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The lucky high schooler hypothesis: Nuevo León from a comparative perspective

La hipótesis del preparatoriano suertudo: Nuevo León desde una perspectiva comparativa

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Abstract

This paper addresses the influence of higher education and parental socioeconomic status on the offspring's probability of a high socioeconomic destination in three residence areas of Mexico: Southern Region, Mexico City and Nuevo Leon. By estimating a structural probit model with instrumental variables (and with data from two ESRU-EMOVI surveys), we find that higher education increases individuals' probability of being positioned at the third welfare tertile and that education probability premiums run in opposition to social reproduction. Our results reject what we call "the lucky high schooler hypothesis". In Nuevo Leon, the probability of a high destination is higher than in Mexico City or the Southern Region. Nonetheless, in Nuevo Leon, higher education probability premiums are smaller than in Mexico City or in the South and show a small dependence on socioeconomic origin, hence lower social reproduction. In contrast, probability premiums to higher education are greater in the South.

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Resumen

Este artículo aborda la influencia de la educación superior y el estatus socioeconómico parental sobre la probabilidad de que la descendencia tenga un destino socioeconómico alto en tres áreas de residencia de México: Región Sur, Ciudad de México y Nuevo León. Estimando un modelo probit estructural con variables instrumentales (y con datos de dos encuestas ESRU-EMOVI), encontramos que la educación superior incrementa la probabilidad de un individuo de posicionarse en el tercer tercil de bienestar y que los premios en probabilidad asociados a la educación van en oposición a la reproducción social. Nuestros resultados rechazan lo que llamamos "hipótesis del preparatoriano suertudo". En Nuevo León, las probabilidades de un destino alto son mayores que en la Ciudad de México o la Región Sur. Sin embargo, en Nuevo León, los premios en probabilidad asociados a la educación superior son menores que en la Ciudad de México o en el sur y muestran una pequeña dependencia del origen socioeconómico, y por tanto menor reproducción social. En oposición, los premios en probabilidad asociados a la educación superior son mayores en el sur.

Introduction

On January 18, 2024, Oxfam released its Inequality Report 2023. This report was based on the results of the post-COVID era inequality and informs that the world is living in a golden inequality age, characterized by the richest increasing their wealth and the poorest increasing their poverty (Oxfam México, 2024). According to the report, one main reason inequality is growing is that the commoditization of education is a global trend.

The commoditization of education is a considerable concern, according to the Oxfam International Report, because education is a double-edged sword. First, as the report emphasizes, education can increase inequality. The well-off offspring receive broader opportunities to access better quality education and benefits like individual mentoring or even peers, with the potential to reach higher positions in the job market. They also receive personal access to qualified teachers and principals, among other privileges (i.e. Huerta-Wong, Burak & Grusky, 2013). Otherwise, low-income children, especially in developing countries, surf the waves of bad-quality schools without basic services (i.e., running water, roofs, sports facilities), poor-prepared teachers, lack of school transportation, and so on (Engle, Fernald, Alderman, Behrman, O'Gara, Yousafzai, *et al*. 2007;

Hillman & Jenkner, 2004; Tikly & Barret, 2011). Second, education is still the upward mobility engine, the best tool for capturing human experience and improving human progress (see Chety, Friedman, Saez, Turner & Yagan, 2017).

Mexico stands out as a society with extreme inequality in a world where inequality is on the rise. This issue is not new; it has been a defining feature of Mexico for the past 200 years, as noted by the German traveler Von Humboldt in 1827. More recent analyses have delved into Mexico's inequality from a historical perspective, revealing its profound implications across various aspects (Campos, 2023; Castañeda-Garza, 2024; Oxfam Mexico, 2024).

Education has long been hailed as the gold standard for creating more equal societies. Its advocates see it as a powerful tool for those born *without privilege* to escape poverty and climb the socioeconomic ladder[1]. They advocate for a significant increase in education coverage, particularly in higher education and graduate schools. They champion meritocracy, the idea that the most qualified professionals should rise to the top of the wealth distribution, as the path to a fairer socioeconomic structure in liberal, democratic societies. However, it's important to note that not everyone sees meritocracy in a positive light. Critics argue that it can perpetuate inequality, as success in the credentialization ladder is often tied to one's socioeconomic origin (i.e., Young, 1958; Vélez-Grajales & Monroy-Gómez-Franco, 2023b).

Investments in education might be a more efficient path to increase productivity and life opportunities and become a mechanism to increase growth and reduce inequality (Heckman & Mosso, 2014). Families invest in education because they expect to increase their children's advantages by developing skills that can be transformed into occupations that bring them more income and wealth. Because this process takes years and even decades, families and individuals, especially those at economic disadvantage, evaluate returns in each stage (López-Calva & Macías, 2010).

This research paper analyzes the role of socioeconomic background and schooling in reaching a high socioeconomic status. We state that Nuevo

[1] This paper does not aim to summarize the literature's milestones coming from one of the most productive research traditions in Social Sciences and, more recently, Economics. Nevertheless, we recommend readers explore James Heckman's work (i.e., Heckman & Mosso, 2014) and a broader reading on the topic, such as Social Stratification (Grusky, 2018).

Leon represents an outstanding case because of its exceptionality and fluid social mobility rates in a country with a tradition of stagnation in social mobility and extreme inequality of opportunities and conditions.

What is the role of education in reaching a high socioeconomic status? We addressed this question to evaluate whether higher education smooths the deep social reproduction in Mexico. We called this effect the "lucky high schooler hypothesis". Our results show evidence to reject this hypothesis, implying that higher education influences the probability of achieving a higher socioeconomic status.

This paper then unfolds three contributions to the knowledge corpus by addressing three gaps in literature. First, several studies are testing the social reproduction hypothesis, which means family background influences the socioeconomic welfare of offspring (Foster & Rothbaum, 2015; Huerta-Wong, Burak & Grusky, 2013; Torche, 2010a, 2010b; Toro, 2021). Various studies also test educational reproduction by measuring the weight of the family background in terms of education on the offspring's education (i.e., Jerrim & MacMillan, 2015). What is rarely found in Mexican stratification literature is to observe the influence of personal educational attainment and the parents' status on the economic well-being of the offspring, as it is in this research paper. Second, once there is evidence sustaining that Northern states are less opportunity unequal than Southern states (Huerta-Wong & Olivera-Pérez, 2020; Solís, 2007; Vélez-Grajales & Monroy-Gómez-Franco, 2023a), we found that comparative studies supporting this statement are scarce. Third, we propose a novel analytical strategy, the structural Probit model with instrumental variables, to estimate the probability of reaching a high socioeconomic destination. Comparative studies in the stratification literature frequently measure odds ratios to analyze inter-society differences (Breen, 2019; Erikson & Goldthorpe, 1992) or even intra-societies (Ariza & Solís, 2009). Structural Probit models with instrumental variables constitute a more versatile method to estimate odds ratios from estimating a conditional probability function; the method goes from estimating the parameters of the conditional probability function first to obtain the predicted probabilities, which allows calculating different odds ratios to answer different questions in different inter/intra societies.

Based on this empirical contribution, findings in this paper suggest that a high probability of socioeconomic status, less inequality of opportunities, and less social reproduction are associated. We find a higher probability of socioeconomic status and less social reproduction in Nuevo Leon. These findings coincide with recent evidence that Nuevo Leon also has less

inequality of opportunities than Mexico City and the South (Vélez-Grajales & Monroy-Gómez-Franco, 2023a). Additionally, we find that education determines the probability of achieving the third welfare tertile. This relationship is observed at any economic origin, getting more for those from the upper background tertile. In Nuevo Leon, probabilities are higher than in Mexico City or the Southern Region, indicating that those probabilities are not a function of coverage in education because coverage is broader and older in Mexico City. Higher education also consistently positions individuals at the third welfare tertile. Educational probability premiums run in opposition to social reproduction. In Nuevo Leon, higher education probability premiums are smaller than in Mexico City or the South.

In contrast, probability premiums for higher education are more prominent in the South. The chances of the highly skilled getting the third tertile position are much higher as their social origin goes higher, but the chances for the highly skilled in the South are greater even if they come from the lowest origin. After reviewing the relationship between social reproduction and education, we include job structure analyses. On average, higher economic origin determines a higher class, i.e., professional classes are more frequent in the offspring of higher economic origins. Otherwise, those from the bottom earn more when they reach professional classes. In Nuevo Leon and Mexico City, those from the top do not substantially benefit from being professionals. They do not improve their chances of arriving at the third tertile by using the job market. In Nuevo Leon, those from the bottom benefit the most by arriving at non-manual positions, having their chances doubled to arrive at the third tertile than those not exiting manual positions. Upward chances are similar in Mexico City as pure social reproduction affects the relationship between the jobs' structure and social reproduction smooths when education is included. In general, the reward for attaining higher education is more prominent if the individual has a low socioeconomic level of origin. For Nuevo Leon, the probability premium of human capital investment to attain a university education is smaller than that in the Southern Region or in Mexico City. The odds ratio functions are flat and close to one, showing a slight dependence on socioeconomic origin.

We then discuss finding a "paradoxical case" in the State of Nuevo Leon. We refer to a paradox as an appealing way to summarize four findings: (1) Social reproduction matters less in comparative terms; (2) Each step in the education ladder corresponds to a higher chance of staying in the third tertile, regardless of social background; (3) This relationship is

particularly significant for non-manual positions, especially those from the bottom of the distribution; and (4) We find that the odds of getting a position at the third welfare tertile are not going through the occupational structure.

In the following, we introduce the "lucky high schooler hypothesis" after a comprehensive review of the literature. We then present the rationale for this hypothesis in the context of Nuevo Leon. We detail the process of merging databases, and the analytical strategy employed to ensure an unbiased comparative analysis. This strategy outlines the steps taken to test the "lucky high schooler hypothesis". After executing this strategy, we summarize our findings on the paradoxical case of Nuevo Leon, provide research-based public policy recommendations, and suggest further research on the relationship between education and higher education.

1. Theoretical background

1.1. The social reproduction and the lucky high schooler hypotheses

People are born with an unequal endowment of economic resources due to the reproduction of the advantage linked to inherited capital (material, cultural, social) that parents transmit to their children. Because Mexico is such an unequal society, we explore the social reproduction hypothesis, which suggests that advantages are passed down from privileged parents to their offspring in a highly unequal society. This is achieved through using various resources in direct or indirect ways. For example, parents that are better-off may use their resources to ensure that their children are well-prepared for success in traditional occupations, having access to prestigious schools and networks, and so on. The latter means greater wealth inequality leads to a more stagnant mobility regime (Huerta-Wong, Burak & Grusky, 2013). The strong effects of social reproduction are the main reason critics deny meritocracy, according to which the weight of inheritance in unequal societies is so high that it is not smoothed by education. Well-off offspring attend better schools, have classmates that help them to climb in the job structure, have well-off offspring themselves also that amplify their advantages, and so on; in contrast, people without advantages can do nothing to restrict their disadvantages (Young 1958; Vélez-Grajales & Monroy-Gómez-Franco, 2023b).

Otherwise, promoters of meritocracy state that education is the primary reference of the effort and ability that the individual performs to counteract the effect of social origins on people's socioeconomic destination. Meritocracy implies that abilities, commitment, and

perseverance determine life chances. In a perfectly meritocratic society, socioeconomic origin and destination are statistically independent once merit is considered (Esping-Andersen & Cimentada, 2018; Hout, 1988).

Schooling can be considered a meritocratic outcome (merit) related to cognitive abilities such as the capacity to reason, understand, and use quantitative or qualitative information (Esping-Andersen & Cimentada, 2018). Academic attainment and skills are rewarded in the labor market snd give way to additional qualifications that increase working productivity (human capital hypothesis) or credential effects that certify the worke's capacity (screening hypothesis) (Psacharopoulos & Patrinos, 2018).

Schooling attainment also improves long-run life effects on the opportunities to belong to a higher economic welfare stratum. Along the pathway to higher degrees, the budget constraint increases (expansion path), increasing employment income and consumption (National Center for Education Statistics, 2023; Oreopoulos & Salvanes, 2011). Then, schooling smooths the correlation between origin and destination.

Based on meritocracy proponents, Torche (2018) proposes that upward mobility should be higher among advanced college graduates than those with low schooling levels. The decline in the association between parents' economic resources and college graduates' economic welfare is explained in two ways. First, the bureaucratic labor market in which BA holders work could limit discretionary rewards and hamper exclusionary social criteria. Second, the unobserved attributes of college students (such as motivation and ability) exhibit desirable and substantial returns in the labor market. Under these premises, graduates are allocated to more managerial positions and professional occupations than people with less schooling. The pecuniary and labor market benefits associated with higher levels of schooling play a dual role in smoothing/discontinuing reproduction. First, schooling acts as a buffer, smoothing the link between socioeconomic destination and ascriptive characteristics. Second, returns to education are also a factor of economic persistence. Privileged families invest their resources in specialized instructors, extra-curricular abilities, initial endowment, more extra-educational opportunities, and better soft skills training than their disadvantaged counterparts. This dual role of education and its associated benefits is a complex but crucial aspect of the social mobility landscape.

We propose the "lucky high schooler hypothesis" based on the latter, the meritocracy critics' perspective. This hypothesis states that individuals with no more than 12 years of schooling have the same probability of a high destination in the socioeconomic distribution compared to those with a university education level. There are some rationale elements beyond the meritocracy critics' perspective. First, the 12 years of schooling threshold is the limit in Mexico's laws. Although its enforcement is dubious for older cohorts, that threshold is established by law. Second, the rates of graduate degrees are still so low that the results are meaningless in open surveys. In statistical terms, this means that the difference between the probability of a high destination when students obtain 17 years (college) of schooling and the probability of a high destination when schooling is 12 years (high school) is zero. Notice that this probability difference may be interpreted as the marginal effect of educational level (from high school to college). Third, this no significant difference proposition implies that social origins, not education, account for individuals' positioning at the top of the socioeconomic structure. In other words, according to the "lucky high schooler hypothesis", education does not matter for climbing the socioeconomic ladder, nor does it matter how many years of education somebody has to reach this relative economic peak.

This hypothesis also arises from ivory tower pretenders anecdotally proposing that, in Mexico, an individual with relatively low schooling (and at a low occupational category) may reach the same welfare level as someone with a college degree. Hence, both individuals would have the same probability of a high socioeconomic destination. This research paper aims to provide a statistical methodology to show if empirical evidence supports or rejects this "lucky high schooler hypothesis". This hypothesis is aligned with the social reproduction hypothesis, stating that parental socioeconomic status contributes to offspring welfare, as does the region of residence. Equation 8 presents a formal statement.

1.2. How to measure attainment

One of the main discussions in stratification analysis refers to how to tackle inequality measurement. The distinction between categorical vs gradational perspectives follows from social mobility literature. The categorical perspective frequently observes the odds of people's intergenerational/intragenerational jump between categories in the social world, i.e., from manual to non-manual jobs, college vs non-college degrees, first quintile vs fifth quintile, and so forth. The gradational perspective frequently analyzes how parental welfare explains how much

variance, elasticity, or prestige in offspring welfare. Recently, some literature under this perspective has focused on the inequality of opportunities discussion using a gradational perspective (i.e., Vélez-Grajales & Monroy-Gómez-Franco, 2023a, 2023b).

