Urban Migration of Adolescent Girls: Quantitative Results from Developing Countries

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Migration is among central features of the economic transformation of poor countries, with a well-recognized role in national economic growth (World Bank 2009). It is equally significant in the lives of individuals. For all who migrate—girls and women, boys and men—each move represents a transition from one environment that is relatively familiar to another about which much may be unknown. In making the passage from the known to unknown, each migrant is likely to confront a range of risks and social dislocations, doing so in the hope of securing better life-prospects for the long term. Protection and safe passage are especially important for adolescent girls, who stand poised at a moment in their lives during which some pathways to adulthood open up while others close. The period from age 10 to 19 is fraught with risk yet also rich with opportunity, a time of multiple transitions when many girls leave their parents and natal homes for new and unfamiliar surroundings. A girl's emerging sexuality, her growing understanding of the many routes to adulthood, and her sense of agency can accelerate progress toward her full potential or can end in circumstances and choices that foreclose life options. If the full human potential of these girls is to be unlocked, it is during their adolescence that governments and development programs should be paying closest attention.

The focus of this paper on girls moving to urban destinations is justified in part by the remarkable demographic transformation that is underway world-wide. According to demographic forecasts, the countries of the developing world will grow by nearly 3 billion in total population by 2050, with nearly all of this growth taking place in their cities and towns (United Nations 2012). By 2030, the populations of rural areas are forecast to be on the decline. The lives of adolescent girls and other demographic groups will increasingly be lived in cities and towns.

The more fundamental rationale, however, has less to do with demography than with inclusive governance. Cities are places where all manner of resources—capital, institutions, government—are concentrated. If a city is well-governed, even its poor residents will have ready access to good schools, effective health care, and beneficial social services. But if its governance system does not function well, the poor can find themselves socially excluded and unable to take advantage of resources that may be no more than a stone's throw away. The challenge of urban governance is to connect—that is, to ensure that the poor and disadvantaged have meaningful connections to the institutions that should protect and enhance their well-being. Cities are important settings in which to consider adolescent girls because of the potential to connect girls to the resources that provide them protection and offer opportunity.

The paper draws upon quantitative evidence to develop a portrait of developing-country adolescent girls and young women who migrate to cities and towns. The evidence comes in the form of a large number of well-standardized censuses and demographic surveys, supplemented with studies of individual countries and regions. Many types of evidence are needed to illuminate girls' lives, but knowledge of the size of migration flows and their demographic composition is essential to understanding the scale of program resources required to reach girls in need, and to get a sense of where within a country those resources should be directed. Demographic data provide the foundation of the evidence base on which this paper rests: these data do not tell the whole story, but they provide essential elements of it.

*Contact email: mmontgomery@popcouncil.org. Portions of this paper draw from M. Temin, M. Montgomery, and S. Engebretsen, *Girls on the Move*, a larger report on adolescent migration under preparation for the Nike and UN Foundations, with expected publication date in the spring of 2013.

A preview of findings In synthesizing this evidence, we reach some conclusions that confirm commonly-held views of migration and others that challenge or flatly contradict these views. We confirm that in many poor countries, substantial percentages of urban adolescent girls are recent in-migrants. The percentages differ by country and data source, but credible estimates range as high as 40 percent in the census-based results and almost double that figure in estimates from demographic surveys. The empirical materials we use reveal no upward time trends in migration operating systematically either across or within most countries, despite what is often asserted in the literature. (Time trends are evident in a few countries, to be sure.) An important finding is that the majority of urban in-migrant girls come not from rural villages, but rather from other cities and towns. Yet the literature contains few accounts of the experiences of urban-to-urban migrants, concentrating instead on those who move from rural areas.

Migrant urban girls often live in what would appear to be socially isolating circumstances. Most migrant girls are unmarried at the time of their move. After arrival, they are much less likely to reside in households headed by a relative, and they are also less likely to live with a mother, father, or spouse. Where other indicators of material disadvantage are concerned, however, it is far from obvious that these girls fare worse than urban non-migrant girls. The likelihood that a migrant girl lives in a household lacking adequate drinking water and sanitation is no higher than for a non-migrant girl of the same age. As a group, young migrant girls have levels of education that exceed those of rural non-migrant girls, but which fall short of the education attained by non-migrant urban girls of the same age. Moreover, urban in-migrant girls are much less likely than their non-migrant peers to be enrolled in school. The human capital assets with which migrant girls enter the urban labor market are mainly those that they have already acquired before arrival.

In several respects these empirical findings are at variance with a literature that has perhaps overly emphasized rural-to-urban migration and which has often asserted that migrants as a group are disadvantaged across the board. To understand what weight to give these findings, it is important to appreciate the weaknesses of the empirical evidence as well as the strengths. It is fair to say that demographic data on migration are broad in coverage but thin in content. Population censuses cannot probe into the social and economic details of adolescent girls' lives, and may well undercount or miss entirely those girls who work as domestics or who live in marginalized circumstances. Much more could be expected of demographic surveys, which have greater scope for inquiry, but neither of the major on-going international survey programs—-the Demographic and Health Surveys (DHS), sponsored by the US Agency for International Development, and the Multiple Indicator Cluster Surveys (MICS), sponsored by UNICEF—has ever made migration a data-collection priority. Indeed, the DHS has recently abandoned the two questions on migration that its surveys have asked for over twenty years, and the MICS program has never collected any migration information at all. As a consequence, although much can be learned about lives of adolescent girls and boys from these important survey programs, rather little can be learned about the adolescents who are recently arrived migrants.

Organization of the paper This paper is not the place for a detailed presentation of within-country migration patterns and differences, which are complex and change over time even for a single country as its economic development proceeds (Panel on Urban Population Dynamics 2003). A thorough investigation would require nothing short of a book-length treatment. Adolescent girls and other migrants undertake their journeys for many reasons, with the hope of economic advancement being one of the more prominent but certainly not the only motivation. Each country's varied economic geography will present a potential migrant with an array of possible destinations, linked to her current place of residence by transport routes and (more importantly) by both social and communication networks that provide her with impressions and information about her life-prospects were she to decide to move (World Bank 2009). Here our aim is to examine a base of evidence assembled from a wide range of countries and time periods, searching for common patterns (and significant exceptions to them) that provide a frame and starting-point for a country-specific investigation. It is mainly at the country level that decisions will be made about the policies, programs, and resources that are devoted to improving the lives of adolescent girls. Our view is that to the extent possible, these decisions should be evidence-based. Internationally comparable evidence simply sets the stage for a more intensive phase of within-country analysis and decision-making.

Section 1 introduces the demographic evidence with which this paper is concerned, noting several features that need to be borne in mind when drawing out the implications for adolescent girls. (The Appendix discusses migration definitions, measures, and selectivity biases in greater depth.) Section 2 presents findings

on the age and sex patterns of migration, investigates the origins of migrants, and assembles evidence on the sequencing of migration and marriage. It closes with an examination of time trends. Within-country flows of adolescent migration are discussed in Section 4, with an emphasis on how quantitative evidence of the kind employed here can provide lessons for the identification of adolescent migrants and targeting of program resources. Section 5 explores whether the evidence in hand would indicate that adolescent girls who migrate to cities are disadvantaged in either material or social terms. Section 6 reviews what little is known of urban residential mobility—the within-city moves across neighborhoods that follow migration and expose girls to different neighborhood risks and resources—and Section 7 presents conclusions and recommendations.

1 The demographic evidence

The analysis of this paper relies heavily on census micro-samples provided by the Integrated Public Use Microdata Series–International program (IPUMS for short).[1] Each of these is a random sample of individual records from a national census, with the number of such records ranging from a few tens of thousands to many millions. We supplement the census data with survey data from the Demographic and Health Surveys (DHS) program, which compensate for smaller sample sizes by offering more socio-economic detail than any census can provide. The maps of Figure 1 depict the 28 low- and middle-income countries that contribute 64 census micro-data samples to the IPUMS collection.[2] These countries span the range from the very low-income, least-developed countries (Cambodia, Mali, Malawi, and Nepal) to middle-income countries such as Argentina, Malaysia, South Africa, and Brazil. Fifty-nine countries have fielded DHS surveys with migration information (yielding 124 such surveys in total). As the maps show, these surveys are especially important in filling gaps in the record for sub-Saharan Africa.

The DHS surveys and the IPUMS-processed censuses provide an adequate basis only for the estimation of *urban in-migration*. That is, considering all urban residents at the time of the interview, we can estimate the percentage who arrived via migration in the preceding five years. (See the Appendix for discussion.) Seasonal migration is not detected, however, and both short-term and circular migration flows are apt to be seriously under-estimated. This is an unfortunate gap in the empirical record, leaving undocumented the seasonal and short-term moves undertaken by adolescent girls as well as other migrants. We are not aware of any systematic, cross-country assessment of these types of migration, and with a few notable exceptions (e.g., Hertrich and Lesclingand 2012), country-specific studies have seldom singled out adolescent girls.

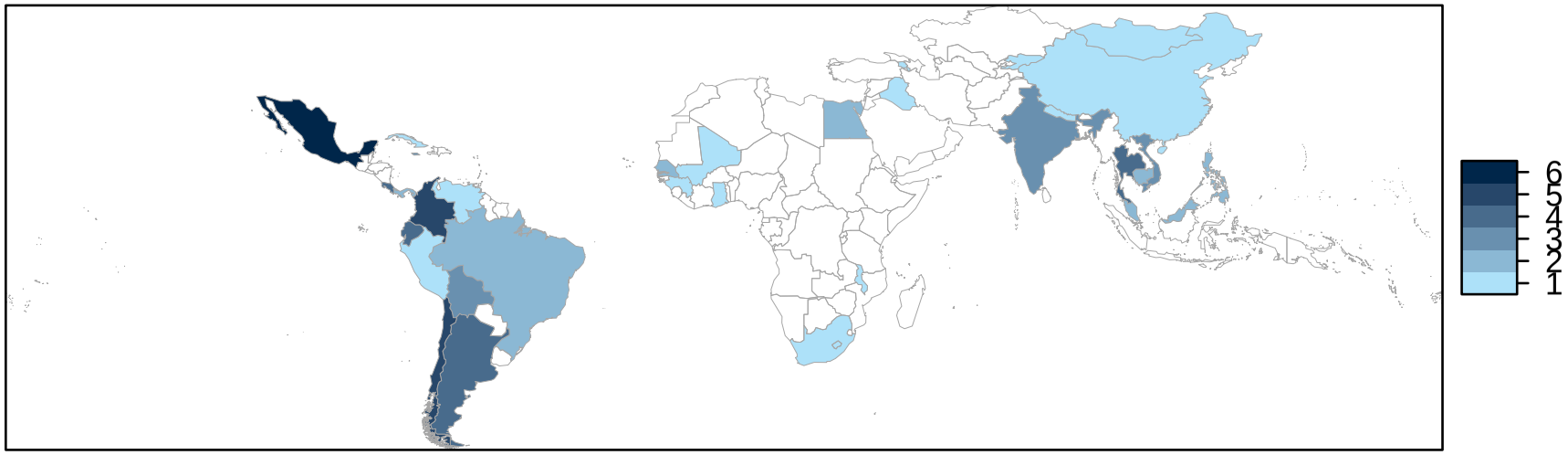
In comparing DHS-based to census-based estimates, the differences in their definitions of migration must be kept firmly in mind. A person who migrated to a particular city from another place in the same major administrative region would certainly be counted as a migrant in the DHS, but might or might not be counted as one in a census depending on its treatment of within-region moves. Likewise, a within-minor administrative unit move would be reckoned a migration in the DHS classification, provided that the move originated outside the city boundary, but it would not be recorded as a migratory move in an IPUMS-processed census. These data sources therefore provide two distinct measures of migration, each of which is meaningful in its own terms, but which cannot be compared on any rigorous basis. This is not a mere technical detail. Policy-makers wishing to set adolescent girl programs on a solid base of evidence, using empirical data to inform decisions about the scale of the resources and the high-priority regions to which they should be targeted, will need to know that different messages may well emanate from different data sources.

The "move from where?" question also needs careful consideration. The IPUMS samples do not identify rural out-migrants as such, although they do identify the administrative unit from which the migrant originated.[3] The origin–destination pairs identifiable in the IPUMS are only defined for administrative

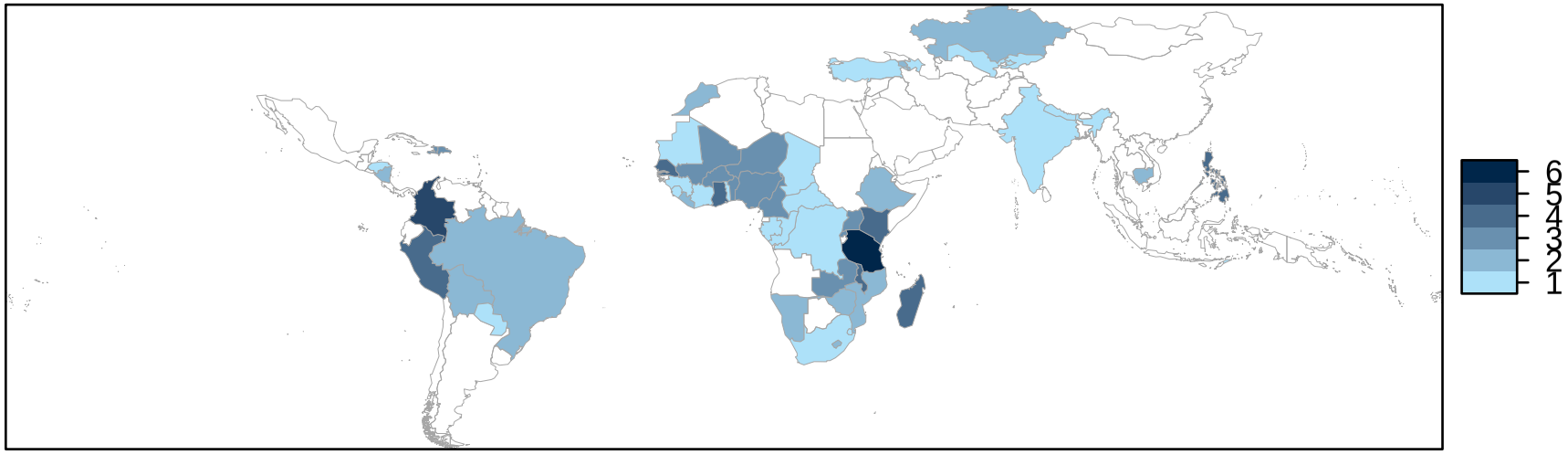
[1] See `https://international.ipums.org/international/`.

[2] For India, the IPUMS data are derived not from a census, but rather from a large national-level employment survey implemented by the national statistical office, which is intended to complement the census. Since this is the lone exception, we will refer to the IPUMS collection as if it were wholly composed of censuses.

[3] The rural–urban status of the origin area is identified in a small minority of censuses, but these data have not been included among the standardized variables supplied by IPUMS. The name of the origin region is made available in the standardized measures, and in theory it should be possible to characterize it as mainly urban or rural by using its composition at the time of the census. Unfortunately, the geographies released for current residence (given confidentiality restrictions) do not necessarily correspond to the geographies of the origin residence.

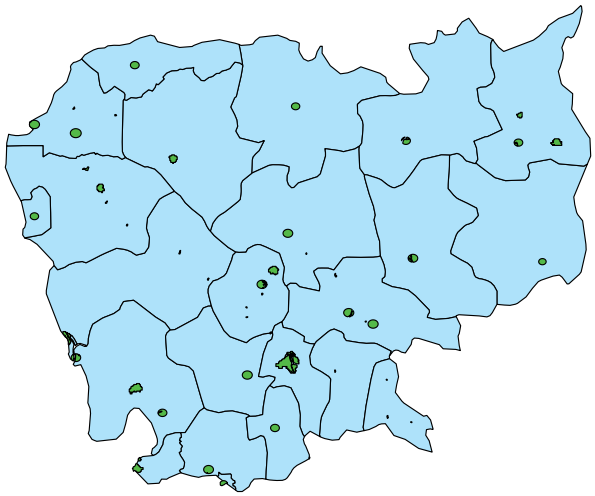


(a) Countries with IPUMS census micro-samples

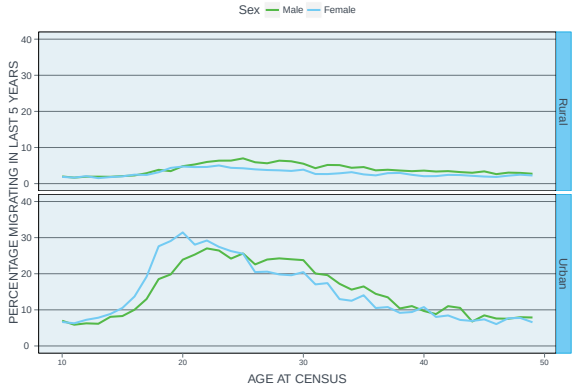


(b) Countries in which DHS surveys have been fielded

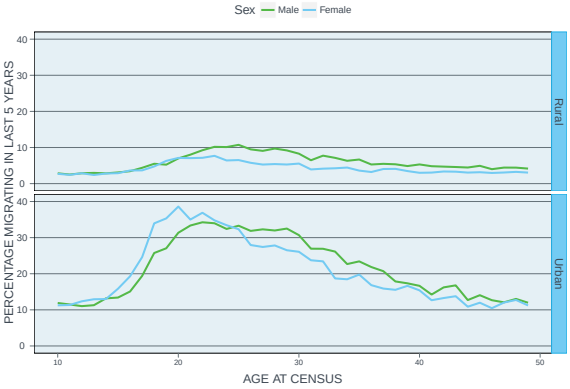
Figure 1: Availability of census micro-samples (IPUMS) and Demographic and Health Surveys (DHS) with migration information, by country and number of censuses or surveys. DHS surveys are excluded if they were restricted to ever-married women.



