Household Patterns of the elderly in low- to middle-income countries from a Multilevel Perspective.

Jeroen Spijker (jspijker@ced.uab.es) and Joan Garcia-Román (jgarcia@ced.uab.es)
Centre d'Estudis Demogràfics, Spain

Abstract

This study examines trends in elderly living arrangements across 185 censuses from 61 low- and middle-income countries in Africa, Asia, and Latin America between 1976 and 2020. These regions offer a unique lens for understanding how demographic, economic, and cultural changes shape household structures in later life, particularly whether older adults are moving away from extended households toward more nuclear or one-person living arrangements.

Using multilevel logistic regression models, we analyze the likelihood of individuals aged 65 and older residing in nuclear or single-households. Results reveal an overall increase in independent living over time. However, once key country-level factors are controlled for—including GDP per capita, income inequality, singulate mean age at marriage, life expectancy at age 65, and population ageing—this temporal trend largely disappears. This suggests that national-level structural changes, rather than shifting individual preferences, are primarily responsible for the observed transition.

Specifically, economic development is positively associated with nuclear/solo living, while later age at marriage—indicating prolonged co-residence of adult children—is linked to more extended household forms. Life expectancy and population ageing also increase the likelihood of independent living, possibly due to improved pensions or social support systems. To conclude, our findings highlight the importance of macro-level context in shaping elderly living arrangements and challenge the assumption of a universal shift toward household nuclearization.

Keywords: Household patterns; Developing countries; Economic development; Demographic factors; Older adults/elderly

1. Background

Academic literature generally views intergenerational co-residence as a hallmark of traditional agricultural societies, which tend to diminish with industrialization, higher levels of education, economic development, and high rural-to-urban migration (Bongaarts and Zimmer, 2002; Goode, 1963; Ruggles and Heggeness, 2008; Spijker and Esteve, 2011). These processes favour the formation of smaller, more mobile nuclear families, particularly as wage labour opportunities in urban centres encourage younger generations to leave rural settings. In such contexts, small nuclear families are better able to adapt to the demands of urban life, which are characterised by high geographic and social mobility, than larger, more rigid, family structures (Burgess, 1960; Singh, 2003).

Nonetheless, previous research by Spijker and Esteve (2011) on young couples in 62 low- and middle-income countries found no clear trend of declining intergenerational coresidence between the 1970s and 2000s, suggesting that traditional family systems remain resilient in the face of modernisation. A similar pattern of living arrangement stability was found in Latin America, where the age at entry into marriages or consensual unions remained stable despite declining fertility declines and increasing female education and labour force participation (Fussell and Palloni, 2004). A process of erosion of the traditional family system is also taking place in Sub-Saharan Africa according to a study by Gabrielli et al. (2018), as one-parent and conjugal households increased between 1990 and 2013, albeit with considerable rural/urban and ethnic differences and an increase of new family forms.

However, while continuing economic growth in many middle-income countries may gradually erode this resilience among young adults, rising old-age survival rates are expected to increase the need for intergenerational coresidence for support in old age (Ruggles and Heggeness, 2008), especially in contexts where formal eldercare systems are lacking (Matus-López, 2015). These demographic shifts, also caused by declining fertility, are altering the age composition of populations by increasing the share of elderly in the population (Weil, 2006). This dynamic is also increasingly visible in emerging economies, especially in Eastern and South-Eastern Asia and Latin America, where the number of elderly dependents is increasing at even faster rates than in western countries (UNDESA, 2020). As elderly dependency ratios rise, the share of working-age adults available to support elderly relatives shrinks, placing strain on family-based support systems and increasing demands for public healthcare and long-term care services (Spijker, 2022).

The impact of these demographic changes on elderly living arrangements also depends on cultural norms. In patriarchal systems where stem and joint families are based on agricultural inheritance, the number of offspring does not strongly affect intergenerational coresidence for the elderly, as the (eldest) son is supposed to succeed the home enterprise,—which is mostly agriculture—and support the parents. However, if nuclear households are the norm, then fewer offspring reduces the likelihood of a child caring for (ailing) elderly parents. However, longer survival of both parents and children may increase intergenerational coresidence (Ruggles and Heggeness, 2008; Shim and Han, 2010).

Changing health conditions and marital status also play a significant role in shaping elderly living arrangements. In European countries, non-married individuals are most likely to live alone, but when their health deteriorates they tend to move in with other family (often a daughter) or to a care home (Dykstra, 2021; Gaymu et al., 2008). In contrast, married individuals typically live with their spouse, even in poor health, as partners usually act as primary caregivers. However, little is known on about the relationship between marital status and elderly living arrangements in non-Western societies, where traditional family forms are still common. In patrilineal joint-family and stem-family systems, wealth, property, and power are often concentrated in the hands of older men (Shäfer, 1997), making this a crucial area for further investigation.

Household structures are also shaped by global processes, such as the internationalization of norms and values. The growing emphasis on individual status over family orientation has led many societies to shift away from traditional living arrangements at varying speeds (Keilman, 1987; Van de Kaa, 1987). Key drivers include women's increased access to education, higher participation in labor markets, and the greater autonomy over sexual and reproductive decisions (Beck and Beck-Gernsheim, 1995; Esteve and Reher, 2024; Oppenheimer, 1994). These changes facilitate the emancipation of children from their parents' households, often before or during union formation. Conversely, early marriage remains common in societies where third parties (family, religious entities, the state) exert influence on individual's martial decisions, seen, for instance, in South Asia's parent-arranged marriage and patriarchal family structures (Jones, 2010).

Despite such global changes, the multiplicity in cultural contexts, societal and economic developments and differences in the timing of such developments has meant that inter- and intra-regional differences in household patterns persist. While all young adults in Western countries typically leave their parents' homes to form their own households, in poorer and more traditional regions of the world, it is still expected that at least one child (usually a son), remains in the parental home even after marriage, whereby in the case of the latter the female spouse would move into the household of her parents-in-law. This occurred in much of China and Japan until the early 1900s and is a practice still seen in large parts of Africa, the Arab world, Korea and India (Burguière et al., 1996; Gabrielli et al., 2018; Shim and Han, 2010) as children are still considered insurance for parents' old age there and an important contribution to family savings (Coontz, 2005). In Korea, the head of the family system, in which legally only sons could be the head of the family, was abolished only in 2005 (Shim and Han, 2010).

Nonetheless, even in these settings, the diffusion of modern norms and values is beginning to reshape intergenerational dynamics. In some African countries, female emancipation and a declining need for family labour due to the expansion of commercial crops has led (often school-educated) daughters or granddaughters to leave the village environment and migrate to urban areas, thereby rejecting traditional roles and challenging the lineage system and broader cultural norms (Dozon, 1996). Similarly, in rural China, female out-migration has resulted in a "bride drain", reducing local marriage rates for men (Meng, 2009), while in India, improved job prospects in the business process outsourcing industry for high-educated women have led to delays in both marriage and childbearing (Jensen, 2012). Such rural-to-urban migration by young adults in search of better career opportunities has not only challenged family support systems for older adults in rural areas, but also contributed to an increase in one-person and skipped generation households, as elders are often left behind without younger kin to co-reside or provide direct care (Cong and Silverstein, 2012).

While important insights into the living arrangements of older adults in developing regions have been provided by earlier studies—most notably Bongaarts and Zimmer (2002), who employed data from Demographic and Health Surveys (DHS) conducted between 1990 and 1998 in 43 countries in Africa,

Asia, and Latin America to document broad household patterns—limitations in data availability and cross-country comparability restricted the depth and scope of such analyses for many years. In contrast, developments in harmonised census microdata, particularly through the Integrated Public Use Microdata Series (IPUMS), now offer unprecedented opportunities to study elderly living arrangements across not only a wide range of low- and middle-income countries but also over many decades.

2. Hypotheses and study objective

Building on a prior study on changing household patterns of young couples in low- and middle-income countries (Spijker and Esteve, 2011), this study aims to determine whether elderly individuals in low- and middle-income countries are increasingly living in one-person or nuclear households. We employ a multilevel modelling approach to identify the individual, household, and country-level variables—specifically demographic, cultural, and economic factors—that influence the household composition of the elderly in these countries.

Analogous to Thornton and Lin's (1994) argument concerning young people, we expect that the likelihood of elderly individuals living alone or in a nuclear household increases in societies that are more extensively exposed to nonfamilial contexts, i.e. contexts that shape both the lives of younger generations and their own.

To summarize the earlier mentioned potential determinants of elderly living arrangements and based on the data collected at the individual, household, and national levels, we propose the following analytical-specific hypotheses, each accompanied by a brief justification in brackets:

Tested at the individual level:

1. Age is negatively associated with one-person/nuclear households (older individuals are more likely to be dependent).
2. Higher educational attainment is positively associated with one-person/nuclear households (reflecting both economic capacity and ideational values).
3. Being employed is positively associated with living in one-person/nuclear households (due to economic independence).
4. Being born in a different region than one's current residence is positively associated with one-person/nuclear households (due to geographic and social detachment from family).
5. Urban residence is positively associated with one-person/nuclear households (as extended households are more typical in agricultural societies).
6. Household wealth (measured by housing ownership) is positively associated with one-person/nuclear households (as wealth enables residential autonomy).

Tested at the country level (time specific):

7. Economic development (GDP in purchasing power parities) is positively associated with one-person/nuclear households (due to cultural and structural conditions that promote a culture of individualism; Ronald (2017)).
8. Average age at marriage (among the current population) is negatively associated with one-person/nuclear households among older adults (as delayed marriage among younger generations may postpone leaving the parental home and reduce the likelihood of intergenerational separation).
9. Life expectancy at age 65 is positively associated with extended households (as longer life increases the opportunity and need for co-residence).
10. Time (measured by 5-year census rounds) is positively associated with one-person/nuclear households (in line with Goode's (1963) prediction that nuclear families will ultimately become the majority).

While individual characteristics play a central role in shaping household structure, broader household and contextual factors—particularly economic and housing conditions—must not be overlooked. These structures determine whether independent living is financially and socially viable. Moreover, by analysing two or more time points per country, we are able to assess whether ongoing socioeconomic and cultural changes are shaping elderly living arrangements across a diverse set of low- and middle-income countries.