After a couple of decades from the "Erickson-Goldthorpe-Portocarero schema" (Erikson & Goldthorpe, 1992) to the "micro-class" analysis (Weeden & Grusky, 2005), literature seems to register some minor variations from the categorical perspective. The extraordinary data requirements of the meso and micro class analysis *a la* Weeden & Grusky (2005) have limited its evolution.

One main concern for categorical analysis proponents is that it is necessary to decompose several aspects of its mechanisms to understand inequality processes. Some are flux/permanent income, as proponents of the gradational approach frequently suggest. However, some are intertwined in details that are plausible to scrutinize and tackle. For example, Jackson (2013) analyzes performance versus choice in educational attainment, isolating a secondary effect that prevents poor children from choosing careers in science and engineering once their origins explain performance at school. In this example, choice emerges as a second inequality effect, just after accounting for performance, indicating a single-round analysis is not good enough to measure it.

In other words, social stratification research is concerned with decomposing the direct transmission of socioeconomic origin (O), plus its indirect effect exerted via socioeconomic returns to educational attainment (E), in adult children's socioeconomic destination (D) (Pfeffer & Hertel, 2015).

The analytic methods usually estimate the social fluidity trends with log-linear analysis procedures, in which occupational status is frequently used to indicate class returns. The class approach distinguishes how "people earn their money, how much money they have, or what they do with their money" (Hout, 2008: p. 26). Those researchers frequently operationalize class theories by using jobs schemas, like manual/non-manual, five big classes schemas, ten classes schemas to the 82x82 micro classes schemas (Huerta-Wong, Burak, and Grusky, 2013). Occupational schemas are helpful as they summarize objective and subjective reward packages attached to a specific position in the socioeconomic structure (Lareau, 2008). Therefore, job schemas address a multidimensional perspective capturing the social organization of inequality, characterizing

a combination of endowments (education, human capital), working conditions (rank, autonomy), and job rewards (income, wealth) (Pfeffer & Hertel, 2015; Raftery & Hout, 1993). In the log-linear analysis, occupational status is frequently used to indicate class returns (Raftery & Hout, 1993; Pfeffer & Hertel, 2015). In economic literature, returns to education are measured using income or earnings at different times or between parents and their adult children (Torche, 2018; Fields *et al*., 2007).

However, from the perspective of economic welfare, these approaches have conceptual and technical drawbacks. First, occupations or pecuniary returns are not an end but a means to attain quality of life (Torche, 2010: p. 97). Second, occupation schemes classify occupations in the same category as occupations with dissimilar earnings in the labor market, while earnings/income is often prone to be underestimated.

It has frequently been stated that due to educational coverage expansion, more people experience transitions along the educational ladder, net because of parental socioeconomic status, place of residence (urban or rural), gender, and skin tone. This effect may be better observed when measures are at their peak. Higher education is proposed as the "engine of upward mobility" (Chetty *et al*., 2017). Chetty and his colleagues found that the rate of children rising from the bottom quintile to the top quintile is positively associated with college in the USA. They also found that public, mid-tier colleges play a more prominent role in this process. Higher education promises that people exit college with more adequate resources to exchange in the job market. Then, the college provides those exchangeable resources net of the socioeconomic background.

1.3. The case of Nuevo Leon, Mexico

Mexico has extreme inequality and a stagnated social mobility regime that offers opportunities to understand the stated hypothesis. After several decades of growing inequality, it has started decreasing. However, today, it is still one of the most unequal countries in the OECD as measured by the Gini coefficient (Dyvik, 2024). Scholars (Toro, 2021) have documented that Mexico's cohorts experienced monotonic upward mobility until the 1982 and 1995 crises produced shocks that limited transitions to the job market, limiting the odds for upward mobility. Castañeda-Valencia (2023) found that Mexico does not observe long-run absolute mobility, with high barriers limiting the long-run mobility and access to the highest positions from the bottom socioeconomic positions.

Today, upward mobility is so limited in comparative terms that it is almost a caste society, suggesting an association between inequality of opportunities and inequality of condition (Huerta-Wong, Burak & Grusky, 2013; Vélez-Grajales & Monroy-Gómez-Franco, 2023b). Additionally, Vélez-Grajales & Monroy-Gómez-Franco (2023b) found that circumstances out of an individual's control, like gender, region, and skin tone, limit the odds of upward mobility. By using this approach, Vélez-Grajales & Monroy-Gómez-Franco (2023b) found inequality of opportunities to be extremely high in Mexico. They estimate that inequality of opportunities accounts for 48% of the total inequality in the total distribution of economic resources. This coefficient is much higher than the 20% reported in Chile (Nuñez & Tartakowsky, 2007) or 30% found in major Latin American economies, including Brazil, Colombia, Ecuador, Guatemala, Panama, and Peru (Ferreira & Gignoux, 2011).

The state of Nuevo Leon is of particular interest in Mexico. Located on the Southern border of the USA (Texas), Nuevo Leon gained economic importance in the 20th century because it is positioned between Mexico's central region and the USA's Southern border.

Nuevo Leon also has higher physical capital stock and average labor productivity than other states. This fact is crucial because the structure of input factors of production matters in explaining productivity. In other words, those economies with high levels of physical capital per worker are more productive; hence, individuals in these economies are more likely to have high socioeconomic levels (Caceres & Caceres, 2017; McMillan & Rodrick, 2011).

Table 1 provides economic indicators from a comparative perspective. Considering 2007-2022, Nuevo Leon's average GDP share has been 7.58%. This state has remained third in the contribution to GDP distribution (where Mexico City is ranked first and the State of Mexico second place). Regarding private capital stock, Nuevo Leon is the third state in Mexico with the highest productive physical capital (below Campeche and Mexico City) and higher than the average private capital stock reported in the Southern Region. Despite that, Nuevo Leon reports a higher labor productivity index average for 2007-2022 (for manufacturing industries) than those reported for the South and Mexico City. Furthermore, Nuevo Leon's economic performance is even better if we compare the total gross product per occupied personnel. Nuevo Leon's gross product value is 22% greater than that of Mexico City and 65% more

than that of the Southern Region, where we find the four most important Mexican oil-producing states.

Table 1
Economic indicators by area of residence

	South Region (average)	Mexico City	Nuevo Leon
Average GDP Share[a] 2007-2022	2.27	15.46	7.58
Private Capital Stock per occupied person[b] (millions of pesos of 2018)	0.69	2.13	1.84
Dwelling stock per inhabitant[c] (thousand pesos of 2018)	231.72	777.58	393.89
Labor productivity index based on hours worked[d] (manufacturing industry; average 2007-2018)	106.45	106.57	108.18
Total Gross Product per occupied personnel[e] (thousand pesos of 2018)	736.41	996.08	1,217.13

Source: Author's elaboration
[a] INEGI, National Accounts System https://www.inegi.org.mx/programas/pibent/2018/#tabulados
[b] Own calculations with data from INEGI, National Accounts System and the National Survey of Occupation and Employment (ENOE) https://www.inegi.org.mx/programas/acervos/2018/#tabulados
[c] ibid
[d] Own calculations with data from INEGI, Economic Information Subsystem https://www.inegi.org.mx/programas/iplcumo/2008/#tabulados
[e] Own calculations with data from INEGI, Economic Census 2019 https://www.inegi.org.mx/app/saic/default.html

As early as the mid-60s, scholars had a good understanding of the mechanisms underlying social mobility in industrial societies. The postwar period was a time to rebuild welfare societies in Europe with low inequality in Western societies. A group of scholars in Texas then asked about the mechanisms of inequality and mobility in developing societies and drove down to Monterrey, Nuevo Leon, South of the border to Texas. That began social mobility and inequality of opportunities studies in developing societies, specifically Latin America. Balán, Browning & Jelin (1977) reported the mid-60s Monterrey as a very fluid regime, a close to optimal flux similar to industrial Western societies as documented by, for example, Erikson and Goldthorpe (1992). From Balán, Browning & Jelin (1977), it was interesting to observe that social flux resulted not in an industrial country feature but more in one able to characterize a developing society.

The case of Monterrey, Nuevo Leon, emerges as a pivotal study area for comprehending the stagnation of social mobility and the high inequality of opportunities in Mexico. Over the years, numerous surveys have probed into the mobility regime in Monterrey (Balan, Browning & Jelin, 1977; Solís, 2007; Huerta-Wong, 2019). The unique demographic growth of Nuevo Leon, propelled by the case of Monterrey, has necessitated a

broader understanding of this region, leading to the establishment of a State-level survey (Vélez-Grajales & Monroy-Gómez-Franco, 2023a).

Otherwise, Monterrey might not constitute an exceptionality. Solís (2007) found that at the beginning of the 2000s, mobility chances started to decline due to structural changes in the job market. Huerta-Wong & Olivera-Pérez (2019) documented 100 years of mobility cohorts, confirming that the decline in upward mobility continued the decade after the Solís report (2007). Upward mobility rates for working men born between 1905 and 1920 were 34.9%, and grew continuously to 50.6% for the working men born from 1940-1954, continued growing for the 1958-1967 cohort, and then declined for the working men born in 1968-1977 to 40.1%. Due to the composition of the samples, women's data included cohorts from 1948. Working women born from 1948-1957 showed upward mobility rates of 31%, which ascended to 46.2% for working women born between 1958 and 1967, and then decreased to 41.5% for working women born between 1968 -1977. This trend was statistically significantly higher in national cohorts born between 1958-1967 but lower than national cohorts born in 1968-1977, analyzing Mexico at a country level, using the Social Mobility Survey (ESRU-EMOVI 2011).

For men born between 1905 and 1920 to parents without education or primary schooling, the frequency of reaching professional education is close to zero. This rate improved to 2% in the cohort from 1921-1932 and 4% in 1947-1956. For the cohort 1957-1966, the frequency of completing higher education for those coming from a father with complete primary studies (9.8%) is more than double that of those with no studies (4.53%), reaching the peak. After that, frequencies go down to less than 1% and 5.37% as frequencies of completing higher education coming from fathers with no education at all and who complete primary education. Furthermore, 4.6% and 6.9% of higher education were completed by fathers with no education at all and completed primary education (Solís, 2007; Huerta-Wong & Olivera-Pérez, 2019).

The first state-level analysis recently reported the weight of inequality of opportunities in inequality of condition as measured by a composite index of household assets. This analysis reported that inequality of opportunities determines 35% of inequality of condition (Vélez-Grajales & Monroy-Gómez-Franco, 2023a). This measurement is much less than the 48% reported for Mexico as a country but larger than the Northern region, estimated at 33% (Monroy-Gómez-Franco, 2023).

In summary, Nuevo Leon presents a unique opportunity for exploring the exceptionality of a flourishing upward-mobility state in the midst of an extremely unequal country with a stagnated mobility regime. This exploration, particularly, delves into how economic advantages are transferred and the role of education as a tool for reaching an economic welfare standard, especially for those born at the bottom.

2. Method: the data and the model

This research study estimates a structural Probit model with Instrumental Variables (IV-PROBIT) and using a complex sampling design to analyze the factors influencing the probability of a high socioeconomic destination. Specifically, we estimate the probability of an individual's destination at a high socioeconomic level as a function of a set of explanatory variables. The estimated model allows a more detailed analysis of the influence of education and socioeconomic origin on the probability of reaching a high socioeconomic status.

Our interest focuses on comparing the probabilities of reaching a high socioeconomic destination among Mexico's three most referenced and contrasting geographical areas regarding inequality of opportunities, poverty, and development in Mexico, using information from the ESRU-EMOVI surveys. As shown in the literature, Nuevo Leon and Mexico City (CEEY, 2019c; CEEY, 2023) are the two federal entities reported as having the highest opportunities for social mobility, more extensive possibilities of social ascension, and hence larger opportunities of overcoming poverty. In contrast, Southern Region states are the ones reported with the lowest degree of upward social mobility (Delajara and Graña, 2018).

Mexico City and Nuevo Leon performed economically similar in the last few decades, but the former has benefited from the status of country capital in a centralized country. Otherwise, the South is the most undermined region in this country, including all states with a significantly impoverished population. This section presents the data sources and describes the econometric model to be estimated.

2.1 Data

We use data from the two latest surveys conducted by the Center of Studies Espinosa Yglesias (CEEY). One is the 2021 ESRU Survey on Social Mobility in Nuevo Leon (ESRU-EMOVI Nuevo Leon 2021). This cross-sectional survey provides retrospective information by asking respondents about their parents or guardians and their children when

they become parents. The second is the 2017 ESRU Survey on Social Mobility in Mexico (ESRU-EMOVI 2017), a nationwide survey. This national survey also provides current and retrospective information on the interviewees' characteristics and their parents; it has statistical representation for women and men at the regional level, including five regions in Mexico: North, Northwest, North-Central, Central, and South. Additionally, within the Central region, the sampling design includes a Mexico City representative sample (CEEY, 2019a: p. 5; CEEY, 2019b: p. 14).

The reader must consider that the ESRU-EMOVI 2017 data does not provide a representative sample for each Southern state. Hence, we use the aggregated data for the Southern Region to contrast Nuevo Leon and Mexico City with geographical units having lower socioeconomic opportunities (as it is the case of the Southern Region).

The data for the Southern Region and Mexico City is merged with the ESRU-EMOVI Nuevo Leon 2021 to construct a database considering the complex sampling design characteristics of the two surveys. It should be noted that the procedure for calculating the expansion factors in the ESRU-EMOVI 2017 differs from that of the ESRU-EMOVI Nuevo Leon 2021. The latter divides the expansion factors by the sample mean of observations in primary sample units. Hence, the ESRU-EMOVI Nuevo Leon 2021 expansion factors were multiplied to homogenize the procedure by this sample mean. Mexico's Southern Region encompasses eight states[2], six of which are among the poorest in the country. For 2022, Chiapas, Oaxaca, and Guerrero, for example, were the three states with the highest percentage of the population in poverty situations (67.4%, 58.4%, and 60.4%, respectively) extreme poverty (28.2%, 20.2%, and 22.2%, respectively) and deprivation of access to health services (66.1%, 65.7% and 52.7%, respectively) (CONEVAL, 2023). Mexico City, otherwise, was located at the bottom tertile of the poverty and deprivation of access to health services distributions in 2022. This metropolis is the second most populated federal entity. It concentrates the highest number of educational services (i.e., 332 universities[3]), economic and financial activity holding first place in GDP share (around 15%; INEGI, 2022), cultural activities, health services (259 private establishments; INEGI, 2023), and federal government agencies and offices. Likewise, in 2022,

[2] Guerrero, Oaxaca, Chiapas, Veracruz, Tabasco, Campeche, Yucatán and Quintana Roo (CEEY, 2019c).
[3] See Gobierno de México, Sistema de Información Cultural. https://sic.cultura.gob.mx/lista.php?table=universidad&disciplina&estado_id

Nuevo Leon was one of the three Mexican states reporting the lowest poverty rate and the sixth state with the lowest deprivation of access to health services. This northern state was the third with the highest GDP share in Mexico in 2022 (8.1%; INEGI, 2022), and it is the fourth state reporting hospital bed availability in private health establishments (INEGI, 2023).

By joining these samples, the final sample size is 8,465 observations, containing 3,135 for the South, 2,241 for Mexico City, and 3,089 for Nuevo Leon. This sample represents a population size of 17,584,874 individuals (64.15% South, 22.31% Mexico City, 13.54% Nuevo Leon).

