

# Gender, Ethnicity and Cumulative Disadvantage in Education

Evidence from Latin American and African Censuses

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## Abstract

This paper studies the impact of gender and ethnicity on educational outcomes using cross-country evidence from Bolivia, Mexico, Peru, Senegal, and Sierra Leone. It uses the Minnesota Population Center's Integrated Public Use Microdata Series-International database, which includes individual-level data from large, harmonized, and representative samples of country censuses. Using an estimation method analogous to difference-in-differences, the paper finds that gender-based differences in literacy, primary school completion, and secondary

school completion are larger for minority ethnic groups compared with others or, alternatively, ethnicity-based differences are larger for women compared with men. The findings suggest that the intersection of gender and ethnicity confers cumulative disadvantage for minority groups, especially in Latin America. The paper discusses the implications of these findings on the design of, targeting in, and resource allocation for development programs.

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# Gender, Ethnicity and Cumulative Disadvantage in Education: Evidence from Latin American and African Censuses

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## 1. Introduction

A large literature from poverty reduction to behavioral economics has documented that development outcomes vary across social groups. Research on gender-based disparities, for example, shows that there are significant gaps between men and women in a wide range of outcomes, including earnings, human capital endowments, health, education and other labor market outcomes (e.g. World Bank 2011a). Recently, welfare patterns related to other social divisions have received attention as well, with studies indicating large differences across race, ethnicity, caste and religious groups (e.g. Hall and Patrinos 2012, Das 2008, Das and Dutta 2008). As the link between different identities and outcomes are becoming clearer, more complex questions arise: Do individuals and groups disadvantaged on the basis of one of their identities face additional barriers because of the way their identities interact with each other? Do these barriers result in cumulative disadvantages, indicating and/or contributing to exclusion of certain groups from society?

As a concept, *intersectionality* has made important contributions to gender analysis by prompting discussions about how to understand and analyze gender in combination with other identities. The intersectional approach seeks to understand individuals' and groups' positions within multiple systems of "interlocking oppressions" (Collins 1999) and how the intersection of multiple identities affect their wellbeing, experiences and social structures (Phoenix and Pattynama 2006). The feminist literature highlights, for example, that day-to-day experiences of ethnic minority women are drastically different from ethnic majority women, although both groups fare worse than men in most outcomes. While what makes ethnicity exacerbate gender-based divisions (and vice versa) often requires a detailed understanding of the context in which these relationships take place (Anthias 2012), existing data sources can help identify if the intersection of gender and ethnicity is associated with systematic welfare disparities across groups. The presence of such gaps can point to cumulative disadvantages that exclude individuals and groups who possess multiple identities from certain outcomes.

This paper examines the intersectionality of gender and ethnicity in three education outcomes included in the Millennium Development Goals (MDGs): literacy rate, primary school completion, and secondary school completion.<sup>4</sup> It focuses on a select group of Latin American and African countries for which recent census data is available, namely Bolivia, Mexico, Peru, Senegal, and Sierra Leone. Controlling for age, age cohorts and urban/rural residence in a model analogous to difference-in-differences, it compares the education outcomes of men and women in ethnic minority groups with their counterparts in other groups. The analysis finds sizable gaps in literacy and educational attainment based on gender and ethnicity, particularly in Latin American countries. Moreover, the analysis of interaction terms shows that gender-based gaps are generally larger for minority groups compared to others, or alternatively, ethnicity-based gaps are greater for women compared to men. The intersection of gender and ethnicity implies cumulative education disadvantages for ethnic minority women, which goes beyond the individual effects of each of these two identities.

Given the role of education on individuals' life choices and the wellbeing of their children, cumulative education disadvantages may contribute to the inter-generational reproduction of poverty and deprivation patterns among minority groups.<sup>5</sup> Further, education interventions which focus exclusively on universal coverage and gender parity in schooling—without considering how intersectionality of multiple identities mediates these outcomes—may not successfully address the existing gaps. While this paper captures what can be considered a symptom or outcome of identity-based exclusion, future research must explore the processes that lead to inter-group disparities and move toward multifaceted interventions to redress the overlapping roots of exclusion, especially for men and women in minority groups.

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<sup>4</sup> The education indicators in the Millennium Development Goals (MDGs) include the ratio of boys to girls in primary and secondary school and the ratio of literate men to women aged 15-24. Our use of education measurements (which are related, but not the same as these indicators) is partly due to data availability constraints, as discussed in the data and methodology section.

<sup>5</sup> See Dubow et al. (2009), Chevalier et al. (2010), and Behrman and Rosenzweig (2002) on the link between mother's education and children's wellbeing.

## 2. Intersectionality and Cumulative Disadvantage

Intersectionality is based on the notion that individuals are simultaneously situated in multiple social structures, which interact in complex ways to influence their experiences, social relations and wellbeing. Although the idea that identities and power structures overlap can be traced to the writings of 19<sup>th</sup> century thinkers, the term was first coined in the late-1980s in the context of racial and gender-based subordination of African American women in the United States (Crenshaw 1989).<sup>6</sup> Since then, it has travelled extensively and took on various meanings across disciplines (Knapp 2005), including an interpretation around identity politics and poverty in mainstream development research (Sen 2008, Yuval-Davis 2006).<sup>7</sup>

Intersectionality is about the interplay between individuals' identities at the micro level, and the institutions with which they interact at the macro level (Collins 1999, Christensen and Jensen 2012). It posits that the intersection of identities produces distinct experiences and relations, affecting the interactions of social groups, their wellbeing outcomes and the social structures that govern their relations (Dhamoon and Hankivsky 2011). As such, intersectionality is as much about the processes through which multiple identities interact and evolve over time, as it is about what these interactions imply for wellbeing outcomes at a point in time.<sup>8</sup>

While intersectionality promises a dynamic understanding of identity-based exclusion, its conceptual complexity comes with analytical requirements that limit empirical research on the subject. One of the challenges facing the literature is to study multiple social structures and

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<sup>6</sup> The term intersectionality was first coined by Crenshaw (1989), who studied black women's employment experiences and violence against women of color in the United States. Crenshaw argued that ignoring differences within groups contributes to tensions among groups, while intersectionality mediates the tension between assertions of multiple identities and group politics. As a concept, however, intersectionality precedes the coinage of the term in the late 1980s; the work of black feminists and Marxist feminists on gender, race and class, for example, predate Crenshaw (Christensen and Jensen, 2012).

<sup>7</sup> From African American feminism, the concept travelled to Europe, where it developed in social sciences and the humanities in the United Kingdom and among post-colonial and post-structuralist gender researchers in Scandinavia. Later, political scientists and sociologists emphasized that intersectional analyses must encompass the interplay between identities and lives at the micro-level and institutions at the macro-level (Christensen and Jensen, 2012).

