EVALUATING THE MIGRATION INFORMATION AND EXAMINATION OF THE DISTRIBUTION OF MIGRANTS FROM SOUTH AFRICA'S 2022 CENSUS TEN PERCENT SAMPLE

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ABSTRACT

Net migration is one of the drivers of population growth in any country. Estimating net migration is problematic except in countries that have reliable population registers. In the context of South Africa, the problem is partly due to outdated data on immigration and emigration from the Department of Home Affairs. There is often reliance on census data for the estimation but apart from a few countries in Africa, censuses do not usually collect information on emigration. The 2022 South Africa's census included some questions on migration but not on emigration. Although the questions did not differentiate between documented and undocumented migrants, it is possible, that some of the foreign-born persons living in South Africa at the time of the 2022 census may have answered that their country of birth is South Africa. It is essential to evaluate the plausibility of the migration information from the 2022 census. Examination of the pattern of migration from the data is also essential. Using the 2022 census 10% sample data, the evaluation showed that overall, the sex-age structure of foreign born at the time of the 2022 census is generally consistent with expected age selectivity in migration. Also, the evaluation indicated that the percentage of foreign-born living in South Africa at the time of the 2022 census was only 3% of the total population of South Africa in 2022. Gauteng had the largest share (49%) of the total number of foreign-born living in South Africa at the time of the 2022 census, with the North West having the least share (1%). While Gauteng, the Western Cape and the North West had a net gain of life-time interprovincial migration among South African born living in South Africa at the time of the 2022 census, the other provinces had a net loss, with the Eastern Cape and Limpopo having the largest net loss. It is unlikely, that censuses in South Africa can provide the true absolute numbers of foreign-born living in South Africa at the time of a census. However, demographic modelling can provide insights.

BACKGROUND

The demographic importance of migration is evident from the basic demographic equation expressed at a national level as

$$P_{(t+n)} = P_t + B_{(t,\ t+n)} - D_{(t,t+n)} + I_{(t,t+n)} - E_{(t,t+n)} \quad \dots\dots\dots\dots (1)$$

Where:
$P_{(t+n)}$ is the estimated or projected population at time $t+n$
P_t is the base population at time t,
$B_{(t,\ t+n)}$ is the number of births in the population during the period t, $t+n$,
$D_{(t,t+n)}$ is the number of deaths in the population during the period t, $t+n$,
$I_{(t,t+n)}$ is the number of immigrants into the population during the period t, $t+n$,
$E_{(t,t+n)}$ is the number of emigrants from the population during the period t, $t+n$.

The equation indicates that the population of a country at a future date is equal to a base population plus the number of births occurring between the base period and the future date minus the number of deaths between the base period and the future date plus the number of immigrants between the base period and the future date minus the number of emigrants between the base period and the future date. At sub-national level, the last two terms in equation 1 are replaced by in-migration and out-migration respectively. As seen from equation 1, it is net migration that impacts population growth and not immigration alone.

PROBLEM STATEMENT

Migration has two components: international and internal migration. The methods for evaluating content errors in migration data from censuses are not as developed as methods for evaluating age-sex distributions, fertility, and mortality. Estimating net migration is problematic worldwide except in countries that operate efficient population registers. In South Africa the challenge is due to the following: (1) out-dated data on immigration and emigration: there has been no new processed information on immigration and emigration from Statistics South Africa due to lack of data from the Department of Home Affairs in recent years. (2) Although information on in- and out-migration as well as immigration can be obtained from the censuses, censuses usually do not collect information on emigration including the 2022 South Africa Census (Census 2022). The Botswana 2011 census and

the 2016 Lesotho census however collected information on emigration. But these are some of the exceptions. (3) The complication of undocumented migration though it is possible to estimate the magnitude of undocumented migration through modelling with some margin of error. Although the manner the census questions on migration have been phrased in South Africa's censuses, theoretically captured both documented and undocumented migrants, it is possible that undocumented migrants may not have provided accurate information about their country of birth (Udjo 2014). Besides, evaluation of migration data from censuses requires complete coverage of the census to be able to estimate the magnitudes of migrants in absolute terms. Complete coverage in a census is hardly achievable anywhere. Although a post-enumeration survey (PES) may attempt to adjust for errors in coverage in censuses, PES adjustments are additional source of errors in a census. The PES adjustments may be highly controversial as was the case in the 2011 South Africa's census.

