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# Social Exclusion

## Concepts, Measurement, and a Global Estimate

*Jose Cuesta*
*Borja López-Noval*
*Miguel Niño-Zarazúa*

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## Abstract

There are multiple estimates of global monetary and multidimensional poverty, but there are still no estimates of populations at risk of social exclusion worldwide. This paper fills this gap by estimating the share and number of populations at risk of exclusion globally and regionally. It develops a conceptual framework of social exclusion that builds on Sen's capability approach and emphasizes the relative, multidimensional, and dynamic features of exclusion. The paper also develops a macro counting measure of population groups that are particularly vulnerable to exclusion based on identity, circumstances, and socioeconomic conditions. The empirical strategy surveys the most reliable sources of vulnerable populations across countries and develops a protocol to avoid double-counting of individuals at risk of social exclusion. Overall, between 2.33 billion and 2.43 billion people—roughly 32 percent of the global population—are estimated to be at risk of being socially excluded. The South Asia and East Asia and Pacific regions contain 1.3 billion such people, with India and China alone home to 840 million of them. Meanwhile, 52 percent of Sub-Saharan Africa's population is vulnerable to exclusion, the greatest share of any region. The paper also discusses several implications of these estimates, emphasizing that policies targeting the poor might not be sufficient to tackle social exclusion.


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# Social Exclusion: Concepts, Measurement, and a Global Estimate

Jose Cuesta,[1] Borja López-Noval[2] and Miguel Niño-Zarazúa[3] [4]

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[1] Social Sustainability and Inclusion Global Practice, World Bank, Washington D.C., US
[2] Universidad de Cantabria, Spain
[3] Department of Economics, SOAS University of London, UK
[4] UNU-WIDER, Helsinki, Finland

## 1. Introduction

Global growth and the pace of poverty reduction had slowed even before the start of the COVID-19 pandemic (World Bank 2020). Global interpersonal inequality remains high despite two decades of reduction in between-country and (to a lesser extent) within-country inequalities (World Bank 2022a). COVID-19 has worsened these deep-rooted barriers from participating equally in society. Mahler et al (2021) estimate that COVID-19 has increased the number of extreme poor to 711 million in 2021 (up from 655 million in 2019) and nowcasts raise this number to at least 786 million in 2022 (World Bank 2022b). The pandemic has also increased both within-country and between-country income inequalities globally (World Bank 2022a). Both increases have been modest in the short term—by less than 0.5 percent points in the Gini index—, although consequences of those increases in income inequality may be greater over the longer term. Education has been severely disrupted globally, and disproportionately for children in low-income households. Azevedo (2020) and Azevedo et al (2021) estimate that the pandemic has disrupted more than 1.6 billion learners and it will increase the number of primary school age children either out of school, or below the minimum proficiency level in reading, from 382 million to 454 million worldwide. COVID-19 has not only increased inequalities in education but also in access to healthcare, and in other social dimensions, within and across countries and further excluded marginalized groups from policy processes. The poor, women, racialized minorities, and other disadvantaged groups have been disproportionately impacted by the pandemic (Henson et al 2020:1341). Roelen et al (2020) argue that the stigma associated with COVID-19 contributes to a vicious circle of poverty, precarity, and vulnerabilities associated with ethnicity and origin, age, and gender. For example, the COVID-19 mortality rate among Black Americans in the US was 2.4 times higher than among Whites in 2020, and three times higher among Indigenous peoples vs. non-Indigenous people in Mexico (APM Research Lab 2020, Secretaria de Salud de Mexico 2021). Reported cases of gender-based violence (GBV) have increased globally since the start of the pandemic: by 33 percent in Singapore, 30 percent in both Cyprus and France, and 25 percent in Argentina (CARE 2020).

Notwithstanding the mounting evidence around certain populations that are at risk of being socially excluded, there has been no systematic and comprehensive attempt to estimate their number before COVID-19 nor how they have increased during the pandemic. This contrasts with the numerous available global poverty estimates (9.1 percent of the global population lived under the US$1.90 IPL in 2017), global multidimensional poverty estimates (14.0 percent in 2017), and global child poverty estimates (17.5 percent in 2017 under US$1.90 IPL; see World Bank 2020 and Silwal et al 2020). World Bank (2021a) estimates that a further 97 million people fell into poverty as a result of the pandemic; a major increase in the number of those at risk at exclusion is similarly likely. Global estimates for specific populations at risk of being excluded do exist but are rarely frequent or systematic. For example, the United Nations High Commissioner for Refugees (UNHCR) and the World Health Organization (WHO) report annual numbers for forcibly displaced populations and victims of GBV, respectively (see below). However, global estimates of persons with disabilities are highly imprecise, while there are no such estimates of LGBTI people.

This paper fills this gap by estimating the share and number of populations at risk of social exclusion globally and regionally. To do so, we develop a conceptual framework of social exclusion that builds on Sen's (1983) capability approach, as well as an empirical strategy to estimate the shares of population at risk of social exclusion across countries through a macro counting measure. Our conceptual framework emphasizes the relative, multidimensional, and

dynamic features of exclusion, and identifies specific groups particularly vulnerable to exclusion based on identity, circumstances, and socioeconomic conditions. Our empirical strategy draws on the most credible sources estimating vulnerable population groups across countries and develops a protocol to minimize double-counting.

The estimation presents several technical challenges. Key among those challenges are the inability to observe social exclusion *directly* as opposed to being vulnerable or at risk of being excluded; differences in what constitutes a life of dignity across countries and over time; the fine line between identity and circumstance as drivers of exclusion; the changing salience of those drivers over time and across contexts; and the need to avoid double-counting groups' vulnerabilities to exclusion while acknowledging that such vulnerabilities may intersect and amplify the severity of exclusion, a key notion from a policy perspective. This paper addresses most of these challenges. In effect, we use a notion of relative poverty, societal poverty, that captures differences in dignified standards of living across countries. Our criteria to determine populations at risk of exclusion simultaneously include circumstances, identity and socioeconomics, so regardless their fluid nature, relevant criteria are all included. Finally, we develop a sequential protocol to correct for double counting across vulnerable population using the most reliable data available across countries and regions. Because we do not work with microdata, that is, data capturing the situation of individuals and their households, we cannot observe exclusion but, rather, we focus on people whose identities, circumstances or socioeconomics make them at a heightened risk of exclusion. Next sections detail how we address each of these challenges.

The remainder of the paper is structured as follows. Section 2 reviews the literature and presents our conceptual framework. Section 3 describes our methodological approach to estimating the size of populations at risk of exclusion. Section 4 discusses the sources of data used, while Section 5 presents the estimates of populations at risk of exclusion, both globally and regionally, and Section 6 concludes.

## 2. Conceptualising Social Exclusion

The concept of social exclusion and its multiple manifestations and drivers are the focus of a growing literature (Atkinson 1998; Sen 2000; Levitas 2006; Hoff and Walsh 2018). The United Nations (2016:18) defines social exclusion as "*a state in which individuals are unable to participate fully in economic, social, political and cultural life, as well as the process leading to and sustaining such a state*." World Bank (2013) highlights two features of exclusion, namely, being a process and preventing individuals and groups from participation in society. Barron et al (forthcoming) define exclusion as the opposite of inclusion, which is a state where everyone has access to basic services and markets as well as to political, social, and cultural spaces in order to participate in society with agency and live with dignity.

The deprivations that emerge from social exclusion vary widely. But social exclusion generally results from three overarching dimensions, as illustrated on the left-hand side of Figure 1. First, people are excluded because their *identities* diverge from established norms and customs. These identities can reflect gender, age, race, caste, and ethnic characteristics, or religious and political affiliations (Kabeer 2000; Loury 2000; Hooker 2005; Keaton 2006; Lightman and Gingrich 2013; Kuo, Malhotra, and Mo 2017). Second, people's *circumstances*, such as being forcibly displaced because of conflict or poverty, or being a victim of gender-based violence, can leave them at risk of exclusion, especially in contexts where discriminatory norms, laws,

and institutions exist (Barnes and Mercer 2005; Phillimore and Goodson 2006; Beirens et al. 2007; Hynes 2011; Hanafi, Chaaban, and Seyfert 2012; Damonti 2014; Ng 2020). Third, people in a *disadvantaged socioeconomic position* are subject to social exclusion because low educational attainment, unemployment, or poverty limit their opportunities to access labour, credit, and insurance markets or exercise their political rights (Dewilde 2003; Halleröd and Larsson 2008; Bhalla and Lapeyre 2016; Pohlan 2019).

The analysis and measurement of social exclusion is important because it enables us to better capture the large populations (as outlined later in Section 5) that are at risk of "*lower social standing, often accompanied by lower outcomes in terms of income, human capital endowments, access to employment and services, and voice in both national and local decision making*" (World Bank 2013:5). The European Union has included the concept of social exclusion in its social policy framework since the adoption of the 1999 Treaty of Amsterdam. Subsequent initiatives, including the 2000 Lisbon strategy for combating poverty, the 2008 recommendation on the inclusion of people excluded from the labour market, and the 2021 European Pillar of Social Rights Action Plan, all establish the reduction of the risk of poverty or social exclusion as a key policy objective (European Commission 2021).

Similarly, the World Bank (2021b:1) has issued a directive identifying groups that are at risk of being excluded: "*those individuals or groups who, by virtue of, for example, their age, gender, race, ethnicity, religion, physical, mental or other disability, social, civic or health status, sexual orientation, gender identity, economic disadvantages or indigenous status, and/or dependence on unique natural resources, may be more likely to be adversely affected by the project impacts and/or more limited than others in their ability to take advantage of a project's benefits… [or] to participate fully in the mainstream consultation process."*[5]

While there is no consensus on the dimensions that constitute the most acute forms of social exclusion (and that therefore should be included in global empirical analyses), there is a general agreement on its multidimensional and dynamic nature, and the relational processes by which groups are excluded. For example, Atkinson (1998) points to three elements that are central to the analysis of social exclusion: 1) the *relativity* of its conceptualization, 2) the *dynamics* underpinning the mechanisms of exclusion, and 3) the *agency* involved in the act of excluding others. Related to this last point, Levitas et al., (2007:9) underscore the *multi-dimensional* process of social exclusion: "*It involves the lack or denial of resources, rights, goods and services, and the inability to participate in the normal relationships and activities, available to the majority of people in a society, whether in economic, social, cultural or political arenas*."[6]

Furthermore, there are different actors at work in social exclusion. Economic forces related to globalization can exclude people, as can the nation state and its institutions, and even individuals. Understanding this multidimensionality of agency involves unpacking interactions between influences and outcomes at different levels—individual, family, community, national and global (Agulnik 2002). Relativity, agency, dynamism and multidimensionality combined

[5] This explicit identification of at-risk groups is not only relevant for conceptual and analytical purposes but also operationally. Following that Directive, all World Bank operations require the identification of groups or individuals affected by the project that may be disadvantaged or vulnerable. This is part of an assessment—within its Environmental and Social Framework—of project social risks and impacts, which also identifies appropriate mitigation measures specific for those groups identified by the Directive. The framework also establishes the need for consultations during project design and monitoring of obligations during implementation involving those disadvantaged or vulnerable individuals or groups.

[6] The relational, multidimensional, collective and dynamic features of social exclusion have been highlighted by Burchardt, Le Grand, and Piachaud, 2002; and Welshman, 2007, inter alia.

encompass, as seen in Figure 1, the dimensions, factors and agents of exclusion, and the domains of deprivations and ultimate consequences that result from these dynamics.

People are socially excluded in the context of relational interactions. For instance, people living in an affluent city may be excluded because of their identity or perceived position in that society, without being materially poor. In contrast, poverty is an absolute condition, a point Sen (1985:669) has persuasively emphasized: "*Poverty is not just a matter of being relatively poorer than others in the society, but of not having some basic opportunities of material wellbeing, the failure to have certain minimum "capabilities". The criteria of minimum capabilities are absolute, not in the sense that they must not vary from society to society, […] or over time […], but people's deprivations are judged absolutely and not simply in comparison with the deprivations of others in that society*". Furthermore, exclusion is relational in that it requires an excluding agent and someone who is excluded. This relational feature is not immediately evident in the case of poverty. Thus, the importance of social exclusion as a concept relates to its focus on *relational* identities, circumstances, and socioeconomic positions, which through the actions of others, lead to *relative* deprivations in social domains, which can ultimately manifest in stigma, segregation, joblessness, and poverty (Burchardt, *et al*., 2002; Steinert and Pilgram, 2003).