<sup>8</sup> Choo and Ferree (2010) identify three different understandings of intersectionality in sociological research—group-centric, process-centered and system-centered. Each of these understandings is associated with distinct methodological approaches to analyze inequalities.

processes under a unified framework. For instance, the sociological literature on intersectionality points out that the dynamics of gender-based exclusion can be different from that of class, race, ethnicity or caste, but empirical studies often neglect the distinct processes underlying each of these categories.<sup>9</sup> This is especially the case in quantitative studies, which rely on preexisting categorizations of individuals in available data sets (Artazcoz et al. 2001, Mohindra et al. 2006). Empirical work on intersectionality is also limited by the number of social divisions that can be reliably analyzed. Among many possible identities or social structures that may confer disadvantage, only a few have received attention in the literature—class, ethnicity, gender and race (Chow et al. 1996, Brewer et al. 2002).<sup>10</sup> It is difficult to find studies that focus on more than two (at most three) identities at a time, since each added layer increases the level of complexity, along with analytical and data requirements.<sup>11</sup>

As a result, the empirical literature looking at intersectionality is sparse, mainly focused on economic outcomes rather than their underlying processes, and concentrated in developed countries that have robust data sources. An important part of this literature is driven by sociologists in the United States, who study labor market outcomes of racial and ethnic minorities (see Browne and Misra 2003 for an overview). These studies disaggregate census data to look at the intersections of race, ethnicity, gender and class in occupational segregation (e.g. Padavic and Reskin 2002), earnings (e.g. Bose 2001, Torres-Stone et al. 2006) and job authority (e.g. Browne, Tigges, and Press 2001), among other outcomes. For example, Torres-Stone et al. (2006), in their study of the 2000 U.S. Census in a multivariate earnings model, explore the earning differential between female workers from different ethnic and economic backgrounds.

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<sup>9</sup> Theorists of intersectionality have criticized the empirical literature that stratifies social groups by discrete categorizations for neglecting the unique processes that give rise to each of these divisions (McCall 2005, Hornschied 2009, Choe and Ferree 2010). However, quantitative studies find it difficult to measure mutually constitutive processes that underpin each social identity, and as a result, use the categorical distinctions in available data sets.

<sup>10</sup> In contemporary development discourse, it is increasingly acknowledged that characteristics like age, religion, citizenship status, place of residence, disability, sexual orientation, to name a few, can also confer advantage or disadvantage. The intersectionality literature has so far focused on more traditional axes of exclusion, such as class, race, and ethnicity.

<sup>11</sup> The research gap is larger in developing countries, where in many cases quantitative data sources did not allow disaggregation of wellbeing indicators by gender until recently, let alone disaggregation by a combination of identities.

Their analysis finds considerable heterogeneity in the earnings of Filipina, Asian Indian and non-Hispanic white women, adding nuance to the generalization that women in major cities earn less than men. Examining the role of intersectionality through interaction effects, they show that the observed earning gaps are driven by the migration backgrounds of each group of women (as refugees, migrant workers, spouses of migrants or native-born residents), which position them differently in the labor market.

In addition to quantitative evidence from formal markets, qualitative literature focusing on domestic work also documents how race, gender, class, immigration and citizenship status exacerbate the disadvantages of poor, migrant and ethnic minority women. Most of these studies use historical analysis or in-depth interviews to show cumulative disadvantages in terms of pay, flexibility and amount of autonomy experienced by minority women in domestic jobs. These disadvantages are attributed to norms governing gender-division of domestic work; class- and ethnicity-based justifications for paying minority groups lower wages; and the legal status of migrant groups in host countries, which weakens their bargaining position vis-à-vis employers (Browne and Misra 2003). Qualitative studies and historical accounts in racially divided societies similarly show that gender, race, ethnicity and class operate together to relegate certain groups to the lowest economic status, such as African descendant women in Zimbabwe (e.g. Moyo and Kawewe 2002).<sup>12</sup>

The literature on intersectionality is much thinner with respect to developing countries, cutting across multiple disciplines and fields. Many of these studies are also experimental, in the sense that they introduce new methods to analyze intersectionality using existing data sets (e.g. Iyer, Sen and Ostlin 2008; Sen, Iyer and Mukherjee 2009; Sen and Iyer 2012). For example, Sen, Iyer and Mukherjee (2009) propose a quantitative methodology to study gender- and class-based inequalities in access to health, which they apply in Karnataka, India using a specialized survey to capture inequalities in healthcare during pregnancy and illness. Unlike most studies that focus on the disadvantages of a particular group (e.g. poor women) vis-à-vis all other groups (e.g. poor men, non-poor men, non-poor women), their methodology allows them to compare health

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<sup>12</sup> See a special issue of *Feminist Economics* (Vol. 8, Issue. 2, 2002) for a set of empirical studies on the intersectionality of gender, race and class.

outcomes for multiple sub-groups, therefore showing the extent to which each social division contributes to exclusion. Their findings highlight that gender-based disparities are larger than class-based differences, where poor men and non-poor men are equally likely to get treatment, but women are always worse off (and worst off in poor households). Based on this finding, the authors conclude that poverty status alone may not be a good predictor of who receives treatment, given that there is gender discrimination within households.

Using the same data, Sen and Iyer (2012) further explore if gender and class can be leveraged to secure health entitlements by groups disadvantaged by one of their identities but not by another one. They focus on the health outcomes of poor men (who face gender advantage, but class disadvantage) in comparison to non-poor women (who face gender disadvantage, but class advantage). They find striking similarities in health outcomes for these two groups, but also point out that the processes through which gender and class are leveraged are different. Again, these findings call for nuanced health interventions that take within-group heterogeneity (and the processes attached to these differences) into greater consideration.<sup>13</sup>

Finally, there are quantitative studies in the broader economic literature that disaggregate wellbeing outcomes by gender in combination with other identities, but are not framed as intersectionality studies. For example, Ñopo, Atal, and Winder (2010) find sizable gender- and ethnicity-based wage gaps between indigenous and nonindigenous populations across Latin American countries, which they relate to differences in educational attainment between men and women and between indigenous and non-indigenous persons, as well as to the scarcity of minorities in the highest-paid positions. Other studies document gender-based disparities within and across minority groups descriptively, without analyzing their interactions in a multivariate setting. Grown and Tas (2011), for example, disaggregate a series of employment statistics for the U.S. to show that the impacts of the 2007-10 economic recession concentrated at the intersection of gender, race/ethnicity, age and family structure. In addition to finding a higher unemployment rate among African American and Hispanic women compared to all other groups, their analysis showed that job loss and insecure forms of employment were highest among young

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<sup>13</sup>The intersectionality literature on access to healthcare is expanding in both developing and developed countries. See Hankivsky (2012) for some empirical evidence and an intersectionality-based policy analysis framework.

females and families maintained by single women. In other words, there were specific vulnerabilities at the intersection of gender and other identities.

Such descriptive patterns have been documented in education outcomes for ethnic minorities as well. Lewis and Lockheed (2007) show that inter-group disparities are common phenomena in countries with diverse ethno-linguistic populations. Testing the link between girls' school participation and ethno-linguistic fractionalization across 120 countries, they show that countries with multiple ethnic and language groups have lower primary school completion for girls, a larger gap between male and female primary school completion rates, and lower overall achievement. Similar findings have been shown in specific country cases as well. For example, Das et al. (2010) find that educational attainment among tribal women in India is lower compared to tribal men and other groups, including women in the disadvantaged castes. Further, rural tribal women face additional disadvantages due to their remoteness from rural and urban centers, which translates into triple disadvantages based on their tribal affiliation, gender and place of residence. Similarly, King and van de Walle (2007) report that indigenous women in Lao PDR are five times more likely to never attend school compared to nonindigenous women. Whereas 34 percent of non-Lao-Tai women never attended school in 2003, the share among Lao-Tai girls was only 6 percent. Further, they find disparities within the non-Lao-Tai groups, especially in rural areas, where only 30 percent of rural Chinese-Tibetan girls aged 6-10 were enrolled in primary school, compared to 56 percent of rural Mon-Khmer boys and 53 percent of Mon-Khmer girls.

