

Inequality of Education in Turkey: A Comparison of Demographic Groups

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Abstract

This paper investigates how the demographic distribution of human capital - defined as educational attainment - evolves over time. With four waves of TDHS data, we analyze educational inequality for the adult population in Turkey to understand whether mass education expansion has benefited different demographic groups equally or not. Also, using decomposition techniques, we explore the relative shares of overall education inequality with respect to between and within variation for gender, residence, neighborhood, region, migration and marriage status. Over the concerned period, the human capital level has improved and its distribution has become more equal. Increased educational attainment for young cohorts and for females may be considered as the main drivers. However, there are reverse factors that weaken the expected improvement.

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Keywords: Educational inequality; demographic groups; decomposition; cohort; Turkey.

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1 Introduction

Besides gender and age; biological, social and behavioral characteristics shape demographic processes as well [Lutz and Samir \(2011\)](#) . Among these, educational attainment is important for population analysis. But, it has limitations when it is not equally distributed among various demographic groups. So, understanding the structure of education inequality contributes to the better exploration of fertility, mortality and migration issues. Human capital disparity in a society might have direct and indirect effects. Integrating education into demographic analysis takes into account the quality dimension besides the quantity of people. Also, the education distribution of the current generation may be the main determinant of the distribution of next generation through social mobility.

According to the Human Development Index, Turkey has a better outlook in terms of the per-capita income and the lifespan compared to the human capital. The average educational attainment of the adult population is around 8 years. The adult population's educational attainment is considered a measure of stock human capital, and hence progress rate is low. Despite the low average, demand and supply side development in the education sector has contributed to the expansion of educational attainment for especially younger cohorts recently. On the demand side, the children of parents with improved resources have spent more years in the education system. As a supply-side factor, the extension of compulsory education duration and an increased number of schools allowed more children to enroll at schools. However, this mass education expansion might have not benefited various groups equally.

Summing up, this paper aims to analyze the extent of educational inequality of the adult population in Turkey by gender, region, residence, neighborhood, migration, and marriage status. Using inequality measures and their decomposition techniques, we will explore whether the extent of education inequality varies among different demographic groups over the period 1998-2013.

1.1 Background

Education is accepted as one of the main determinants of socio-economic status and health.

The literature on the relationship between education and demography is twofold. First, individual educational attainment levels may affect their demographic processes and population health [Mare and Maralani \(2006\)](#). Secondly, the distribution of education in community-level may have also spill-over benefits on individuals. Distribution of education may be an important determinant of demographic processes and population health ([Galea and Ahern, 2005](#)). For both purposes, the measurement of inequality in education has been on the focus demographers.

There are several studies using inequality measures to analyze education distribution among the populations in developing and developed countries. Some of these have focused on specific countries ([Galea and Ahern \(2005\)](#) for Japan; [Lin \(2007\)](#) for Taiwan; [Qian and Smyth \(2008\)](#) and [Yang et al. \(2014\)](#) for China; [Tomul \(2011\)](#) for Turkey; [Agrawal \(2014\)](#) for India).

On the literature of cross-country side, some studies of educational inequality include [Zhang and Li \(2002\)](#); [Dorius \(2013\)](#); [Meschi and Scervini \(2014\)](#); [Zieseemer \(2016\)](#); [Permanyer and Boertien \(2019\)](#).

Nevertheless, few studies have explored educational inequalities by several demographic groups with a cohort approach.

1.2 Data and Method

Data for this paper are obtained from 4 waves of the Turkish Demographic and Health Survey TDHS (1998, 2003, 2008, 2013), and are restricted to the adult population over the age of twenty-five. In TDHS, household members who had graduated or who were currently attending a school were asked in what kind of school they had achieved and the highest degree of education grade at that level. So, we consider educational outcomes as the stocks and hence years of schooling attained. The quantity of formal education is the mean years of schooling of the adult population above 25 years.

There are different tools to measure the total level of inequality in educational attainment, achievement, and finance like Variance, Coefficient of Variation, Standard Deviation, Gini Index, Theil Index, General Entropy, and Mean Logarithmic Entropy.

The education Gini formula, adopted from [Thomas et al. \(1999\)](#) is shown in the following equation:

$$G^E = \frac{1}{\mu N(N-1)} \sum_{i < j}^2 |x_i - x_j| \quad (1)$$

Here G^E is the education Gini index; μ is the mean value of average years of schooling (AYS) the total sample; N is the total number of observations in the sample; x_i and x_j are AYS of the unit of interest For a population with values y_i , $i = 1$ to n , that are indexed in non-decreasing order ($y_i \leq y_{i+1}$):

$$G = \frac{1}{n} \left(n + 1 - 2 \frac{\sum_{i=1}^{n-1} (n+1-i)y_i}{\sum_{i=1}^n y_i} \right) \quad (2)$$

In complex surveys like TDHS, the true estimation of standard errors needs more effort than simple random samplings. DHS methodology typically adopts Taylor Linearization for means and proportions and Jackknife n or Bootstrap for rates respectively. Since Education GINI is a rate indicator, R software is used to calculate Education GINI and standard errors with jackknife n.

Inequality measures like Theil and Logmean Deviation can be decomposed as the sum of between and within inequality terms. But, GINI has a third component that reflects interactions or overlaps between the subgroups distributions

2 Results

Table 1 shows the breakdown of the number of people older than twenty-five having already graduated, for each level of education for both males and females.