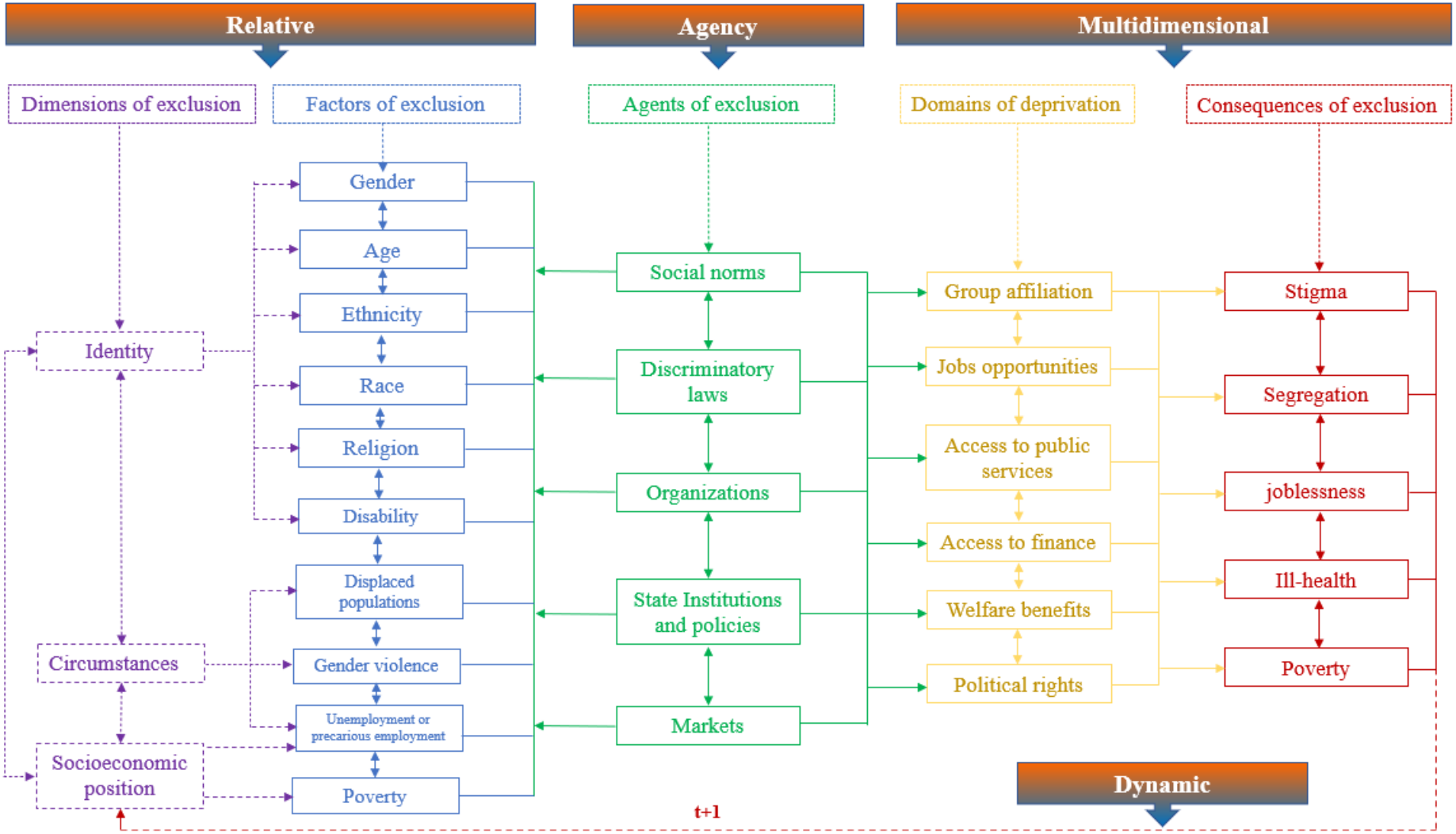
Being at risk of exclusion because of religious, ethnic or racial identity can be rooted in social norms that actively discriminate against people perceived as not belonging to a community (Kabeer 2000; Loury 2000; Hooker 2005). These norms can change over time and space (both at national and subnational levels). For example, sexual orientation in Classical antiquity was often morally irrelevant in a similar way to being right or left handed today (Badgett 2006). However, sexual orientation is today one of the strongest drivers of exclusion worldwide, while left-handedness was suppressed in many schools worldwide until just a few decades ago (Guber 2019; Roth 2005). Similarly, a study of social exclusion in Ireland in the 1970-80s would have had to include Catholic and Protestant affiliation but such a binary would have been almost completely non-salient in the US. Being an atheist in a theocratic society today is often a source of active social discrimination, whereas being generically a religious minority can be less so. In fact, being a religious minority at the national level does not always mean that one is excluded, especially where religion is morally irrelevant, or where that national minority happens to be a local majority – Christians in the Indian state of Kerala, for example.[7]

Similarly, refugees and displaced populations can be subject to a heightened risk of social exclusion due to discriminatory laws that *actively* deprive them of political rights or welfare benefits (Phillimore and Goodson, 2006; Beirens et al., 2007). Adverse economic conditions can also generate *passive* processes that cause long-term unemployment and exclusion. For example, in high-income countries, the rate of long-term unemployment is highly correlated with (relative) poverty rates and is a major source of social exclusion (Gallie, Paugam, and Jacobs, 2003; Kieselbach et al., 2013). In low- and middle-income countries, where long-term unemployment is generally low, it is the precariousness of informal employment that passively excludes people from social protection (Canelas and Niño-Zarazúa, forthcoming). The distinction between active and passive forms of exclusion highlighted by Sen (2000) is critical for our analysis. Understanding the roots of social exclusion is also essential when formulating policy responses.

[7] We thank Michael Woolcock for pointing out the importance of "morally irrelevant" dimensions of social exclusion.

While belonging to multiple disadvantaged identities or experiencing several adverse circumstances can amplify the severity of exclusion, the conditions that underpin these exclusionary factors can change over time (Barnes 2005). Political crises, disasters, conflict, economic shocks, and demographic transitions can temporarily worsen the risk of exclusion and discrimination among under-represented groups (European Commission 2021). At the same time, exclusion is also often long-term and structural. Early ethnographic studies (e.g. Liebow 1967) demonstrated how social exclusion among Black Americans was transmitted between generations. In Latin America, indigenous populations have been historically excluded from markets and resources, and their precarious conditions continue to restrict their children from future opportunities (Behrman, Gaviria, and Székely, 2003). Similarly, in South Asia, the exclusionary structure of castes has reduced intergenerational educational and occupational mobility among disadvantaged groups (Kabeer, 2006; Drèze and Kingdon, 2001; Reddy, 2015; Thorat et al., 2017).

**Figure 1. Conceptual framework of social exclusion**




Source: Authors

The empirical literature emphasizes the strong correlation between low income and higher risk of social exclusion. In Britain, for instance, Burchardt, Le Grand, and Piachaud (2002) find that nearly half of those at the bottom quintile of income distribution are excluded from production and employment. Similarly, Gallie, Paugam, and Jacobs (2003) and Kieselbach et al. (2013) find that long-term unemployment is correlated with income poverty among European countries, which in turn increases the risk of long-term unemployment and social exclusion. As a result, disadvantaged groups not only are held back in the present but have few expectations for the future (Dewilde 2003; Bäckman and Nilsson 2011).[8] In this respect, social exclusion can be regarded as being constitutively a part of capability deprivations as well as instrumentally the cause of capability failures (Sen 2000).

As discussed earlier, the literature underscores the relevance of vulnerability to social exclusion as a concept that is intrinsically relative, multidimensional and dynamic, and which is consistent with the concepts of functioning and capability failures (Sen 1983), and notions of deprivations in *necessities* and *customs* that limit people's ability to live their lives to a minimum standard (Smith 1776). In mid-18th Century Europe, any "*creditable day labourer would be ashamed to appear in public without a linen shirt"* (Smith 1776:870). Thus, behind the idea of capability failures, however measured, there is an underlying notion of living with dignity in a society.

Nussbaum's seminal work on capabilities makes that connection with human dignity: "*all human beings should acknowledge and respect the entitlement of others to live lives commensurate with human dignity*" (Nussbaum 2006: 53). Nussbaum (2011) does not define dignity itself but in relation to three features: respect, agency, and equality. World Bank (2013) argue that dignity, respect, and recognition as terms are often used interchangeably. They link dignity to the way subordinate groups are treated by dominant groups or by the state. This treatment includes contempt for their cultures and practices, and intentional or unintentional stereotyping that prevents them from fully taking part in society. For example, in many Hindu communities, tradition regards widows as bringing back luck, which in turn leads to their exclusion from property rights, services, and dignity (World Bank 2013: 72). The framework constructed to explain the building of social inclusion lies on three concepts, opportunity, ability, and dignity, reassuringly similar to Nussbaum's notions of equality, agency and respect.

Townsend (1979), Sen (1983), Atkinson and Bourguignon (2001), and Ravallion and Chen (2013) have pointed out that relative deprivations are not fixed over time for a wide range of functionings. Therefore, any international poverty line would need to capture variation in living standards as they evolve with the process of economic development. Ravallion and Chen (2009:3) also argue that poverty lines should allow for differences in the cost of social inclusion: the expenditure needed to participate with dignity in customary social and economic activities. While international poverty lines (IPLs) contain that notion of dignity, they remain limited by narrowing indicators to commodities alone without considering freedom from discrimination, or capability failures due to gender or ethnic identity.

In order to better approximate the notion of vulnerability to social exclusion to functioning and capability failures that are also reflected in the socio-economic position of vulnerable

[8] Others have emphasized that the poor and excluded also have aspirations for themselves and their descendants, which constitute not an individual phenomenon but a cultural capacity that helps individuals exert voice and navigate their social spaces (Appadurai 2004).

groups, we follow Jolliffe and Prydz (2021) and adopt the concept of societal poverty line (SPL). Unlike IPLs, the SPL relies on poverty lines that vary across and within countries over time. The SPL combines elements of absolute and relative poverty and simultaneously considers a floor that captures extreme poverty in any country, while allowing for an increase in a person's basic requirements to fulfill his or her functioning and capabilities as a country becomes richer.

While current data limitations do not allow us to directly observe which specific individuals or populations experience capability failures in relevant domains of exclusion (or explore their perceptions of dignity), the methodology presented below in Section 3 allows us to capture these dimensions indirectly to derive global estimates of those who are at risk of being excluded because of their identity, circumstances, and/or socioeconomic position.

## 3. Methodology

In order to estimate the global incidence of social exclusion (or more precisely, the size of populations at risk of exclusion) we adopt a macro counting approach. Our method counts the number of vulnerable populations at the country level and then aggregates those counts at the regional and global level while correcting—to the extent possible—overlaps between excluded populations. This approach is conceptually simple and circumvents more methodologically complex issues at the micro level, such as defining exclusion thresholds for specific domains like markets, social services, and political spaces (see Figure 1 above) and differentiating individual-specific exclusion from community-wide exclusion.

Instead, starting off from a comprehensive list of individuals and groups broadly recognized as being vulnerable to social exclusion at the global level allows a first approximation. For instance, ethnic minorities are at risk of exclusion in many contexts, so the macro counting approach adds the total number of such populations across countries. However, if we believe that people living with disabilities are also at risk of exclusion, we will need to count that group with precision while making sure that persons with disabilities that are part of an ethnic minority are not counted twice.

This is a key methodological challenge in our analysis. Enduring multiple sources of exclusion can deepen the severity of relative deprivations. Being a refugee or asylum seeker as well as a member of an ethnic, racial or religious minority can severely constrain labor market participation and job prospects, irrespective of qualifications (Phillimore and Goodson 2006; Marbach, Hainmueller, and Hangartner 2018; Bansak, Hainmueller, and Hangartner 2016). From a policy perspective, this intersectionality requires a broader policy space and instruments that render certain exclusionary norms "morally irrelevant". However, from a measurement point of view, it is critical to avoid double-counting multiple forms of social exclusion when generating international comparative estimates like ours.

Thus, to avoid double-counting, we sequentially subtract population overlaps across our predefined groups that are vulnerable to exclusion. Figure 2 below describes that sequential, six-step approach. The first step accounts for the total number of individuals globally that are at risk of social exclusion because of their *identities*. Drawing on multiple sources that estimate the share of the different groups at risk of social exclusion within the total population of all surveyed countries (see Section 4), we compute the total number of people who belong to a

vulnerable group *g*—including children, women, people living with a disability, lesbian, gay, bisexual, transgender and intersex (LGBTI) people, Indigenous people, Afrodescendants, and members of a religious minority—as follows:

$$pop_{gct} = pop_{ct} \times sharepop_{gct}, \quad (1)$$

where $pop_{gct}$ measures the population at risk of exclusion of group *g*, in country *c* in year *t*; $pop_{ct}$ is the total population of the country in the same year; and $sharepop_{gct}$ stands for the share of the at-risk group *g* within the total population.

The second step narrows the estimate of total number of people at risk of social exclusion, based on socioeconomic status for each at-risk population group. That is, it estimates the share of those living under the country's societal poverty line within each vulnerable population. Those below the SPL are expected to suffer from capability deprivations and live under conditions incompatible with a life of dignity. Unlike international or national poverty measures—which use poverty lines that remain fixed for long periods and may not be relevant to different country income levels—societal poverty relies on a poverty line that varies across and within countries over time. As discussed above, societal poverty conveniently combines elements of absolute and relative poverty below which a life of dignity is compromised, while acknowledging that standards of living evolve over time and might change as countries become richer. A country's societal poverty line is defined as: SPL = max (US$1.90, US$1.00 + 0.5 × *median*), where *median* is the daily median level of income or consumption per capita (see World Bank 2020).

