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Migration, settlement change and health in post-apartheid South Africa: Triangulating health and demographic surveillance with national census data¹

MARK A. COLLINSON, STEPHEN M. TOLLMAN, and KATHLEEN KAHN

MRC/Wits Rural Public Health and Health Transitions Research Unit (Agincourt), School of Public Health, University of the Witwatersrand, South Africa

Abstract

Background—World population growth will be increasingly concentrated in the urban areas of the developing world; however, some scholars caution against the oversimplification of African urbanization noting that there may be “counter-urbanization” and a prevailing pattern of circular rural–urban migration. The aim of the paper is to examine the ongoing urban transition in South Africa in the post-apartheid period, and to consider the health and social policy implications of prevailing migration patterns.

Methods—Two data sets were analysed, namely the South African national census of 2001 and the Agincourt health and demographic surveillance system. A settlement-type transition matrix was constructed on the national data to show how patterns of settlement have changed in a five-year period. Using the sub-district data, permanent and temporary migration was characterized, providing migration rates by age and sex, and showing the distribution of origins and destinations.

Findings—The comparison of national and sub-district data highlight the following features: urban population growth, particularly in metropolitan areas, resulting from permanent and temporary migration; prevailing patterns of temporary, circular migration, and a changing gender balance in this form of migration; stepwise urbanization; and return migration from urban to rural areas.

Conclusions—Policy concerns include: rural poverty exacerbated by labour migration; explosive conditions for the transmission of HIV; labour migrants returning to die in rural areas; and the challenges for health information created by chronically ill migrants returning to rural areas to convalesce. Lastly, suggestions are made on how to address the dearth of relevant population information for policy-making in the fields of migration, settlement change and health.

Keywords

South Africa; Agincourt; urbanisation; migration; temporary migration; permanent migration; rural-urban links; health policy

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Correspondence: Mark Collinson, MRC/Wits Rural Public Health and Health Transitions Research Unit (Agincourt), PO Box 2, Acornhoek 1360, South Africa. Tel: +27-13-795 5076. Fax: +27-13-795 5076. mark@agincourt.co.za.

Background

Leading scholars predict that world population growth will be increasingly concentrated in the urban areas of the developing world [1,2]. Urbanization has been a key issue on the continent of Africa for over 30 years [3,4]. Sub-Saharan Africa's urban population was 15% in 1950, 32% in 1990, and is projected to be 54–60% by 2030 [5,6]. Data with which to examine the situation has been deplorably scarce and the lack of standardization regarding what constitutes urban has hampered comparative research by African urbanization scholars [7]. Zlotnik quotes the Secretary General of the United Nations Expert Group on Population Distribution and Migration, saying that there were considerable differences between the urbanization process being experienced by developing countries during the second half of the twentieth century, and those experienced by the developed world countries a century earlier. In particular, the number of people involved in the developing world situation were several orders of magnitude higher and the urban areas had smaller economic bases [3,8]. In sub-Saharan Africa rapid, large-scale urbanisation combined with poor planning and governance have resulted in a significant proportion of urban populations living below the poverty line in overcrowded slums and sprawling shanty towns [9,10]. However, there is evidence that African urban growth rates and migration processes may adjust to urban economic conditions and thereby slow down as economic conditions get worse [11]. This has led some scholars to caution against the oversimplification of African urbanization, noting that there may even be “counter-urbanization” resulting from decreasing standards of living in urban slums [11]. It has also been noted that there is a prevailing pattern of circular rural–urban migration and high levels of social connection between rural and urban households [11–13]. This form of migration is known across the developing world, but is remarkably strong in southern Africa due to the social and political history of the region.

In South Africa in 2001 the level of urbanization was 56%, giving a 4.3% increase between 1996 and 2001 [14]. Circumstances are different in South Africa compared with the pattern characteristic of the rest of sub-Saharan Africa [11]. The influx of migrants into cities may in part be a response to the ending of decades of restrictive apartheid legislation which artificially held down the level of urbanization. [15]. This history is dominated by the mining industry, rapid industrialization following the mineral discoveries of the late nineteenth century, and the “homeland” system which sought to forcibly restructure the settlement patterns and livelihood strategies of the African population in order to provide necessary (largely male) labour. Unemployed family members were compelled to remain in densely settled, rural areas. Circular labour migration was promoted and reinforced by government legislation, which ultimately yielded a transition from an agrarian to a cash-based rural economy [16], but one that was poverty-stricken and hence engendered continual cycles of labour migration with large numbers of disunited households split into rural and urban components. This sociopolitical history implies that the findings of this paper may pertain to much of southern Africa but not necessarily the migration patterns of other parts of sub-Saharan Africa.