AIM AND OBJECTIVES

The overall aim of the evaluation of the migration data from Census 2022 10% sample, therefore, was to assess the trend in relative size and structure and distribution of migrants. Thus, the specific objectives of the evaluation were to

1. Assess the plausibility of the proportions of the reported life time migrants of the enumerated population in Census 2022 10% sample in comparison with previous censuses.
2. Asses the plausibility of the sex-age structure of the reported life time migrants in the enumerated population in Census 2022 10% sample in comparison with previous censuses.
3. Examine the pattern of migration based on Census 2022 10% sample.

This approach avoids biases that incomplete coverage in Census 2022 and the PES adjustments would have introduced in the assessment of the migration data.

DEFINITIONS

Migrant, Emigrant, Out-migrant, Immigrant, In-migrant, Life time migrant: An individual whose administrative unit of residence differs at the beginning and end of a certain interval is identified as a migrant. Migrants may be classified as emigrants (at international level) or out-migrants (at country level) with respect to their place of origin and as immigrants (at international level) or in-migrants (at country level) with respect to their place of current residence. A life time migrant is a person whose

place of birth was in a different administrative unit from his or her current residence (van de Walle, 1958, P: 801)

THE MIGRATION QUESTIONS

The migration questions in the Census 2022 questionnaire that were the focus of this study were:
What is (name)'s country of citizenship?
In which province was (name) born?
In which province does (name) usually live?

The data from these questions were combined with the data on province of enumeration as well as the age and sex data for the analysis.

METHODS

The computations required in relation to the stated specific objectives had two components: (1) computations of proportions focusing on international migrants i.e., foreign born living in South Africa at the time of Census 2022 of the total enumerated population in the 10% sample; (2) computations of proportions focusing on internal migrants i.e., South African born not living in province of birth at the time Census 2022 of the total enumerated population in the province in the 10% sample. The categories of responses to the migration questions were the nine provinces in South Africa as well as outside South Africa. Migration matrix tables were produced from the data for the analysis.

RESULTS

Plausibility of the Proportions of Reported Life Time International Migrants of Total Enumerated Population in Census 2022 10% sample

International and internal migration are dynamic processes over time and their proportions of the total enumerated population are expected to fluctuate over time depending on push factors at the place of origin and pull factors at the place of destination. Table 1 shows the percentages of the reported life time migrants of the total enumerated population in the 2022 10% sample, 2011 and 2001 censuses. As seen in the table, the percentage of foreign born of the total enumerated

population in Census 2022 10% sample is plausible because it is consistent with the corresponding percentages in the 2001 and 2011 censuses without PES adjustments.

Table 1: Percent Foreign Born of Total Enumerated Population Living in South Africa at the Time of Census

Census Year	Percent Foreign Born
2022 10% sample	3.1
2011	4.2
2001	2.2

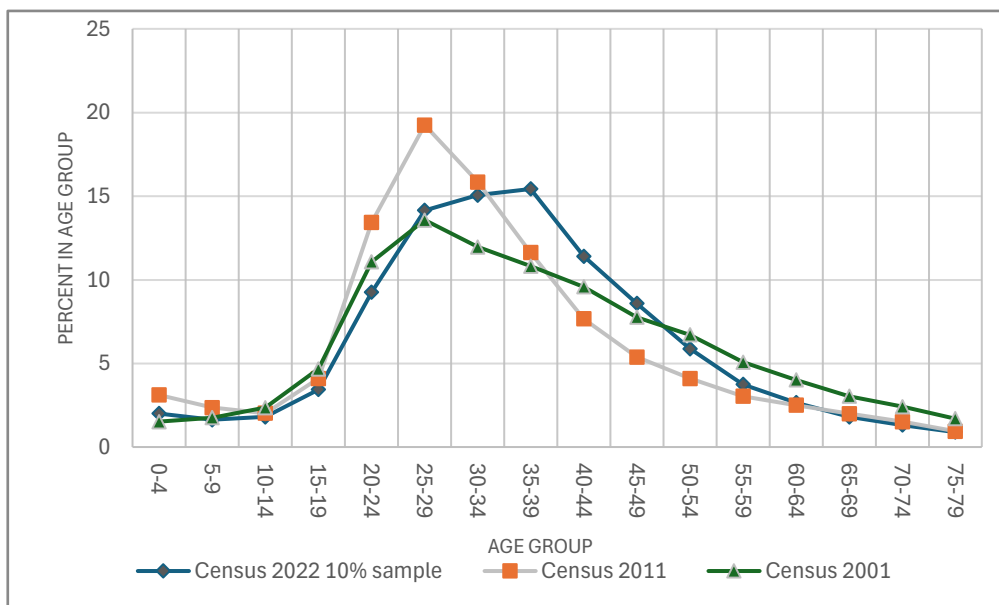Source: Author's computation from 2022 10% sample, 2011 and 2001 Censuses without PES adjustments.