A main constraint is that we lack data to determine the societal poverty headcounts for each specific population at risk of exclusion. And for other poverty measures—national or international poverty lines—we also lack consistent data across groups and countries (see Section 4 below). As a result, we estimate SPL headcount rates specific to each group ($povrate\_\widehat{SPL}_{gct}$) by combining data on the overall national SPL headcount ($povrate\_SPL_{ct}$)—our preferred poverty measure, which is consistently available for most countries—with any other existing data on the poverty rate differential between each vulnerable group and the general population. For example, we might have information on the absolute poverty rates for people with disabilities vs people with no disabilities. In that case, we would use the differential of such poverty rates to generate an estimate for the number of people with disabilities below the SPL. This allows us to approximate the number of people of group *g* living under the country *c*'s specific societal poverty line as follows:

$$povhc\_\widehat{SPL}_{gct} = povrate\_\widehat{SPL}_{gct} \times pop_{gct}, \quad (2)$$

where $povhc\_\widehat{SPL}_{gct}$ is the estimated number of individuals of group *g* below the SPL; and $povrate\_\widehat{SPL}_{gct}$ is the estimated group-specific SPL poverty rate based on data on the overall SPL poverty rate and the poverty rate differential between vulnerable group *g* and rest of the population taken from secondary sources as follows:

$$povrate\_\widehat{SPL}_{gct} = \frac{povrate\_SPL_{ct}}{sharepop_{gct} + \frac{1}{\hat{k}_{gct}}(1 - sharepop_{gct})}, \quad (3)$$

where $\hat{k}_{gct} = \frac{povrate\_proxy_{gct}}{povrate\_proxy_{(-g)ct}}$ is the ratio between the available consistent poverty rates for at-risk group *g*, and the rest of the population (-*g*). Thus, we use existing poverty estimates for specific vulnerable groups based on the international poverty line (IPL) that are relevant for the income level of each country. If for example, a country is classified as an upper middle-income country, the poverty line assigned to each vulnerable group for which we have no information based on the SPL will be the World Bank IPL of USD 5.50 (2011 PPP) per person per day. Table 1 below summarizes all the approximations used for such vulnerable groups without specific societal poverty headcount estimates.[9]

**Table 1. Proxy poverty lines used to extrapolate data gaps in the absence of group-specific SPLs**

| Country, or economy, income level * | Proxy poverty lines |
|---|---|
| Low income | $1.90 IPL |
| Lower-middle income | $3.20 IPL |
| Upper-middle income (and high-income global south) | $5.50 IPL |
| High income | 50% median income or available national poverty line |

Source: Authors
Note: income level of the country or economy as defined by World Bank income level classification

The third step identifies overlaps across estimates of populations at risk of exclusion in each country. To do so, we sequentially subtract those already accounted for from the total number of people at risk of being socially excluded estimated for each group in step 2. We generally assume independence between the different exclusion attributes when lacking information on the actual intersection. Additionally, we follow a consistent sequence across all countries: starting with poor children, then subtracting from the group of poor women the poor female children, then subtracting from the group of poor people with disabilities poor females (both adults and children) and poor male children and so on, as illustrated in Figure 2 below. The *men* group is used as a residual group including those societal poor that do not belong to any of the preceding vulnerable groups. The total double-counted or overlapped at-risk populations do not change regardless of the sequence of this subtracting exercise. What does change if the subtracting sequence changes is the group-specific overlap with other populations.[10] While our methodology allows to capture multiple overlaps across population groups (see Table 2), it is only at the individual level that exclusion overlaps can be fully and precisely identified. This is possible when individual-level microdata captures information about her gender, location, age, access to markets, services, civic and political participation, disabilities, sexual orientation and gender identity, whether she has ever been displaced, and so forth. [11]

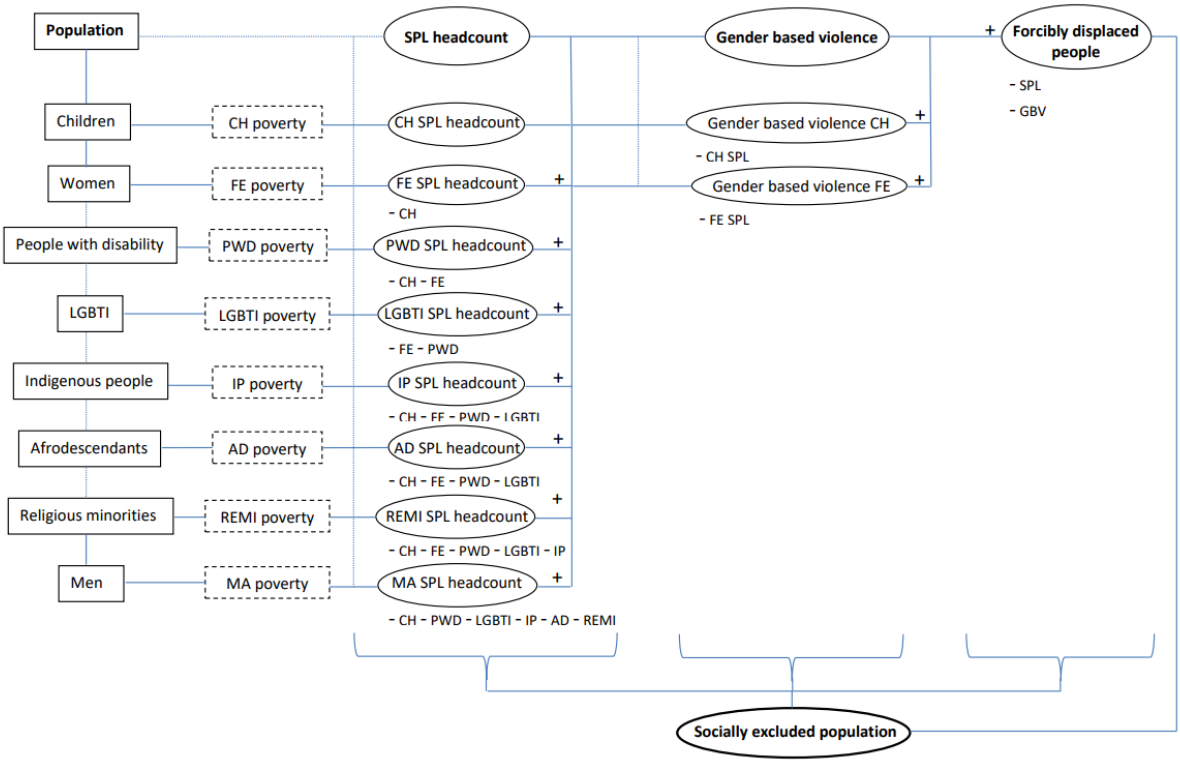
[9] See Annex 1A for a more extensive discussion of this process. In particular, Annex 1A details additional adjustments made to the $\hat{k}$ ratios across population groups in each country to ensure consistency between the population totals of each vulnerable group in a country and the country's total population numbers.

[10] It should be noted that if the estimate for the total population of a group at risk of social exclusion based on identity changes (step 1), it would also change the estimated distribution of such identity among the poor, but not the estimate for the total population at risk of social exclusion based on socioeconomic status, which is determined by the observed overall SPL poverty rate of the country.

[11] In addition to microdata at the individual level, one would also need specific thresholds to unambiguously determine what constitutes exclusion in each of the key dimensions. In practice, it requires defining for each country below under which conditions an individual is excluded from labor markets (for example, has a

**Error! Reference source not found.** below illustrates the computation procedure. The first column shows the totals by at-risk group as computed in step 2. The second column enumerates the intersections between the associated total and the preceding groups using formal notation. In the third column we briefly describe those intersections.[12]

**Figure 2. A systematic approach to quantifying population groups at risk of social exclusion (after minimizing double-counting)**




Source: Authors

The fourth step accounts for the number of those who are at risk of social exclusion because of their *circumstances*, that is, it accounts for the share of countries' populations that is victim to gender-based violence (GBV) and/or which is forcibly displaced. We compute the total number of women socially excluded due to their experience of violence in age group *a*, country *c* and year *t* as follows:

$$GBVhc_{(FE)act} = pop_{(FE)act} \times GBVrate_{(FE)act}, \quad (4)$$

precarious or hazardous job or suffers from long-term unemployment), financial markets (has no access to a bank account), services (lives in a dwelling with no adequate sanitary services) and so forth. An interesting illustration of such an exercise is Ballon and Cuesta (forthcoming) adopting Alkire and Foster (2011)'s Multidimensional Poverty approach to define multidimensional exclusions in Peru and South Africa.

[12] In Annex 1B, we describe the step-by-step procedure to sequentially remove each overlap across populations at risk of exclusion.

where $pop_{(FE)act}$ refers to the total female population in age group $a$, country $c$, and year $t$; while $GBVrate_{(FE)act}$ stands for the incidence of gender-based violence in age group $a$, country $c$, and year $t$. Regarding forcibly displaced populations, we take the incidence or headcount ratio for this group ($FDPhc_{ct}$) directly from official international statistics (see section 4).

In a fifth step, to avoid double-counting among populations that are at risk of exclusion because of their circumstances, we proceed sequentially, starting from the total number of people in each country at risk of being socially excluded based on socioeconomic status (step 3), and add all women victims of gender-based violence minus those already accounted for because of their poverty status. We estimate the intersection between societal poverty and GBV based on data on the incidence of this group by income level or poverty status, following a procedure analogous to that used in step 2 to estimate the at-risk-group societal poverty headcounts. We note that that the incidence of GBV by income level or poverty status is not defined at the SPL in the available data.[13]

We then add all forcibly displaced persons not accounted for already by poverty status or for being a victim of GBV. The intersection between forcibly displaced populations and SPL ($povhc\_\widehat{SPL}_{(FDP)ct}$) is estimated based on auxiliary data on the poverty differential between foreigners and nationals in a sample of countries, following the same procedure as in the second step discussed above. Finally, we estimate the intersection between non-poor forcibly displaced women and women subject to GBV, based on data on the incidence of GBV by poverty level and assuming that the incidence of GBV is constant across all age groups.[14]

The last step adds together all estimated populations at risk of exclusion per country to obtain estimates of the global and regional populations at risk of social exclusion. To do so, we use estimates for those countries for which information on vulnerable populations is available and assign regional (or global) averages to those countries lacking data when such an extrapolation would be appropriate. Regarding indigenous and forcibly displaced people, Afrodescendants and religious minorities, extrapolation is not conducted on countries failing to report the populations of these groups because two countries in the same region might have very different population profiles based on their history or otherwise. Finally, for those cases where there is no information about the poverty incidence among at-risk populations, we extrapolate regional or global averages.

The advantages of the proposed methodology are manifold. Estimates are easy and quick to produce. Numbers and shares can be updated annually. Assumptions can be easily adjusted when better information emerges. It builds from a logical and consistent approach to avoid double-counting that is replicable across countries and contexts. However, our methodology also runs up against important informational constraints. We suspect a degree of measurement error involving double-counting, as we use aggregated data from different sources. It is only at the micro level, using individual and household level data, that one can determine with greater certainty whether a person is simultaneously affected by different forms of exclusion. While double-counting is mitigated in terms of the intersections between age, gender, poverty, disability, and sexual orientation and gender identity, we have not been able to remove possible intersections between, for example, Afrodescendants and being a member of a religious minority. Nevertheless, such intersections are likely to be relatively small.

[13] See Annex 1C for a more extensive discussion of this procedure.
[14] See Annex 1C for further details.

**Table 2. The procedure for computing the number of socially excluded people based on socioeconomic status, avoiding double-counting**

| At-risk group | SPL poverty | | Intersection description | Intersecting group | Assumptions on intersections[1] |
|---|---|---|---|---|---|
| | Total | Intersections | | | |
| Children, CH | $povhc\_\widehat{SPL}_{(CH)ct}$ | -- | -- | -- | N.a. |
| Women, FE | $povhc\_\widehat{SPL}_{(FE)ct}$ | $povhc\_\widehat{SPL}_{(FE)(CH)ct}$ | Female children SPL poor | CH | Age among poor women follows the same distribution as the entire poor population |
| Persons with Disabilities, PWD | $povhc\_\widehat{SPL}_{(PWD)ct}$ | $povhc\_\widehat{SPL}_{(CH)(PWD)ct}$ | Children with disabilities SPL poor | CH | Age among poor PWDs follows the same distribution as the entire PWD population |
| | | $povhc\_\widehat{SPL}_{(FE)(-CH)(PWD)ct}$ | Female adults with disabilities SPL poor | FE | The gender distribution among poor PWDs is the same as the entire poor population |
| LGBTI people | $povhc\_\widehat{SPL}_{(LGBTI)ct}$ | $povhc\_\widehat{SPL}_{(FE)(LGBTI)ct}$ | Female LGBTI SPL poor | FE | N.a. |
| | | $povhc\_\widehat{SPL}_{(MA)(PWD)(LGBTI)ct}$ | Male with disabilities LGBTI SPL poor | PWD | The incidence of disability among poor LGBTI people is the as the entire poor population |
| Indigenous Peoples, IPs | $povhc\_\widehat{SPL}_{(IP)ct}$ | $povhc\_\widehat{SPL}_{(CH)(IP)ct}$ | Indigenous children SPL poor | CH | Age among poor IPs follows the same distribution as the entire poor population |
| | | $povhc\_\widehat{SPL}_{(FE)(-CH)(IP)ct}$ | Indigenous female adults SPL poor | FE | n.a. |
| | | $povhc\_\widehat{SPL}_{(MA)(-CH)(PWD)(IP)ct}$ | Indigenous male adults with disabilities SPL poor | PWD | The incidence of disability among poor IPs is the same as the entire poor population |
| | | $povhc\_\widehat{SPL}_{(MA)(-CH)(-PWD)(LGBTI)(IP)ct}$ | Indigenous male adults without disabilities LGBTI SPL poor | LGBTI | The share of LGBTI people among poor male IPs is the same as among poor men in general |
| Afrodescendants, ADs | $povhc\_\widehat{SPL}_{(AD)ct}$ | $povhc\_\widehat{SPL}_{(CH)(AD)ct}$ | Afrodescendant children SPL poor | CH | Age among poor ADs follows the same distribution as the entire poor population |
| | | $povhc\_\widehat{SPL}_{(FE)(-CH)(AD)ct}$ | Afrodescendant female adults SPL poor | FE | The gender distribution among poor ADs is the same as among the entire poor population (no assumption for Latin American countries, for which poverty data by ethnicity/race is disaggregated by gender) |