(a) Provinces and Urban Areas



(b) Moves across Major Boundaries



(c) Moves across Major or Minor Boundaries

Figure 2: Percentage of in-migrants by age and sex in Cambodia. Migration defined as a move in the previous five years. Panel (a) depicts the country's provincial boundaries and its urban areas as detected in night-time lights satellite sensors. In Panel (b), only moves crossing province boundaries—those shown in the top panel—are counted as migration. In Panel (c), moves crossing either province or "village" boundaries are counted in the definition. Source: Cambodia (2008) IPUMS sample.

areas. The DHS surveys add significant value in distinguishing origin areas according to urban–rural status, although these surveys do not identify the geographic location of the origin. It would not be difficult to craft a much-improved measure of migration by combining the better features of the census and DHS approaches, as we will discuss in the paper's recommendations.

2 Scale, origins, and time trends

Several decades of research have established the existence of a pronounced age pattern in migration, with rates peaking in the early to mid-20s for both sexes. This pattern is so common as to have been enshrined in mathematical models of migration by age (see especially Rogers 1986; Rogers 1995). There is substantial variation across the world's regions in sex composition, with female migrant flows being especially prominent in Southeast Asia. Figure 2 for Cambodia illustrates the age and sex patterns that are broadly characteristic of this region. The top panel of this figure depicts the spatial basis of the migration estimates: it shows the major administrative regions of the country (provinces in this case) and also indicates the locations of the

cities and (large) towns in these provinces that offer a range of potential destinations for an urban-bound migrant.[4] In Panel (b) of the figure, in-migration percentages are shown for women and men by age and urban–rural location at the time of the 2008 census, with migration being defined as a move that crosses a provincial boundary. The 2008 census also gathered information on within-province moves, and Panel (c) shows the percentages of in-migrants according to this definition. Allowing for within-province moves increases the peak migration percentage by some 7 points (for female migrants to urban areas), but leaves largely intact the regularities by age, sex, and location that are evident in cross-province moves. In Cambodia, the urban–rural difference in the prevalence of migrants is large, with much greater percentages of urban than rural residents (for both sexes) being recent migrants. Another pattern is evident in the figure that is much more general in the region and elsewhere in the developing world: Beginning about age 15, higher percentages of urban Cambodian girls than boys have in-migrated, with the percentages for girls remaining higher into young adulthood (age 24). At age 20, the percentages of young urban women who have migrated in the previous five years ranges from over 30 percent to nearly 40 percent depending on the definition of migration employed.

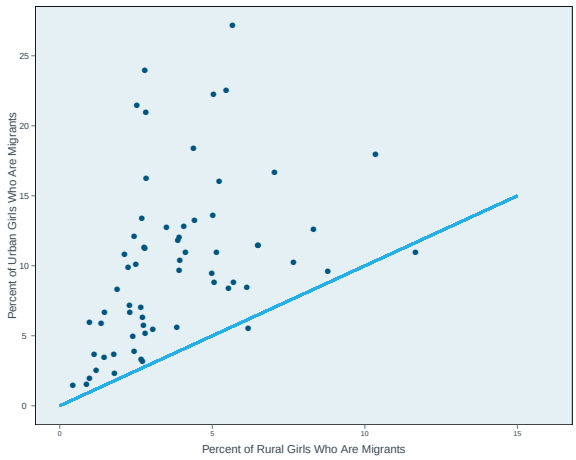
The Cambodia example thus illustrates two features of migration that, if not universal, are at least very commonly seen: higher in-migration percentages in urban areas than rural, and higher urban migration percentages for adolescent girls as compared with boys of the same age. We see just how common these features are via Figure 3, which focuses on girls and boys aged 15–19, both urban and rural, from the full range of IPUMS censuses. This figure presents three comparisons employing a graphical device that we will use throughout the paper. Migration percentages for the group of principal interest (in Panel (a) of the figure, it is urban girls) are arrayed on the vertical axis and percentages for a comparison group (rural girls) on the horizontal. Each point represents a single census micro-sample. A diagonal line, angled at 45 degrees, splits the graph: for any point falling on this line, the migration percentages of the two groups are equal. Points above the line are cases in which migration percentages for urban girls are higher; and for points below the line, migration percentages in the rural comparison group are higher. As Panel (a) clearly shows, much higher percentages of urban girls are recently-arrived migrants than is the case with rural girls. Panel (b) delivers precisely the same message for urban and rural boys. Of course, the definition of migration as a move that crosses a province or similar boundary overlooks all within-province moves, which could be more common within rural areas. Figure 3 may therefore exaggerate the urban–rural differences that would emerge under a more inclusive definition of migration.

As Panel (c) of Figure 3 demonstrates, the female–male differences in urban in-migration seen in the Cambodian case are by no means limited to that country. Here urban girls aged 15–19 are compared with percentages for urban boys of the same age—with surprisingly few exceptions, these girls are more likely than boys to be recently-arrived migrants. The difference is evident in economies and societies as varied as those of Brazil, Colombia, Costa Rica, Ghana, Guinea, Malawi, and Mali. The gap between the sexes is not always large: for instance, the female and male percentages are nearly identical in the most recent census available for Argentina (that of 2001, although larger differences were apparent in its earlier censuses), Malaysia (2001) and South Africa (2001). Bolivia (in its 1976 and 1992 censuses) is an exception to the rule of higher urban migration percentages for adolescent girls, as are the most recent censuses for Egypt and Nepal. But on the whole, the consistency of this pattern is impressive.

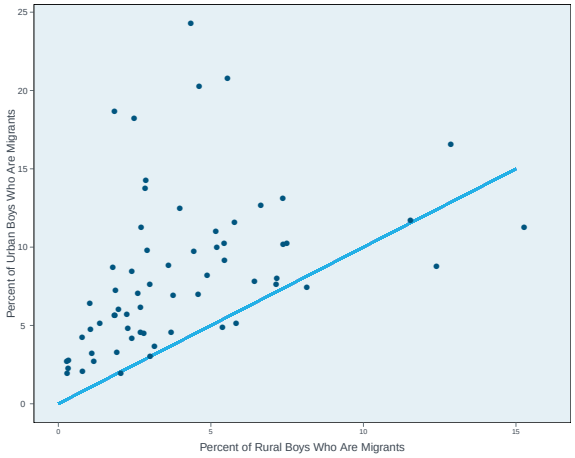
Considering only adolescent girls and young women, we find large cross-country differences in the levels of urban in-migration, with migrants accounting for only 5–10 percent of urban girls in some countries but well over 20 percent in others. The country differences are displayed by region in Figure 4 for ages 15–19 and Figure 5 for a comparison group of young women. The percentages increase with age: in the 2008 census for Malawi, for example, urban in-migration is estimated at 27 percent for girls 15 to 19, and 38 percent for young women aged 20–24. As was apparent in the case of Cambodia, the percentages also depend on the definition of migration adopted. In India, only 6 percent of urban adolescent girls are counted as migrants under a state-to-state definition, whereas when within-state, district-to-district moves are counted, over 15 percent of urban girls are in-migrants (data from 1999, not shown).

The urban in-migration percentages recorded in the DHS surveys are generally much higher than the census-based figures, even for cases in which the census allows moves within minor administrative units to qualify as migration. The DHS–census differences can be seen in a comparison of Figure 6 for African DHS

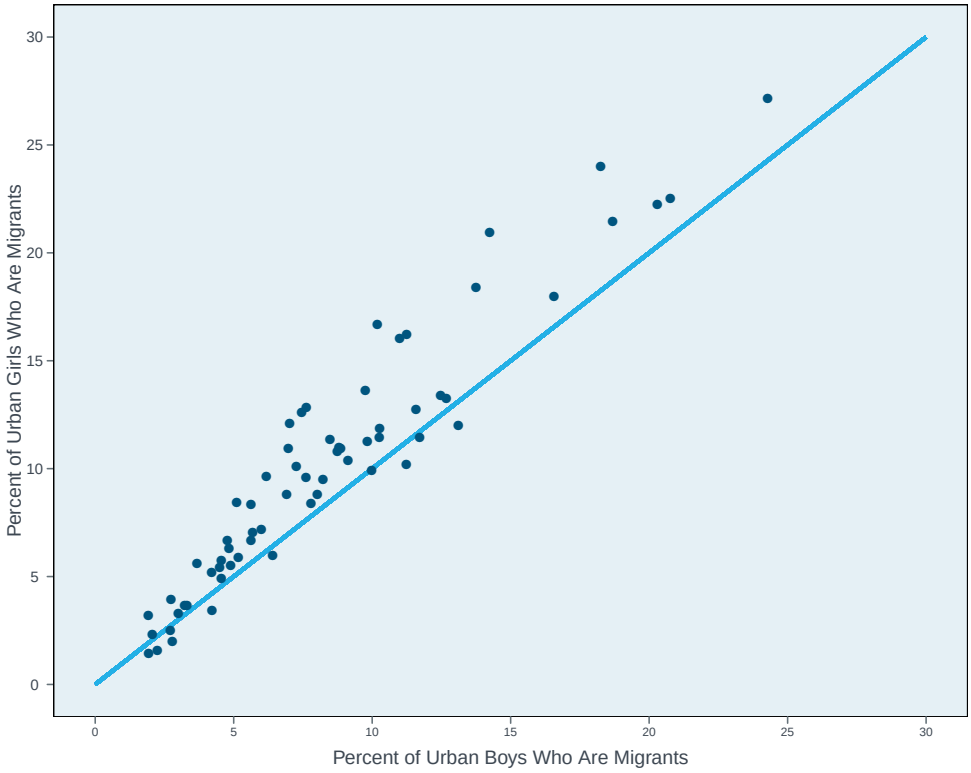
[4]These locations are estimates based on night-time lights satellite imagery analyzed in the Global Rural–Urban Mapping Project; see Balk et al. (2005); CIESIN (2008).



(a) Urban and rural girls compared

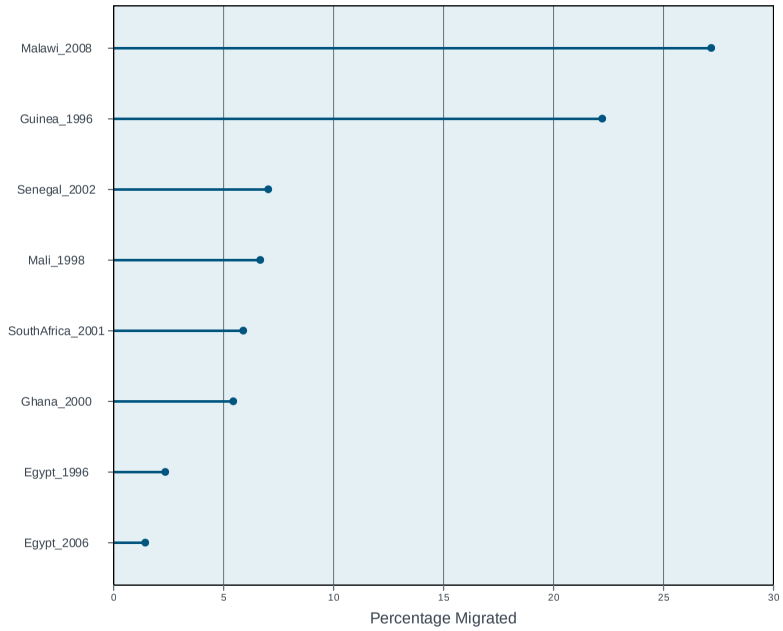


(b) Urban and rural boys compared

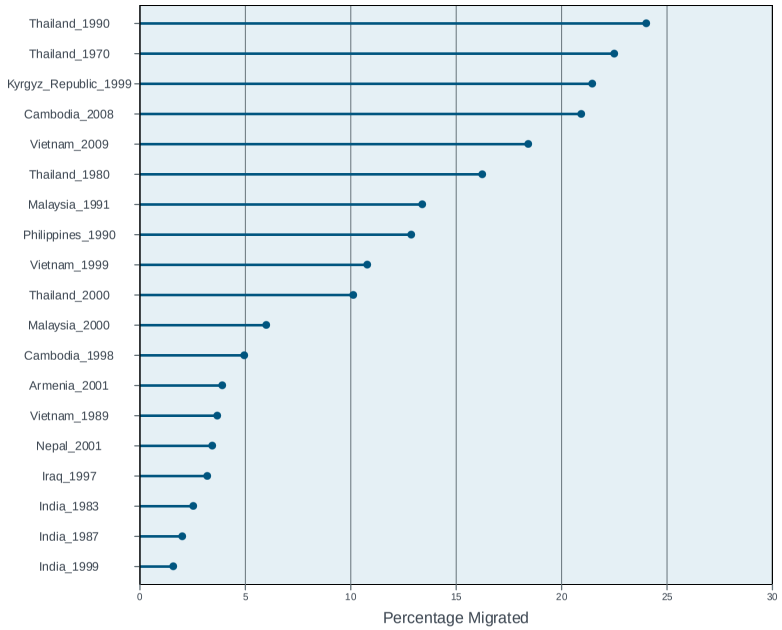


(c) Urban girls compared with urban boys

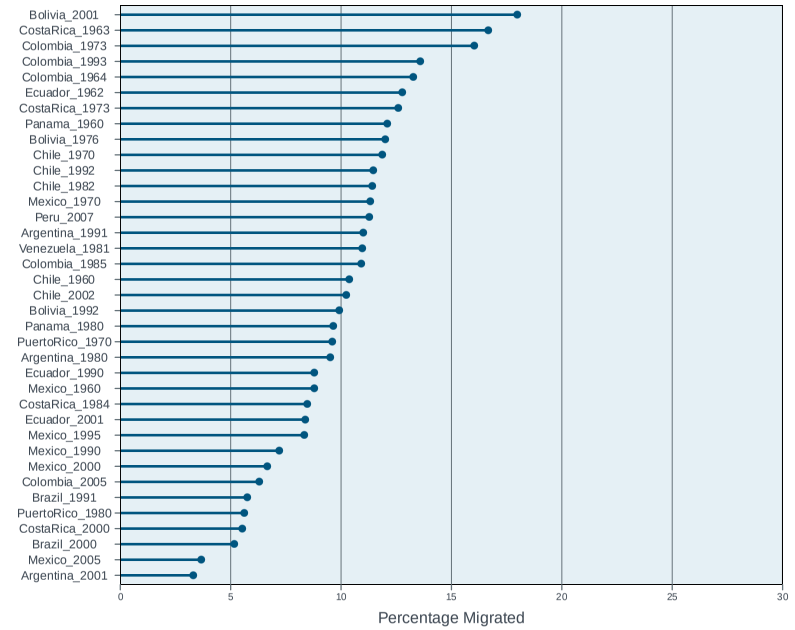
Figure 3: In-migration percentages for adolescent girls and boys aged 15–19. Migration defined as a cross-province move or the equivalent in the previous five years. Source: IPUMS.



