3.1 Introduction

The development of a long-term transport framework that provides opportunities for economic growth and creates inclusive communities where people can work, live and play requires a strategic understanding of the country’s demographic characteristics and socio-economic status.

The characteristics of the population measured in terms of population growth, provincial population share, income, employment status, population density and provincial contribution to the economy are key indicators informing strategic planning.

In tracking and monitoring demographic and socio-economic changes, the NATMAP 2050 relied on Census 2001 and National Household Travel Survey 2003 data. These data sources were updated in 2011 and again in 2013. Comparing these data sets provides a powerful indication of demographic and socio-economic trends and of whether planning policy has had an effect over the past decade. By considering the changes that have come about, it is possible to determine the appropriate focus of transport planning and transport investment.

This chapter provides an overview of the status of South Africa’s demography. It presents observations from the population analyses and forecasting carried out during the NATMAP 2050 analysis process, the population’s socio-economic status, and the interventions required to align the population forecast with the NATMAP 2050 Vision.
3.2 Status of Demographic and Socio-Economic Characteristics

3.2.1 Demographic characteristics

Spatial distribution and density are critical in designing sound transportation systems that will meet and support the geographical mobility of the population. Highlighted below are key characteristics of South Africa’s population.

**POPULATION**

**National population growth:** The change in population provides planners with guidance as to the rate at which the transport system needs to be expanded to support the change. The total population increased year on year at a compounded rate of 1.8% per annum between 1996 and 2001. However, from 2001 to 2011 the growth rate declined and stabilised at 1.5% per annum. The total population of South Africa in 2011 was 51.8 million. Figure 3-1 illustrates the South African population growth and growth rate.

**Provincial population growth:** Changes in population growth in a specific province provide an indication of the attractiveness of the province and, when compared to changes in contribution to GDP, provide a strategic indication of migratory movement between provinces, as well as the increase in population per province. As seen in Table 3-1, the population per province increased year on year with the exception of the North West province, where the population decreased slightly during 2007, according to the community survey. However, comparing 2001 with 2011, the population remained about the same. The population growth rate in Gauteng remained above 3% from 1996 to 2011. Mpumalanga and the Western Cape reported growth rates of above 2% per year over this period.

**TABLE 3-1: POPULATION GROWTH PER PROVINCE** (Source: STATSSA, 2011)

<table>
<thead>
<tr>
<th>Province</th>
<th>1996</th>
<th>2001</th>
<th>%Growth</th>
<th>2007</th>
<th>%Growth</th>
<th>2011</th>
<th>%Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>WC</td>
<td>3,9382</td>
<td>4,5248</td>
<td>2.8%</td>
<td>5,2865</td>
<td>3.2%</td>
<td>5,8016</td>
<td>2.4%</td>
</tr>
<tr>
<td>EC</td>
<td>6,293</td>
<td>6,4512</td>
<td>0.5%</td>
<td>5,2865</td>
<td>-3.9%</td>
<td>6,5786</td>
<td>5.6%</td>
</tr>
<tr>
<td>NC</td>
<td>0,8526</td>
<td>0,8084</td>
<td>-1.1%</td>
<td>1,067</td>
<td>5.8%</td>
<td>1,1396</td>
<td>1.7%</td>
</tr>
<tr>
<td>KZN</td>
<td>8,4042</td>
<td>9,408</td>
<td>2.3%</td>
<td>10,282</td>
<td>1.8%</td>
<td>10,2564</td>
<td>-0.1%</td>
</tr>
<tr>
<td>FS</td>
<td>2,639</td>
<td>2,688</td>
<td>0.4%</td>
<td>2,7645</td>
<td>0.6%</td>
<td>2,7454</td>
<td>-0.2%</td>
</tr>
<tr>
<td>GP</td>
<td>7,3486</td>
<td>8,8256</td>
<td>3.7%</td>
<td>10,4275</td>
<td>3.4%</td>
<td>12,2766</td>
<td>4.2%</td>
</tr>
<tr>
<td>NW</td>
<td>3,3698</td>
<td>3,6736</td>
<td>1.7%</td>
<td>3,2495</td>
<td>-2.4%</td>
<td>3,5224</td>
<td>2.0%</td>
</tr>
<tr>
<td>MP</td>
<td>2,8014</td>
<td>3,136</td>
<td>2.3%</td>
<td>3,8375</td>
<td>3.0%</td>
<td>4,0404</td>
<td>2.7%</td>
</tr>
<tr>
<td>LP</td>
<td>4,9126</td>
<td>5,2864</td>
<td>1.5%</td>
<td>5,238</td>
<td>-0.2%</td>
<td>5,3872</td>
<td>0.7%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>40,6</td>
<td>44,8</td>
<td>48,5</td>
<td>51,8</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**POPULATION DISTRIBUTION**