To sum up, the existing literature on intersectionality and descriptive evidence from the peripheral literature point to a few conclusions and directions for future research. Although the evidence is limited, it indicates that development outcomes falter at the intersection of identities. This is an important finding, not least because it highlights the importance of identifying the specificity of development challenges faced by different groups and takes researchers one step closer to understanding overlapping roots of exclusion. It is also important from a policy perspective, since failing to recognize the role of intersectionality can misinform the design, targeting and resource allocation decisions in development interventions. Going forward, the empirical base needs to be broadened, especially for developing countries. Currently, census-based studies that have the potential to portray systematic patterns of exclusion are concentrated

in developed countries, whereas the literature on developing countries remains anecdotal, descriptive or based on analyses of small qualitative samples or household surveys, with all their limitations.<sup>14</sup> This paper tries to address this gap by using harmonized census data from a select group of Latin American and African countries.

### **3. Data and Methodology**

#### ***3.1. Data***

The data used in this paper are available through the Integrated Public Use Microdata Series-International (IPUMS-I) initiative led by the Minnesota Population Center at the University of Minnesota. It includes nationally representative samples of country censuses (using the household as the sample unit) that correspond to 10 percent of the census in each country. Although the censuses belong to different years, they are harmonized for comparability across countries and over time.<sup>15</sup>

To study the impact of gender and ethnicity on education outcomes, we limit our analysis to censuses collected since 2001 that include a proxy for respondents' ethnicity. The literature on self-reports of ethnic background indicates that race, color and other indicators of self-identification are "fluid" (i.e. tend to vary across time, place, economic status, and even the interviewer's race or color), which reduces their reliability over time or across countries (Telles and Paschel 2012).<sup>16</sup> In contrast, language-based indicators of ethnicity are less malleable and easier to interpret than race or color, both over time and across contexts. For this reason, we focus on countries in which the linguistic information included in the census is unambiguous and

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<sup>14</sup> For example, Carr (2013) argues that household surveys are more prone to underrepresenting traditionally excluded populations compared to censuses (e.g. people who live in fragile or disjointed households, slum populations, those who live in areas posing security risks, among others). Surveys can also be more prone to issues of measurement error and sampling bias.

<sup>15</sup> For more information about the IPUMS-I database, see <https://international.ipums.org/international/about.shtml>.

<sup>16</sup> Telles and Paschel (2012) find that the relationship between wealth and racial self-identification is fluid and varies across Latin America. In Colombia, for example, increases in wealth are associated with greater tendencies for identifying oneself as white; in Brazil and Costa Rica, they are associated with polarization, as wealthier respondents are more likely to self-identify as black or white rather than of mixed race. Their paper also provides a good overview of the literature on this topic.

reveals the respondents' ethnic background. It is important to note, however, that we do not assume that being a native speaker of any language signifies advantage or disadvantage; we simply use language as a proxy to identify the different ethnic groups in each country.

Five censuses in the IPUMS-I database include this information, in slightly different forms: "mother tongue" in Bolivia (2001), Peru (2007) and Sierra Leone (2004); "indigenous-language speaker" in Mexico (2010); and "primary language" in Senegal (2002).<sup>17</sup> Focusing on these countries, we use language to stratify respondents in each country into two groups. The native speakers of a minority language are categorized as the "minority group", whereas the native speakers of the official and/or the most common language are categorized as the "reference group" (Table 1).<sup>18</sup> What we refer to as the "minority group" does not necessarily represent the groups officially classified as minorities in the sampled countries, nor does it imply that these groups make up less than a certain percentage of their country's population.<sup>19</sup>

In Bolivia, individuals who identify Quechua, Aymara or another indigenous language as their mother tongue are classified as members of the minority group. Similarly, the minority group in Peru includes individuals who identify Quechua as their mother tongue.<sup>20</sup> In Mexico, the census does not explicitly state the respondents' mother tongue, but it identifies whether or not they speak an indigenous language. We interpret this information as an indicator of indigenous mother tongue and use it as a proxy for ethnic background.<sup>21</sup> In all three of these

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<sup>17</sup> Although several other country censuses in the IPUMS-I database included linguistic variables, these countries were excluded from the final sample because country specialists indicated that language is not a good proxy for ethnicity in their specific contexts.

<sup>18</sup> The identification of the reference and minority languages as proxies for ethnicity was supplemented through consultations with specialists in each country.

<sup>19</sup> In Bolivia, for example, the official classification of minorities cuts across multiple languages (including Spanish and indigenous languages) as well as ancestral roots.

<sup>20</sup> In Peru (2007), we limit the analysis to individuals who speak Spanish and Quechua as their mother tongue, since Quechua is by far the largest indigenous group in the country. However, using a broader "indigenous mother tongue" category, which encompasses all native languages including Quechua, does not change the results.

<sup>21</sup> Admittedly, this distinction may mistakenly classify those members of the reference group who learned an indigenous language, but who otherwise have no ethnic relation to indigenous groups in Mexico, as a member of the minority group (e.g., those who speak an indigenous language for professional reasons or through bilingual education). Although our data is not conducive to identifying these cases, we expect these situations to comprise a

Latin American countries, Spanish speakers are classified as the reference group. In the two African countries in our sample, the reference group includes individuals who are native speakers of either the colonial language(s) or the most common local language.<sup>22</sup> These are Wolof in Senegal and English and Mende in Sierra Leone, where the minority groups include those who identify a language other than these languages as their “primary language” and “mother tongue,” respectively.

**Table 1. Languages used for identifying the reference and minority groups in each country**

Country (Year)	Reference groups		Minority groups	
	<i>Languages</i>	<i>% in population</i>	<i>Languages</i>	<i>% in population</i>
Bolivia (2001)	Spanish	59.7	Mother Tongue Quechua, Aymara or Other	39.2
Mexico (2010)	Spanish	78.7	Speak Any Indigenous Language	21.0
Peru (2007)	Spanish	83.3	Mother Tongue Quechua	13.8
Senegal (2002)	Wolof	51.0	Primary Language Pulaar, Serer or Other	47.3
Sierra Leone (2004)	English, Mende	32.1	Mother Tongue Temne, Krio or Other	67.6

Note: The wording of the language question is different in each census. The reference and minority groups are mutually exclusive. The “Other” language category pertains to other local languages; foreign languages are excluded from the analysis. Population figures are for ages 12 and above.

Source: IPUMS-I.

Together, the reference and minority groups encompass 90 to 100 percent of the population aged 12 and above in all countries included in the sample (Table 1). Interestingly, a significant share of the respondents classified as the “minority group” live in rural areas of their respective countries, ranging from 54 percent in Peru to 76 percent in Mexico (Figure 1). In

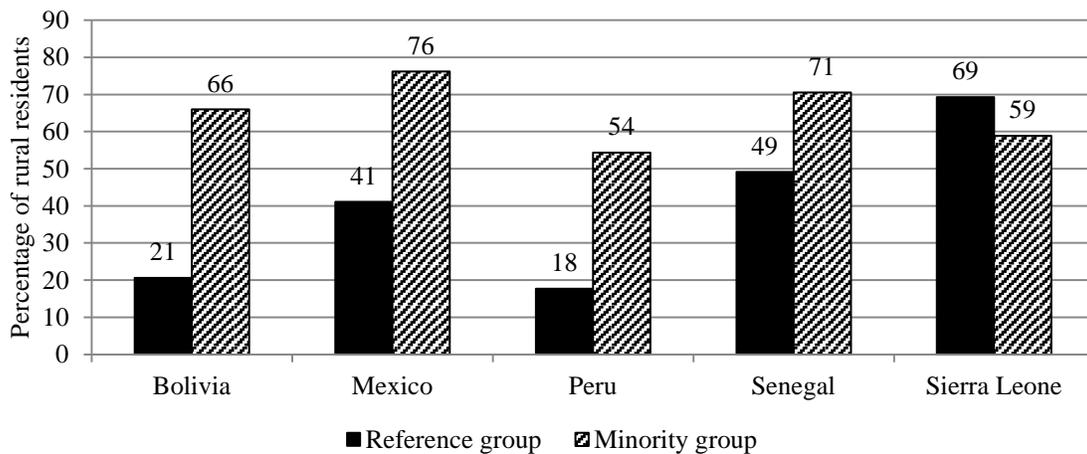
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small fraction of the overall category, and, if anything, to upwardly bias our results (i.e., decrease the magnitude of the respective coefficients).