(a) Africa

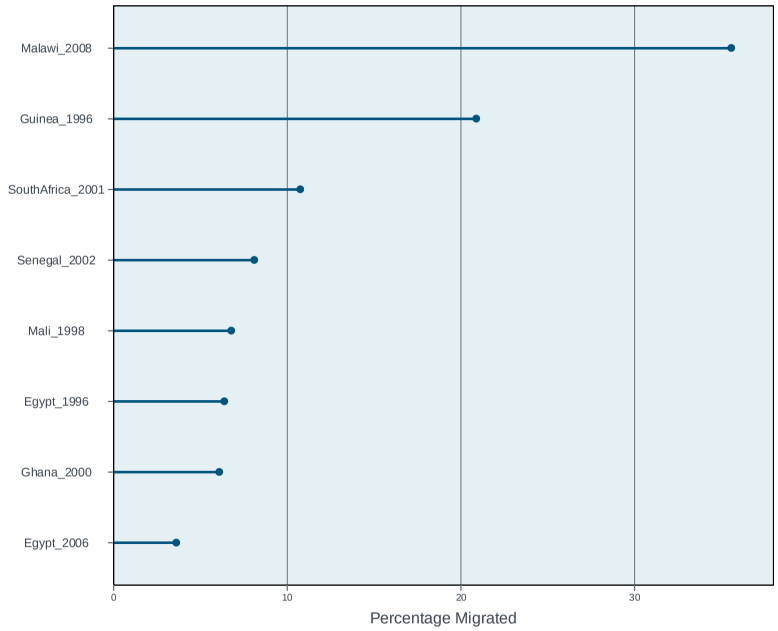


(b) Asia

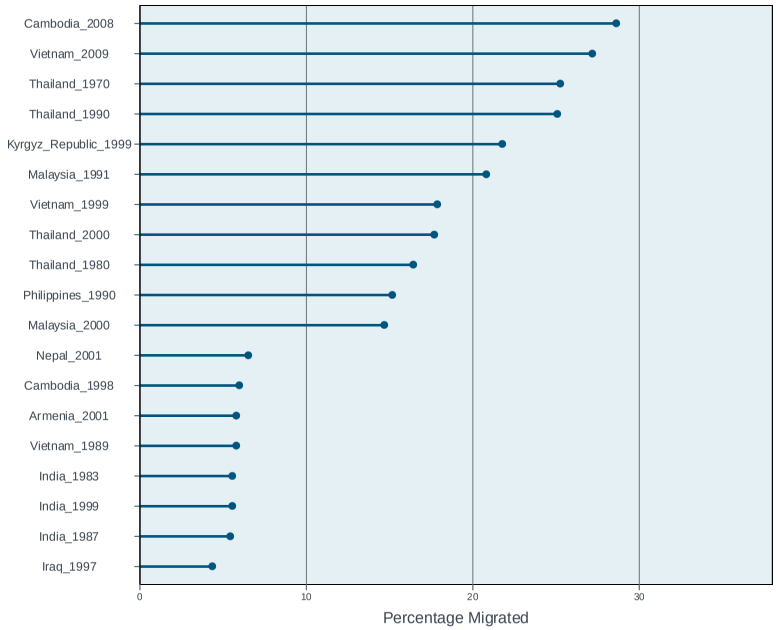


(c) Latin America

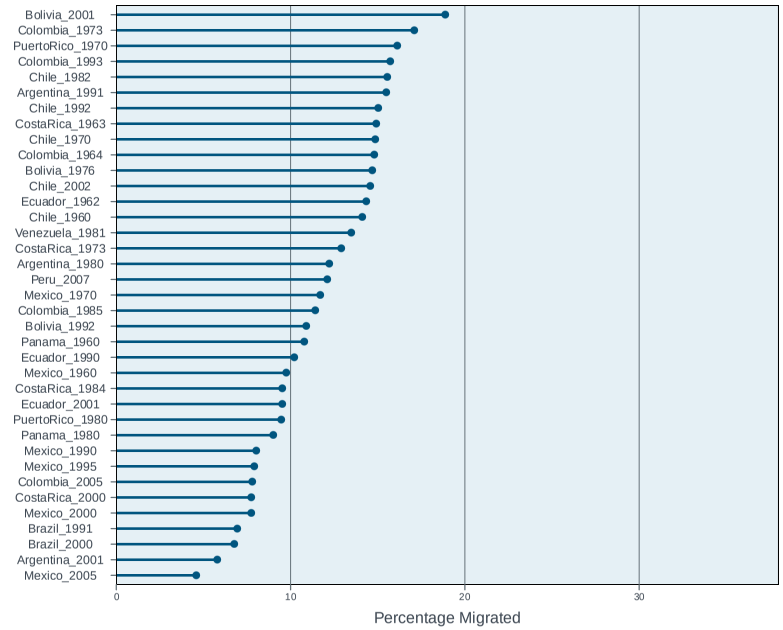
Figure 4: Percentage of in-migrants among urban girls aged 15–19, by world region. Migration defined as a cross-province or equivalent move in previous 5 years. Source: IPUMS.



(a) Africa



(b) Asia



(c) Latin America

Figure 5: Percentage of in-migrants among young urban women aged 20–24, by region. Migration is defined as a cross-province or equivalent move in previous 5 years. Source: IPUMS.

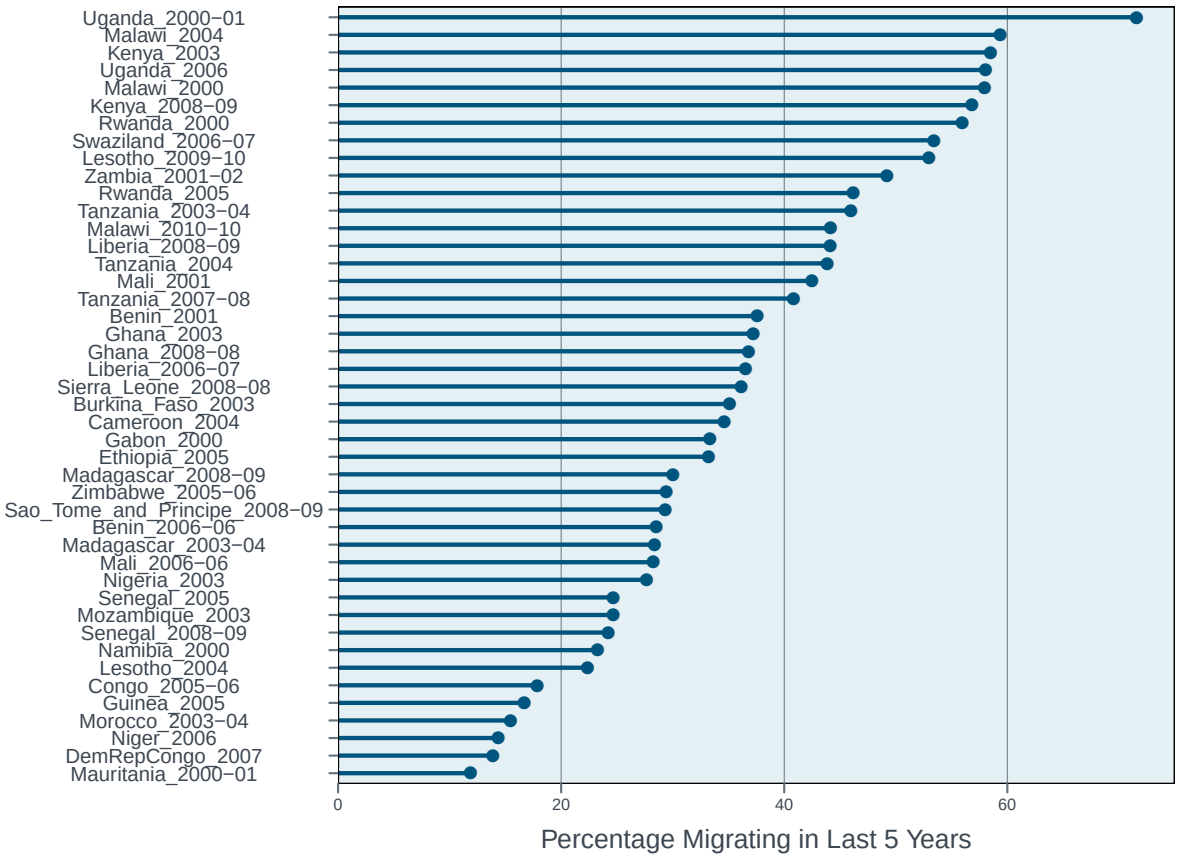


Figure 6: Percentage of in-migrants among urban girls aged 15–19 in Africa. Migration defined as a change of locality in previous 5 years. Source: DHS surveys fielded since 2000.

surveys fielded since 2000 with Panel (a) of Figure 4, which is derived from the IPUMS censuses. Taking the case of Malawi, for which 27 percent of urban girls are recent migrants at ages 15–19 according to the 2008 census, the estimate for the 2004 DHS survey is nearly 60 percent and a second estimate for a 2010 survey exceeds 40 percent. A gap this large between the census and survey estimates must stem from fundamental differences in migration definitions.

Here we have two messages emanating from two authoritative sources of quantitative empirical evidence, giving a range of estimates that might well strike a policy-maker as unacceptably wide. Should one source of evidence then be discounted in favor of the other? The crux of the problem is not technical: it lies in the social implications of the different migration definitions. The census definition would put the focus on girls who have (generally) travelled longer distances in their moves, and who might therefore find themselves further from family and other sources of social support. Estimates based on the survey definition, which allows changes in locality to count as migration, are likely to involve more short-distance moves than figure into the census estimates. If distance travelled is a measure of social dislocation, then a policy-maker might find the census estimates more informative of the scale of potential need. But where migration is concerned, distance may be a very poor proxy for dislocation—a long-distance migrant might follow well-travelled paths along which many former residents of her village, ethnic group, or social network have made their way to the same destination. Indeed, a long-distance migrant might not have even contemplated such a journey without some assurance that she would find some of her familiars at destination. In short, quantitative evidence such as provided here does not speak for itself; for its meaning to be extracted and properly interpreted, it must be infused with knowledge of the local context.

Migration from rural areas

We follow much of the migration literature in focusing on rural-to-urban migration, the idea being that rural-origin girls may be unfamiliar with urban life and may not know initially how to go about finding safe accommodation, or how to locate adequate employment or health care. It is possible—although the literature is nearly silent on this point—that girls migrating from other cities or towns would experience a similar sense of dislocation, although, having already acquired something of what Barua and Singh (2003) term "urban literacy", these urban girls might not experience social disorientation to quite the same extent. Using data from a large set of DHS surveys, Figure 7 summarizes the percentage of urban in-migrant girls who have arrived from rural villages. The survey-specific percentages are arrayed vertically, and situated horizontally according to the level of urbanization in the country as a whole, as recorded in United Nations (2010) for the year in which the survey took place. (As countries make the transition from predominantly rural to predominantly urban, the rural population share—the base from which rural-to-urban migrants come—shrinks relative to the urban share, and we would therefore expect a negative association to emerge between the country's level of urbanization and the percentage of urban in-migrants who come from rural villages. That association is clearly visible in the figure.) There are a number of DHS surveys in which more than half of urban in-migrants come from rural origins, but in most of these surveys it is the *urban*-origin migrants who are in the majority. This is often the case even at relatively low levels of urbanization characteristic of sub-Saharan Africa and South Asia.

In light of the heavy emphasis on rural-to-urban migration that so marks the literature, these results need to be carefully assessed. If it were possible to include China in the calculations, where rural-origin migrants are believed to have outnumbered those from urban origins through the 1990s, the conclusion that urban-origin girls are in the majority would likely need modification for this country at least.[5] Is it possible that the way the DHS defines migration and collects information on previous residence somehow biases upward the percentage of urban-origin migrants? Recall that in these surveys, migration is produced by a change in *locality*; hence short-distance moves from just beyond a city's boundary would be recorded as migratory moves. It would seem likely that these nearby origin places are also apt to be urban. Bilsborrow (1998, p. 7) has conjectured that when asked about their origins, formerly rural respondents may identify

[5] Yu Zhu, personal communication, and Jiang (2006), who finds that 60 percent of China's "floating population" of migrants are from rural areas, as will be discussed later in this paper. However, similar findings emerge in detailed studies of migration to Chinese cities. Zhu (2006, Table 2) finds that for Shanghai, of the world's largest urban agglomerations, about three-fifths of all migrants come from a different district within this vast municipality. In the 2000 census, these district-to-district moves are considered migration rather than residential mobility.

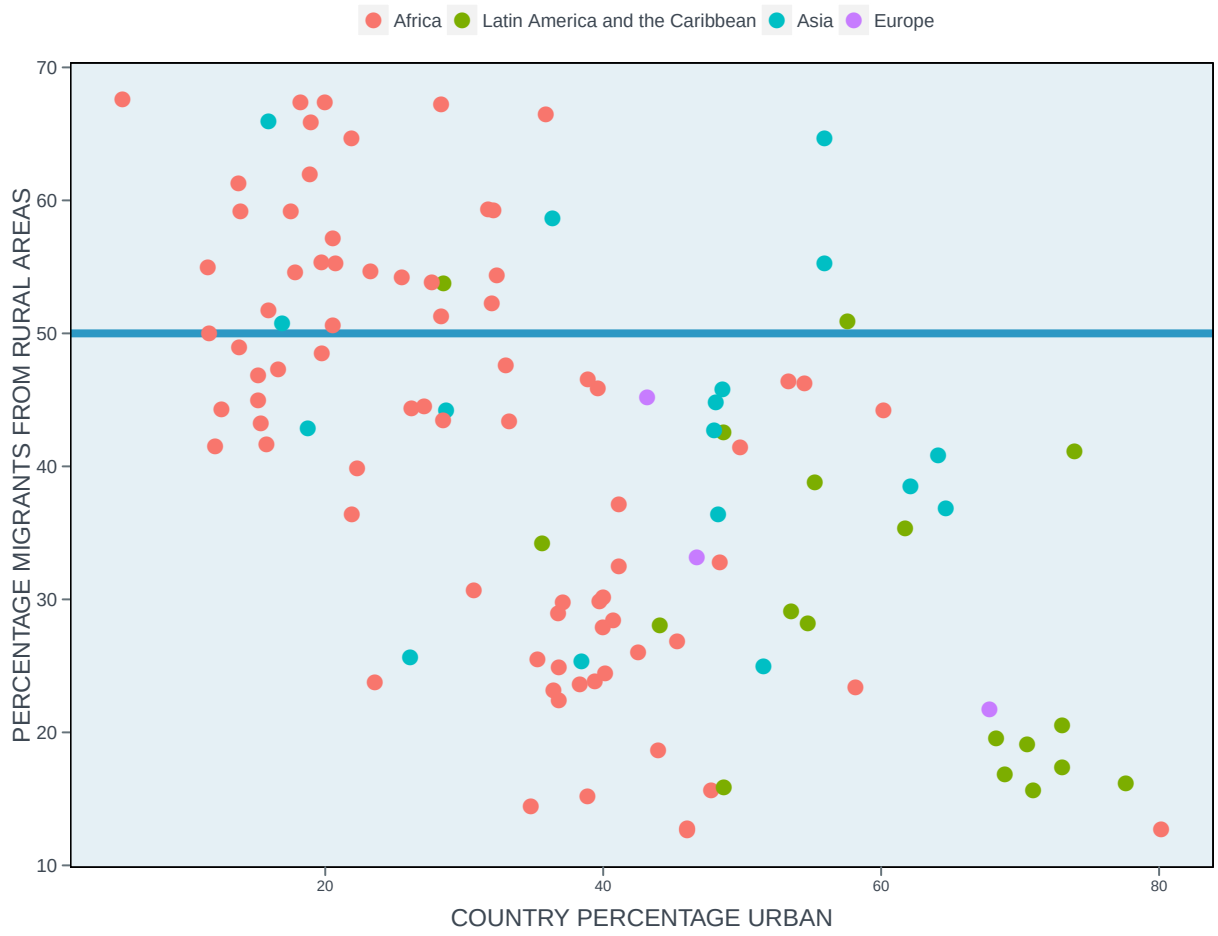


Figure 7: Percentage of urban in-migrants who come from rural villages, girls aged 15–19. Migration defined as a change in locality. Source: DHS surveys.

their place of origin by the name of the nearest recognizable city or town. (We know of no evidence on this point.) Upward bias in the urban-origin percentages cannot be entirely ruled out, but the case for such bias is somewhat speculative. In the absence of more compelling evidence, we are inclined to think that the literature simply lags behind the empirical realities, and has been slow to recognize the importance of urban-to-urban migration flows.

Time trends

The availability of censuses and DHS surveys for a wide range of countries and years provides an opportunity to investigate time trends in urban migration. Much of the migration literature suggests that migration is on the upswing, leaving the unwary reader with the impression that migration percentages are somehow known to be increasing with time. But apart from a few country-specific studies, these intimations of trend are seldom accompanied by evidence. Figure 8 arrays the IPUMS migration estimates by calendar year, singling out the countries with multiple censuses by connecting their estimates with a line to better expose any trends that are underway. We see little here to support the notion of strong upward time trends. Indeed, for Latin America the impression given by these estimates is of mild downward time trends. A complementary exercise with DHS surveys (not shown) also yields mixed results with no persuasive evidence of upward trends.[6] The impression of increases over time may well stem not from any changes in the percentages, but rather from growth in the total number of migrants produced in part by population growth overall.