**Population percentage share per province:** The percentage share of the population per province remained near identical between 2007 and 2011. KwaZulu-Natal, the seventh largest province (7.6% land area), and Gauteng, the smallest (1.4% land area), have the largest share of the overall population. KwaZulu-Natal’s share of population decreased by 1.2% from 2007 to 2011, whereas Gauteng’s share increased by 2%. This is significant and implies that renewed effort is required in Gauteng to support the increase in population in terms of transport planning. Figure 3-2 summarises the provincial population share.

**Percentage population per urban, tribal and farm classification:** The percentage of population in urban, tribal or traditional areas and farms provides an indication of the distribution of people throughout each province (see Figure 3-3). Population share is, however, not the only indicator and needs to be considered in conjunction with provincial contribution to GDP.

![Figure 3-1: Total Population of South Africa Including Census 2011 Data](Source: STATSSA, 2011)
In the provinces with the highest contribution to GDP (see Figure 3-10), the largest portion of the population lives in urban areas, especially in Gauteng, KwaZulu-Natal and the Western Cape. The majority (78%) of the population within the Limpopo Province lives in tribal areas. Tribal areas are typically villages inhabited by self-sustaining citizens. Villages take the form of pockets of houses/huts clustered throughout an area perforated by large grassland/fields/farmland in between. Urban areas include formal and informal urban residential areas and commercial and subsistence farming.

The fact that, in several provinces, more than 50% of the population lives in tribal areas has a significant bearing on the approach to providing access in these rural areas. The fact that, in several provinces, more than 50% of the population lives in tribal areas has a significant bearing on the approach to providing access in these rural areas. The distribution of population between metropolitan areas and secondary development nodes: Todes and Harrison (2013) provide insight into the change in total population within metropolitan and other secondary nodes.

The authors prepared a research study on the change of population and gross value added (GVA) per area category. For the purposes of the study to compare population growth and economic contribution, urban areas were categorised based on spatial extent, economic activity and population. The categories and typical examples of cities are (refer to Figure 3-4):

- An inner core: consisting of the large metropolitan agglomerations and secondary cities (e.g. the Gauteng City-Region, the Western Cape Urban Agglomeration, the KwaZulu-Natal Coastal Urban Agglomeration, Nelson Mandela Bay, Mangaung, Buffalo City, Msunduzi, Polokwane, the Free State Goldfields, Mbombela, Polowane, Sol Plaatje and the Cape South Coast Tourism Belt)
- An outer core: consisting of large towns with major service functions, medium-sized mining centres, peri-urban agglomerations around the inner core, and large agglomerations around previous homeland capitals (e.g. Newcastle, Kroonstad, Grahamstown, Phalaborwa, Mthatha and Thohoyandou)

- A semi-periphery: consisting of medium-sized towns with an established infrastructure, secondary mining outliers and the more densely settled parts of the previous Bantustans with local economies producing more than R1 billion per year (e.g. Vryheid, Kuruman and Springbok)

- A periphery: consisting of small service centres with established infrastructure, small mining economies and previous Bantustan economies with outputs of more than R0.4–R1 billion per year (e.g. Calvina and Dannhauser)

- A deep periphery: comprising very marginal local economies with outputs of less than R0.4 billion per year (e.g. Jansenville, Tarkastad, Boshof, Harding, Pofadder and Warrenton).
FIGURE 3-4: DISTRIBUTION OF POPULATION BETWEEN METROPOLITAN AREAS AND SECONDARY DEVELOPMENT NODES (Source: Todes & Harrison, 2013)
Table 3-2 illustrates the comparison of annualised population growth and GVA change per category of area between 1996 and 2011. In 1996, the GVA contribution made by the inner core settlements was 79.4%. Their contribution increased to 81.4% in 2011. However, the more peripheral the area, the lower the GVA growth. Figure 3-4 also shows that in the inner core, significant levels of population growth occurred. South Africa’s average annual population growth of 1.6% between 1996 and 2011 is comparatively low, and the growth that has occurred is overwhelmingly concentrated in the inner core.