3. Method

3.1 The data

For our analysis, we selected 185 census samples from 61 low- and middle-income countries available in the Integrated Public Use of Microdata Series (IPUMS) International database for the period between 1976 and 2020 (Minnesota Population Center, 2025). These samples contain data for all relevant variables and include at least two samples per country. The extraction system allows customization of samples to obtain smaller subsamples while maintaining the representativity of the total population. We selected subsamples in which households exceeding 100,000 were limited to this threshold. From these households we selected individuals aged 65 and older. Appendix Table 1 provides for each census sample the overall number of sample cases, the population aged 65 and older used in the analysis, and its distribution according to household type—which is detailed below.

Individuals were selected based on the following criteria:

1) They lived in a family or private household (excluding those in group quarters, non-family, or

unclassified households); and

2) They were at least 65 years of age.

The dependent variable of the analysis refers to whether the individual lives in a one-person/nuclear household or in a traditional household, which we defined as follows:

1) One-person/nuclear households. Nuclear households consist of either living as a "married/cohabiting couple, with no children", "married/cohabiting couple, with children", or a "single-parent household", whereby the eldest child has to be under 20 years of age. As we consider adults 65 years and older, this is basically reduced to one-person and couple-only households (hence also labelled as independent elderly households).

2) Traditional households. Includes stem, joint, and other family households. Stem family households refer to individuals living as a "married/cohabiting couple, with children" or "single-parent household" where the eldest child is 20 years or older. Joint and other family households include the categories "polygamous family", "extended family, relatives only" and "composite household, family and non-relatives".

We use the following explanatory variables as outlined in the background:

1) Individual-level variables: Age, sex, literacy, employment status, migrant status[1], and urban/rural residence, house ownership status.

2) Sample-level variables: Life expectancy at age 65, log of GDP in PPP, Singulate Mean Age at Marriage (SMAM), and the proportion of the population aged 65 and older. As economic development may not reach all segments of the population equally, we controlled for income inequality (the Gini coefficient).

The individual-level variables are dichotomized, but we include a 'Missing' category to retain samples where information is unavailable. We also account for the type of census and the decade of data collection to control for registration-type and time changes. A description of the dependent and independent variables included in the analysis for each census sample can be found in Appendix Table 2. Averages for the whole sample is provided in Table 1.

3.2 Analytical Strategy

We first provide descriptive statistics on the proportion of elderly individuals residing in a one-person/nuclear household based on the individual characteristics to identify bivariate associations across the samples.

[1] Migrant status is computed from the major administrative unit in which the household was enumerated (GEOLEV1) and the place of birth at the same scale.

In order to estimate the independent effect of each explanatory variable on the odds of living in a single/nuclear household compared to a traditional household and to distinguish between the individual- and country-level effects, multi-level logistic regression was employed with random intercepts for the countries. It was modelled according to a binomial distribution using the function glmer from the package lme4 available in the statistical program R. We considered two levels of data: individual and country and ran five models, adding variables step by step:

- **Model 1**: Includes the year of the sample (grouped into 5-year intervals from 1976 until 2020).
- **Model 2**: Introduces demographic individual variables.
- **Model 3**: Adds sociodemographic characteristics.
- **Model 4**: Incorporates residence characteristics.
- **Full Model**: Includes sample-level variables.

The model also simultaneously estimates both within-level and between-level variances, allowing for the calculation of the intra-class correlation coefficient (ICC). The ICC quantifies the proportion of total variance in the outcome that is attributable to differences between the national contexts, rather than individual-level variation. This provides an indication of the extent to which household composition patterns are structured by broader country-level factors.

This structured approach allows us to systematically examine the individual- and country-level factors influencing elderly individuals' type of household. As a note, correlations between the individual-level variables were below 0.3, while regarding the contextual variables the highest correlation 0.65 between life expectancy the proportion of population 65 and older. All models are controlled for country effects and whether the census was de facto or de jure.

4. Results

4.1 Descriptive statistics

The proportion of elderly who live in non-traditional one-person/nuclear households according to the analysed individual characteristics is shown in Table 1. As one is able to observe, overall, 26.3 of the entire sample lived in one-person/nuclear households during the observation period, which varied between 3.5% in Senegal in 2002 and 70.3% in Israel in 1983; see Appendix Table 2. (For illustrative purposes, Appendix Figure 1 shows the country-specific proportions separately for one-person and nuclear household according to census year and continent). Men were over-represented in one-person/nuclear households: 30.0% of elderly men live in this type of household, compared to 22.8% of women. When comparing age groups, sex differences remain similar, although among the 80+ just 15.6% of women lived in a one-person or nuclear household. Regarding the other variables studied,

living in a one-person or nuclear household is more prevalent among literate than illiterate persons (28.7% versus 22.2%). The same applies to the employed (27.7% vs. the non-employed (25.1%). There are no differences according to migrant status (25.6% for both those who were born in the region they lived in and those that didn't). Urban dwellers were slightly more likely to live in a one-person or nuclear household (27.5% vs, 24.7% among those who lived in a rural area). Lastly, homeownership is associated with a lower probability of living in a single/nuclear household (25.2% vs. 32.1% among non-owners).

Table 1 Variable descriptives and the proportions of the population aged 65+ that lived in single/nuclear households according to the individual-level independent variables included in the model. The total sample comprises 185 censuses conducted between 1976 and 2020 across 61 low- and middle-income countries.

Variable	*Category*	*% in sample*	*% living in single/nuclear household*
Total sample	Total	100.0	26.3
Sex			
	Men	46.2	30.0
	Women	53.8	22.8
Age and sex			
	Men 65-69	36.1	30.1
	Men 70-74	27.7	30.9
	Men 75-79	17.4	31.5
	Men 80+	18.8	27.0
	Women 65-69	33.6	23.8
	Women 70-74	27.3	24.3
	Women 75-79	17.3	24.0
	Women 80+	21.7	15.6
Literacy			
	No	43.6	22.2
	Yes	42.8	28.7
	Missing	13.6	30.2
Employment			
	No	61.6	25.1
	Yes	29.0	27.7
	Missing	9.4	27.7
Migrant			
	Not from region	54.5	25.6
	From region	22.7	25.6
	Missing	22.8	27.8
Lives in urban area			
	No	42.4	24.7
	Yes	36.0	27.5
	Missing	21.6	26.5
House owner			
	No	12.1	32.1
	Yes	75.5	25.2
	Missing	12.3	25.7

Source: Minnesota Population Center (2025). For a list of census samples, see Appendix Table 1. Own calculations.

Multilevel model results

While descriptive statistics provide a general overview of the type of factors that may influence the household arrangements of the elderly population, many of these factors are interrelated and may confound the association between any one variable and the outcome. For instance, literacy may appear to be associated with a greater likelihood of living in nuclear households, but this could partly reflect the fact that younger elderly individuals are both more likely to be literate and more likely to be in good health, both of which s support independent living. In our multilevel logistic regression, we therefore estimate the independent effect of each explanatory variable on the odds of residing in a one-person/nuclear household (versus a traditional household), while simultaneously controlling for other individual and contextual factors, as well as for unobserved heterogeneity at the country level. This approach allows us to isolate the relative contribution of each factor and to distinguish between individual- and structural-level influences on elderly living arrangements in low- and middle-income countries. Results are shown in Table 2 and are described below.

The first model starts with the inclusion of the time when the census was held. Without controlling for any variable, temporal effects are clearly visible with the latest census period (2016-21) showing a 67% higher odds ratio (OR = 1.67, CI: 1.65–1.70) of living in single-person/nuclear households than the reference category (1976-80).

In Model 2, we added the individual demographic variables age and sex. Results confirm the first hypothesis (H1) as the oldest elderly (80+) were significantly less likely to live in single/nuclear households than younger elderly age groups (OR 0.82, CI: 0.81–0.83 when compared to the 65–69 reference group). Women were also less likely to reside in such households than men (OR = 0.65, CI: 0.64–0.65). Temporal effects remain very similar to Model 1.

Model 3 introduced the individual socioeconomic characteristics literacy, employment status, and migrant status. Not quite as expected, after controlling for census year, age and sex, being literate was no longer associated with a higher likelihood of living in a single/nuclear households (OR: 0.94, CI: 0.93–0.94) (H2). On the other hand, employment remained positively associated (OR = 1.28, CI: 1.27–1.29) (H3), reflecting the role of increasing economic status enabling independent living (Bongaarts and Zimmer, 2002; Dykstra, 2021). Being a migrant was also associated with a slightly lower likelihood of living in a one-person/nuclear household (OR: 0.97, CI: 0.96–0.97). While this finding contradicts Hypothesis 4, which anticipated a positive association, one potential explanation is that while migration may entail geographic and social detachment from the extended family in the region of origin, it may also foster the formation of larger or more extended households in the destination area. Migrants—especially in low- and middle-income countries—often face economic precarity and housing shortages leading to resources being pooled (Fussell and Palloni, 2004; Ruggles and Heggeness, 2008), or cultural expectations that encourage co-residence with other relatives for mutual support (Giuliano, 2007).

Another known pull factors is pension income, which can provide grandmothers time and resources to help with the childcare of young children while the mother works away from home (Edmonds et al., 2005). Thus, instead of promoting individualization, migration may in some contexts reinforce or recreate extended household living.

In Model 4, residence factors were added. Elderly individuals living in owner-occupied housing had significantly lower odds (OR = 0.74; CI: 0.73-0.74) of residing in single/nuclear households compared to non-owners. Urban residents were also slightly less likely to live in such households than rural dwellers (OR = 0.81; CI: 0.81-0.82). The fact that both Hypothesis 5 and 6 could not be confirmed possibly reflects the persistence of extended family structures in cities of low- and middle-income countries as well as the aforementioned economic precarity and (affordable) housing shortages (Fussell and Palloni, 2004; Ruggles and Heggeness, 2008). Missing data for both variables also strongly reduced the odds of elderly living independently, possibly indicating marginalized groups.

Finally, the full model (Model 5) incorporated contextual (country-level) variables corresponding to each census year. The application of a multilevel approach was justified by an intra-class correlation (ICC) of 0.13 in Model 4, indicating a sufficiently meaningful proportion of attributable to between-country differences, alongside a design effect well above the conventional threshold of 2 (Peugh, 2010). Controlling for selected country-level characteristics (including the Gini coefficient) reduced the ICC by 4 percentage points, representing a 31% reduction in the between-country variance observed in Model 4. In the full model, 6.2% of the total variance is explained by the individual-level (fixed) predictors, while an additional 8.6% is attributed to between-country differences, as captured by the random effects. These results highlight the combined explanatory power of both micro- and macro-level factors in shaping elderly living arrangements.

