 shows that the urban-rural gap in preparatory achievement is 6 percentage points, while this gap increased to 12.5 percentage points for completion of secondary level.

This could be interpreted by the fact that urban areas have jobs that require educational degrees, while rural areas have jobs that do not require a degree. So, educated people in rural areas migrate to urban areas. Additionally, rural areas have more informal jobs, particularly in the agriculture sector, thus households do not have incentives to educate their children and may pressure children to drop out when they are young.

Education of household heads has a great impact on child education achievement, particularly among secondary education. One of the most important factors affecting child education achievement is the education of household heads, where it has a significant impact on child education, particularly among the youth aged 18-21. More educated household heads invest more time and money in their children such as for private tutoring and in overall involvement in their children's schools, e.g., attending parental meetings at school. On the other hand, less educated parents are more likely to lack both the know-how and the resources to invest similarly in their children´s education.

Figure 13. Education Attainment by Education of Head of Household



The results show that only 45 percent of the youth aged 18-21 years with illiterate household heads completed secondary education, while this percentage increased significantly by 39 percentage points to reach 85 percent among those with household heads that have university education. The link between education of household heads and children attainment at primary education level was not as strong as for secondary education, indicating that there is a general consensus on the importance of attaining primary education even among children whose household heads having low education. For secondary schools, households with low educated household heads have to compromise between secondary education cost and seeking jobs in labor market and acquire skills (opportunity cost), see Figure 13. As expected, work of household heads also has a

Figure 14. Education Attainment by Sector of Work of Household Heads

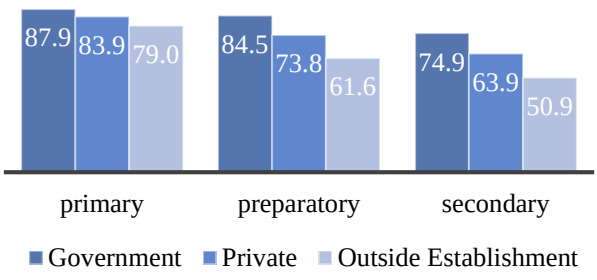
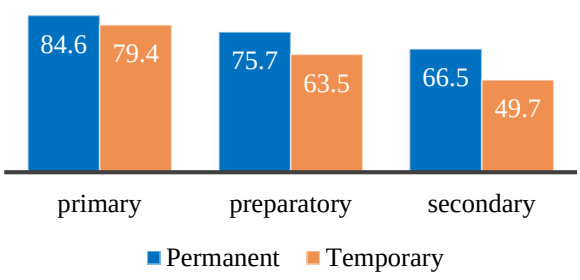


Figure 15. Education Attainment by Stability of Work of Household Heads



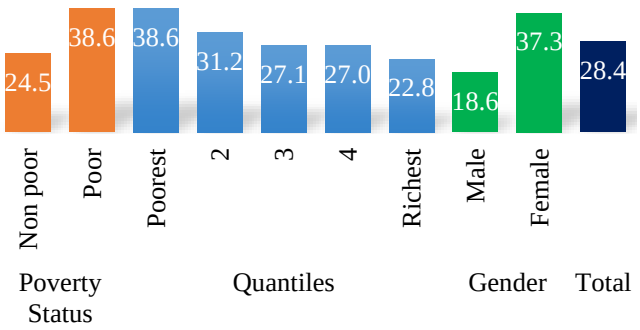
significant impact on child education achievement. Children with household heads who work in the government or in a private sector and have permanent jobs and social insurance are more likely to complete their education levels than those with household heads who work outside establishments or have temporary or casual jobs with no social insurance. Secondary level is achieved for almost 75 percent of children whose household heads work in the government and have social insurance, while this percentage decreased to only 51 percent among those with household heads who work outside establishments or in temporary jobs.

5.2 Inequality in Illiteracy Rate

Overall, survey data show that the illiteracy rate among individuals aged 25 years or above reached 28.4 percent with marked disparities among different segments of the population.

Gaps in illiteracy between the poor and the better-off individuals are clear, and between different quantiles as shown in Figure 16. Illiteracy among poor individuals aged 25 years and above reached 39 percent decreased to 24.5 percent among non-poor individuals. Disparities between quantiles[4] are also clear as shown in the figure. With regards to gender variations in illiteracy rate, Figure 16 shows that the gap between males and females is wider than the gap between poor and non-poor gap. Illiteracy among females is almost double that of males (37 and 19 percent, respectively).

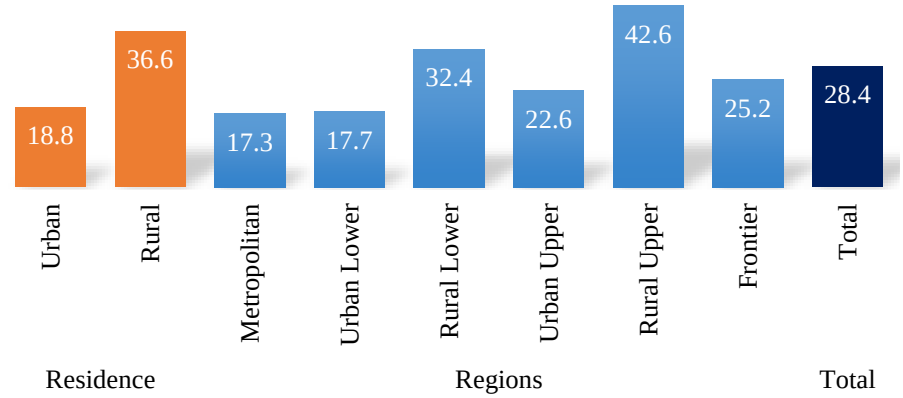
Figure 16. Illiteracy Rate among Individuals 25 Years and Above by Poverty and Gender



[4] Individuals are ranked according to their per capita consumption from the poorest to richest and then households are grouped into 5 equal groups. The first group represents the poorest 20% of the population (according to their consumption), while the fifth group represents the richest 20% of the population.

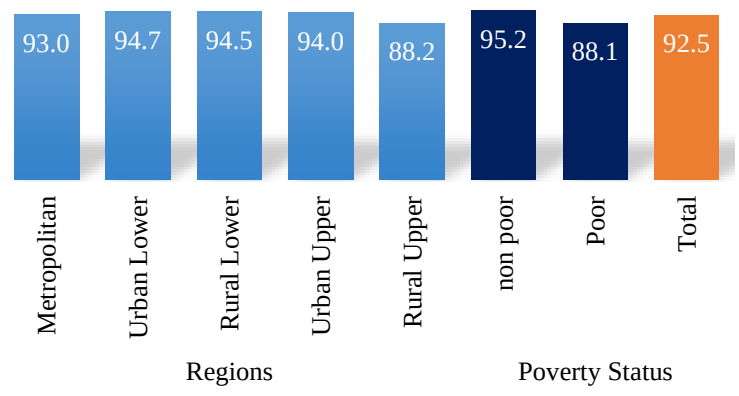
Survey results also show that there were significant regional variations in illiteracy. Figure 17 shows that in regions with dominating agricultural activities such as rural Upper Egypt, the illiteracy rate is the highest, where it reached 42.6 percent. On the other hand, the least illiteracy rate is observed in the metropolitan regions and urban Lower Egypt, where the rates are 17.3 percent and 17.7 percent, respectively.