<sup>22</sup> In all cases, the data used only offers one mother tongue/primary language for each individual. Of the five countries studied here, only the Senegal census asks for one’s primary language and secondary language, where roughly 40 percent of individuals note a secondary language and 22 percent cite Wolof.

contrast, the reference group is overwhelmingly urban in the three Latin American countries. In Senegal and Sierra Leone, rural residents make up more than one-half of the reference group and the minority group. However, the rural-urban divide across the minority ethnic groups is still present in Senegal, with 71 percent of the minority group living in rural areas compared to only 49 percent of the reference group.

**Figure 1. Percentage of rural residents in reference and minority groups**



Source: IPUMS-I.

Using census data for intersectional analysis has certain advantages and disadvantages. Since most censuses collect only basic socioeconomic information about the population, the range of variables that can be included as control or outcome indicators is limited in our data set. In addition, most census variables are categorical, which limits the analytical methods that can be used. However, census data have some advantages as well. As mentioned earlier, the IPUMS-I samples drawn from each country’s census is representative of the population and harmonized across countries. Therefore, the results reflect actual education gaps in each country and are comparable across countries. In addition, the simplicity of the census variables means that concerns regarding measurement error are not as relevant in comparison to an analysis based on

household surveys.<sup>23</sup> External validity is also less of a concern because censuses are designed to enumerate the entire population—although this is not always achieved in practice<sup>24</sup>—whereas household surveys often have incomplete coverage by design, as well as being more likely to exclude minority groups due to considerations of security, remoteness and cost (Carr 2013). Finally, because of the number of observations in census data, samples drawn from censuses include large samples of minority groups. Hence, an intersectionality study that uses census data is likely to have greater statistical power compared to one that uses a stratified survey sample.

### 3.2. Methodology

In analyzing how gender and ethnicity play a role on educational outcomes, both together and separately, we use the following reduced form model:

$$EDU_i = f(\alpha + \beta_1 G_i + \beta_2 ETH_i + \beta_3 (G_i * ETH_i) + \gamma X_i + \epsilon_i) \quad (1),$$

where  $EDU_i$  is an education outcome for individual  $i$ ;  $G_i$  and  $ETH_i$  are individual  $i$ 's gender and ethnicity, respectively;  $(G_i * ETH_i)$  is an interaction term; and  $X_i$  is a vector of control variables for individual  $i$ , which includes a dummy for rural residence, respondent's age and age-squared, and a set of dummies for age cohort.<sup>25</sup> The error terms  $\epsilon_i$  are clustered at the household level.

Using the “reference” and “minority” framework described above, the main explanatory variables of interest are  $G_i$  and  $ETH_i$ , which are equal to one for females and for individuals in the minority group, respectively (zero otherwise). Therefore, if  $\beta_1 < 0$  in Equation (1), women fare worse than men in their educational outcomes, whereas  $\beta_2 < 0$  indicates that a minority

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<sup>23</sup> A household survey specifically designed for recovering the mechanisms of exclusion may provide a more detailed explanation for what we find in this paper. This may be an approach for a future paper, but keeping in mind that it may have external validity costs and may replace some limitations of using census data with the complications of household surveys.

<sup>24</sup> As noted by Buettner and Garland (2008, cited in Carr 2013), it has been shown that some censuses exclude minorities, marginalized groups, non-citizens and specific categories of prisoners or rebels because of political reasons. According to the United Nations Statistical Division, however, census data collection in developing countries has improved since 2000 due to technological innovations in mapping, enumeration and data capture (Carr 2013).

<sup>25</sup> Age cohort is a set of dummy variables for ages 10-19, 20-29, 30-39, 40-49, 50-59, 60-69, and 70+. These were included as additional age controls in order to account for potential impacts of education policy shifts on different age groups.

group experiences a penalty relative to the reference group. Finally,  $\beta_3 < 0$  indicates that there is an *additional* penalty for being both female and a member of a minority group. The *cumulative* effect for ethnic minority women is captured through the sum of all three effects.<sup>26</sup>

We focus on three educational outcomes. In the first version of the model,  $EDU_i$  is a *binary outcome* indicating whether individual  $i$  aged 12 years or above is literate or not, so we use a probit estimator and report average marginal effects. Due to data availability constraints, this model is run for only Bolivia, Mexico, Peru and Sierra Leone. In the second model,  $EDU_i$  is an *ordered categorical outcome* representing educational attainment for individual  $i$  aged 25 and above, i.e. did not complete primary education, completed primary school, completed secondary school, and completed university. We estimate this model for all of the countries in the sample using an ordered probit regression and report average marginal effects for primary school completion and secondary school completion.<sup>27</sup> To assist in the interpretation of the results, we also complement the second model with a set of probit regressions, after collapsing the four educational attainment categories into two binary variables (the first variable is equal to one if individual  $i$  completed primary school or higher and zero otherwise; the second variable is equal to one if the individual completed secondary school or higher and zero otherwise).

Since the dependent and explanatory variables are all categorical, the interpretation of the model becomes analogous to the difference-in-differences model, where education outcomes of a “treatment group” are compared against those of a benchmark group. In this model, the benchmark category is *males in the reference* group (where  $G_i = 0 \wedge ETH_i = 0$ ). In Equation (1),  $\beta_3$  is an indicator of whether there is a differentiated effect of ethnicity on educational

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<sup>26</sup> Due to non-linearity, the individual and combined impacts of being a female, being a minority, and being both are captured by the marginal effects, rather than by the coefficients. However, since  $f(\cdot)$  is strictly monotonic, the regression coefficients have the same sign as the marginal effects.

<sup>27</sup> We limit our analysis to primary and secondary school completion because these two outcomes are more compatible with an age cut-off. While it is reasonable to assume that most individuals who will complete primary and secondary school will have done so by the time they are 25, a similar assumption for university completion may not be as well founded. Nevertheless, it is worthwhile to mention that an analysis of university completion rates achieved results in the same direction as primary and secondary school completion, but with smaller magnitudes given the low level of university completion in countries studied in this paper.

outcomes across genders, or alternatively, the differentiated effect of gender across ethnicities.<sup>28</sup> As explained by Puhani (2008) in a discussion on non-linear difference-in-differences model,  $\beta_3$  will have the same sign as the “treatment effect” since  $f(\cdot)$  is strictly monotonic.

As a virtue of the similarity to difference-in-differences, we are able to compare the difference in educational attainment for each sub-group with respect to males in the reference group as follows:

- i. The marginal effect of the first term ( $G_i$ ) shows the difference in education outcomes between *females in the reference group* ( $G_i = 1 \wedge ETH_i = 0$ ) and males in the reference group ( $G_i = 0 \wedge ETH_i = 0$ ).
- ii. The marginal effect of the second term ( $ETH_i$ ) shows the difference in education outcomes between *males in the minority group* ( $G_i = 0 \wedge ETH_i = 1$ ) and males in the reference group ( $G_i = 0 \wedge ETH_i = 0$ ).
- iii. The sum of the marginal effects for each of the three terms ( $G_i, ETH_i, G_i * ETH_i$ ) shows the difference in educational attainment between *females in the minority group* ( $G_i * ETH_i = 1 \Leftrightarrow G_i = 1 \wedge ETH_i = 1$ ) and males in the reference group ( $G_i = 0 \wedge ETH_i = 0$ ).