Table 2 summarizes the descriptive statistics for the main variables in the merged sample used to test research hypotheses. Rows define variables, and then columns define relative frequencies per region.

We estimate two indexes of total economic resources (TER) to measure parental and informants' socioeconomic levels. The indexes are divided into tertiles so that parental and offspring socioeconomic levels are defined by their corresponding tertile of the economic resources indexes distribution. Indexes are estimated using multiple correspondence analysis on a matrix of categorical variables expressing the individual's asset holdings. Because the Nuevo Leon database distinguishes five cohorts for parents and offspring in terms of assets' holdings, indexes from Mexico City and the South Region are also estimated for these five cohorts.

Table 2
Sample description

Variable	Categories	South Region	Mexico City	Nuevo Leon	Total
Sex					
	Female (%)	52.99	54.9	52.29	53.32
	Male (%)	47.01	45.1	47.71	46.68
Skin tone					
	Dark (%)	61.31	55.74	69.54	61.18
	Not dark (%)	38.69	44.26	30.46	38.82
Area of residence					
	Rural (%)	54.5	7	15.58	38.63
	Urban (%)	45.5	93	84.42	61.37
Interviewee's occupation					
	Agriculture (%)	14.71	0.07	2.36	9.31
	Manual Low Qualification (%)	24.26	21.49	36.73	25.52
	Manual High Qualification (%)	25.75	21.46	22.3	24.2
	Commerce (%)	18.75	28.81	17.93	21.03
	Non-Manual Low Qualification (%)	9.95	15.85	11.22	11.55
	Non-Manual High Qualification (%)	6.58	12.31	9.46	8.39
Age	Average years	41.34	41.66	41.58	41.44
Education	Average years	8.77	11.27	10.72	9.59

Source: Authors' elaboration. Percentages and means are calculated considering the sampling design.

Table 2 displays data on education for the three sample groups. Education averages are higher in Mexico City, followed by Nuevo Leon and the South. Table 2 also shows that the rate of non-manual highly qualified workers is substantially higher in Mexico City than in Nuevo Leon and the South. Average rates of manual occupations are substantially lower in Mexico City (43%) than in Nuevo Leon (59%) or the South (50%). Otherwise, average rates of non-manual occupations are substantially higher in Mexico City (28%) than in Nuevo Leon (20%) or the South (16%).

By descriptively crossing socioeconomic status (SES) origins and destinations in the higher section of Table 3, it is possible to observe a high level of correlation between origins and destinations at the top left and the bottom right. The latter finding shows that two-thirds of people whose origin is in the bottom third remain there, as 7 in 10 of people whose origin is in the top third. Also, upward mobility rates from the bottom to the top are close to 5%, as downward mobility rates are from the top to the bottom. These measures are close to those routinely reported in the Mexican social mobility literature (Torche, 2020; Solís, 2019; Vélez-Grajales, Campos & Huerta-Wong, 2016).

Table 3
Sample description by tertile of interviewees' socioeconomic status

		Interviewees's Socioeconomic Status			
Variable	Classification	Low tertile	Medium tertile	High tertile	Total
Socioeconomic Status of Origin					
	Low	66.79	27.81	5.4	100
	Medium	29.64	46.08	24.28	100
	High	4.11	25.4	70.49	100
Sex					
	Male	32.84	30.58	36.58	100
	Female	34.36	35.21	30.44	100
Area of residence					
	Urban	18.76	34.45	46.79	100
	Rural	57.31	30.81	11.88	100
Skin tone					
	Not-dark	28.74	30.74	40.52	100
	Dark	36.77	34.51	28.73	100
Region of residence					
	South	49.26	34.18	16.56	100
	Mexico City	6	32.45	61.55	100
	Nuevo Leon	5.25	28.64	66.11	100
Educational level					
	No studies	74.87	23.32	1.8	100
	Incomplete primary school	63.59	28.69	7.72	100
	Primary school	53.57	33.95	12.48	100
	Middle school	31.05	40.32	28.63	100
	High school	19.63	33.73	46.64	100
	College/Graduate	7.04	22.42	70.54	100

Occupation				
Agriculture	78.62	17.97	3.41	100
Manual Low Qualification	33.15	33.67	33.18	100
Manual High Qualification	31.8	40.81	27.38	100
Commerce	27.79	35.45	36.76	100
Non-Manual Low Qualification	7.66	29.85	62.49	100
Non-Manual High Qualification	3.79	13.67	82.54	100

Source: Authors' elaboration. Percentages and means are calculated considering the sampling design.

Table A1 (appendix) displays data on education for the three sample groups. Education averages are higher in Mexico City, followed by Nuevo Leon and the South. Although higher education rates in Mexico City (19.8%) are pretty similar to those in Nuevo Leon (18.5), high school rates are significantly higher in Mexico City (34.3%) than in any other place. Then, the number of people reporting to have high school or higher education in Mexico City (54%) is significantly higher than those reported in Nuevo Leon (41%) or the South (33%). Under the human capital perspective, returns expectations for the South might be higher (as Torche, 2020 found as well) because higher credentials constitute a goods scarcity. This difference occurs because of a relatively early high school coverage in Mexico City, as indicated by the population of 50-59.

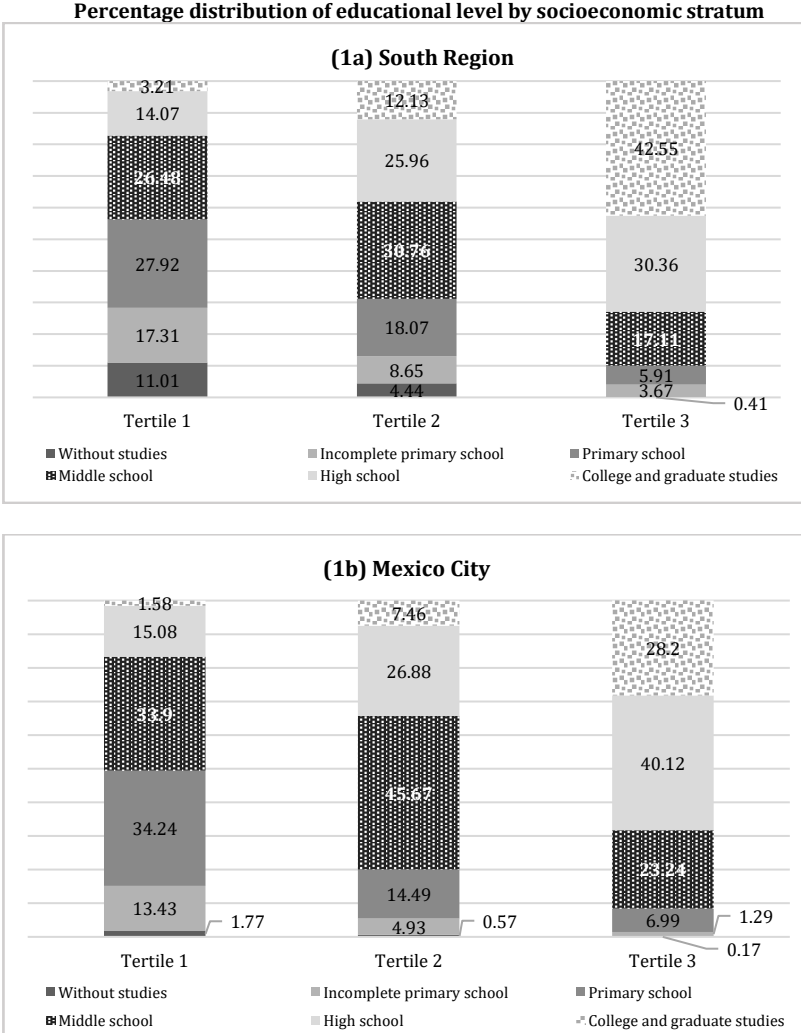
Corresponding with the latter, Table A1 shows that the professionals' rate is substantially higher in Mexico City than in Nuevo Leon and in the South, remarkably for the youngest cohort. Average rates of manual occupations are substantially lower in Mexico City (43%) than in Nuevo Leon (59%) or the South (50%). Otherwise, average rates of non-manual occupations are substantially higher in Mexico City (28%) than in Nuevo Leon (20%) or the South (16%). Those differences remain in the youngest cohorts, even with the growing higher education coverage.

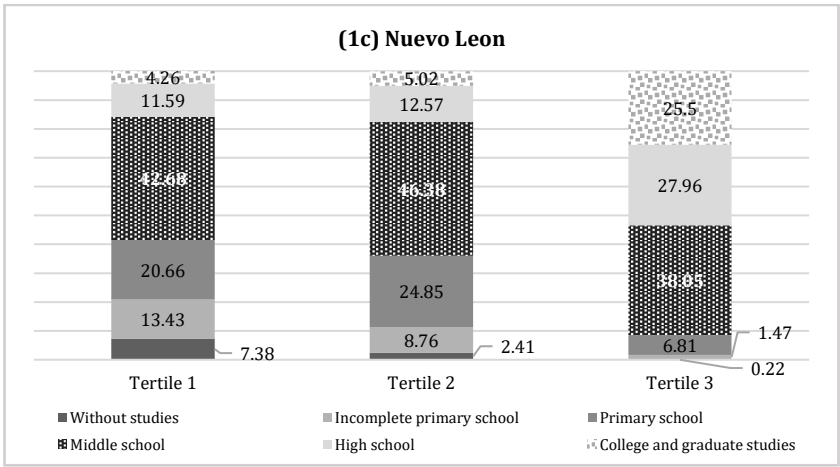
Figure 1 describes the attainment of socioeconomic status crossing for schooling. We may observe a positive relationship between having a higher educational level and socioeconomic level so that individuals with college or graduate studies are more likely to have a high socioeconomic status. Notice that panels in Figure 1 show a direct association between education and economic status. As people climb the educational ladder, their relative frequencies at the third tertile are greater. The opposite is also true. People with less education are likelier to remain at the bottom of the economic distribution. Also, notice that this is not the results but the variables section, and Figures 1 and 2 do not state anything about origins and destinations but the variables' relative frequencies.

Figure 2 describes the attainment of socioeconomic status crossing for occupation. We may observe the positive relationship between high

occupational classes (low and highly qualified) and socioeconomic level; the higher the socioeconomic level, the more likely it is to find an individual with a non-manual occupation. On the contrary, a negative relationship exists between low occupational classes and socioeconomic levels. This Figure also suggests that somebody does not need to be highly qualified or have a non-manual occupation, which usually requires a high educational level to be at the top of the socioeconomic distribution.

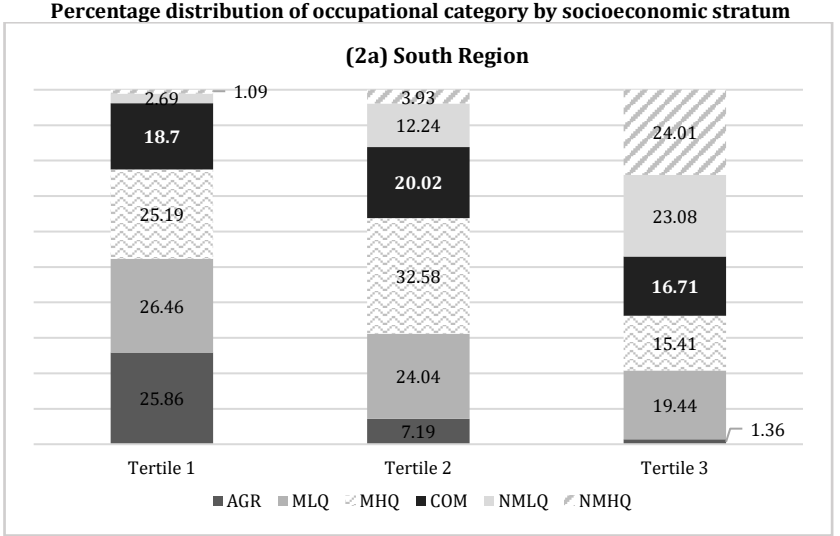
Figure 1
Percentage distribution of educational level by socioeconomic stratum

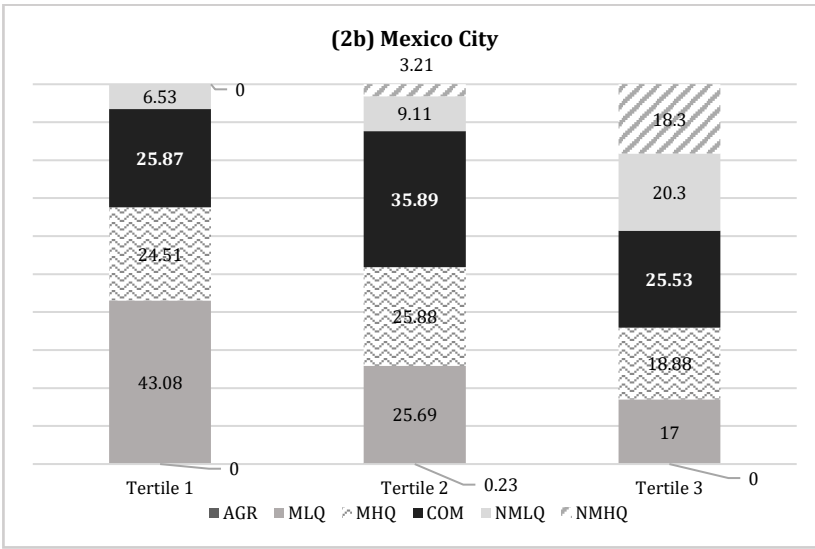


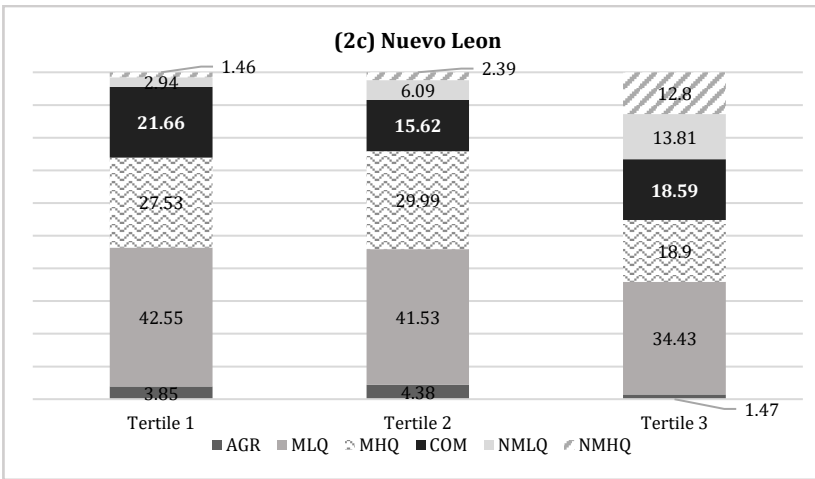


Source: Authors's elaboration considering the sampling design.

Figure 2
Percentage distribution of occupational category by socioeconomic stratum







Source: Authors's elaboration considering the sampling design. Abbreviations for occupational categories: AGR=agriculture; MLQ=manual with low qualification; MHQ=manual with high qualification; COM= commerce; NMLQ=non-manual with low qualification; NMHQ=non-manual with high qualification.

2.2. The model

This paper addresses the influence of education attainment and parental economic level on the probability of having a high socioeconomic destination, controlled by sex, age, skin tone, area of residence, and region.

