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Ethnic Inequality in Mexican Education: Social Origins, State Interventions and Intergenerational Mobility

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Abstract

We assess ethnic inequality in Mexican education over six decades. Using the first wave of the Mexican Family Life Survey, which includes information from respondents and their siblings (living and deceased), we construct six, ten-year cohorts including individuals born between 1930 to 1989. Using a multi-level approach, which allows us to account for individual- and family-level characteristics, we assess differences in the likelihood that indigenous and non-indigenous Mexicans make each of three distinct educational transitions: 1) into primary school, 2) from primary school to lower-secondary school, and 3) from lower-secondary school to upper-secondary school. We find that the indigenous disadvantage in terms of entering primary school was eliminated by recent cohorts. However, the indigenous disadvantage persists for entry into lower-secondary school, despite overall improvements in the probability of successfully transitioning.

In recent years there has been growing awareness of the need to address discrimination and social exclusion of indigenous people within the international community (United Nations 2009). The UN Permanent Forum on Indigenous Issues, established in 2000, reflects an increased willingness to discuss economic, political, social, and educational issues of indigenous people at a global level. Scholars have paid particular attention to monitoring educational gaps between indigenous and non-indigenous populations in various countries given the long-term consequences of educational inequality for occupational attainment, political participation, and health (e.g., McEwan (2004) for Bolivia and Chile; Turcotte (2004) for Canada; Freeman (2005) for the United States; Cooke (2007) for Australia and New Zealand). Studies consistently report considerable educational disadvantages of indigenous people compared to their non-indigenous counterparts.

In this study, we use a historical perspective to empirically assess the evolution of ethnic inequality in Mexico, comparing the educational trajectories of indigenous Mexicans and their non-indigenous counterparts. By covering six, ten-year birth cohorts from the 1930s to the 1980s, the scope of our study contributes a greater historical and contextual depth as compared to other, cross-national work on educational progress of indigenous people that have largely focused on the period subsequent to the mid 1990s (e.g., (Hall and Patrinos 2006; UN 2009; Vinding 2006). As far as we know, this is the longest period of analysis that addresses inequality in indigenous education. By assessing a historical trend, we may better contextualize contemporary patterns within longer trends of stability and change in indigenous educational inequality.

We assess three sequential educational transitions in the educational career: transition into primary school, transition into lower secondary school given primary school attendance, and

transition into upper secondary school given lower secondary school attendance. Most studies that monitored educational progress of indigenous Mexicans focused on the years of completed schooling or enrollment rates for a particular level of education (e.g., (Giugale, Lafourcade, and Nguyen 2001; Hall and Patrinos 2006). As Mare (1980; 1981) pointed out three decades ago, analysis with competed years of school conflates changes in the distribution and allocation of schooling to different groups of people depending on their ethnicity and socioeconomic background. A transition model better addresses changes in the way in which ethnicity is associated with educational attainment – independent of changes in the marginal distribution of schooling.

The educational transition model also allows us to identify the stages of the educational career where change (or persistence) in ethnic inequality has been particularly noticeable. An influential framework in the literature of educational expansion and inequality, termed Maximally Maintained Inequality (MMI), posits that the effects of social origin, typically defined by parental education and occupation, on educational transitions decline at a given level of education only if enrollments of advantaged group are saturated at the level (Raftery and Hout 1993; Shavit and Blossfeld 1993). Inequality persists at higher educational transitions where saturation has yet to be attained. Although originally formulated for the effect of social classes, researchers have extended the insight of MMI to explain changes in ethnic educational inequalities in countries like Taiwan and the Netherlands (Jao and McKeever 2006; Tolsma, Coenders, and Lubbers 2007). Consistent with the prediction of MMI, these studies have found declining ethnic inequality at the lower levels of educational system that have dramatically expanded but persistent ethnic inequality at the higher level of educational system.

However, the MMI hypothesis has not always been confirmed: for instance, in Israel ethnic inequality declined at a given level of education even before the level was saturated for advantaged groups (Ayalon and Shavit 2004; Shavit and Kraus 1990). Although not for ethnicity but for father's education, a study of the Chilean education has found even a rise in the effect of father's education on the likelihood of entering secondary school, the level of education for which demand was likely saturated for advantaged groups (Torche 2005). Therefore, the applicability of MMI to ethnic educational inequality in Mexico is an open question. Although state efforts to incorporate its pre-colonial indigenous population in the post-colonial economic and educational expansion resulted in commissioned and independent studies by the U.S. Department of Education (Gill 1969), a raft of Mexican sociologists and anthropologists (Ramirez 2006; Ramírez-Casteñada 2006) and the Mexican government (INI 1994), little empirical evidence has emerged to assess the ethnic inequality for much of post-revolutionary Mexican history.