3 Migration and marriage

In the absence of retrospective histories on migration and marriage, it is difficult to see how these two potentially life-changing events are linked. The census samples on which we rely can reveal whether migrants have ever been married at the time of the census, but generally do not enable the date of first marriage to be determined. Figure 9 compares the percentages ever married for urban in-migrant girls (aged 15–19) to the percentages for non-migrant urban girls, and also provides a second comparison to rural non-migrant girls. When compared with other urban girls in Panel (a) of the figure, in-migrant girls are clearly more likely to have been married; the differences range from very small to quite large in some cases. When set against a comparison group of rural non-migrant girls, however, the picture is mixed, without any clear difference in one direction or the other. In further investigations (results not shown), we have found that rural migrant girls are the most likely of the four comparison groups to have married.

The timing of migration in relation to marriage varies by setting, and since censuses provide information on marital status at the census date but do not generally determine age at marriage, we must turn to demographic surveys for a sense of the usual sequence of events. The DHS surveys collect month and year of marriage, which can be compared with the length of current residence (known only in terms of years of residence) to determine whether for girls who have both moved and married, the move clearly preceded marriage, followed marriage, or whether both events occurred in the same year but in an order that cannot be reconstructed with the data at hand.

Figures 10 and 12 presents the results on the timing of events for urban in-migrant girls. For each surveyed country, the percentages of girls who married before the move, at about the same time, and who moved while unmarried. It is in the last category—unmarried migrants—that we find the overwhelming majority of migrant girls in all of the countries. To be sure, in some countries (Mali, for example) a significant share of all urban migrants marry either before or at roughly the same time as marriage, but in no country does this group account for more than half of migrant girls.

The time sequence of migration and marriage does not in itself fully reveal how these two behaviors are related. Migration may be one phase in a longer-term strategy by which a girl prepares herself—in terms of

[6] To be sure, some caution is in order in interpreting the figure. The migration percentages exhibited here are *urban in-migration* percentages. They are not readily interpretable as guides to *rural out-migration* percentages. For the reasons detailed above in the discussion of the rural proportion of migrants, it is possible for constant rates of rural-to-urban outmigration (by which a constant percentage of rural residents leave each year for cities and towns) to result in declining rates of urban in-migration. This is because the rural base providing such out-migrants steadily shrinks in relative terms as urbanization proceeds. Likewise, rising rates of rural out-migration are compatible, in theory, with constant or falling rates of urban in-migration. Given this, Figure 8 cannot be read as a conclusive rejection of the proposition of upward trends in out-migration percentages.

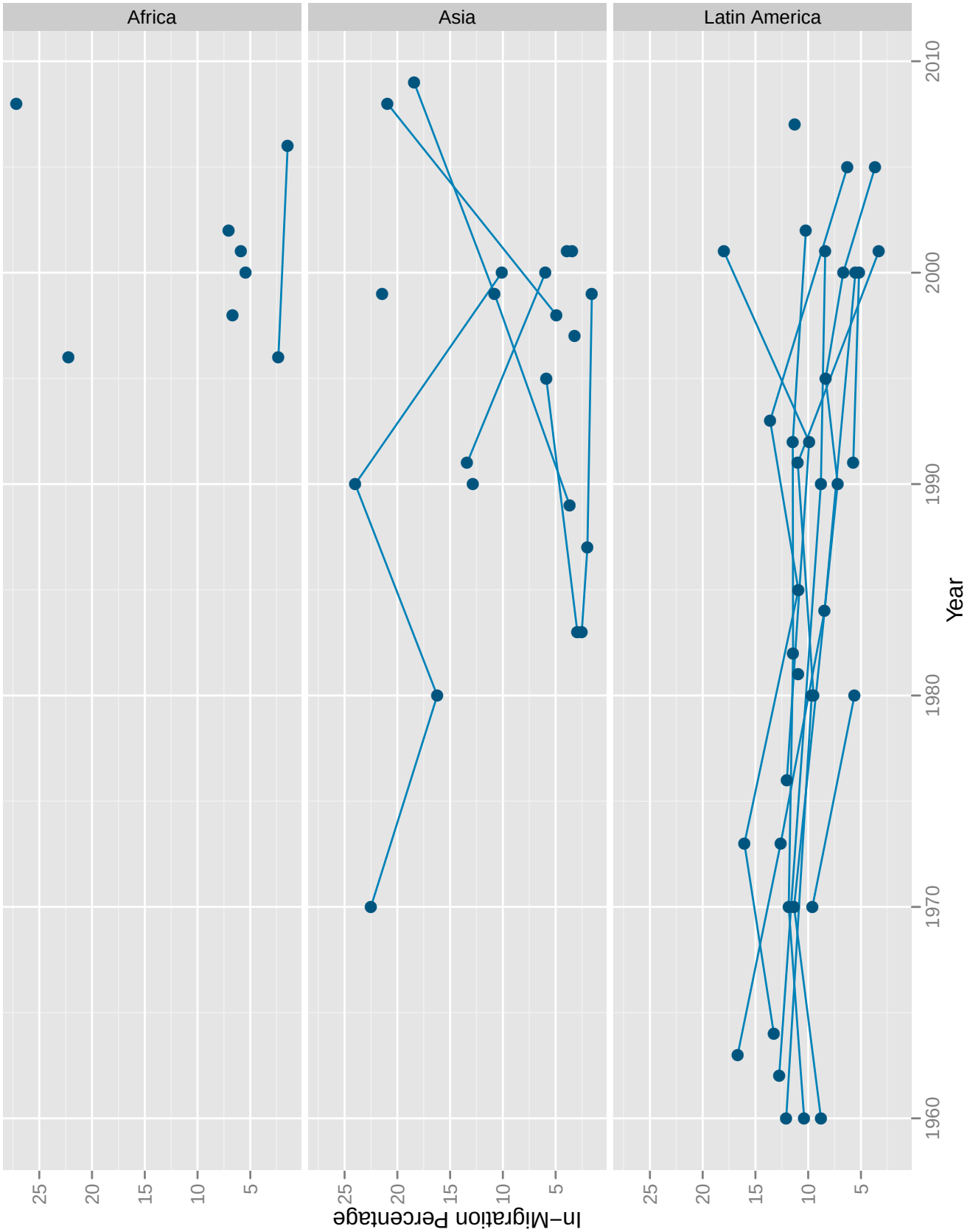
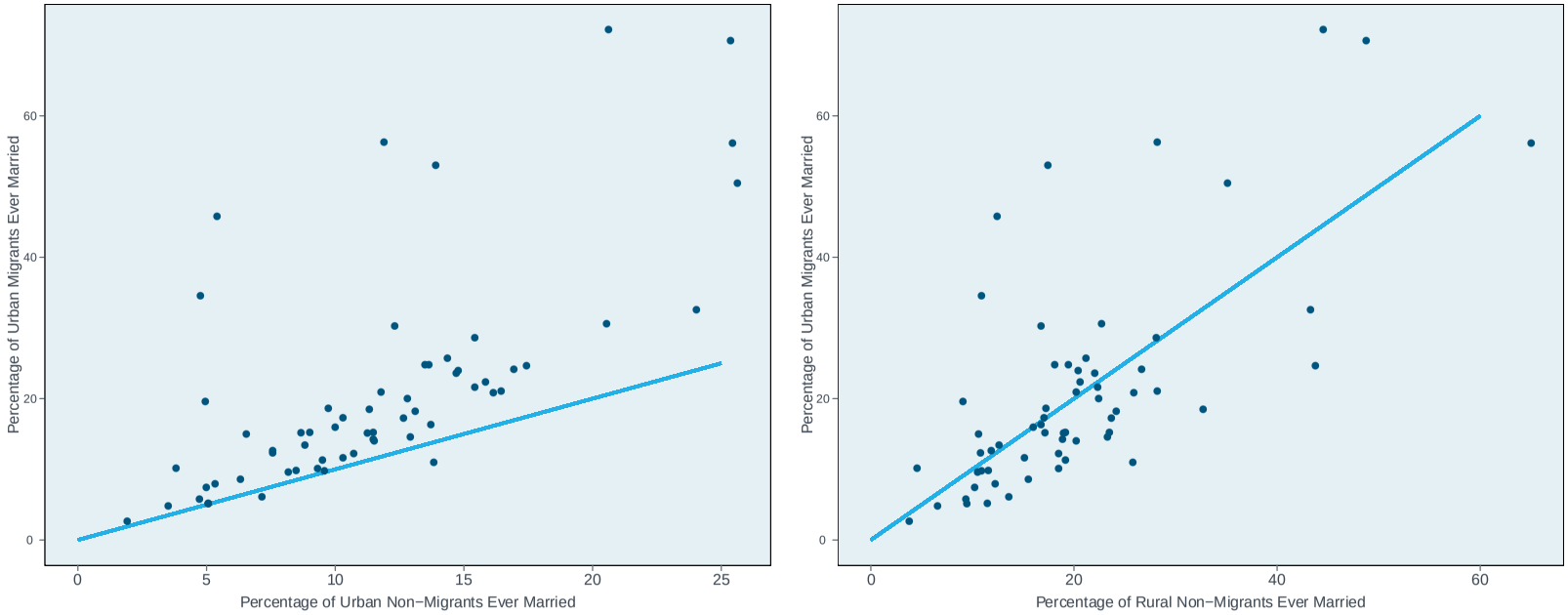


Figure 8: Percentage of in-migrants among urban girls aged 15–19, by region and year of census. Migration is defined as a cross-province or equivalent move in previous 5 years. Source: IPUMS.



(a) Urban girls

(b) Urban migrant girls and rural non-migrants

Figure 9: Percentage of girls aged 15–19 who have ever married, by migration status and current residence. Migration defined as a cross-province or equivalent move. Source: IPUMS.

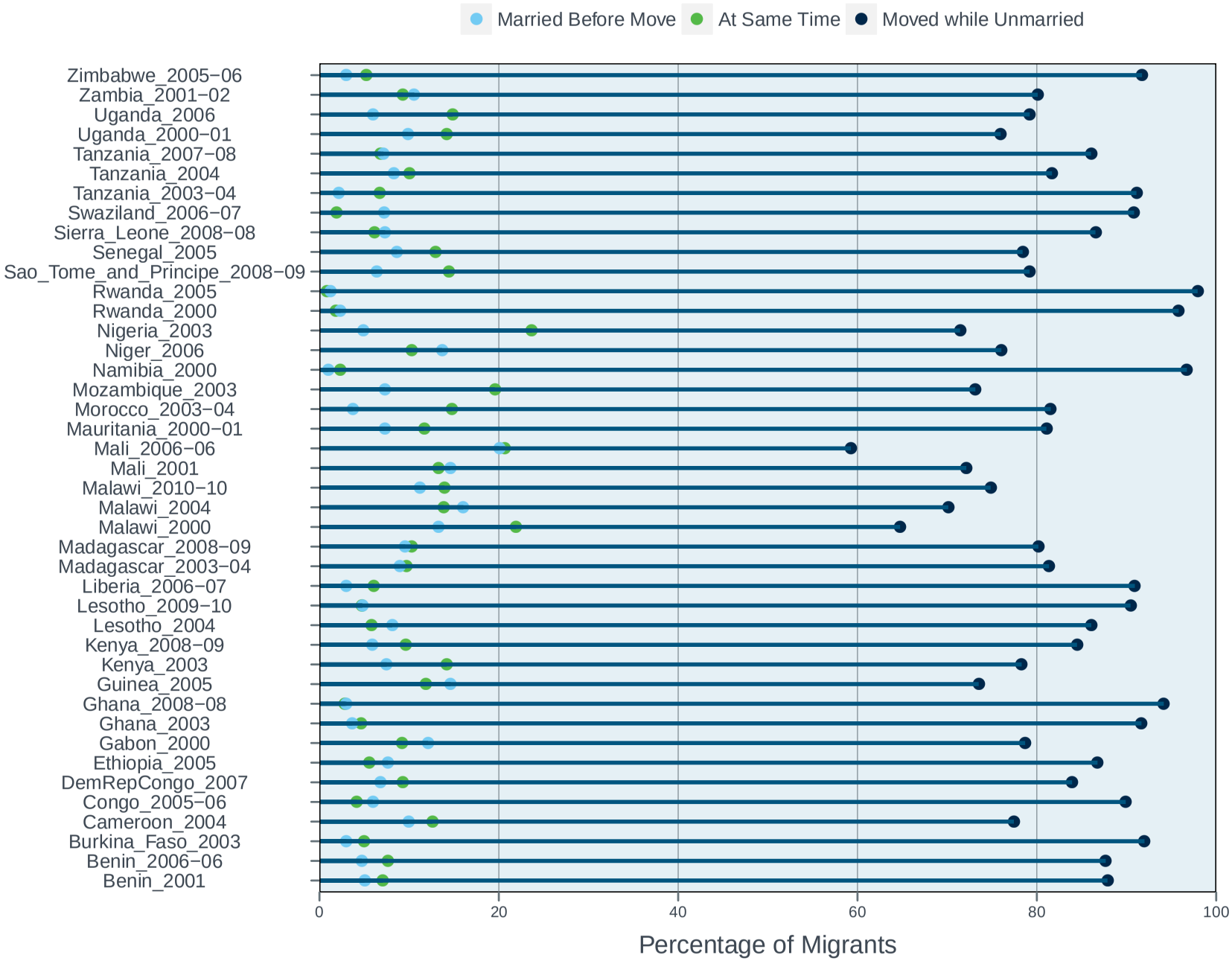


Figure 10: Approximate timing of migration in relation to marriage for Africa, urban girls aged 15–19. Migration defined as a change in locality. Source: DHS surveys since 2000, excluding those restricted to ever-married women.

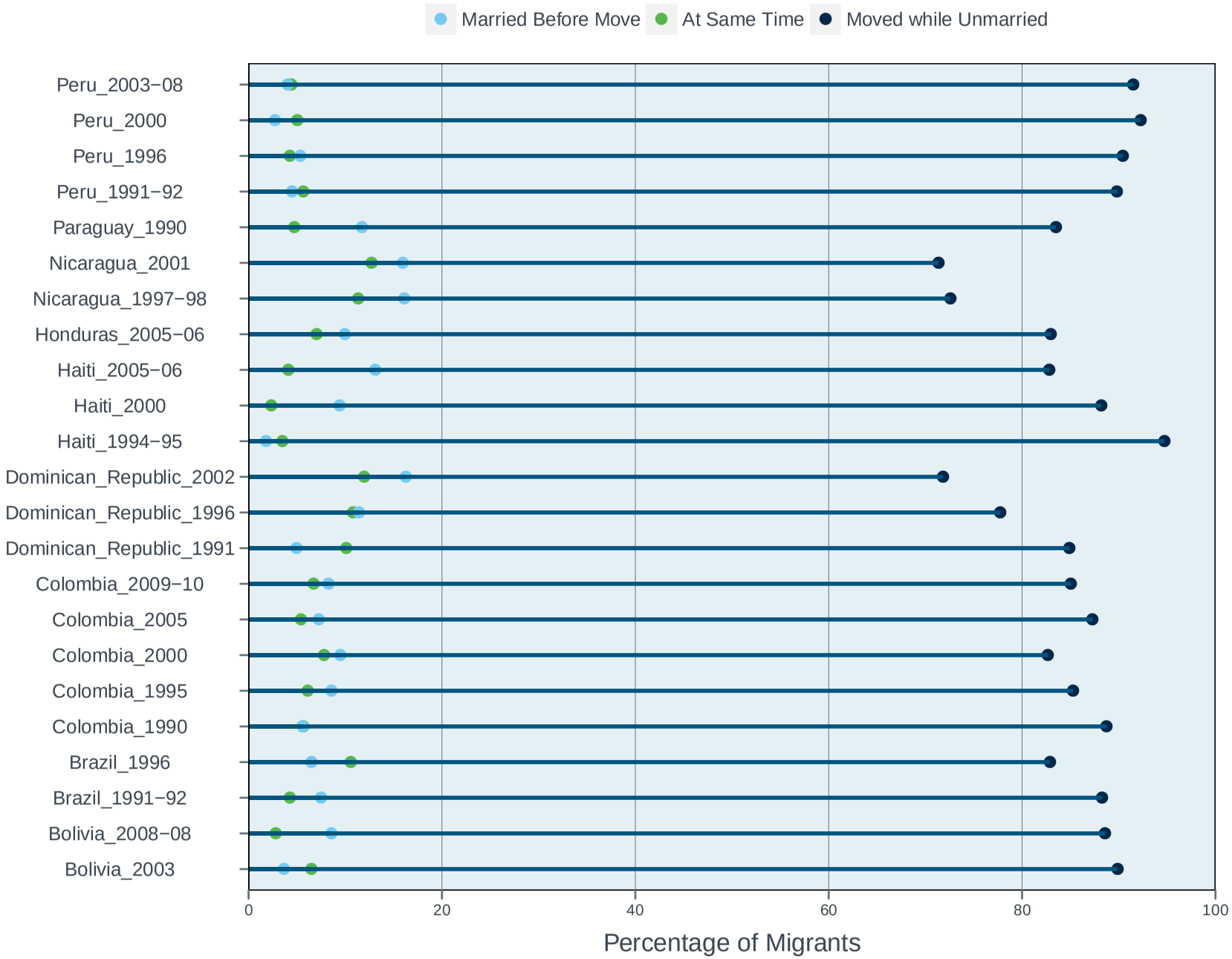


Figure 11: Approximate timing of migration in relation to marriage for Latin America, urban girls aged 15–19. Migration defined as a change in locality. Source: DHS surveys, excluding those restricted to ever-married women.