Table 1: Share of Population by Education Over Twenty-Five, TDHS-2013

Education Level	Male	Female	Total
No education	6.41	22.31	14.51
Incomplete primary	3.50	6.14	4.84
Complete primary	36.83	39.48	38.18
Incomplete secondary	17.72	9.28	13.42
Complete secondary	17.54	11.15	14.29
Higher	18.01	11.63	14.76
Total	100.00	100.00	100.00

Table 2 shows the trend in the Gini education coefficient and AYS as determined from statistics of the four DHS (1993, 2003, 2008, 2013) of Turkey done. The Gini education coefficient for the overall population older than twenty-five is 47.65 in 1998 and decreases consistently after that. In other words, educational inequality as measured by the Gini coefficient is shrinking. Further, the average number of years of schooling in 1998 was 4.5 and increased 2.29 years to reach 6.79 years in 2013.

Table 2: GINI Education Coefficient and Average Years of Schooling

	TDHS-1998	TDHS-2003	TDHS-2008	TDHS-2013
Gini Education Coefficient				
All	47.65	42.34	38.47	36.96
Male	37.22	34.01	30.5	30.09
Female	57.3	49.84	45.72	43.14
Average Years of Schooling				
All	4.5	5.73	6.19	6.79
Male	5.68	6.91	7.31	7.87
Female	3.37	4.61	5.12	5.75

Figure 1 and Figure 2 show the education distribution by gender and wealth by employing Lorenz curve. Initial observation points that females and the east region have less Our results show that increased educational attainment for young cohorts and females helped to decrease overall inequality. However, there are reverse factors that weaken the expected improvement as well.

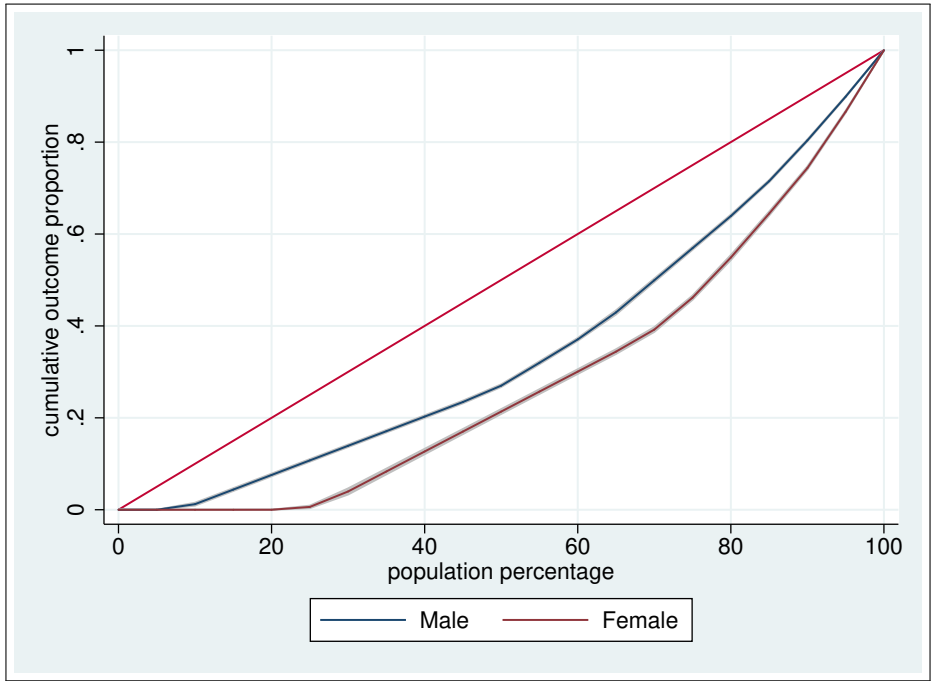


Figure 1: Lorenz Curve for Educational Attainment by Gender, TDHS-2013

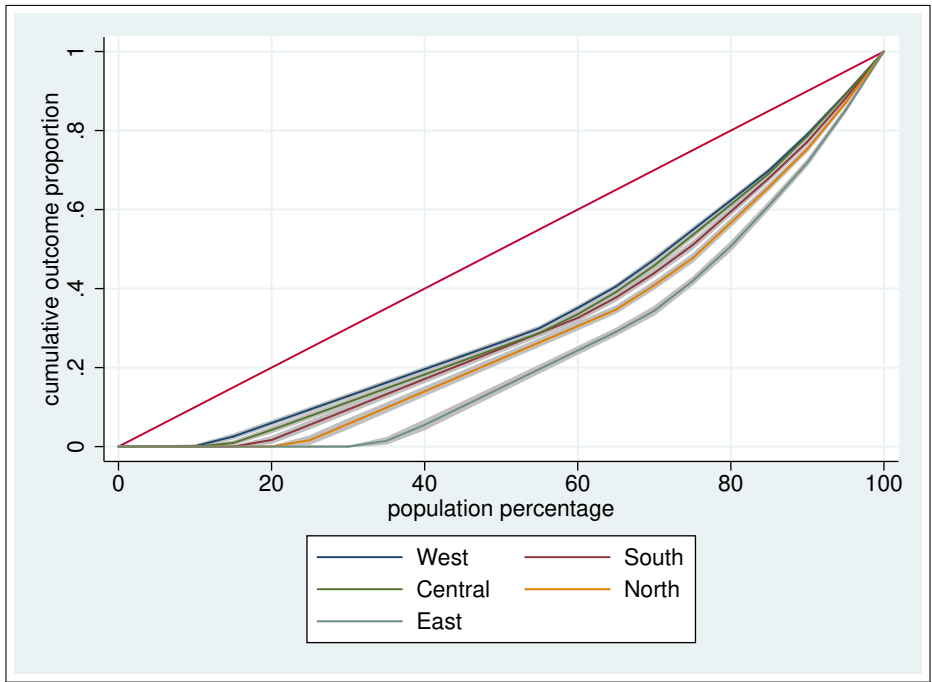


Figure 2: Lorenz Curve for Educational Attainment by Region, TDHS-2013

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