Mexican education provides an interesting context within which to address evolution of ethnic inequality in education. Characterized by both linguistic and geographic diversity, Mexico contained over 5.2 million speakers of indigenous languages in 1990 increasing to over 6 million by 2000, reflecting at least 59 distinct languages distributed across all 31 states (Flores-Crespo 2007; INI 1994). Although increasing in number, however, the indigenous language population of Mexico has declined in percentage terms from 16% in 1930 to 7% by 2000 (see Table 1). These percentage figures can be deceptive as only 5 countries in Latin America (Mexico, Bolivia, Guatemala, Peru and Ecuador) contained nearly 90% of the region's indigenous population in the mid-1990s. Of this group, Mexico was the largest, containing about 29% of the region's total indigenous population (Yashar 1996).

[Insert Table 1 Here]

Our work benefits from a unique data source, the Mexican Family Life Survey (MxFLS), which records the education of respondents and their siblings, providing a large sample size and covering a long period of Mexican history. Before introducing our data and measures, we briefly describe the changing contexts of indigenous education and highlight major initiatives that have directly targeted the indigenous education since the beginning of modern Mexican education. The description of educational initiatives for indigenous populations will provide a useful contextual background to understand changes (or persistence) in ethnic inequality in Mexican education.

The Context of Indigenous Education in Mexico

The Department of Indigenous Affairs

The founding of the Ministry of Education in 1921 marked the beginning of the effort to expand access to education and use it as tool to solidify a shared national identity, which characterized the political discourse in the immediate post-revolutionary period (Aguirre-Beltran 1957; Aguirre-Beltran 1973). Although empirical evidence of their success is limited, a number of educational reforms have attempted to address educational inequality throughout history of modern Mexican education. The equality of access to education and expansion of educational opportunity were put forth as core components of the post-revolutionary Mexican state (Mabry 1985; Sotelo Inclán 2002). As early as 1932, eleven "centers of indigenous education" had been established, but the establishment of the Department of Indigenous Affairs in 1936 marked the

first concerted initiative of the post-revolutionary government that specifically targeted the indigenous community (Aguirre-Beltran 1973). This effort was an extension of a larger shift in education policy marked by an amendment to article 3 of the constitution, defining education to be "socialist" in 1934 (Sotelo Inclán 2002). This reform resulted in specific curriculum intended to increase class consciousness (Latapí Sarre 1998), organizing a national identity around class, not ethnicity (Ramírez-Casteñada 2006).

This period is defined by a tension between class based and ethnic based identity. Efforts by the federal government to coordinate and serve indigenous Mexicans as a distinct educational population conflicted with proponents of a class-based national identity. This duality was reflected in the wording of the constitutional amendment that called for education to be administered equally to both "workers and peasants" (Aguirre-Beltran 1973).

National Indigenous Institute

The socialist period, which ended abruptly with the word "socialist" being stricken from the constitution in 1946 (Gill 1969), was followed by a relative absence of conflict in terms of educational reform. In terms of indigenous education, this moment in history marked an important transition defined by the end of the Department of Indigenous Affairs and the emergence of the National Indigenous Institute (INI) in 1948, defining the organizational structure of indigenous affairs for the remainder of the century (Aguirre-Beltran 1973; Cardiel Reyes 1981). The INI took over the coordination of the centers of indigenous education establishing two regional centers in Chiapas and Chihuahua, shifting the focus away from Mexico City (Cardiel Reyes 1981; Ramírez-Casteñada 2006).

Post-INI Period

The INI continues to be the primary state entity in charge of indigenous issues in Mexico – education or otherwise. Other state initiatives have followed, most notably the Eleven Year Plan (1959-1970), which substantially expanded primary and lower-secondary education into smaller communities with at least 1,000 inhabitants (Mier y Terán Rocha and Romero 2003). This would have excluded a substantial number of smaller, rural indigenous communities, but nevertheless marked the first large-scale, general expansion of educational accessibility. Some have argued that the focus on relatively populous communities may not have benefited the more rural, indigenous population (Rodriguez 1985).

In 1993, article 3 of the constitution was amended once again, establishing compulsory lower-secondary education. Primary education was seen as being universally attained, situating the logical target for retention at post-primary transitions. Although making lower-secondary education mandatory was not an educational effort that particularly targeted indigenous population, the focus on lower-secondary education may have benefited indigenous students as well as non-indigenous students. Earlier work pointed out that the age of transition to lower-secondary school was a common point at which many indigenous students left school (Aguirre-Beltran 1973).