| | | | | | |
|---|---|---|---|---|---|
| | | $povhc\_\widehat{SPL}_{(MA)(-CH)(PWD)(AD)ct}$ | Afrodescendant male adults with disabilities SPL poor | PWD | The incidence of disability among poor ADs is the same as among the entire poor population |
| | | $povhc\_\widehat{SPL}_{(MA)(-CH)(-PWD)(LGBTI)(AD)ct}$ | Afrodescendant male adults without disabilities LGBTI SPL poor | LGBTI | The share of LGBTI people among poor male ADs is the same as among poor men in general |
| Religious minorities, REMI | $povhc\_\widehat{SPL}_{(REMI)ct}$ | $povhc\_\widehat{SPL}_{(CH)(REMI)ct}$ | Religious minority children SPL poor | CH | Age among poor people pertaining to religious minorities follows the same distribution as the entire poor population |
| | | $povhc\_\widehat{SPL}_{(FE)(-CH)(REMI)ct}$ | Religious minority female adults SPL poor | FE | The gender distribution among poor people pertaining to religious minorities is the same as among the entire poor population |
| | | $povhc\_\widehat{SPL}_{(MA)(-CH)(IP)(REMI)ct}$ | Religious minority Indigenous male adults SPL poor | IP | The incidence of poverty among IPs pertaining to religious minorities is the same as among the entire religious minority population |
| | | $povhc\_\widehat{SPL}_{(MA)(-CH)(PWD)(-IP)(REMI)ct}$ | Religious minority non-Indigenous male adults with disabilities SPL poor | PWD | The incidence of disability among poor people pertaining to religious minorities is the same as among the entire poor population |
| | | $povhc\_\widehat{SPL}_{(MA)(-CH)(-PWD)(LGBTI)(-IP)(REMI)ct}$ | Religious minority non-Indigenous male adults without disabilities LGBTI SPL poor | LGBTI | The share of LGBTI people among poor men pertaining to religious minorities is the same as among poor men in general |

Source: authors.

Notes: Assumptions initially refer to a particular pairwise intersection (e.g., between Indigenous people and female groups). When intersections of a higher order are involved (e.g., between *adult* Indigenous people and females), and no specific information on those intersections is available, we assume that the distribution of the additional category (e.g., females) is constant across the other categories involved in the intersection (e.g., we assume that the share of females among Indigenous people is constant across age groups, i.e., the share of females among *adult* Indigenous people is the same as among the entire Indigenous population). As such, it should be noted that assumptions are cumulative over the sequence of intersections.

## 4. Data

This section describes the data sources used to estimate the number and share of the global population at risk of exclusion. It also describes how the incidence of poverty is estimated for each of the populations vulnerable to exclusion following the methodology developed in the previous section. The sample includes 195 countries, comprising 99 percent of the world's population, for which data can be individually reported on these vulnerable populations. We use existing country-level data and impute regional averages to those countries lacking data for which extrapolation is appropriate, as discussed below. In many cases we lack the exact data point for 2017, for which we impute the data from the closest available year and project forward or backward. In a few cases, including the LGBTI population group, we lack enough data to perform a regional extrapolation so we use the global average instead.

Table 3 describes each of the data sources used for our vulnerable populations. To determine the overall vulnerable population (i.e., that of women and children) we use population data from the World Bank (2021c)'s Population Estimates and Projections database complemented with data from the United Nations (2019)'s World Population Prospects database. We use population data disaggregated by gender and age for our sample of 195 countries. We define as children those of 0 to 17 years of age.

We use regional-level data from the World Health Organization and World Bank (2011), which in turn publish data for 2004, to estimate the number of people with disabilities worldwide. This data is disaggregated by gender and age. Results refer to the prevalence of "severe" disability, defined as severity Classes VI and VII – the equivalent of being blind, or having Down Syndrome, quadriplegia, severe depression, or active psychosis. Estimates are also presented for "moderate and severe" disability, defined as severity Classes III and higher – the equivalent of having angina, arthritis, low vision, or alcohol dependence (WHO-WB 2011: 296). Estimates based on the more stringent definition of disability are interpreted as lower bound estimates, whereas those based on the more extensive definition are interpreted as upper bound estimates. Because of the age grouping in the original sources, in some cases estimates for disabled children rely on data that refer to individuals ages 0 to 15. . Aggregate data is provided for seven groupings of countries: the six WHO regions (limited to low- and middle-income countries), on the one hand, and high-income countries, on the other. For a few countries that do not provide relevant data to the WHO, we impute estimates for persons with disabilities on the basis of both income and geographical criteria.[15]

Regarding the LGBTI population, we use country-level data mostly from developed countries, as we did not find reliable estimates for developing countries (see Table 2). Estimates refer mostly to adults, although some studies include adolescents (those over 15 or 16 years old). However, in those cases we assume estimates refer to the adult population to consistently derive adult-only estimates. All sources capture self-identified LGBTI people, but studies differ in the extent to which all members are covered, from LGBTQ2+ in Statistics Canada (2021) to LGB in OECD (2019a).[16] Only 14 countries have specific estimates. We extrapolate the average size of this group for countries with no data. Estimates based on all the available data, irrespective of the actual definition of the group in the corresponding data source, are interpreted as lower bound estimates, as they are lower than alternative estimates based on the extrapolation of

[15] Those countries are Curaçao (Americas), Montenegro (Europe), Serbia (Europe) and South Sudan (Africa).
[16] LGBTQ2+ stands for Lesbian, Gay, Bisexual, Transgender, Queer, Questioning, Intersex, Allies, Asexual and Pansexual, whereas LGB only covers lesbian, gay and bisexual populations.

Valfort (2017)'s estimation of the LGBTI population in the United States, which are reported as upper bound estimates.

Data on Indigenous peoples (IPs) by country are drawn from Stidsen (2007); Sobrevila (2008); OECD (2019b); and Davis-Castro (2020, 2021), who compile data from several sources, including UNICEF and FUNPROEIB Andes (2009), World Bank's LAC Equity Lab (2021), ECLAC and Fondo para el Desarrollo de los Pueblos Indígenas de América Latina y el Caribe (FILAC) (2020), World Bank Group (2015), and ECLAC (2014). We use the lower estimate reported in any of the available data sources as a lower bound estimate for the total number of Indigenous peoples in a country and the larger estimate found as an upper bound estimate. In total, we have data for 59 countries. There is no imputation for this category, as it is not possible to make assumptions about the share of IPs in a given country from others, even those in the same region.

Data on the Afrodescendant population by country are drawn from the following sources: United Nations Statistics Division (2021), which includes data for 30 countries; World Bank (2018), which includes data for 11 Latin American countries; Statistics Canada (2017); Office for National Statistics (2013) for the UK; U.S. Census Bureau (2020); France Diplomacy, Ministry for Europe and Foreign Affairs (2019); Istat (2021) for Italy; INE (2021) for Spain; CIA (2020) for Saudi Arabia; and Seif (2006) for Yemen. We have data for a total of 44 countries. As in the case of IPs, there is no country imputation for this category.

Data on religious minority populations are drawn from Pew Research Center (2015: 8), which covers 233 countries and territories. Categories include Buddhists, Christians, Folk Religions (including African traditional religions, Chinese folk religions, Native American religions, and Australian aboriginal religions), Hindus, Jews, Muslims, Other Religions (an umbrella category that includes Baha'is, Jains, Sikhs, Taoists, and many smaller faiths, the largest of this group being Sikhs), and Unaffiliated. We compute the share of population belonging to a religious minority as the total share of those religious affiliations that account separately for less than the 25 percent of the country's population. This allows us to include Muslims as minorities in India and Israel, as they represent 15.4 and 20.1 percent of these countries' populations, respectively). At the same time, this threshold avoids including very large religious groups as minorities, such as Christians in Nigeria, who represent 46.9 percent of the population, but are the dominant religion in southern regions.

Regarding female victims of gender-based violence, we estimate the proportion of women subjected to physical and/or sexual violence in the last 12 months[17] provided by World Bank (2021d) on the basis of data compiled by the United Nations Statistics Division (UNSD). We estimate the number of GBV victims who are children (15-17 years old) and those who are adult (18-49 years old) assuming that the incidence is constant across age groups. The number for the adult population represents a lower bound estimate that is complemented with an upper bound estimate that extrapolates the incidence of GBV to the whole adult female group. We have data for 103 countries. We extrapolate the regional average incidence of GBV to those countries lacking data using regional and income levels.

Data on forcibly displaced populations (FDP) are drawn from the Refugee Population Statistics Database provided by the United Nations High Commissioner for Refugees (UNHCR). For

[17] More precisely, the proportion of women subjected to physical and/or sexual violence in the last 12 months is the percentage of ever-partnered women aged 15-49 who were subjected to physical violence, sexual violence, or both by a current or former intimate partner in the last year.

each asylum country and year, we compute the total number of FDPs as the sum of refugees under UNHCR's mandate; asylum-seekers; IDPs of concern to UNHCR; Venezuelans displaced abroad; stateless persons; and others of concern over all countries of origin.

**Table 3. Data sources to estimate number and share of vulnerable population groups worldwide, circa 2017**

| Vulnerable groups | Number of observations (countries and territories) | Extrapolation of data? | Sources | Disaggregation details |
|---|---|---|---|---|
| Women | 195 | No | World Bank (2021c) 's Population Estimates and Projection Database<br>United Nations (2019)'s World Population Prospects Database | All ages |
| Children | 195 | No | World Bank (2021c) 's Population Estimates and Projection Database<br>United Nations (2019)'s World Population Prospects Database | 0-17 years of age |
| People with disabilities | Regional data | Regional | World Health Organization and World Bank (2011) | Severe and moderate categories. Data disaggregated by gender and age |
| LGBTI people | 14 | World | OECD (2019a)<br><br>Layte et al. (2006)<br><br>Uhrig (2013)<br><br>Wilson et al. (2020)<br><br>Statistics Canada (2021)<br>Valfort (2017) | Self-identify as lesbians, gay men or bisexuals (adults)<br><br>Self-identified as homosexual or bisexual (18-64, by gender)<br><br>Self-identify as lesbians/gay, bisexuals or other (16+)<br><br>Self-identify with a minority sexual identity (gay, lesbian, bisexual, and other sexual minority identities), (18+, by gender)<br><br>LGBTQ2+ (15+, by gender)<br>Self-identify LGBTI (18+) (US), LGB (18+, by gender) |
| Indigenous peoples | 59 | No | Stidsen (2007); Sobrevila (2008); OECD (2019b); and Davis-Castro (2020, 2021), who compiles data from several sources, including UNICEF and FUNPROEIB Andes (2009), World Bank's LAC Equity Lab (2021), ECLAC and Fondo para el Desarrollo de los Pueblos Indígenas de América Latina y el Caribe (FILAC) (2020), World Bank Group (2015), and ECLAC (2014) | All ages |
| Afrodescendants | 44 | No | United Nations Statistics Division (2021)<br>World Bank (2018); Statistics Canada (2017); UK Office for National Statistics (2013); U.S. Census Bureau (2020); France Ministry for Europe and Foreign Affairs (2019); Istat (2021); INE (2021); CIA (2020); and Seif (2006) | All ages, disaggregated by gender<br>All ages |
| Religious minorities | 233 | No | Pew Research Center (2015) | Religious minorities include non-majority groups that do not exceed 25 percent of religious affiliation in a country. All ages |

| | | | | |
|---|---|---|---|---|
| Victims of gender-based violence | 103 | Regional | World Bank (2021d) based on data of the United Nations Statistics Division (UNSD) | We use the variable Proportion of women subjected to physical and/or sexual violence in the last 12 months (% of women aged 15-49)<br>We estimate the number of GBV victims who are children (15-17 years old) and those who are adult (18-49 years old) assuming that the incidence is constant across age groups |
| Forcibly displaced populations | 167 | No | United Nations High Commissioner for Refugees (2020) | For each asylum country and year, we compute the total number of FDP as the sum of Refugees under UNHCR's mandate; Asylum-seekers; IDPs of concern to UNHCR; Venezuelans displaced abroad; Stateless persons; and Others of concern over all countries of origin |

Source: Authors

After each vulnerable population at the country, regional, and global level is estimated, we estimate the share of those populations living in poverty. In order to do so, we start from the country's overall societal poverty line reported by Jolliffe and Prydz (2021), available for 164 countries of the sample and covering 97 percent of the world's population. We extrapolate the regional average incidence of societal poverty incidence to those countries lacking data. We then estimate the share of the societal poor who belong to each at risk of exclusion group based on available country-level data on the incidence of poverty among each specific group-.