Thus, we use an econometric model for binary categorical dependent variables to estimate the effect of ascriptive characteristics and educational attainment on the propensity or probability of achieving a welfare level. Because of that, we estimate a structural Probit model with an Instrumental Variable (IV), given the potential endogeneity of the education variable, which generates the possibility of an endogeneity problem with inconsistent estimators.

As described in the variables section, welfare is a latent variable observed via the household's provision of domestic goods and services (Vélez-Grajales & Monroy-Gómez-Franco, 2023a). This index, without temporary fluctuations and measurement errors, establishes a criterion for the highest welfare, quantifies the distances to determine the level of economic welfare, and compares the relative propensity to get a high stratum. The criterion of high welfare is a threshold distinguishing the most desirable baskets of goods and services. We chose the highest tertile of the offspring economic index as the threshold that distinguishes the highest baskets (high destination). This decision concentrates the analysis on the relatively most affluent part of the economic distribution but also focuses on the highest stratum in income, educational attainment, and occupational positions. The parental economic index is divided into tertiles because we intend to compare the probabilities located at the top of economic welfare in the function of the high, medium, or low stratum.

The model setup assesses the marginal effects of the explanatory variables. It captures the differences between Nuevo Leon, Mexico City, and the South on the probability of achieving a high economic status.

Education (interviewee's years of schooling) is an explanatory variable of particular interest in our model. This variable is usually correlated with ability, a non-observed variable, hence omitted in the model, which generates the possibility of an endogeneity problem with inconsistent estimators as a result. We address the potential endogeneity of the education variable in the model, by using a structural Probit model with an Instrumental Variable (IV) procedure. The dependent variable hd_i^* (high destination) is the individual's propensity to be located in the top socioeconomic stratum. This propensity is a continuous and unobserved (latent) variable. The observed variable hd_i is the tertile of the TER index distribution in which each interviewee (offspring) is located and takes on two values: $hd_i = 1$ if the interviewee's current hierarchical position in the socioeconomic structure is in the third (top) tertile and $hd_i = 0$ otherwise.

The relationship between the observed (binary) and unobserved (continuous) variables is the following:

$$hd_i = \begin{cases} 1 \ if \ hd_i^* > 0 \ \ propensity \ of \ destination \ at \ the \ high \ socioeconomic \ strata \\ 0 \ if \ hd_i^* \leq 0 \ \ propensity \ of \ destination \ at \ the \ non-high \ socioeconomic \ strata \end{cases} \quad (1)$$

Under the previous definition, the model can be formally expressed as:

$$hd_i^* = \boldsymbol{x}_i\boldsymbol{\beta} + \gamma educ_i + e_i \quad (2)$$

$$educ_i = \boldsymbol{x}_i\boldsymbol{\alpha} + \boldsymbol{z}_i\boldsymbol{\theta} + u_i \quad (3)$$

Where:
hd_i^* = individual *i*'s propensity of high socioeconomic destination.
$\boldsymbol{x}_i$ = raw vector of K exogenous explanatory variables for the interviewed individual *i*
$educ_i$ = individual *i*'s years of schooling (endogenous variable)
$\boldsymbol{\beta}$ = column vector of K structural parameters associated with the exogenous explanatory variables
γ = the structural parameter associated with years of schooling
$\boldsymbol{z}_i$ is a raw vector of L=3 external instruments (instrumental variables)
$\boldsymbol{\alpha}$ and $\boldsymbol{\theta}$ are the $K \times 1$ and $L \times 1$ vectors of the reduced form parameters
e_i and u_i are the standard normal distributed structural error and reduced form error terms, respectively.

Equation (2) along with equation (1) is the structural equation, and equation (3) is the reduced form for the variable $educ_i$ which is endogenous if e_i and u_i are correlated (Wooldridge, 2002: p. 472; Rivers and Vuong, 1988: pp. 348-349). Also, equations (2) and (3) define a recursive model where the $educ_i$ variable appears as a regressor in the equation for the latent variable hd_i^* but hd_i^* does not appear in the equation for $educ_i$ (Stata 17, p. 1137).

The set of exogenous explanatory variables includes the interviewee's characteristics (sex, age, skin color), parental socioeconomic stratum (tertile), and location indicators (area of residence and region of residence).

The $\boldsymbol{z}_i$ vector of external instruments includes parents' years of schooling (the highest number of years of schooling reported among father and mother); a housing overcrowding indicator for the parental home

(defined by the ratio of number of household members and number of bedrooms in the parental home) and the type of flooring in the parental house (dirt floor vs other). A more detailed description of all the variables used in the model can be found in Table 4.

By assumption, the structural error term e_i and the reduced form error u_i are distributed multivariate normal $(e_i, u_i) \sim N(\mathbf{0}, \mathbf{\Sigma})$.

The simultaneous equations probit model given by equations (2) and (3) is estimated using an efficient Maximum Likelihood procedure (which is available in Stata 17) alternative to the two-step estimation method proposed by Rivers and Vuong (1988: p. 353).

The likelihood function is derived considering that the joint density $f(hd_i, educ_i|\boldsymbol{x}_i, \boldsymbol{z}_i)$ can be written as (Wooldridge, 2002: p. 476; Stata 17: p. 1142):

$$f(hd_i, educ_i|\boldsymbol{x}_i, \boldsymbol{z}_i) = f(hd_i|educ_i, \boldsymbol{x}_i, \boldsymbol{z}_i) \times f(educ_i|\boldsymbol{x}_i, \boldsymbol{z}_i) \quad (4)$$

Therefore, the log likelihood function is expressed as:

$$\ln L = \sum_{i=1}^{N} w_i \left\{ hd_i \ln \mathbf{\Phi}(m_i) + (1 - hd_i) \ln[1 - \Phi(m_i)] + \ln \phi \left(\frac{educ_i - \boldsymbol{x}_i\boldsymbol{\alpha} - \boldsymbol{z}_i\boldsymbol{\theta}}{\sigma} \right) - ln\sigma \right\} \quad (5)$$

where

$$m_i = \frac{\boldsymbol{x}_i\boldsymbol{\beta} + \gamma educ_i + \rho(educ_i - \boldsymbol{x}_i\boldsymbol{\alpha} - \boldsymbol{z}_i\boldsymbol{\theta})/\sigma}{(1 - \rho^2)^{1/2}} \quad (6)$$

and where $\mathbf{\Phi}(\cdot)$ and $\phi(\cdot)$ are the standard normal cumulative distribution function and density function, respectively; w_i is the weight for observation i, which, in the context of complex sampling, is the expansion factor. The parameter ρ is the correlation coefficient between e_i and u_i; finally, σ is the standard deviation of u_i.

Finally, the probability of a destination at a high socioeconomic level for an individual as a function of a set of explanatory variables can be expressed as (Wooldridge, 2002: p. 476):

$$P(hd_i = 1|\boldsymbol{x}_i, educ_i) = \mathbf{\Phi}\left[\frac{\boldsymbol{x}_i\boldsymbol{\beta} + \gamma educ_i + \rho(educ_i - \boldsymbol{x}_i\boldsymbol{\alpha} - \boldsymbol{z}_i\boldsymbol{\theta})/\sigma}{(1 - \rho^2)^{1/2}} \right] \quad (7)$$

Once the model has been estimated, the corresponding endogeneity test is carried out to verify the appropriateness of the IV procedure; this is a

Wald test where the null hypothesis states that $\rho = \text{Corr}\,(educ_i, e_i) = 0\ \forall\ i$, implying that the variable $educ_i$ is exogenous (*i.e.* similar to a Hausman test where, under the null hypothesis, there is no systematic difference between the vectors of the IV probit and standard probit estimators). It is worth mentioning that if the variable $educ_i$ is endogenous in equation (2), the standard probit estimator is inconsistent for $\boldsymbol{\beta}$ and γ. However, if there is no endogeneity, the standard probit estimator is consistent and efficient; hence, a standard probit model would be preferable (Rivers and Vuong, 1988: p. 359; Stata 17: p. 1138).

After estimating the conditional probability function, quantifying the relative distance involves identifying the probabilities of reaching the highest welfare tertile among the economic origin strata and school levels. It is expected that, in each economic stratum and an additional level of educational achievement, the propensity to a high economic destination will increase as a "reward" for effort, talent, and perseverance.

The relative propensity is evaluated using odds ratios. In social stratification literature, the odds ratio is a comprehensive analysis frequently applied to describe flows/ mobility patterns between two strata. In summary, we provide an odds ratio analysis that compares estimated probabilities of high destinations between groups with different origins, levels of education, and current occupations.

Table 4
Description of variables used in the model (N=8,465 obs.)

Variable	Description	Type of variable and units
hd	Interviewee's Economic Resources Not-high: T1 and T2; High T3	*Binary Variable:* 0, Not-high (66.7%); 1, High (33.3%);
educ	Interviewee's years of schooling	*Continuous variable / years* Mean=9.6; min=0; max=23
age	Interviewee's years of age	*Continuous variable / years* Mean=41.5; min=25; max =64
age^2	Quadratic term of interviewee's years of age	*Continuous variable*
sex	Interviewee's sex	*Binary Variable:* 0 if Male (46.7%); 1 if Female (53.3%)
area	Interviewee's area of residence (Rural < 2500 inhab; Urban ≥ 2500 inhab)	*Binary Variable:* 0 if urban (61.4%); 1 if rural (38.6%)
skin_tone	Interviewee's skin tone (Dark: tones A-H; Light: tones I-K)	*Binary Variable:* 0 if Light (38.8%); 1 if Dark (61.2%)

sec_origin	Based on a skin tone palette Parental Economic Resources (socioeconomic origin) Low: T1; Medium: T2; High T3	*Categorical Variable:* 1 if Low; 2 if Medium; 3 if High
region	Interviewee's region of residence (Southern Region; Mexico City; Nuevo Leon)	*Categorical Variable:* 1 if South Region (64.1%); 2 if Mexico City (22.3%); 3 if Nuevo Leon (13.6%)
	Instrumental variables	
educ_ho	Parental schooling (education in the home of origin) Highest number of years of schooling reported among father and mother	*Continuous variable* / years Mean=4.2; min=0; max=23
overcrowding_ho	Housing overcrowding indicator for the home of origin (defined by the ratio of the number of household members and number of bedrooms in the parental home)	*Continuous variable* / ratio mean=3.8; min=0.5; max =20
floor_ho	Type of flooring in the parental house (dirt floor vs other)	*Binary Variable:* 0 if Not-dirt floor (67.2%); 1 if dirt floor (32.8%)

Source: Authors' elaboration. Percentages and means are calculated considering the sampling design.

2.3. Formalyzing hypotheses

2.3.1 The lucky high schooler hypothesis

"Individuals with no more than 12 years of schooling (the *lucky high schooler*) have the same probability of reaching a high destination in the socioeconomic distribution compared to those who have attained a university educational level."

In statistical terms, this means that the difference between the probability of a high destination when the years of schooling are 17 years obtained (college) and the probability of a high destination when the years of schooling obtained are 12 (high school) is zero, implying that there are lucky high schoolers:

$$P(hd_i = 1|\boldsymbol{x}_i, educ_i = \mathbf{17}) - P(hd_i = 1|\boldsymbol{x}_i, educ_i = \mathbf{12}) = 0 \qquad (8)$$

Notice that this probability difference may be interpreted as the marginal effect of the educational level (from high school to college). If the difference in probabilities is positive, it can be said that there are no lucky high schoolers since the probability of a high socioeconomic destination for those individuals who attained college is bigger.

2.3.2 The social reproduction hypothesis

"In Nuevo Leon, parental socioeconomic status has a lower influence on the offspring's socioeconomic status than in Mexico City and the Southern

Region states". This hypothesis implies that as a result of its lower inequality of opportunities (Vélez-Grajales & Monroy-Gómez-Franco 2023a), the social reproduction rate in Nuevo Leon is lower than in other regions. In other words, personal efforts have less unequal outputs along the different socioeconomic strata of origin in Nuevo Leon. To provide some evidence regarding the lower social reproduction hypothesis in Nuevo Leon, we analyze odds ratios, which help us visualize how the probability premiums change with the socioeconomic origin in the three regions.

3. Results

3.1 Model estimation

The estimation results are shown in Table 5. The coefficients for sex, area of residence (rural/urban), and age-squared variables are not statistically significant. The age and skin tone coefficients are statistically significant at the 5% level, and the rest of coefficients are statistically significant at the 1% significance level. The Wald exogeneity test[4] reports a 24.04 sample value of the test statistic with a zero P-value, implying that the variable *educ* is endogenous and that the IV-PROBIT is the appropriate estimation procedure.

The corresponding instruments' strength and validity tests were performed for the reduced form equation of the *educ* variable. The Wald test for the three external instruments' strength reports a sample value of the test statistic $F_{(3,1047)} = 106.48$ with a P-value equal to 0.000, concluding that at least one external instrument (as needed since there is only one endogenous variable) is sufficiently strong. On the other hand, following Guevara (2018) we use the Refutability Test to test the validity of the external instruments, where, under the null hypothesis, the three external instruments are exogenous. The test statistic, in this case, is computed as a Likelihood Ratio test, having a χ_2^2 distribution, where the degrees of freedom refer to the number of overidentifying restrictions. The sample value of the test statistic was LR = 3.13 with a P-value = 0.2093; therefore, the null hypothesis cannot be rejected, and we conclude that the external instruments are valid. The IV-PROBIT model's Pseudo-

[4] The STATA ivprobit command used with survey data analysis and using conditional maximum-likelihood estimator does not provide the Wald exogeneity test. To obtain the Wald's test statistic, we estimate the model with the ivprobit command and using the expansion factors as sampling weights as well as clustered robust standard errors (where the cluster variable is psu).

R^2 is 0.4, an acceptable goodness of fit measure. The estimation results produce 82.5% of correctly classified predictions, indicating the model's very good predictive power.

In order to analyze the influence of each explanatory variable on the probability of having a high socioeconomic destination, the average marginal effects (AME) were calculated based on the average structural function probabilities. The point and interval estimates are displayed in Table 6, where we may observe that, except for the variables sex and residence environment (as previously mentioned), the AMEs are all statistically significant. The most influential factors on the objective probability are the interviewee's region of residence and the home of origin (parental) socioeconomic level. *Ceteris paribus*, on average, an individual living in Nuevo Leon increases his/her probability of having a high socioeconomic destination by 26.5 percentage points relative to those living in the Southern states. Living in Mexico City increases this probability by 18.2 percentage points. Individuals in Nuevo Leon even in manual occupations with no more than middle school level education have a higher chance of ending at a high socioeconomic destination than those living in Mexico City or the South.