Aims

We examine the ongoing urban transition in South Africa in the post-apartheid period, and consider the health and social policy implications of prevailing migration patterns. The overarching question is: if we approach urbanization as a massive, permanent movement to the cities, what do we overlook, and with what consequences for health and social policy?

Material and methods

Two data sets were used in the analysis, namely the South African national census of 2001 and the Agincourt health and demographic surveillance system. The first is a national cross-section of the South African population. The second is the population of a rural sub-district in a former “homeland” area where the population dynamics are recorded longitudinally with annual information updates. The sub-district-level data enables more refined categorization of migration, made possible by the frequent household updates and a more inclusive household definition.

Using data from the 2001 national census, people were classified into a settlement typology with the following five categories: “Metropolitan formal”, if they resided in one of the country’s seven metropolitan areas; “Secondary urban”, if they resided in a smaller city or town; “Informal urban”, if they resided in a marginal slum, squatter settlement or informal township; “Tribal area”, if they resided in a former “homeland” area; and “Formal rural”, if they resided on a commercial farm. The first three categories could be considered urban and the last two categories rural. To examine changes in settlement distribution we constructed a transition matrix that indicated, for each migration, the settlement type of the origin and destination. Migration rates are given for each combination of origin and destination category. A migration was defined as a move made by a person during the inter-censal period into the place where they were enumerated in the 2001 census. The household definition was a *de facto* definition, where the criterion for inclusion was that a person had slept in the household on the night of census enumeration.

The second data source was the Agincourt health and demographic surveillance system, established to follow demographic events in a geographically defined sub-district population of 70,000 people (the Agincourt sub-district), comprising 21 rural villages in the northeast of South Africa, adjacent to the Kruger National Park and the national border with Mozambique. In terms of rural:urban categorization, the Agincourt population can be considered rural. The primary method was a rigorous annual update of the demographic status, namely births and other pregnancy outcomes, deaths, in-migrations and out-migrations, of every member of the sub-district population, coupled with an updating of the household roster. This was done through an annual household visit conducted by a trained local fieldworker with data quality procedures woven into both the field and data operations. The baseline census was conducted in Agincourt in 1992 [17]. This methodology, and the smaller scale of the area, enabled a sharper discrimination of the types of move. A *de jure* household definition was employed, which included temporarily absent household members, for example labour migrants, on the household list. Permanent migration was defined as a person entering or leaving a household with a permanent intention, whereas temporary (or circular) migration was defined as a person leaving a household with a temporary intention and spending at least six months of a year away from home, but remaining linked to the rural household [18,19]. Both migration types are described below, giving the migration rates by age and sex and according to a typology of origin and destination places. The time period used in the analysis is 1994–2003. If a permanent move occurred within the geographical bounds of the sub-district then both an in- and an out-migration were recorded

in the surveillance database; to prevent double counting, only the in-migration of these in-site moves is reported here.

The data were captured during the census and vital events update round; temporary migration from census questions concerning residence status over a one-year period, and permanent in- and out-migration by details regarding the migration event, at an individual level, giving the date of the move and other key variables such as place of destination or origin. Data were captured into a relational database using the software programme SQL Server and a custom made data-entry programme. By writing programmes in SQL Server, the data on all migrations in the population were categorized by migration type, summed by age/sex category and divided by the person years at risk to obtain the age/sex migration rates by type for each year. The final calculations and graphics were done in Microsoft Excel.

Findings

National-level data

The settlement-type transition matrix, given in Table I, shows the general pattern of recent migration and settlement change in South Africa. Urban-to-urban moves clearly make up a majority of the migrations captured in the national census. All settlement types of origin had a net population loss towards the metropolitan areas, with the metropolises absorbing approximately twice the rate of people being lost by out-migration. The metropolitan areas gained at the expense of the secondary urban areas by 4 persons per 1,000 population in between censuses. They also gained at the expense of the former homelands by 3 persons per 1,000 population. The out-migration from metropolitan areas is larger towards secondary urban centres than to former homeland areas. There is evidence of higher out-migration from secondary urban areas to rural settings, than from metropolitan areas.

Permanent migration in the Agincourt data

Figure 1 gives the age–sex profile of permanent migrations undertaken by the Agincourt study population over two periods: 1994–98 and 1999–2003. There is clearly a different profile for males and females. Children under 10 of both sexes show a prevalence rate of some 100/1,000 person years for this kind of migration. The prevalence is lower in ages 10–14 for both sexes, and then climbs steeply for women. The modal distribution is for women aged 15–34, and peaks at ages 20–24, at a rate of 160 women per 1,000 female person years. The migration rate of males continues to drop by age until age 25, and between ages 30 and 34 shows a modest peak at the level of 80/1,000 person years. Beyond age 39, the migration rate declines in both sexes, while remaining slightly higher for women. After age 54 the distribution is low, but appears wavy and erratic. This is due to low numbers of moves and relative instability of “person years” in the older age groups. The trend in permanent migration is increasing for young adult females and children.