#### 4. Results

Before discussing the findings of the multivariate analysis, it is illustrative to highlight literacy and educational attainment in the reference and minority groups (Table 2). In three of the four countries for which literacy data are available (Bolivia, Mexico and Peru), the literacy rate is the highest for males in the reference group, followed by females in the reference group, and then by ethnic minority males and ethnic minority females, respectively. The only exception is Sierra Leone, where gender-based disparities in literacy are greater than ethnicity-based

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<sup>28</sup> Sen, Iyer and Mukherjee (2009) argue that analyses that take the product of two dummy variables in a regression model cannot compare outcome disparities across sub-groups with intersecting identities. This is because the interaction terms capture differences between one reference pair (e.g. ethnic minority women) with respect to all other pairs taken together. This is not the case in this model, where the binary nature of the explanatory variables allows us to infer the distinct impacts on all four groups under consideration.

disparities—males in the minority group fare roughly the same as their counterparts in the reference group (46 and 50 percent, respectively), but females in both of these groups fare substantially worse than men (25-29 percent).

**Table 2. Literacy and educational attainment in the reference and minority groups, by gender**

Country	Outcome	Reference group		Minority group	
		Male	Female	Male	Female
Bolivia	Lit	97.6	94.4	87.4	63.0
	PSC	80.1	72.3	47.0	20.1
	SSC	45.5	39.9	11.6	3.7
Mexico	Lit	93.3	91.2	77.1	61.8
	PSC	67.8	65.5	38.2	26.0
	SSC	21.6	19.6	5.6	3.0
Peru	Lit	97.8	94.2	90.3	68.9
	PSC	78.7	70.9	51.8	29.3
	SSC	62.3	55.4	30.3	14.6
Senegal	PSC	32.7	20.6	22.0	9.8
	SSC	10.2	3.9	5.5	1.3
Sierra Leone	Lit	46.0	25.0	49.8	28.8
	PSC	31.4	14.0	29.7	14.3
	SSC	5.3	1.6	6.8	1.7

Note: Literacy rate for ages 12 and above. Primary and secondary school completion rates for ages 25 and above. Lit=Literacy rate, PSC=Primary school completion, SSC=Secondary school completion.

Source: IPUMS-I.

In primary and secondary school completion rates, similar patterns exist in each of the five countries in the sample. Female members of the minority group usually do worse than the male members of the same group, who in turn fare worse than females and males in the reference group. In all cases (except for secondary school completion in Sierra Leone), males in the reference group have the highest school completion rates. However, there is some variation across countries in the relative sizes of gender-based and ethnicity-based differences. In Latin American countries, for example, gender-based differences in primary and secondary school

completion rates are very small between men and women in the reference group, but considerably large in the minority group. Further, ethnicity-based differences across the reference and the minority groups are considerably large, even for men.

Taken together, the descriptive statistics suggest that gender and ethnicity may confer cumulative disadvantages for ethnic minority women in Latin America. In the African countries in our sample, primary and secondary school completion rates are generally low for all groups, with comparatively smaller inter-group and intra-group differences. However, these small quantitative differences can amount to large qualitative impacts on women and minority groups, as will be discussed further below.

The regression results are in line with these descriptive patterns, controlling for age, age squared, age cohorts and urban/rural residence. In particular, women have lower literacy levels and educational outcomes than men in all countries included in the sample. This gender-based gap is unequivocally larger for minority groups compared to the reference group in four out of five countries in the sample. Alternatively, there is a statistically significant gap in educational outcomes between the reference group and the minority group in all countries, with the gaps being considerably larger between women than between men. For school completion outcomes, there is some heterogeneity in the absolute and relative sizes of the disadvantage brought about by gender, ethnicity and the combination of the two identities. These findings are discussed below, while full regression tables with various specifications are provided in the Appendices.

#### ***4.1. Literacy***

Results on literacy are available for the three Latin American countries in our sample and Sierra Leone. In Bolivia, where 87 percent of individuals aged 12 or older are reported as literate, women are 11.1 percentage points less likely to be literate than men, and ethnic minority men are 9.8 percent less likely to be literate than Spanish-speaking men, controlling for age, age squared, age cohorts and urban/rural residence (see the first and second column of Table A1 in Appendix A). However, the specification that includes gender, ethnicity and the interaction of these two variables shows that a large portion of these gender- and ethnicity-based gaps is borne by ethnic minority women (Table 3). The difference in literacy rates between Spanish-speaking women and Spanish-speaking men is 6.3 percentage points, while the literacy gap between

ethnic minority men and Spanish-speaking men is 5.1 percentage points. Ethnic minority women face an *additional* 7.3 percentage point disadvantage because of the intersection of gender and ethnicity, which results in a *cumulative disadvantage* of 18.7 percentage points relative to Spanish-speaking men.

The contribution of gender and ethnicity to the cumulative impacts on ethnic minority women vary across countries. In Mexico, belonging to an ethnic minority group explains a large portion of the gap in the literacy rate between ethnic minority women and Spanish-speaking men. Even ethnic minority men in Mexico, who only face ethnicity-based disadvantage, are 13.4 percentage points less likely to be literate than Spanish-speaking men. While the disadvantage faced by ethnic minority women is larger in magnitude in Mexico compared to Bolivia (22.1 versus 18.7 percentage points), the gap between them and their male counterparts is smaller. In Peru, the relative contributions of gender and ethnicity are not as skewed (4.6 and 3.2 percentage points, respectively) and ethnic minority women face a relatively smaller but significant cumulative disadvantage, at 12.4 percentage points.

**Table 3. Literacy Regression Results - Probit**

*marginal effects, using Male Reference Language Speakers as reference group*

	Bolivia (2001)	Mexico (2010)	Peru (2007)	Sierra Leone (2004)
Age	-.004 ***	-.005 ***	-.002 ***	-.006 ***
Rural resident	-.091 ***	-.069 ***	-.113 ***	-.305 ***
Female	-.063 ***	-.024 ***	-.046 ***	-.213 ***
Minority	-.051 ***	-.134 ***	-.032 ***	-.006 **
Female * Minority	-.073 ***	-.063 ***	-.046 ***	.011 ***
Obs.	561,126	8,541,041	2,028,394	307,066

Note: Regressions include individuals aged 12 and above. \*\*\*p<0.01, \*\*p<0.05, \*p<0.10.

In Sierra Leone, the opposite result is found, where the difference in literacy is almost exclusively across genders rather than across ethnic minority status. For example, ethnic minority men are 0.6 percentage points less likely to be literate than men in the reference group. On the other hand, women in the reference group whose mother tongue is English and/or Mende are 21.3 percentage points less likely to be literate than men in the same group. For ethnic

minority women, the literacy gap with respect to men in the reference group is equally large, at 20.3 percentage points. These impacts, however, are based on a much lower base given that only two in five people 12 years of age and above are literate in Sierra Leone. Nevertheless, gender-based differences are large when evaluated in relative terms, since female literacy rate in Sierra Leone is below 30 percent for women 12 years of age and above, but nearly 50 percent for men.

#### ***4.2. Primary School Completion***

As discussed earlier, the educational attainment variable in the IPUMS-I data set is a harmonized variable with four ordered outcomes. To understand the role of gender, ethnicity, and the intersection of the two on these outcomes, we conduct an ordered probit and report average marginal effects for primary school and secondary school completion. We supplement this analysis with a standard probit, using a simplified version of these two outcome variables (full regression results are provided in Appendices B and C).

