

Development Progress

In quest of inclusive progress

Exploring intersecting inequalities in human development

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The poorest women from disadvantaged ethnic groups are being left behind



In 11 of 16 countries with data, they have the **fewest average years of education**



In 14 of 16 countries with data, they have the **highest** share of child deaths

Inequality in years of education in Ghana





Poorest women from the Gruma ethnic group

(2008)

Inequality in years of education in Peru

Average woman

Poorest Quechua women



4.3 wears

(2009)

In Ethiopia, the likelihood of having completed primary school varies considerably

Rural Somali women



Urban women from all other ethnic groups

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Executive summary

For 16 countries with appropriate data, this paper seeks to ascertain to what extent wealth status, urban/rural place of residence and ethnicity – and overlaps between them – explain inequalities in education and health; and how these inequalities have changed over time. Our focus is on women's years of education and on the proportion of children in a household who have died.

We show that people who belong to one or more disadvantaged groups experience outcomes that are significantly below the average and that group-based identifiers explain a significant share of inequality in those outcomes in most countries. The gaps between the most disadvantaged group and the population average are pronounced in both education and health: the number of years of education ranges from one to nearly six, and the share of children who have died differs between three and 18 percentage points. Overall, women in the lowest wealth quintile from minority ethnic groups had the lowest average outcomes in education in 11 of 16 countries and the highest share of child deaths in 14 of 16 countries.

We then explore the relationships between place of residence, ethnicity and wealth – and find that people in the bottom wealth quintile live largely in rural areas and disproportionately belong to particular ethnic groups. We do not find a strong relationship between ethnicity and rural–urban status – within our sample, there is no clear pattern either within or across countries.

Turning to group inequalities, on the basis of a decomposition exercise, we find that the three characteristics we focus upon explain a significant share of inequality in education and in health in many countries. The contribution is especially high for education. Wealth explains between around 20% (Zimbabwe, Mali) and just over 40% (Bolivia) of total inequality. Place of residence and ethnicity each explain between less than 5% (Philippines) and 25% (Bolivia) of total inequality. For health, group-based inequalities appear to be less significant – the three characteristics each account for less than 6% of inequality, but with variation between countries.

We next explore to what extent 'intersecting inequalities' - our focus is on belonging to two deprived groups – condition inequality in education and health. Two main findings are highlighted here. First, the effect of belonging to a disadvantaged ethnic group and living in a rural area is significantly larger than either of the component parts in many countries, for education and for health. For example, when looking at years of education in Bolivia, ethnicity and place of residence each explain around 25% of total inequality. When examined jointly, they together explain close to 40%. The fact that the total contribution is often significantly higher than either component (though less than the sum of both) hints that this combination can be particularly pernicious. Where wealth is joined with place of residence and then with ethnicity, the effect of the intersection is only slightly higher than that of wealth. Second, inequality based on wealth and ethnicity jointly has changed less than the other two forms of overlapping disadvantage (wealth and residence; ethnicity and residence) over the past 20 years in education, while there have been fewer observable changes in inequalities in health.

Finally, we aim to give some insights into the effect of being at the intersection of two disadvantaged groups – in other words, whether there is a spillover effect associated with belonging to two disadvantaged groups such that the disadvantage is compounded. We explore this in a very preliminary way, so the findings are illustrative rather than indicative – but they hint at an additional burden of experiencing overlapping disadvantage.

These findings speak to the need for policies to address not only individuals from disadvantaged groups but also those who are doubly disadvantaged. Policy actions should prioritise people experiencing overlapping disadvantages. In some cases, technical solutions such as better targeting will be crucial, though the importance of ethnic marginalisation also draws into relief the need to tackle politically sensitive drivers such as social discrimination. Many of the policies are national – intersecting inequalities are experienced in different ways from country to country. At the same time, the Sustainable Development Goals (SDGs) and growing focus on 'leaving no one behind' add an important international angle. It will be crucial to monitor the success of the SDGs at a disaggregated level and to identify how to collect the data needed to do this well.

Key messages

- The poorest women from disadvantaged ethnic groups are the most likely to have been 'left behind' by progress in human development in 16 countries with available data. In 11 countries, this group has the fewest average years of education, and in 14 countries, it has the highest levels of child deaths.
- Inequalities associated with where a woman resides within a country, her ethnic group and her household's wealth quintile – and the overlap of these factors – are sizeable in many countries. The combination of living in a rural area and being from a minority ethnic group is particularly pernicious in many countries.
- Inequality in education associated with wealth and ethnicity has changed less over the past 20 years than any of the other 'intersections' we explore.
- Preliminary exploration suggests that intersecting inequalities heighten disadvantage beyond the impact of the separate components. This has implications for how such inequalities are experienced and addressed.
- Many of the remedial policies needed are country specific, but there is also an international lens. Policy actions should prioritise people with overlapping disadvantages. It is crucial to monitor the SDGs at a disaggregated level, which in turn will require better data.

1. Introduction

Inequality has earned a place in debates over the successor framework to the Millennium Development Goals (MDGs). This growing focus stems, in part, from clear evidence that unprecedented progress in human development over the past two decades has not been evenly distributed (Save the Children, 2012; Kabeer, 2010; Lenhardt and Shepherd, 2013). Senior officials have declared a commitment to 'leave no one behind' and have acknowledged that this commitment cannot be met without tackling inequality. The Report of the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda proposes anchoring inequality in the new global development goals when it states that 'the indicators that track them should be disaggregated to ensure no one is left behind and targets should only be considered "achieved" if they are met for all relevant income and social groups' (United Nations, 2013). This is echoed in goal 10.2 of the Sustainable Development Goals (SDGs): 'by 2030 empower and promote the social, economic and political inclusion of all irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status'.¹ Progress on average achievements will also depend greatly on how the worst performing groups fare, so reducing inequality is also instrumentally important.

Alongside this stronger focus on inequality has been a deepening understanding of its root causes and consequences as well as the difference between inequality of opportunity and inequality of outcomes (Brunori et al., 2013; de Barros et al., 2008). While unequal outcomes that arise from individual choices, efforts or innate talents arguably might demand fewer corrective actions, unequal outcomes caused by restricted opportunities based on ethnicity, place of origin or gender should not be tolerated either on moral grounds or on meritocratic principles (de Barros et al., 2008; Fuentes-Nieva, 2012).

We know that inequality of opportunity exists and that ethnicity, wealth and place of residence play a significant role in determining human development outcomes (see Brunori et al., 2013, for an overview of recent empirical evidence). We also know that inequality of opportunity is a barrier to social progress. But identifying who is most affected by this inequality is by no means straightforward.

This paper distinguishes three approaches to measuring inequality: vertical, horizontal and intersecting. In contrast to 'vertical inequality', where households or individuals are ranked according to their income or another attribute, 'horizontal' measures of inequality distinguish group-level outcomes (Stewart et al., 2005). Horizontal measures are better equipped to show distributional differences arising from opportunity – i.e., those inequalities linked systematically with belonging to particular social groups. Group-based measures of inequality can, therefore, expose the social exclusion that has prevented certain groups from benefiting or benefiting equally from the broader progress in human development witnessed over the past 20 years.

Despite their value, however, group-based inequalities can still mask severe exclusion as their one-dimensional treatment of identity assumes all people who belong to a particular group will experience exclusion equally. In reality, the *intersection* of group differences can produce some of the most extreme forms of exclusion in societies. A person's ethnic identity, gender and spatial location can all interact in ways that exclude him or her from a country's economy, political system and social life.

The term 'intersectionality', now widely used by sociologists, originated in the black feminist tradition of the 1960s and was popularised by Kimberlé Crenshaw (1991) to describe the distinct experience of violence among women of colour (Crenshaw, 1991). Naila Kabeer (2010) uses the term 'intersecting inequalities' to highlight the overlapping disadvantages faced by individuals or groups that reinforce their exclusion. The particular overlaps that characterise marginalisation in any given country or region vary by context, but Kabeer points out that poverty is strongly associated with identities that are ascribed at birth - race, caste, gender and ethnicity - and that are most pronounced when they intersect with disadvantaged locations and economic class (Kabeer, 2010). The impact of overlapping disadvantage was also analysed in the 2012 World Development Report on Gender Equality and Development, highlighting the persistence of gaps in health, education and economic outcomes among women and girls who face other forms of exclusion, such as geographic remoteness, ethnic minority status, and disability (World Bank, 2012).

Figure 1 (overleaf) depicts the different concepts of inequality identified in this paper. First, *vertical inequality* ranks everyone by some outcome (e.g. income, education, health) – one example is the standard Gini coefficient that measures the dispersion of outcomes within a given population. Second, *horizontal inequality* groups individuals according to some characteristic (e.g. ethnicity, spatial location, wealth quintile), and inequality is determined by the differences between these groups. A measure of horizontal inequality can be as simple as a comparison of the ratio of average outcomes between two

¹ http://www.un.org/ga/search/view_doc.asp?symbol=A/68/970&Lang=E





groups (e.g. average rural income compared to average urban income). When comparing more than two groups, however, more complex measures are needed (Stewart et al., 2005). Third, *intersecting inequality* groups people, once again, according to some characteristic, but it identifies those who fall into overlapping categories (e.g. living in a rural area and belonging to the poorest wealth group). Inequality is then measured by the difference in the outcomes explained by the various combinations of those overlapping group characteristics. This paper will show that tracking progress in this manner is feasible and necessary to ensure that marginalised groups who face 'overlapping disadvantages' are being incorporated into wider development progress.