As noted above, though the questions on migration in South Africa's censuses did not differentiate between documented and undocumented migration, it is possible that some undocumented migrants may have reported their country of birth as South Africa (i.e. self-naturalisation according to the terminology used by the evaluation group of the 1996 census). If that were the case, the percentages shown in Table 1 could be underrepresentation of the percentages of foreign born of the total enumerated population in the 2022 10% sample. Despite this, the empirical evidence suggests that the percentage of the foreign-born population living in South Africa has been consistently small.

Plausibility of the Age Structure of Reported Life Time International Migrants

Migration tends to be selective of certain characteristics (Newell 1994), for example, sex selective – proportionately, males tend to migrate more than females – and age selective – proportionately persons in the working age group tend to migrate more than persons in other age groups. There might be some shifts however in the age pattern of migrants over time. Figures 1 - 2 show the age structure of life time international migrants living in South Africa at the time of the censuses. As seen in both graphs, the sex-age structure of foreign born at the time of Census 2022 are consistent with expected sex-age selectivity in migration. Furthermore, the overall age-sex pattern of foreign-born in Census 2022 as seen in the 10% sample is consistent with the overall age-sex pattern of foreign-born living in South Africa at the time of the 2011 and 2001 censuses albeit some shifts in certain ages. For example, in Census 2022 there was a lower peak in the percentage of international migrants of the total volume of international migrants in the age group 25-29 compared to the corresponding percentage in the 2011 census, and a higher peak in the age group 30-34 compared with the corresponding percentages in the other censuses among males. Among females, census 2022 as seen in the 10% sample had a

lower peak in the age group 25-29 compared to the 2011 census. Figure 3 shows the age structure of net-international migrants in Botswana at the time of the 2011 Census in that country. Unlike South Africa, and as indicated above, the Botswana 2011 census included questions on emigration. Despite that, one may make rough comparisons of Figures 1-2 with Figure 3 since it is not expected that the age distribution of emigrants would differ much from the age distribution of immigrants. As seen from Figure 3, the age distribution of international net migrants living in Botswana is like the age distribution of the foreign-born living in South Africa at the time of Census 2022 except for the higher percentages below the age of 9 years in the case of Botswana compared with South Africa.

Figure 1: Age Distribution of Foreign-Born Living in South Africa at the Time of Census, Males
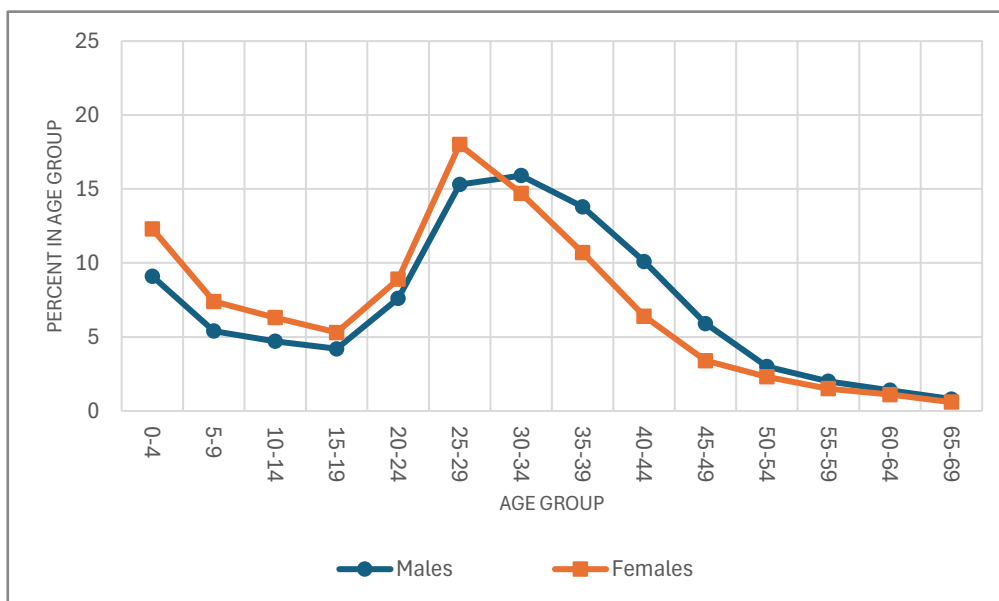