Figure 17. Illiteracy Rate among Individuals 25 Years and Above by Regions



5.3 Inequality in School Attendance

Figure 18. Attendance Rate among Children 6-18 years by Regions and Poverty Status



School attendance is strongly related to students' educational outcomes. Poor attendance is often caused by a combination of factors, including school, family and community factors as well as student characteristics.

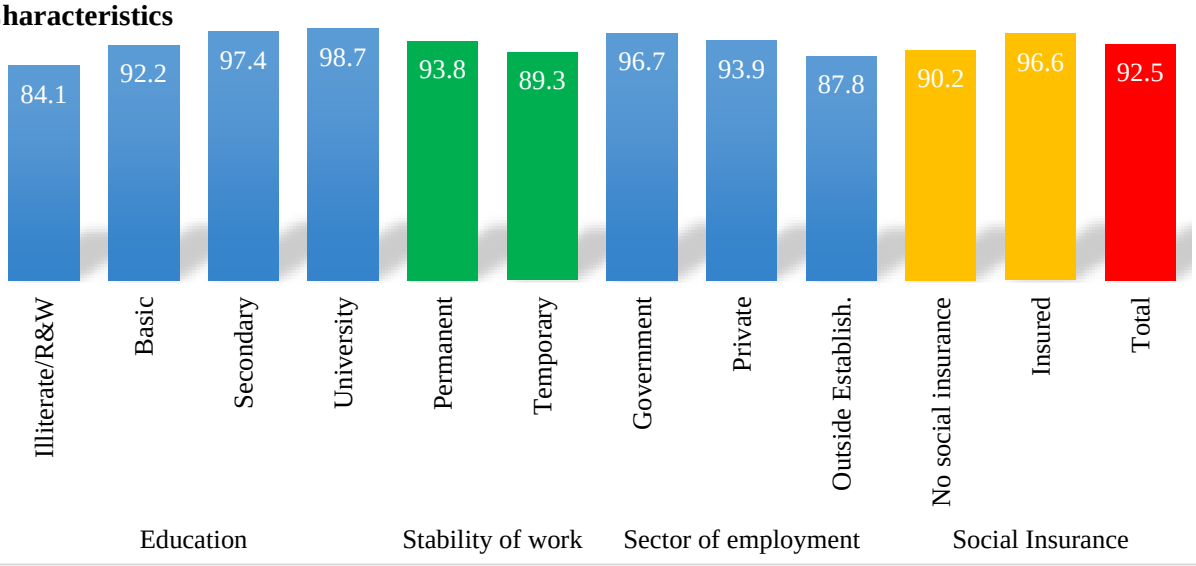
Most children and adolescents aged 6 to 18 are currently attending schools, with significant gap between poor and non-poor children. Overall, 93 percent of children aged 6-18 are currently attending schools, with better-off children having the highest attendance rates, where 95 percent of children attended schools, while this percentage decreased to 88 percent among poor children. Children in all regions have almost the same rate of attendance as the national level except those in rural Upper Egypt, where the rate decreased to 88 percent.

The gap in attendance rates for children aged 6-18 years according to household heads characteristics is not as wide as it was according to attainment rates. Completion of an education

level is markedly affected by the characteristics of household heads more than child school attendance.

When household heads' education was examined, data presented in Figure 19 show that only 84 percent of children 6-18 years with illiterate household heads are currently attending schools compared with 97 percent whose household heads have a secondary certificate and 99 percent with heads who have university education. While just 88 percent of children with household heads who work outside establishments are attending schools, almost 97 percent of their counterparts with

Figure 19. Attendance among Children Aged 6-18 by Household Heads Characteristics



household heads who work in government sector report currently attending school.

VI. Inequality in Impact Indicators

Education significantly influences a person's life chances in terms of labor market access, and wage/income level. It is also crucial for health, social and political participation, general human flourishing, and living standards. Research found that the more education a person has, the healthier and wealthier he is likely to be.

Education is also valuable for society and the economy as a whole. All societies benefit from productive and knowledgeable workers who can generate social surplus and respond to preferences. Ultimately, education is and will continue to be a critical tool to ensure growth, development and inclusiveness in our societies. It is, therefore, relatively uncontroversial to say that education is a highly valuable good to both individuals and to society.

This section discusses the inequality in impact indicators of educational system in Egypt. Impact indicators are reflected in educational efficiency and its impact on the welfare level of individuals of age 25 years and above. Impact indicators of education are also reflected in the overall illiteracy rate, employment status, stability and working in formal/decent jobs.

6.1 Inequality in Education Leads to Inequality in Living Standards and Vice Versa

Poverty perpetuates the lack of education, leading to a vicious cycle of poverty and low education. Such relationships help explain how poverty is transferred from one generation to the next. Education is a very powerful, though not the only, instrument that can enable individuals to break the cycle of poverty.

Poverty is over represented among illiterate people and those with only basic education. Results presented in Figure 20 show that more than one third (36 percent) of illiterate individuals aged 25 years or above or who could read and write without certificate are poor, while this percentage decreased to only 10 percent among individuals with university education or higher.

Figure 20. Distribution of Individuals Aged 25 Years and Above by Poverty and Education

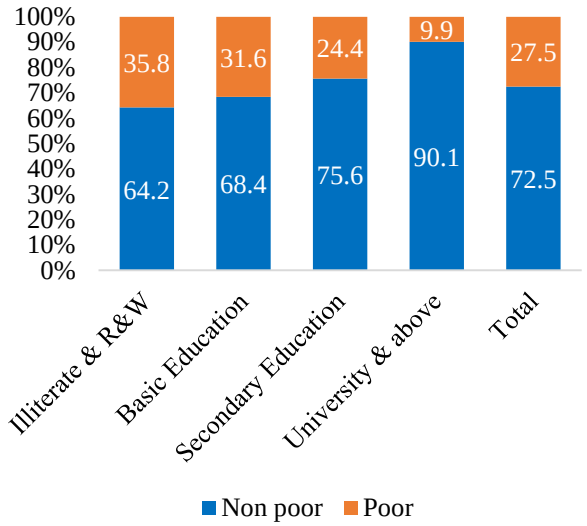
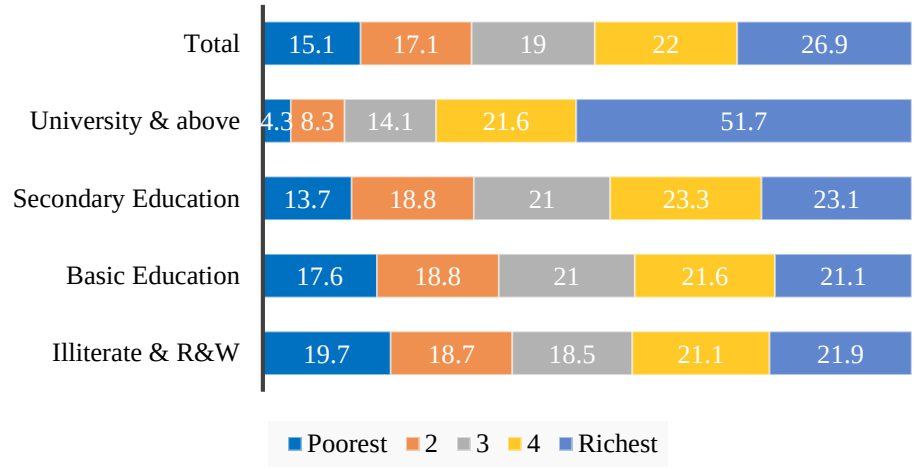