The most recent effort, which is not assessed in this study, is the *Oportunidades* program, which was initiated in 2001 (Behrman, Parker, and Todd 2005b). Initially, *Oportunidades* focused primarily on rural areas, which may have disproportionately benefited the indigenous population. However, given that our modeling strategy uses information on completed schooling by 2002, we are unable to assess cohorts who are still attending, which accounts for nearly all beneficiaries of *Oportunides*.

In sum, after the creation of the INI in 1948, little targeted attention has been paid to Mexico's indigenous population by the federal state. Some studies have shown that subsequent periods of educational reform and expansion in the 1950s, 1960s and 1970s have improved the educational mobility of some underrepresented groups, particularly women, even if educational initiates were not particularly aimed to reduce gender disparity (Creighton, Park, and Teruel 2009). That said, overall, Mexico's indigenous population has received a limited educational focus and its ability to benefit from more general reform efforts remains an open question.

Data and Sample

The Mexican Family Life Survey (MxFLS-1) contains information about the completed education of all resident adults (age 15+) and their non-resident siblings – living and deceased. This affords a large sample of approximately 81,000 individuals, which allows us to take the long view as we have information on those no longer living, conditional on at least one surviving sibling.

Collected in the summer of 2002, MxFLS-1 includes extensive educational, economic, and demographic information for 8,440 households in 150 communities, representative of private dwellings nationally and regionally (Rubalcava and Teruel 2006). All individuals 15+ included in the MxFLS-1 sample were asked about basic demographic information for all of their non-resident siblings (alive and deceased). To limit the sample to siblings (deceased and non-coresident) who had had the opportunity to transition to upper-secondary, we include only those that are currently over 18 or survived past the age of 18. Including information on deceased siblings reduces selectivity due to mortality differentials.

The resulting sample includes all adult members of the sampled household in MxFLS-1 and age-eligible (18+) non-resident siblings. The age range, based on reported age at the time of MxFLS-1, is 18-74. Three nested samples are used to separately analyze transitions from no school to primary school, primary school to lower-secondary school, and lower-secondary school to upper-secondary school. Information on the level of schooling for non-coresident and deceased siblings is recorded only as level attended, which does not specify if the sibling had graduated. A more precise outcome would consider successful completion of a given level of schooling as distinct from a successful transition and distinct from dropping out (e.g. graduation from primary without continuation vs. transition into lower secondary vs. dropping out in primary). Given that we cannot distinguish graduation without continuation from leaving school prior to graduation (i.e. dropping out), we are limited to considering only successful transitions, which are identified by the sibling having at least attended a higher level of schooling.

The primary-school sample includes all individuals who were age-eligible respondents in MxFLS-1 and their non-resident siblings (living and deceased), resulting in a sample of 81,693 individuals who are clustered within 15,110 families with an average of 5.4 per family. The sample for the transition from primary school to lower-secondary school includes all individuals that successfully transitioned into primary school and thus were eligible to make the next transition to lower secondary school. This includes a total of 69,935 individuals who are clustered within 14,336 families with an average of 4.9 per family. Finally, the sample for the transition from lower secondary to upper-secondary school pertains to all individuals that successfully transitioned into lower-secondary school and thus were eligible to make the next transition to upper secondary school, which includes a total of 27,136 individuals who are clustered within 8,432 families with an average of 3.2 per family.

Model

Because we include all age-eligible siblings (alive and deceased), each analytic sample includes multiple individuals from the same family. These siblings are likely to have shared a common household and family environment and, by definition, have at least one shared parent. In other words, they are more likely to be similar to each other than to children in other families. To address this family-level clustering, we estimated a multilevel random-intercept logit model described by equation 1 (Rabe-Hesketh and Skrondal 2008):

$$(1)\ \text{logit}\left(\Pr\left\{y_{ij}=1\middle|x_{ij},x_{j},z_{j}\right\}\right)=\beta_0+\beta_1 x_{ij}+\beta_2 x_{j}+\sigma_{j},$$

where the outcome y_{ij} (successfully transitioning) is a function of individual (*i*) and family (*j*) characteristics. The random intercept that varies over households ($z_j \sim N(0, \sigma_j)$) and is assumed to be independent across clusters. To assess the need for a multilevel approach, we compared the random-intercept model to the standard logit model using a likelihood-ratio χ^2 test, which makes the conservative assumption of a χ^2 distribution with one degree of freedom. For the three models described below, we rejected the null hypothesis ($p<0.001$) that the family random-effect parameter was equal to zero, suggesting that a random-intercept model is preferable. We fitted equation (1) using the *xtmelogit* command in Stata 11 (StataCorp 2009).