In Table II an origin and destination typology was used to group moves according to the main sites of migration. The most common combinations include local village-to-village moves, moves between villages and nearby towns, moves to and from secondary urban centres, and moves linked to the main metropolitan areas. These categories are ordinal on a “rural–urban” continuum, and suggest “distance” from the rural villages in the study site. The first feature evident is the high level of village-to-village moves. Second, nearby towns are gaining population from the rural villages with 11% of out-migrations and less than half of that (5%) entering as in-migrants. Secondary urban areas are more in equilibrium with rural villages with stable flows in both directions. This pattern is repeated between metropolitan areas and rural areas, only at a lower rate. The reasons for permanent migration are not displayed here but include marriage and divorce, and taking families out of rural

villages in order to benefit from better access to services. The critical sphere of work seeking and employment follows a pattern of temporary migration, which is examined in the next section.

Temporary migration as described by Agincourt data

Figure 2 shows the prevalence of temporary migration by age and sex, and the trend over two periods of observation. There is a markedly different age–sex profile, with levels markedly higher than that recorded for permanent migration. The male distribution is dominant with a wide modal peak, from ages 25 to 54, at a level of more than 500 per 1,000 person years; i.e. involving more than half of the male population. The age distribution shows a steep increase in the likelihood of temporary migration after age 19, which remains high until around age 74. The female distribution, although clearly lower than the male level, is somewhat higher than that for women permanent migrants, with a wide modal peak from ages 25 to 49 at a level higher than 200/1,000 person years. Children are much less likely to migrate than adults, at levels around 60/1,000 person years.

The reasons for temporary migration differ from permanent migration. This type of move is largely for employment, education or looking for work. A small proportion move to live with another family member, or as children accompanying a parental move.

Trends by time period show that temporary migration profiles have changed over time for both sexes. Men aged 15 to 24 were over 20% more likely to migrate in the later period (1999–2003) compared with the earlier period (1994–98). Women in the age group 15 to 49 showed a strong increase in the likelihood of temporary migration, with the proportion of younger adult women (15 to 29) growing faster than the proportion of older women making such moves.

In Table III the destinations of temporary circular migrants can be seen, along with the relative popularity of destination categories. Urban categories encompassed the great majority of destinations (87%), the most frequent category being the primary metropolis, i.e. Johannesburg (46%). Numbers are provided for a single year only, namely 2002, because the circular nature of the migration could result in the same people being counted in different years, thereby inflating the numbers of migrants.

Discussion

The results from this analysis are considered from two perspectives: changing patterns of human settlement in South Africa, and challenges to personal and community health. The paper closes by considering policy implications of the persisting high levels of temporary migration.

Migration and settlement change

The national findings show that migration has resulted in an increase in urban population growth, particularly in the metropolitan areas of South Africa. The findings also showed a high prevalence of intra-urban moves. However, the permanence of the rural-to-urban migration is challenged by the sub-national data, which show strong ties between the urban and rural population in the form of temporary or circular migration. Migration patterns in the national and sub-district data suggest three challenges to the simple notion that urbanization leads to a larger proportion of the national population residing in metropolitan areas.

1. Prevailing patterns of temporary, circular migration—The Agincourt case study showed remarkably high levels of temporary migration among rural African men and an

increasing trend among rural African women. The pattern of labour migration established during the apartheid era has established the social networks, cultural acceptance, transport systems, etc. to facilitate the temporary migration of both men and women in the post-apartheid era.

The geographic distance to be overcome by migrants has been identified as a factor limiting movement since the earliest attempts to express the theoretical laws of migration [20]. This is confirmed by the permanent migration findings reported here, i.e. the further the distance to a place, the less likely it is to be a migrant destination. However circular migration shows a different pattern, with migrants from rural villages most likely to move to the primary metropolis, with its promise of employment and advancement, despite it being further away than any other category of destination. This finding is confirmed in other South African literature [21] and highlights the contrasting nature and patterns of temporary versus permanent migration.

2. Stepwise urbanization—“Step migration” has been described as migration involving a sequence of moves from smaller to larger places, rather than a single leap from village to metropolis [20]. There is evidence in the national data that, while positive net migration flows to the metropolitan areas occur from all settlement types, the largest net gain is from secondary urban areas. This implies that the migration component of urbanization in South Africa may occur predominantly through urban-to-urban migration rather than from rural-to-urban moves.

In the sub-district data it can be seen that the main destination of permanent net-out-migration is to nearby towns. This is suggestive of step migration, although follow up research is needed to establish whether migrants from rural villages (or their children) remain resident in small towns or move subsequently to larger settlements. Since small towns are attracting the population via a one-way stream from rural villages, this bears directly on the spatial dimensions of regional and national economic planning.