In the ordered probit results, we find that ethnicity has the largest absolute impact on primary school completion in Mexico, where ethnic minority men are 8.9 percentage points less likely to fall into the “completed primary school” category than Spanish-speaking men (Table 4). Following the literacy findings discussed above, gender has the strongest impact in Sierra Leone, where women in the reference group are 13.5 percentage points less likely to fall in the “completed primary school” category than males in the same group. Interestingly, some coefficients of interest are positive for Peru, where primary school completion rates are close to 70 percent, and Sierra Leone, where primary school completion rates are just over 20 percent. In particular, women and ethnic minorities in Peru are *more likely* to fall into the “completed primary school” category than into any other category. In Sierra Leone, the exact opposite holds. Women and ethnic minorities are less likely to fall in the “completed primary school category”, but being ethnic minority women has a small positive impact on this likelihood.

We consider two possible explanations that may be underlying these results. On one hand, policies that encourage female and minority school enrollment may tip the scale to the advantage of these groups, and in fact, it is well documented that school enrolment among girls has surpassed that of boys in several Latin American and some African countries (Tembon and Fort, 2008). On the other hand, it is possible to observe a positive coefficient for women and

ethnic minorities in an ordered probit, if everyone had the same probability of completing primary school, but women and ethnic minorities were not able to complete secondary school. In other words, a particular group may be more likely to fall into the “completed primary school” because they are moving up from the “less than complete primary school” category or because they are not able to move up to the “completed secondary school” category.<sup>29</sup>

**Table 4. Primary School Completion Regression Results - Ordered Probit**

*Marginal effects, using Male Reference Language Speakers as reference group*

	Bolivia (2001)	Mexico (2010)	Peru (2007)	Senegal (2002)	Sierra Leone (2004)
Age	-.000 ***	-.003 ***	.001 ***	.001 ***	-.003 ***
Rural resident	-.059 ***	-.084 ***	.000	-.202 ***	-.232 ***
Female	-.008 ***	-.010 ***	.011 ***	-.067 ***	-.135 ***
Minority	-.039 ***	-.089 ***	.014 ***	-.012 ***	-.041 ***
Female * Minority	-.041 ***	-.036 ***	.013 ***	-.022 ***	.018 ***
Obs.	320,603	5,612,740	1,289,699	327,958	171,963

Note: Regressions include individuals aged 25 and above. \*\*\*p<0.01, \*\*p<0.05, \*p<0.10.

Collapsing the ordered school completion variable into two separate binary variables for primary school and secondary school allows us to explore these two explanations through probit regressions (full regression results are provided in Appendix C). The three positive coefficients for Peru in the ordered probit regression become negative in the probit model, suggesting that women and ethnic minorities may be facing barriers in progressing to secondary school. In particular, ethnic minority women are 32 percentage points less likely to complete primary school than males in the reference group (Table 5), but 38 percentage points less likely to complete secondary school compared to the same reference group (Table 6). In other words, ethnic minority women are more likely to remain in the “completed primary school” category than move up to the next rung. In contrast, the intersectionality variable in probit regressions for

<sup>29</sup> There can be other explanations, including the possibility that the language variable used for categorizing individuals into “reference” and “minority” groups may not capture the relevant differences in terms of ethnicity or other factors that may be associated with the observed educational gaps.

Sierra Leone carries a somewhat positive message. The additional burden for being an ethnic minority woman is less than the sum of the two individual burdens. However, men in the reference group are still 21 percentage points more likely to have completed primary school than ethnic minority women (Table 5) and 4.5 percentage points more likely to have completed secondary school (Table 6).

**Table 5. Primary School Completion Regression Results - Probit**

*Marginal effects, using Male Reference Language Speakers as reference group*

	Peru (2007)	Sierra Leone (2004)
Age	-.008 ***	-.004 ***
Rural resident	-.367 ***	-.306 ***
Female	-.087 ***	-.181 ***
Minority	-.114 ***	-.056 ***
Female * Minority	-.119 ***	.023 ***
Obs.	1,289,699	171,963

Note: Regressions include individuals aged 25 and above. \*\*\*p<0.01, \*\*p<0.05, \*p<0.10.

**Table 6. Secondary School Completion Regression Results - Probit**

*Marginal effects, using Male Reference Language Speakers as reference group*

	Peru (2007)	Sierra Leone (2004)
Age	-.007 ***	-.000 ***
Rural resident	-.426 ***	-.063 ***
Female	-.076 ***	-.040 ***
Minority	-.163 ***	-.015 ***
Female * Minority	-.143 ***	.010 ***
Obs.	1,289,699	171,963

Note: Regressions include individuals aged 25 and above. \*\*\*p<0.01, \*\*p<0.05, \*p<0.10.

Looking across the five countries included in the sample, the intersectionality variable in the primary school probit regressions is larger in Latin American countries than in African countries (see Table C1 and C2 in Appendix C). In Senegal, for example, the negative impact of each of the three identities are quite small—10.0 percentage points for being female, 1.6

percentage points for being ethnic minority, and an additional 3.8 percentage points more for being ethnic minority women. While this may seem to indicate that ethnic minority women face fewer disadvantages in these countries compared to the Latin American countries, it is worth noting that educational attainment rates are generally lower in African countries (on average, only one in five people over the age of 25 in either of the two countries has completed primary school) and therefore small differences across groups may reflect qualitatively sizable impacts. For instance, a penalty of 10 percentage points on ethnic minority women is a sizable impact where the literacy rate is just over 20 percent. On the other hand, a possible explanation for not observing large ethnicity-based divisions in Senegal and Sierra Leone can be because ethnicity-based differences are less relevant in driving educational gaps than other characteristics not captured by the linguistic proxy variable used in this paper, such as land ownership and lineage.

### ***4.3. Secondary School Completion***

The multivariate findings on secondary school completion in the five countries included in the sample are partly affected by the fact that secondary school completion rates among individuals aged 25 and above were low in the sampled countries (especially in Africa) when these censuses were conducted. Of the countries in the sample, Peru has the highest level of secondary school completion; one in two Peruvians at or over the age of 25 have completed secondary school according to the 2007 census, followed by one in four Bolivians in the 2001 census. In contrast, the corresponding rates are 6 percent and 3 percent, respectively, for Senegal in 2002 and Sierra Leone in 2004. Thus, inter- and intra-group differences in secondary school completion in these two countries must be interpreted with caution.

The results are qualitatively similar to those for primary school completion, and in the three Latin American countries, the intersectionality of gender and ethnicity plays an important role in hindering secondary school completion rates for ethnic minority women (see Table C2 in Appendix C for the full probit results). In Bolivia and Peru, the gap in secondary school completion between ethnic minority women and Spanish-speaking men is more than twice as large as the gap between ethnic minority men and Spanish-speaking men. In Bolivia, women in the reference group are 4.2 percentage points less likely than Spanish-speaking men to fall in the “completed secondary school” category as opposed to any other category, whereas the penalty for ethnic minority men is 11.8 percentage points. Ethnic minority women face an additional 9.3

percentage point disadvantage, for an overall reduction in their likelihood of completing secondary school of 25.3 percentage points (Table 7). The cumulative effect is smaller in Mexico at 10 percentage points, but the absolute differences are as large as they are in Bolivia—only 3 percent of ethnic minority women have completed secondary school, compared to 22 percent of men and 20 percent of women in the reference group, respectively.