Table 4 below shows the existing evidence for each population group. We rely on additional sources to estimate the shares of different groups in each country's societal poverty headcount. By age and sex, and disability, LGBTI, Afrodescendant, religious minority, and forcibly displaced status, the available data allows us to determine consistent poverty rates at the corresponding poverty line for the relevant group and for the overall population. The regional or global averages of these poverty rates are extrapolated to those countries lacking data, which are ultimately used to estimate the incidence of societal poverty among the relevant group as explained in the previous section. There are slightly different procedures for forcibly displaced and indigenous peoples, and victims of GBV, explained below.

Regarding age, we use data from Silwal et al. (2020) and Luxembourg Income Study (LIS) Database (2021). There are a total of 149 countries with poverty data available by age group. Similarly, we use data from World Bank Spring 2021 Poverty and Equity Briefs (World Bank 2021e) and OECD (2019a) which provide poverty data disaggregated by gender. We have poverty data by gender for 156 countries. For each country we use poverty data at the income threshold that is closer to its societal poverty line. We use a regional average to estimate societal poverty by age and gender for countries lacking data.

For the incidence of poverty among people with disabilities, we rely on several sources, each of which uses a different methodology for estimating poverty. Fontenot et al. (2018) uses the US Census Bureau's multi poverty thresholds measure.[18] Eurostat (2021a) has data for 36

[18] "Following the Office of Management and Budget's (OMB) Statistical Policy Directive 14, the U.S. Census Bureau uses a set of dollar value thresholds that vary by family size and composition to determine who is in poverty. If a family's total monetary income is less than the applicable threshold, then that family and every

European countries, using the at-risk-of-poverty measure.[19] Mitra et al. (2013) has data for 15 developing countries, using Alkire-Foster's multidimensional poverty index (Alkire and Foster 2011). We use a regional average to estimate societal poverty among people with disabilities for those countries lacking data.

As far as we know, only two studies estimate the incidence of poverty for LGBTI people as it compares with non-LGBTI people, using 50 percent of the median income in the case of the UK (Uhrig 2013) and the national poverty line in the case of the US (Badgett et al. 2019). We use the average of these two poverty rates to estimate societal poverty among LGBTI people in countries lacking data.

To estimate the incidence of poverty among Indigenous peoples, we use two sources, ECLAC (2021) and ILO (2019). ILO's (2019) Figure 3.11 (pp. 95-97) presents poverty headcount using the $1.90, $3.20, and $5.50 a day poverty lines by Indigenous peoples' status and sex for Africa, Asia and the Pacific, Latin America and the Caribbean, North America, low-income countries, lower middle-income countries, upper middle-income countries, and high-income countries. We impute the corresponding regional poverty rates to individual countries, except for the case of Australia, Japan, and New Zealand which are given high-income-country regional values instead of Asia-Pacific values. Moreover, we impute the corresponding income class averages to European countries with IPs given that there are not regional data available in their case. Finally, we use ECLAC (2021)'s country-level data for 11 Latin American countries. ECLAC (2021) provides poverty rates by ethnicity/race and gender groups at two different poverty lines: poverty and extreme poverty.[20] As previously, for each country we use the poverty line that is closer to its societal poverty line.[21] We use a regional average to estimate societal poverty for these groups in countries lacking data.

Regarding the incidence of poverty among Afrodescendants, we use the following sources. First, ECLAC (2021), which provides poverty rates by ethnicity/race and gender groups at the poverty and extreme poverty lines for 11 Latin American countries (for each country we select the poverty line that is closer to its social poverty line as explained in footnote 8). Second, Fontenot et al. (2018), which provides poverty rates for Black Americans and the population at large in the US.[22] Third, Seif (2006), which provides a description of the socioeconomic

individual in it are considered in poverty. The official poverty thresholds are updated annually for inflation using the Consumer Price Index (CPI-U). The official poverty definition uses money income before taxes or tax credits and excludes capital gains and noncash benefits (such as Supplemental Nutrition Assistance Program benefits and housing assistance). The thresholds do not vary geographically" (Fontenot et al. 2018, p. 47).

[19] "Persons are considered to be at risk of poverty after social transfers, if they have an equivalized disposable income below the risk-of-poverty threshold, which is set at 60 % of the national median equivalized disposable income." (Eurostat 2021b).

[20] The *extreme poverty line* is calculated by ECLAC as the cost of a basic food basket in those countries. "The basic food basket is constructed to satisfy the average energy requirements of the population, using a structure of goods and prices given by consumption patterns observed in a reference group and adjusted for basic dietary balances". In turn, the *poverty line* "is obtained by multiplying the extreme poverty line by a factor that expresses expenditure on non-food goods and services. Unlike in the case of the basic food basket, for which energy requirements provide exogenous criteria for efficiency evaluation, there are no clear normative parameters for establishing a threshold of non-food goods and services consumption for the poverty line. For that reason, the ratio between total spending and food spending —the Orshansky coefficient— in the reference population is used, without specifying what type of needs are to be met with that amount" (ECLAC 2019, pp. 21-23).

[21] In the case of the ECLAC (2019) data, we use the extreme poverty line for low and lower-middle income countries and the poverty line for upper-middle- and high-income countries.

[22] See footnote 5 for information on the US Census Bureau's multi poverty thresholds measure used by Fontenot et al. (2018).

status of AD people in Yemen. We use a world average of these poverty rates to estimate societal poverty among these groups within countries lacking data.

Poverty data concerning religious minorities are available for India (Panagariya and Mukim 2014) and the UK (Heath and Yaojun 2015). We transform the poverty rates provided in these sources using refined religious population data from the Indian Population Census (2011) for India, and Voas and Bruce (2019) and Office for National Statistics (2012) for the UK, to get poverty rates of interest consistent with the Pew Research Center (2015) religious categories. We extrapolate the Indian poverty rates to low- and middle-income countries, and the UK ones to high-income countries.

Regarding the intersection between GBV and poverty, we collect information on the incidence of GBV by income level/poverty status from several sources, as shown in table 4. As we have data on the probability of poverty across GBV victims for at least one country from every world region, we impute the average regional GBV poverty likelihood to those countries that lack such data in the same region.

Regarding the incidence of poverty within the group of forcibly displaced people, we rely on data for the EU provided by EUROSTAT on people at risk of poverty or social exclusion by broad group of citizenship and gender for the population aged 18 and over, and the at risk of poverty rate for children by citizenship of their parents for the population aged 0 to 17 years.[23] We use this European data to consistently estimate the poverty rates for foreigners and nationals by age and gender group and for the overall population. The average of these poverty rates is extrapolated to those countries lacking data, allowing us to ultimately estimate the incidence of societal poverty among forcibly displaced people.

[23] *People at risk of poverty or social exclusion* "corresponds to the sum of persons who are: at risk of poverty after social transfers, severely materially deprived or living in households with very low work intensity. Persons are counted only once even if they are affected by more than one of these phenomena. Persons are considered to be at risk of poverty after social transfers, if they have an equivalized disposable income below the risk-of-poverty threshold, which is set at 60 % of the national median equivalized disposable income. Severely materially deprived persons have living conditions severely constrained by a lack of resources, they experience at least 4 out of 9 following deprivations items: cannot afford i) to pay rent or utility bills, ii) keep home adequately warm, iii) face unexpected expenses, iv) eat meat, fish or a protein equivalent every second day, v) a week holiday away from home, vi) a car, vii) a washing machine, viii) a color TV, or ix) a telephone. People living in households with very low work intensity are those aged 0-59 living in households where the adults (aged 18-59) work 20% or less of their total work potential during the past year." (Eurostat 2021b).

## Table 4. Studies estimating poverty incidence within vulnerable population groups

| Source | Poverty measure | | Sample features | Year | Number of countries |
|---|---|---|---|---|---|
| **Women and children** | | | | | |
| Jolliffe and Prydz (2021) | Social poverty line | | Overall | 1990-2017 | 166 |
| Silwal et al. (2020) | $1.90, $3.20, and $5.50 IPLs | | By age group | 2017 | 149 |
| LIS (2021) | 50% of the Median | | By age group | 1978-2019 | 52 |
| World Bank 2021 PEBs (World Bank 2021e) | $1.90, $3.20, and $5.50 IPLs | | By gender | 2006//2019 | 125 |
| OECD (2019a) | 50% of the Median | | By gender | 2011//2017 | 42 |
| **People with disabilities** | **Relevant concept** | **Poverty measure** | **Sample features** | **Year** | **Number of countries** |
| Fontenot et al. (2018) | Any disability | US Census Bureau's multi poverty thresholds measure | Overall (18-64 years of age) | 2017 | 1 |
| Eurostat (2021a) | Some or severe activity limitation | At-risk-of-poverty measure | Overall | 2019 | 36 |
| Mitra et al. (2013) | If a person reports a severe or extreme difficulty in, or is unable to do, any of the following: 1) seeing/recognizing people across the road (while wearing glasses or lenses); 2) moving around; 3) concentrating or remembering things; 4) taking care of themself, he or she is identified as having a disability | Alkire and Foster's (2011) multidimensional poverty measure | Overall (18–65 years of age) | 2004 | 15 |
| **LGBTI people** | **Relevant concept** | **Poverty measure** | **Sample features** | **Year** | **Number of countries** |
| Uhrig (2013) | Self-identify LGB or other | 50% of Median equalized household income | Overall (16+ years of age) | 2012 | 1 |
| Badgett et al. (2019) | LGBT | National poverty line | By gender (18+ years of age) | 2017 | 1 |
| **IPs** | **Poverty measure** | | **Sample features** | **Year** | **Number of countries** |
| ECLAC (2021) | ECLAC'S poverty and extreme poverty measures | | By gender | 2000-2019 | 11 |
| ILO (2019) | $1.90, $3.20 and $5.50 a day poverty lines | | By gender | 2011//2018 | 7 regions/ groups |
| **ADs** | | | | | |
| ECLAC (2021) | ECLAC'S poverty and extreme poverty measures | | By gender | 2000-2019 | 11 |
| Fontenot et al. (2018) | US Census Bureau's multi poverty thresholds measure | | Overall | 2017 | 1 |
| Seif (2006) | Social status | | Overall | 2006 | 1 |
| **Religious minorities** | **Poverty measure** | | **Sample features** | **Year** | **Number of countries** |
| Heath and Yaojun (2015) | 60 per cent of the median income | | Overall (16+ years of age) | 2011 | 1 |
| Panagariya and Mukim (2014) | Lakdawala Lines | | Overall | 2010 | 1 |
| **GBV** | **Relevant concept** | **Poverty measure** | **Sample features** | **Year** | **Number of countries** |
| Walby and Allen (2004) | Domestic violence or sexual assault (including various | Estimated income percentile based | Women (16-59 years of age) | 2001 | UK |

| | | | | | |
|---|---|---|---|---|---|
| | grades of severity and attempts) | on SPL poverty rate | | | |
| Altınay and Arat (2009) | Physical violence at least once by their husbands | Estimated income percentile based on SPL poverty rate | Ever married women | 2007 | Turkey |
| Usta et al. (2015) | Physical violence by an intimate partner during past year | Estimated wealth index percentiles based on SPL poverty rates | Ever married women (15-49 years of age) | 2005, 2007 | Egypt, Jordan |
| O'Donnell et al. (2002) | Physical, sexual or psychological violence by an intimate partner | $C15,000 | Ever married women | 1993 | Canada |
| Kishor and Johnson (2004) | Spousal violence in the past 12 months | Estimated wealth percentiles based on SPL poverty rates | Ever married women (Age 15-49) | 1995//2002 | Cambodia, Dominican Rep., Egypt, Haiti, India, Nicaragua, Zambia |
| Rivera-Rivera et al. (2004) | Low-level acts of emotional and physical violence (e.g., control of activities, not allowing women to have a job, insults, and slaps to the face); More serious physical violence, including having been struck with an object, burned, or locked up; Extremely serious physical or emotional violence, such as strangling attempts and threats with a knife or gun by her most recent partner in the previous year | Estimated socioeconomic level percentile based on SPL poverty rate | Ever partnered women (ages 15-49) (Cuernavaca local sample) | 1998 | Mexico |
| Flake (2005) | Ever pushed, shaken, or attacked by partner | Estimated socioeconomic status percentile based on SPL poverty rate | Women currently living with a partner (Age 15-49) | 2000 | Peru |
| **FDP** | **Relevant concept** | **Poverty measure** | **Sample features** | **Year** | **Number of countries** |
| Eurostat (2021a) | Citizenship: Non-EU28 countries nor reporting country | People at risk of poverty or social exclusion | By gender (18+ years of age) | 2011-2020 | 37 |
| Eurostat (2021a) | Citizenship of their parents: Foreign country | At-risk-of poverty (AROP) measure | Overall (Age 0-17) | 2011-2020 | 37 |

Source: Authors

## 5. Results

We estimate that between 2.33 and 2.44 billion people are at risk of exclusion worldwide (Table 5). This represents between 31.1 and 32.4 percent of the global population in 2017. The difference between the lower and upper bound estimates, that is, 102 million people, is explained by the higher or lower estimates of GBV victims, persons with disabilities, and

LGBTI people. Furthermore, we estimate that between 1.6 billion and 2 billion people belong to two or more at risk of exclusion populations.

The main contributors to social exclusion—after double-counting is deducted—relate to women, children, and (poor) men categories. They represent between 85 and 90 percent of the at risk of exclusion populations in the upper and lower bound estimates, respectively. By contrast, LGBTI, Indigenous, Afrodescendant, and forcibly displaced populations represent about 100 million or around 4 percent of the at-risk population globally.