Table 5
IV-PROBIT Estimation Results

Equation (2) Estimates			Equation (3) Estimates		
	hd			educ	
educ	0.2076758	***	Sex		
	-0.0172960		female	-0.7515647	***
Sex				-0.1264655	
female	-0.0295701		age	0.0363802	
	-0.0566901			-0.0462243	
age	0.0435869	**	age # age	-0.0011751	**
	-0.0175668			-0.0005229	
age # age	-0.0002026		sec_origin		
	-0.0002037		medium	0.8221899	***
sec_origin				-0.2091757	
medium	0.2532842	***	high	2.1481111	***
	-0.0969488			-0.3023547	
high	0.6978133	***	skin_tone		
	-0.1385345		dark	-0.6066321	***
skin_tone				-0.1383326	
dark	-0.1478777	**	residence		
	-0.0673965		rural	-0.5673249	***
area				-0.1955547	
rural	-0.0822470		area		
	-0.0881862		Mexico City	-0.3199341	
region				-0.1966969	
Mexico City	0.7175647	***	Nuevo Leon	-0.8060091	***

	-0.0750433			-0.2223615	
Nuevo Leon	0.9806562	***	educ_ho	0.2908926	***
	-0.0878121			-0.0174234	
Intercept	-4.5573668	***	overcorowding_ho	-0.0894016	***
	-0.4154311			-0.0282554	
			floor_ho		
			dirt	-1.3862314	***
Wald test of exogeneity (corr = 0):				-0.2217925	
chi2(1) = 24.04; Prob > chi2 = 0.0000			Intercept	10.0286748	***
Instrumented: educ				-0.9589357	
Instruments: 1.sex age c.aged#c.age			athrho2_1	-0.3610766	***
2.sec_origin 3.sec_origin 1.skin_tone				-0.0736444	
1.residence 2.area 3.area			lnsigma2	1.2386763	***
educ_ho overcrowding_ho 1.floor_ho				-0.0150449	
			corr(e.educ,e.hd)	-0.3461620	
				-0.0648197	
			sd(e.educ)	3.4510421	
				-0.0519207	

Source: Authors' elaboration. *** p < 0.01, ** p < 0.05, * p < 0.1. Standar Errors in parenthesis.

Table 6
Average Marginal Effects

variable		dy/dx	Delta-method std. err.	t	P > t	[95% conf.	Interval]
	educ	0.047028	0.004542	10.350000	0.000000	0.038115	0.055941
sex							
	female	-0.006701	0.012760	-0.530000	0.600000	-0.031740	0.018337
	age	0.006118	0.000861	7.110000	0.000000	0.004429	0.007808
sec_origin							
	medium	0.061296	0.022690	2.700000	0.007000	0.016774	0.105818
	high	0.182576	0.036396	5.020000	0.000000	0.111159	0.253993
skin_tone							
	dark	-0.033829	0.015444	-2.190000	0.029000	-0.064134	-0.003525
area							
	rural	-0.018786	0.020132	-0.930000	0.351000	-0.058289	0.020718
region							
	Mexico City	0.188258	0.020650	9.120000	0.000000	0.147738	0.228777
	Nuevo Leon	0.264956	0.025571	10.360000	0.000000	0.214780	0.315132

Source: Authors' elaboration based on estimation results.
Note: dy/dx for factor levels is the discrete change from the base level.

Socioeconomic origin is the second factor with a major influence on the probability of achieving a high destination. Those individuals born in homes with middle and high socioeconomic strata increase their high destination probability by 6.1 and 18.3 percentage points, respectively,

relative to those born in the lowest tertile of the socioeconomic distribution. This result supports the growing corpus of evidence on low upward economic mobility for Mexico (CEEY, 2013; CEEY, 2019b; Delajara *et al.*, 2020; Guillermo & Castañeda-Valencia, 2021; Huerta-Wong, Ibarra & Espinosa, 2022).

For individuals with dark skin tone, the probability of a high socioeconomic tertile is reduced by 3.4 percentage points relative to those with non-dark skin, implying a disadvantage for the former, as also reported by the literature (i.e., Vélez-Grajales & Monroy-Gómez-Franco, 2023a, 2023b).

3.2 Testing the high schooler hypothesis

The AME of education indicates that, on average, each additional year of schooling increases the probability of a high socioeconomic destination by 4.7 percentage points. Given the statistical significance of the education's AME, this result rejects the "lucky high schooler hypothesis". In spite of that, we provide an alternative hypothesis test procedure based on equation 8 (specified in section 2.3.1); we use expressions 9 and 10 to test the hypothesis, where the null implies that there are lucky high schoolers:

$$H_0: \quad P(hd_i = 1|x_i, educ_i = 17) - P(hd_i = 1|x_i, educ_i = 12) = 0 \qquad (9)$$

$$H_1: \quad P(hd_i = 1|x_i, educ_i = 17) - P(hd_i = 1|x_i, educ_i = 12) > 0 \qquad (10)$$

Using the Stata command to calculate the Average Structural Function probabilities evaluated at educ = 17 and educ = 12, the corresponding estimated probabilities were $P(hd_\iota = 1|x_\iota, \widehat{educ_\iota} = 17) = 0.7587$ and $P(hd_\iota = 1|\widehat{x_\iota, educ_\iota} = 12) = 0.4432$. The test statistic is distributed $\chi^2_{(1)}$, and the reported sample value of the test statistic is 192.82 with a corresponding P-value = 0.000, leading to reject the null hypothesis; that is, statistically speaking, there is no such a thing as a lucky high schooler having the same probability of reaching the highest socioeconomic stratum as those with a college degree. On average, individuals who have attained a university degree are 31.6 percentage points more likely to reach a high destination in the socioeconomic distribution.

In addition to the explained procedure, a second approach was implemented to test the "lucky high schooler hypothesis". We computed the predicted probabilities of a high socioeconomic destination for those individuals in the sample with a complete high school level of education. This includes individuals in the sample with 12, 13, 14, or 15 years of

schooling; that is, those who completed high school and those who had some extra years of schooling without the completion of a college degree). Also, we computed the corresponding predicted probabilities for those individuals in the sample who attained at least a college degree (this includes individuals with at least 16 years of schooling: college or graduate studies). Using this approach, the null hypothesis is:

$$H_0\colon\ P(hd_i = 1|\boldsymbol{x}_i, educ_i = college/graduate\ ) - P(hd_i = 1|\boldsymbol{x}_i, educ_i = high\ school\ ) = 0 \quad (9b)$$

The corresponding estimated probabilities were:

$$P(hd_\iota = 1|\boldsymbol{x}_\iota, educ_\iota = \widehat{college}/graduate\ ) = 0.654$$

$$P(hd_\iota = 1|\boldsymbol{x}_\iota, \widehat{educ_\iota} = high\ school\ ) = 0.459.$$

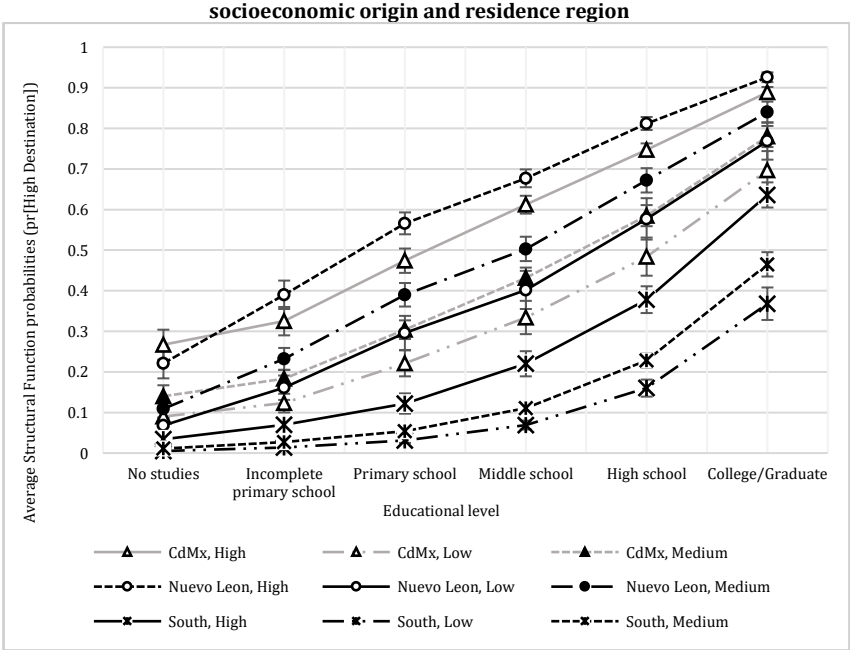
The adjusted Wald test statistic is distributed, $F_{(1,1049)}$ and the reported sample value of the test statistic is 496.12, with P-value = 0.000; therefore, the null hypothesis is rejected, implying that attaining a college or graduate degree increases the probability of a high destination relative to completing high school only. Hence, it is not a "lucky situation", but an investment in human capital that increases the probability of reaching a high socioeconomic destination.

3.3 The effect of education on welfare

Figure 3 shows the probabilities of a high socioeconomic destination by educational level (years of schooling) for each level of socioeconomic origin and region. It is clearly shown that predicted probabilities are an increasing function of the academic and socioeconomic origin levels. Individuals in Nuevo Leon with the lowest socioeconomic level of origin have practically the same probability of a high destination as those born of medium economic origin in Mexico City. Figure 3 also shows that any average individual in the South has less probability of a high destination than individuals in Mexico City with the lowest economic status of origin. This evidence depicts the high comparative disadvantage of educational attainment for individuals living in the Southern states of Mexico. Although chances of a high destination get better when attaining higher education, the probabilities are far lower compared to the Nuevo Leon region. Once again, the evidence shows the outstanding probabilities of a

high socioeconomic destination for individuals in Nuevo Leon relative to the other regions of residence.

Figure 3
Probabilities of a high socioeconomic destination by educational level, socioeconomic origin and residence region



Source: Authors' elaboration based on estimation results.
Note: CdMX, Mexico City

3.4 Reproduction matters: the probability premium of higher education by socioeconomic origin

Figure 4 (panels 4a, 4b and 4c) shows the odds ratios of comparing the average probabilities of high socioeconomic destination for individuals with different educational levels relative to those with high school levels; these ratios are calculated for each socioeconomic stratum of the parental home. That is, for each academic level, the odds ratios are defined as the ratios of average probabilities:

$$\frac{\bar{\boldsymbol{P}}(hd_i = 1|\boldsymbol{x}_i, educ_i, sec\_origin_i, region_i)}{\bar{\boldsymbol{P}}(hd_i = 1|\boldsymbol{x}_i, educ_i = high\ shool, sec\_origin_i, region_i)} \tag{11}$$

Tables A2, A3 and A5 in the appendix show the point estimates and significance of the corresponding odds ratios. For the three regions, the probability of a high destination increases with educational attainment. In Nuevo Leon (panel 4c), we may observe that the effects of education and origin are smaller than in any other region. Someone with a university degree is 1.4 times more likely to reach a high socioeconomic destination than someone with a high school level if both were born in a home with a low socioeconomic stratum. However, in the case of an individual with a college degree born in a medium or high economic stratum, the increase in the odds of reaching a high destination is very small, going to 1.6 and 1.7, respectively. This result shows again evidence supporting a lower social reproduction in Nuevo Leon.

By contrast, in the South (panel 4a), an average individual with a college degree is 2 times more likely to reach a high socioeconomic destination than someone with a high school level coming from the bottom stratum. These odds increase to 2.6 and 3.5 if the individual with a college/graduate degree is born in a home with a medium or high economic status, respectively, showing the combined effect of the inequality of opportunities.

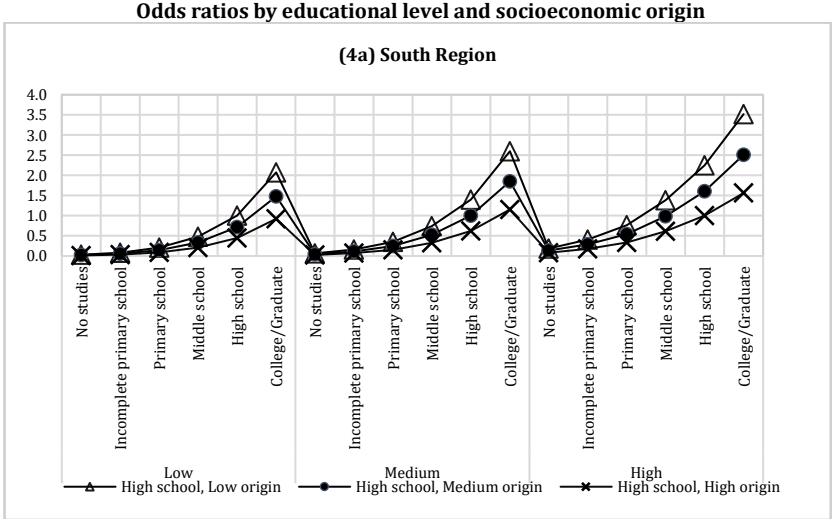
The education and origin effects are smaller in Mexico City (panel 4b) than in the South. On average, an individual who has a college or graduate degree is 1.6 times more likely to reach a high socioeconomic destination than someone with a high school level if both were born in a home with a low economic stratum. The odds increase to 1.75 and 2 if the individual with a university degree comes from a home with a medium or high economic status, respectively.

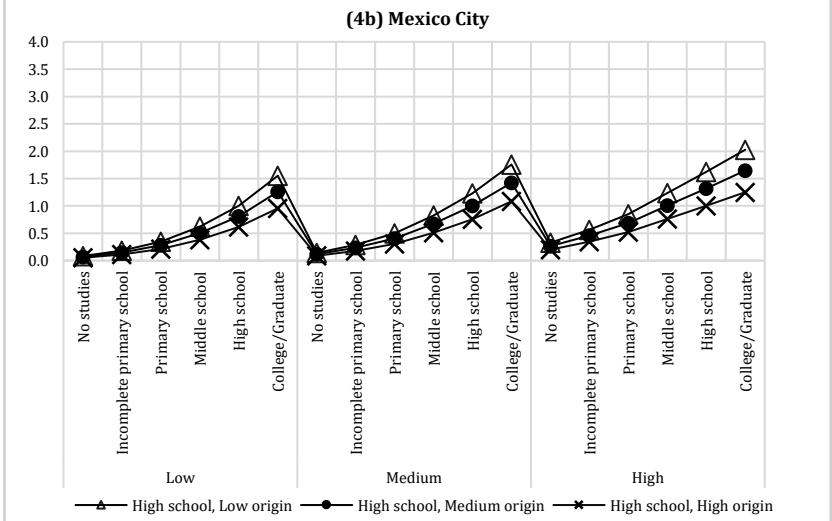
Figure 4 also provides evidence to support that higher education smooths social reproduction. In the South, when born from the bottom, it is twice as likely to have a high destination whether the individual attains a university degree; the odds go to 1.85 and 1.6 when born in a medium and high socioeconomic stratum respectively. Because the probability premium of university education is higher for those coming from the bottom, we may say that education compensates for the origin; hence, education smooths social reproduction, although the smoothing magnitude changes by area of residence.