Source: Author's computation from 2022 10% sample, 2011 and 2001 Censuses unweighted

Figure 2: Age Distribution of Foreign-Born Living in South Africa at the Time of Census, Females
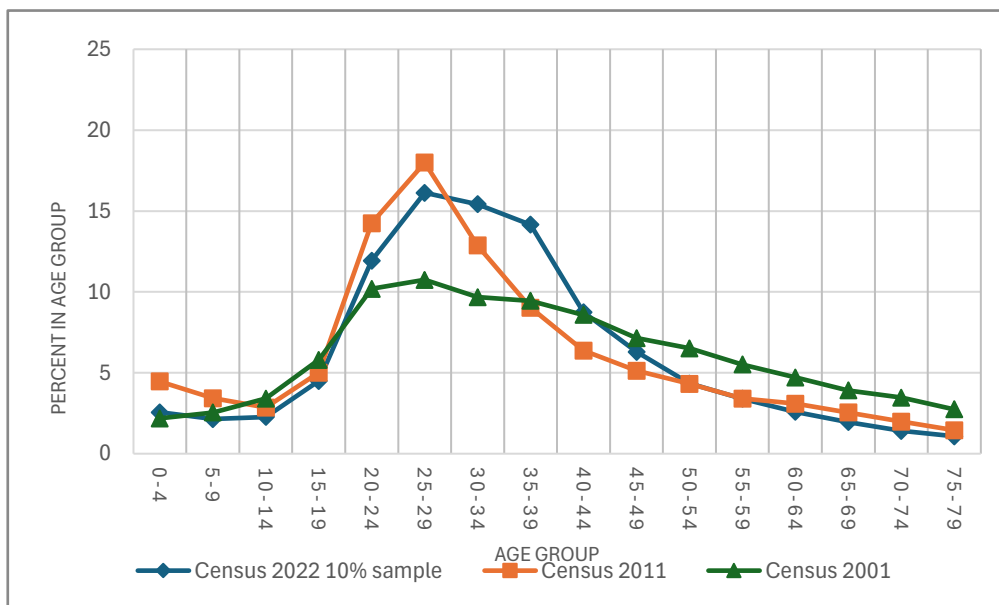
Source: Author's computation from 2022 10% sample, 2011 and 2001 Censuses unweighted.