This analysis aims to respond to two key gaps in our knowledge about intersecting inequalities: a rigorous methodological approach to their measurement, and empirical evidence on their links to human development. We focus on an analysis of health and education outcomes as they represent two fundamental components of human development.

The paper draws on data from Demographic and Health Surveys (DHS) in 16 countries with two survey rounds in the 1990s and 2000s (Table 1). These surveys offer nationally representative and internationally comparable data on health and education outcomes, and include background information on an individual's place of residence, wealth quintile and ethnicity.² Although DHS have been conducted in more than 90 countries, many of which now have undergone at least two rounds that allow comparison over time, only the 16 countries that asked a consistent question on ethnicity could be included in this analysis.

This paper traces the changes that have occurred in intersecting inequalities in education and health in these 16 countries over periods of approximately ten years. The purpose is to show how intersections of group-based factors may identify the most excluded households and to assess whether people who face overlapping disadvantages are, indeed, being 'left behind' by progress in human development. This form of disaggregation is presented as one response to the United Nations (UN) High-Level Panel's proposal to track progress on a new set of global development goals in a

Table 1: Demographic and Health Survey countries and years

	1st survey year	2nd survey year
Benin	1996	2006
Bolivia	1998	2008
Burkina Faso	1993	2010
Ethiopia	2000	2011
Ghana	1998	2008
Guinea	1999	2012
Kenya	1998	2008/09
Malawi	2000	2010
Mali	1995/96	2006
Nepal	1996	2006
Niger	1998	2006
Peru	1996	2009
Philippines	1998	2008
Uganda	1995	2011
Zambia	1996	2007
Zimbabwe	1999	2010/11

² The surveys selected had the most comparable categories of ethnicity over time (these can change between surveys). Where more than two surveys were available, the latest survey was used and the survey nearest to 10 years prior to that survey.

way that is defined by the achievement of progress across all relevant income and social groups.

The structure is as follows: Section 2 sets out the methodology adopted for the study and provides an overview of the data used to measure levels and changes in intersecting inequalities over time. Section 3 explores the relationship of each of the group-based characteristics – wealth quintile, place of residence (rural vs. urban), and ethnicity – to show how intersecting inequalities manifest themselves and to substantiate what they can tell us. Sections 4 and 5 analyse baseline levels of intersecting

inequalities among disaggregated groups for education and health, showing the extent of inequality across countries and highlighting particularly disadvantaged groups. These sections also measure changes over time across the different group-based intersections to highlight areas where progress has been made or where more interventions may be needed. Section 6 briefly explores how belonging to two disadvantaged groups affects outcomes above and beyond experiencing one disadvantage. Section 7 draws conclusions from the analysis and makes policy recommendations.

2. Methodology

2.1 General entropy measures

This study applies one of the general entropy (GE) family of measures of inequality, of which the best known is the Theil index, which allows outcomes to be decomposed across subgroups of a population (see Annex 2 for a full description of GE). The measure identifies diversity in a data set, as opposed to uniformity. In cases where data are uniform, we would conclude that they are equal, whereas a diverse data set suggests inequality.

GE measures can be additively decomposed into between-group and within-group inequalities, such that:

total inequality=between group inequality+within group inequality

To determine the share of inequality accounted for by between-group intersections, we compare the ratio of between-group to total inequality over time. Betweengroup inequality is expressed as a percentage of total inequality, with the remaining inequality explained by differences within groups that are explained by other factors (e.g. age, employment status, parents' level of education). While these other factors may be important, our analysis concentrates on the contribution of three group characteristics – place of residence, wealth group and ethnicity – and their intersection.

We have used a GE approach with $\alpha = 2$ (as opposed to the more commonly used Theil with $\alpha = 1$). The reason is that we aim to accentuate differences in the upper end of the distribution in order to highlight the variation in the part of the distribution where it is most present (see for example women's education in Mali in 1995/96 in Figure 2).³ If we were to apply an equal weight across the distribution of women's education in Mali, for example, we would conclude that women's years of education are relatively equal because the majority (83%) had less than one year of schooling in 1996. But because this study is concerned with inclusion, it is focused on the inequality between the minority of women who receive some and perhaps quite high levels of education, and the many others who receive very little, and often none at all.

For child deaths, a similar logic applies: the majority of households report zero children having died, but some report the deaths of upwards of five or six children. By applying a slightly higher weight to values in the upper end of the distribution, we accentuate the differences between this end of the distribution and the remainder.

Figure 2: Women's years of education in Mali, 1995/96



kernel = Epanechnikov, bandwidth = 0.3505

We are examining a positive outcome in the case of education, and a negative outcome in the case of health – we discuss below how this affects the comparability of the results.

If the proportion of between-group inequality reduces over time on an indicator for one particular intersection (and that change is significant), the country is considered to have made more inclusive progress on that particular indicator for that intersection of group identities.⁴ It should be noted that inequality can reduce if some people become worse off – if, for example, people with higher outcomes in the first period have lower outcomes in the second period while everyone else either stays the same or improves. This is a rare occurrence in our analysis, as education and health outcomes have improved in nearly all cases.

2.2 Data

A dearth of data on ethnicity (as well as religion and caste) complicates the measurement of intersecting inequalities. Even more limited are internationally comparable data that have a time horizon long enough to track changes over time, and samples large enough to allow for subnational

³ This GE₂ approach has been applied in other studies of inequality in health outcomes (Assaad et al., 2012; Sehili et al., 2005) as well as education (Sahn and Younger, 2007).

⁴ To examine whether changes over time are significantly different, boot-strapped estimates of the standard error of between-group inequality are calculated (see annex 1).



and group-based disaggregation. The Demographic and Health Survey, a nationally representative household survey conducted at relatively regular intervals in many countries, is one of the few options available and has been used to track group-based inequalities in a number of studies (see Lenhardt and Shepherd, 2013; Østby, 2008; Sahn and Younger, 2007; Stewart and Langer, 2008; Sumner, 2012a, 2012b).

In the majority of DHS conducted, the bulk of the questions are directed towards women of reproductive age (aged 15-49) and men aged 15-59. Some surveys, however, include only a women's sample or include a smaller number of men. Our analysis, therefore, focuses on women's outcomes as this allows a larger comparative sample across countries. Women's years of schooling is used to measure education outcomes. At the household level, the extent of children's death under the age of five is used as an indicator of health. Other metrics might be better suited to the analysis of health outcomes at the household level, but limited data, together with the requirement of a continuous

variable to apply the GE measure, limits this choice. We use the number of children who have died as a proportion of all children born in the household, with the measure therefore ranging between 0 and $100.^{5,6}$

The DHS data present a number of challenges to the measurement of intersecting inequalities for this study. First, the sample of countries used for this analysis is limited to those where surveys asked a relevant identification question for respondents' ethnicity or language. It is further limited to the countries that asked this question consistently in more than one survey round. Thus the country sample is limited to 16 countries. Respondents' self-identified ethnicity was used to categorise ethnicity, except in Bolivia, Peru and Zimbabwe, where language was used as a proxy.⁷

DHS are nationally and sub-nationally representative but are not necessarily representative of all ethnic groups. Once the data are partitioned by ethnicity and place of residence or wealth quintile, subgroups can become very small. A minimum group threshold of 30 observations has

⁵ Although indicators for both education and health are bounded continuous rather than perfectly continuous measures, a number of studies have shown this to be an acceptable compromise (see Aristondo and de la Vega, 2013; Lambert and Zheng, 2011; Wagstaff et al., 2001).

⁶ To account for the effect of age on a woman's years of education and the likelihood of a mother having experienced one or more child deaths, inequality measures have been regressed on age and the residual – the part that is not explained by age – has been used as the 'clean' indicator.

⁷ Ethnic identities are not easily defined, and the approximation of ethnic identity using language further blurs this definition (UNRISD, 2010).

been used.⁸ In some countries, this eliminates some ethnic groups – an important issue, given that their minority status means they are already likely to be marginalised. In these cases, the household outcomes for these groups are still factored into the overall inequality measures, but group averages are not reported – this could bias estimates of between-group inequality, an issue that should be considered in future survey design. One possibility is for such surveys to oversample small minorities in order to track how they are faring.⁹

DHS do not collect information on income or consumption. Instead they ask questions related to a selection of household assets (such as televisions and bicycles) and draw on these responses, using factor analysis, to produce a wealth index, from which households are ranked into wealth quintiles.¹⁰ The wealth factor scores are not comparable across countries over time as the asset base changes, as does the relative weighting of different assets in the index (see Rutstein and Staveteig, 2013). This means that the DHS asset quintiles can be used to group households within a given survey and compare them across surveys as a relative wealth measure. This is not possible with the absolute values of the wealth-factor scores as these will change with updates to the index.