A key observation is that the inclusion of country-level variables substantially attenuated the previously observed temporal effects. While the odds ratios for the two most recent census periods (2011–2015: OR = 1.08; 2016–2020: OR = 1.06) remain significantly above 1 relative to the 1976–1980 reference period, they are considerably lower than those observed for the 1981–1985 period (OR = 1.16). This suggests that, when compared to the early 1980s, elderly households have actually become more traditional in structure. In other words, the upward trend in independent living among older adults observed from 1981–1985 to 2016–2020 (as seen in Model 1) appears largely driven by broader national-level processes of economic development and demographic shifts, rather than by a linear or autonomous trend toward household nuclearisation.

Turning to the effects of specific country-level predictors, the results reveal important macro-level dynamics. Higher GDP per capita (PPP, logged) is significantly associated with increased odds of older adults living in one-person or nuclear households (OR = 1.22), lending support to the hypothesis (H7) and the notion that economic development promotes more independent living arrangements in later life.

The singulate mean age at marriage (SMAM), used as a proxy for the current marriage system, is negatively associated with one-person/nuclear living among older adults. This finding aligns with Hypothesis 8, suggesting that in low- and middle-income societies where individuals marriage later, adult children are more likely to remain in the parental home longer, thereby reducing the likelihood of older adults living alone or solely with a spouse. As for life expectancy at age 65 and the proportion of the population aged 65+, both considered to be indicators of intergenerational co-residence potential, each shows a positive association with independent living among older adults (OR = 1.02 and 1.13, respectively), contrary to Hypothesis 9. Although longer life expectancy may increase the need for care, these findings suggest that ageing societies may also facilitate prolonged independent living, potentially through expanded pension systems, healthcare access, or cultural adaptations to longevity and family structure.

Finally, returning to the initial objective—namely, to assess whether elderly households have become less traditional—Model 1 indicates that they have. However, the full model shows that this trend is largely attributable to changes at the country level rather than individual-level shifts. This underscores the importance of structural and institutional factors in shaping household living arrangements among older populations.

Table 2. Multilevel logistic regression coefficients of the determinants of living in a one-person/nuclear household (vs. traditional household) for elderly in 61 low- to middle-income countries from the late 1980s to early 2020[a]

Type	Variable name	Predictor	*M1*		*M2*		*M3*		*M4*		*M5*	
Intercept	Intercept		**0.22**	0.22–0.23	**0.43**	0.41–0.46	**0.39**	0.37–0.41	**0.56**	0.52–0.60	**0.12**	0.11–0.13
Time	Five-year census period (Ref. 1976-80)	1981-1985	**1.10**	1.08–1.11	**1.11**	1.09–1.13	**1.09**	1.08–1.11	**1.12**	1.10–1.14	**1.16**	1.14–1.18
		1986-1990	**1.22**	1.21–1.24	**1.24**	1.22–1.27	**1.23**	1.21–1.25	**1.24**	1.22–1.26	**1.10**	1.08–1.12
		1991-1995	**1.15**	1.13–1.16	**1.17**	1.15–1.18	**1.16**	1.15–1.18	**1.18**	1.17–1.20	**1.09**	1.08–1.11
		1996-2000	**1.27**	1.26–1.29	**1.29**	1.27–1.31	**1.28**	1.26–1.30	**1.24**	1.22–1.26	1.00	0.98–1.01
		2001-2005	**1.33**	1.31–1.34	**1.35**	1.33–1.37	**1.36**	1.34–1.38	**1.35**	1.33–1.37	**1.11**	1.09–1.13
		2006-2010	**1.40**	1.38–1.42	**1.44**	1.41–1.46	**1.44**	1.42–1.46	**1.36**	1.34–1.38	*0.98*	0.96–1.00
		2011-2015	**1.46**	1.44–1.48	**1.51**	1.48–1.53	**1.52**	1.50–1.54	**1.51**	1.48–1.53	**1.08**	1.06–1.10
		2016-2020	**1.67**	1.65–1.70	**1.73**	1.70–1.76	**1.74**	1.71–1.78	**1.68**	1.65–1.71	**1.06**	1.03–1.08
Individual (Level 1)	Age (Ref 65-69)	70-74			**1.04**	1.03–1.04	**1.05**	1.05–1.06	**1.05**	1.05–1.06	**1.05**	1.05–1.06
		75-79			1.01	1.00–1.01	**1.03**	1.03–1.04	**1.04**	1.03–1.05	**1.04**	1.03–1.05
		80+			**0.82**	0.81–0.83	**0.85**	0.85–0.86	**0.86**	0.85–0.86	**0.85**	0.85–0.86
	Sex (Ref. Men)	Women			**0.65**	0.64–0.65	**0.68**	0.67–0.68	**0.68**	0.67–0.68	**0.68**	0.67–0.68
	Education (Ref. Illiterate)	Literate					**0.94**	0.93–0.94	**0.97**	0.96–0.97	**0.96**	0.95–0.97
		Missing					**0.90**	0.88–0.91	**0.89**	0.88–0.91	**0.88**	0.86–0.90
	Employment status (Ref. Not employed)	Employed					**1.28**	1.27–1.29	**1.26**	1.25–1.27	**1.26**	1.25–1.27
		Missing					**1.08**	1.06–1.09	**1.13**	1.11–1.14	**1.04**	1.03–1.05
	Migrant status (Ref. Region of birth)	Other region					**0.97**	0.96–0.97	**0.98**	0.97–0.99	**0.98**	0.97–0.98
		Missing					**0.93**	0.92–0.94	**0.96**	0.95–0.98	0.99	0.97–1.00
	Housing ownership (Ref. Not owner)	Owner							**0.75**	0.75–0.76	**0.75**	0.74–0.75
		Missing							**0.53**	0.52–0.54	**0.51**	0.50–0.52
	Urbanicity (vs Rural area)	Urban area							**0.85**	0.84–0.85	**0.84**	0.84–0.85
		Missing							**0.84**	0.83–0.85	**0.80**	0.79–0.81
Contextual (Level 2)	Life expectancy at age 65										**1.02**	1.02–1.03
	GDP (Purchasing power parities) (log)[b]										**1.22**	1.20–1.24
	Singulate Mean Age at Marriage										**0.96**	0.95–0.96
	Proportion population 65+										**1.13**	1.12–1.13
Random effects (Level 2)	σ2		3.29		3.29		3.29		3.29		3.29	
	Variance	Country	0.38		0.41		0.46		0.50		0.33	
	ICC		0.10		0.11		0.12		0.13		0.09	
	N	Country	61		61		61		61		61	
	Observations		3516632		3516632		3516632		3516632		3516632	
	Design effect		5766		6342		6919		7495		5189	
	Marginal R^2/ Conditional R^2		0.005/0.107		0.020/0.128		0.024/0.144		0.031/0.158		0.062/0.148	

Source: IPUMS-International (Minnesota Population Center, 2025). [a]All models are controlled for country fixed effects and census type (de jure, de facto or both). [b] Controlled for income inequality (Gini); in **bold**, significant at p<0.01, in *italics*, significant at p<0.05.

Discussion

This study offers new insights into the individual- and country-level determinants shaping the living arrangements of older adults across low- and middle-income countries, using harmonized census data across more than 4 decades from IPUMS-International. By adopting a multilevel analytical framework, we were able to assess both micro- and macro-level influences, focusing especially on the trend toward nuclear and one-person households in later life.

At the individual level, results showed that being male or 80+ significantly increased the likelihood of living alone or in a nuclear household. These findings reflect well-documented gendered patterns in mortality and caregiving norms, whereby women outlive their spouses and are more likely to age alone (Dykstra, 2021). Statistically significant negative associations between being a migrant, living in an urban area and owning an own home and the likelihood of independent living challenges some assumptions. It suggests that migration and urbanicity, while often involving geographic separation from kin, may also encourage the co-residence of extended families in response to financial constraints, housing shortages, or cultural preferences for interdependence.

In recent decades, significant global progress has been made in the area of education (Buchmann & Hannum 2001). While the power of the dimension of education originates in its efficiency as a principle of differentiation within social structures (Bourdieu 2006) it also represents the access to new values and beliefs—such as those prevalent in the presumably more developed West (Thornton & Philipov 2009), as well as access to better employment and higher income that can affect household structures (Becker, 1991). It is likely that these structural and ideational elements of education would influence, apart from values, and beliefs also family and demographic behaviour, including decisions regarding intergenerational co-residence and the financial ability to make this happen. However, while our bivariate results (showing a larger propensity for living alone or only with a spouse among the literate and those who live in an urban area) are consistent with earlier findings from Bongaarts and Zimmer (2002) on living arrangements of older adults in the developing world, once we controlled for other individual and country-level variables we found the opposite association. It should be mentioned, though, that Bongaarts and Zimmer (2002) did not apply a multi-level approach but used country as the unit of analysis.

At the country level, several macro-social factors were shown to have important explanatory power. Economic development, proxied by GDP per capita (PPP), was strongly associated with the likelihood of older adults living in single-person/nuclear households. This supports the hypothesis that economic growth fosters individual autonomy and reduces the economic necessity of intergenerational co-residence. Interestingly, the more traditional marital norms are, more likely that elderly living alone or only with a spouse, as later marriage can reflect stronger family ties and extended co-residence norms. However, it should be noted that our definition of a nuclear household (living with a spouse and/or children under the age of 20) also has bearing on the results as once adult co-residing children turn 20 the household would be considered a stem household (if no-one else except the spouse is also present in the household), which we considered as traditional.

Interestingly, the inclusion of macro-level variables in the full model attenuated the temporal effects that initially suggested a trend toward more nuclear living. Compared to the early 1980s, living arrangements in the most recent census periods appeared more traditional once macro-level context was

accounted for. This implies that national-level economic and demographic changes are major drivers of shifting household structures, rather than intrinsic cultural change or an inevitable trajectory toward nuclearization.