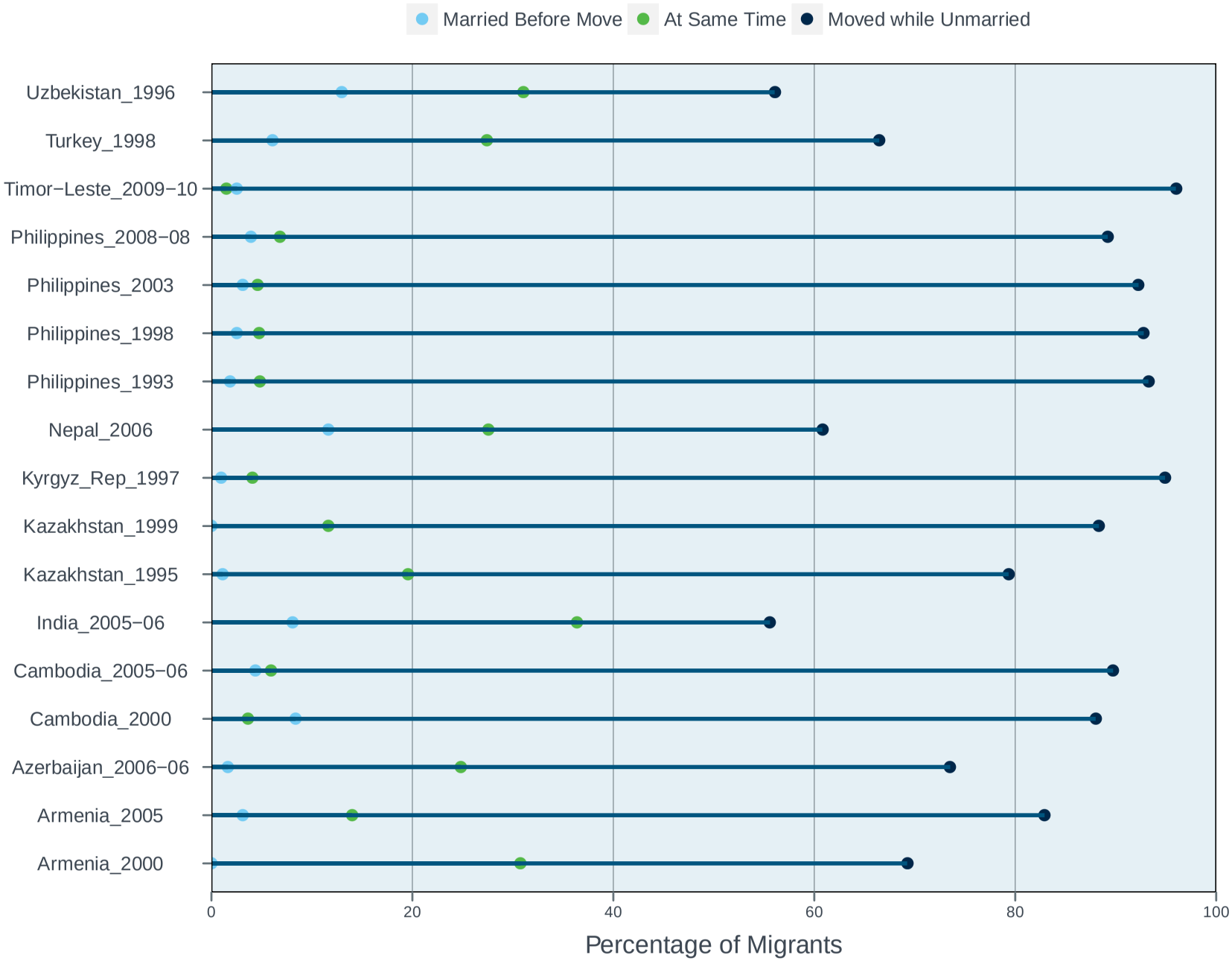


Figure 12: Approximate timing of migration in relation to marriage for Asia, urban girls aged 15–19. Migration defined as a change in locality. Source: DHS surveys, excluding those restricted to ever-married women.

the acquisition of skills and capital—so that when she does eventually marry, that transition takes place on more favorable terms. In a sense, then, a girl may "move for marriage" even if she is unmarried at the time of the move and remains so for a considerable period of time after her arrival.

4 Lessons from within-country estimates

Much of the value of internationally comparable evidence on adolescent migration is that it helps to dispel common mis-impressions and opens the way for an evidence-based investigation of an individual country that is deeply informed by local knowledge as well as the broader context. By considering one country as an example, we can preview the role that can be played by accessible demographic evidence in such country-level considerations. The case of Venezuela, one of the Latin American countries analyzed by Adamo (2012), illustrates how quantitative evidence can provide a frame for addressing fundamental issues in adolescent girl programming.[7]

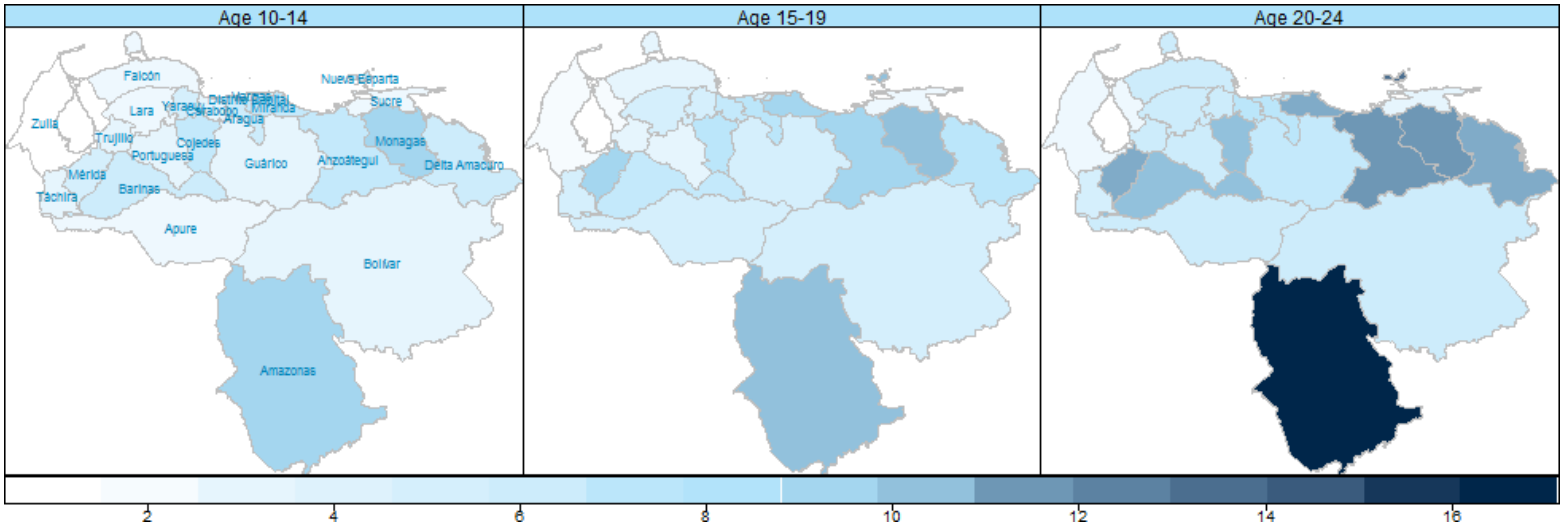
As the first panel of Figure 13 shows for girls 15–19 and for comparison groups aged 10–14 and 20–24, the highest urban in-migration percentages among all Venezuelan states are seen in the generally thinly-populated southern state of Amazonas, where migrant girls are likely to be found in the state capital of Puerto Ayacucho. But the greatest number of migrant girls lives elsewhere: in the state of Miranda, in the north near the federal capital district (Caracas) on the Atlantic coast. The largest flows of adolescent migrants are those between the capital district and Miranda (these are mainly urban-to-urban flows, with girls streaming in both directions), followed by flows of migrants to Anzoátegui state (where petrochemicals, tourism, and fishing dominate the local economy) from Sucre, which lies to its north, and Bolívar just to the south.

The difference highlighted in the figure—between percentages and totals—is a fundamental consideration in matching intervention program resources to needs. In the case of Venezuela, percentages would point adolescent girl program designers in one direction and totals in another. It is an especially important distinction to consider when migrant girls are difficult to identify as a group; if high-percentage areas are targeted for attention, then a program can approach groups of girls knowing that a substantial percentage of them will prove to be migrants. When migrant girls are not so difficult to identify, program resources might instead be directed to locations with the greatest number of such girls. Data on origin–destination flows are also likely to help focus program interventions, especially those aimed at better preparing rural girls for the experience of urban life.

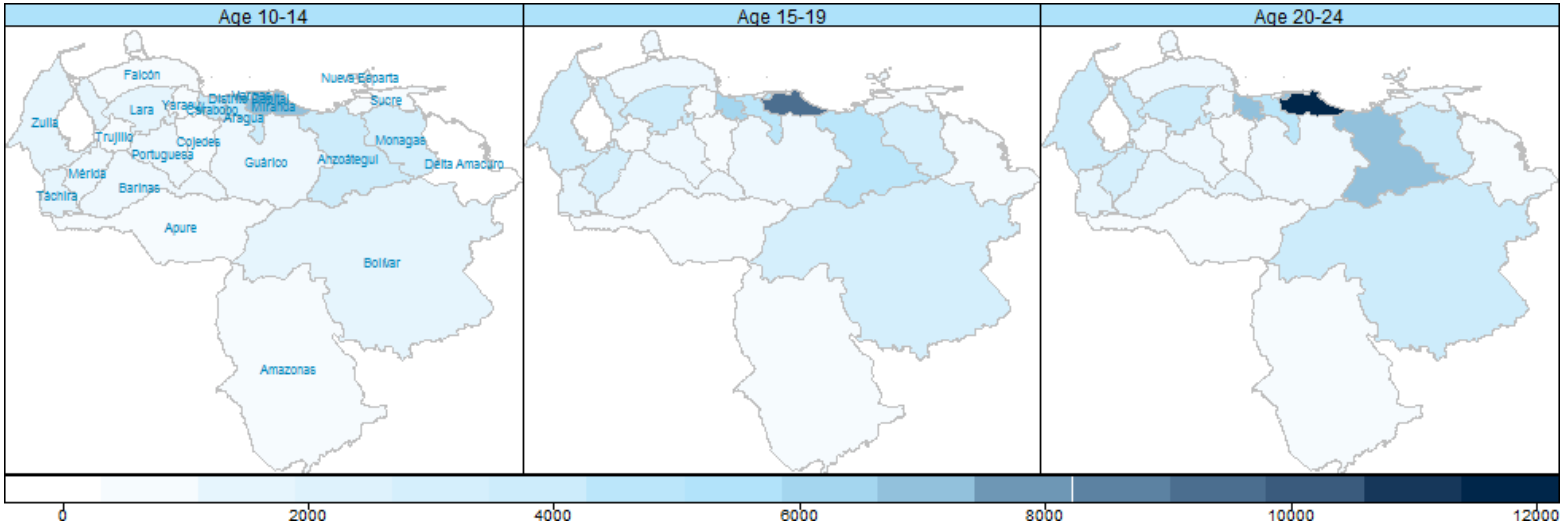
5 Are migrants disadvantaged?

A major theme in the literature on adult migration—see Panel on Urban Population Dynamics (2003) for an extensive review—has to do with whether, and in what ways, rural-to-urban migrants suffer from disadvantages in relation to a comparison group, which is usually taken to be urban non-migrants or rural non-migrants. The conclusions about disadvantage depend on the comparison group and the measure of advantage or disadvantage being studied. For adult men, studies of wages and earnings commonly find that with other factors controlled, migrants do not suffer from detectable wage penalties after an initial period of adjustment to city life, and subsequently are often seen to out-perform urban non-migrant men. (Beegle, Weerdt, and Dercon (2008) provides a recent example in this vein in which rural out-migrants from the Kagera region of Tanzania are compared on a longitudinal basis to rural non-migrants. Migrants record sizeable gains in living standards relative to the non-migrants.) The health and survival of the children of adult rural-to-urban migrants have been closely scrutinized in this literature. Although the health studies vary in emphasis, the Panel on Urban Population Dynamics (2003) identified a broad consensus that health penalties, when they exist at all, are mainly confined to an adjustment period of two to three years following the move, after which the health of migrant urban children closely resembles that of non-migrant children. With the aid of the empirical materials at hand, we can launch a discussion of disadvantage in access to public services, in measures of social support, and in schooling.

[7] Data on migrant percentages and flows were obtained by Adamo using complete census records, making use of the data holdings described in CELADE (2011a) and CELADE (2011b), a remarkable collection of publicly accessible demographic data for Latin America that is providing a model for statistical authorities in other regions of the world.



(a) Percentage of urban in-migrants



(b) Total number of urban in-migrants

Figure 13: Urban in-migrant percentages and totals by state and age, girls and young women, Venezuela. Source: Venezuelan census of 2001, analyzed by Adamo (2012).

Access to public services

In keeping with Panel on Urban Population Dynamics (2003, pp. 176–77), we compare access to improved sources of drinking water and sanitation for migrant and non-migrant urban girls, using DHS data on access to these services.[8] Figure 14 compares service access in households with urban migrant girls aged 15–19 with those having non-migrant girls of the same age. (To put it more precisely, households enter this comparison when a girl aged 15–19 is selected at random for the DHS individual interview, as it is only through the interview that her migration status is determined.) The figure is designed so that points lying below the diagonal lines indicate that non-migrant girls are advantaged in terms of service access relative to migrant girls, whereas points above the lines give the advantage to migrants. Evidently, in neither service is there any systematic evidence of migrant disadvantage: the differences are generally small and roughly evenly distributed about the diagonal. In further work (not shown) we have investigated whether service differences emerge in comparisons among non-migrants, migrants whose previous residence was urban, and rural-origin migrants. The differences in access remain small and do not indicate systematic disadvantages even for the rural-origin migrants. To be sure, DHS surveys do not establish that the girl herself enjoys the same access to drinking water and sanitation as the other members of her household, but for drinking water, at least, it would be surprising if she did not.[9]

Access to social resources

Census data cannot detect the full extent of social isolation experienced by migrant girls, but can offer some measures that hint at it. Figure 15 depicts the percentages of urban girls aged 15–19 who are either unrelated to their head of their household, or are only a distant relative of the head. As can be seen, the migrant–non-migrant differences are typically quite large. Figure 16 touches on similar issues, showing the percentages of urban girls of this age who do not live with a mother, father, or spouse. For an adolescent girl, having close relatives near enough at hand to figure into daily life presumably provides at least a measure of protection, advice, comfort, and other forms of social support. Migrant girls must either find a way to do without these social assets or must locate them in other quarters not examined by the census, such as in networks of friends and work-partners.