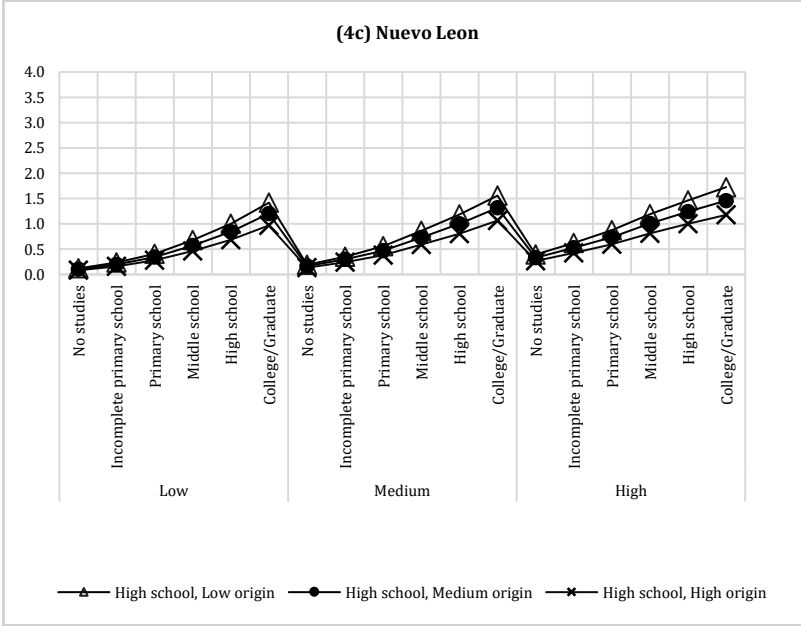
For Mexico City, the odds of a high destination when having a university degree relative to a high school diploma, go from 1.55 for those born in the bottom stratum to 1.43. And 1.25 for those born in the middle and top

socioeconomic stratum. However, in Nuevo Leon (panel 4c), the higher education smoothing (compensation) effect is minimal. The odds go from 1.42 for those born in the bottom tertile of the socioeconomic distribution to 1.32 and 1.18 for those born in the middle and top tertiles, respectively. Nonetheless, higher education consistently improves the probability of a high destination.

Figure 4
Odds ratios by educational level and socioeconomic origin







Source: Authors' elaboration based on estimation results.

3.5 On occupational status and educational attainment

The estimated model's flexibility and the data set's sampling representativeness allow the estimation of average probabilities of high destination status by occupational category and economic origin. The interviewee's occupational categories were not included in the final model as explanatory variables because they are highly correlated with the years of schooling (*educ*), which explains why none of the occupational categories' coefficients are statistically different from zero. Despite the high correlation between these variables, neither the occupational categories could be included as external instruments for the endogenous covariate *educ*, and the reason is that the causality goes from education to occupation; for the average interviewed individuals, education comes first in time, and then the current occupation.

Figure 5 (panels 5a, 5b, and 5c) shows the estimated odds ratios by occupational category and region of residence. It is of special interest to compare some specific probabilities. In particular, for individuals with a given occupational category (m = 1, 2, …7), we compare the average probability of achieving a high socioeconomic destination when they

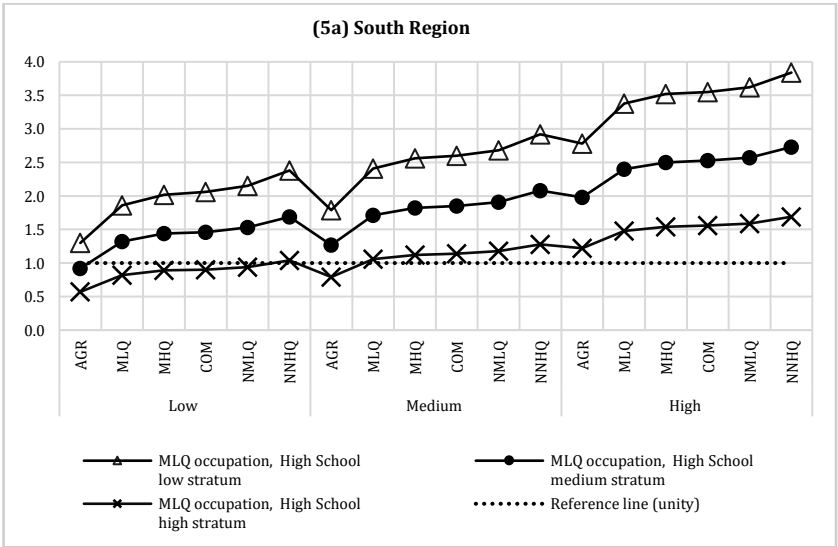
attained college (or graduate) education and were born in the *j*-th socioeconomic stratum (low, medium, high), with the average probability of achieving a high socioeconomic destination for those individuals that attained high school education and were born in a given socioeconomic stratum and report having a manual low-qualified (MLQ) occupational category. These ratios are calculated for each of the three (l = 1,2,3) regions of residence.

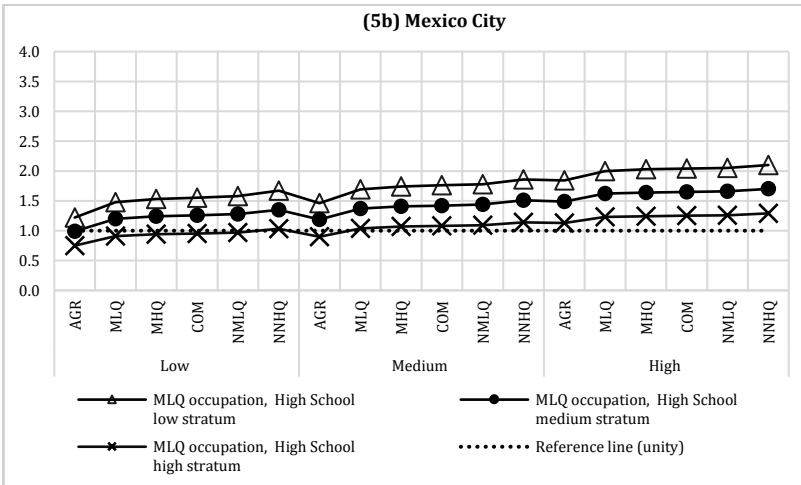
Algebraically, for each occupational category, the odds ratios are defined as the ratios of average probabilities:

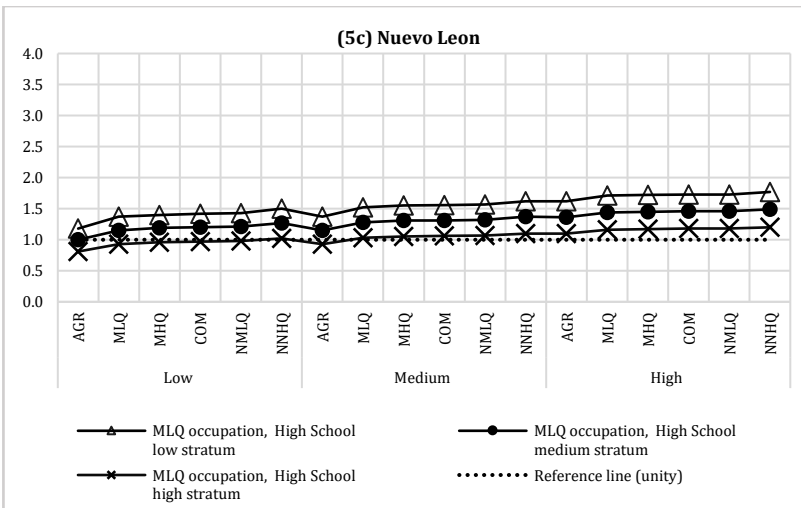
$$\frac{\bar{P}\left(hd = 1 \middle| \boldsymbol{x}, educ = college, sec\_origin_j, region_l\right)_{if\ occupation=m}}{\bar{P}\left(hd = 1 \middle| \boldsymbol{x}, educ = high\ shool, sec\_origin_j, region_l\right)_{if\ occupation=MLQ}} \tag{12}$$

The corresponding tables showing point estimates and the significance of odds ratios are in Tables A5-A7 in the appendix. When compared with individuals attaining high school and having a low-qualified manual occupation at the low and medium stratum of origin, practically all the ratios are statistically different from one, implying that the compared probabilities are different.

Figure 5
Odds ratios by occupation and region of residence







Source: Authors' elaboration. Abbreviations for occupational categories: AGR=agriculture; MLQ=manual with low qualification; MHQ=manual with high qualification; COM= commerce; NMLQ=non-manual with low qualification; NMHQ=non-manual with high qualification.

In the Southern Region (Figure 5, panel 5a), the probability premium of a college degree increases as the individual with college reports a higher occupational status. However, the premium gets smaller if the individual with high school and MLQ occupation comes from the middle/top tertile. Regardless of the occupational status, individuals with college coming from the bottom have the same probability of a high destination compared

to MLQ occupations — high schoolers, coming from the top. This latter finding also shows that there is substantial social reproduction. It suggests that higher education may be a limit for those coming from the top. Education matters intra stratum. For those with a university degree born in a medium/high socioeconomic stratum, the probability is between 1.2 and 1.7 times larger than that of individuals with a MLQ occupation and high school education born in the same tertile (Table A5, column 3). Otherwise, compared with those from the bottom stratum who report MLQ occupation and who have attained a high school diploma at most, the probability premium of a high socioeconomic destination becomes greater (see Table A5, column 1). Individuals with high educational level and high socioeconomic stratum of origin are up to 3.8 times more likely to reach a high destination, as is the case for those reporting a non-manual/high qualification occupational status.

Mexico City (Figure 5, panel b) shows a similar behavior to the South. When comparing high schoolers with manual/low qualification occupations and high socioeconomic origin, there is no significant difference in probabilities of high destination for those with a college education if they come from the bottom, regardless of their occupational category. Otherwise, when high schoolers are compared with highly educated individuals born into high economic status, the odds are statistically different from one but between 1.13 and 1.3 depending on the occupational category (see table A6, column 3). Nonetheless, as previously observed, the major increase in the odds occurs when individuals with high educational levels are compared with high schoolers born into a low socioeconomic level home; in this case, when the occupational category is improved, it is possibly twice as likely to have a high socioeconomic destination when getting a university education and being born in a high socioeconomic status (bottom curve in panel 4b; see table A6, column 1). These odds in Mexico City are smaller than those observed in the Southern Region, indicating that the probability premium of having a university education is not as high as in the South.

Nuevo Leon (Figure 5, panel (c)) shows that, in general, the odds behavior is very similar to those previously described. However, the probability premium of human capital investment in attaining a university education is smaller than that in the Southern Region or Mexico City (regardless of the occupational status reported). The odds ratio functions are flat and close to one, showing a small dependence on socioeconomic origin. The behavior of the probability ratios suggests that the influence of parental socioeconomic status on offspring's output is lower in Nuevo Leon compared to the Southern Region and Mexico City. This result shows

evidence supporting the lower reproduction rate hypothesis found above. In Nuevo Leon, the probability of reaching a high socioeconomic destination seems to be relatively more influenced by external factors.

Consequently, two conclusions can be drawn from this analysis. First, the reward for attaining a high educational level is more prominent if the individual has a low socioeconomic level of origin, and second, the social reproduction rate is lower in Nuevo Leon[5].

3.6 Testing again the social reproduction hypothesis

Odds ratios are used again to test if Nuevo Leon has better probabilities of a high socioeconomic destination, regardless of socioeconomic origin. This time, we compare the average probability of having a high socioeconomic status for an individual in Nuevo Leon, born in the *j*-th socioeconomic stratum with the corresponding average probabilities for individuals in the *l*-th region of residence (Southern Region and Mexico City) and born in the *j-th* socioeconomic stratum. If the odds ratios are equal to one, in that case, there is no difference in the chances of reaching a high destination in Nuevo Leon relative to the other areas of residence in our study, given the stratum of origin; otherwise, if the probability ratio (odds ratio) is bigger than one, this implies that social reproduction in Nuevo Leon is relatively lower.

Algebraically

$$H_o: \quad \frac{\overline{\boldsymbol{P}}\left(hd = 1 \middle| \boldsymbol{x}, area = Nuevo\ Leon, sec\_origin_j\right)}{\overline{\boldsymbol{P}}\left(hd = 1 \middle| \boldsymbol{x}, area_l, sec\_origin_j\right)} = 1 \qquad (13)$$

$$H_1: \quad \frac{\overline{\boldsymbol{P}}\left(hd = 1 \middle| \boldsymbol{x}, area = Nuevo\ Leon, sec\_origin_j\right)}{\overline{\boldsymbol{P}}\left(hd = 1 \middle| \boldsymbol{x}, area_l, sec\_origin_j\right)} \neq 1 \qquad (14)$$

Under the null hypothesis, the test statistic of this nonlinear function of estimators has a $\chi^2_{(1)}$ distribution. Table 7 shows the results of testing the equality of each pair of probabilities; the odds ratios are all statistically

[5] A robustness check exercise was performed to examine potential bias in our conclusions due to the differences in the rural/urban distribution of individuals between regions. We estimated the structural probit model using only observations for individuals living in urban areas. The estimated coefficients for the restricted sample and odds ratios did not show significant change. Therefore, we may conclude that there is no bias due to rural/urban distribution differences between regions. Results from this exercise are available by request from the reader.

different from one when comparing Nuevo Leon with the Southern Region. Thus, the null hypothesis is rejected when comparing these two regions. We may observe, for example, that an individual in Nuevo Leon has 4.5 more probability of reaching a high destination than someone in the Southern Region if both were born in a low-stratum home. The odds go to 2.26 and 2.84 if they were both born in a medium and high-stratum home, respectively.

Compared with Mexico City, the chances of reaching a high destination are similar in Nuevo Leon. For example, the odds of a high destination are only 1.1 if both individuals come from the bottom stratum and 1.05 if both come from the top stratum; moreover, if both come from the middle-stratum, those in Mexico City have better chances (1.2 times more probability) to reach a higher destination relative to those in Nuevo Leon.

Table 7
Odds ratios by area of residence and stratum of origin

		Nuevo Leon					
Area of residence	Stratum	Low		Medium		High	
South	Low	**4.50**	***	3.79	***	6.75	***
	Medium	3.19	***	**2.26**	***	4.78	***
	High	1.90	***	1.31	***	**2.84**	***
Mexico City	Low	**1.10**	**	1.08	***	1.65	***
	Medium	0.91		**0.83**	*	1.36	***
	High	0.70	***	1.19	***	**1.05**	*

Source: Autor's elaboration based on estimation results. *** p < 0.01, ** p < 0.05, * p < 0.1.

Conclusions

Some conclusions can be drawn from this analysis. First, the reward for attaining a high educational level is more prominent for the three areas of residence if the individual has a low socioeconomic level of origin. Second, the social reproduction rate is lower in Nuevo Leon. Compared with the South and Mexico City, Nuevo Leon is the region where it is more likely to have a high socioeconomic destination, for any given stratum of origin and educational level. We have shown that this holds even for individuals with low educational levels. We have also shown that social reproduction is lower in Nuevo Leon, implying that social mobility is higher relative to the Southern Region and Mexico City. Nevertheless, this state's probability premium for attaining higher education is smaller than that of the South, which may be considered a paradox. A smaller probability premium means that there are similar chances for everybody to reach a higher destination, which implies more social fluidity or higher social mobility.

The explanation for this paradoxical result could be related to the inequality of opportunities by region or area of residence. In particular, lower social mobility is explained by inequality of outputs, and part of the latter is attributable to the disparity of opportunities (CEEY, 2023: p. 60). Following the same reasoning, we may say that a lower inequality of outputs (as our findings for Nuevo Leon) is partly attributable to a lower inequality of opportunities. Studies have shown that in the Southern Region and in the center of Mexico (where Mexico City is located), at least 45% of the economic inequality is explained by the disparity of opportunities (CEEY, 2019: p. 61), while in Nuevo Leon this percentage is 35% (CEEY, 2023: p. 60). Our findings show that, in Nuevo Leon, there is less inequality of outputs than in the Southern Region and Mexico City, which might be explained by less inequality of opportunities in the state of Nuevo Leon.