**Table 5. Global vulnerable populations by group at risk of social exclusion: lower and upper bounds, 2017**

| | Lower bound | | Upper bound | |
|---|---|---|---|---|
| | **N (millions)** | **% Global Total** | **N (millions)** | **% Global Total** |
| **Children** | | | | |
| *Population* | 2,317.3 | 30.9 | 2,317.3 | 30.9 |
| Poor | 767.3 | 37.0 | 767.3 | 37.0 |
| Victims of GBV | 32.3 | 8.8 | 32.3 | 6.3 |
| (Intersection) | (12.9) | | (12.9) | |
| *Socially excluded* | **786.8** | 33.7 | **786.8** | 33.7 |
| **Women** | | | | |
| *Population* | 3,722.2 | 49.6 | 3,722.2 | 49.6 |
| Poor | 1,038.4 | 50.0 | 1,038.4 | 50.0 |
| Victims of GBV | 334.7 | 91.2 | 481.8 | 93.7 |
| (Intersection) | (113.5) | | (158.0) | |
| *Socially excluded* | 1,259.6 | 54.0 | 1,362.2 | 56.0 |
| (Intersection) | (403.0) | | (403.0) | |
| *Socially excluded not double counted* | **856.6** | | **959.2** | |
| **People with disabilities** | | | | |
| *Population* | 225.9 | 3.0 | 1,182.4 | 15.8 |
| Poor | 74.4 | 3.6 | 385.0 | 18.5 |
| (Intersection) | (40.8) | | (215.6) | |
| *Socially excluded not double counted* | **33.6** | | **169.4** | |
| **LGBTI people** | | | | |
| *Population* | 132.7 | 1.8 | 228.3 | 3.0 |
| Poor | 36.0 | 1.7 | 61.7 | 3.0 |
| (Intersection) | (24.0) | | (47.6) | |
| *Socially excluded not double counted* | **12.0** | | **14.1** | |
| **Indigenous people** | | | | |
| *Population* | 327.0 | 4.4 | 357.1 | 4.8 |
| Poor | 124.9 | 6.0 | 134.7 | 6.5 |
| (Intersection) | (86.5) | | (103.2) | |
| *Socially excluded not double counted* | **38.4** | | **31.5** | |
| **Afrodescendants** | | | | |
| *Population* | 188.1 | 2.5 | 188.1 | 2.5 |
| Poor | 59.5 | 2.9 | 59.5 | 2.9 |
| (Intersection) | (41.8) | | (46.2) | |
| *Socially excluded not double counted* | **17.7** | | **13.3** | |
| **Religious minorities** | | | | |
| *Population* | 1,527.1 | 20.3 | 1,527.1 | 20.3 |
| Poor | 432.2 | 20.8 | 432.2 | 20.8 |
| (Intersection) | (328.4) | | (352.8) | |
| *Socially excluded not double counted* | **103.8** | | **79.4** | |

| | | | | |
|---|---|---|---|---|
| **Men** | | | | |
| *Population* | 3,784.5 | 50.4 | 3,784.5 | 50.4 |
| Poor | 1,037.1 | 50.0 | 1,037.1 | 50.0 |
| (Intersection) | (589.1) | | (691.5) | |
| *Socially excluded not double counted* | **448** | | **345.6** | |
| **Forcibly displaced people** | | | | |
| *Population* | 67.6 | 0.9 | 67.6 | 0.9 |
| *Socially excluded* | 67.6 | 2.9 | 67.6 | 2.8 |
| (Intersection) | (32.1) | | (32.6) | |
| *Socially excluded not double counted* | **35.5** | | **35.5** | |
| **TOTAL** | | | | |
| *Population* | 7,506.7 | 100.0 | 7,506.7 | 100.0 |
| *Socially excluded* | **2,332.2** | **31.1[a]** | **2,434.3** | **32.4[a]** |

Source: Authors' estimates.

Notes: ([a]) % World total population. The lower bound estimates are based on the following assumptions: (1) victims of GBV are restricted to women aged 15 to 49; (2) the population of PWD is based on the most restrictive definition of disability (severe disability); (3) the population of LGBTI people is based on all available data; (4) the population of IPs is based on the lower estimate available in our sources for each country. On the other hand, the upper bound estimates are based on the following assumptions: (1) the prevalence of GBV is extrapolated to the whole adult female group; (2) the population of PWD is based on the least restrictive definition of disability (at least moderate disability); (3) the size of the LBGTI group in the US (4.4%) is extrapolated to the rest of countries; (4) the population of IPs is based on the larger estimate available in our sources for each country. See section 4 for further details.

Regional differences are wide with respect to both absolute numbers and shares within regional populations (see Table 6 below). At risk population totals are highest in South Asia at between 622 million and 644 million, followed closely by East Asia and Pacific at 609 million (659 million as upper bound estimate), and sub-Saharan Africa at 552 million (558 million). These three regions amount for 76 percent of the global population at risk of exclusion and 68 percent of the global population.

Unsurprisingly, given their population sizes, India and China concentrate most of the at-risk population in their respective regions. India reports approximately 470.9 million people of at risk of exclusion, while China is home to 369.2 million (using lower-bound estimates). These numbers represent 75 and 60 percent of the entire population at risk of exclusion in South Asia and East Asia and Pacific, respectively, and 36 percent of all people at risk of exclusion worldwide. These findings do not change when considering upper-bound estimates (see Table 6).

The share of the at-risk population in sub-Saharan Africa is the largest worldwide. More than half of the total population (roughly 53 percent) is found to be at risk of exclusion based on both lower and upper bound estimates (see Table 6). Its rate doubles that of East Asia and Pacific (26 percent), and well exceeds that of MENA (28 percent), South Asia (34 percent), Latin America (29 percent), North America (20 percent) and ECA (17 percent). It is worth noting that while North America (comprising US and Canada) has the smallest population at risk of exclusion of any region, the share of its population at risk of exclusion exceeds that of Europe and Central Asia.

**Table 6. World vulnerable population by group at risk of social exclusion: lower and upper bounds, by region 2017**

| | Lower bound | | | Upper bound | | |
|---|---|---|---|---|---|---|
| | N (millions) | % Population | % Global Total | N (millions) | % Population | % Global Total |
| **Latin America** | | | | | | |
| *Population* | 634.2 | 100.0 | 8.4 | 634.2 | 100.0 | 8.4 |
| *Social exclusion* | **187.9** | **29.6** | **8.1** | **194.3** | **30.6** | **8.0** |
| **South Asia** | | | | | | |
| *Population* | 1,792.9 | 100.0 | 23.9 | 1,792.9 | 100.0 | 23.9 |
| *Social exclusion* | **622.1** | **34.7** | **26.7** | **644.2** | **35.9** | **26.5** |
| Without India | | | | | | |
| *Population* | 454.2 | 100.0 | 6.1 | 454.2 | 100.0 | 6.1 |
| *Social exclusion* | **151.2** | **33.3** | **6.5** | **156.7** | **34.5** | **6.4** |
| **East Asia Pacific** | | | | | | |
| *Population* | 2,314.0 | 100.0 | 30.8 | 2,314.0 | 100.0 | 30.8 |
| *Social exclusion* | **609.5** | **26.3** | **26.1** | **659.7** | **28.5** | **27.1** |
| Without China | | | | | | |
| *Population* | 927.6 | 100.0 | 12.4 | 927.6 | 100.0 | 12.4 |
| *Social exclusion* | **240.3** | **25.9** | **10.3** | **258.79** | **27.9** | **10.6** |
| **Europe and Central** | | | | | | |
| *Population* | 912.5 | 100.0 | 12.2 | 912.5 | 100.0 | 12.2 |
| *Social exclusion* | **161.8** | **17.7** | **6.9** | **171.5** | **18.8** | **7.0** |
| **MENA** | | | | | | |
| *Population* | 441.3 | 100.0 | 5.9 | 441.3 | 100.0 | 5.9 |
| *Social exclusion* | **124.3** | **28.2** | **5.3** | **127.3** | **28.8** | **5.2** |
| **North America** | | | | | | |
| *Population* | 361.7 | 100.0 | 4.8 | 361.7 | 100.0 | 4.8 |
| *Social exclusion* | **74.3** | **20.5** | **3.2** | **79.0** | **21.8** | **3.2** |
| **Sub-Sahara Africa** | | | | | | |
| *Population* | 1,050.2 | 100.0 | 14.0 | 1050.2 | 100.0 | 14.0 |
| *Social exclusion* | **552.3** | **52.6** | **23.7** | **558.3** | **53.2** | **22.9** |
| **World total social exclusion** | **2332.2** | **31.1** | **100.0** | **2,434.3** | **32.4** | **100.0** |

Source: Authors' estimates.
Notes: See Table 5 notes for definitions of lower and upper bound estimates.

By income level, lower-income economies report the highest incidence of people at risk of exclusion, with 50.9 percent of their population (lower bound; 51.7 percent upper bound—see Table 7). But with a small share of worldwide population, lower-income economies are only home to 6 percent of the worldwide at risk of exclusion population. Middle-income economies, by contrast, represent two thirds of both the global population and the population at risk of exclusion. The population at risk of exclusion in lower-middle-income economies combined is the most numerous and has a largest share across regions. High-income economies represent 16 percent of the global population but less than 10 percent of the worldwide population at risk of exclusion. As expected, people in fragile, conflict-affected, and violent contexts are highly likely to be at risk of exclusion. About 48 percent of the population in such contexts are

categorized as such, a reflection of their geographical composition (see Table 7). Again, all these findings hold for upper-bound estimates.

**Table 7. Global estimates of social exclusion by World Bank income category and fragile and conflict-affected situations for 2017: lower and upper bounds**

| | Lower bound | | | Upper bound | | |
|---|---|---|---|---|---|---|
| | N (millions) | % Population | % Global Total | N (millions) | % Population | % Global Total |
| **High-income economies** | | | | | | |
| *Population* | 1,247.7 | 100.0 | 16.6 | 1,247.7 | 100.0 | 16.6 |
| *Social exclusion* | **225.8** | 18.1 | **9.7** | **246.2** | 19.7 | **10.1** |
| **Upper-middle-income econ.** | | | | | | |
| *Population* | 2,472.5 | 100.0 | 32.9 | 2,472.5 | 100.0 | 32.9 |
| *Social exclusion* | **656.0** | 26.5 | **28.1** | **700.3** | 28.3 | **28.8** |
| **Lower-middle-income econ.** | | | | | | |
| *Population* | 2,645.6 | 100.0 | 35.2 | 2,645.6 | 100.0 | 35.2 |
| *Social exclusion* | **893.1** | 33.8 | **38.3** | **923.6** | 34.9 | **37.9** |
| **Low-income economies** | | | | | | |
| *Population* | 273.8 | 100.0 | 3.6 | 273.8 | 100.0 | 3.6 |
| *Social exclusion* | **139.5** | 50.9 | **6.0** | **141.5** | 51.7 | **5.8** |
| **Fragile & conflict-affected Situations** | | | | | | |
| *Population* | 867.1 | 100 | 11.6 | 867.1 | 100.0 | 11.6 |
| *Social exclusion* | **417.8** | 48.2 | **17.9** | **422.6** | 48.7 | **17.4** |
| **World total social exclusion** | **2,332.2** | **31.1** | **100.0** | **2,434.3** | **32.4** | **100.0** |

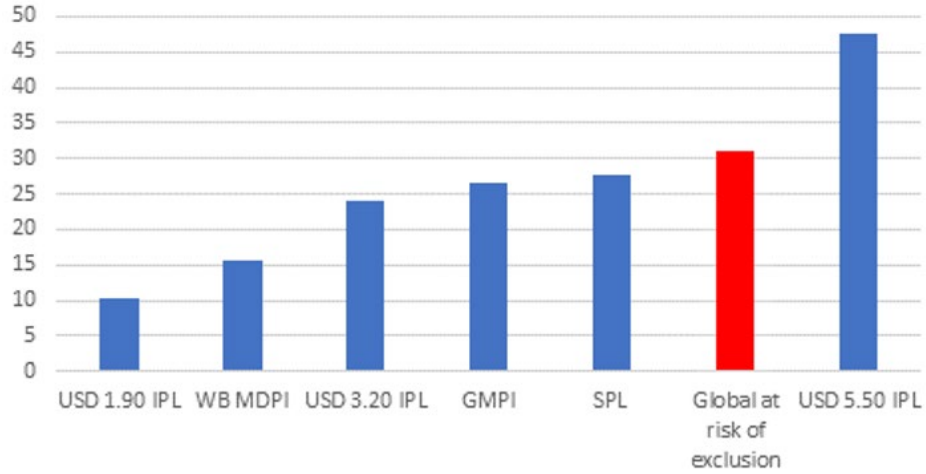
Source: Authors' estimates.
Notes: See Table 5 notes for definitions of lower and upper bound estimates.