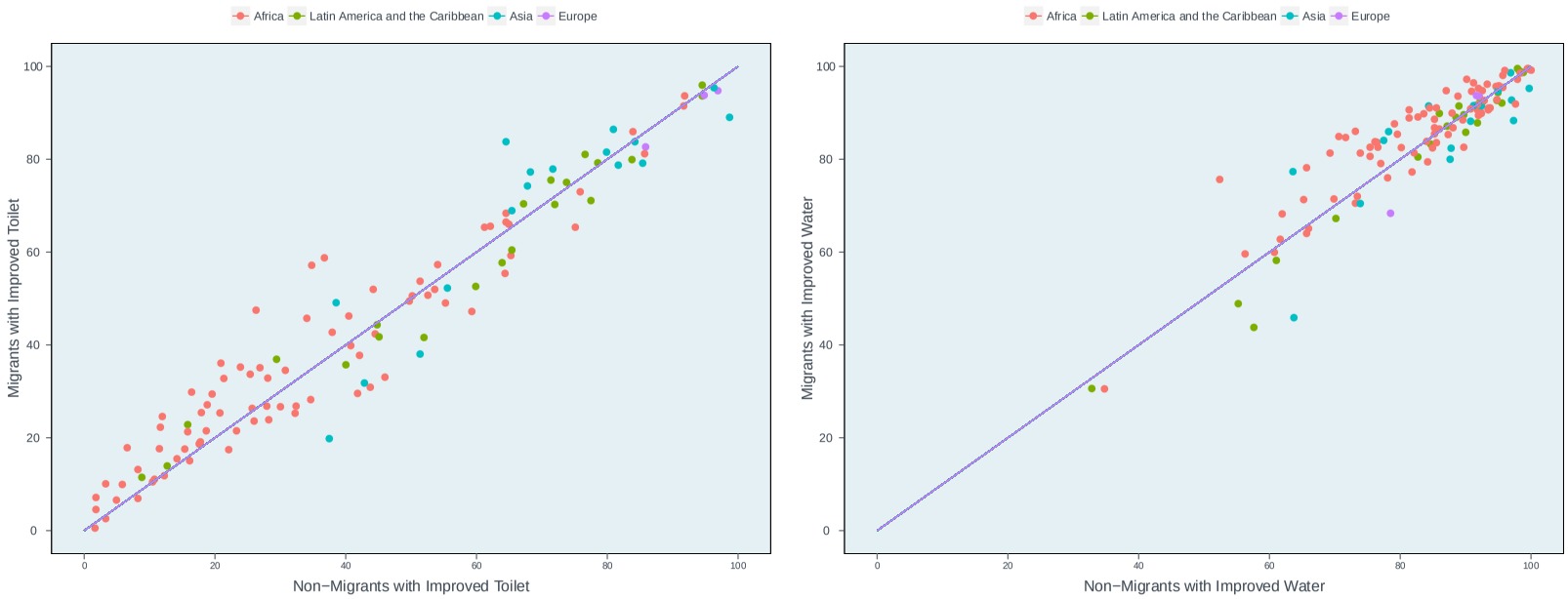
But is it still strictly necessary for parents and family to be at hand to provide support? A number of recent studies of Asian migrants shows how central mobile phones are becoming to their lives: they give leisure-starved migrants a way to sustain their social lives and build new social networks, enable rapid exchange of information about job openings, and equip migrant girls with a low-cost means of connecting both routinely and in emergencies with their parents, siblings, and far-flung relatives (Bunmak 2012; Ngan and Ma 2008; Yang 2008; Lin and Tong 2008). The social changes that this new technology is bringing to migrants' lives, and the new possibilities that it offers for linking girls to intervention programs.

Human capital assets

Where schooling is concerned, urban migrant girls can be located mid-way in achievement between rural non-migrant girls and other urban girls. They have higher levels of educational attainment than rural non-migrant girls, as shown in Figure 17, which depicts the differences between migrant and non-migrant girls at the two extremes of the educational distribution. Each point represents in the figure, for a given census, the percentage for urban migrants (on the vertical axis) and rural non-migrants (horizontal axis), with age groups differentiated by color. Panel (a) depicts the percentages of girls who have completed no schooling at all, or have only gone as far as incomplete primary. (For the ages under consideration here—16 to 22 years—most girls have either ended their schooling or have progressed past primary school. Age remains a factor for secondary schooling.) A point situated below the diagonal indicates that the rural girls

[8] The meaning of "improved" is set out by the WHO–UNICEF Joint Monitoring Programme for Water Supply and Sanitation, which monitors country progress toward the Millennium Development Goals; see `http://www.wssinfo.org`.

[9] In commenting on this paper, Mark Collinson has observed that in southern Africa (where he directs research in Agincourt, a rural demographic surveillance system), it is the somewhat better-off rural families whose members migrate to cities and towns, from where they send back remittances and otherwise support the rural family of origin, thereby further improving its living standards relative to other rural families. He conjectures that these positive feed-backs may explain the lack of clear disadvantages seen among urban in-migrants.



(a) Access to Improved Sanitation

(b) Access to Improved Drinking Water

Figure 14: Percentage of urban girls aged 15–19 with access to improved services, by migrant status and region. Migration is defined as change in locality over the previous 5 years. Source: DHS.

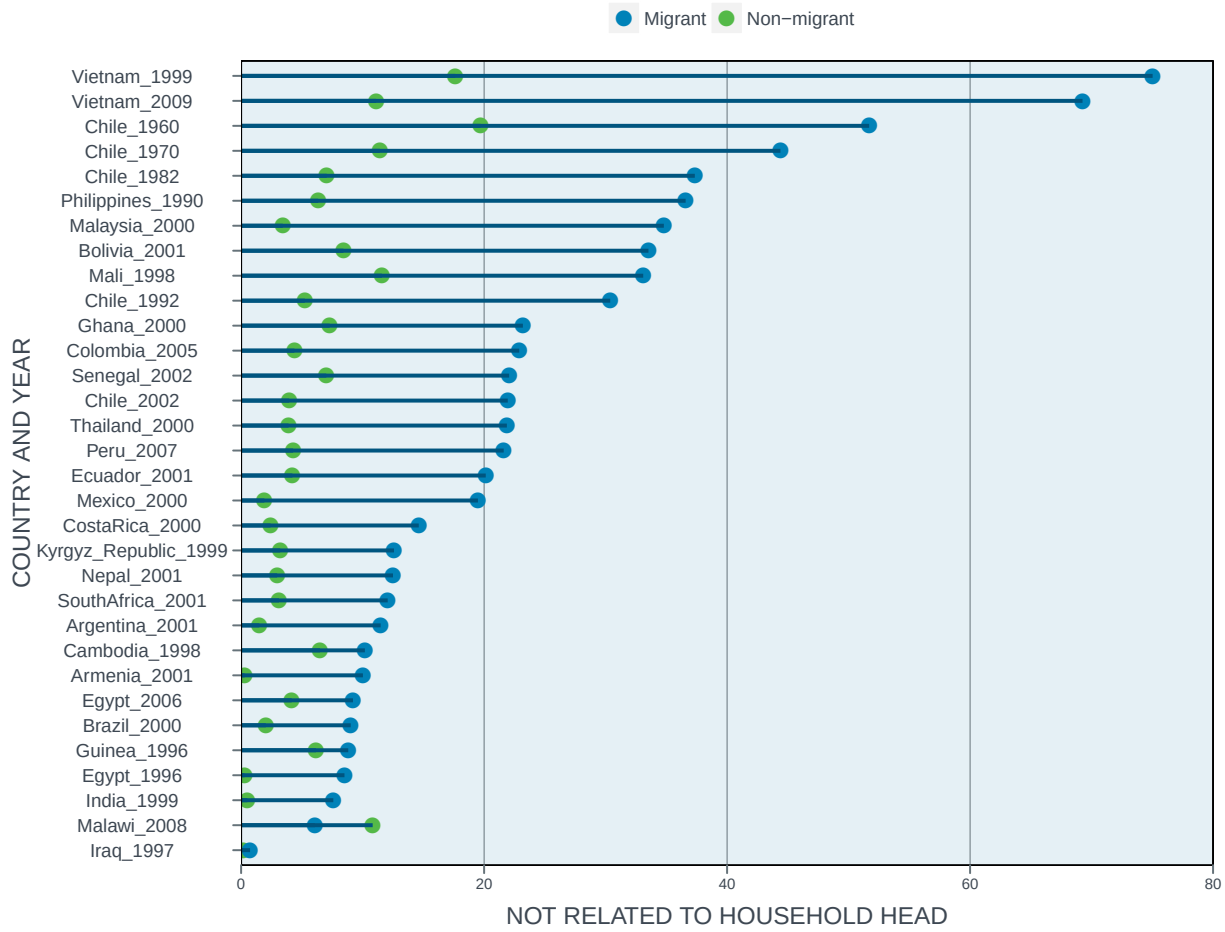


Figure 15: Urban girls aged 15–19 unrelated to household head (or only distantly related), by migrant status (cross-province movers). Source: IPUMS.

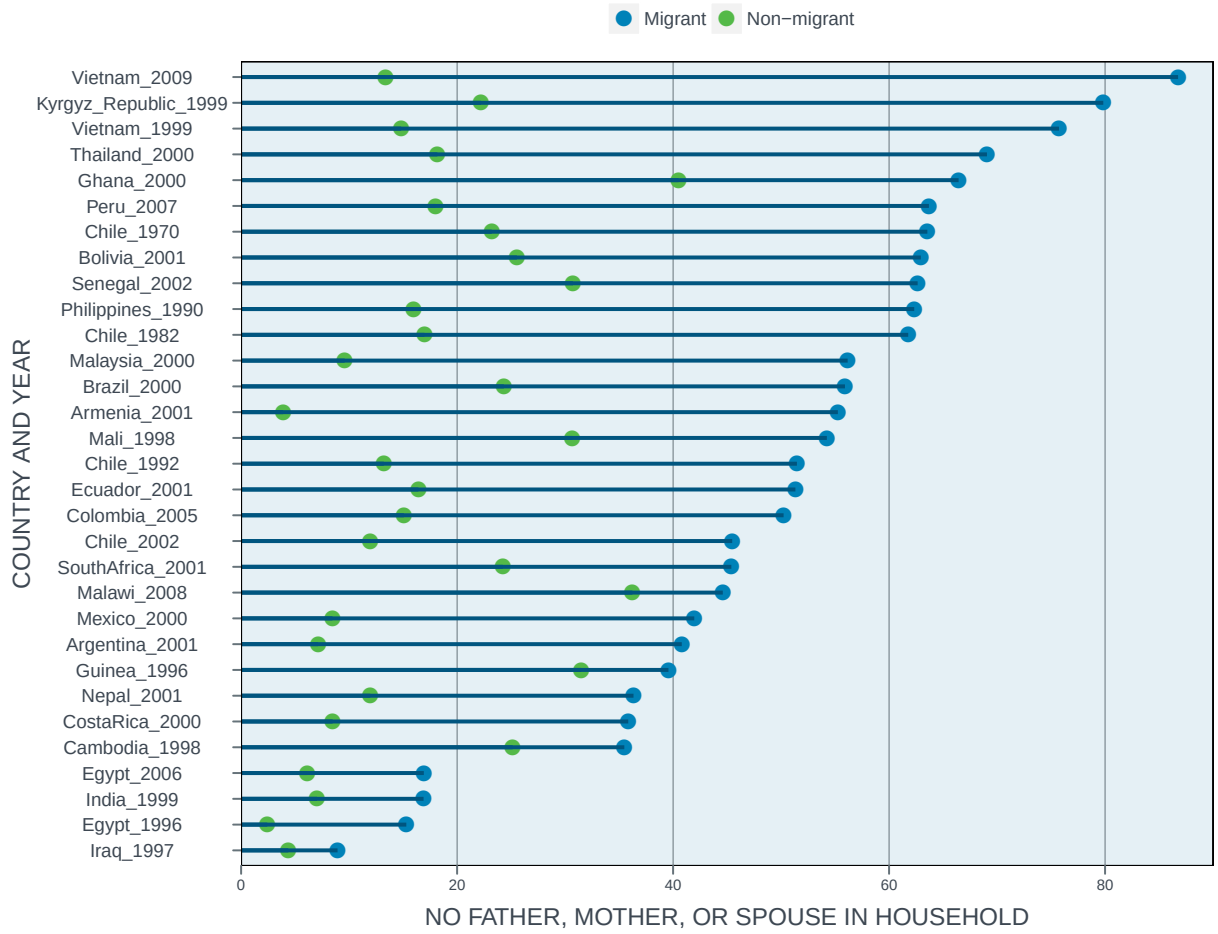
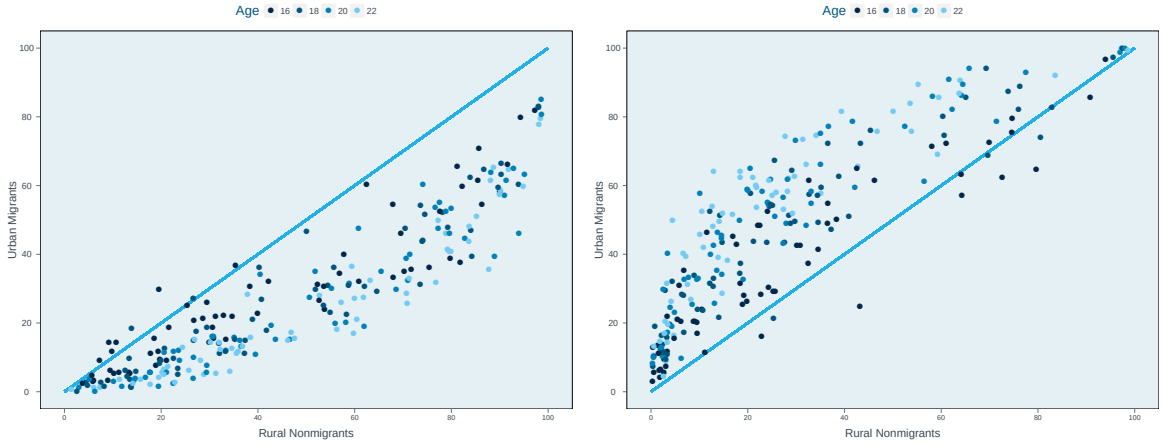


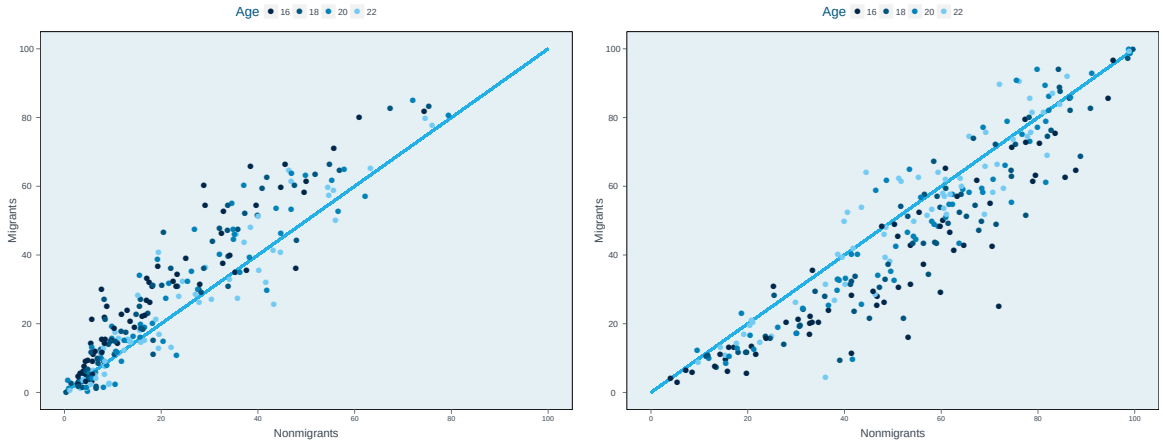
Figure 16: Urban girls aged 15–19 not living with a mother, father, or spouse, by migrant status (cross-province movers). Source: IPUMS.



(a) No schooling or incomplete primary

(b) Any secondary or higher

Figure 17: Educational attainment of urban migrant girls and rural non-migrant girls, by age. Migration defined as a cross-province move or the equivalent. Source:IPUMS.



(a) No schooling or incomplete primary

(b) Any secondary or higher

Figure 18: Educational attainment of urban migrant and urban non-migrant girls, by age. Migration defined as a cross-province move or the equivalent. Source:IPUMS.

are more likely to have low levels of schooling than urban migrant girls of the same age—this educational advantage of urban migrants relative to rural girls is readily apparent. It is equally clear at the upper end—attainment of any secondary schooling—shown in Panel (b), in which urban migrant girls exhibit a decided advantage. These figures underscore a common theme in studies of migration: higher levels of education increase the propensity to move.

However, although better educated than their rural peers, urban in-migrant girls do not generally match the levels of educational attainment achieved by their urban non-migrant girls. Figure 18 shows that migrant girls are not as well equipped with human capital as other urban girls. Panel (b) of Figure 18 shows the percentages of girls with any secondary or higher schooling. In this case, the relative advantages enjoyed by non-migrant girls are evident in the mass of points falling below the diagonal line.