This research paper aimed to fill some gaps in the literature on inequality in Mexico. First, how education contributes to household income has yet to be deeply understood, including the moderating role of economic background and destinations. Second, recently, the discussion on equality of opportunities in Mexico establishes that education has a negligible effect on ameliorating inequality and that meritocracy is questionable. Third, the case of Nuevo Leon is interesting for several of reasons. It has been routinely observed as an upward mobility society, less unequal in opportunities than the Center or Southern states. Asking if education plays a differential role in this particular society appeared necessary, which is why we proposed a comparative analysis.

As a result of our analysis, we found that education pays in return, but reproduction also matters. We showed evidence that, on average, there are no lucky high schoolers. A higher education directly and positively affects the chances of being in the highest welfare tertile. With more levels of schooling, there is a greater probability of staying in the third welfare tertile, controlling for economic origin. Even if the South had a high socioeconomic origin, the probabilities of a high destination are below the corresponding probabilities for those individuals in Mexico City with the lowest socioeconomic status of origin. Although chances of a high destination get better when attaining higher education, the probabilities are far lower compared to the state of Nuevo Leon.

Our findings also reveal that higher education consistently shows statistically significant differences as a tool to position individuals at the third welfare tertile. The probability premium is more extensive for

individuals who get high school education coming from the lowest tertile in any region. The probability premium is more extensive for individuals living in the South than in Mexico City or Nuevo Leon. Yes, reproduction still matters as the region faces higher social reproduction. Differences in Nuevo Leon are minimal but still statistically significant. These implications are crucial for understanding the dynamics of social mobility and welfare disparities.

In general, the reward for attaining higher education is more prominent if the individual has a low socioeconomic level of origin. For the South region, on average, individuals with university studies born in a low socioeconomic stratum have the same probability of a high destination as those born in a high socioeconomic stratum but only attained high school and have the lowest occupational category. Compared with those attaining only a high school diploma and coming from a low stratum, the probability premium of a high socioeconomic destination increases; individuals with higher education and a high socioeconomic stratum of origin are up to 3.8 times more likely to reach a high destination.

In Mexico City, there is no significant difference in probabilities of high socioeconomic destination for those with a college education if they were born in a low socioeconomic level home. Compared with individuals with higher education born into a high socioeconomic status, the odds are between 1.14 and 1.3. The largest increase in the odds occurs when individuals with higher education are born into a low socioeconomic level home; in this case, it is up to twice as likely to have a high socioeconomic destination when having a university education and being born in a high socioeconomic status. Mexico City's probability premium of having a university education is lower than in the Southern Region. For Nuevo Leon, the probability premium of human capital investment to attain a university education is the smallest compared with the Southern Region and Mexico City. The odds ratio functions are flat and close to one, showing a small dependence on socioeconomic origin. The behavior of the probabilities ratios suggests that upward social mobility is higher in Nuevo Leon compared to the Southern Region and Mexico City.

A paradoxical case in the State of Nuevo Leon was found in our research. In Nuevo Leon social reproduction matters less in comparative terms, suggesting there is less opportunity for an unequal society, as reported by Vélez-Grajales and Monroy-Gómez-Franco (2003a). Each step in the education ladder corresponds to a higher chance of staying at the third tertile, net of social background. This relationship corresponds to non-

manual positions especially for those who come from the bottom of the distribution.

This research paper contributes significantly to the empirical literature because it offers a technique to improve intra/inter societies comparisons. Using this approach provides evidence about the role of education on economic welfare. From this comparative perspective, education still significantly improves Mexicans' lives. For the average child from the bottom or the top, it seems worthy enough to encourage him/her to follow the educational path.

There are limitations to mention that open a further research agenda. We found no differences in sex, but there are differences in skin tone, as established in previous research (i.e., Vélez Grajales & Monroy-Gómez-Franco, 2023a). More comparative evidence about the paradoxical role of education with relatively low probability premiums in Nuevo Leon would be desirable to show if this is an exceptionality a less inequality of opportunities feature. Future research to test these hypotheses in light of a new wave of the ESRU Social Mobility Survey (ESRU-EMOVI 2023) is the challenge. More questions might arise about the differences between rural/urban areas because there is some previous evidence of the dramatic differences in this dichotomy regarding mobility, inequality, and welfare. We provided a general overview with a comparative emphasis, as a starting point.

References

[1] Ariza, M. & Solís, P. (2009). Dinámica socioeconómica y segregación espacial en tres áreas metropolitanas de México, 1990 y 2000. *Estudios Sociológicos, 27*(79), 171-209. https://doi.org/10.24201/es.2009v27n79.266.

[2] Balán, J., H. L. Browning & E. Jelin (1977). *El hombre en una sociedad en desarrollo. Movilidad social y geográfica en Monterrey*. México: Fondo de Cultura Económica.

[3] Breen, R. (2019). Education and intergenerational social mobility in the US and four European countries. Oxford Review of Economic Policy, 35(3), 445-466. https://doi.org/10.1093/oxrep/grz013.

[4] Cáceres Luis & Cáceres Susan (2017). Labor productivity and social policy in Latin America. Journal of Developing Areas, vol. 51. https://www.jstor.org/stable/26415727.

[5] Campos, R. (2023). *Desigualdades: Por qué nos beneficia un país más igualitario*. México: CEEY/Grano de Sal.

[6] Castañeda-Garza, D. (2024). *Desiguales: Una historia de la desigualdad en México*. México: Debate.

[7] Castañeda-Valencia, A. M. (2023). *La brecha del éxito: desigualdad de oportunidades y movilidad socioeconómica en México* (tesis doctoral) Available at: https://repositorioinstitucional.buap.mx/items/0485d167-116f-44a9-bc0a-91461a4d49f3.

[8] CEEY, Centro de Estudios Espinosa Yglesias (2013). Informe Movilidad Social en México 2013, Imagina tu futuro. Available at: https://ceey.org.mx/informe-de-movilidad-social-en-mexico-2013-imagina-tu-futuro/.

[9] CEEY, Centro de Estudios Espinosa Yglesias (2019a). Nota Metodológica. Encuesta ESRU de Movilidad Social en México 2017. Documentos Metodológicos. Available at: https://ceey.org.mx/contenido/que-hacemos/emovi/.

[10] CEEY, Centro de Estudios Espinosa Yglesias (2019b). Informe Movilidad Social en México 2019. Available at: https://ceey.org.mx/wp-content/uploads/2019/05/Informe-Movilidad-Social-en-M%C3%A9xico-2019.pdf.

[11] CEEY, Centro de Estudios Espinosa Yglesias (2019c). Movilidad Social en la Ciudad de México. 2019. Available at:https://ceey.org.mx/informe-de-movilidad-social-en-la-ciudad-de-mexico-2019/#:~:text=Los%20resultados%20del%20estudio%20muestran,lo%20largo%20de%20su%20vida.

[12] CEEY, Centro de Estudios Espinosa Yglesias (2023). Documento Metodológico Encuesta ESRU de Movilidad Social en Nuevo Leon 2021. Available at: https://ceey.org.mx/contenido/que-hacemos/emovi/.

[13] Chetty, R., Friedman, J.N., Saez, E., Turner, N. & Yagan, D. (2017). Mobility Report Cards: The Role of Colleges in Intergenerational Mobility. Working Paper: Human Capital and Economic Opportunity Global Working Group. Available at: https://econpapers.repec.org/paper/hkawpaper/2017-059.html.

[14] CONEVAL, Consejo Nacional de la Evaluación de la Política de Desarrollo Social (2023). Resultados de pobreza en México 2022. https://www.coneval.org.mx/Medicion/MP/Paginas/Pobreza_2022.aspx.

[15] Delajara, M., & D. Graña (2018). Intergenerational Social Mobility in Mexico and its Regions. Results from Rank-Rank Regressions, Sobre México. *Temas de Economía*, *4*(1): 22-37. https://ceey.org.mx/wp-content/uploads/2018/06/06-Delajara-Gra%C3%B1a-2017.pdf.

[16] Delajara M, Campos-Vázquez R, Vélez-Grajales R. (2020). Social mobility in Mexico. What can we learn from its regional variation? Working Paper; 01/2020. https://ceey.org.mx/social-mobility-in-mexico-what-can-we-learn-from-its-regional-variation/.

[17] Dyvik, E.H. (2024). Gini coefficient in OECD and affiliated countries based on disposable income as of 2022, by country. Available July 21, 2024, on: https://www.statista.com/statistics/1461858/gini-index-oecd-countries/.

[18] Engle, P.L., Fernald, L.C.; Alderman, H.; Behrman, J.; O'Gara, C.; Yousafzai, A., *et al.* (2007). Strategies to avoid the loss of developmental potential in

more than 200 million children in the developing world. *The Lancet*, *369*, 229-42. https://doi.org/10.1016/S0140-6736(07)60112-3.

[19] Erikson, R. & Goldthorpe, J.H. (1993). *The constant flux: A study of class mobility in industrial societies*. Oxford, UK: Oxford University Press.

[20] Esping-Andersen, G. & Cimentada, J. (2018). Ability and mobility: The relative influence of skills and social origin on social mobility. *Social Science Research*, *75*, 13-31. https://doi.org/10.1016/j.ssresearch.2018.06.003.

[21] Ferreira, F. & Gignoux, J. (2011). The measurement of inequality of opportunity: Theory and an application to Latin America. *The Review of Income and Wealth, 57*(4), 622-657. https://doi.org/10.1111/j.1475-4991.2011.00467.x.

[22] Fields, G., Duval, R., Freije, S., Puerta, M., Arias, O., & Assunção, J. (2007). Intragenerational Income Mobility in Latin America [with Comments]. En *Economía*, *7*(2), 101-154. https://www.jstor.org/stable/20060493.

[23] Foster J.E., & Rothbaum, J. (2015). Using synthetic panels to estimate intergenerational mobility. Working Paper No. 13, Centro de Estudios Espinosa Yglesias. Available on July 21st 2024, at: https://ceey.org.mx/wp-content/uploads/2018/06/13-Foster-Rothbaum-2015.pdf.

[24] Grusky, D. B. (2018). *Social stratification: class, race, and gender in sociological perspective* (4th Ed.). New York: Routledge.

[25] Guevara A. (2018). Overidentification tests for the exogeneity of instruments in discrete choice models. Transportation Research Part B 114 (2018) 241-253. https://www.sciencedirect.com/science/article/abs/pii/S0191261518302303?via%3Dihub.

[26] Guillermo Peón, S.B. y Castañeda Valencia, A.M. (2021). Efectos de los factores macroeconómicos e individuales sobre la movilidad socioeconómica en México: análisis mediante la estimación de un Modelo Probit Ordenado Generalizado. *EconoQuantum, 18*(1),75-115. https://econoquantum.cucea.udg.mx/index.php/EQ/article/view/7197.

[27] Heckman, J.H. & Mosso, S. (2014). The economics of human development and social mobility. *Annual Review of Economics, 6*, 689-733. https://doi.org/10.1146/annurev-economics-080213-040753.

[28] Hillman, A.L., & Jenkner, E. (2004). Educating children in poor countries. Washington, DC.: International Monetary Fund. Available on July 21st 2024, at: https://www.imf.org/external/pubs/ft/issues/issues33/.

[29] Hout, M. (2008). How Class Works: Objective and Subjective Aspects of Class Since the 1970s. En Lareau, A. & Conley, D., *Social Class: How Does It Work?,* pp. 25-64. NY: Russel Sage Foundation.

[30] Hout, M. (1988). More Universalism, Less Structural Mobility. The American Occupational Structure in the 1980s. *American Journal of Sociology*, *93*, 1358-1400. https://www.journals.uchicago.edu/doi/10.1086/228904.

[31] Huerta-Wong, Juan E., Ibarra López, Ignacio, y Espinosa Montiel, Rocío (2022). Oportunidades y capacidades. Movilidad intrageneracional y

desigualdad en México. *Revista De El Colegio De San Luis, 12*(23), 1-31. Available at: https://revista.colsan.edu.mx/index.php/COLSAN/article/view/1326/1493.

[32] Huerta-Wong, JE. & Olivera-Pérez, E. (2020). *Movilidad Social en Territorios de México: Monterrey y Puebla*. Puebla, Mex: BUAP / UPAEP.

[33] Huerta-Wong, JE., Burak, E., & Grusky, D. (2013). "Is Mexico the Limited Case? Social Mobility in the New Gilded Age". *Documento de trabajo, Stanford Center on Poverty and Inequality*. Available at: http://web.stanford.edu/group/scspi/_media/working_papers/huerta-wong_burak_grusky_mexico-mobility.pdf.

[34] INEGI Instituto Nacional de Estadística y Geografía (2021). Censo de Población y Vivienda 2020. Tabulados del Cuestionario Básico. Localidades y población total por entidad federativa según tamaño de localidad. Available at: https://www.inegi.org.mx/programas/ccpv/2020/#tabulados.

[35] INEGI Instituto Nacional de Estadística y Geografía (2022). Producto Interno Bruto por Entidad Federativa 2021. Comunicado de Prensa Núm. 734/22, 7 de Diciembre 2022. Available at: https://www.inegi.org.mx/contenidos/saladeprensa/boletines/2022/PIBEF/PIBEF.pdf.

[36] INEGI Instituto Nacional de Estadística y Geografía (2023). Estadísticas de Salud en Establecimientos Particulares (ESEP) 2022. Comunicado de Prensa Núm. 458/23, 31 de Julio 2023. https://www.inegi.org.mx/contenidos/saladeprensa/boletines/2023/ESEP/ESEP2022.pdf.

[37] Jackson, M. (2013). *Determined to succeed? Performance versus choice in educational attainment*. Stanford, CA: Stanford University Press.

[38] Lareau, A. & Conley, D. (2008). *Social Class: How Does It Work?* NY: Russel Sage Foundation.

[39] López-Calva L. y Macías, A. (2010). ¿Estudias o trabajas? Desersión escolar, tragbajo temprano y movilidad en México. En J. Serrano & F. Torche (eds.), *Movilidad social en México, población, desarrollo y crecimiento*. Cd. De México: CEEY.

[40] McMillan, M. & Rodrik, Daniel (2011). Globalization, structural change and productivity growth, NBER Working Paper, Nº 17143, Cambridge. https://www.nber.org/papers/w17143.

[41] Monroy-Gómez-Franco, L. (2023). Essays on Social Mobility and Distribution. (Doctoral Dissertation), City University of New York.

[42] National Center for Education Statistics. (2023). Annual Earnings by Educational Attainment. Condition of Education. U.S. Department of Education, Institute of Education Sciences. Retrieved [15-ene-2024], from https://nces.ed.gov/programs/coe/indicator/cba.

[43] Núñez, J. & Tartakowsky, A. (2007), Inequality of outcomes vs. inequality of opportunities in a developing country: An exploratory analysis for Chile, *Estudios de Economía, 34*(2), 185-202. https://www.scielo.cl/scielo.php?pid=S0718-52862007000200004&script=sci_abstract&tlng=pt.

[44] Oreopoulos, P., and K.G. Salvanes (2011). Priceless: The Nonpecuniary Benefits of Schooling. *Journal of Economic Perspectives*, *25*(1): 159–84. https://www.aeaweb.org/articles?id=10.1257/jep.25.1.159.