Figure 3: Age Distribution of Net International Migrants by Sex, Botswana 2011 Census
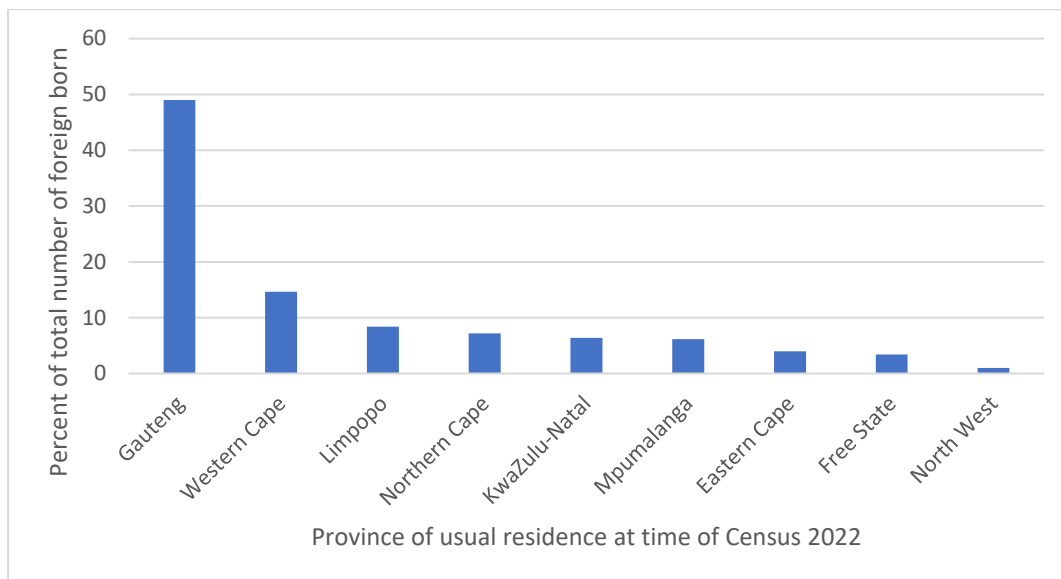

Source: Author's computation from Botswana 2011 Census unweighted (Botswana did not conduct a PES).

Provincial Distribution of Foreign-born Living in South Africa

As seen in Figure 4, Census 2022 10% sample data indicate that Gauteng had the largest share (49%) of the total number of foreign-born living in South Africa at the time of Census 2022, with the Western Cape having the second largest share (15%) while the North West had the least share (1%).

Figure 4: Provincial Distribution of Foreign-born Living in South at the time of Census 2022
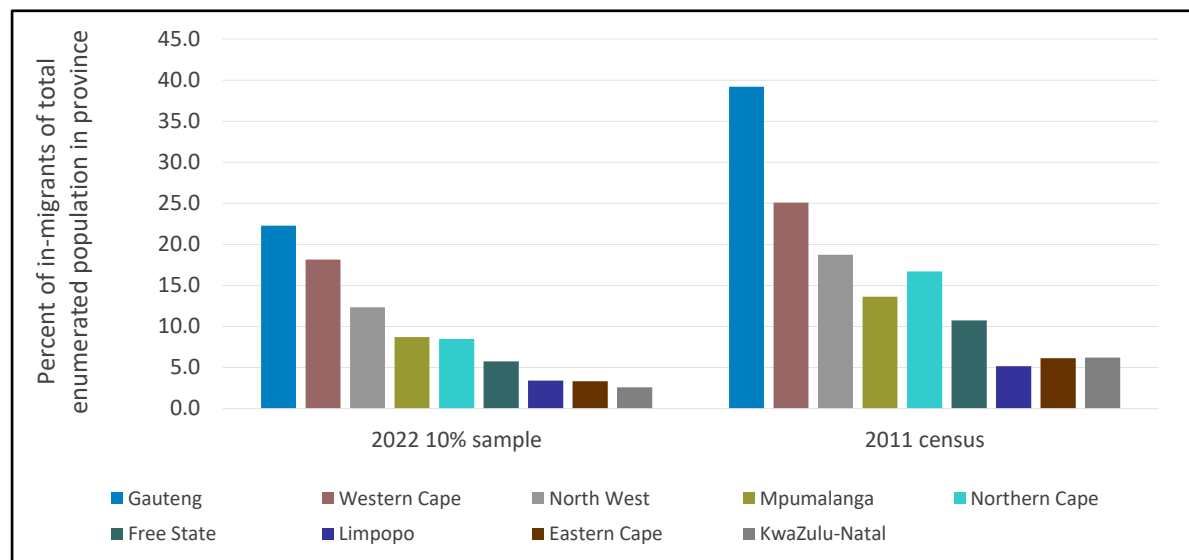

Source: Author's computation from 2022 10% sample.