Variables

[Insert Table 2 here]

Table 2 presents descriptive statistics of individual-level and family-level variables for each transition sample separately.

Dependent Variable:

The dependent variable for each of the three transition models is a dichotomous measure of a successful transition from one level of education to the next – into primary school, from primary school to lower-secondary school, and from lower-secondary school to upper-secondary school. Across all cohorts, over 90% of individuals entered primary school with far fewer making subsequent transitions to lower-secondary school (55%) and upper-secondary school (45%).

[Insert Figure 1]

Individual-Level Measures of Cohort:

In order to assess trends over time in the differences in the likelihood of making educational transitions between indigenous people and their non-indigenous counterparts, we construct six, ten-year birth cohorts. Starting in 1930, each cohort covers a decade, ending with those born in 1989. Figure 1 defines the six, ten-year birth cohorts used in this analysis. For example, cohort 3 includes individuals born in the 1950s [1950-1959] who are assumed to transition into primary school at age 6 [1956-1965], lower-secondary school at age 12 [1962-1971], and upper-secondary school at age 15 [1965-1974].

Family-Level Measure of Ethnicity:

Ethnicity in Mexico is often fluid, allowing individuals to plausibly maintain a variety of identities, which may or may not contain a link to an identifiable indigenous group. Often, the measure used for aggregate, national-level population estimates is based on language, distinguishing individuals who speak a non-Spanish language native to the Americas from Spanish speaking Mexicans. This measure is derived from the census and is widely used (INI 1994; Ramirez 2006). Although language can be a reasonable measure of indigenous identity, language loss can occur across the life course due to geographic and social mobility, which can limit access to other speakers. This may occur independent from a change in self-assessed identity.

We construct a dichotomous measure based on self-identification, where respondents are asked if they consider themselves a member of an indigenous group or ethnicity[1]. The question is directly queried of the survey respondent and the response is assigned to non-resident and deceased siblings, which assumes ethnicity to be a family-level characteristic. Across all cohorts, about 13% of families in the primary-school sample are considered indigenous compared to 12% and 9% for the lower-secondary and upper-secondary school samples respectively.

Family-Level Measures of Social Origins and Rural Context:

We account for social origins using measures of the education and occupation of the survey respondent's father. Both measures are derived from direct questions posed to the sampled individual and are assigned to the non-resident siblings as well, resulting in a family-

[1] The original wording of question used to construct the measure of indigenous identity is derived from question ed03 in MxFLS-1, which uses the following wording in English and Spanish:
Do you recognize yourself as part of an indigenous group?
¿Usted se reconoce como parte de un grupo o etnia indigena?

level measure. The father's education is the total years of schooling (between 3.5 and 4.1 years on average across all cohorts and transitions) and is included as a continuous measure with children of more educated fathers being expected to be more likely to successfully transition to each of the three levels of schooling considered.

The father's occupation is a four-part categorical measure with the following categories – 1) peasant, day labor, and agriculture, 2) non-agricultural, 3) self-employed, landlord, business owner, and 4) other. Agriculture is the most common paternal employment for the primary and lower-secondary sample but is replaced by non-agricultural occupations for the upper-secondary sample. Children with fathers who were employed in agriculture, which is the reference category in all models, are expected to be less likely to transition relative to their peers who have fathers employed in other occupations. A rural context is distinguished using a qualitative description of the place of birth of the sampled individual. We recoded the responses to generate a dichotomous measure distinguishing rural (*ranchería* and *pueblo*) from non-rural (*ciudad*, *ejido*, *hacienda*, *villa*, and other).[2]

Individual-Level Measures of Family Size and Sex:

The measure of family size is derived from the total number of siblings at a given age. We use year of birth of all siblings to captures the number of siblings living at each of three school transitions. As with the construction of the cohorts, this assumes a transition age of 6 for primary school, 12 for lower-secondary school, and 15 for upper-secondary school. The measure is continuous and individuals in household with a greater number of siblings are expected to be

[2] It is true that rural and indigenous variables are highly correlated. In our sample, 81.4% of indigenous people were born in a *ranchería* or *pueblo* (i.e. rural). However, including both variables in our equation did not cause a collinearity problem. We also estimated the same models without the rural variable, which produced very similar results as those reported in the current study.

less likely to transition across all levels of schooling (Blake 1989). Sex is included as a dichotomous variable with female as the reference with roughly half the sample being female across all cohorts.