**Table 7. Secondary School Completion Regression Results - Ordered Probit**

*Marginal effects, using Male Reference Language (Spanish) Speakers as reference group*

	Bolivia (2001)	Mexico (2010)	Peru (2007)	Senegal (2002)	Sierra Leone (2004)
Age	-.003 ***	-.004 ***	-.003 ***	.000 ***	-.000 ***
Rural resident	-.146 ***	-.076 ***	-.250 ***	-.070 ***	-.034 ***
Female	-.042 ***	-.011 ***	-.029 ***	-.029 ***	-.020 ***
Minority	-.118 ***	-.060 ***	-.075 ***	-.005 ***	-.007 ***
Female * Minority	-.093 ***	-.029 ***	-.080 ***	-.009 ***	.003 ***
Obs.	320,603	5,612,740	1,289,699	327,958	171,963

Note: Regressions include individuals aged 25 and above. \*\*\*p<0.01, \*\*p<0.05, \*p<0.10.

## 5. Discussion and Policy Implications

The results in this paper demonstrate the importance of taking the intersectionality of gender and ethnicity into consideration in development research and policy. Using harmonized census data for five developing countries, we find important differences in the absolute and relative roles that gender, ethnicity, and the intersection of gender and ethnicity play on literacy, primary school completion and secondary school completion outcomes.

The intersectionality effect is large and negative in the three Latin American countries in our sample, implying that ethnic minority women face cumulative education disadvantages compared to other groups. On the other hand, gender- and ethnicity-based differences are small in Senegal and Sierra Leone, though they represent large relative losses for women and ethnic minorities given generally low levels of educational attainment in these two countries. We recognize that the findings for these two countries may be conflated by the possibility that a language-based proxy for ethnicity may not overlap with ethnic divisions in Africa in the same

way it does in Latin America. Even so, existing patterns of cumulative disadvantage may still point to deeper processes that exclude women and native speakers of local languages from education, a finding that needs further investigation.

This paper demonstrates that systematic disparities that exclude certain social groups from development outcomes can be captured using existing data sources, even though the processes that give rise to these outcomes require more in-depth analysis. The findings highlight the specificity of problems faced by subgroups of population in these countries and make a call for policy interventions that take these specificities into account. In several Latin American countries, for example, universal education policies date back to the early twentieth century, as exemplified by efforts to expand coverage in rural areas in Mexico in the 1920s (Schoenhals 1964) and education reforms in Peru and Mexico in the 1970s (Benavides et al. 2007, Corrales 1999).<sup>30</sup> However, access to education remained uneven in the decades that followed these efforts, with rural residents, women and indigenous populations lagging behind (World Bank 2011b). This paper shows, moreover, that the gender gap in educational outcomes among indigenous populations is larger than among non-indigenous populations, or alternatively, women experience a greater education penalty for being indigenous compared to men. In Africa, recent efforts around the “Education for All” campaign and the MDGs have been credited for improving school enrollment in lower grades, but school completion rates have remained persistently low in all grades and uneven for boys versus girls (Lewin 2009).

Slow progress in overall educational outcomes in the sampled countries may stem from the fact that the heterogeneity of impacts is not receiving sufficient redress. Although our analysis is limited to specific age groups (12+ for literacy and 25+ for school completion), the findings suggest that the current working-age ethnic minority women may be disproportionately represented among the poor, as the educational losses they have incurred are largely irreversible and reflected in their earnings prospects. Further, cumulative disadvantages can have inter-generational impacts on children’s wellbeing and education, as evidence suggests that mothers’

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<sup>30</sup> Education reform was implemented in Bolivia in the 1990s, but education, including that of indigenous children, already had a prominent role in government policies for various decades prior, and a section dedicated to improving rural education was set up within the Ministry of Education in as early as the 1930s.

education is a strong predictor of children’s education and wellbeing (Dubow et al. 2009, Chevalier et al. 2010, Behrman and Rosenzweig 2002).

Restricting our analysis on literacy rate to individuals between 12 and 20 years of age indicates that intersectionality effects are present in younger cohorts too. In Bolivia, for example, the overall literacy rate among the youth is almost universal at 98 percent, but boys in the ethnic minority groups are 1.1 percentage points less likely to be literate than their Spanish native speaker counterparts, and indigenous girls are 3.1 percentage points less likely to be literate than the same reference group. The respective gaps are 3.1 percentage points and 4.3 percentage points in Mexico, where literacy rate among the youth cohort is 97 percent (see Table D1 in Appendix D).<sup>31</sup>

Ultimately, the results in this paper draw attention to the truism that “one-size-fits-all” interventions, such as universal education, may not successfully address the development problems faced by specific subgroups, such as low literacy and low school completion among ethnic minority women. Further, focusing on only one axis of exclusion when multiple roots of exclusion are at work can slow down the progress made in development outcomes or mask the persistent problems that may be hindering the overall progress. Therefore, documenting systematic variations in development outcomes by social subgroups as a first step, and following up with analysis of the processes through which multiple axes of exclusion give rise to these outcomes, can help governments and development agencies identify the groups and axes of exclusion that need to receive additional redress. More broadly, using an intersectional approach in development policy and research will likely increase the understanding of how policies and programs that impact one aspect of life are linked to others. This, in turn, should inform multipronged policies or combinations of policies that target multiple sources of disadvantage simultaneously, not only to loosen the grip of the overlapping axes of exclusion, but also to accelerate progress in development goals.

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<sup>31</sup> We cannot conduct a similar analysis for educational attainment due to data constraints, but the gaps are likely to be higher for primary school completion and secondary school completion if drop-outs and repetition follow similar patterns.

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## Appendix Tables

### A. Probit Regression Results for Literacy

**Table A1. Literacy - Probit**

*marginal effects, using Male Reference Language Speakers as reference group*

	Bolivia (2001)			Mexico (2010)			Peru (2007)			Sierra Leone (2004)		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Age	-0.005 ***	-0.004 ***	-0.004 ***	-0.005 ***	-0.005 ***	-0.005 ***	-0.002 ***	-0.002 ***	-0.002 ***	-0.006 ***	-0.006 ***	-0.006 ***
Rural resident	-0.141 ***	-0.092 ***	-0.091 ***	-0.109 ***	-0.069 ***	-0.069 ***	-0.141 ***	-0.113 ***	-0.113 ***	-0.305 ***	-0.305 ***	-0.305 ***
Female	-0.111 ***	-0.106 ***	-0.063 ***	-0.046 ***	-0.044 ***	-0.024 ***	-0.059 ***	-0.057 ***	-0.046 ***	-0.206 ***	-0.206 ***	-0.213 ***
Minority		-0.098 ***	-0.051 ***		-0.180 ***	-0.134 ***		-0.067 ***	-0.032 ***		-0.001	-0.006 **
Female * Minority			-0.073 ***			-0.063 ***			-0.046 ***			.011 ***
Obs.		561,126			8,541,041			2,028,394			307,066	

Note: Regressions include individuals aged 12 and above. \*\*\*p<0.01, \*\*p<0.05, \*p<0.10.