Figure 21 highlights the gap in education status according to different welfare levels represented by the consumption quintiles. The highest incidence of richest quantile (52%) was found among individuals who had university education or above, compared to only 22 percent among illiterate individuals. The figure also shows that one person out of five illiterate persons belongs to the poorest quintile, while this ratio is one person among eight for individuals who had secondary education. Additionally, only 4 percent of individuals who had a university education belong to the poorest quintile.

Figure 21. Distribution of Individuals Aged 25 and Above by Quantiles and Education



On the other hand, poverty or lack of financial resources is the main cause for poor educational achievements of children, including low school enrollment and high dropout rates and thus child labor. Most of the adolescents, who leave school to seek employment before or just after completing the basic education level, are from poor households. Differences in school enrollment between the poor and non-poor are more pronounced if we look at the age group 15-18, where the secondary cycle starts. Poverty is also the cause for child malnutrition, and its consequences of low attainments.

6.2 Recent Poverty Trends and their Impact on Child Education

Recent poverty figures for 2019/20[5] demonstrated improvements in poverty rates, where poverty declined from 32.5 to 29.7 percent but rates in urban areas exhibited insignificant changes.

[5] HIECS surveys have been conducted every two years since 2008, and households are surveyed during an entire year. The last survey for the year 2019/2020 was supposed to cover the period from October 2019 until September 2020, but in view of the Corona pandemic, the sampled households were visited during the period from October 2019 until March 2020 through face to face interviews (as usual). Field work was interrupted because of COVID 19 outbreak and thus 2019/2020 results covers living standards from October 2019 until March 2020.

Moreover, poverty figures are still higher than their counterparts in 2015, before the floating of Egyptian pound.

Since 2017, a high inflation rate emerged following the floating of Egyptian pound, and poverty increased. The Government responded by scaling up existing social protection programs, adjusting wages and pensions, and putting together a stimulus package that was intended to accelerate job creation, as well as to curb the increase in prices.

In the face of the prices increasing and deteriorating living standards (during 2015–2018 period), poor households adopted several coping strategies to mitigate these adverse effects and increase their incomes in the short run. However, the coping strategies might have a negative impact on **the human capital of the poor and on their living standards in the medium and long runs**. These can be judged by the following trends on child labor and employment.

First, secondary school enrollment rates decreased, especially among poor females (from 69.1 percent to 66.4 percent). This may be attributed to the increase in poverty in 2017/18, with poor families consequently abandoning the education of girls.

Second, taken as a whole, the percentage of working children aged 15 to 17 years increased by about 7 percent between 2017/18 and 2019/20 (from 12.8 percent to 13.7 percent), but the increase among the poor was much more substantial—reaching about 17 percent (from 16.8 percent to 19.6 percent). Poor households tried to increase their incomes by putting more of their children, especially males, into the labor market.

To sum up, although poverty declined recently, inequality in secondary enrollment had increased. Deeper analysis on recent poverty trends points out the potential dangers that accompanied this change, which leads to more education inequality. The change may largely be due to the coping strategies, with high possible costs of the strategies.

6.3 Inequality in Education Affects Employment Conditions

Higher levels of education provide more employment opportunities. Education has a substantial impact on employment prospects. In general, people with higher levels of education have better job prospects; the difference is particularly marked between those who have attained university education and those who have not. Overall, only 50 percent of individuals aged 25 years and above are employed. Education is generally good insurance against unemployment, even in difficult economic times. Almost two thirds (64 percent) of individuals aged 25 years and more with university education are employed, while this percentage almost halves (39 percent) among illiterate people.

Figure 22. Percentage of Employed Individuals Aged 25 Years and Above by Education Status

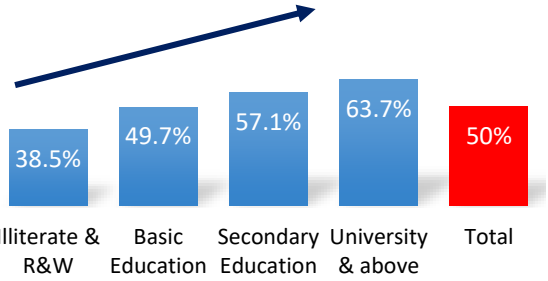
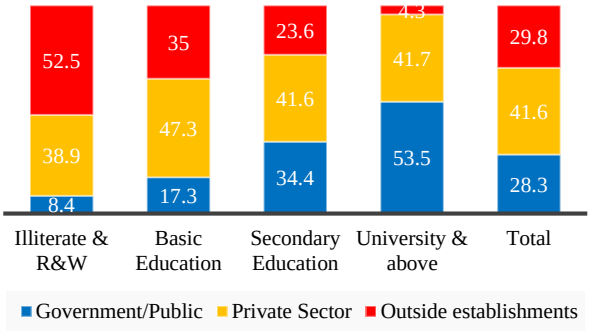


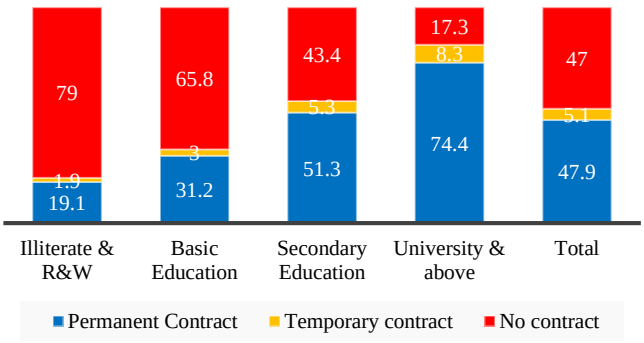
Figure 23. Distribution of Individuals 25 Years and above by Educational Level and Sector of Employment



Regarding sector of employment, employment in the government or in a government-owned corporation (public sector) exhibits a clear correlation with education level. Government sector workers are more likely to be educated than those in other sectors. More than half (54 percent) of employed individuals that have acquired a university education worked in the government sector, compared to only 8 percent among illiterate employed people. On the other hand, working outside government establishments is overrepresented among illiterate people, where 53 percent of employed illiterate people aged 25 years and above worked outside establishments, compared to 24 percent among people who have secondary education and only 4 percent of people with university education.