Results

[Insert Table 3 here]

Transition into Primary School

Column 1 of Table 3 reports the estimated coefficients and relevant test statistics for the multi-level logit regression model of transitioning into primary school. The estimated coefficient for indigenous is negative and significant, suggesting that for the reference cohort (cohort 3), being indigenous is associated with being less likely to successfully start primary education relative to the non-indigenous population. The coefficient estimates for the cohort*indigenous interaction suggest that the indigenous disadvantage is significantly reduced to -0.61 (-0.82+0.21) by cohort 4 and -0.45 (-0.82+0.37) by cohort 5. By the sixth and most recent cohort, little difference remains with the coefficient reduced to 0.04 (-0.82+0.86). The indigenous*cohort interaction for cohort 1 and 2 are not significant, although the estimated coefficients are negative.

As expected, father's education is positively and significantly associated with entering primary school, as are non-agricultural occupations. Males are significantly less likely to transition, although other work has shown that the male advantage was quite large in earlier cohorts and was only eliminated after the Eleven-Year Plan in the 1950s (Creighton and Park

2010). Children with more siblings at age 6 are significantly more likely to enter primary school, but the magnitude of the estimated coefficient is relatively small and close to zero.

[Insert Table 4 here]

Table 4 reports the predicted probabilities of entering primary and lower-secondary school for indigenous (column 1) and non-indigenous (column 2) individuals. The values are calculated using the observed characteristics of the individuals in the sample and the best linear unbiased predictor of the random component of the model. For primary school transitions, the probability of an indigenous individual entering primary school is 0.17 less than the estimated probability for a non-indigenous individual in cohort 1. This gap is reduced in each subsequent cohort resulting in no difference by the most recent cohort 6. Given that neither group experienced a decline the predicted probability of entering primary school, the gap was closed by a more rapid improvement by the indigenous population rather than a decline in the probability of transitioning for the non-indigenous population.

Transition into Lower-Secondary School

Column 2 of table 3 reports the estimated coefficients and test statistics for the multi-level logit model of transitioning into lower-secondary school, conditional on entering primary school. As with the primary school transition models (column 1), the coefficient for ethnicity is negative and highly significant, suggesting that indigenous Mexicans are less likely than their non-indigenous peers to enter lower-secondary school for the reference cohort – cohort 3. However none of the cohort*indigenous interactions are significant, suggesting that the gap

between indigenous and non-indigenous for lower-secondary school entry does not significantly change across cohorts. In a model that does not include the cohort*indigenous interaction (results not shown), the estimated coefficient for being indigenous is -0.57 and highly significant, suggesting that indigenous individuals are at a disadvantage relative to the non-indigenous in terms of entry into lower-secondary school and that the disadvantage persists after controlling for cohort.

This is not to say that the odds of entering lower-secondary school did not improve for both groups (indigenous and non-indigenous), only that the indigenous disadvantage was not reduced. The predicted probabilities, shown in table 4, give an intuitive description of the modest, but persistent gap. The probability of an indigenous individual entering lower-secondary school is 0.02 less than the estimated probability for non-indigenous individuals in cohort 1. By cohort 3, the gap has extended slightly to 0.05, where it mostly remains for the remaining cohorts analyzed. As with the primary school transitions, the predicted probability for both indigenous and non-indigenous individuals is increasing across cohorts, starting at 0.14 and 0.12 respectively in cohort 1 and ending at 0.49 and 0.44 respectively in cohort 6. Unlike with the probability of entering primary school, the improvement in the indigenous population's probability of entering lower-secondary school is not outpacing the non-indigenous. Although the probability of transitioning into primary school (see table 4) reached nearly 90% for the indigenous and non-indigenous population, the probability of transitioning into lower-secondary education was less than 0.5 even among the most recent cohort.

Individuals with more educated fathers or fathers who are employed outside agriculture are significantly more likely to successfully enter lower-secondary school. Rural birth is

significantly associated with a lower likelihood of entering lower-secondary school as is being female.

Transition into Upper-Secondary School

Column 3 of table 3 reports the estimated coefficients and test statistics for the multi-level model of transitioning into upper-secondary school, conditional on entering lower-secondary school. The coefficient for ethnicity is not significantly associated with the likelihood of entering upper-secondary school. The implication is that after successfully entering lower-secondary school, indigenous Mexicans are not significantly more or less likely than their non-indigenous peers to enter upper-secondary. In addition, the cohort*indigenous interaction is not significant, suggesting that the association between being indigenous and transitioning into upper-secondary school does not vary by cohort.[3] Cohort 6 is omitted from the model as some of these individuals may still be enrolled in lower-secondary school.

As with the primary and lower-secondary transitions, individuals with better-educated fathers are significantly more likely to successfully transition. Father's occupation is only marginally associated with successfully entering upper-secondary school with individuals with father who are self-employed, landlords, or business owners being more likely to transition than children with father's engaged in agriculture. Also females, individuals born in rural areas, and individuals with more siblings at age 15 are at a significant disadvantage.