Despite its strengths, the study has several limitations. Census data provide only cross-sectional snapshots and are limited to co-residence, not broader support networks or caregiving arrangements. Variables such as health status, social policy specifics, or qualitative aspects of family life are not captured. Health status, in particular, may play a critical role in shaping living arrangements. Older adults in poor health may be more likely to move in with adult children—or, conversely, adult children may move in with ageing parents—to provide necessary care. Such decisions are often reactive and shaped by declining physical or mental functioning. Prior research has shown that men and women whose health deteriorates over time are more likely to change residence than those who remain in good health. The pressure to co-reside tends to arise when older individuals experience chronic physical or cognitive impairments that hinder their ability to carry out personal or household tasks independently (Bhula-or et al., 2022).

Additionally, the use of national averages for contextual indicators may mask important subnational variation. It is also important to emphasize that all measures are based on the current status of individuals at the time when the census was conducted as censuses are information sources on prevalence not incidence. However, despite the limitation of offering little biographical information, we strongly believe that the value of the international comparability remains high.

In sum, this study highlights the importance of integrating both individual and structural perspectives to understand the living arrangements of older adults. The findings challenge simplistic notions of a universal shift toward nuclearization and underscore the role of broader socio-economic and demographic contexts in shaping household structures in later life.

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Appendix Table 1 Characteristics of census samples included in the analysis.

Country/year	*Total population*	*Population aged 65+*		
	Initial sample size (households)	*Number of cases*	*Single/Nuclear household*	*Traditional household*
Total sample	**16232729**	**3516632**	**26.3**	**73.7**
Africa				
Benin 1979	61113	16512	23.8	76.2
Benin 1992	83344	20696	20.1	79.9
Benin 2002	100183	21599	19.5	80.5
Benin 2013	99791	16650	19.8	80.2
Botswana 1981	18306	4854	10.0	90.0
Botswana 1991	29241	6679	13.9	86.1
Botswana 2001	42375	8310	15.0	85.0
Botswana 2011	61792	9460	18.5	81.5
Burkina Faso 1996	100109	23570	11.7	88.3
Burkina Faso 2006	100087	20122	12.4	87.6
Cameroon 1987	99799	17370	23.9	76.1
Cameroon 2005	100105	17629	21.6	78.4
Côte d'Ivoire 1988	100124	11414	12.4	87.6
Côte d'Ivoire 1998	100042	14414	11.9	88.1
Egypt 1986	100029	18048	30.3	69.7
Egypt 1996	99983	15773	39.2	60.8
Egypt 2006	100023	15677	44.4	55.6
Ethiopia 1984	99579	19149	36.3	63.7
Ethiopia 1994	99959	15361	28.0	72.0
Ethiopia 2007	99990	14972	29.8	70.2
Ghana 2000	95484	25131	11.1	88.9
Ghana 2010	100042	20252	17.6	82.4
Guinea 1996	99810	30089	10.4	89.6
Guinea 2014	100026	27329	10.6	89.4
Kenya 1989	99938	15634	26.8	73.2
Kenya 1999	100033	14626	25.6	74.4
Kenya 2009	100026	14663	23.8	76.2
Kenya 2019	100013	15458	27.1	72.9
Lesotho 1996	37088	8789	20.0	80.0
Lesotho 2006	41726	10422	19.7	80.3
Malawi 1987	100145	17829	31.6	68.4
Malawi 1998	100001	17229	31.5	68.5
Malawi 2008	99869	16992	29.5	70.5
Malawi 2018	99977	16444	29.9	70.1
Mali 1987	99646	21094	19.2	80.8
Mali 1998	99926	21972	18.0	82.0
Mali 2009	99929	19463	16.6	83.4
Morocco 1982	99817	23053	22.4	77.6
Morocco 1994	100037	25653	16.8	83.2
Morocco 2004	87162	25234	12.0	88.0
Morocco 2014	100013	27952	18.2	81.8
Mozambique 1997	99900	12746	38.1	61.9
Mozambique 2007	100091	13530	39.7	60.3
Mozambique 2017	100069	14142	39.8	60.2
Rwanda 1991	100027	15231	22.5	77.5
Rwanda 2012	100190	13587	27.1	72.9
Senegal 1988	79904	24162	5.2	94.8
Senegal 2002	99999	32895	3.5	96.5
Senegal 2013	99929	28116	3.6	96.4
Sierra Leone 2004	82518	21509	10.6	89.4
Sierra Leone 2015	93966	18288	9.5	90.5
South Africa 2001	99954	19441	23.8	76.2
South Africa 2007	100049	19223	24.7	75.3
South Africa 2011	100027	18460	31.9	68.1
South Africa 2016	99963	22206	33.3	66.7
Tanzania 1988	99919	20580	20.5	79.5
Tanzania 2002	99972	17718	20.7	79.3
Tanzania 2012	99977	18312	21.5	78.5
Uganda 1991	100049	15054	23.9	76.1
Uganda 2002	100051	14502	28.4	71.6
Uganda 2014	100056	14225	21.6	78.4
Zambia 1990	99615	15482	22.6	77.4
Zambia 2000	101190	14952	22.6	77.4
Zambia 2010	99922	14428	21.4	78.6

Asia/Oceania				
Armenia 2001	81929	32276	28.8	71.2
Armenia 2011	76318	31567	27.7	72.3
Bangladesh 1991	100005	17425	15.0	85.0
Bangladesh 2001	99999	18534	17.5	82.5
Bangladesh 2011	99978	20531	19.7	80.3
Cambodia 2004	21000	4053	14.9	85.1
Cambodia 2008	99849	19851	16.3	83.7
Cambodia 2013	28650	5624	15.3	84.7
Cambodia 2019	100119	25320	15.9	84.1
China 1982	99986	20013	27.3	72.7
China 1990	99994	20862	27.8	72.2
China 2000	100000	24344	33.0	67.0
Fiji 1986	13000	2193	5.8	94.2
Fiji 1996	15003	2477	10.0	90.0
Fiji 2007	18522	3788	12.4	87.6
Indonesia 1980	99993	15522	26.0	74.0
Indonesia 1985	99973	15756	28.2	71.8
Indonesia 1990	100228	17302	28.2	71.8
Indonesia 1995	100020	17858	31.4	68.6
Indonesia 2005	99899	16998	33.5	66.5
Indonesia 2010	100003	19439	31.2	68.8
Iran 2006	100075	23896	42.0	58.0
Iran 2011	100002	20359	48.8	51.2
Israel 1983	99687	28919	70.3	29.7
Israel 1995	100233	31273	67.8	32.2
Kyrgyz Republic 1999	100258	23948	30.4	69.6
Kyrgyz Republic 2009	99860	21791	22.9	77.1
Laos 1995	80174	17048	8.7	91.3
Laos 2005	99098	21751	8.4	91.6
Laos 2015	100286	23083	8.1	91.9
Malaysia 1980	38049	7007	20.3	79.7
Malaysia 1991	78192	13146	20.8	79.2
Malaysia 2000	95564	17005	24.4	75.6
Mongolia 1989	42783	8616	39.0	61.0
Mongolia 2000	55795	8571	24.2	75.8
Mongolia 2010	76815	10264	33.5	66.5
Mongolia 2020	96561	13775	42.2	57.8
Nepal 2001	99963	21370	15.5	84.5
Nepal 2011	100073	26062	16.8	83.2
Papua New Guinea 1990	67757	8496	22.3	77.7
Papua New Guinea 2000	94041	11825	20.3	79.7
Philippines 1990	100011	18261	19.7	80.3
Philippines 2000	99993	19292	21.9	78.1
Philippines 2010	99991	19606	23.6	76.4
Thailand 1980	76189	13865	13.9	86.1
Thailand 1990	100113	18409	14.7	85.3
Thailand 2000	100253	22512	19.7	80.3
Turkey 1985	99979	18133	28.1	71.9
Turkey 1990	99980	18201	30.0	70.0
Turkey 2000	99960	20765	35.2	64.8
Vietnam 1989	100041	21764	23.4	76.6
Vietnam 1999	100026	23888	20.5	79.5
Vietnam 2009	100001	24369	29.3	70.7
Vietnam 2019	99983	28438	36.2	63.8
Latin America and the Caribbean				
Argentina 1980	100009	27861	26.8	73.2
Argentina 1991	99971	31048	35.5	64.5
Argentina 2001	99986	34667	46.6	53.4
Bolivia 1976	90920	15806	30.6	69.4
Bolivia 1992	85973	15345	36.4	63.6
Bolivia 2001	88024	17228	35.2	64.8
Bolivia 2012	100040	20751	33.8	66.2
Brazil 1980	99998	18728	30.6	69.4
Brazil 1991	99989	20264	31.7	68.3
Brazil 2000	99995	21907	34.7	65.3
Brazil 2010	99992	25676	37.4	62.6
Chile 1982	93277	23811	21.7	78.3
Chile 1992	93116	23285	24.5	75.5
Chile 2002	90096	24760	30.8	69.2
Colombia 1985	91430	18888	16.2	83.8
Colombia 1993	92376	18558	17.2	82.8
Colombia 2005	99982	26629	26.0	74.0
Costa Rica 1984	51830	10762	22.9	77.1
Costa Rica 2000	90741	20009	29.5	70.5