It is important to note that direct comparisons cannot be made between overall levels of inequality in health and education, as the two measures are not comparable. The education indicator measures a positive outcome (more years of education), while the health indicator measures a negative outcome (child deaths) and, as shown above, the measure we apply highlights these differences. The DHS education indicator also has more categories, with a range between 0 and 25 years, while the DHS health indicator ranges from 0 to 7 child deaths. Moreover there is a certain stochastic element to mortality – even in the best-off households, children die from accidents or disease – which will limit inequality (Harttgen and Klasen, 2012). Therefore, all else being equal, we would expect to find more inequality in education than in health.

Further, comparisons cannot be drawn between levels of inequality across different intersections, as certain group characteristics have more categories than others and are, therefore, likely to be more unequal (for example, some countries identify more than 10 ethnic groups while others record only three; likewise, place of residence has only two categories while wealth quintile has five categories). Figure 3 shows the group intersections applied in the analysis and the comparisons that can be made.

Figure 3: Comparability across intersections

Place of residence - Wealth group

Levels between countries and change within countries over time (both direction of change and magnitude)

Wealth group - Ethnicity

Levels within countries and direction of change (not magnitude) between countries over time

Ethnicity - Place of residence

Levels within countries and direction of change (not magnitude) between countries over time

2.3 Group characteristics and their effects

The group-based characteristics applied in this study have been selected drawing on Kabeer (2010), though certain data limitations have restricted the number of group-based identifiers that could be considered (e.g. religion identifiers were not present in all surveys). However, the three group characteristics – wealth group, ethnicity and place of residence – span geographical and income divides.

Assessing the effect of belonging to two or more disadvantaged groups requires consideration of the type of effect – whether it is likely to be the sum of the individual effects of being in each disadvantaged category, or if instead there is an independent additive effect of the interaction (in other words, belonging to two categories carries an additional burden). This distinction has important policy implications for the targeting of resources towards disadvantaged groups as well as the tailoring of services to accommodate the needs of groups that face different barriers to access. This study looks at the effects of intersecting group-identities on outcomes in three illustrative countries: Ethiopia, Ghana and the Philippines. We examine first each group characteristic individually, then the added effect of their intersection. We do so through a logit regression where the dependent variable is the likelihood of completing primary education; the explanatory variables are age and whether the individual belongs to each of two disadvantaged groups and the interaction between those two groups. If the interaction term is significant, we conclude that the effect of the group intersection may exert an additional effect on outcomes.

- 9 For various possibilities to expand the data available on small groups, see Samman and Roche (2014).
- 10 See http://www.measuredhs.com/topics/Wealth-Index.cfm for an overview and supporting documents on the DHS calculation of the wealth index.

⁸ In accordance with the UNESCO WIDE database on inequality in education, which also uses DHS data for its group-based calculations, in addition to the central limit theorem.

3. What do group intersections tell us?



The disaggregation of average outcomes – years of education and the share of child deaths – by intersected groups reveals very large gaps between the most disadvantaged groups and the population average (Table 2, overleaf). For education, the gap ranges from one year to nearly six years, and for health (the share of children who have died), it is between three and 18 percentage points. What begins to emerge is a picture of marginalisation of some groups, particularly at the intersection of wealth group and ethnicity. This intersection identifies groups with the lowest average outcomes in education in 11 of 16 countries and the highest share of child deaths in 14 of 16 countries.

Having identified the most disadvantaged and advantaged groups, we then explore the relationship

between group-based characteristics to show what information we gain by combining these rather than looking at each individually. Wealth and place of residence are very much associated, as are wealth and ethnicity in many countries, but place of residence and ethnicity are not closely related. This carries implications for how these pairs of characteristics contribute to inequality in education and in health.

In the majority of countries examined, people who have the least assets overwhelmingly live in rural areas (Figure 4, overleaf). Across the entire sample, some 95% of those in the poorest wealth quintile are found in rural areas, while around 80% of the richest quintile live in urban areas.¹¹ These results are highly generalised as they represent a

¹¹ The DHS wealth index has been criticised for being too urban in its construction, which could explain this relationship in part. Rutstein (2008) raises two concerns: (1) some of the publicly provided services that make up the wealth index, such as electricity and piped water, are more likely to be found in urban areas; (2) the index does not distinguish between the poorest of the poor, particularly in rural areas. The analysis of this paper tries to tackle the second concern by further disaggregating the bottom quintile, using intersections of rural/urban and ethnicity. The first concern remains, but this paper holds that the absence of these services in rural areas is a defining characteristic of the rural poverty that these results aim to highlight.

Country	Lowest average years of education	Group average	Country average	Gap (years)	Highest average child deaths (proportion)	Group average	Country average	Gap (prop)
Benin	Poorest Peulh	0	2.3	2.3	Poorest Dendi	0.22	0.10	0.12
Bolivia	Rural Quechua	4.3	7.3	3.0	Poorest Quechua	0.12	0.05	0.07
Burkina Faso	Poorest Touareg	0.1	3.0	2.9	Poorest Lobi	0.20	0.11	0.09
Ethiopia	Rural Somali	0.2	2.9	2.7	Poorest Afar	0.12	0.08	0.04
Ghana	Poorest Gruma	0.9	6.6	5.7	Poorest Gruma	0.13	0.09	0.06
Guinea	Poorest Malinke	0.1	1.5	1.4	Poorest Toma	0.22	0.15	0.07
Kenya	Poorest Mijikenda/Swahili	2.6	7.9	5.3	Poorest Luo	0.13	0.05	0.08
Malawi	Poorest Yao	2.4	5.3	2.9	Poorest urban	0.15	0.10	0.05
Mali	Poorest Sonrai	0.2	1.4	1.2	Poorest Tamacheck	0.24	0.16	0.18
Nepal	Poorest Muslim/Churaute	0.6	3.1	2.5	Poorest Tamang	0.10	0.07	0.03
Niger	Rural Arab, Gourmantch, Toubou ^a	0	1.0	1.0	Rural Gourmantch	0.28	0.17	0.11
Peru	Poorest Quechua	4.3	9.6	5.3	Poorest other indigenous	0.07	0.02	0.05
Philippines	Poorest rural	5.6	10.7	5.1	Poorest Waray	0.08	0.02	0.06
Uganda	Poorest Ngakaramajong	0.1	5.7	5.6	Poorest Bakiga	0.16	0.08	0.08
Zambia	Rural Mashi ^b	1.2	6.4	5.2	Rural Bisa	0.21	0.10	0.11
Zimbabwe	Poorest 'other' ^c	5.3	9.0	3.7	Poorest Shona	0.06	0.05	0.01

Table 2: The most disadvantaged groups and country averages across 16 countries in latest DHS

Ethnicity/place of residence Wealth group/place of residence

a All three groups reported zero average years of schooling. These groups were not large enough to be represented in the intersection of wealth and ethnicity.

b The Zambia DHS survey includes 67 ethnic groups, so disaggregating by wealth group makes most groups too small to be represented. Ethnicity could only be disaggregated by place of residence.

c Only Shona, Ndebele and English speakers are included in the survey. The 'other' category appears to be picking up other smaller groups.

variety of country contexts but not any larger grouping given the limited number of countries available for this analysis.

Similar aggregate results cannot be presented for intersections with ethnicity, given the complexity of group identity across country contexts, so we consider these intersections at a country level. Most countries display a strong relationship between ethnicity and wealth, particularly Bolivia and Peru. In Bolivia, the Quechua and Aymara people are overwhelmingly in the poorest wealth quintile, whereas the richest quintile is comprised almost entirely of Spanish speakers who are likely to be predominantly of European descent (Figure 5). In Peru too, Quechua, Aymara and other indigenous groups are found almost entirely in the poorest or second-poorest wealth quintiles (Figure 6).

There is a great deal of variability within countries with regard to the relationship between ethnicity and place of residence, and no observable trend across countries. In some countries the most marginalised ethnicities are at the greatest disadvantage regardless of where they live. This is the case for Peulh in Benin, who complete the fewest years of education in both rural and urban areas, and Waray in the Philippines, who experience the highest share of child deaths in both areas. In some countries, members of the most disadvantaged group live predominantly

in rural areas, as is the case for Gruma in Ghana and Ngakaramajong in Uganda.

Three key stylised facts on the significance of intersecting inequalities emerge from our preliminary analysis:

- By disaggregating groups by wealth quintile, place of residence, and ethnicity (and indeed other group characteristics), we can identify which of these characteristics, individually and in combination, are associated with exclusion.
- People living in rural areas are more likely to be disadvantaged than those in urban areas.
- Most countries in our sample exhibit some relationship between ethnicity (or language) and wealth status, but there is no clear relationship between ethnicity and place of residence across countries. In some countries, members of the most marginalised ethnic group are at the greatest disadvantage regardless of where they live; in others, they concentrate predominantly in either rural or urban areas.