These differences in educational attainment probably understate the advantages that non-migrant girls eventually acquire in terms of completed schooling, because non-migrant girls are decidedly more likely to be enrolled and continuing to build upon their educational assets. Figure 19 contrasts enrollment percentages for urban girls at ages 16, 18, 20, and 22, with the percentages for in-migrants again shown on the vertical axis and those for non-migrants (of the same age) on the horizontal. Each point depicts the levels of enrollment for a given census and age. Points above the diagonal line are those for which migrant enrollment percentages exceed the non-migrant percentages; points below the line indicate higher enrollments for the non-migrant girls. As can be seen, cases in which migrant girls exhibit higher levels of enrollment are infrequent. In the great majority of these comparisons, migrant girls are less likely to be enrolled.

Is China's "floating population" disadvantaged?

We lack access to recent census data for urban China, whose migrant population dwarfs the total populations of most countries—Zhu (2007) estimates it at 120 million—but can draw on the literature for guidance on the question of disadvantage. Jiang (2006) has employed a 1 percent sample of the 2000 Chinese census to study the living conditions of the "floating population" of urban migrants, who are the persons living in cities for which they do not hold *hukou* registration. The floating population accounts for nearly one-quarter of all urban Chinese. Although often portrayed as rural-to-urban migrants, the floating population actually comes from both rural and urban origins: 54 percent of migrants have an agricultural *hukou* but the other 46 percent hold a non-agricultural registration. Of the migrants who arrived in the five years before the 2000 census, the previous place of residence for 39 percent was another city or town, with 61 percent arriving from a rural village. Although they are characterized as "floating," a term that suggests constant movement and only fleeting attachment to place, a significant share of these migrants have long-term residence in the city where

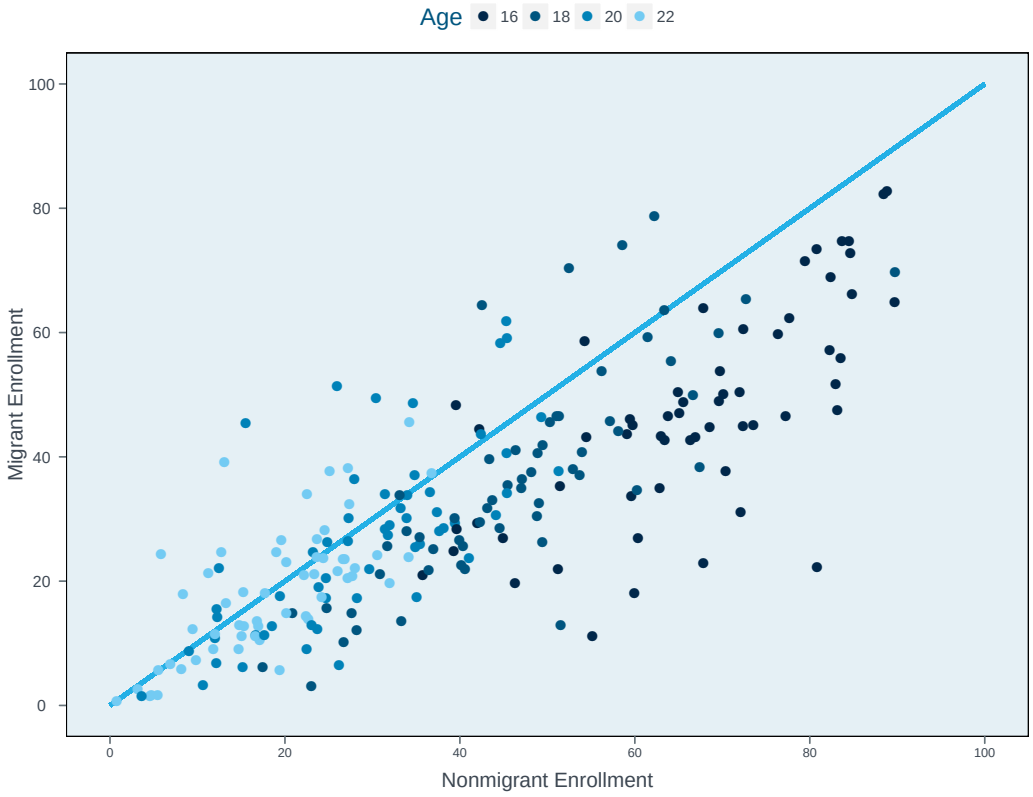


Figure 19: School enrollment percentages of urban girls by migration status and age. Migration is defined as a cross-province or equivalent move in previous 5 years. Source: IPUMS.

they were enumerated: 40 percent had lived there for 5 years or more. In a study of floating migrants in Fujian Province, Zhu (2007) finds that 19–26 percent intend to stay despite their lack of legal status, although most intend either to return home or to move on when employment opportunities arise.

In Beijing, some 28 percent of these migrants rent private housing, usually paying substantially higher rents than other urban residents but in turn receiving housing of at least adequate quality. The remainder of Beijing's floating migrants often live in housing linked to their work-places: 26 percent live in work-unit dormitories, 13 percent rented work-unit housing, and about 20 percent lived at the work site itself. A number of studies have shown that all three types of work-related housing are of poor quality at least in terms of crowding and lack of privacy. Examining the floating population as a whole, however, Jiang (2006, p. 732) finds:

> In contrast to local residents, the floating population had better access to tap water, clean cooking fuel, better bath or shower facilities and more durable housing (in terms of housing construction materials), although their kitchen and toilet facilities were poorer. . . . Measured by the comprehensive housing facility index, the housing facilities were best for permanent migrants and poorest for the local residents, while the housing facilities of the floating population was in between. Moreover, the floating population living in households headed by permanent and local residents enjoyed better housing facilities than those living in households headed by the floating population.

In short, China's floating population of migrants comes from diverse backgrounds and lives in diverse circumstances. By all accounts, migrants who reside at their work sites (which are often construction sites) are greatly disadvantaged, but other groups of migrants enjoy advantages in some dimensions of housing and access to services while being disadvantaged in others.

6 Residential mobility

The movements undertaken by adolescent girls certainly do not cease when they arrive in the city, but few studies of migrants continue to trace them as they circulate from house to house and neighborhood to neighborhood. Residential mobility is exceedingly difficult to summarize across settings, because a migrant's ability to change residence within a city depends on a myriad of factors: the neighborhood in which she first arrives, the possibilities for renting, whether the household has security of tenure, access to formal institutions offering credit-based housing finance, and the extent to which moves are effectively restricted by regulation and other government policies. Not all of these factors bear directly on adolescent girls living apart from close relatives.

In a study of slum-dwellers in Accra (Ghana), Rokicki (2011) makes use of a retrospective migration history to identify women who moved during adolescence. Among these women, most of those who arrived in Accra as adolescent in-migrants found housing initially in the relatively poor neighborhoods of the city (in the lowest quartile of a socioeconomic index), and although nearly 60 percent of the in-migrant women went on to move again, these follow-on moves tended to take them to (marginally) better housing located in other poor neighborhoods. Adolescents who were already living in Accra were also residentially mobile, but their subsequent moves were distributed across a wider variety of the city's neighborhoods. As Rokicki (2011) points out, all of the respondents in this study resided at interview in an Accra slum; it would not be surprising if setbacks and disappointments were over-represented in their life experiences.

So far as we are aware, apart from Rokicki (2011), no research has focused specifically on the residential mobility of urban in-migrant adolescents. For South Africa, Ginsburg et al. (2011) have used the Birth to Twenty cohort study to follow a representative sample of children born in 1990 in Greater Johannesburg, whose residential histories can now be reconstructed up to age 15. (By definition, all of these children are native-born urban residents.) By that age, 57 percent of children have changed residence at least once within the metropolitan area. Changes of residence are more likely for the children whose mothers (or caretakers) have no formal education and for those living in poor-quality housing. In Johannesburg, residential mobility would appear to be an indicator of disadvantage. The Lall, Suri, and Deichmann (2005) study of Bhopal (India) also employed an innovative retrospective housing history questionnaire and a representative city-wide sample of households. Non-slum households tend to remain in non-slum neighborhoods, with only

7 percent of these households moving to slum neighborhoods. However, about 1 in 5 of Bhopal's slum-dwelling households were able to negotiate a move out of the slums, a process that often took years while they pieced together enough personal savings to afford new housing. Lall et al. found that residents of better-off slums were able to move out more quickly, as were in-migrant households (in Bhopal, these households are better-educated and possibly more enterprising than urban natives). Renters were generally more likely to move than owners—as shown in Chandrasekhar and Montgomery (2009), in urban India renting becomes more common than owning as one moves up the socio-economic scale. The renting–owning difference is especially marked in the case of "owners" lacking any formal documentation of ownership (they form the majority of owners), who cannot exploit the asset value of their housing to trade up. Hence, in the Bhopal study but not in Johannesburg, residential mobility is associated with socioeconomic advantage.

Reviewing Chinese cities from 1949–94, Huang and Deng (2006) find low levels of residential mobility overall, with policies governing eligibility for housing (which in this era was allocated through work units) being the dominant influence over this period and individual characteristics not linked to qualification being less important. Since 1994, the pace of residential movement has substantially quickened and features of a private market in housing are emerging. Wu (2006) focuses specifically on the experiences of in-migrants to Beijing and Shanghai, drawing upon surveys of migrants. Well into the reform era, the *hukou* system prevented migrants registered in rural areas from accessing state-supplied rental housing. However, the situation is changing. Where migrants with rural *hukou* are ineligible to own, they are increasingly finding rental housing in migrant estates managed by local governments. These migrants move often, especially between the ages of 25 and 35, and would appear to be more mobile than urban natives. Although adolescent migrants are not singled out in Wu's study, multivariate models indicate that mobility declines significantly with age, suggesting that residential moves may be especially common among the young. As Wu (2006) emphasizes, knowledge of the specific housing opportunities for which a migrant is eligible circulates within migrant informal social networks (initially comprising friends, relatives, and co-villagers) and work-places (especially in the large firms and state enterprises providing dormitory housing).

7 Conclusions and recommendations

This paper's main message is that care needs to be taken when characterizing migrant girls as a group. They are so varied in background, motivation, and experience that group averages will not always be informative. Effective policies and programs will need to take the range of migrant circumstances into account, develop methods to identify the girls who are most at risk or would benefit most from interventions, and devise ways of reaching these sub-groups of girls.

We have found that although the percentage of migrants among urban adolescent girls varies a great deal across countries, there are many countries in which significant percentages of urban girls have recently arrived. In setting adolescent intervention priorities, policy-makers and program designers will need to attend to the ways in which measures of migration affect estimates of these percentages and thus the size of the migrant group as a whole. Estimates drawn from surveys in the DHS program suggest sharply higher percentages than do the census-based estimates. Which of these sources is taken as a guide for policy will depend on local understandings of migration, in particular the distinctions between the relatively shorter-distance moves that are captured in the surveys and the generally longer-distance moves seen in censuses. The distinction between rural-origin and urban-origin migrants also needs careful consideration. There are many countries in which rural-origin migrants are in the majority, especially where levels of urbanization are still low, but in most of the cases we have examined there are more urban-origin migrants. As countries continue to urbanize, this segment of the migrant population will need attention.

As has been shown, in terms of schooling and social isolation, urban migrant girls as a group suffer from disadvantages in relation to their non-migrant urban peers. But in terms of material disadvantage, insofar as that can be equated with access to basic-need services (drinking water and sanitation), there is no clear evidence that migrant girls as a group fare worse than non-migrants. Even when migrant girls are separated into two sub-groups—those coming directly from rural villages and those migrating from other towns and cities—little compelling evidence of disadvantage emerges.

The literature on adult urban migrants, which was reviewed in Panel on Urban Population Dynamics (2003), finds that the strongest evidence of disadvantage is confined to an adjustment period after arrival,

which may last two to three years. After that period of adjustment, however, studies tend to show that migrants are either indistinguishable from non-migrants in terms of living standards, or even appear to do better than the non-migrants. The adult migration literature provides a way of thinking about adolescent migrants that may prove helpful: it would suggest putting focus on particular socio-economic sub-groups of migrants who may be disadvantaged, and pinpointing the stages or windows of time in a migrant girl's journey during which her risks and needs may be most prominent.

Research recommendations

Ask about migration As poor countries continue to urbanize, it will be essential to keep urban migrants in view. The Demographic and Health Surveys has recently abandoned its twenty-year tradition of collecting migration data, and the Multiple Indicator Cluster Surveys (MICS) has yet to begin collecting such data. Both of these important survey programs recognize the significance of the adolescent life-stage for individual well-being and policy; but neither seems to recognize the extent to which girls and boys of this age are on the move. We would not recommend that the DHS simply reinstate its former questions, which were inadequate at best. Rather, we would urge that the DHS and MICS programs coordinate their efforts to define migration (possibly following the lead of national censuses in using administrative boundaries as the core criterion) and agree upon a modest block of questions that identify a migrant's origin areas in terms of urban–rural status and detailed, named geographic location. We would argue against efforts to artificially "standardize" these geographic locations—that classification task should be left to the researchers using the data, who will be able to call upon other public-domain sources of geographic boundaries.

Seasonal and short-term migration Migration researchers have long lamented the lack of information on these moves, which are important to the lives and well-being of many residents of poor countries. Where possible given other survey priorities, we recommend that the DHS and MICS programs initiate a period of experimentation with survey questions designed to illuminate such moves.

Residential mobility Very little research effort has been directed to characterizing a migrant's first living situation upon arrival and tracing the series of moves subsequently undertaken within the city. Yet arguably, a change of house and neighborhood can be just as important to a girl's well-being as a longer-distance move. The dividing-line between migration and residential mobility is artificial at best and misleading at worst. The research reviewed above offers a menu of survey questions and modules that would repay study as models for future work on mobility.

Tracking Researchers designing longitudinal surveys to understand how moving is linked to changes in well-being are urged to consult Beegle, Weerdt, and Dercon (2008) and Thomas and Frankenberg (2001) for guidance on how large-scale national surveys can track migrants to their destination areas. Beegle, Weerdt, and Dercon (2008) are able to show that had their survey been limited in coverage to households that remained in Kagera (Tanzania) over the 1994–2001 period of the study, it would have missed the substantial gains in living standards that out-migrants achieved, and would have suggested only modest declines in poverty when (with all residents followed) much greater progress in reducing poverty were achieved. As mobile phone coverage increases, we expect it to become much easier for researchers and intervention programs alike to maintain contact with adolescent girls on the move.

8 Appendix

Broadly similar approaches are taken in censuses and DHS surveys to collect data on migration, but the approaches differ in several respects and neither data-gathering mechanism is fully satisfactory. To appreciate the differences in the two approaches, it may be helpful to set them against a third alternative that would collect minimally adequate migration information. Such a mechanism would summarize moves in terms of their origin and destination, with the urban or rural nature of both locations recorded and situated geographically either by point coordinates or (more realistically) in terms of small administrative units. In

this way, the data would be aligned with migration theory, which emphasizes the role of spatial differences in current living standards and longer-term life prospects across a range of potential destinations (Lucas 1997). Unfortunately, neither the IPUMS censuses nor the DHS surveys meet these minimal criteria, and they fall short in different ways.

One relatively minor difference between the census and survey approaches has do with the description of a household's place of residence at the time of the interview. The vast majority of censuses—although surprisingly, not all—indicate whether the current residence is urban or rural according to the country's official definition.[10] The official definition is also applied by the DHS to classify the sampling clusters of its surveys. Where the census and DHS programs differ is in supplying geographic context on the administrative units in which the interviewed households reside. This is less a matter of what data are collected than of restrictions on their release into the public domain. To protect respondent confidentiality, the census files made available through IPUMS generally identify locations only by broad administrative region, such as the province of residence or a similar first-level administrative unit. The equivalent of first-level administrative area is also available in most DHS surveys, but quite a number of these surveys additionally supply finer geographic detail in country-specific variables supplementing the standard survey. In recent years, an increasing percentage of DHS surveys have gone even further in the direction of spatial specificity by collecting longitude–latitude coordinates for their sampling clusters, making these available in its public-domain datasets.[11]

If the DHS program offers greater specificity about current residence, its surveys are generally less revealing than censuses about migration. Most censuses collect information on place of residence 5 years before the date of the census, although a few focus instead on 1 or (in rare cases) 10 years before the census. Migrants are then defined as those whose current residence differs from residence 5 years previous. In focusing on these two points in time, this (conventional) definition overlooks important movements that take place between them: seasonal migrants would not be identified, nor would most short-term, so-called "target migrants" who have returned by the time of the census to where they had previously lived (Bilsborrow 1984; Hertrich and Lesclingand 2012). A number of censuses include a question on the length of current residence (coded in years) as an alternative to the 5-years-previous question; and some censuses gather both. When both measures are available, we use the more conventional 5-years-previous measure; if it is not available, we define migration as taking place when the length of current residence is less than 5 years. If more than one move took place over the 5-year period, neither of these measures will record it: they indicate whether any move took place, but not the number of moves.