Costa Rica 2011	99753	25085	35.0	65.0
Cuba 2002	97941	31464	25.3	74.7
Cuba 2012	99898	35120	32.4	67.6
Dominican Republic 1981	88649	17048	18.6	81.4
Dominican Republic 2002	89475	19647	25.9	74.1
Dominican Republic 2010	86563	18833	27.7	72.3
Ecuador 1982	84297	16386	24.8	75.2
Ecuador 1990	86499	17080	26.3	73.7
Ecuador 2001	82740	22837	23.4	76.6
Ecuador 2010	99986	23837	33.1	66.9
El Salvador 1992	88889	20396	18.4	81.6
El Salvador 2007	82773	22650	24.8	75.2
Guatemala 1981	58857	9346	20.6	79.4
Guatemala 1994	99754	19680	23.1	76.9
Guatemala 2002	99897	22476	24.4	75.6
Honduras 1988	77406	14932	17.7	82.3
Honduras 2001	99664	19374	19.1	80.9
Honduras 2013	78876	17368	20.5	79.5
Jamaica 1982	54526	15168	28.3	71.7
Jamaica 1991	62291	16864	29.3	70.7
Jamaica 2001	64317	15235	35.0	65.0
Mexico 1995	72277	16102	27.0	73.0
Mexico 2000	100001	23336	29.3	70.7
Mexico 2010	99987	29497	34.0	66.0
Mexico 2015	100007	29839	34.7	65.3
Mexico 2020	99990	33088	35.4	64.6
Nicaragua 1995	75852	15292	13.1	86.9
Nicaragua 2005	88765	18512	15.6	84.4
Panama 1980	42965	8489	25.8	74.2
Panama 1990	54019	12451	25.7	74.3
Panama 2000	73419	17006	26.2	73.8
Panama 2010	95579	25175	30.3	69.7
Paraguay 1982	60465	12882	19.3	80.7
Paraguay 1992	88386	18574	22.7	77.3
Paraguay 2002	100034	22318	21.3	78.7
Peru 1993	88151	18330	23.7	76.3
Peru 2007	85988	21553	26.3	73.7
Peru 2017	82692	23194	32.5	67.5
Trinidad and Tobago 1980	23813	5713	32.9	67.1
Trinidad and Tobago 2000	30474	7744	31.4	68.6
Trinidad and Tobago 2011	35824	10502	31.8	68.2
Uruguay 1985	84962	31061	40.3	59.7
Uruguay 1996	84677	34365	44.0	56.0
Uruguay 2006	85316	36619	57.4	42.6
Uruguay 2011	100422	39305	56.8	43.2
Venezuela 1981	87731	15669	17.0	83.0
Venezuela 1990	85623	15987	17.8	82.2
Venezuela 2001	84241	17423	18.5	81.5

Appendix Table 2. Independent variables included in the analysis.

Country/year	*Population 65+*													*Total population*				
	Age, men				Age, women				Total	Socioeconomic		Residence status		Housing	Contextual				
	65-69	*70-74*	*75-79*	*80+*	*65-69*	*70-74*	*75-79*	*80+*		*% literate*	*% employed*	*not in region of birth*	*% urban*	*% owner*	*e65*	*GINI*	*GDP in PPP*	*SMAM*	*%65+*
Total sample	**17.0**	**12.8**	**8.0**	**8.6**	**18.3**	**14.6**	**9.2**	**11.6**	**100.0**	**46.2**	**33.7**	**28.5**	**41.8**	**86.0**	**14.0**	**45.7**	**6197.0**	**21.4**	**5.1**
Africa																			
Benin 1979	13.3	12.7	7.5	18.9	12.3	11.3	6.9	17.2	100.0	NA	53.2	9.3	NA	91.4	12.1	38.6	1594.0	17.9	5.4
Benin 1992	11.6	13.9	6.4	17.7	13.6	13.7	5.9	17.1	100.0	5.3	63.5	10.1	32.2	74.4	13.1	38.6	1790.5	19.0	4.2
Benin 2002	10.9	12.7	5.4	16.0	13.9	15.3	6.7	19.1	100.0	8.3	60.3	12.2	30.9	34.1	13.2	38.6	1934.4	19.8	3.8
Benin 2013	11.7	12.7	5.2	14.9	13.2	15.4	6.6	20.3	100.0	15.0	48.3	15.6	41.9	36.6	13.3	45.6	1939.0	20.7	3.0
Botswana 1981	11.8	7.4	6.2	20.0	13.5	8.3	7.6	25.3	100.0	NA	NA	NA	NA	69.7	12.6	54.2	2528.0	20.1	6.1
Botswana 1991	13.4	9.9	7.3	13.4	17.5	11.4	9.0	18.2	100.0	NA	34.4	NA	30.0	78.1	12.6	59.2	5616.0	20.5	5.0
Botswana 2001	12.3	9.7	6.8	14.9	16.1	14.0	11.2	15.0	100.0	NA	17.7	26.2	NA	95.0	11.8	63.4	8082.8	21.6	5.2
Botswana 2011	12.2	9.4	7.1	12.5	15.4	13.0	10.7	19.9	100.0	NA	32.2	26.0	NA	93.2	13.2	58.1	13376.0	22.4	4.9
Burkina Faso 1996	15.2	12.9	7.1	13.2	15.2	14.1	7.2	15.1	100.0	2.1	61.7	15.5	NA	96.8	11.1	49.0	1255.8	19.0	4.0
Burkina Faso 2006	14.5	11.7	6.7	13.7	15.1	13.3	7.2	17.9	100.0	3.6	52.8	17.4	17.6	89.0	11.4	41.6	1322.6	19.0	3.9
Cameroon 1987	17.2	14.1	6.0	11.1	17.0	16.1	5.7	12.7	100.0	15.5	51.5	NA	20.2	93.8	12.5	62.0	2471.0	19.9	3.5
Cameroon 2005	17.2	13.9	7.3	9.0	18.5	15.4	7.7	11.1	100.0	32.0	48.4	NA	32.9	90.4	12.5	57.0	2222.9	18.7	3.5
Côte d'Ivoire 1988	25.7	12.2	6.6	8.0	20.5	10.9	5.9	10.2	100.0	7.0	50.4	20.3	NA	92.0	12.0	36.9	2444.0	18.2	2.1
Côte d'Ivoire 1998	21.9	14.3	8.3	8.5	18.5	12.6	6.9	9.1	100.0	7.5	60.0	27.1	29.9	86.4	11.9	39.0	2393.5	19.4	2.5
Egypt 1986	25.1	13.9	6.7	8.1	19.0	13.6	5.5	8.1	100.0	23.0	13.2	25.2	49.5	69.1	12.9	32.0	3921.0	22.1	3.8
Egypt 1996	25.2	15.9	6.8	5.3	20.8	15.2	5.3	5.7	100.0	23.7	15.1	24.0	42.7	74.5	13.6	30.8	5293.1	22.1	3.4
Egypt 2006	24.1	15.0	7.5	6.4	20.0	13.8	6.4	6.9	100.0	27.0	11.5	20.9	45.0	76.2	13.4	31.5	8509.6	22.9	3.7
Ethiopia 1984	16.1	14.6	7.3	15.7	12.8	14.6	5.3	13.7	100.0	6.2	NA	NA	13.3	56.5	10.1	34.4	956.0	17.8	4.7
Ethiopia 1994	19.3	16.7	8.2	12.1	13.8	15.0	5.8	9.3	100.0	6.6	NA	NA	13.5	67.8	11.5	29.0	731.8	19.8	3.2
Ethiopia 2007	19.4	14.0	8.2	13.4	15.8	13.5	6.2	9.5	100.0	13.6	63.8	NA	15.3	90.0	12.5	31.5	936.4	19.6	3.4
Ghana 2000	12.9	10.6	7.2	19.2	12.6	12.0	7.1	18.3	100.0	29.2	51.2	17.9	38.8	72.5	13.0	40.9	2100.3	20.8	5.2
Ghana 2010	11.9	12.6	7.6	10.6	13.5	17.0	10.3	16.4	100.0	35.6	50.2	21.1	45.0	72.9	13.3	42.5	2946.0	22.7	4.7
Guinea 1996	16.7	11.7	7.6	13.8	15.1	13.9	6.8	14.5	100.0	9.2	51.6	91.0	17.5	92.2	12.5	44.9	927.1	17.7	4.8
Guinea 2014	16.6	14.3	8.5	11.7	14.7	15.2	7.3	11.7	100.0	13.3	40.2	91.2	23.4	NA	13.2	48.3	1399.0	19.1	3.8
Kenya 1989	15.9	11.2	8.8	13.2	16.3	12.3	8.1	14.3	100.0	24.0	69.1	10.0	7.6	94.4	13.3	57.5	1761.0	19.8	3.4
Kenya 1999	15.3	12.2	8.6	10.1	17.1	14.8	9.0	13.1	100.0	NA	68.9	11.4	13.3	92.3	12.9	45.4	1920.8	20.0	3.3
Kenya 2009	13.6	11.8	7.8	12.1	15.3	14.0	8.9	16.5	100.0	NA	66.8	10.8	19.3	93.7	13.9	44.2	2404.6	20.9	3.4
Kenya 2019	16.3	13.1	6.6	8.6	18.0	14.8	9.1	13.5	100.0	NA	81.6	11.3	15.0	93.9	14.4	37.1	3207.3	21.5	4.0
Lesotho 1996	13.7	10.1	8.3	5.9	17.8	16.0	13.7	14.5	100.0	NA	22.8	NA	10.6	96.3	12.2	60.3	1931.7	21.6	4.7
Lesotho 2006	13.4	12.3	5.6	5.7	17.0	21.3	10.8	13.9	100.0	67.5	25.8	NA	13.0	NA	10.4	49.8	2056.3	20.7	5.8
Malawi 1987	18.6	10.8	7.7	11.1	20.1	12.0	7.5	12.2	100.0	25.1	77.9	35.2	4.5	97.3	12.1	56.0	905.0	18.1	4.2
Malawi 1998	16.8	11.3	8.3	10.5	18.9	13.2	8.2	12.8	100.0	36.2	87.4	NA	4.9	96.7	11.3	50.3	986.0	18.3	4.0
Malawi 2008	14.4	9.2	9.4	10.4	16.2	12.0	12.3	16.1	100.0	38.7	56.6	20.2	5.7	96.9	12.8	43.6	1017.8	18.7	3.9
Malawi 2018	16.5	9.0	8.1	8.1	20.3	12.1	11.4	14.4	100.0	41.3	80.3	19.8	7.1	97.0	14.0	40.6	1172.7	19.7	3.7
Mali 1987	14.5	9.8	4.9	20.3	13.5	10.4	5.1	21.6	100.0	8.1	41.8	NA	NA	91.8	10.6	36.5	1138.0	18.4	5.2
Mali 1998	17.3	14.2	7.7	12.9	15.5	13.2	6.3	12.8	100.0	8.0	43.9	NA	23.1	86.1	11.0	44.4	1167.4	19.0	4.0
Mali 2009	11.6	8.9	5.7	23.8	10.3	8.9	5.0	25.9	100.0	16.1	44.1	NA	16.9	81.0	11.8	51.0	1477.4	18.5	5.1
Morocco 1982	16.8	15.5	7.3	13.7	12.4	16.4	5.1	12.7	100.0	7.7	23.1	NA	NA	81.9	12.2	39.2	3725.0	22.0	3.9