Plausibility of the Proportions of Inter-Provincial In-Migration of the Total Enumerated Population

As seen in Figures 5 and 6, the provincial pattern of in-migration based on Census 2022 10% sample among South African born is consistent with the provincial pattern in the 2011 census with Gauteng having the largest proportion of in-migrants relative to the enumerated population (about 22%) and KwaZulu-Natal, the least (less than 3%) for both sexes. The graphs, however, appear to suggest that the percentage of in-migrants of the total population declined in Census 2022 compared with the corresponding percentage in the 2011 census in each province. Note that the graphs focused only on one aspect of internal migration. Where there is in-migration, there is usually also a counter stream of out-migration but may be of different magnitudes.
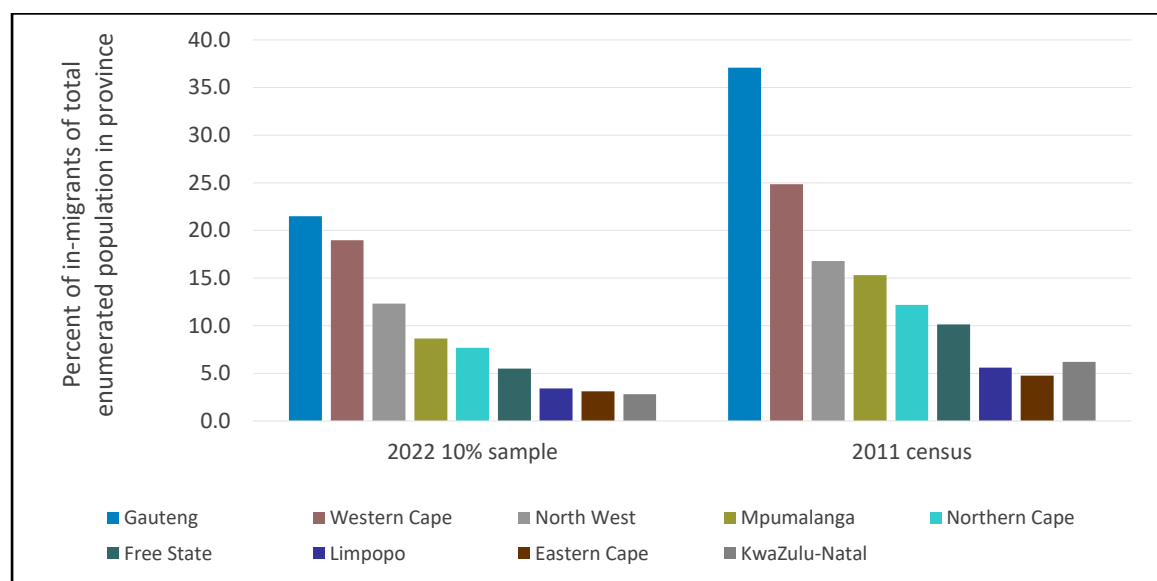
Figure 5: Percentage of In-migrants of Total Enumerated Population at Time of census, Males

Source: Author's computation from Census 2022 10% sample and 2011 Census

Figure 6: Percentage of In-migrants of Total Enumerated Population at Time of census, Females
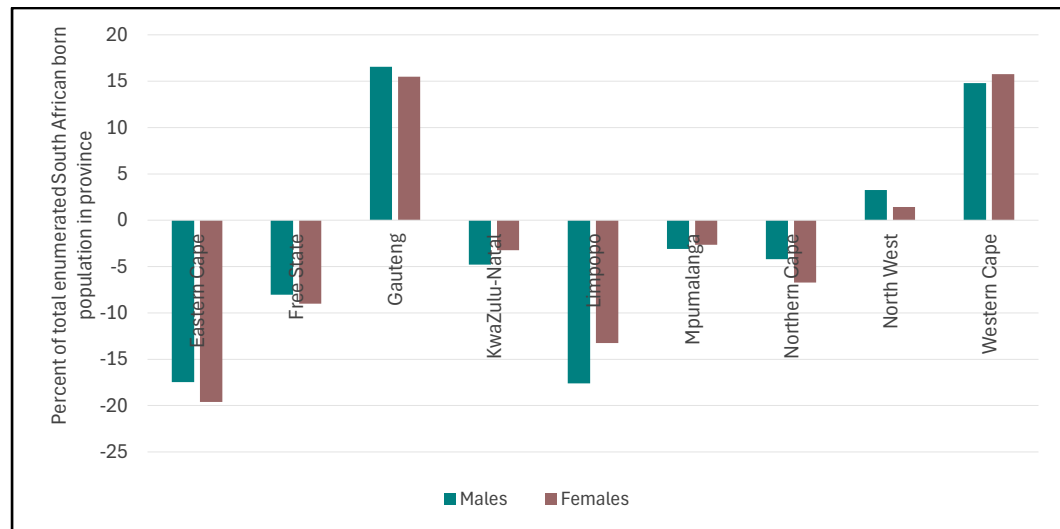