In the Demographic and Health Surveys, only the length of current residence is generally available (it is also coded in years), and relatively few surveys have provided more detail than that. For a time, in the late 1990s to early 2000s, the DHS program experimented with using monthly calendars as a device to record demographic behavior over the 6 years leading up to the survey, and about twenty-five countries included migration in these calendars. An examination of the calendars shows that length of current residence as calculated via the calendar is broadly consistent with the standard question on years of residence. Also, relatively few adolescents or adult women are found to have moved more than once over the six-year span of the calendar (under 10 percent in these surveys), suggesting that not much information on the number of recent moves is sacrificed by using length of residence to indicate whether any move took place.

An important difference between the IPUMS-processed censuses and the surveys—one to which we give considerable attention in this paper—concerns the distance or boundary-crossing criterion that distinguishes a migratory move from a mere change of residence. For current urban residents, the DHS practice has been to define migration as a move that originated outside the city or town in which the respondent currently lives. Since the boundaries of these urban places are difficult to discern, and since neither interviewers nor respondents can be expected to know them precisely, it seems that the DHS interviewers must in some way bring judgement to bear in separating out migration from all accounts of moves given by respondents. It is not at all obvious what criteria are applied in these surveys to define rural migration—is migration

[10] For example, China includes no urban designation in its IPUMS 1990 census sample. The Chinese census identifies large cities and it is possible to estimate migration to those cities, but not to urban areas in general.

[11] Mindful of the potential threats to confidentiality, the DHS introduces random locational errors to these coordinates before releasing them, with the result that locations are pinpointed with a maximum of 2 kilometers of displacement error in the case of urban clusters and 5 kilometers for rural. Although displacement errors of this sort are damaging for studies that depend on access to the fine spatial detail, we do not think they present a serious threat to studies of migration.

entailed in a change of village?—and possibly in rural areas locational boundaries would be even less evident than in urban areas. Census data-collection efforts typically define migration with greater consistency and transparency, making specific reference to the boundaries of official administrative regions.[12] Some censuses define migration to be a move that crosses a major administrative unit boundary; others allow crossings of minor unit boundaries to count. As Standing (1984, p. 32) wrote nearly thirty years ago in a passage that is still on point today,

> Somewhat remarkably, most demographers and other social scientists have let statisticians and survey administrators determine the areas between which moves are classified as "migration"…. It has been said that the areas between which moves count as migration are first defined by bureaucrats and later rationalised by social science researchers.

Standing and others have noted that because these administrative units vary a good deal in their geographic size, both within and across countries, it is difficult to work out an acceptable method for standardizing estimates so that they are not size-dependent.

Censuses and the DHS program have taken fundamentally different approaches to characterizing the area from which a move took place. Ideally, as we've mentioned, a migrant's origin area would be described not only in geographic but also in urban–rural terms. In reality, neither censuses nor the DHS provides such minimally complete information. Census data do not generally record whether the community from which the migrant came was urban or rural. The DHS surveys, by contrast, typically do describe the rural–urban status of the origin community, but offer no clues as to its geographic location. Moreover, the basis on which the urban–rural status of the origin is decided is not obvious. It would again appear that the classification is left to the DHS interviewer to decide.

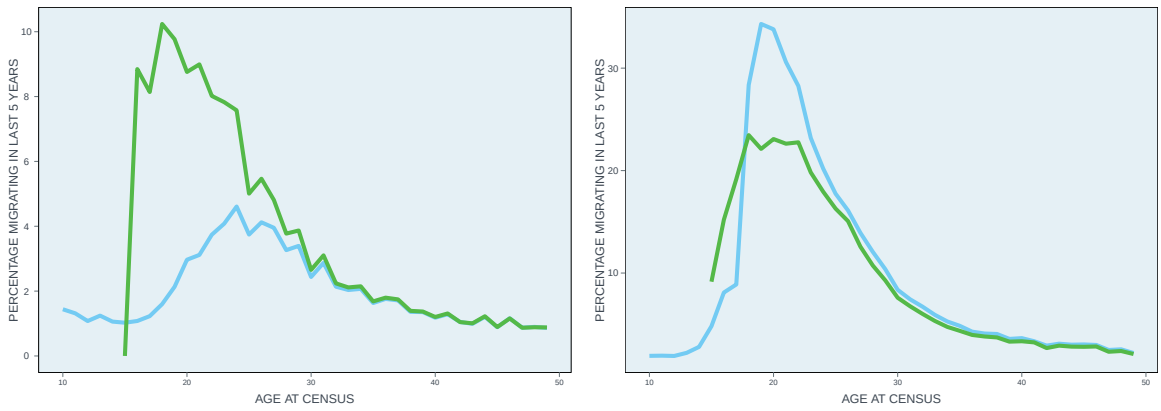
The geographic distance covered by the migrant is not available in either DHS surveys or censuses, and in neither case is the origin described in sufficient detail for distance to be computed after the fact. Given data on the boundaries of the administrative units recorded in the census (stored in a shapefile or the equivalent), the minimum and maximum possible distances travelled in a move could be calculated, and if additional data were available on the spatial distribution of population within these administrative units, the distance traversed by a migrant could be estimated in a statistical model. This would be a substantial although feasible empirical exercise, but it lies outside the scope of this report.

The respondents canvassed by censuses and DHS surveys also differ in ways that could significantly affect migration estimates. Census interviewers collect information from each household member, or at least from those old enough to be eligible for consideration. (Age five is the usual cut-off below which migration questions do not apply.) This information is conveyed to the census-taker by one household member who speaks for the household as a whole. In the DHS survey program, by contrast, migration-related data are collected only from the subset of adults who are selected (at random) for in-depth individual interviews, rather than from all migration-eligible household members, and the interviewees speak for themselves. In most DHS surveys, the respondents are women aged 15–49, although it is becoming more common for men to be interviewed as well, allowing a more representative picture of migration to emerge. An important consideration is that in a number of Asian and North African countries, DHS individual interviews are restricted to ever-married women, a design decision that introduces the potential for selection bias in migration estimates. (We will provide examples below.) The by-proxy census reports of migration may well contain more measurement error overall than if individual members gave their own accounts to the census-taker, but the census data should not be afflicted by marriage-related selectivity bias.

Marriage-related selectivity bias

A number of DHS surveys interview only women who have been married, and because it is through the individual interviews that migration status is ascertained, this practice raises the possibility of selection bias that could distort estimates of migration. Migration questions in censuses are framed without reference to marital status, and unlike DHS surveys, these questions cover all household members who are old enough to be asked. Figure 20, based on census samples for Egypt and Vietnam, illustrates how marriage selection effects can introduce bias. These calculations compare estimates of urban in-migration for all women who

[12] How this is handled in the field is admittedly unclear.



(a) Egypt, 2006 census

(b) Vietnam, 2009 census

Figure 20: Urban in-migration percentages for all women and for ever-married women, Egypt (2006) and Vietnam (2009). All-women percentages are depicted in blue lines and percentages for ever-married women in green lines. Migration defined as a cross-governorate move for Egypt and a cross-province move for Vietnam. Source: IPUMS.

were canvassed in the censuses with estimates from the census records of ever-married women. At older ages, by which nearly all women in these countries have married, the migration percentages coincide. At younger ages, however, they differ substantially—but the direction of bias is upward in the case of Egypt and downward for Vietnam. Although census data do not establish the time-sequence of events, it would appear that in Egypt, women tend to migrate just before, upon, or shortly after marriage, so that the migration percentages for ever-married women are well above those for all women. In Vietnam as in much of Southeast Asia, migration is typically undertaken by young unmarried women who move for a variety of reasons—among them, to enjoy a period of relative autonomy away from parents, and to earn incomes that help support younger siblings—and thus an artificial restriction of the sample to ever-married women depresses urban migration percentages. These census-based examples suggest that migration estimates from surveys restricted to ever-married women will tend not to give an accurate representation of migration overall, especially in the age ranges in which substantial percentages of women are yet to marry. Since the direction of bias as well as its magnitude is situation-dependent, we have opted to exclude from our analyses all DHS surveys limited to ever-married women. This is an unfortunate—Egypt, India, and a number of other large countries have DHS surveys restricted to ever-married women, and some of these countries have been surveyed multiple times—but we see no way to correct statistically for the selection bias.

Moving for . . . what?

Censuses and many surveys (although not those in the DHS program) often ask migrants to describe why they moved. The usual practice is to permit only one "most important reason" to be recorded, which is unduly restrictive given that migration is often motivated by many considerations. If they are limited to one response only, girls and young women may supply the reason that others would be likely to find most socially acceptable. A girl who migrates to join her spouse, but who also holds ambitions to pursue university schooling and gain professional employment, may simply describe her move as being "for marriage" so that her high ambitions remain appropriately cloaked.

As guides to motivation, questions such as these also suffer from a fundamental and irremediable logical flaw: They are asked only of movers. If the desire to be with a spouse is an important consideration in a girl's choice of location, then a girl who stays home to be with her spouse is never given the opportunity to say that she "stayed for marriage." It is obvious—and yet the literature seldom remarks upon this obvious point—that questions put only to movers cannot detect which motivations truly guide decisions about location.

If these questions have little value for understanding the considerations that lead some girls to move and others to stay, they have other uses. If a girl says that she moved to the city "for employment", but has no job at the time of interview, this might be read as a mismatch between her pre-migration expectations and the realities she has faced after the move took place. There is value and the potential for securing insight in this kind of comparison.

References

[1] Susana Adamo. *Mapping Internal Migration Patterns of Adolescent Girls in Latin America and the Caribbean*. Working paper, Center for International Earth Science Information Network (CIESIN), The Earth Institute, Columbia University, New York. 2012.

[2] Deborah Balk et al. "The Distribution of People and the Dimension of Place: Methodologies to Improve the Global Estimation of Urban Extents". *Proceedings of the Urban Remote Sensing Conference of the International Society for Photogrammetry and Remote Sensing*. Tempe, Arizona, 2005.

[3] Nupur Barua and Suneeta Singh. *Representation for the Marginalized—Linking the Poor and the Health Care System. Lessons from Case Studies in Urban India*. Draft paper, World Bank, New Delhi. 2003.

[4] Kathleen Beegle, Joachim De Weerdt, and Stefan Dercon. *Migration and Economic Mobility in Tanzania: Evidence from a Tracking Survey*. Policy Research Working Paper no. 4798, Development Research Group, World Bank. Washington, DC: World Bank. 2008.

[5] Richard E. Bilsborrow. "Survey Design". *Migration Surveys in Low-Income Countries: Guidelines for Survey and Questionnaire Design*. Ed. by Richard E. Bilsborrow, A. S. Oberoi, and Guy Standing. Dover, New Hampshire, USA: Croom Helm, 1984. Chap. 4, pp. 60–87.

[6] Richard E. Bilsborrow. "The State of the Art and Overview of the Chapters". *Migration, Urbanization, and Development: New Directions and Issues*. Ed. by Richard E. Bilsborrow. New York: United Nations Population Fund (UNFPA), 1998, pp. 1–58.

[7] Suttiporn Bunmak. "Cell Phone Networks and Migrant Networks: The Case of *Nayu* Migrant Workers in Malaysia". *Malaysian Journal of Society and Space* 8.1 (2012), pp. 38–49.

[8] CELADE. *25 Years of REDATAM Software Development*. *Redatam Informa*, Volume 17, published by CELADE, Population Division of ECLAC. 2011.

[9] CELADE. REDATAM*: Recuperación de Datos para Áreas Pequeñas por Microcomputador (Microcomputer recovery of small area data)*. Software developed at CELADE, the Latin America Demographic Center. Latest version December, 2011. 2011. URL: `http://www.eclac.cl/celade/redatam`.

[10] S. Chandrasekhar and Mark R. Montgomery. *Broadening Poverty Definitions in India: Basic Needs in Urban Housing*. Paper prepared for the International Institute for Environment and Development (IIED), London. 2009.

[11] CIESIN. *Global Rural–Urban Mapping Project (GRUMP)*. Socieconomic Data and Applications Center (SEDAC), Columbia University. Partners include the International Food Policy Research Institute (IFPRI), the World Bank, and the Centro Internacional de Agriculture Tropical. 2008.

[12] Carren Ginsburg et al. "Modelling Residential Mobility: Factors Associated with the Movement of Children in Greater Johannesburg, South Africa". *Population, Space and Place* 17.5 (2011), pp. 611–626.

[13] Véronique Hertrich and Marie Lesclingand. "Adolescent Migration and the 1990s Nuptiality Transition in Mali". *Population Studies* 66.2 (2012), pp. 147–166. DOI: `10.1080/00324728.2012.669489`.

[14] Youqin Huang and F. Frederic Deng. "Residential Mobility in Chinese Cities: A Longitudinal Analysis". *Housing Studies* 21.5 (2006), pp. 625–652.

[15] Leiwen Jiang. "Living Conditions of the Floating Population in Urban China". *Housing Studies* 21.5 (2006), pp. 719–744.

[16] Somik V. Lall, Ajay Suri, and Uwe Deichmann. *Household savings and residential mobility in informal settlements*. World Bank Policy Research Working Paper 3596, Washington DC: World Bank. 2005.

[17] Angel Lin and Avin Tong. "Mobile Cultures of Migrant Workers in Southern China: Informal Literacies in the Negotiation of (New) Social Relations of the New Working Women". *Knowledge, Technology, and Policy* 21 (2008), pp. 73–81.

[18] Robert E. B. Lucas. "Internal Migration in Developing Countries". *Handbook of Population and Family Economics*. Ed. by Mark Rosenzweig and Oded Stark. Amsterdam: Elsevier North-Holland, 1997, pp. 721–798.

[19] Raymond Ngan and Stephen Ma. "The Relationship of Mobile Telephony to Job Mobility in China's Pearl River Delta". *Knowledge, Technology, and Policy* 21 (2008), pp. 55–63.

[20] Panel on Urban Population Dynamics. *Cities Transformed: Demographic Change and Its Implications in the Developing World*. Mark R. Montgomery, Richard Stren, Barney Cohen, and Holly E. Reed, editors. Washington, DC: National Academies Press, 2003.

[21] Andrei Rogers. *Multiregional Demography: Principles, Methods and Extensions*. Chichester, UK: John Wiley and Sons, 1995.

[22] Andrei Rogers. "Parameterized Multistate Population Dynamics and Projections". *Journal of the American Statistical Society* 81.393 (1986), pp. 48–61.

[23] Slawa Rokicki. *Residential Mobility in Accra, Ghana*. Tech. rep. New York: Population Council, 2011.

[24] Guy Standing. "Conceptualising Territorial Mobility". *Migration Surveys in Low-Income Countries: Guidelines for Survey and Questionnaire Design*. Ed. by Richard E. Bilsborrow, A. S. Oberai, and Guy. London and Sydney: Crook Helm Ltd, 1984.

[25] Duncan Thomas and Elizabeth Frankenberg. "Lost But Not Forgotten: Attrition and Follow-up in the Indonesian Family Life Survey". *Journal of Human Resources* 36.3 (2001), pp. 556–592.

[26] United Nations. *World Urbanization Prospects: The 2009 Revision*. New York: United Nations, Population Division, Department of Economic and Social Affairs, 2010.

[27] United Nations. *World Urbanization Prospects, The 2011 Revision*. New York: United Nations, Department of Economic and Social Affairs, Population Division, 2012.

[28] World Bank. *World Development Report 2009: Reshaping Economic Geography*. Washington, DC: The World Bank, 2009.

[29] Weiping Wu. "Migrant Intra-urban Residential Mobility in Urban China". *Housing Studies* 21.5 (2006), pp. 745–765.

[30] Ke Yang. "A Preliminary Study on the Use of Mobile Phones amongst Migrant Workers in Beijing". *Knowledge, Technology, and Policy* 21 (2008), pp. 65–72.

[31] Yu Zhu. "China's Floating Population and Their Settlement Intention in the Cities: Beyond the *Hukou* Reform". *Habitat International* 31 (2007), pp. 65–76.

[32] Yu Zhu. "Patterns of Population and Employment Change in Shanghai in the 1990s: A Zonal Analysis with International Comparisons". *International Development Planning Review* 28.3 (2006), pp. 287–309.