[45] Oxfam Mexico (2024). El monopolio de la desigualdad: cómo la concentración del poder corporativo lleva a un México más desigual. Available on July 21st 2024, at: https://oxfammexico.org/wp-content/uploads/2024/01/El-monopolio-de-la-desigualdad-Davos-2024-Briefing-Paper.pdf.

[46] Pfeffer, F. & Hertel, F. (2015). How Has Educational Expansion Shaped Social Mobility Trends in the United States?, *Social Forces*, Volume 94, Issue 1, September 2015, 143-180, https://doi.org/10.1093/sf/sov045.

[47] Psacharopoulos, G., & Patrinos, H.A. (2018). Returns to Investment in Education: A Decennial Review of the Global Literature. *Education Economics*, *26*(5): 445-58. https://doi.org/10.1080/09645292.2018.1484426.

[48] Raftery, A. E., & Hout, M. (1993). Maximally Maintained Inequality: Expansion, Reform, and Opportunity in Irish Education, 1921-75'. *Sociology of Education*, *66*(1), 41-62. https://doi.org/10.2307/2112784.

[49] Rivers, Douglas & Vuong Quang H. (1988). Limited information estimators and exogeneity tests for simultaneous probit models. *Journal of Econometrics, 39*, 347-366. https://doi.org/10.1016/0304-4076(88)90063-2.

[50] Solís, P. (2007). *Inequidad y movilidad social en Monterrey*. México. México: El Colegio de México/Centro de Estudios Sociológicos.

[51] Solís, P. (2013). Desigualdad vertical y horizontal en las transiciones educativas de México. *Estudios Sociológicos, 31*, 63-95. https://estudiossociologicos.colmex.mx/index.php/es/article/view/80/80.

[52] STATA 17. Base Reference Manual, Release 2017. Ivprobit-Probit model with continuous endogenous covariates. Available at: https://www.stata.com/manuals/rivprobit.pdf.

[53] Tikly, L.P. & Barret, A.M. (2011). Social justice, capabilities and the quality of education in low income countries*. International Journal of Educational Development, 31*(1), 3-14. https://doi.org/10.1016/j.ijedudev.2010.06.001.

[54] Torche, F. (2010a). Cambio y persistencia de la movilidad intergeneracional en México. En J. Serrano & F. Torche (eds.) *Movilidad social en México. Población, desarrollo y crecimiento.* México: CEEY, pp. 71-134. https://ceey.org.mx/wp-content/uploads/2018/06/Movilidad-Social-en-M%C3%A9xico.-Poblaci%C3%B3n-desarrollo-y-crecimiento.pdf.

[55] Torche, F. (2010b). Economic Crisis and Inequality of Educational Opportunity in Latin America. *Sociology of Education, 83*(2). https://doi.org/10.1177/0038040710367935.

[56] Torche, F. (2018). **"**Intergenerational Mobility at the Top of the Educational Distribution". *Sociology of Education*, *91*(4), 266-289. https://doi.org/10.1177/0038040718801812.

[57] Torche, F. (2020). Changes in intergenerational mobility in Mexico: A cohort analysis. Available on July 22, 2024, at: https://ceey.org.mx/wp-content/uploads/2020/04/03-Torche-2020.pdf.
[58] Toro, H. (2021). Minding the curve: The influence of social origin on earnings inequality by education in Mexico. *The British Journal of Sociology, 72*(5), 1394-1414. https://doi.org/10.1111/1468-4446.12889.
[59] Vélez-Grajales, R., Huerta-Wong, J.E., & Campos, R. (Eds.) (2016). *México, ¿el motor inmóvil?* México: Centro de Estudios Espinosa Yglesias. https://ceey.org.mx/mexico-el-motor-inmovil/.
[60] Vélez-Grajales, R.; Monroy-Gómez-Franco, L. (2023a). Desigualdad de oportunidades en Nuevo Leon, México (2023), Problemas del Desarrollo. *Revista Latinoamericana de Economía, 54*(214), pp. 77-100. https://doi.org/10.22201/iiec.20078951e.2023.214.70019.
[61] Vélez-Grajales, R.; Monroy-Gómez-Franco, L. (2023b). *Por una cancha pareja: Igualdad de oportunidades para lograr un México más justo*. México: CEEY/Grano de Sal.
[62] Von Humboldt, B. (1827). *Ensayo político sobre la Nueva España*. Available on 26/01/20024 at: http://cdigital.dgb.uanl.mx/la/1080012467_C/1080012467_T1/1080012467_MA.PDF.
[63] Weeden, K. & Grusky, D. (2005). The Case for a New Class Map. *American Journal of Sociology*, *111*(1), 141-212. https://doi.org/10.1086/428815.
[64] Wooldridge, Jeffrey. M. (2010). *Econometric Analysis of Cross Section and Panel Data*. 2nd ed. Cambridge, MA: MIT Press.
[65] Young, M. (1958). *The rise of the meritocracy.* UK: Pelican Books.

Appendix

Table A1. Distribution of educational level by age group

Educational level	Total (by area)	Age group (years)				
		60-64	50-59	40-49	30-39	25-29
Southern Region (%)						
Without studies	7.01	18.87	12.1	7.25	3.77	0.78
Incomplete primary school	12.09	30.93	21.82	10.45	6.71	4.08
Primary school	20.91	21.42	26.79	23.9	18.58	15.61
Middle school	26.39	11.11	19.19	31.41	30.38	27.9
High school	20.83	6.74	13.4	17.3	25.03	33.18
College and graduate studies	12.77	10.91	6.71	9.69	15.53	18.45
Total	100	99.98	100.01	100	100	100
Mexico City (%)						
Without studies	0.39	1.96	0.62	0.23	---	---
Incomplete primary school	3.2	12.34	6.31	1.55	0.69	0.47
Primary school	11.06	23.78	21.35	9.7	5.77	3.83
Middle school	31.16	27.92	29.36	38.18	33.31	24.6

High school	34.32	18.45	26.01	34.78	40.15	41.96
College and graduate studies	19.87	15.54	16.35	15.56	20.09	29.14
Total	100	99.99	100	100	100.01	100
Nuevo Leon (%)						
Without studies	1.22	6.04	1.86	1.19	0.04	0.04
Incomplete primary school	4.18	20.06	7.38	1.47	1.77	0.87
Primary school	12.7	21.6	19.76	15.49	7.81	5.29
Middle school	40.68	25.62	33.32	47.34	44.94	39.04
High school	22.69	12.12	22.78	19.3	27.7	25.36
College and graduate studies	18.52	14.55	14.89	15.2	17.74	29.4
Total	99.99	99.99	99.99	99.99	100	100

Source: Authors' elaboration considering the sample design.
Note: Age groups are defined following the procedure to calculate the economic resources index

Table A2. Odds ratios by educational level and socioeconomic origin; Southern Region

Socioeconomic Stratum of origin	Educational level	High school, Low origin		High school, Medium origin		High school, High origin	
Low							
	No studies	0.03	***	0.02	***	0.01	***
	Incomplete primary school	0.09	***	0.06	***	0.04	***
	Primary school	0.21	***	0.15	***	0.09	***
	Middle school	0.48	***	0.34	***	0.21	***
	High school	1.00		0.71	***	0.44	***
	College/Graduate						
Medium		2.07	***	1.48	***	0.92	
	No studies	0.06	***	0.05	***	0.03	***
	Incomplete primary school	0.16	***	0.11	***	0.07	***
	Primary school	0.35	***	0.25	***	0.16	**
	Middle school	0.74	**	0.53	***	0.33	**
	High school	1.40	**	1.00		0.62	***
	College/Graduate	2.60	***	1.85	***	1.15	
High							
	No studies	0.19	***	0.13	***	0.08	***
	Incomplete primary school	0.41	***	0.29	***	0.18	***
	Primary school	0.76		0.55	***	0.34	***
	Middle school	1.39		0.99		0.62	***
	High school	2.25	***	1.61	***	1.00	
	College/Graduate	3.52	***	2.51	***	1.56	***

Source: Authors' elaboration. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A3. Odds ratios by educational level and socioeconomic origin; Mexico City

Socioeconomic Stratum of origin	Educational level	High school, Low origin		High school, Medium origin		High school, High origin	
Low							
	No studies	0.08	***	0.07	***	0.05	***
	Incomplete primary school	0.18	***	0.15	***	0.11	***
	Primary school	0.35	***	0.28	***	0.21	***
	Middle school	0.62	***	0.50	***	0.38	***
	High school	1.00		0.81	***	0.62	***
	College/Graduate	1.55	***	1.26	***	0.96	
Medium							
	No studies	0.14	***	0.12	***	0.09	***
	Incomplete primary school	0.29	***	0.24	***	0.18	***
	Primary school	0.50	***	0.41	***	0.31	***
	Middle school	0.83	**	0.67	***	0.51	***
	High school	1.23	**	1.00		0.76	***
	College/Graduate	1.75	***	1.43	***	1.08	***
High							
	No studies	0.33	***	0.27	***	0.20	***
	Incomplete primary school	0.56	***	0.46	***	0.35	***
	Primary school	0.85		0.69	***	0.52	***
	Middle school	1.24		1.01		0.76	***
	High school	1.62	***	1.32	***	1.00	
	College/Graduate	2.03	***	1.65	***	1.25	***

Source: Authors' elaboration. *** p < 0.01, ** p < 0.05, * p < 0.1.

Table A4. Odds ratios by educational level and socioeconomic origin; Nuevo Leon

Socioeconomic Stratum of origin	Educational level	High school, Low origin		High school, Medium origin		High school, High origin	
Low							
	No studies	0.12	***	0.10	***	0.08	***
	Incomplete primary school	0.24	***	0.20	***	0.16	***
	Primary school	0.41	***	0.34	***	0.28	***
	Middle school	0.68	***	0.57	***	0.46	***
	High school	1.00		0.85	**	0.68	***
	College/Graduate	1.42	***	1.20	***	0.97	***
Medium							
	No studies	0.19	***	0.16	***	0.13	***
	Incomplete primary school	0.35	***	0.30	***	0.24	***
	Primary school	0.56	***	0.47	***	0.38	***
	Middle school	0.86	**	0.73	***	0.59	***
	High school	1.18	**	1.00		0.81	***

	College/Graduate	1.56	***	1.32	***	1.06	*
High								
	No studies	0.40	***	0.33	***	0.27	***
	Incomplete primary school	0.62	***	0.53	***	0.42	***
	Primary school	0.87		0.74	***	0.60	***
	Middle school	1.19		1.01		0.81	***
	High school	1.47	***	1.24	***	1.00	
	College/Graduate	1.73	***	1.46	***	1.18	***

Source: Authors' elaboration. *** p < 0.01, ** p < 0.05, * p < 0.1.

Table A5. Odds ratios by occupational category; South Region

	Socio-economic stratum of origin	Occupational Category	(1) MLQ occupation, High School low stratum		(2) MLQ occupation, High School medium stratum		(3) MLQ occupation, High School high stratum	
South Region	Low							
		AGR	1.3		0.92		0.57	***
		MLQ	1.86	***	1.32	**	0.82	
		MHQ	2.02	***	1.44	***	0.89	
		COM	2.06	***	1.46	***	0.9	
		NMLQ	2.15	***	1.53	***	0.94	
		NNHQ	2.38	***	1.69	***	1.04	
	Medium							
		AGR	1.79	**	1.27		0.79	**
		MLQ	2.41	***	1.71	***	1.06	
		MHQ	2.56	***	1.82	***	1.12	
		COM	2.6	***	1.85	***	1.14	
		NMLQ	2.68	***	1.91	***	1.18	*
		NNHQ	2.92	***	2.08	***	1.28	**
	High							
		AGR	2.78	***	1.98	***	1.22	*
		MLQ	3.38	***	2.4	***	1.48	***
		MHQ	3.52	***	2.5	***	1.54	***
		COM	3.55	***	2.53	***	1.56	***
		NMLQ	3.62	***	2.57	***	1.59	***
		NMHQ	3.84	***	2.73	***	1.69	***

Source: Authors' elaboration. *** p < 0.01, ** p < 0.05, * p < 0.1.
Abbreviations for occupational categories: AGR=agriculture; MLQ=manual with low qualification; MHQ=manual with high qualification; COM= commerce; NMLQ=non-manual with low qualification; NMHQ=non-manual with high qualification.

Table A6. Odds ratios by occupational category; Mexico City

	Socio-economic stratum of origin	Occupational Category	(1) MLQ occupation, High School low stratum		(2) MLQ occupation, High School medium stratum		(3) MLQ occupation, High School high stratum	
Mexico City	Low							
		AGR	1.22	*	0.99		0.75	***
		MLQ	1.48	***	1.2	**	0.91	
		MHQ	1.53	***	1.24	***	0.94	
		COM	1.55	***	1.26	***	0.95	
		NMLQ	1.58	***	1.28	***	0.97	
		NNHQ	1.67	***	1.35	***	1.03	
	Medium							
		AGR	1.46	**	1.19	**	0.9	
		MLQ	1.69	***	1.37	***	1.04	
		MHQ	1.74	***	1.41	***	1.07	
		COM	1.76	***	1.42	***	1.08	
		NMLQ	1.78	***	1.44	***	1.09	*
		NNHQ	1.86	***	1.51	***	1.14	***
	High							
		AGR	1.84	***	1.49	***	1.13	***
		MLQ	2	***	1.62	***	1.23	***
		MHQ	2.03	***	1.64	***	1.24	***
		COM	2.04	***	1.65	***	1.25	***
		NMLQ	2.05	***	1.66	***	1.26	***
		NMHQ	2.1	***	1.7	***	1.29	***

Source: Authors' elaboration. *** p < 0.01, ** p < 0.05, * p < 0.1.
Abbreviations for occupational categories: AGR=agriculture; MLQ=manual with low qualification; MHQ=manual with high qualification; COM= commerce; NMLQ=non-manual with low qualification; NMHQ=non-manual with high qualification.

Table A7. Odds ratios by occupational category; Nuevo Leon

	Socio-economic stratum of origin	Occupational Category	(1) MLQ occupation, High School low stratum		(2) MLQ occupation, High School medium stratum		(3) MLQ occupation, High School high stratum	
Nuevo Leon	Low							
		AGR	1.18	**	1		0.81	**
		MLQ	1.37	***	1.15	***	0.93	
		MHQ	1.4	***	1.19	***	0.96	
		COM	1.42	***	1.2	***	0.97	
		NMLQ	1.43	***	1.21	***	0.98	
		NNHQ	1.5	***	1.27	***	1.02	
	Medium							
		AGR	1.37	***	1.15	**	0.93	
		MLQ	1.52	***	1.28	***	1.03	
		MHQ	1.55	***	1.31	***	1.05	
		COM	1.56	***	1.31	***	1.06	*
		NMLQ	1.57	***	1.32	***	1.07	*
		NNHQ	1.62	***	1.37	***	1.1	***
	High							
		AGR	1.62	***	1.36	***	1.1	***
		MLQ	1.71	***	1.44	***	1.16	***
		MHQ	1.72	***	1.45	***	1.17	***
		COM	1.73	***	1.46	***	1.18	***
		NMLQ	1.73	***	1.46	***	1.18	***
		NMHQ	1.77	***	1.49	***	1.2	***

Source: Authors' elaboration. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Abbreviations for occupational categories: AGR=agriculture; MLQ=manual with low qualification; MHQ=manual with high qualification; COM= commerce; NMLQ=non-manual with low qualification; NMHQ=non-manual with high qualification.