3. Return migration—There is also evidence that bidirectional migration streams occur between rural and urban settlement types. The growth of secondary cities may, in some instances, be fuelled by migration out of metropolitan areas as a reaction to urban poverty [7]; further, rural settlements are receiving migrants from secondary urban areas. This reflects the strong rural:urban links in South Africa where many urban migrants expect to return to their rural homes on illness or retirement [22]. Certain policy implications of this are discussed below.

Urbanization and health

The speed and scale of urbanization pose challenges that bear on the environment and housing, population health and social cohesion, and the rights of individuals, particularly those marginalized in the process [1]. While urban settings tend to have better health outcomes than rural in most sub-Saharan African countries [1,23] there are exceptions that arise from the concentration of poverty in slums and squatter settlements. This spatial concentration, coupled with people's reliance on common but limited public resources, can make urban residents particularly vulnerable to communicable disease. The urban transition has long been associated with a health transition [24] involving a shift from the situation where communicable diseases are the main causes of morbidity and mortality to one where non-communicable diseases predominate [1]. However, evidence is showing that this does not always hold and health transition theory is being challenged by unrelenting communicable disease in developing world cities [1], urban poverty leading to malnutrition [11,25], and cardiovascular disease emerging in rural settings [26,27].

This paper has sought to challenge the view that rapid urbanization is associated with a massive, permanent migration to large cities in South Africa. It should therefore be asked: what are the policy implications of prevailing patterns and levels of temporary, circular migration in South Africa? Four areas can be highlighted:

1. Rural poverty in South Africa, and the lack of local means of production, is tied to the economic dependence on labour migration of rural households. Migration brings economic rewards for rural households through remittances, but this implies that households without labour migrants have an even higher risk of malnutrition and poverty [19].
2. HIV/AIDS is a disease of mobility [28,29] and high levels of circular migration can lead to increased risk of multiple sexual partners at both ends of the migration cycle. This, coupled with low perception of personal risk [28], can lead to enabling conditions for the transmission of HIV and other sexually transmitted infections.
3. Increasing numbers of circular labour migrants of prime working age fall sick in the urban areas of South Africa, coming home to be cared for and eventually to die in the rural areas where their families live [30]. This pattern shifts the burden of caring for circular labour migrants in their terminal illness to their families and the rural healthcare system, with likely consequences on the demand for healthcare resources.
4. Migrants returning with chronic illness to rural areas pose a significant challenge to health information systems. Referral mechanisms must traverse long distances and span different settlement types if continuity of healthcare for returning migrants is to be maintained.

Several writers on contemporary migration patterns in developing world settings have highlighted the paucity of data available for understanding the population dynamics associated with migration [1,11]. Key insights from this study are that national census data must accommodate the recording of circular migration, currently not the case in South Africa. Second, health and demographic surveillance provides a useful source of data triangulation that is capable of capturing the migration dynamics of the highly mobile rural South African population.

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Figure 1.
Permanent migration by age, sex and period, Agincourt, 1994–2003. Source: Agincourt data.

Figure 2.
Rates of temporary migration, by age, sex and period. Rates produced annually and averaged over the period. Source: Agincourt data.

Table 1

National-level settlement type transition matrix, South Africa, 2001

	Metropolitan formal	Secondary urban	Informal urban	Former homeland	Commercial agriculture
Metropolitan formal	28	5	1	1	1
Secondary urban	9	28	2	5	4
Informal urban	1	2	1	0	0
Former homeland	4	6	1	6	2
Commercial agriculture	1	1	0	1	1

Cells contain migration rate per thousand population in the period between censuses, from the row settlement type as origin to the column settlement type as destination. Source: national census data.

Table II

Sites of permanent migration, Agincourt study population, 1992–2003

Destination/origin category	Number of out-migrations	%	Number of in-migrations	%	Sum of in- and out-migrations	Net migration	Ratio of net migration to out-migration
Village-to-village moves	40457	72%	40290	79%	80747	-167	0.00
Nearby towns	6067	11%	2686	5%	8753	-3381	-0.56
Secondary urban	4670	8%	4012	8%	8682	-658	-0.14
Primary metropolis	2298	4%	1550	3%	3848	-748	-0.33
Other and unknown	2996	5%	2357	5%	5353	-639	-0.21
Total	56488	100%	50895	100%	107383	-5593	-0.10

Source: Agincourt data.

Table III

Destination of circular, temporary migrants, both sexes, 2002

Temporary migration destination	<i>n</i>	%
Village-to-village moves	212	2
Nearby towns	1277	11
Secondary urban	4936	41
Primary metropolis	5588	46
Other unknown	48	0
Total	12061	100

Source: Agincourt data.