These global estimates confirm two key results. First, the global population at risk of exclusion exceeds most existing estimates of monetary and multidimensional poverty. With a lower bound estimate of 31.1 percent of the global population in 2017, there were three times more people at risk of exclusion that than those living under the absolute monetary poverty line of USD 1.90 per person per day (2011 PPP)—estimated by World Bank (2020) to be around 10.4 percent. They also more than doubled the share of the multidimensionally poor, at 15.5 percent (World Bank 2020).[24] Those vulnerable to exclusion also exceeded global estimated numbers of those living in monetary poverty at USD 3.20 per person per day (24.1 percent), OPHI's estimates of the multidimensionally poor using the Global Multidimensional Index (26.5 percent),[25] and estimates using societal poverty lines (27.6 percent). Only global monetary poverty estimates using the USD 5.50 international poverty line, at 47.6 percent, exceed the share of the population at risk of exclusion (see Figure 3 below).

[24] The World Bank MDP includes the following dimensions to estimate deprivations: monetary poverty, educational attainment, educational enrolment, electricity, sanitation, and drinking water.
[25] The OPHI Global MPI uses health, education, and living standards indicators to estimate its incidence (Nutrition, Child Mortality, Years of Education, School Attendance, Cooking Fuel, Sanitation, Drinking Water, Electricity, Floor, and Assets).

Second, regional counts of the population at risk of exclusion show that Sub-Saharan Africa remains the region with the largest relative incidence, at 53 percent (both lower and upper-bound estimates). This parallels widespread monetary and multidimensional poverty, however defined, in the same region. For example, the headcount rate of poverty in Sub-Saharan Africa in 2017 ranges from 41 percent (for USD 1.90 per person per day) to 60 percent (using the Global Multidimensional Poverty Index).

**Figure 3. Global rates of poverty and exclusion, %, 2017**




Source: Authors' estimates
Note: IPL, international poverty line; MDPI, multidimensional poverty index; GMPI, global multidimensional poverty index; SPL, societal poverty line

## 6. Conclusions

In contrast to the multiple available estimates of worldwide monetary and multidimensional poverty, the global population at risk of social exclusion still lacks a similar estimate. This limits the ability of both international and national institutions to monitor progress towards sustainable development goals, honor political commitments to leave no-one behind, and design effective social development and protection programs. Poverty and exclusion, while intimately related, are conceptually different and should be measured differently.

We have developed a measure of social exclusion that encapsulates its relative, multidimensional, and dynamic nature. Our measure combines identity, circumstances, and the socioeconomic conditions of certain populations that are at a higher risk of exclusion from living a life of dignity in their society regardless of geographical and developmental contexts. Methodologically, we first identify vulnerable population groups and the criteria that make them at a heightened risk of exclusion. We then adopt a macro counting approach that estimates the shares of individuals within such populations to be at risk of exclusion per country; imputes information gaps based on regional or global peer averages; and avoids double-counting across categories of vulnerable population groups.

Our measurement sheds light on the global, regional, and developmental incidence of exclusion worldwide in a way not presented before. We estimate that between 2.33 and 2.43 billion people, or between 31.1 and 32.4 percent of the global population, are at risk of being excluded based on identity, circumstances, and socioeconomic considerations. This number is *notably* larger than global estimates of monetary poverty at USD 1.90 (2011 PPP) international poverty

lines and World Bank's multidimensional poverty headcounts. It is also *moderately* larger than USD 3.20 (2011 PPP) international poverty line poverty rates, the Global Multidimensional Poverty headcounts; and the global incidence of societal poverty as defined by the World Bank. Our global social exclusion estimate is only outstripped by the global poverty headcount using a USD 5.50 (2011 PPP) international poverty line.

Vulnerability to exclusion is most widespread in absolute terms in the South Asia and East Asia and Pacific regions. They concentrate 1.3 billion people at risk of exclusion: 53 percent of the worldwide total, a share that rises to 76 percent if we include Sub-Saharan Africa. India and China combined comprise some 36 percent of all those at risk of exclusion worldwide, 840 million people. Incidence is highest in Sub-Saharan Africa, where over 52 percent of people are at risk of exclusion. This rate is three times that observed in Europe and Central Asia. A fifth of people in the North America region—US and Canada—are at risk of exclusion, exceeding rates in Europe and Central Asia.

The share of at-risk populations in fragile, conflict-affected and violent contexts worldwide is close to 50 percent, driven by high rates in Sub-Saharan Africa (and to a lesser extent South Asia and East Asia Pacific). As expected, fewer people are at risk of exclusion in high-income economies (less than 10 percent of their population) while more people are vulnerable in low-income economies (about 48 percent). Middle income economies, the most populous worldwide and with large shares of exclusion—bordering 40 percent in the case of lower-middle-income economies—concentrate two thirds of those at risk of exclusion worldwide.

Our macro counting method has several limitations. Data gaps exist worldwide but are worse across fragile and poor countries. This is only partially compensated by the fact that these countries represent a relatively small share of the global population. Second, even though double-counting is dealt with methodically, it cannot be fully eliminated. To do so would require precise microdata that could identify each exclusion at the individual level (and specific thresholds to define exclusion sensitive to context). The closest data source to this is a census. However, censuses are neither frequently collected nor do they typically allow to identify certain vulnerable groups such as LGBTI people, forcibly displaced populations, or victims of GBV. Opportunities to improve such microdata to eliminate risks of double-counting would require technical innovations that avoid jeopardizing the privacy of such groups. Third, our analysis provides a static snapshot of exclusion at a point in time, but does not capture the fact that the roots, drivers, and agents of exclusion may well change over time and space.

Notwithstanding these issues, global estimates of the population at risk of exclusion provide three relevant policy messages. First, policies targeted to alleviate or end most extreme forms of poverty might overlook the non-extreme poor who are nevertheless at risk of exclusion. Globally, this gap is substantial in magnitude: about a fifth of the world's population, or almost 1.5 billion people.

Second, addressing exclusion effectively clearly requires multiple interventions, differing between groups and sustained over time. Drivers of social exclusion such as discriminatory laws, social norms, weak institutions, and recurrent crises may be familiar to all excluded groups. But exclusion due to GBV or forced displacement requires a package of interventions that might not be effective in tackling exclusion due to long-term unemployment, or lack of access to health or financial services.

Third, the complexities in defining and measuring exclusion does not mean that exclusion is unmanageable. However, addressing it effectively requires precise estimates and agreed-upon methodologies from available sources that can be monitored frequently and easily. Several similar methodological challenges have been overcome in the past, such as global food price monitoring and acute food insecurity warning systems; the internationally agreed system of national accounts; definitions and measurement of decent work; or international statistics on crime and justice. Such experiences offer lessons about the value of concerted action, arriving at technical agreements, operationalizing monitoring, and using data for effective policy making.

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## ANNEX 1

### A. Group-specific societal poverty headcounts

The observed overall poverty rate at the SPL can be expressed as the population weighted average of the poverty rates concerning the group at risk of social exclusion, on the one hand, and the rest of the people, on the other:

$$povrate\_SPL_{ct} = povrate\_SPL_{gct} \times sharepop_{gct} + povrate\_SPL_{(-g)ct} \times (1 - sharepop_{gct}). \quad \text{(A1)}$$

Dividing by $povrate\_SPL_{gct}$ both sides of the equation:

$$\frac{povrate\_SPL_{ct}}{povrate\_SPL_{gct}} = sharepop_{gct} + \frac{povrate\_SPL_{(-g)ct}}{povrate\_SPL_{gct}} \times (1 - sharepop_{gct}).$$

Defining $k_{gct} = \frac{povrate\_SPL_{gct}}{povrate\_SPL_{(-g)ct}}$:

$$\frac{povrate\_SPL_{ct}}{povrate\_SPL_{gct}} = sharepop_{gct} + \frac{1}{k_{gct}}(1 - sharepop_{gct}). \quad \text{(A2)}$$

And solving for the variable of interest:

$$povrate\_SPL_{gct} = \frac{povrate\_SPL_{ct}}{sharepop_{gct} + \frac{1}{k_{gct}}(1 - sharepop_{gct})}. \quad \text{(A3)}$$

From the previous equation we observe $povrate\_SPL_{ct}$ and $sharepop_{gct}$, but no $k_{gct}$. We approximate $k_{gct}$ by the ratio of the available proxy poverty rates: $\hat{k}_{gct} = \frac{povrate\_proxy_{gct}}{povrate\_proxy_{(-g)ct}}$ to get:

$$povrate\_\widehat{SPL}_{gct} = \frac{povrate\_SPL_{ct}}{sharepop_{gct} + \frac{1}{\hat{k}_{gct}}(1 - sharepop_{gct})} \quad (A4)$$

Our method extrapolates the poverty rate differential at the available poverty line to the SPL. We should use proxy poverty lines as similar to the SPL as possible for two related reasons: one, the composition of the poor may change depending on the poverty line even across a short range of values due to socioeconomic reasons, and two, the composition of the poor necessarily changes as the number of poor in a group reaches the total population of that group. In this regard, we can see in Equation (A1) that for $\hat{k}_{gct} > 1$ the estimated group-specific SPL poverty rate ($povrate\_\widehat{SPL}_{gct}$) may be greater than 1 depending on the observed overall SPL poverty rate ($povrate\_SPL_{ct}$) and the size of group at risk of social exclusion ($sharepop_{gct}$).[26]

[26] Note that $\hat{k} > 1$ is the relevant case as the poverty rates are always larger for the groups at risk of social exclusion.

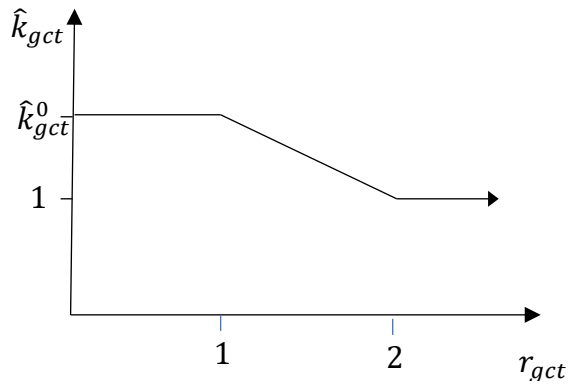
We first select the proxies for the SPL poverty rates according to the criteria shown in Table 1 trying to use poverty rates at those poverty lines closer to the SPL when data for several poverty rates at different poverty lines are available.

The second issue, which is especially apparent when extrapolating poverty rate differentials concerning a small at-risk group from a country with relatively low poverty rates to a country with a high SPL poverty rate,[27] is addressed by establishing a linear correcting factor for $\hat{k}_{gct}$ as a function of the ratio $r_{gct} = \frac{povrate\_SPL_{ct}}{povrate\_proxy_{ct}}$.[28] In particular, we assume that $\hat{k}_{gct}$ converges linearly to 1 across the interval $r_{gct} \in [1,2]$ and remains equal to 1 thereafter. The rationale is that, as can be seen in Equation A1, when $\hat{k}_{gct} = 1$ the estimated group-specific SPL poverty rate becomes equal to the observed overall SPL poverty rate. More formally, the function is defined as follows:

$$\hat{k}_{gct} = \begin{cases} \hat{k}^0_{gct} & \text{if } r_{gct} \leq 1 \\ 2\hat{k}^0_{gct} - 1 + \left(1 - \hat{k}^0_{gct}\right) r_{gct} & \text{if } 1 < r_{gct} < 2 \\ 1 & \text{if } r_{gct} \geq 2 \end{cases} \tag{A5}$$

where $\hat{k}^0_{gct} = \frac{povrate\_proxy_{gct}}{povrate\_proxy_{(-g)ct}}$.

Graphically it takes the following form:




This correcting factor is arbitrary although it seems reasonable and conservative. Thus, we establish that once the overall SPL poverty rate doubles the overall proxy rate the group at risk of social exclusion has the same poverty incidence as the general population. For each vulnerable group, Table A1.1 shows the number of countries that bind the restriction $r_{gct} \leq 1$.

[27] The most notorious example is the estimation of the number of the poor LGBTI in African countries using the poverty rate differentials affecting this group in the UK and the US.

[28] Note that $povrate\_proxy_{ct} = povrate\_proxy_{gct} \times sharepop_{gct} + povrate\_proxy_{(-g)ct} \times (1 - sharepop_{gct})$ is different for each vulnerable group.

**Table A1.1** Number of countries in the sample by $r_{gct}$ interval and vulnerable group

| | $r_{gct} \leq 1$ | $1 < r_{gct} < 2$ | $r_{gct} \geq 2$ | Total N |
|---|---|---|---|---|
| Children | 38 | 113 | 44 | 195 |
| Women | 75 | 54 | 66 | 195 |
| People with disability | 120 | 64 | 11 | 195 |
| LGBTI people | 19 | 53 | 123 | 195 |
| Indigenous people | 21 | 23 | 15 | 59 |
| Afrodescendants | 5 | 28 | 5 | 38 |
| Religious minorities | 59 | 101 | 35 | 195 |

**B. Correcting for overlapping at-risk populations based on socioeconomic status**

To account for the total number of people at risk of being socially excluded based on socioeconomic status adding up all at-risk groups' poverty numbers we sequentially estimate the intersection between each group and all the preceding ones in the sequence and subtract the resulting intersection from the corresponding unadjusted total. We use the *men* category as a residual group that comprises those individuals that are not included in the preceding groups.