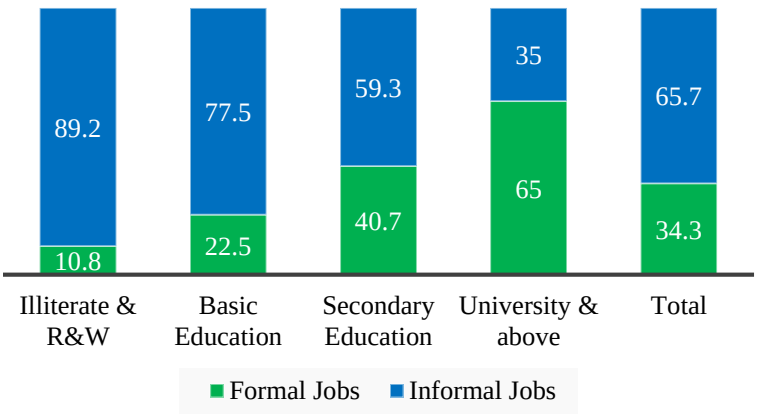
The majority of wage workers are illiterate individuals who work without employment contracts and thus they do not benefit of any social insurance, while educated people are more likely to have permanent contracts. Wage workers can work with two types of contracts: jobs with formal/ permanent contract or temporary contract, in addition to some wage workers who work without any employment contract. Overall, jobs with temporary or no contracts exhibited the highest percentage of wage workers, where 52 percent of wage workers aged 25 years and above worked with no or temporary contracts, while 48 percent worked with permanent contracts. Among illiterate wage workers, 81 percent worked with no or temporary contracts, while this percentage decreased to 26 percent among people who have university education.

Figure 24. Distribution of Individuals 25 Years and Above by Education Level and Type of Contract



Informal jobs are defined as jobs that are temporary or outside establishments or do not contribute to social insurance (may benefit but not participate). Accordingly, those who work in formal jobs are those who work in permanent jobs, inside establishments and contribute to social insurance.

Figure 25. Distribution of Individuals 25 Years and Above by Educational Level and Informality of Jobs



Educated people are most likely to work in formal jobs. Overall, data presented in Figure 25 show that 34 percent of working people aged 25 years and above work in formal jobs. People who work in formal jobs are overrepresented among those with secondary education and those with university education (41 and 65 percent, respectively), while underrepresented among illiterate people (only 11 percent).

To sum up, education enables individuals to break the cycle of poverty, where poverty is overrepresented among illiterate people. Additionally, educational attainment has a great impact on the employment status of individuals, where highly educated people have a better chance of landing formal/decent work with a permanent contract.

VII. Impact of the Corona Pandemic on Inequality in Education

The impact of the Corona pandemic on inequality of education can be traced through two channels. First, through changes in household income and the coping strategies adopted to mitigate the adverse impact, and second, through changes in the educational system that resulted from distance learning or lockdown.

7.1 Impact of Income Changes

During April and May 2020,[6] 4500 households were interviewed and asked about changes in their income, consumption patterns, and employment status, and the reasons for such changes.

The survey showed that about a quarter of individuals were not affected by COVID-19. The majority of individuals (73.5 percent) reported that their income had decreased. COVID-19 affected the income of persons residing in rural areas more strongly than urban residents. Self-assessment of poverty showed that ***about one-third of households suffered from insufficient income to meet their needs during the past month. The percentage increased slightly in rural areas to reach 34.3 percent, compared to 31.8 percent in urban areas.***

The crisis highlighted the frailties of the Egyptian labor market. About 62 percent of employed individuals had been affected by the pandemic: 26 percent of them became unemployed, about 56 percent worked fewer days or less hours than usual, and about 18 percent worked only intermittently. The impact of COVID-19 on employment status was higher in the third and fourth income quintiles, where 65 percent of them indicated change in their employment status. The corresponding figure is 56 percent in the richest quintile and 62 percent in the poorest two quintiles. About 74 percent of the individuals suffered from a decrease in income, and the decrease for most of them was related to labor market conditions, such as unemployment, reduction of wages, or closure of activity.

[6] The impact of COVID-19 on Egyptian families until May 2020, the Central Agency for Public Mobilization and Statistics (CAPMAS).

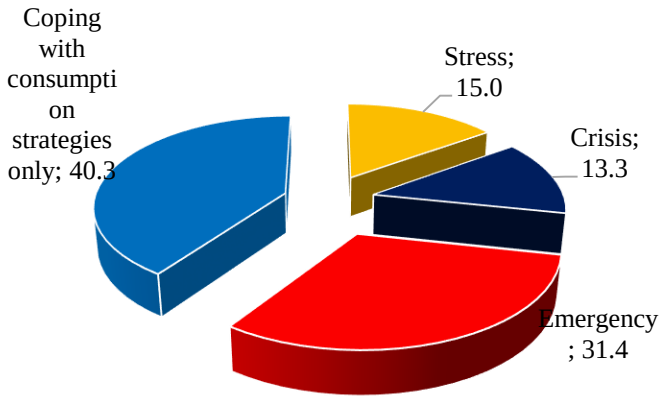
Households are expected to respond to changes of income reduction by consuming cheaper and less nutritious food, and reducing their expenditure on health and education as well as sending their children to work, threatening their safety and security. The impact is more severe on the poor and those who live in rural areas. **All these results may influence the access of children to education and exacerbate inequality.**

- **Coping Strategies for income reduction**

Households adopted various consumption and stress strategies to cope with income reduction. The coping strategies adopted by households can be grouped into four main categories: Consumption strategies (such as eating cheaper foods, reducing number or portions of meals), stress strategies (such as borrowing food or borrowing money to buy food, use savings or sell jewelry), crises coping strategies (such as reducing expenditure on health and education, sending children to work and selling income-generating land), emergency strategies (begging, such as rely on assistance from family and friends and seek donations), WFP 2015.

Overall, Figure 26 shows that 40 percent of households that reported that they could barely meet their basic needs relied mainly on consumption strategies (eating cheaper foods), 31 percent adopted emergency strategies (begging or seeking donations) and 13 percent depended on crisis strategies (reducing expenditure on health and education or sending children to work).