Figure 5: Wealth quintile and ethnicity in Bolivia



Figure 4: Wealth quintile by place of residence, 2000s, 16 countries



Figure 6: Wealth quintile and ethnicity in Peru



4. Inclusive progress in education



The number of years of education an individual completes could conceivably be a matter of choice, effort or talent, but when looking at data about groups of individuals, we see that consistent patterns are likely to be associated with some external factors. This section addresses whether the number of years a woman attends school is associated with constraints imposed by where she lives, her ethnicity, her household's level of asset holdings, and by the intersections of these factors.

The direct or hidden costs of education – such as school fees, uniforms and transport to school – are often prohibitive for the poor. Some children from ethnic groups may be discouraged from attending school because they do not understand the language of instruction or because the nature of the curriculum is alien to their culture. In some areas, children are kept from school in order to work, and some areas simply do not have enough school places. Given the tremendous global efforts to ensure 'education for all', these barriers to education require attention.

4.1 Ethnicity and place of residence

Inequalities associated with people's identities ascribed at birth, such as ethnicity, are considered to be some of the most enduring forms of exclusion (Kabeer, 2010). And while inequalities arising from place of residence and wealth status might require material solutions, inequalities arising from social discrimination might require more deep-seated social transformation. However, the appropriate policy response cannot be designed by looking at any one characteristic on its own, as ethnic inequalities are often tied inherently to economic and spatial inequalities (Kabeer, 2010).

Our results reinforce this conclusion. We find that ethnicity typically explains a measurable share of inequality in many countries – anywhere from 5% to 25% of the total, depending on the country. This finding suggests that inequalities cannot be resolved completely by addressing other less politically sensitive drivers of inequality: social discrimination must be addressed to



Figure 7: Proportion of education inequality explained by ethnicity, place of residence and their intersection, latest year available

Note: The figure represents the results of separate decompositions of inequality for ethnic groups, place of residence and the intersections of ethnic group with place of residence.

ensure that wider development progress reaches the most marginalised groups.

Place of residence also explains between around 5% and 25% of total inequality. Cross-country variation is sizeable: in some countries, such as Ghana, Kenya and Nepal, inequality among ethnic groups is a larger contributor to overall inequality, while in others, inequality between rural and urban areas is far more pronounced, such as in Ethiopia, Niger and Mali.

The intersection of ethnicity and place of residence is particularly salient. The joint effect ranges from about 12% (Zimbabwe) to nearly 40% (Bolivia) and accounts for a somewhat higher share of inequality than either of the component parts in all but one country. For example, in Bolivia, ethnicity and place of residence each explain around 25% of total inequality – but the two taken together explain close to 40%. And in Malawi, ethnicity on its own explains 8% of between-group inequality and place of residence explains 14%, while their intersection explains 27%. The fact that in many of these countries the total contribution is significantly higher than either component (though less than the sum of both) hints that this combination can be particularly pernicious.

The importance of ethnicity intersected with place of residence differs by country – although, as noted earlier, this is partially a function of the different number of ethnic groups reported in each country. Figure 7 shows that inequalities between ethnic groups by place of residence explained 39% of total inequality in women's education in Bolivia in 2008, while in the Philippines it explained only 4% in 2008.

In five of the countries sampled, the share of intersecting inequalities between ethnicity and place of residence on education outcomes declined between the two rounds of surveys, while it increased in six countries – Burkina Faso, Guinea, Kenya, Malawi, Nepal and Peru (Figure 8). The magnitude of change between time periods is greater for this intersection than for the other two intersections we explore. Ethiopia saw the largest reduction in the importance of this intersecting inequality, while Kenya saw a very large increase (Box 1, overleaf).

4.2 Wealth quintile and place of residence

In all of the countries sampled, women in rural areas have fewer years of education than the national average, and those who are asset poor in rural areas have even less education. This finding aligns with what we know about challenges to the delivery of basic services in rural areas and shows that while urban poverty is rising, rural areas continue to experience the highest rates of poverty (Wild et al., 2012).

The share of inequality associated with wealth and place of residence is in most cases only marginally higher than that of wealth taken alone. As noted in the previous section, place of residence and wealth groups tend to be highly correlated, and this finding reinforces that relationship. The share of inequality associated with place

Box 1: Ethnicity and place of residence, a comparison between Kenya and Ethiopia

The share of inequality explained by the joint effect of ethnicity and place of residence in Kenya increased by nine percentage points in 10 years. This stark increase is worth highlighting as it is a clear case in which a few groups did not share in a country's overall progress on education: average schooling for women has reached 7.9 years. Those groups at the greatest disadvantage in 1998 - rural Mijikenda/Swahili with 3.9 years of education and rural Massai with 4.7 years - also experienced the smallest increases in years of education over the 10year period. While most other ethnic groups in rural and urban areas reported more than 1 additional year of education, the Massai (only represented in rural areas) reported only 0.4 additional years of education in 2008/09 and Mijikenda/Swahili actually reported slightly less education than in 1998. As relatively advantaged women attained additional years of schooling at a faster rate than more disadvantaged women, inequalities in women's education widened considerably.

In Ethiopia, on the other hand, the intersection of ethnicity and place of residence explains 37% of total inequality in 2000, declining to 25% in 2011. Ethiopia's achievement of greater equity in access to schooling is an important aspect of its impressive absolute gains in education. Among the groups that have begun closing the gap with the national average are urban Somali and rural Guragie women, who reported 2.6 and 2.3 years of schooling in 2011 respectively, compared to 0.5 and 0.6 years of school in 2000 (see Figure 12, page 24).

If we take a closer look at a disaggregated snapshot of women's education in Ethiopia (Figure 9), the importance of intersections becomes clear. At first glance, just looking at rural and urban levels of education, we might conclude that rural women are at a disadvantage. However, by intersecting place of residence with ethnicity we see that there is considerable variation between ethnicities within urban and rural areas. For example, the average number of years of education in urban areas in Ethiopia was 3.8 in 2000. However, this higher average relative to rural areas was largely attributable to higher group averages among some ethnicities (e.g. Amhara, Guragie and Oromo group averages of 4-5 years), whereas other ethnic groups in urban areas maintained far lower average years of schooling (e.g. the Somali group average of 0.5 years and Afar average of 1.8 years).

of residence ranges from around 10% (Zimbabwe) to 25% (Bolivia), while the share associated with wealth and with the intersection of the two characteristics ranges from around 20% (again, Zimbabwe) to 40% (again, Bolivia).





Wealth and place of residence help to explain inequalities in women's years of education in all of the countries we observe. All show some degree of inequality based on this intersection of group characteristics, ranging from 20% to over 40% total inequality. The highest levels of this intersecting inequality are found in Bolivia (43% of total inequality), Peru (37%) and Zambia (33%) in the latest period of surveys (2006-2011). At the lower end of the spectrum, inequalities between wealth quintiles in urban and rural areas explained around 20% of total inequality in Nepal, Mali and Zimbabwe (Figure 10, overleaf).

In nine countries – Bolivia, Burkina Faso, Ghana, Guinea, Kenya, Malawi, Nepal, Peru, and Uganda – inequalities between groups defined by wealth quintile and place of residence increased over time; in two – Ethiopia (Box 2, overleaf) and Mali – they decreased; and in the remaining five, there was no statistically significant change (Figure 11, overleaf). This suggests a very mixed picture: in just two countries, the poorest quintile of rural women is catching the others in terms of years of education, while in other countries, the gap is either stagnating or widening.

4.3 Ethnicity and wealth quintile

An important marker of exclusion in the majority of countries we study is the combined effect of being both asset poor and from a disadvantaged ethnicity. Ethnicity Figure 9: Women's years of education in Ethiopia





Figure 10: Proportion of education inequality explained by wealth quintile, place of residence and their intersection, latest year available

Note: The figure represents the results of separate decompositions of inequality for ethnic groups, place of residence and the intersections of ethnic group with place of residence.

explains a relatively small share of inequality in years of education throughout our sample – from just 1% in Mali to about 25% in Bolivia. Asset quintile explains rather more – between 20% (Zimbabwe) and 40% (Bolivia). For the majority of countries, differences between the intersection of ethnic groups and wealth groups explain a large amount of variation in years of education: from 21% in Zimbabwe to 48% in Bolivia (Figure 13, page 25), and this impact has either increased or remained unchanged in most cases (Figure 14, page 25).¹²

Although comparison between countries for this intersection is not straightforward as the number of categories varies greatly between countries, we see the highest inequalities for Bolivia and Peru, despite the fact that the number of categories for these countries is relatively smaller than for others (five and six respectively). It appears, therefore, that the impact of this intersecting inequality can be significant even if the number of categories is small.