Of note, the shared unobserved characteristics within families remain highly correlated in all models. The intraclass correlation coefficient (ρ_j) is 0.45, 0.58, and 0.43 for the primary school, lower-secondary school, and upper-secondary school transition models respectively.

[3] Because both the coefficient of ethnicity and the coefficients of interaction between ethnicity and cohort were not significant, we did not include predicted probabilities for transition to upper-secondary school in Table 3.

Interpreted as a traditional correlation, where values closer to 1 reflect stronger positive concomitant change, these characteristics reflect important determinants of educational success that are unmeasured and shared among siblings such as parental encouragement, proximate schools, and cognitive ability. Based on these results, accurately estimating the association between educational transitions and ethnicity, which is a shared, family-level attribute, benefits from explicitly addressing within-family correlation in a multilevel framework. This allows greater confidence in the estimated standard errors, associated tests of significance and predicted probabilities.

Conclusion

Particularly for entrance into primary school, ethnic inequality in Mexico was pronounced for those born at the end of the first third of the 20th century. However, for those entering primary school after the establishment of the National Indigenous Institute (INI) in 1948 and during the Eleven-Year Plan (1959-1970), the gap narrowed substantially. The gap disadvantaging the indigenous population in terms of entrance into primary school was eliminated entirely by the time those born in the 1980's reached primary school age. This narrowing of the gap and its eventual closure occurred as the probability of entering primary school reached saturation with nearly universal entrance by the final two cohorts in the analysis. However, given the nearly monotonic reduction in the indigenous gap in primary school transitions, the results do not provide clear evidence that a specific initiative or educational reform is to be credited with closing the gap.

In contrast, ethnic inequality, although modest, in terms of transitions into lower-secondary school persists throughout the birth cohorts analyzed. Notably, cohort 6, which

entered lower-secondary school after it became mandatory in 1993, shows little difference in terms of indigenous gap in educational transitions when compared to previous cohorts. Even cohorts that experienced nearly universal entrance into primary school with little discernable difference between the indigenous and non-indigenous population, show little change in terms of the indigenous disadvantage when entering lower-secondary school. As already pointed out above, even among the most recent cohort, only half made transition to lower-secondary school, whereas primary education was nearly saturated (even among the second oldest cohort, eight out ten non-indigenous people entered primary education). Overall, our result is consistent with previous studies confirming the MMI hypothesis that ethnic inequality tends to decline for the lower levels of educational system for which demand is saturated for advantaged groups but persists for the higher levels of educational system for which demand is far below saturation even for advantaged groups.

Given this persistent ethnic inequality it is perhaps not surprising that no significant ethnic difference is observed in upper-secondary school transitions as indigenous members of Mexican society who successfully transition into lower-secondary school are a somewhat selective group and are relatively more likely to continue. Moreover, the non-significant gap between indigenous and non-indigenous individuals in the likelihood of making transition to upper secondary schools has persisted throughout our six cohorts.

This research provides an important, but modest foundation upon which to base subsequent work. We suggest that two specific questions should drive future efforts. Firstly, what determines the observed reduction in ethnic inequality for primary-school transitions? Although we crafted cohorts that reflect consistent periods of time, we do not note a pattern in the observed reduction in inequality as clearly linked with specific educational initiates and our

mention of the role of educational initiatives particularly geared toward indigenous people such as INI and the decentralization of centers of indigenous education is somewhat speculative. A clearer accounting of the locations of these sites and the interaction between specific indigenous groups would greatly strengthen subsequent work. Secondly, what determines the persistence of ethnic inequality for lower-secondary transitions? Although the gap closed at the primary-school level, lower-secondary inequality persists, which requires some explanation as to why the increasing number of indigenous students did not continue beyond primary school. Additionally, our work, which uses information about completed education, does not assess efforts in recent decades, such as *Oportunidades*. Evidence suggests that these efforts have contributed to increases in overall enrollment in poorer households and for girls (Behrman, Parker, and Todd 2005a), which could advantage more rural and/or indigenous communities. Overall, this work is a necessary first step toward empirically assessing change and persistence in ethnic inequality in Mexican education, providing a strong foundation for future work.