**B. Ordered Probit Regression Results for Educational Attainment**

**Table B1. Primary School Completion - Ordered Probit**

*Marginal effects, using Male Reference Language Speakers as reference group*

	Bolivia (2001)			Mexico (2010)			Peru (2007)		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Age	-.001 ***	-.001 ***	-.000 ***	-.003 ***	-.003 ***	-.003 ***	.001 ***	.001 ***	.001 ***
Rural resident	-.111 ***	-.065 ***	-.059 ***	-.107 ***	-.085 ***	-.084 ***	-.011 ***	-.001 ***	.000
Female	-.019 ***	-.016 ***	-.008 ***	-.014 ***	-.014 ***	-.010 ***	.013 ***	.014 ***	.011 ***
Minority		-.066 ***	-.039 ***		-.117 ***	-.089 ***		.014 ***	.014 ***
Female * Minority			-.041 ***			-.036 ***			.013 ***
Obs.	320,603			5,612,740			1,289,699		
<i>continued</i>	Senegal (2002)			Sierra Leone (2004)					
	(1)	(2)	(3)	(1)	(2)	(3)			
Age	.001 ***	.001 ***	.001 ***	-.003 ***	-.003 ***	-.003 ***			
Rural resident	-.208 ***	-.202 ***	-.202 ***	-.228 ***	-.232 ***	-.232 ***			
Female	-.076 ***	-.076 ***	-.067 ***	-.122 ***	-.122 ***	-.135 ***			
Minority		-.022 ***	-.012 ***		-.033 ***	-.041 ***			
Female * Minority			-.022 ***			.018 ***			
Obs.	327,958								

Note: Regressions include individuals aged 25 and above. \*\*\*p<0.01, \*\*p<0.05, \*p<0.10.

**Table B2. Secondary School Completion - Ordered Probit***Marginal effects, using Male Reference Language Speakers as reference group*

	Bolivia (2001)			Mexico (2010)			Peru (2007)		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Age	-.004 ***	-.003 ***	-.003 ***	-.004 ***	-.004 ***	-.004 ***	-.003 ***	-.003 ***	-.003 ***
Rural resident	-.207 ***	-.142 ***	-.146 ***	-.093 ***	-.076 ***	-.076 ***	-.281 ***	-.249 ***	-.250 ***
Female	-.079 ***	-.075 ***	-.042 ***	-.015 ***	-.016 ***	-.011 ***	-.038 ***	-.037 ***	-.029 ***
Minority		-.168 ***	-.118 ***		-.072 ***	-.060 ***		-.122 ***	-.075 ***
Female * Minority			-.093 ***			-.029 ***			-.080 ***
Obs.	320,603			5,612,740			1,289,699		
	Senegal (2002)			Sierra Leone (2004)					
	(1)	(2)	(3)	(1)	(2)	(3)			
Age	.000 ***	.000 ***	.000 ***	-.000 ***	-.000 ***	-.000 ***			
Rural resident	-.073 ***	-.070 ***	-.070 ***	-.033 ***	-.034 ***	-.034 ***			
Female	-.033 ***	-.033 ***	-.029 ***	-.018 ***	-.018 ***	-.020 ***			
Minority		-.009 ***	-.005 ***		-.005 ***	-.007 ***			
Female * Minority			-.009 ***			.003 ***			
Obs.	327,958								

Note: Regressions include individuals aged 25 and above. \*\*\*p<0.01, \*\*p<0.05, \*p<0.10.

**C. Probit Regression Results for Educational Attainment**

**Table C1. Primary School Completion - Probit**

*Marginal effects, using Male Reference Language Speakers as reference group*

	Bolivia (2001)			Mexico (2010)			Peru (2007)		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Age	-.009 ***	-.008 ***	-.003 ***	-.012 ***	-.012 ***	-.012 ***	-.008 ***	-.008 ***	-.008 ***
Rural resident	-.374 ***	-.253 ***	-.253 ***	-.255 ***	-.198 ***	-.197 ***	-.414 ***	-.366 ***	-.367 ***
Female	-.187 ***	-.177 ***	-.098 ***	-.048 ***	-.048 ***	-.027 ***	-.110 ***	-.106 ***	-.087 ***
Indigenous		-.277 ***	-.178 ***		-.256 ***	-.203 ***		-.181 ***	-.114 ***
Female * indigenous			-.172 ***			-.099 ***			-.119 ***
Obs.		320,603			5,612,740			1,289,699	
<i>continued</i>		Senegal (2002)			Sierra Leone (2004)				
	(1)	(2)	(3)	(1)	(2)	(3)			
Age	.001 ***	.001 ***	.001 ***	-.004 ***	-.004 ***	-.004 ***			
Rural resident	-.310 ***	-.301 ***	-.301 ***	-.300 ***	-.306 ***	-.306 ***			
Female	-.117 ***	-.117 ***	-.100 ***	-.166 ***	-.166 ***	-.181 ***			
Indigenous		-.033 ***	-.016 ***		-.046 ***	-.056 ***			
Female * indigenous			-.038 ***			.023 ***			
Obs.		327,958							

Note: Regressions include individuals aged 25 and above. \*\*\*p<0.01, \*\*p<0.05, \*p<0.10.

**Table C2. Secondary School Completion - Probit**

*Marginal effects, using Male Reference Language Speakers as reference group*

	Bolivia (2001)			Mexico (2010)			Peru (2007)		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Age	-.005 ***	-.004 ***	-.005 ***	-.005 ***	-.005 ***	-.005 ***	-.007 ***	-.007 ***	-.007 ***
Rural resident	-.305 ***	-.213 ***	-.215 ***	-.200 ***	-.174 ***	-.174 ***	-.466 ***	-.424 ***	-.426 ***
Female	-.086 ***	-.082 ***	-.049 ***	-.025 ***	-.026 ***	-.021 ***	-.096 ***	-.094 ***	-.076 ***
Minority		-.251 ***	-.195 ***		-.119 ***	-.103 ***		-.231 ***	-.163 ***
Female * Minority			-.120 ***			-.045 ***			-.143 ***
Obs.	320,603			5,612,740			1,289,699		
<i>continued</i>	Senegal (2002)			Sierra Leone (2004)					
	(1)	(2)	(3)	(1)	(2)	(3)			
Age	.000 ***	.000 ***	.000 ***	-.000 ***	-.000 ***	-.000 ***			
Rural resident	-.087 ***	-.083 ***	-.083 ***	-.062 ***	-.063 ***	-.063 ***			
Female	-.051 ***	-.051 ***	-.046 ***	-.034 ***	-.034 ***	-.040 ***			
Minority		-.017 ***	-.012 ***		-.012 ***	-.015 ***			
Female * Minority			-.013 ***			.010 ***			
Obs.	327,958								

Note: Regressions include individuals aged 25 and above. \*\*\*p<0.01, \*\*p<0.05, \*p<0.10.

**D. Probit Regression Results for Youth Literacy**

**Table D1. Youth Literacy (ages 13-20) - Probit**

*marginal effects, using Male Reference Language Speakers as reference group*

	Bolivia (2001)			Mexico (2010)			Peru (2007)			Sierra Leone (2004)		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Age	-0.002 ***	-0.002 ***	-0.002 ***	-0.002 ***	-0.002 ***	-0.002 ***	-0.001 ***	-0.001 ***	-0.001 ***	-0.032 ***	-0.032 ***	-0.032 ***
Rural resident	-0.023 ***	-0.011 ***	-0.011 ***	-0.022 ***	-0.012 ***	-0.012 ***	-0.018 ***	-0.017 ***	-0.017 ***	-0.305 ***	-0.302 ***	-0.302 ***
Female	-0.012 ***	-0.011 ***	-0.004 ***	-0.000 *	.000 **	.008 ***	-0.003 ***	-0.003 ***	-0.002 ***	-0.181 ***	-0.181 ***	-0.176 ***
Minority		-0.021 ***	-0.011 ***		-0.045 ***	-0.031 ***		-0.002 ***	.002 **		.027 ***	.031 ***
Female * Minority			-0.016 ***			-0.020 ***			-0.008 ***			-0.008
Obs.		146,834			1,976,358			441,903			88,648	

Note: Regressions include individuals between the ages 12 and 20 (both inclusive). \*\*\*p<0.01, \*\*p<0.05, \*p<0.10.