As with the intersection of wealth and place of residence, wealth appears to be the major contributing factor in most countries, though the effect of its intersection with ethnicity remains sizeable. Furthermore, in some countries there is a strong correlation between ethnicity and wealth groups, as was shown to be the case in both Bolivia and Peru (Figures 5 and 6, page 17).

It is noteworthy that the proportion of inequality explained by this intersection appears to have changed less than for the other two intersections. Only eight countries from our sample of 16 experienced any significant change at all, whereas 11 countries experienced significant changes for the other two intersections. Also, of the three countries that experienced a decline in inequality explained by this intersection, two experienced a decline of less than three percentage points (still statistically significant, but very small). For the intersection of wealth and place of residence, both countries experiencing declines were larger than three percentage points; for the intersection of place of residence and ethnicity, three of the five countries experienced a decline greater than three percentage points. This evidence suggests that some of the most entrenched inequalities appear to be at the intersection of ethnicity and wealth.

Furthermore, this intersection exposes some of the lowest years of education among certain groups within countries. In Ghana, for example, the poor identifying as Mole-Dagbani in 1998 reported as little as 19% of the national average years of schooling compared to the poor among the Akan people (who completed the same average number of years of schooling as the national average). Furthermore,

¹² Given that this intersection has more potential groups than the other two intersections, we would expect to see the highest inequalities here. As a result, we cannot compare the magnitude of inequality between intersections.



Figure 11: Change in inequality in women's education by wealth quintile and place of residence

Note: Only countries where this change was statistically significant are presented.

Mole-Dagbani women in the richest quintile also reported the average number of years of schooling. This example shows that ethnicity and income group taken individually do not provide a complete explanation of exclusion from education. In most countries, the intersection of ethnicity and wealth pinpoints exclusion more precisely.

4.4 Overall trends in education

We also see significant differences in how countries are ranked according to each intersection. For example, while Kenya is 12th out of 16 countries ranked by inequalities between wealth quintiles and place of residence (1st being the most unequal), it is 5th out of 16 countries ranked by inequalities between ethnic groups and place of residence. Conversely, the Philippines stands at 9th place on inequalities between wealth quintiles and place of residence but is in 16th position on inequalities between ethnicity and place of residence

There is also no broad trend in terms of how these three types of intersecting inequalities have evolved over

Box 2: Inclusive progress in women's education in Ethiopia by place of residence and wealth quintile

Ethiopia has had tremendous success in increasing access to schooling while closing gaps across a number of groups' average years of schooling, particularly the gaps for those intersecting inequalities based on the urban-rural and wealth divide. Results show that the average number of years of women's schooling in Ethiopia increased from 1.1 to 2.9 between 2000 and 2011. Although still low by international standards, the change is impressive, given that only the richest quintile reported an average of more than one year of schooling in 2000, whereas in 2011 all wealth groups across rural and urban areas reported at least one year of schooling on average (Figure 12).

time in relation to one another in these 16 countries. For each intersection, there is a near split between the number of countries in which inequality fell and those in which it increased. There were also some cases where the impact of an intersection did not change significantly (only those intersections denoted by an asterisk in Table 1, Annex 1, were statistically significant). In some countries, changes in intersecting inequalities took place across two or three intersecting inequalities; in others, the pattern was not consistent. There are, however, some standout cases:

Inclusive progress:

- The largest decline in intersecting inequality in any country was seen in Ethiopia, where the contribution of ethnicity and place of residence to inequality in women's years of education fell by 10 percentage points averaged over 10 years.
- In Ethiopia and Mali, the contribution of all three group intersections to inequality of women's years of education declined.
- The Philippines also experienced declines for two group intersections.

Unequal progress:

- The largest increase in intersecting inequality in any country we explore was in Kenya, where the contribution of ethnicity and place of residence to years of women's education increased by 11 points.
- Guinea, Kenya, Nepal and Peru experienced an increase in the inequality explained by all three intersections (wealth, ethnicity and place of residence).
- Burkina Faso, Malawi, and Uganda experienced increases for at least two group intersections.

Figure 12: Women's years of education by wealth quintile and place of residence, Ethiopia, 2000 to 2011







Note: The figure represents the results of separate decompositions of inequality for ethnic groups, place of residence and the intersections of ethnic group with place of residence.



Figure 14: Change in inequality in women's education by wealth quintile and ethnicity

5. Inclusive progress in health

Concentrations of child deaths at the household level tend to be distributed fairly evenly between groups, more so than differences in years of education between groups. There have also been fewer statistically significant changes over time in the proportion of inequality explained by differences between groups facing overlapping disadvantages, though there have been noteworthy reductions for particular intersections, some of which are highlighted below. Indeed, inequalities are most pronounced *within* groups.

That being said, the analysis of group-based intersecting inequalities yields some important insights. In some countries, intersecting inequalities in health do, in fact, explain a sizeable proportion of total inequality. As a result, and even with such an extreme indicator, the disaggregation by group characteristics enables a better understanding of the nature of exclusion from the health sector.

5.1 Ethnicity and place of residence

The intersection of place of residence and ethnicity explained the largest proportion of inequality in Bolivia (5%), Kenya (4%) and Niger (4%) in the latest surveys (see Figure 15). Ethiopia was the only country that saw a significant change between the two time periods, with a decline from 2.7% in 2000 to 1.3% in 2011. Kenya, one of the countries where this intersection was most pronounced, saw notably lower proportions of child deaths among rural Luo households between 1998 and 2008/09 (see Box 3).

5.2 Wealth quintile and place of residence

In Bolivia, the intersection of place of residence and wealth quintile explained 4% of total inequality in the proportion of child deaths within households in the latest round of surveys (Figure 17, overleaf). Rural households in the lowest wealth quintile experienced twice the share of child deaths as the national average in 2008, while poor urban



Figure 15: Proportion of health inequality explained by ethnicity, place of residence and their intersection, latest year available

Note: The figure represents the results of separate decompositions of inequality for ethnic groups, place of residence and the intersections of ethnic group with place of residence.

Box 3: Inclusive progress in reducing child deaths in Kenya, the example of rural Luo people

Rural Luo households in Kenya, which experienced a staggering household child death rate of three times the national average at the time of the 1998 Demographic and Health Survey, also experienced the largest decline in child deaths across all ethnic groups (Figure 16). It may be that some rural households that continued to be affected by life-threatening health challenges moved to urban areas (the rate of child deaths increased for urban Luo households). However, even accounting for this trend, there remains a clear decline in child deaths among rural Luo households. Given that this group was so extremely afflicted by high rates of child deaths only 10 years earlier, this does appear to be a positive example of inclusive progress in health.



Figure 16: Change in share of child deaths in Kenya by ethnicity and place of residence, 1998-2008

households experienced slightly more than the national average. In Guinea, urban residents in the richest quintile experienced half the national average of child deaths, while rural residents in the poorest quintile experienced 20% more child deaths than the national average. No country saw a significant change in inequality between the two time periods.

5.3 Ethnicity and wealth quintile

The intersection of ethnicity and wealth group was also significant in a number of countries. In Kenya it accounted for 6% of total inequality in the proportion of child deaths within the household in the latest survey round, followed by 5% in Bolivia (Figure 18, overleaf). Benin and Burkina Faso were the only two countries to see a significant change in inequality for this intersection, with a decline from 9.1% to 3.8% in Benin between 1996 and 2006 and a decline from 6.1% to 3.7% in Burkina Faso between 1993 and 2010. And while overall change in inequality of child deaths in other countries was not statistically significant, notable reductions in child deaths were reported among particular intersections of groups. For example, in Ghana among the Mole-Dagbani households in the poorest wealth quintile, the share of child deaths fell from 1.7 times the national average in 1998 to 1.4 by 2008. Likewise, the share of child deaths among the near-poorest¹³ Grussi – which was exceptionally high in 1998 (one in five children per household) – fell from just over two times the national average to slightly below that average by 2008.

13 There were too few Grussi respondents in the poorest quintile, so the second quintile was used.



Figure 17: Proportion of health inequality explained by wealth quintile, place of residence and their intersection, latest year available

Note: The figure represents the results of separate decompositions of inequality for ethnic groups, place of residence and the intersections of ethnic group with place of residence.



Figure 18: Proportion of health inequality explained by ethnicity, wealth quintile and their intersection, latest year available

Note: The figure represents the results of separate decompositions of inequality for ethnic groups, place of residence and the intersections of ethnic group with place of residence.

6. The effect of experiencing overlapping disadvantages

To give some illustration of how group identities individually and jointly condition outcomes, we also compare education outcomes for different group intersections in three countries using a logit regression and show the marginal effect of being in the most disadvantaged group versus other groups in the population.¹⁴ Using as the dependent variable the probability of completing at least a primary school education, we examine the effects of group intersections on education, controlling for age of the woman – so we are looking at partial correlations rather than a fully specified regression model. This analysis aims to give some cursory insights into the association between group characteristics taken singly and their interaction in predicting human development outcomes in certain contexts.