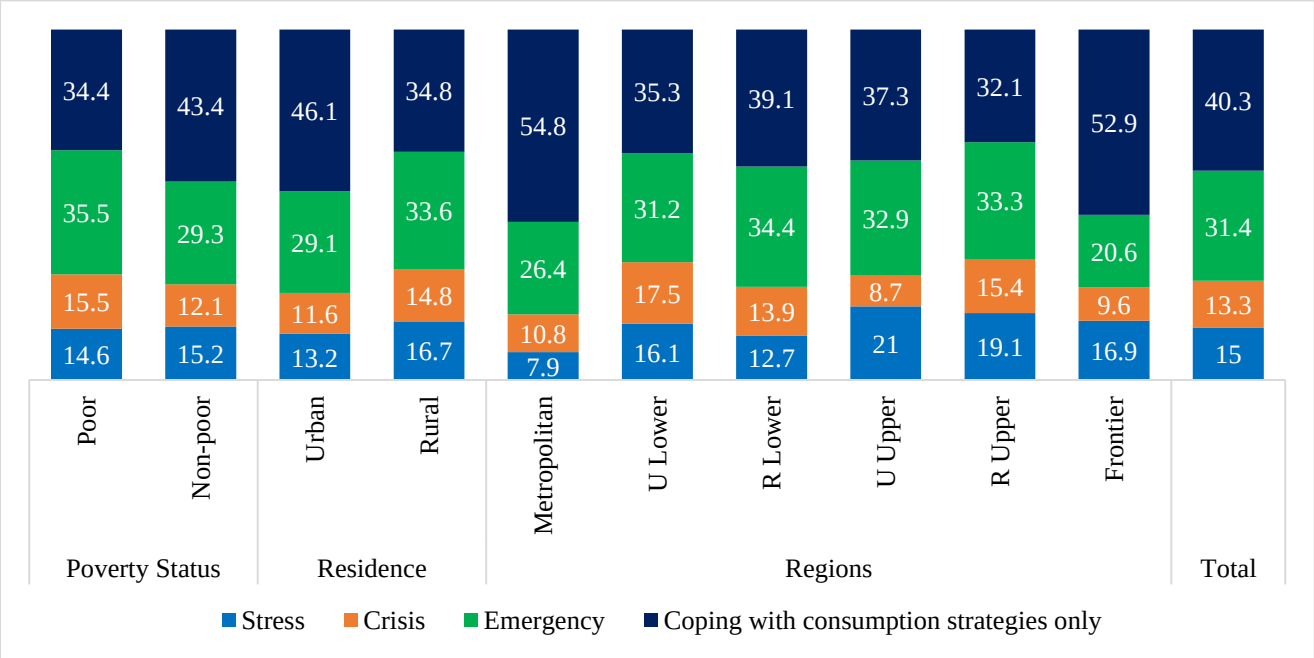
Figure 26. Distribution of Households by Coping Strategies for Food Insufficiency, 2018



Poor households depend more on emergency and crises strategies compared to non-poor households, including begging, reduced spending on health and education and taking children out of schools and sending them to work. Regarding place of residence, Figure 27 shows that 15 percent of households who suffer insufficiency of food relied on crisis strategies, i.e., taking children out of school and decreasing their spending on health and education. Marked differences in coping strategies adopted by households are observed among regions as shown in the figure. Almost 18 percent of households who suffer insufficiency of food in urban Lower Egypt relied on crisis

strategies (taking children out of school and decreasing their spending on education and health) compared to only 13 percent at the national level. Households in urban Upper Egypt are least likely to depend on crisis strategies compared with other regions, where only 9 percent of households depend on crisis strategies. Households in metropolitan areas are more likely to depend on consumption strategies (such as eating cheaper foods) to cope with insufficient food than all other regions. On the other hand, only 11 percent depended on crisis strategies (taking children out of school) since metropolitan areas have jobs that require an educational degree more than any other regions. Accordingly, households tend to have their children complete their education and to cope with insufficient food via other strategies.

Figure 27. Distribution of Households by Coping Strategies for Food Insufficiency and Characteristics



7.2 Impact of Changes in Educational System

Keeping children in schools might increase the Corona virus infection rate. But keeping them home could threaten their future too—particularly if they do not have internet access. The lockdown or adopting a hybrid system is likely to limit access to schools and to strongly impact both the quality as well as the quantity of education received.[7] Different segments of children are expected to be

[7] Although it is too early to quantify the impact of remote learning on children's educational attainment, several gaps in circumstances point out that remote learning may increase the gap in educational achievement.

profoundly affected by the Corona pandemic, especially those from poorer backgrounds. The pandemic showed dramatic inequities in technology access and utilization. Not only does everyone not have the high-speed broadband required for online education, but many people also lack laptops, notebooks, smartphones or electronic devices that allow them to stream videos and take advantage of new modes of service delivery. Table 2 shows the percentage of children living in households with no digital devices or access to internet, using the HIECS 2019/20. More than 50 percent of the poor do not have smart phones, 81 percent do not have access to the internet, 92 percent do not have a PC or laptop and 99 percent do not have tablets. The digital divide is obvious as 94.7 percent of the richest quintile have smart phones, and 83 percent can access internet services.

Table 2. Percentage of Children Living in Households with no Digital Devices, 2019/20.

	Per capita Consumption Quintiles						Location		All Egypt
	Poorest	Second	Third	Fourth	Richest		Urban	Rural	
Smart mobile phone	54.5%	36.9%	24.6%	16.5%	6.3%		22.7%	37.5%	31.4%
Access to Internet /router	81.2%	66.1%	53.2%	39.3%	17.5%		43.6%	65.4%	56.4%
Laptop/PC	92.5%	84.5%	78.7%	68.9%	49.5%		69.2%	84.4%	78.1%
Tablet/iPad	99.4%	98.1%	96.8%	94.6%	85.0%		93.9%	97.2%	95.9%
Any of the above	52.0%	33.9%	21.6%	13.8%	4.5%		19.9%	35.0%	28.8%

The digital divide widens the educational inequality gaps, leaving many poor children behind. Not having access to digital services limits opportunities for online education, and makes it nearly impossible to request access to needed health or educational materials. Moreover, there is also a real gap in helping children at home, and it is this homework that exacerbates inequalities, as parents of the poor children are less educated, they are unable to provide quality homework assistance to their children.

UNICEF (2020) call for the following actions to reduce digital gaps: 1) Policies should recognize that teachers, school professionals and parents have to adapt to these new forms of learning and need to be trained to effectively manage virtual classrooms. 2) There is a need to address the social and gender norms that prevent children—especially girls—from using computers and online learning to their maximum potential. Even in households where online learning is an option, in many countries, parental restrictions are among the most common barriers to digital access for children, and concerns about girls' online safety and the fear that girls will become exposed to content that goes against their community's values mean girls are discouraged from

using the internet. 3) Further investments and innovation are needed to ensure the quality of remote learning and provide real-time monitoring of education outcomes, including formative learning assessments. 4) Improving remote learning infrastructure.