Source: Author's computation from Census 2022 10% sample and 2011 Censuses

Inter-Provincial Life Time Net Migration among South African Born Persons

The evidence from Census 2022 10% sample indicates that the Eastern Cape and Limpopo had the largest net loss of life time inter-provincial net migration among South African born living in South Africa at the time of Census 2022. Whereas, the Free State, KwaZulu-Natal, Mpumalanga, and the Northern Cape also had a net loss, Gauteng, the Western Cape and the North West had a net gain of

life-time interprovincial migration among South African born living in South Africa at the time of Census 2022 (Figure 7).

Figure 7: Provincial Pattern of Life Time Net Migration at time of Census 2022

DISCUSSION AND CONCLUSION

Migration is one of the direct drivers of population growth. It is the balance between the two aspects of migration (net migration) combined with fertility that drive population growth at national and sub-national level. However, migration is usually the big elephant in population projections due to lack of reliable and complete information. Assumptions about net migration in population projections can substantially affect projections outcomes at national and provincial levels which may consequently mis-inform policy makers in the allocation of scarce resources. It is essential therefore to assess the plausibility of migration data from censuses and surveys as in fertility and mortality. Census 2022 did not include a direct question on emigration, thus the focus of the evaluation at national level presented in this study was on immigrants i.e., foreign born living in South Africa at the time of the Census 2022 while at provincial level, the focus was on in-migration and out-migration from province among South African born.

The results of the evaluation indicate that the percentage of foreign-born of the total population in Census 2022 10% sample is plausible because it is consistent with the corresponding percentages in the 2001 and 2011 censuses. The evaluation further showed that overall, the sex-age structure of foreign born at the time of Census 2022 is generally consistent with expected age selectivity in migration. There was also consistency in the sex-age structure derived from Census 2022 10% sample

compared with the corresponding sex-age structure in the 2001 and 2011 censuses though some shifts over time were evident from the data. This is expected as migration is a dynamic process driven by dynamic pull and push factors that different age groups may not respond to uniformly over time. The results of the evaluation of life time inter-provincial in-migration showed that the pattern of in-migration in Census 2022 among South African born is consistent with the corresponding provincial pattern in the 2011 census.

Given certain sentiments about foreigners living in South Africa, it is important to highlight that Census 2022 10% sample data indicate that the percentage of foreign-born living in South Africa at the time of Census 2022 was only 3% of the total population of South Africa in 2022. The census 2022 questions on migration did not ask whether one is documented or undocumented migrant so in theory all foreign born persons living in South Africa at the time of Census 2022 should have been captured in the data. It is possible though, that some of the foreign-born persons may have answered that their country of birth is South Africa. Even taking that into consideration, it is unlikely that the percentage of foreign-born persons living in South Africa at the time of Census 2022 could have been more than 5% of the total population.

The evaluation did not focus on absolute numbers of migrants. Absolute numbers are sometimes contentious. It is unlikely, that censuses in South Africa can provide the true absolute number of foreign-born living in South Africa at the time of a census. The true absolute number of migrants aside accurate reporting of country of birth, depends on 100% coverage of the population in a census. This is not possible anywhere. While a complete coverage of a census is not achievable, the reliance on PES adjustments for undercount to produce absolute numbers of foreign-born is problematic because a PES is not an exact science. One should therefore be wary of official absolute numbers of foreign-born living in South Africa at the time of a census. It might be tempting to convert the percentages provided in this study to absolute numbers. Such approach would be valid if the PES adjustments were unquestionable, but they are not – see for example Udjo (2024: pp 17-19). However, demographic modelling can provide insights into the absolute numbers of migrants at specific points in time.

ACKNOWLEDGEMENT

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