First, we analyse whether each group characteristic exerts an individual effect upon the years of education a woman is expected to attain.¹⁵ Then we establish whether there is an additional burden of belonging to the most disadvantaged group intersection.¹⁶ We look at the examples of Ethiopia, Ghana and the Philippines to capture diversity in terms of geography and inequality. Ethiopia and Ghana have relatively high levels of group-based inequality, while the Philippines has relatively low levels. These countries also represent three different marginalised intersections: in Ethiopia the most marginalised group is at the intersection of place of residence and ethnicity, in Ghana the most marginalised intersection is found between ethnicity and wealth group, and in the Philippines it is the intersect of wealth group and place of residence. Full regression results and marginal effects can be found in Annex 3.

There are clear additive effects of belonging to two disadvantaged groups. In Ethiopia, for example, a rural Somali woman between the ages of 15 and 49 had a 15% probability of having completed primary school or above in 2011. The average probability of completing primary school among Somali women in urban areas was 38%, similar to the average among rural women from all other ethnic groups (43%) and much lower than the average among urban women from all other ethnic groups (77%). In Ghana, the poorest Gruma women had a 23% probability of completing primary education or above in 2008 compared to 54% among the poorest women from other ethnic groups, 68% among non-poorest Gruma, and 85% among non-poorest women from other ethnic groups. In the Philippines, where inequality in women's education is much lower, there is still a sizeable additive effect, with a gap of 7% between the poorest rural residents and the richest urban residents.

Logit regressions on women's completion of primary education show significant results for the interaction terms of group identities, suggesting that there is an independent effect of each group intersection above the effects of each individual group characteristic. The results in Annex 3 show particularly large and significant differences in education outcomes for those groups facing multiple forms of disadvantage in Ethiopia and Ghana. In the Philippines the effect is smaller but still statistically significant.

¹⁴ Health outcomes were not assessed given the small size of the effect found using child deaths as an approximation for health.

¹⁵ We examine the predictive margins associated with each group characteristic.

¹⁶ We examine the significance of the interaction term from the predictive margins of the regression.

7. Conclusions and policy recommendations



This study has shown that in some countries, groups of people who face overlapping disadvantages have been 'left behind' by the remarkable gains that have been made in human development over the past 20 years. The analysis has demonstrated, first, that these groups can be identified from household-level data and, second, that highly aggregated averages can be misleading in concealing underlying group-based inequalities.

One conclusion of this study, therefore, is that tracking the outcomes of excluded groups is both possible and necessary to ensure that future progress in human development is wholly inclusive. Although the general entropy (GE) approach may not be the simplest measure to translate to policy-makers, evaluators or indeed citizens, it is a useful metric to show the share of inequality associated with different group characteristics both singularly and in combination and to illustrate the changes experienced by people who share these characteristics. No country in this analysis was immune to intersecting inequalities in health and education, and it seems certain that further analysis of different elements of human development and different group-based characteristics would highlight additional exclusions. The GE measure of inequality acts as a magnifying glass in tracking progress; it allows policy-makers to observe how policies affect different groups of people who face very distinct forms of exclusion.

The results reinforce the notion that context matters, as different intersections are experienced in different ways from country to country. Context is crucial, for example, when looking at the impact of inequalities associated with ethnicity. In Latin America, there are clearly differentiated outcomes between Spanish speakers and indigenous groups as shown by the findings from Bolivia and Peru on women's education, while in countries like the Philippines these intersections appear to have less of an impact on education outcomes. However, despite each country's unique political, economic and historical circumstances, we see that the intersection of ethnic marginalisation with other characteristics remains an issue across the countries studied. Ethnicity, as it intersects with place of residence or wealth group, has an impact on health and education outcomes across all countries in our sample, which are drawn from several regions and income groups. This is significant not least because it points to the need to address politically sensitive drivers of change such as social discrimination. The intersection of ethnicity and wealth group has been shown by this analysis to be the most entrenched intersection, as it has changed the least over time.

Patterns of change across these contexts are also mixed. Two of the countries we studied – Ethiopia and Mali – have experienced reductions in inequality in women's education across all the intersections on which we focus. A recent Overseas Development Institute report (Paz Arauco et al., 2014) reviewed the factors that have contributed to this progress in Ethiopia, but further research is needed to understand the complex process of tackling intersecting inequalities in different contexts. On the other hand, countries such as Guinea, Kenya, Nepal and Peru have demonstrated more unequal progress over the past 20 years according to our analysis. Further attention must be paid to countries where there are still serious challenges in addressing the extreme marginalisation of certain groups.

Exclusionary social norms can be perpetuated in health and education systems in a variety of ways, such as through language of instruction and curriculum in schools or the practice of child marriage, which is shown to have detrimental effects on child and maternal health and nutrition (Shepherd et al., 2014). These issues are compounded when intersected with other disadvantages, such as the asset poverty that leaves households unable to pay school fees or dowries, or living in remote or marginal areas (e.g. informal urban settlements), which limits access to services. The combination of these factors keeps households trapped in chronic poverty, and this poverty can transfer across generations when children are not provided with the means to develop their own capabilities through education and good health. While universal approaches may be necessary to promote equality (e.g. to empower all girls and women and to ensure universal access to services for all), the results of this study reinforce the need to target particularly disadvantaged groups, particularly those facing multiple disadvantages. Targeted interventions to address overlapping disadvantages faced by socially excluded groups could include anti-discrimination laws or programmes applying positive discrimination; social protection and cash-transfer programmes; investments in infrastructure in vulnerable areas; promoting access to decent work; land reforms where existing institutions exclude certain disadvantaged groups; and promoting the rights of marginalised groups to make their voices heard (Kabeer, 2010).

Such approaches to inclusive development have been tried and tested in a number of contexts. Brazil's *Bolsa Familia* and *Fome Zero* programmes are well known examples of comprehensive national programmes that aim to 'include the excluded'. Ethiopia's 'ethnic federalist' system is an example of a political settlement with ethnicity at its core and where a commitment to reduce inequality between ethnic groups is high on the political agenda.

A great deal of research attention has been devoted to vertical and, increasingly, horizontal inequalities. Less studied has been the extent to which inequalities between ethnic groups, intersected with other group characteristics or in their own right, have been linked to human development over the past two decades. This study has found that ethnicity is associated with important differences between groups and that poorer groups within certain ethnicities continue to be at the greatest disadvantage.

The evidence we present highlights the need to prioritise policy actions aimed at groups experiencing overlapping disadvantages. Better data on the circumstances of particular (sometimes small) groups will be a necessary input. The incipient adoption of the SDGs offers a pivotal opportunity to bring group-based inequalities, and the associated data requirements, into relief at an international level. The MDGs were, for the most part, set at a highly aggregate level. It is absolutely crucial that the new set of ambitions are monitored at a more disaggregated level, with success defined by improvements across all groups.

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Annex 1: Calculation of general entropy (GE)

General entropy (GE) is calculated by:

$$GE(\alpha) = \frac{1}{\alpha^2 - \alpha} \left[\frac{1}{n} \sum_{i=1}^n \left(\frac{y_i}{\bar{y}} \right)^\alpha - 1 \right]$$

where n is the number of individuals in the sample, y_i is the income/human development outcome of individual $i, i \in (1, 2, ..., n)$, and $\bar{y} = (\frac{1}{n}) \sum y_i$ is the arithmetic mean income/human development outcome. The parameter α represents the weight given to distances between outcomes at different parts of the distribution and can take any real value. For lower values of α , GE is more sensitive to changes in the lower tail of the distribution, and for higher values of α , GE is more sensitive to changes in the upper tail (Litchfield, 1999).

The most commonly applied α values are α =0 (mean log deviation) and α =1 (Theil index). However, this study sets α =2 (half the coefficient of variation) to accentuate differences in the upper end of the distribution in order to compensate for the high number of zero values in the lower end.