VIII. Inequality of Opportunities in Outcome Indicators of Education

Equality of opportunity means that the child's chances in access to different education levels are unrelated to circumstances or characteristics of the person at birth such as gender, area of birth, parents' education, etc. The Human Opportunity Index (HOI) is an instrument that allows us to detect situations of inequality between children, specifically associated with circumstances beyond the individual's control. The HOI represents the first step for the evaluation of progress in access or equality of opportunities as a result of public policy programs at the national and regional levels.

While one of the four opportunities for education is associated with attendance, the other three are associated with quality or performance. The indicator for attendance is school attendance for children between 6 and 18 years of age. The quality or outcome indicators include finishing primary schooling on time, at age 12-15; finishing preparatory schooling on time, at age 15-18; and finishing secondary general or technical on time, at age 18-21 as shown in Table 3 below.

Table 3. Human Opportunity Indicators for Children and Youth Aged 6-21 Years.

The Opportunity	Definition of the Opportunity
Primary education attainment	Children aged 12-15 years and completed primary education on time.
Preparatory education attainment	Children aged 15 - 18 years and completed preparatory education on time.
Secondary education attainment	Youth aged 18 - 21 years and completed secondary education on time.
School attendance among children aged 6-18	Children aged 6-18 years who are currently enrolled in schools.

In this section, we start with a descriptive analysis of education attainment at different school levels and their relationship with circumstances beyond their control, such as poverty status and family background as well as school attendance among children aged 6-18 and then the HOI is evaluated in the next sub-section.

Inequality occurs when people living in the same society do not have access to the same opportunities. High levels of inequality of opportunity mean that people's circumstances at birth – their gender, the place where they were born, their parental background determine to a significant degree the educational qualifications they obtain. Inequality of opportunity is thus widely regarded as the unfair part of inequality. Equality of opportunity does not mean eliminating all differences in terms of educational qualifications or levels of income; rather, it means that such differential

achievements should reflect people's differing levels of effort, as well as choices freely made by individuals at different stages of their lives.

The previous section observes the association between each of the background variables and educational attainment specified as primary, preparatory and secondary education. Because these background variables are correlated with each other, these simple associations do not allow us to establish the net effect of each variable on education attainment. Accordingly, inequality of opportunities and the contribution of each background circumstance allows us to simulate the impact of these circumstances on educational attainment.

The questions addressed by this section are: How unequal is the distribution of opportunities among children and youth to essential educational services? Which demographic and location circumstances are most correlated to access to opportunities in Egypt?

8.1 Relevant Circumstances (Factors Affecting the Human Opportunities)

The choice of the circumstances vector is somewhat limited by the availability of data set. The circumstances vector includes variables specific to the child and youth, the demographic composition of household, child's gender, household size, consumption level of the household represented by poverty status, variable for location and characteristics of household head (gender, education status, sector, stability of work and participation in social insurance). The circumstances that are included in the analysis could be summarized as follows:

1. Gender of child/youth
2. Poverty status
3. Region
4. Household size
5. Number of children aged 0-5 years in household
6. Number of children aged 6-17 years in household
7. Number of elderly aged 60 years or above in household
8. Gender, education, employment status of head of household
9. Stability of work, sector of employment and participation of heads in social insurance

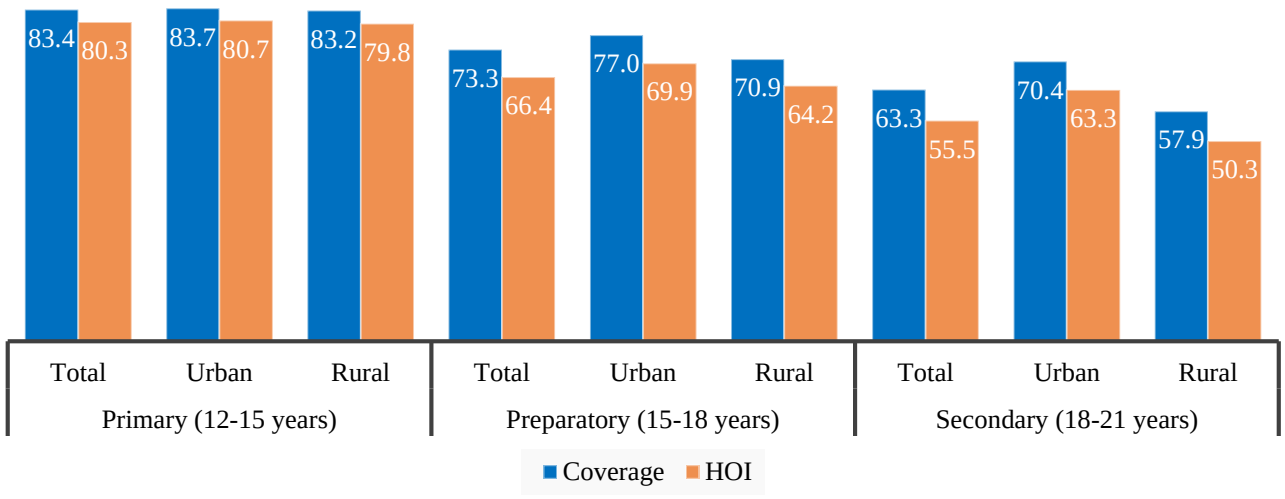
The HOI is used to measure inequality between students due to circumstances beyond the individual's control (such as gender, age, or geographic residence). It is, therefore, an important tool to assist in designing public policy programs that guarantee equal opportunity. The HOI takes into account the average of education attainment (coverage) and the inequality of its distribution. An increase in the index is associated with either increased education attainment (coverage) or a more equitable distribution of coverage, (Paes de Barros et al. 2009).

- **Urban/Rural Inequality**

Figure 28 shows that there is a progressive building of inequalities over the primary, preparatory and secondary cycles, with circumstances beyond the individual's control explaining 4 percent of achievement at the end of primary education, 9 percent at the end of the preparatory level and 12 percent at the end of secondary level.

The HOI for secondary school attainment in total Egypt reached 55.5 points, which means that only 56 percent of all opportunities to achieve secondary education are available and allocated equitably between youth 18-21 years. Coverage rate (access) is 63.3 percent, but due to unequal circumstances, opportunities declined to 56 percent.