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Table 1: Percentage of Total Population Indigenous in Mexico: 1930-2000

Year	% Indigenous
1930	16.0%
1940	14.8%
1950	11.2%
1960	10.4%
1970	7.8%
1980	9.0%
1990	7.5%
2000	7.0%

Source: (Inegi 1985a; Inegi 1985b)

Table 2: Family- and Individual-Level Descriptive Statistics

	Primary % or Mean (S.D.)	Lower Secondary % or Mean (S.D.)	Upper Secondary % or Mean (S.D.)
Family-Level Characteristics:			
Transition			
No	9.4%	44.9%	55.1%
Yes	90.6%	55.1%	44.9%
Indigenous			
No	87.0%	88.0%	91.0%
Yes	13.0%	12.1%	9.0%
Father's Occupation			
Peasant, Day Labor, Agriculture	47.6%	45.5%	36.4%
Non-Agricultural	33.7%	35.3%	39.9%
Self-Emp., Landlord, Business Owner	14.8%	15.3%	19.1%
Other	3.9%	4.0%	4.6%
Father's Education (*Years*)	3.51 (3.72)	3.68 (3.73)	4.14 (3.65)
Rural			
No	35.8%	37.4%	45.7%
Yes	64.2%	62.6%	54.3%
Total (*Family-Level*)	15,110	14,336	8,432
Individual-Level Characteristics:			
Cohorts			
1: [1930-1939]	5.3%	3.8%	1.6%
2: [1940-1949]	9.6%	8.1%	4.7%
3: [1950-1959]	16.6%	16.0%	14.9%
4: [1960-1969]	24.8%	25.5%	35.5%
5: [1970-1979]	25.9%	27.5%	43.3%
6: [1980-1989]	17.8%	19.2%	-
Number of Siblings			
at Age 6	4.82 (2.76)		
at Age 12		5.83 (2.81)	
at Age 15			6.12 (2.79)
Sex			
Female	48.8%	49.1%	47.8%
Male	51.2%	50.9%	52.3%
Total (*Indiviodual-Level*)	81,693	69,935	27,136

Source: MxFLS-1

Table 3: Two-Level Random-Intercept Logistic Regression Transition Models

Model:	(1)			(2)			(3)		
Transition into:	Primary			Lower Secondary			Upper Secondary		
	!		S.E.	!		S.E.	!		S.E.
Indigenous (*ref.=non-indigenous*)	-0.82	***	0.10	-0.57	***	0.13	0.19		0.19
Birth Cohorts									
1: [1930-1939]	-1.05	***	0.07	-1.56	***	0.10	-0.22		0.16
2: [1940-1949]	-0.61	***	0.05	-0.96	***	0.06	-0.12		0.09
3: [1950-1959] (*ref.*)	-		-	-		-	-		-
4: [1960-1969]	0.34	***	0.05	1.22	***	0.04	0.00		0.06
5: [1970-1979]	0.57	***	0.05	1.70	***	0.05	-0.40	***	0.06
6: [1980-1989]	0.63	***	0.06	2.33	***	0.06			
Birth Cohorts*Indigenous (*ref.=non-indigenous*)									
1*Indigenous	-0.26		0.17	0.28		0.35	-0.38		0.63
2*Indigenous	-0.20		0.13	-0.06		0.22	0.12		0.37
3*Indigenous (*ref.*)	-		-	-		-	-		-
4*Indigenous	0.21	+	0.11	-0.05		0.14	-0.21		0.20
5*Indigenous	0.37	**	0.12	0.01		0.15	-0.19		0.21
6*Indigenous	0.86	***	0.15	0.16		0.16	0.00		0.00
Father's Education *(years*)	0.19	***	0.01	0.31	***	0.01	0.18	***	0.01
Number of Siblings									
at Age 6	0.03	***	0.01						
at Age 12				0.00		0.01			
at Age 15							-0.05	***	0.01
Father's Occupation									
Peasant, Day Labor, Agriculture (*ref.*)	-		-	-		-	-		-
Non-Agricultural	0.45	***	0.06	1.02	***	0.06	-0.03		0.06
Self-Emp., Landlord, Business Owner	0.39	***	0.07	1.11	***	0.07	0.17	*	0.07
Other	0.36	***	0.11	0.91	***	0.12	0.11		0.12
Rural (*ref.=non-rural*)	-0.45	***	0.05	-1.15	***	0.06	-0.36	***	0.05
Sex (*ref.=female*)	-0.11	***	0.03	0.29	***	0.02	0.40	***	0.03
n	81693			69935			27136		
$\hat{\sigma}_j$	1.64			2.13			1.57		
σ_j	0.45			0.58			0.43		