Annex 2: Summary inequality estimates

Annex table 1: Education inequality estimates

	Intersection	Total GE (T1)	Total GE (T2)	GE Between - group (T1)	GE Between -group (T2)	Between- group prop (T1)	Between- group prop (T2)	BG confidence intervals (T1)	BG confidence intervals (T2)
Benin	Ethnicity/Place of residence	0.5569	0.5354	0.0981	0.0962	0.1762	0.1798	0.0857 0.1111	0.0856 0.1056
	Place of residence /Wealth group	0.5581	0.5323	0.1604	0.1553	0.2874	0.2918	0.1432 0.1778	0.1433 0.1670
	Ethnicity/ Wealth group	0.5569	0.5354	0.1765	0.1605	0.3169	0.2997	0.1602 0.1982	0.1437 0.1661
Bolivia	Ethnicity/Place of residence	0.1392	0.0704	0.0315	0.0273	0.2266	0.3874	0.0285 0.0345	0.0254 0.0290
	Place of residence /Wealth group	0.1392	0.0704	0.0480	0.0300	0.3452	0.4266	0.0441 0.0519	0.0296 0.0332
	Ethnicity/ Wealth group	0.1392	0.0704	0.0493	0.0336	0.3544	0.4770	0.0457 0.0541	0.0321 0.0362
Burkina Faso	Ethnicity/Place of residence	0.8406	0.6993	0.1440	0.1793	0.1714	0.2564	0.1308 0.1627	0.1645 0.1987
	Place of residence /Wealth group	0.8409	0.6992	0.1642	0.2105	0.1953	0.3010	0.1509 0.1810	0.1998 0.2388
	Ethnicity/ Wealth group	0.8406	0.6993	0.1879	0.2013	0.2236	0.2879	0.1764 0.2081	0.1856 0.2172
Ethiopia	Ethnicity/Place of residence	0.7388	0.1599	0.2715	0.0405	0.3675	0.2533	0.2438 0.2987	0.0389 0.0527
	Place of residence /Wealth group	0.6931	0.1576	0.2230	0.0462	0.3218	0.2931	0.2118 0.2496	0.0389 0.0522
	Ethnicity/ Wealth group	0.7388	0.1599	0.2477	0.0471	0.3353	0.2946	0.2283 0.2743	0.0431 0.0559
Ghana	Ethnicity/Place of residence	0.2099	0.1609	0.0406	0.0420	0.1935	0.2612	0.0319 0.0452	0.0383 0.0504
	Place of residence /Wealth group	0.2539	0.1611	0.0619	0.0472	0.2436	0.2932	0.0501 0.0689	0.0400 0.0531
	Ethnicity/ Wealth group	0.2099	0.1609	0.0634	0.0575	0.3020	0.3572	0.0515 0.0689	0.0542 0.0675
Guinea	Ethnicity/Place of residence	1.8509	0.4854	0.3287	0.1019	0.1776	0.2099	0.2621 0.3613	0.0875 0.1132
	Place of residence /Wealth group	1.8198	0.4854	0.4408	0.1214	0.2422	0.2502	0.4089 0.5145	0.1074 0.1397
	Ethnicity/ Wealth group	1.8509	0.4854	0.4573	0.1270	0.2471	0.2617	0.4281 0.5307	0.1188 0.1524
Kenya	Ethnicity/Place of residence	0.0904	0.1031	0.0118	0.0262	0.1304	0.2545	0.0112 0.0162	0.0210 0.0290
	Place of residence /Wealth group	0.0934	0.1031	0.0187	0.0260	0.2006	0.2525	0.0163 0.0221	0.0239 0.0315
	Ethnicity/ Wealth group	0.0904	0.1031	0.0218	0.0349	0.2414	0.3385	0.0195 0.0260	0.0309 0.0394

Annex table 1:	: Education	inequality	estimates /	(continued)
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	Intersection	Total GE (T1)	Total GE (T2)	GE Between - group (T1)	GE Between -group (T2)	Between- group prop (T1)	Between- group prop (T2)	BG confidence intervals (T1)	BG confidence intervals (T2)
Malawi	Ethnicity/Place of residence	0.2009	0.1299	0.0396	0.0323	0.1971	0.2488	0.0355 0.0469	0.0302 0.0354
	Place of residence /Wealth group	0.2009	0.1306	0.0436	0.0347	0.2169	0.2656	0.0378 0.0493	0.0307 0.0371
	Ethnicity/ Wealth group	0.2009	0.1299	0.0541	0.0468	0.2691	0.3605	0.0500 0.0599	0.0451 0.0506
Mali	Ethnicity/Place of residence	1.6909	1.0892	0.3068	0.1715	0.1815	0.1575	0.2836 0.3607	0.1495 0.1999
	Place of residence /Wealth group	1.6922	1.0871	0.3908	0.2171	0.2309	0.1997	0.3468 0.4425	0.1818 0.2486
	Ethnicity/ Wealth group	1.6909	1.0892	0.3787	0.2313	0.2240	0.2124	0.3468 0.4469	0.1936 0.2582
Nepal	Ethnicity/Place of residence	0.8206	0.1869	0.1685	0.0439	0.2053	0.2349	0.1404 0.2046	0.0400 0.0545
	Place of residence /Wealth group	0.8965	0.2112	0.1959	0.0468	0.2186	0.2218	0.1681 0.2317	0.0414 0.0558
	Ethnicity/ Wealth group	0.8206	0.1869	0.2076	0.0621	0.2530	0.3324	0.1849 0.2500	0.0536 0.0699
Niger	Ethnicity/Place of residence	1.4913	1.6501	0.3445	0.4009	0.2310	0.2429	0.3013 0.3973	0.3408 0.4539
	Place of residence /Wealth group	1.4918	1.6504	0.3483	0.4202	0.2335	0.2546	0.3071 0.4016	0.3586 0.4670
	Ethnicity/ Wealth group	1.4913	1.6501	0.3450	0.3724	0.2313	0.2257	0.3145 0.4134	0.3371 0.4356
Peru	Ethnicity/Place of residence	0.1162	0.0775	0.0286	0.0201	0.2463	0.2597	0.0268 0.0306	0.0191 0.0221
	Place of residence /Wealth group	0.1162	0.0775	0.0415	0.0291	0.3570	0.3749	0.0394 0.0437	0.0262 0.0297
	Ethnicity/ Wealth group	0.1162	0.0775	0.0432	0.0307	0.3714	0.3957	0.0409 0.0456	0.0299 0.0336
Philippines	Ethnicity/Place of residence	0.0632	0.0521	0.0078	0.0023	0.1241	0.0443	0.0067 0.0089	0.0017 0.0030
	Place of residence /Wealth group	0.0632	0.0610	0.0171	0.0172	0.2706	0.2813	0.0157 0.0188	0.0160 0.0187
	Ethnicity/ Wealth group	0.0632	0.0521	0.0183	0.0135	0.2902	0.2584	0.0171 0.0202	0.0118 0.0141
Uganda	Ethnicity/Place of residence	0.2611	0.1468	0.0600	0.0334	0.2296	0.2277	0.0523 0.0719	0.0308 0.0404
	Place of residence /Wealth group	0.2596	0.1465	0.0632	0.0430	0.2436	0.2937	0.0542 0.0728	0.0385 0.0482
	Ethnicity/ Wealth group	0.2611	0.1468	0.0817	0.0493	0.3129	0.3357	0.0771 0.0978	0.0456 0.0563

	Intersection	Total GE (T1)	Total GE (T2)	GE Between - group (T1)	GE Between -group (T2)	Between- group prop (T1)	Between- group prop (T2)	BG confidence intervals (T1)	BG confidence intervals (T2)
Zambia	Ethnicity/Place of residence	0.1633	0.1290	0.0373	0.0328	0.2286	0.2541	0.0343 0.0453	0.0280 0.0363
	Place of residence /Wealth group	0.1673	0.1305	0.0472	0.0425	0.2821	0.3258	0.0419 0.0528	0.0405 0.0497
	Ethnicity/ Wealth group	0.1633	0.1290	0.0545	0.0474	0.3334	0.3673	0.0535 0.0648	0.0433 0.0539
Zimbabwe	Ethnicity/Place of residence	0.0573	0.0456	0.0099	0.0056	0.1728	0.1221	0.0083 0.0119	0.0043 0.0063
	Place of residence /Wealth group	0.0573	0.0455	0.0114	0.0090	0.1997	0.1968	0.0098 0.0135	0.0075 0.0100
	Ethnicity/ Wealth group	0.0573	0.0456	0.0124	0.0095	0.2171	0.2074	0.0105 0.0146	0.0081 0.0106