Figure 28. Coverage Rate and the HOI for Education Attainment Opportunities by Residence

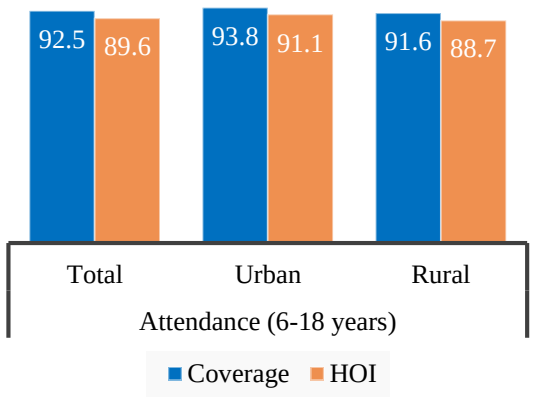


Differences are observed between urban and rural areas, where the urban-rural gap reached 13 points. The HOI among rural areas reached 50 points and the coverage is 58 percent, i.e., the

opportunities to complete secondary education are available and allocated equitably for only 50 percent of the youth aged 18-21 years, and 8 percent of opportunities to achieve secondary education are not allocated equitably between youth due to circumstances beyond their control.

Urban areas have better allocation of opportunities, where the HOI reached 63 percent and the coverage reached 70 percent as shown in Figure 28. This figure shows that 63 percent of all opportunities to complete secondary education are allocated equitably between youth in urban areas, while 8 percent of opportunities are not allocated equitably between the youth.

Fig 29. Coverage Rate and HOI for Different Opportunities by Residence



Regarding the opportunity of education attendance among children aged 6-18 years, the results show that the HOI reached almost 90 percent with no great difference between urban and rural areas as shown in Figure 29. However, for all opportunities, rural areas have more restricted access with more inequality of opportunity than in urban areas.

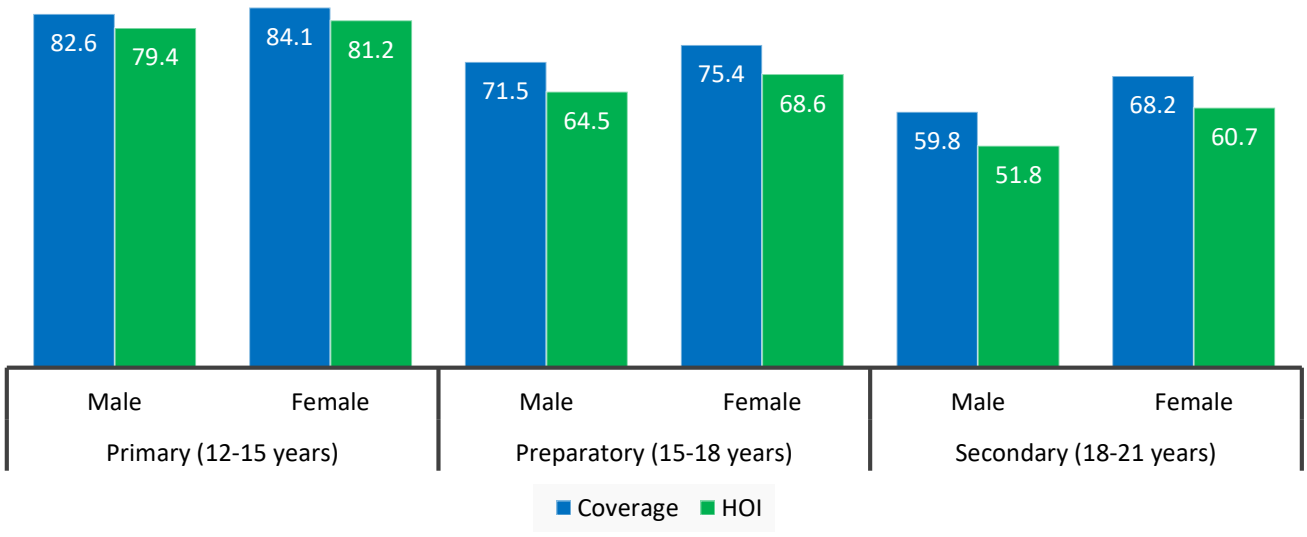
- **Inequality among male/female students**

Inequalities due to individual characteristics among male students are greater than those among female students, particularly in secondary education. Regarding the inequalities due to circumstances beyond the individual's control between male and female students, Figure 30 shows that the gap between males and females increases over the primary, preparatory and secondary cycles. Inequality explains 4 percent of achievement at the end of primary education for both males and females, while inequality explains 10 percent and 9 percent for males and females, respectively at the end of the preparatory level, and finally inequality explains 13 percent and 11 percent at the end of secondary level for males and females, respectively.

Female students have more equitable access to education than male students. Significant differences are observed between males and females, where the female-male gap reached 8 points. Figure 30 shows that the opportunities to complete secondary education are available and allocated equitably for only 52 percent of males 18-21 years (the HOI reached 52 percent), and 8 percent of

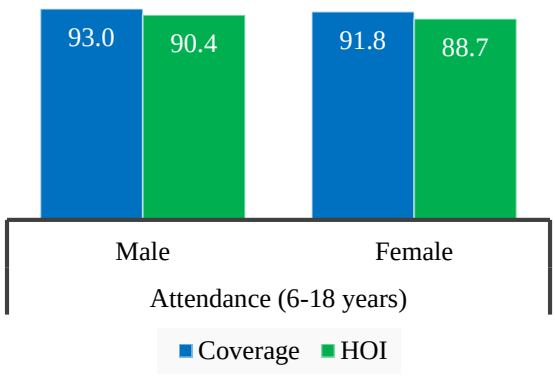
opportunities to achieve secondary education are not allocated equitably between male students due to circumstances beyond their control. These figures reached 61 percent and 7 percent respectively for female students.

Figure 30. Coverage Rate and the HOI for Education Attainment Opportunities by Gender of Students



Regarding the opportunity of education attendance among male and female children aged 6-18 years, the results show that the HOI reached almost 90 percent with no significant difference between males and females as shown in Figure 31.

Figure 31. Coverage Rate and the HOI for Different Opportunities by Gender of Students



8.2 Decomposition of the Urban-Rural gap into Distribution and Coverage Effects

The HOI is determined by the rates of coverage specific to each group and its corresponding participation in the population (the distribution of circumstances). As a result, the HOI can change

only when at least one of these characteristics changes. Thus, any change in the index can be associated with either changes in the distribution of circumstances (distribution effect) or changes in at least one of the rates of coverage in a specific group (coverage effect).

Difference between opportunities in urban and rural areas, as measured by HOI, is in general driven by a difference in access (coverage effect) more than the differences in equality of opportunities between urban and rural areas. Table 4, in the last two columns, summarizes the decomposition of the total difference of the HOI between urban and rural areas into access and equality of opportunities. The table indicates that the differences in HOIs are mainly due to the *coverage effect* (higher coverage of education services in urban areas than in rural areas). The fact that urban areas availed more education services than rural areas is registered by urban-rural gaps, particularly in preparatory and secondary education.