Morocco 1994	17.7	14.9	7.3	10.6	16.0	16.3	5.5	11.7	100.0	9.2	20.4	NA	NA	81.4	13.0	39.3	4461.1	25.0	4.5
Morocco 2004	15.6	14.3	7.6	11.5	16.7	15.6	6.6	12.2	100.0	14.0	18.7	NA	NA	83.8	13.6	40.7	5584.2	26.2	5.6
Morocco 2014	15.0	12.8	19.0	0.9	15.3	15.2	21.1	0.7	100.0	24.9	14.0	NA	58.0	85.9	14.6	39.5	7714.6	32.2	6.2
Mozambique 1997	21.5	10.1	9.2	7.8	23.7	10.6	9.3	7.9	100.0	13.3	67.8	12.0	22.1	NA	11.3	52.5	1323.7	17.4	3.0
Mozambique 2007	18.4	11.6	9.1	8.0	20.4	13.2	9.3	10.0	100.0	20.7	66.0	12.0	22.8	97.4	11.2	45.8	1068.0	17.6	3.1
Mozambique 2017	16.9	10.3	8.3	10.0	18.6	12.6	9.8	13.6	100.0	31.7	47.5	18.5	27.1	91.2	11.9	51.9	1076.7	17.2	3.2
Rwanda 1991	18.4	15.4	7.7	7.1	19.4	17.5	7.0	7.5	100.0	9.7	58.3	14.5	NA	98.3	10.6	46.3	1282.3	21.3	3.1
Rwanda 2012	11.8	10.4	6.9	9.7	18.9	16.6	10.7	15.0	100.0	25.1	37.0	NA	9.6	94.9	13.1	60.0	1528.6	23.4	3.2
Senegal 1988	21.7	12.2	7.9	9.3	19.6	10.0	7.6	11.7	100.0	9.4	38.9	50.2	NA	86.9	12.0	54.1	2085.0	20.1	3.5
Senegal 2002	16.9	15.4	9.0	9.4	15.4	16.3	7.2	10.4	100.0	35.6	31.1	31.3	36.5	90.5	12.1	40.7	1959.6	21.3	3.6
Senegal 2013	16.5	14.3	7.9	10.0	16.0	15.5	8.1	11.7	100.0	21.1	19.5	29.2	44.1	92.3	13.2	39.7	2127.4	21.8	3.5
Sierra Leone 2004	13.1	11.1	8.3	17.5	13.8	12.4	7.7	16.0	100.0	16.4	64.2	22.8	29.0	87.7	11.2	39.4	1197.2	19.8	4.6
Sierra Leone 2015	15.0	12.4	8.0	12.3	15.0	14.3	8.0	15.1	100.0	22.7	58.6	22.0	36.1	85.8	12.1	35.0	1563.0	20.6	3.5
South Africa 2001	13.5	10.1	6.3	6.6	21.7	18.0	10.9	12.9	100.0	NA	9.5	14.9	52.9	70.5	14.7	59.2	7839.6	20.3	5.2
South Africa 2007	15.2	8.9	6.3	5.7	21.9	16.8	12.2	13.1	100.0	NA	19.9	15.1	54.3	76.7	14.8	63.6	10576.3	20.5	5.4
South Africa 2011	14.7	11.1	6.1	6.3	20.1	16.5	11.3	14.0	100.0	NA	NA	17.7	56.1	72.9	14.8	63.3	11838.0	19.9	5.7
South Africa 2016	16.3	10.1	6.8	5.5	22.5	14.8	11.6	12.5	100.0	NA	NA	10.7	51.0	83.5	15.5	63.0	11908.1	20.1	5.9
Tanzania 1988	15.4	13.0	7.6	13.8	14.3	13.4	6.4	16.1	100.0	17.1	68.0	18.0	NA	93.4	12.6	35.3	867.0	19.1	4.5
Tanzania 2002	15.5	13.3	8.2	10.3	16.5	14.4	8.5	13.3	100.0	28.4	56.9	15.8	31.0	NA	12.5	38.2	1293.2	19.5	4.1
Tanzania 2012	13.6	14.1	8.6	12.3	14.1	14.1	8.3	14.8	100.0	38.5	60.3	13.7	23.9	93.1	13.6	38.2	2271.5	19.3	3.7
Uganda 1991	16.1	13.6	8.1	12.6	15.4	14.9	7.3	12.1	100.0	16.6	55.4	48.4	5.2	94.7	11.1	42.4	915.4	18.5	3.7
Uganda 2002	16.6	13.9	7.5	12.2	14.6	15.0	6.7	13.3	100.0	31.1	45.3	42.4	6.3	93.9	11.0	45.2	1301.1	18.7	3.1
Uganda 2014	15.2	12.7	7.4	10.3	15.6	16.0	8.0	14.9	100.0	31.3	66.0	NA	16.0	94.0	11.6	41.9	1941.2	19.5	3.0
Zambia 1990	19.5	15.5	8.3	7.1	19.1	14.8	7.4	8.4	100.0	26.4	44.7	32.3	15.0	89.5	11.9	60.5	1285.0	20.4	2.6
Zambia 2000	21.7	15.0	9.1	9.5	18.1	12.0	6.5	8.1	100.0	36.7	52.7	40.0	19.0	92.7	11.1	45.6	1428.5	19.7	2.8
Zambia 2010	16.4	12.7	9.2	9.2	18.6	14.5	9.1	10.2	100.0	52.1	50.9	42.6	NA	90.4	12.3	52.0	3032.1	20.2	2.7
Asia/Oceania																			
Armenia 2001	16.8	14.8	6.1	2.8	20.9	20.0	11.6	7.1	100.0	96.8	16.7	44.7	60.2	95.2	14.3	35.4	5457.5	23.2	9.9
Armenia 2011	9.2	13.9	9.5	7.6	11.8	20.0	13.9	13.9	100.0	98.9	22.8	37.7	65.2	95.5	15.1	29.4	8465.0	24.4	10.5
Bangladesh 1991	18.4	19.6	7.6	12.1	13.2	14.6	5.0	9.5	100.0	22.3	48.7	NA	15.5	94.3	11.9	27.6	1031.4	17.9	3.3
Bangladesh 2001	16.7	19.0	7.7	12.4	13.4	14.4	5.6	10.7	100.0	29.0	44.2	NA	18.0	93.5	14.7	33.4	1551.2	19.0	3.9
Bangladesh 2011	16.4	17.9	7.2	11.9	14.3	15.2	5.7	11.5	100.0	23.0	37.6	NA	16.9	92.8	14.1	32.2	2772.0	19.3	4.7
Cambodia 2004	16.7	10.8	7.0	5.5	23.3	17.9	10.8	8.1	100.0	37.7	40.4	16.1	13.2	96.4	14.0	49.6	1965.9	22.5	3.9
Cambodia 2008	15.5	11.4	7.6	5.8	22.5	16.5	11.3	9.4	100.0	48.4	54.2	13.6	16.4	97.5	14.5	49.2	2482.0	22.9	4.3
Cambodia 2013	15.3	11.1	7.0	6.5	22.3	16.7	11.0	10.2	100.0	49.0	48.6	20.6	14.5	97.0	15.1	45.3	2813.7	22.1	4.9
Cambodia 2019	15.7	10.6	6.5	6.6	23.3	16.0	10.4	10.8	100.0	73.0	51.0	13.5	35.8	NA	15.3	46.5	3896.8	22.9	5.9
China 1982	20.6	13.2	7.0	3.9	22.1	15.5	11.0	6.8	100.0	18.1	16.5	NA	NA	NA	13.0	28.5	2128.0	22.2	4.9
China 1990	20.7	13.0	7.7	4.2	21.2	15.1	10.0	8.1	100.0	25.2	19.2	NA	NA	NA	14.0	32.2	2982.0	21.8	5.6
China 2000	20.1	13.9	8.2	5.1	20.4	14.5	9.7	8.1	100.0	50.5	NA	8.6	22.2	NA	15.4	39.8	4730.4	23.1	7.4
Fiji 1986	19.1	13.3	7.5	10.0	18.7	13.4	7.2	10.8	100.0	NA	29.0	93.4	34.2	85.8	11.9	46.3	6308.1	22.3	3.4
Fiji 1996	21.1	13.0	7.8	5.4	22.5	13.7	9.5	7.1	100.0	NA	37.1	92.4	NA	76.5	12.1	45.7	9349.9	22.6	3.2
Fiji 2007	21.3	12.6	7.3	5.7	22.1	14.6	7.7	8.6	100.0	NA	26.1	92.1	44.7	84.9	12.1	40.0	12928.2	21.9	4.5
Indonesia 1980	16.7	14.5	6.4	7.6	19.3	17.7	7.7	10.2	100.0	24.2	34.8	9.0	17.8	93.9	12.3	39.0	2981.0	19.7	3.2
Indonesia 1985	20.1	13.5	5.5	7.6	20.8	15.9	7.1	9.4	100.0	35.6	38.8	10.2	22.8	92.8	12.5	32.1	3143.0	21.2	3.4
Indonesia 1990	19.8	13.7	6.0	6.9	21.5	15.8	7.2	9.2	100.0	43.8	40.0	8.9	25.4	94.5	12.7	32.3	4007.0	21.5	3.9
Indonesia 1995	21.0	14.8	6.4	5.2	23.0	15.6	6.8	7.3	100.0	44.7	38.2	13.4	32.4	94.1	12.9	34.8	5494.9	22.4	4.4
Indonesia 2005	20.1	14.2	7.6	6.2	22.0	15.5	8.2	6.3	100.0	63.3	NA	12.2	35.4	91.3	13.3	34.1	6482.0	23.1	4.6
Indonesia 2010	18.6	12.9	7.1	6.2	20.7	16.2	9.1	9.2	100.0	62.4	43.5	11.0	42.0	91.9	13.6	37.2	8386.4	21.9	5.1
Iran 2006	16.4	16.5	10.6	9.1	15.5	14.6	8.7	8.6	100.0	16.5	23.8	NA	45.9	91.6	14.6	44.8	14185.8	22.5	5.2
Iran 2011	14.3	13.0	11.0	11.1	16.5	13.5	10.2	10.4	100.0	30.1	21.3	NA	67.5	NA	15.5	34.7	18024.0	23.3	5.9
Israel 1983	14.3	15.4	9.8	7.2	17.7	16.9	10.1	8.6	100.0	NA	NA	NA	98.7	73.1	15.9	36.4	18468.0	24.3	9.0