First, once we have accounted for societal poor children, we should discount them from the remaining at-risk groups that include children (Intersecting group CH in Table 2). Regarding the age composition of the poverty headcount of at-risk group *g* ($povhc\_\widehat{SPL}_{gct}$), in general we assume the same age distribution as among the poor in general, thus we estimate the number of children among the societal poor in at-risk group *g*, for *g* including women, indigenous peoples, Afrodescendants, and religious minorities, in country *c* and year *t* as:

$$povhc\_\widehat{SPL}_{(CH)gct} = povhc\_\widehat{SPL}_{gct} \times sharehc\_\widehat{SPL}_{(CH)ct}, \qquad \text{(A6)}$$

where $sharehc\_\widehat{SPL}_{(CH)ct}$ is easily computed on the basis of the estimates for the children group in step 2 as:

$$sharehc\_\widehat{SPL}_{(CH)ct} = \frac{povhc\_\widehat{SPL}_{(CH)ct}}{povhc\_SPL_{ct}}. \qquad \text{(A7)}$$

Only in the case of the PWD poverty headcount do we assume the same age distribution as among the PWD group as a whole (instead of the age distribution among the poor in general), given that the prevalence of disability is highly correlated with age and moreover adults are who determine the poverty status of children in the household. Thus, in this case we have:

$$povhc\_\widehat{SPL}_{(CH)(PWD)ct} = povhc\_\widehat{SPL}_{(PWD)ct} \times sharePWDpop_{(CH)ct}, \qquad \text{(A8)}$$

where $sharePWDpop_{(CH)ct}$ is the share of children within the population of PWD in country *c* and year *t*.

Second, once we have accounted for societal poor adult women, we should discount them from the remaining at-risk groups that include women (Intersecting group FE in Table 2). Regarding the gender composition of the poverty headcount of the at-risk group *g* ($povhc\_\widehat{SPL}_{gct}$), we may estimate the share of women either based on poverty data broken down by gender or assuming the same gender distribution than among the poor in general depending on the

available data for each at risk group. Thus, for those groups for which we lack poverty data broken down by gender (persons with disabilities, Afrodescendants in countries other than those from the LAC region, and religious minorities) we assume the same gender distribution than among the poor in general to estimate the number of adult women among the societal poor of the at-risk group *g* in country *c* and year *t* as:

$$povhc\_\widehat{SPL}_{(FE)(-CH)gct} = povhc\_\widehat{SPL}_{gct} \times (1 - sharehc\_\widehat{SPL}_{(CH)ct}) \times sharehc\_\widehat{SPL}_{(FE)ct}, \quad \text{(A9)}$$

Where $sharehc\_\widehat{SPL}_{(FE)ct}$ is easily computed on the basis of the estimates for the women group in step 2 as:

$$sharehc\_\widehat{SPL}_{(FE)ct} = \frac{povhc\_\widehat{SPL}_{(FE)ct}}{povhc\_SPL_{ct}} \quad \text{(A10)}$$

For those groups for which we have poverty data broken down by gender (LGBTI, indigenous people, and Afrodescendants in Latin American and the Caribbean countries) we estimate the number of adult women among the societal poor of the corresponding at-risk group *g* in country *c* and year *t* as:

$$povhc\_\widehat{SPL}_{(FE)(-CH)gct} = povhc\_\widehat{SPL}_{gct} \times (1 - sharehc\_\widehat{SPL}_{(CH)ct}) \times shareghc\_proxy_{(FE)ct}, \quad \text{(A11)}$$

Where $shareghc\_proxy_{(FE)ct}$, the share of women among the poor of the corresponding at-risk group at the available proxy poverty line, may be directly taken from the shelf, as in the case of LGBTI, or, as in the case of IP and Afrodescendants in LAC countries, estimated as:

$$shareghc\_proxy_{(FE)ct} = \frac{povhc\_proxy_{(FE)gct}}{povhc\_proxy_{gct}} \quad \text{(A12)}$$

Where, using data already used in step 2, we have that:

$$povhc\_proxy_{(FE)gct} = pop_{(FE)gct} \times povrate\_proxy_{(FE)gct}, \quad \text{(A13)}$$

and

$$povhc\_proxy_{gct} = pop_{(FE)gct} \times povrate\_proxy_{(FE)gct} + pop_{(MA)gct} \times povrate\_proxy_{(MA)gct} \quad \text{(A14)}$$

Third, once we have accounted for societal poor adult men with disabilities, we should discount them from the remaining at-risk groups that include disabled men (intersecting group PWD in Table 2). For this purpose, we assume that PWD represent the same share of the remaining at-risk groups' poor adult men than among the poor adult men in general. Thus, we have:

$$povhc\_\widehat{SPL}_{(MA)(-CH)(PWD)gct} = povhc\_\widehat{SPL}_{gct} \times (1 - sharehc\_\widehat{SPL}_{(CH)ct}) \times sharehc\_\widehat{SPL}_{(MA)ct} \times share(MA)(-CH)hc\_\widehat{SPL}_{(PWD)ct}, \quad \text{(A15)}$$

where $share(MA)(-CH)hc\_\widehat{SPL}_{(PWD)ct} = \frac{povhc\_\widehat{spl}_{(MA)(-CH)(PWD)ct}}{povhc\_\widehat{spl}_{(MA)(-CH)ct}}$.

Fourth, once we have accounted for societal poor adult LGBTI men without disabilities, we should discount them from the remaining at-risk groups that include LGBTI men (Intersecting group LGBTI in Table 2). For this purpose, we assume that LGBTI people represent the same share of the remaining at-risk groups' poor adult men without disabilities than among the poor adult men in general. Thus, we have:

$$povhc\_\widehat{SPL}_{(MA)(-CH)(-PWD)(LGBTI)gct} = povhc\_\widehat{SPL}_{gct} \times (1 - sharehc\_\widehat{SPL}_{(CH)ct}) \times sharehc\_\widehat{SPL}_{(MA)ct} \times (1 - share(MA)(-CH)hc\_\widehat{SPL}_{(PWD)ct}) \times share(MA)(-CH)hc\_\widehat{SPL}_{(LGBTI)ct}, \quad \text{(A16)}$$

where $share(MA)(-CH)hc\_\widehat{SPL}_{(LGBTI)ct} = \frac{povhc\_\widehat{spl}_{(MA)(-CH)(LGBTI)ct}}{povhc\_\widehat{spl}_{(MA)(-CH)ct}}$.

Fifth, once we have accounted for societal poor indigenous adult men, we should discount them from the remaining at-risk groups that include indigenous men (Intersecting group IP in Table 2). In fact, the only remaining at risk group that intersects with the group IP is the *religious minorities* group (the group *men* is a residual category), whose data is disaggregated in several religious affiliations, one of which, *Folk Religions*, may be used to approximate the intersection between the groups IP and REMI. Thus, we take from the shelf the population of indigenous peoples that belongs to a religious minority in country *c* in year *t*: $pop_{(IP)(REMI)ct}$. Assuming a constant share of this intersection across age and gender groups we can easily compute the adult male population in this subgroup: $pop_{(MA)(-CH)(IP)(REMI)ct}$. Finally, assuming the same poverty incidence within this subgroup as among the group *religious minorities* in general, we get the headcount of interest as follows:

$$povhc\_\widehat{SPL}_{(MA)(-CH)(IP)(REMI)ct} = pop_{(MA)(-CH)(IP)(REMI)ct} \times \left(\frac{povhc\_\widehat{SPL}_{(MA)(-CH)(REMI)ct}}{pop_{(MA)(-CH)(REMI)ct}}\right). \quad \text{(A17)}$$

Finally, regarding the residual group *men*, we determine the total number of non-double-counted societal poor men as the residual or difference between the total number of societal poor people in country *c* and year *t* and the total number already accounted for as members of the previous at-risk groups:

$$povhc\_\widehat{SPL}\_nointersected_{(MA)ct} = povhc\_SPL_{ct} - \sum_g (povhc\_\widehat{SPL}_{gct} - povhc\_\widehat{SPL}\_intersected_{gct}), \quad \text{(A18)}$$

Where $povhc\_SPL_{ct} = povrate\_SPL_{ct} \times pop_{ct}$ and $povhc\_\widehat{SPL}\_intersected_{gct}$ is the sum of the different intersections between the societal poor of group *g* and those from the preceding groups in the sequence as estimated previously and shown in Table 2. For instance, for the case of the indigenous people we have that:

$$povhc\_\widehat{SPL}\_intersected_{(IP)ct} = povhc\_\widehat{SPL}_{(CH)(IP)ct} + povhc\_\widehat{SPL}_{(FE)(-CH)(IP)ct} + povhc\_\widehat{SPL}_{(MA)(-CH)(PWD)(IP)ct} + povhc\_\widehat{SPL}_{(MA)(-CH)(-PWD)(LGBTI)(IP)ct} \quad \text{(A19)}$$

It is now straightforward to compute the sum of the intersections between the group of societal poor men and those from the previous at-risk groups negatively as the difference between the

total number of societal poor men and the amount that do not belong to any of the previous at-risk groups:

$$povhc\_\widehat{SPL}\_intersected_{(MA)ct} = povhc\_\widehat{SPL}_{(MA)ct} - povhc\_\widehat{SPL}\_nointersected_{(MA)ct}$$
(A20)

**C. Correcting for overlapping at-risk populations based on socioeconomic status and other circumstances**

Starting from the total country number of people at risk of being socially excluded based on socioeconomic status (step 3), we then add all women victims of gender-based violence minus those already accounted for because of poverty status. We estimate the intersection between poverty and gender-based violence on the basis of data on the incidence of GBV by income level or poverty level. Thus, we first note that:

$$GBVrate_{(FE)act} = GBVrate_{(FE)a(SPL)ct} \times povrate\_SPL_{(FE)act} + GBVrate_{(FE)a(-SPL)ct}(1 - povrate\_SPL_{(FE)act}), \quad \text{(A21)}$$

Where $GBVrate_{(FE)act}$ represents the percentage of women victims of gender based violence in age group *a*, country *c* and year *t*; $GBVrate_{(FE)a(SPL)ct}$ is the corresponding incidence rate among women living below the societal poverty line and $GBVrate_{(FE)a(-SPL)ct}$ the incidence among those living above that line. $povrate\_SPL_{(FE)act}$ stands for the SPL poverty rate among women in age group *a*, country *c* and year *t*.

Solving for the variable of interest and defining $s_{act} = \frac{GBVrate_{(FE)a(SPL)ct}}{GBVrate_{(FE)a(-SPL)ct}}$ we have:

$$GBVrate_{(FE)a(SPL)ct} = \frac{GBVrate_{(FE)act}}{povrate\_SPL_{(FE)act} + (\frac{1}{s_{act}}) \times (1 - povrate\_SPL_{(FE)act})} \quad \text{(A22)}$$

There are two unknowns in this equation: $povrate\_SPL_{(FE)act}$ and $s_{act}$. Instead of $povrate\_SPL_{(FE)act}$ we use $povrate\_\widehat{SPL}_{(FE)act}$ as estimated in Step 2. Regarding $s_{act}$, we use an estimate of this ratio, $\hat{s}_{act}$, based on some auxiliary sources that provide data on the incidence of GBV by income level or poverty status.[29] The final expression takes the following form:

$$\widehat{GBVrate}_{(FE)a(\widehat{SPL})ct} = \frac{GBVrate_{(FE)act}}{povrate\_\widehat{SPL}_{(FE)act} + (\frac{1}{\hat{s}_{act}}) \times (1 - povrate\_\widehat{SPL}_{(FE)act})}.^{30} \quad \text{(A23)}$$

Finally, it is straight forward to estimate the intersection between SPL poverty and gender-based violence as follows:

[29] Most of the data available report the incidence of GBV by income quantiles. We use simple interpolations to estimate the incidence corresponding to the SPL percentile.
[30] Note that due to data constraints we assume that $GBVrate_{(FE)act}$ and $\hat{s}_{act}$ are constant across age groups.

$$povhc\_\widehat{SPL}_{(FE)a(GBV)ct} = \widehat{GBVrate}_{(FE)a(\widehat{SPL})ct} \times povhc\_\widehat{SPL}_{(FE)act}, \quad \text{(A24)}$$

Where $povhc\_\widehat{SPL}_{(FE)act}$ is the SPL poverty headcount of women in age group $a$,[31] country $c$ and year $t$ as estimated in Step 2.

We should then add all forcefully displaced persons not accounted already because of poverty status or as victims of GBV. The intersection between forced displacement and SPL poverty ($povhc\_\widehat{SPL}_{(FDP)ct}$) is estimated on the basis of auxiliary data on the incidence of poverty among foreigners as compares with nationals following the same procedure as in Step 2. Finally, assuming that the incidence of gender-based violence is constant across non-poor subgroups, the intersection between non-poor forcibly displaced women and gender based violence is estimated on the basis of some previous results as:

$$GBVhc_{(FE)(-\widehat{SPL})(FDP)ct} = \widehat{GBVrate}_{(FE)(-\widehat{SPL})ct} \times pop_{(FE)(-\widehat{SPL})(FDP)ct}, \quad \text{(A25)}$$

Where $GBVhc_{(FE)(-\widehat{SPL})(FDP)ct}$ is the total country number of non-poor forcibly displaced women that suffer gender based violence in country $c$ and year $t$; $\widehat{GBVrate}_{(FE)(-\widehat{SPL})ct}$ is the estimated incidence of gender based violence among non-poor women; and $pop_{(FE)(-\widehat{SPL})(FDP)ct}$ is the total country number of non-poor forcibly displaced women.

[31] Note that we assume the same age distribution among the poor females as among females in general to estimate the number of poor females with 15 to 17 years of age, on the one hand, and the number of poor females ages 18 to 49, on the other.