Source: MxFLS-1

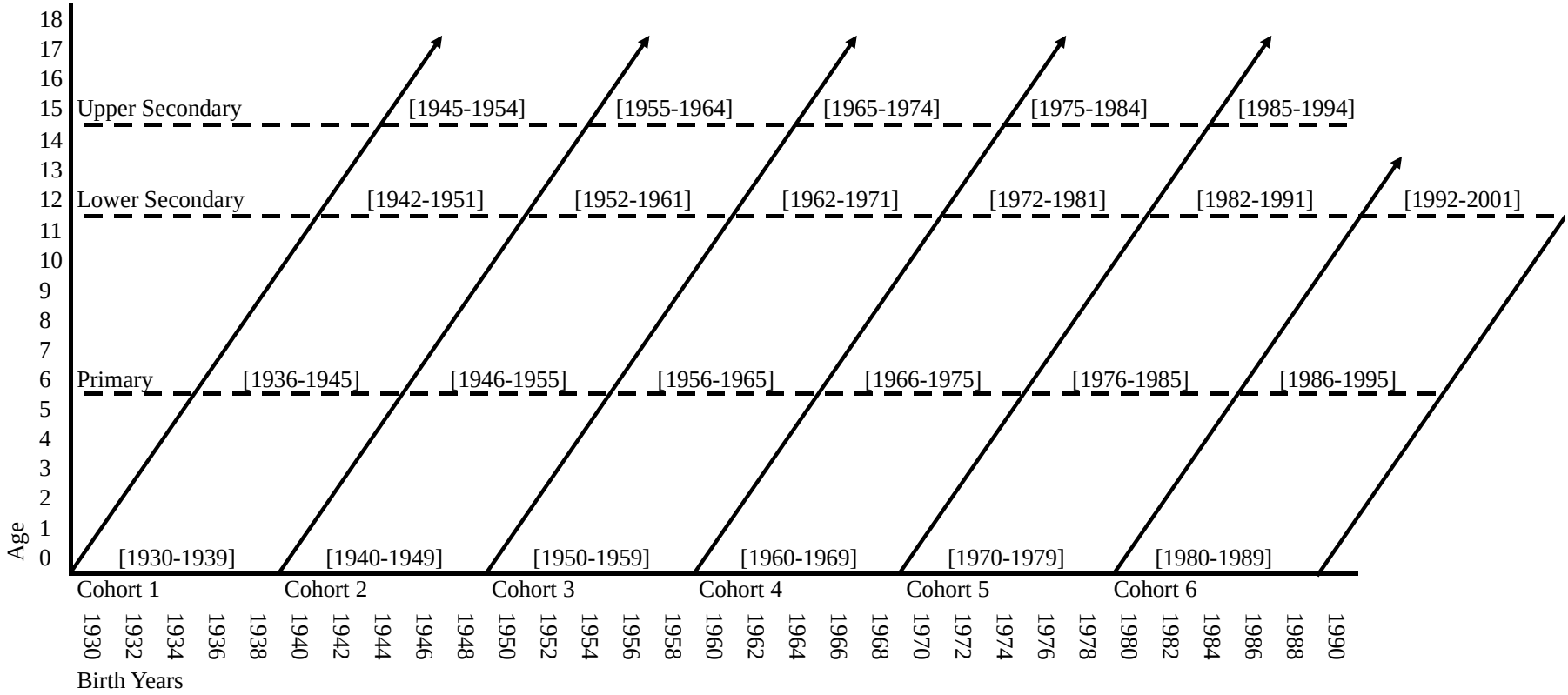
*p<0.05 , **p<0.01 ,***p<0.001

Table 4: Predicted Probabilities of Transitioning into Primary and Lower-Secondary School

	(1)	(2)	(1)-(2)
	Indigenous		
	No	Yes	
Primary School Transition			
Cohort 1: [1930-1939]	0.74	0.57	0.17
Cohort 2: [1940-1949]	0.80	0.66	0.14
Cohort 3: [1950-1959]	0.86	0.77	0.09
Cohort 4: [1960-1969]	0.89	0.84	0.05
Cohort 5: [1970-1979]	0.91	0.87	0.03
Cohort 6: [1980-1989]	0.91	0.91	0.00
Lower-Secondary School Transition			
Cohort 1: [1930-1939]	0.14	0.12	0.02
Cohort 2: [1940-1949]	0.18	0.13	0.04
Cohort 3: [1950-1959]	0.25	0.21	0.05
Cohort 4: [1960-1969]	0.37	0.31	0.06
Cohort 5: [1970-1979]	0.42	0.36	0.06
Cohort 6: [1980-1989]	0.49	0.44	0.05

Source: MxFLS-1
Note: Predicted probabilities are estimated using the observed values of covariates and the best linear unbiased predictor of the random parameter.

Figure 1: Lexis Diagram of Analytic Birth Cohorts



Note: The bracketed years are the calendar years of birth and the occurrence of a given transition for a given cohort assuming that transitions to primary school occur at age 6, lower-secondary school at age 12, and upper-secondary school at age 15.