The difference in the HOI for secondary education between urban and rural areas is mainly explained by the coverage effect (84 percent). This means that the difference in secondary education attainment is interpreted by the extensive coverage of these schools in urban areas compared to rural areas. On the other hand, the difference in opportunities of completing primary education between urban and rural areas is explained to a large extent by the distribution effect. ***This indicates that the reason for children not attending primary school is greatly due to their personal circumstances while the reasons children do not go to secondary school is because of lack of schools in their area.***

Moreover, the difference in school attendance between urban and rural areas depends to some extent on the characteristics of children themselves, where 11 percent of the differences in the HOI for school attendance among children 6-18 years are explained by the effect of different circumstances between urban and rural areas.

Table 4. Decomposition of Urban-Rural Gap in the HOI into Distribution and Coverage Effect

	HOI in urban areas	HOI in rural areas	Difference between urban and rural	Decomposition %	
Opportunities				**Access (Due to difference in coverage)**	**Distribution (Due to difference in equality of opportunities)**
Completion of primary education on time (12-15 years)	80.7	79.8	0.8	62.57	37.43
Completion of preparatory education on time (15-18 years)	69.9	64.2	5.7	95.87	4.13
Completion of secondary education on time (18-21 years)	63.3	50.3	12.9	84.28	15.72
School attendance (6-18 years)	91.1	88.7	2.4	88.67	11.33

8.3 Evaluating the Equality of Circumstances

School attendance among children aged 6-18 years and completion of primary education have the highest equality in circumstances, while the completion of secondary education on time has the highest inequality in circumstances. When the equality of circumstances of different opportunities is examined to assess the ranks of these equalities, it was found that school attendance among children aged 6-18 has the highest equality in circumstances compared to all other opportunities. The least equality in circumstances is the completion of secondary education on time, which means that secondary achievement on time depends more on circumstances of youth themselves than all other opportunities. Additionally, Table 5 shows that there are differences between urban and rural areas regarding the equality in the circumstances for secondary attainment among youth. Youth in urban areas have more equitable circumstances than those in rural areas.

Table 5. Equality of Access and Rank of Equality in Urban and Rural Areas

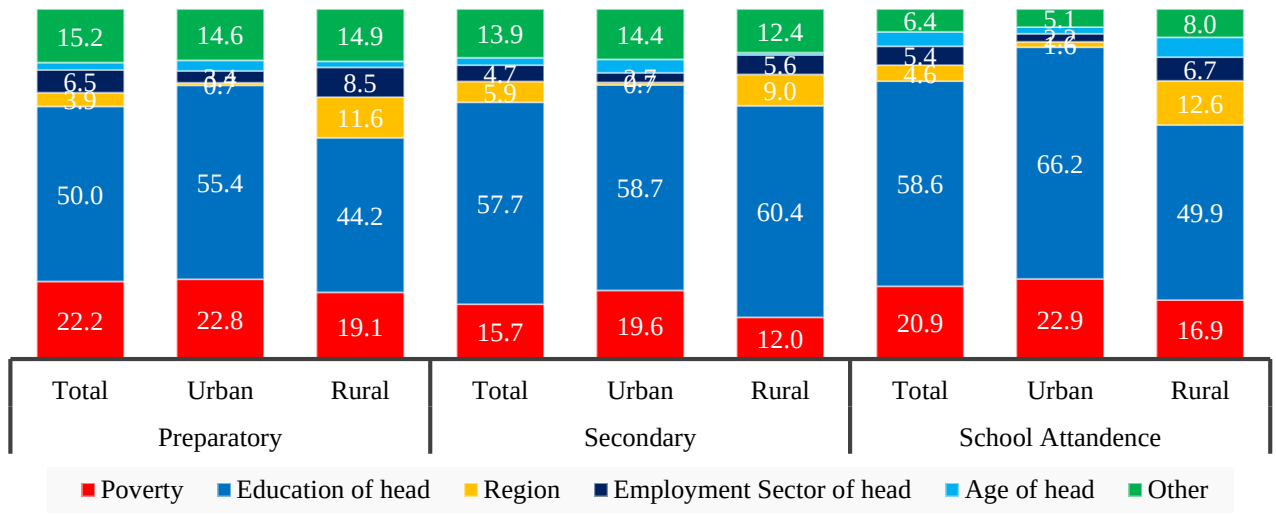
Opportunity	Urban areas		Rural areas		Difference in equality
	Equality (1-D)	Rank of equality	Equality (1-D)	Rank of equality	
Completion of primary education on time	96.4	2	96.0	2	0.4
Completion of preparatory education on time	90.9	3	90.6	3	0.3
Completion of secondary education on time	89.9	4	87.0	4	2.9
School attendance among children aged 6-18	97.1	1	96.8	1	0.3

8.4 Circumstances Mostly Contributing to Inequality in Opportunities

Education of household heads and poverty are the main factors contributing to overall inequalities between children. Sector of employment of household heads and regions are considered the second main contributors to overall inequalities among children in rural areas. Exploring the relative contributions of circumstances to overall inequality of opportunity in education attainment is an important factor for developing the appropriate strategies. Figure 32 shows marked disparities between the impacts of different circumstances on the inequality in education attainment and attendance opportunities. Overall, education of household heads is the factor that contributes most to all opportunities, where its share reached 50 percent or more in overall inequalities. Additionally, the figure shows that education of heads has more impact on overall inequality among children aged 18-21 years to achieve secondary education and for school attendance compared to those in preparatory education. Moreover, there is a marked difference between urban and rural areas regarding the contribution of education of heads to the overall inequality in school attendance.

The contribution of poverty to overall inequality between children remains very powerful, where poverty contributes more than 20 percent of overall inequalities. Sector of employment (i.e., government, private or outside establishment) of household head has a significant contribution to overall inequalities, particularly in rural areas. Region of residence (Lower or Upper Egypt) has a marked contribution to overall inequalities in education attendance or attainment in rural areas more than in urban areas.

Figure 32. Contribution of Circumstances to Overall Inequality in Education Opportunities



IX. Policy Implications

Regional balance. Ensure that regional disparities in incomes, employment opportunities and educational inputs and outputs are reduced.

Education. Breaking the vicious circle between poverty and education requires addressing both supply and demand for education through providing free basic education to ensure that every child has a chance to go to school. It also requires creating a strong demand for education, through improving the quality of education and its high return.

Although one of the largest contributing factors to inequality of education is education of household heads, policies can mitigate the adverse effect of low educational attainments of household heads by providing conditional incentives for households to send their children to schools. Incentives may include providing illiteracy classes, on-the-job training, and conditional cash transfers and school meals.

Social protection. Social protection is linked to improved education, health, and nutrition outcomes. Expanding access to social protection programs can increase income stability and help limit the ‘use of negative coping mechanisms,’ such as consumption rationing (i.e., eating less or spending less on education and health) or child labor.

Reduce the digital gap so that children can continue learning. Design remote learning programs that are accessible to all children and adapted for households that do not have access to broadcast or digital media. Support and train teachers and parents to effectively manage remote ‘virtual’ classrooms and help children learn at home, at all levels of education.

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