Israel 1995	14.0	12.1	7.7	9.4	17.8	16.3	9.5	13.3	100.0	NA	13.3	NA	98.8	74.5	17.3	37.1	23378.2	27.2	9.9
Kyrgyz Republic 1999	17.1	12.9	5.0	3.4	22.1	19.4	10.2	9.8	100.0	89.8	10.1	NA	36.7	NA	13.2	30.2	3144.5	21.6	5.5
Kyrgyz Republic 2009	13.5	12.6	8.0	6.1	16.9	18.1	12.6	12.2	100.0	92.5	5.6	NA	36.3	NA	13.1	29.9	4075.8	22.9	4.8
Laos 1995	20.0	12.6	7.7	7.7	19.5	14.3	8.1	10.0	100.0	24.2	31.6	17.3	16.8	98.3	12.2	34.7	1801.5	20.8	3.7
Laos 2005	17.4	12.8	8.0	8.6	18.8	14.2	8.9	11.2	100.0	36.2	23.0	18.3	27.8	98.7	12.6	34.3	2948.7	21.2	3.9
Laos 2015	17.3	11.6	7.9	9.1	19.6	13.8	9.0	11.7	100.0	58.5	36.4	17.2	35.3	99.2	13.4	37.4	5559.0	21.6	4.3
Malaysia 1980	19.3	15.5	8.7	6.6	19.5	15.3	8.2	7.0	100.0	23.9	26.0	51.6	49.8	78.2	13.1	51.0	5829.0	23.5	3.9
Malaysia 1991	18.4	13.6	7.0	7.7	19.3	15.8	8.0	10.1	100.0	NA	19.2	33.2	51.6	87.8	14.1	47.2	8781.2	24.4	3.8
Malaysia 2000	18.5	13.9	7.5	6.4	19.9	15.7	8.5	9.7	100.0	48.2	16.8	21.0	58.0	86.0	14.5	47.3	13474.7	24.7	3.9
Mongolia 1989	18.1	10.6	7.7	5.5	20.6	16.1	11.7	9.6	100.0	69.9	NA	32.1	NA	NA	11.7	33.2	2232.0	21.6	4.3
Mongolia 2000	19.0	10.7	7.7	4.6	23.9	14.0	10.7	9.4	100.0	87.7	8.2	37.9	NA	NA	12.2	31.6	2936.1	23.4	3.5
Mongolia 2010	17.0	12.7	7.3	4.6	20.4	16.1	11.2	10.8	100.0	63.1	5.2	55.9	NA	92.8	13.1	33.1	7830.1	24.0	3.9
Mongolia 2020	16.1	9.7	7.1	5.8	23.9	14.7	11.4	11.2	100.0	62.9	11.1	53.3	NA	94.0	15.3	32.1	12990.3	26.8	4.1
Nepal 2001	20.3	14.8	8.9	6.0	20.2	14.2	8.4	7.0	100.0	14.1	41.8	13.6	23.4	95.5	13.0	51.2	1738.3	19.3	4.2
Nepal 2011	20.0	14.1	8.4	7.2	19.7	14.1	8.4	8.0	100.0	20.9	36.9	15.2	14.5	96.4	13.4	47.0	2189.0	20.2	5.4
Papua New Guinea 1990	27.4	16.1	8.2	6.9	21.0	10.7	4.6	5.2	100.0	25.8	57.8	5.5	5.0	57.0	11.6	45.8	2508.1	20.6	2.4
Papua New Guinea 2000	25.4	16.3	7.9	6.4	21.7	12.3	5.4	4.6	100.0	29.7	55.5	5.6	5.6	96.2	12.0	45.8	2978.3	20.3	2.4
Philippines 1990	17.8	12.8	8.7	6.7	20.7	14.8	10.4	8.1	100.0	75.0	37.8	20.8	45.2	91.6	13.3	48.0	3502.0	23.3	3.5
Philippines 2000	18.1	12.4	8.0	6.2	20.5	14.9	9.9	10.0	100.0	78.1	NA	NA	NA	86.2	13.9	47.7	4033.6	23.6	3.9
Philippines 2010	17.1	12.5	6.9	5.9	20.5	16.1	10.5	10.5	100.0	92.0	NA	NA	NA	89.9	14.2	46.4	5694.0	23.4	4.4
Thailand 1980	18.1	12.6	7.2	5.4	21.0	16.6	10.1	8.9	100.0	36.4	NA	24.0	14.5	94.4	15.1	45.2	4071.0	22.3	3.6
Thailand 1990	18.8	12.0	7.5	6.7	20.9	14.1	9.6	10.4	100.0	64.9	NA	24.9	27.4	94.4	17.4	45.3	7385.0	23.9	4.6
Thailand 2000	18.7	12.9	6.9	5.9	22.4	15.4	8.8	9.0	100.0	69.6	NA	20.3	29.5	94.6	17.6	42.8	9627.1	23.9	6.1
Turkey 1985	14.7	14.0	7.7	9.2	16.4	15.7	9.7	12.4	100.0	33.0	33.2	27.4	NA	NA	14.7	49.0	6958.0	21.1	4.3
Turkey 1990	19.7	10.1	8.4	7.7	21.3	12.2	9.3	11.4	100.0	37.2	36.5	28.3	NA	86.5	14.8	48.0	8606.0	21.7	4.3
Turkey 2000	21.1	13.1	6.6	4.7	21.9	17.2	8.1	7.3	100.0	52.1	34.8	28.7	NA	88.2	15.2	47.0	11904.0	22.7	5.7
Vietnam 1989	17.9	10.1	6.8	4.5	23.3	16.0	11.5	9.9	100.0	48.3	17.0	NA	35.1	91.4	15.7	35.9	1588.0	23.0	4.8
Vietnam 1999	16.7	11.0	6.8	4.9	21.4	16.2	11.9	11.1	100.0	61.2	16.6	NA	45.9	97.7	16.6	36.0	2641.3	22.5	5.9
Vietnam 2009	11.7	10.3	8.8	8.0	16.2	15.7	12.8	16.6	100.0	73.3	29.6	NA	24.1	98.6	16.9	37.5	4360.1	22.1	6.5
Vietnam 2019	15.7	9.4	6.2	9.1	20.4	12.8	9.7	16.8	100.0	85.7	25.2	NA	28.8	97.6	17.2	36.3	7266.0	22.5	8.1
South America																			
Argentina 1980	16.3	12.3	8.0	6.5	18.6	15.0	10.9	12.4	100.0	79.8	12.5	43.8	72.2	75.2	14.2	40.8	13080.0	21.3	8.9
Argentina 1991	15.7	10.1	7.8	7.5	17.4	14.3	12.4	14.9	100.0	91.4	14.8	NA	91.7	84.0	15.9	46.8	11224.0	22.2	10.5
Argentina 2001	14.3	11.8	8.0	6.9	16.8	15.6	12.3	14.2	100.0	93.9	11.2	41.3	91.0	86.1	16.7	53.3	13652.0	23.0	10.0
Bolivia 1976	16.4	10.8	7.6	10.3	19.3	14.1	8.8	12.7	100.0	25.7	42.4	11.4	30.5	85.2	11.8	54.7	4219.0	21.0	4.1
Bolivia 1992	15.0	11.1	7.1	13.1	17.1	13.3	8.2	15.0	100.0	40.1	51.1	21.4	50.3	83.7	12.2	49.1	3592.1	21.6	4.6
Bolivia 2001	15.8	13.1	8.1	7.6	19.0	15.8	10.1	10.5	100.0	48.2	40.8	18.5	49.1	85.5	12.5	57.7	4166.5	21.8	5.0
Bolivia 2012	16.5	11.5	7.7	9.8	17.8	13.8	9.2	13.8	100.0	73.5	49.1	17.8	56.6	85.2	13.0	46.6	5503.9	22.7	6.0
Brazil 1980	20.0	13.0	7.5	6.0	21.9	14.2	9.0	8.4	100.0	44.9	18.5	25.3	66.4	74.6	14.0	57.9	8249.0	21.5	4.1
Brazil 1991	18.0	12.3	8.2	6.8	21.3	14.3	9.8	9.4	100.0	51.2	16.5	23.6	72.8	81.3	14.5	56.9	7888.0	21.9	4.8
Brazil 2000	16.6	12.3	8.0	7.0	19.4	15.8	10.2	10.8	100.0	60.0	16.0	24.9	77.6	86.2	15.1	58.7	9834.4	21.7	5.9
Brazil 2010	15.6	11.8	7.8	8.3	18.7	14.5	10.6	12.6	100.0	65.2	14.7	22.4	76.0	87.9	16.1	53.3	14215.6	21.7	7.4
Chile 1982	17.1	12.1	7.7	6.4	20.7	15.1	9.9	11.0	100.0	75.2	12.4	50.0	80.6	77.3	13.9	52.6	8016.0	22.0	5.9
Chile 1992	16.3	11.2	7.6	7.5	18.9	14.5	10.9	13.0	100.0	81.5	11.2	50.1	81.6	82.6	15.7	54.8	11773.3	21.9	6.5
Chile 2002	15.1	12.6	7.7	7.5	17.7	16.0	10.3	13.1	100.0	85.7	11.4	50.2	84.1	86.2	18.0	51.9	15509.8	22.4	8.0
Colombia 1985	17.5	13.2	8.2	7.5	20.2	14.3	8.8	10.4	100.0	66.4	30.7	36.0	66.1	83.0	14.3	55.4	6809.0	21.8	4.1
Colombia 1993	18.0	13.3	8.5	7.8	18.8	14.4	9.3	10.0	100.0	73.1	26.4	38.5	72.4	83.3	15.2	52.9	8180.9	21.3	4.5
Colombia 2005	16.7	12.7	8.3	7.8	19.7	14.4	10.1	10.3	100.0	63.8	18.5	31.6	58.0	78.4	16.4	53.9	9524.7	20.7	6.4
Costa Rica 1984	16.2	13.9	9.4	8.7	17.7	14.7	9.2	10.2	100.0	78.5	16.4	35.5	57.6	77.9	16.9	46.8	7065.0	21.0	4.5
Costa Rica 2000	15.8	12.6	9.0	9.8	17.4	14.1	9.3	12.0	100.0	82.8	12.5	37.3	64.1	85.2	17.9	47.4	9319.8	21.5	5.6
Costa Rica 2011	15.9	11.9	8.5	10.1	17.3	13.3	9.7	13.3	100.0	89.9	11.3	37.0	74.5	86.4	19.0	48.8	12366.0	22.8	7.2