Annex table 2: Health inequality estimates

	Intersection	Total GE (T1)	Total GE (T2)	GE Between -group (T1)	GE Between -group (T2)	Between- group proportion (T1)	Between- group proportion (T2)	BG confidence intervals (T1)	BG confidence intervals (T2)
Benin	Ethnicity/Place of residence	0.2985	0.3670	0.0135	0.0112	0.0454	0.0304	0.0111 0.0186	0.0092 0.0153
	Place of residence /Wealth group	0.2988	0.3667	0.0136	0.0091	0.0455	0.0248	0.0101 0.0192	0.0066 0.0116
	Ethnicity/ Wealth group	0.2985	0.3670	0.0272	0.0141	0.0910	0.0384	0.0238 0.0362	0.0110 0.0174
Bolivia	Ethnicity/Place of residence	0.5853	0.6069	0.0192	0.0285	0.0329	0.0469	0.0140 0.0272	0.0194 0.0373
	Place of residence /Wealth group	0.5853	0.6069	0.0283	0.0265	0.0483	0.0436	0.0237 0.0362	0.0216 0.0348
	Ethnicity/ Wealth group	0.5853	0.6069	0.0307	0.0330	0.0525	0.0544	0.0256 0.0416	0.0241 0.0413
Burkina Faso	Ethnicity/Place of residence	0.28547	0.31463	0.00914	0.00918	0.0320126	0.02917216	0.0078 0.0133	0.0080 0.0128
	Place of residence /Wealth group	0.28772	0.31453	0.00644	0.00764	0.02238	0.02428	0.0050 0.0095	0.0059 0.0104
	Ethnicity/ Wealth group	0.28547	0.31463	0.01728	0.01161	0.06054654	0.03688819	0.0159 0.0279	0.0089 0.0152
Ethiopia	Ethnicity/Place of residence	0.28828	0.23522	0.00774	0.00295	0.02685105	0.01255915	0.0065 0.0122	0.0020 0.0060
	Place of residence /Wealth group	0.27815	0.23394	0.00525	0.00420	0.01886231	0.01796386	0.0040 0.0071	0.0039 0.0083
	Ethnicity/ Wealth group	0.28828	0.23522	0.01075	0.00504	0.03727732	0.02142557	0.0055 0.0129	0.0027 0.0091
Ghana	Ethnicity/Place of residence	0.51280	0.76820	0.00948	0.01312	0.01848544	0.01707332	0.0049 0.0181	0.0060 0.0279
	Place of residence /Wealth group	0.51052	0.76791	0.00974	0.01275	0.01909	0.01660	0.0093 0.0190	0.0036 0.0263
	Ethnicity/ Wealth group	0.51280	0.76820	0.01709	0.02138	0.03332394	0.02783294	0.0093 0.0293	0.0124 0.0448
Guinea	Ethnicity/Place of residence	0.25931	0.36013	0.00698	0.01143	0.02692165	0.03173262	0.0042 0.0095	0.0089 0.01701
	Place of residence /Wealth group	0.25985	0.36013	0.00687	0.01197	0.02643028	0.03323514	0.0047 0.0100	0.0078 0.0156
	Ethnicity/ Wealth group	0.25931	0.36013	0.00971	0.01533	0.03743322	0.04257481	0.0057 0.0128	0.0107 0.0200
Kenya	Ethnicity/Place of residence	0.70896	0.79360	0.05930	0.03520	0.08364973	0.04435398	0.0340 0.0706	0.0030 0.0638
	Place of residence /Wealth group	0.70881	0.79366	0.01911	0.01090	0.02695951	0.01373076	0.0135 0.0284	0.0036 0.0223
	Ethnicity/ Wealth group	0.70896	0.79360	0.07000	0.04492	0.09873927	0.05659946	0.0600 0.1004	0.0198 0.0793

Annex table	2: Health i	nequality	estimates ((continued))

	Intersection	Total GE (T1)	Total GE (T2)	GE Between -group (T1)	GE Between -group (T2)	Between- group proportion (T1)	Between- group proportion (T2)	BG confidence intervals (T1)	BG confidence intervals (T2)
Malawi	Ethnicity/Place of residence	0.26221	0.28407	0.00349	0.00199	0.01333	0.00699	0.0030 0.0060	0.0010 0.0032
	Place of residence /Wealth group	0.26228	0.28491	0.00307	0.00210	0.01171948	0.00736108	0.0019 0.0049	0.0013 0.0040
	Ethnicity/ Wealth group	0.26221	0.28407	0.00489	0.00403	0.01864325	0.01417956	0.0050 0.0093	0.0028 0.0071
Mali	Ethnicity/Place of residence	0.21008	0.25292	0.00658	0.00638	0.03130359	0.02523235	0.0055 0.0096	0.0038 0.0091
	Place of residence /Wealth group	0.21022	0.25307	0.00794	0.00644	0.03777894	0.02544787	0.0063 0.0107	0.0045 0.0089
	Ethnicity/ Wealth group	0.21008	0.25292	0.00872	0.00871	0.0415312	0.03444085	0.0091 0.0136	0.0073 0.0134
Nepal	Ethnicity/Place of residence	0.33523	0.36480	0.00751	0.00759	0.02239926	0.02081259	0.0058 0.0128	0.0070 0.0145
	Place of residence /Wealth group	0.31621	0.37474	0.00687	0.00630	0.02173414	0.01681851	0.0049 0.0100	0.0040 0.0100
	Ethnicity/ Wealth group	0.33523	0.36480	0.01208	0.01254	0.03602633	0.03437992	0.0130 0.0236	0.0053 0.0200
Niger	Ethnicity/Place of residence	0.17601	0.20340	0.00889	0.00726	0.05050253	0.03571092	0.0073 0.0116	0.0044 0.0087
	Place of residence /Wealth group	0.17621	0.20340	0.00735	0.00673	0.04169468	0.0330927	0.0061 0.0094	0.0056 0.0091
	Ethnicity/ Wealth group	0.17601	0.20340	0.00916	0.00706	0.05201884	0.03469296	0.0084 0.0130	0.0043 0.0093
Peru	Ethnicity/Place of residence	0.60470	1.32290	0.02437	0.02736	0.04030185	0.02067918	0.0194 0.0308	0.0006 0.0436
	Place of residence /Wealth group	0.60465	1.32290	0.02728	0.03258	0.04511	0.02463	0.0228 0.0334	0.0213 0.0391
	Ethnicity/ Wealth group	0.60470	1.32290	0.03199	0.04105	0.05290	0.03103	0.0274 0.0378	0.0146 0.0785
Philippines	Ethnicity/Place of residence	0.79272	1.89759	0.01067	0.00878	0.01345837	0.00462637	0.0081 0.0179	0.0042 0.0220
	Place of residence /Wealth group	0.79272	1.83575	0.01891	0.02743	0.02385763	0.01494372	0.0134 0.0272	0.0201 0.0460
	Ethnicity/ Wealth group	0.79272	1.89759	0.02187	0.02270	0.02759356	0.01196415	0.0202 0.0347	0.0178 0.0470
Uganda	Ethnicity/Place of residence	0.36829	0.29349	0.00564	0.00479	0.01530643	0.01630727	0.0047 0.0130	0.0046 0.0105
	Place of residence /Wealth group	0.36494	0.29440	0.00338	0.00539	0.00926123	0.01829513	0.0021 0.0069	0.0025 0.0081
	Ethnicity/ Wealth group	0.36829	0.29349	0.01104	0.01136	0.02997179	0.03871608	0.0156 0.0283	0.0082 0.0214

\neg	Annex table	2: Health inec	uality estimates	(continued)
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	Intersection	Total GE (T1)	Total GE (T2)	GE Between -group (T1)	GE Between -group (T2)	Between- group proportion (T1)	Between- group proportion (T2)	BG confidence intervals (T1)	BG confidence intervals (T2)
Zambia	Ethnicity/Place of residence	0.42079	0.38746	0.01117	0.00692	0.02653862	0.01786007	0.0130 0.0234	0.0051 0.0174
	Place of residence /Wealth group	0.42378	0.38953	0.00725	0.00338	0.01711813	0.00868416	0.0052 0.0122	0.0001 0.0058
	Ethnicity/ Wealth group	0.42079	0.38746	0.02078	0.01348	0.04937	0.03478	0.0311 0.0445	0.0153 0.0323
Zimbabwe	Ethnicity/Place of residence	0.99773	1.10622	0.00741	0.00546	0.00742542	0.00493217	0.0046 0.0150	0.0017 0.0107
	Place of residence /Wealth group	0.99773	1.10610	0.01060	0.00739	0.01062833	0.00667984	0.0043 0.0398	-0.0031 0.0165
	Ethnicity/ Wealth group	0.99773	1.10622	0.00973	0.01153	0.00975	0.01042	0.0078 0.0305	0.0033 0.0292

Annex 3: Logistic regressions and marginal effects

Annex table 3: Logistic regression results on primary completion by group

Ghana		Ethiopia		Philippines	
	Coefficient		Coefficient		Coefficient
Gruma	-1.061***	Somali	-2.156***	Rural	-1.288***
	(0.241)		(0.339)		(0.353)
Poorest	-1.688***	Rural	-1.929***	Poorest	-3.117***
	(0.126)		(0.159)		(0.408)
Poorest Gruma	-0.373	Rural Somali	0.435	Rural Poorest	0.577
	(0.366)		(0.521)		(0.455)
Age	-0.004***	Age	-0.118***	Age	-0.060***
	(0.001)		(0.005)		(0.007)
Observations	4916		13621		13594
Prob > F	0.000		0.000		0.000

Note: The dependent variable is primary school completion coded so that completing primary school or higher =1 and not completing primary = 0.

***p < .001; standard error in parentheses

Annex table 4: Predictive margins on primary completion by group

Ghana		Ethiopia		Philippines	
	Margin		Margin		Margin
Poorest Gruma	0.227***	Rural Somali	0.146***	Rural poorest	0.927***
	(0.055)		(0.446)		(0.005)
Poorest others	0.537***	Urban Somali	0.382***	Rural non-poorest	0.994***
	(0.029)		(0.060)		(0.001)
Non-poorest Gruma	0.678***	Rural others	0.426***	Urban poorest	0.962***
	(0.050)		(0.015)		(0.010)
Non-poorest others	0.855***	Urban other	0.771***	Urban non-poorest	0.998***
	(0.007)		(0.019)		(0.001)

Note: The dependent variable is primary school completion coded so that completing primary school or higher =1 and not completing primary = 0.

***p < .001; standard error in parentheses

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