Cuba 2002	15.6	12.3	9.1	10.6	16.1	12.7	10.1	13.5	100.0	NA	7.2	25.8	NA	NA	17.6	38.0	4369.0	20.9	10.5
Cuba 2012	15.6	12.0	8.4	10.5	16.8	13.6	9.5	13.5	100.0	NA	12.6	18.4	NA	NA	18.0	38.0	7138.0	21.2	13.6
Dominican Republic 1981	18.9	14.2	7.5	9.9	16.8	12.9	7.6	12.2	100.0	35.3	49.1	30.0	NA	92.0	12.5	46.7	3846.0	21.2	3.6
Dominican Republic 2002	16.0	14.3	8.2	10.2	16.4	14.1	8.6	12.3	100.0	64.0	32.1	NA	60.8	82.5	16.3	49.7	7327.4	21.1	5.7
Dominican Republic 2010	15.9	12.8	8.3	11.0	15.8	13.7	9.2	13.4	100.0	65.9	19.3	38.9	71.1	82.0	16.8	47.7	11276.5	20.7	6.2
Ecuador 1982	12.2	10.3	6.1	16.7	12.0	10.8	6.4	25.5	100.0	60.8	32.4	19.9	NA	77.4	13.4	50.5	6558.0	20.8	5.4
Ecuador 1990	16.4	12.9	8.7	9.7	17.0	13.6	9.1	12.7	100.0	64.7	38.8	18.9	64.7	83.3	16.6	51.7	6221.0	21.4	4.3
Ecuador 2001	14.3	11.4	8.6	13.3	15.3	12.2	9.2	15.6	100.0	73.1	36.6	18.5	71.3	80.6	17.5	55.4	7131.2	20.8	6.7
Ecuador 2010	16.7	12.3	8.5	10.0	17.8	12.8	9.4	12.6	100.0	73.0	32.9	20.2	57.6	81.6	18.4	48.8	9327.2	21.1	6.4
El Salvador 1992	15.8	12.7	7.8	9.3	18.1	14.3	9.4	12.5	100.0	44.1	33.0	28.9	NA	76.7	14.5	53.0	3750.5	21.5	5.0
El Salvador 2007	14.2	11.2	8.5	10.0	18.2	13.8	10.8	13.3	100.0	52.7	23.0	30.0	64.4	82.2	17.3	45.2	7139.2	21.9	6.8
Guatemala 1981	18.9	14.0	8.3	8.4	19.2	13.8	7.9	9.5	100.0	38.7	37.4	22.2	42.1	74.8	13.4	52.0	6256.0	20.0	3.1
Guatemala 1994	18.9	13.6	8.0	8.4	19.5	13.7	8.2	9.8	100.0	41.7	34.0	22.2	43.3	83.6	14.4	57.1	5414.5	20.9	3.8
Guatemala 2002	16.1	13.7	9.4	10.4	16.7	13.8	8.8	11.0	100.0	40.4	30.8	19.6	51.7	87.2	16.5	54.3	5980.2	21.4	4.5
Honduras 1988	18.2	12.0	8.7	10.0	19.0	12.2	9.1	10.9	100.0	35.7	44.5	34.9	41.2	88.7	12.7	61.6	3009.0	20.5	3.5
Honduras 2001	16.4	13.1	9.2	10.1	17.9	13.5	9.1	10.7	100.0	46.1	32.3	32.4	45.4	89.3	13.7	55.4	3365.2	20.7	4.0
Honduras 2013	15.6	12.7	9.2	9.9	17.3	13.5	9.7	12.0	100.0	55.1	28.9	26.9	51.1	90.1	14.6	50.0	4561.0	20.9	5.0
Jamaica 1982	16.4	13.4	8.4	7.4	17.1	15.1	9.8	12.4	100.0	NA	24.1	40.8	NA	76.2	14.6	53.5	5019.0	20.7	6.8
Jamaica 1991	14.7	11.5	9.1	10.0	16.6	13.0	10.9	14.2	100.0	NA	17.3	36.0	NA	83.3	15.2	49.3	6116.6	21.7	7.5
Jamaica 2001	14.7	12.4	9.0	9.8	15.5	13.9	10.2	14.6	100.0	NA	19.0	37.2	41.4	82.5	14.1	48.3	6615.2	18.3	7.4
Mexico 1995	15.8	12.1	8.0	10.9	18.6	13.5	8.0	13.1	100.0	60.9	34.1	24.3	61.6	91.3	17.1	52.7	9945.0	22.2	5.0
Mexico 2000	15.0	11.7	8.2	12.0	17.0	12.9	9.3	13.8	100.0	61.4	28.5	20.0	53.0	90.9	17.6	53.4	12613.4	21.6	5.3
Mexico 2010	16.1	12.8	8.7	9.6	17.0	13.5	9.8	12.6	100.0	58.2	28.0	12.8	45.2	92.1	17.3	47.7	14697.3	21.5	6.5
Mexico 2015	16.2	12.4	7.8	9.4	19.2	13.6	8.9	12.4	100.0	64.5	21.9	13.3	50.6	87.4	17.3	47.9	16235.0	21.5	7.3
Mexico 2020	16.4	11.6	8.5	9.5	18.6	14.2	9.5	11.6	100.0	66.8	26.2	11.8	51.3	88.4	14.6	44.6	15253.7	21.8	8.3
Nicaragua 1995	16.7	12.0	8.5	10.1	17.7	13.1	9.1	12.7	100.0	48.4	32.3	37.8	NA	91.2	13.2	56.2	2264.1	19.7	3.5
Nicaragua 2005	15.9	11.8	8.6	9.9	17.5	13.2	9.6	13.4	100.0	48.5	26.3	35.5	58.0	91.9	13.4	48.8	3370.8	20.5	4.3
Panama 1980	20.9	13.2	8.5	7.5	19.2	12.2	8.9	9.6	100.0	64.5	22.4	32.7	52.7	77.9	15.5	49.7	6849.0	20.9	4.3
Panama 1990	17.7	14.2	10.0	8.4	17.0	13.2	9.3	10.4	100.0	70.1	20.1	NA	NA	84.5	15.4	58.6	7119.0	21.4	5.4
Panama 2000	16.3	12.5	9.2	10.6	15.8	13.1	9.6	12.8	100.0	75.5	18.1	33.9	61.4	88.9	17.3	56.6	9898.8	21.6	6.0
Panama 2010	16.0	12.8	8.5	10.4	16.9	13.3	9.3	12.9	100.0	80.9	16.4	33.1	63.1	92.0	19.1	51.6	15169.1	21.4	7.4
Paraguay 1982	17.0	12.9	7.9	7.3	19.1	14.9	10.0	10.9	100.0	65.6	28.3	46.7	49.4	91.1	13.5	57.0	5230.0	21.5	4.3
Paraguay 1992	17.7	12.2	8.2	7.7	18.0	14.4	10.1	11.8	100.0	NA	28.6	44.6	55.7	85.8	14.6	52.8	5186.6	21.1	4.5
Paraguay 2002	15.0	12.9	8.5	8.8	16.8	15.2	10.0	12.7	100.0	NA	30.3	46.8	57.8	92.4	15.3	60.5	5571.4	21.6	4.9
Peru 1993	17.1	12.7	8.2	9.2	18.0	13.2	9.0	12.5	100.0	61.9	31.2	32.3	68.4	83.1	14.8	50.3	4857.0	22.4	4.7
Peru 2007	16.1	12.8	9.6	9.7	17.0	13.2	9.9	11.7	100.0	73.1	27.2	32.1	74.5	84.8	16.2	50.0	8138.4	22.6	6.4
Peru 2017	15.9	12.3	8.6	10.6	17.2	12.8	9.7	12.9	100.0	77.4	29.2	33.9	80.9	87.8	17.4	43.3	12390.0	23.0	8.5
Trinidad and Tobago 1980	17.9	11.1	6.7	11.0	18.9	13.0	9.0	12.5	100.0	NA	17.6	NA	NA	77.8	13.8	42.4	19734.0	23.2	6.1
Trinidad and Tobago 2000	15.6	12.7	9.1	8.1	17.5	14.4	10.7	11.9	100.0	NA	6.3	31.5	NA	88.4	14.1	40.3	19179.9	24.2	6.9
Trinidad and Tobago 2011	17.6	11.5	7.7	8.6	19.3	13.6	9.5	12.2	100.0	NA	7.3	24.3	NA	89.5	16.8	40.3	29745.0	23.9	9.1
Uruguay 1985	14.9	12.0	8.0	6.7	18.0	15.8	11.5	13.1	100.0	86.8	8.6	45.5	90.3	69.1	15.7	43.0	8901.0	22.2	11.1
Uruguay 1996	14.8	11.4	7.5	7.3	18.4	14.8	11.2	14.7	100.0	91.7	13.5	43.0	NA	75.4	16.7	40.8	12660.2	22.1	12.9
Uruguay 2006	12.3	10.8	8.5	8.4	16.3	15.4	12.7	15.5	100.0	94.2	14.4	83.6	NA	81.3	17.9	45.9	13223.8	23.0	14.8
Uruguay 2011	12.6	10.4	8.0	8.8	16.0	13.7	12.6	18.1	100.0	96.4	12.7	40.1	NA	73.9	18.4	42.2	17211.0	22.6	14.1
Venezuela 1981	18.3	12.1	7.4	7.7	20.3	14.1	9.3	10.7	100.0	51.2	20.1	41.8	81.9	86.4	14.9	55.6	15750.0	20.8	3.5
Venezuela 1990	16.3	12.5	7.8	8.1	19.5	14.4	10.1	11.4	100.0	57.7	23.0	35.7	58.0	88.7	15.4	43.2	13251.0	21.1	4.0
Venezuela 2001	16.1	12.7	8.2	8.3	18.0	14.8	9.9	12.0	100.0	71.3	19.3	45.7	87.5	89.8	15.1	47.2	14298.0	21.9	4.9

Source: IPUMS-International (Minnesota Population Center 2010). Own calculations.

Appendix Figure 1. Independent variables included in the analysis.