The changes reflected are very general because the diversity within each spatial category vary considerably. However, these changes provide insight into migratory patterns and demonstrate that the majority of people migrate to areas where economic activity is increasing. This trend emphasises that transport investment needs to be focused carefully to ensure that all these categorised areas enjoy optimal provision of transport services and infrastructure. An integrated investment approach is, therefore, required to ensure economic growth throughout the country.

PEOPLE WITH SPECIAL NEEDS

Due to the differences in the questions asked during the 1996, 2001 and 2007 community surveys, it is not possible to compare the results directly. The latest report also does not include statistics on children under the age of 5 or on persons with psycho-social and certain neurological disabilities due to data limitations, and should, therefore, not be used for purposes of describing the overall disability prevalence or profile of persons with disabilities in South Africa.

The findings show a national disability prevalence rate of 7.5%, subject to the limitations described above. Provincial variations show that the Free State and the Northern Cape provinces have the highest proportion of persons with disabilities (11%), followed by the North West and the Eastern Cape (10% and 9.6%, respectively). The Western

FIGURE 3-5: PERCENTAGE PEOPLE WITH SPECIAL NEEDS PER PROVINCE
(Source: STATSSA, 2011)

Cape and Gauteng provinces show the lowest percentage of persons with disabilities (5%).

The percentage of people with special needs per province is shown in Figure 3-5. Typically, people with special needs rely on public transport or other organisations to assist them with their movement needs. When comparing the total population that reside in tribal areas in the Eastern Cape and the North West, the need for a stronger rural transport strategy is confirmed.

3.2.2 Socio-economic factors

The socio-economic indicators of employment status and activity, occupation, household and population income and employment by major industries have a significant impact on people’s everyday lives and their decisions about transportation.

EMPLOYMENT

Employment is a key economic indicator and is sensitive to economic growth cycles. For example, employment peaked in 2008 to approximately 13.8 million people during a period of stable and strong economic growth. However, during the world recession between 2009 and 2010, which saw economic growth rates decline, employment declined by approximately 806 000 persons. However, following this period, employment grew again by 204 000 and 258 000 persons in 2011 and 2012, respectively.

The number of employed people increased from 0.7% to 3.2% from 1996 to 2011. This is a significant increase and supports South Africa’s economic aspirations. The change in the number of people employed per province is shown in Figure 3-6.

Formal and informal employment split: The majority of employed people are employed in the formal economic sectors. Figure 3-7 shows the percentage distribution of the employed population between formal and informal sectors per province. Gauteng and the Western Cape employed only 9% and 11% of the population in the informal market. Comparing the split between formal and informal employment with average monthly household expenditure, it is seen that provinces with a higher percentage of formally employed people spend more per month (see Figure 3-8).

Gauteng and the Western Cape yield higher monthly expenditure, suggesting that people who live in these provinces on average earn higher salaries. This may be why these provinces are attractive to job seekers and see higher immigration levels compared to the other provinces. An integrated approach to the provision of housing and transport systems is, therefore, required, particularly in Gauteng and in the Western Cape.
FIGURE 3-6: NUMBER OF EMPLOYED PEOPLE PER PROVINCE 1996 TO 2011 (Source: STATSSA, 2011)

FIGURE 3-7: EMPLOYED POPULATION PER MAIN SECTOR; 2011 (Source: STATSSA, 2011)

FIGURE 3-8: MONTHLY HOUSEHOLD INCOME PER PROVINCE (Source: STATSSA, 2011)
ECONOMIC ACTIVITY

Provincial contribution to GDP: The provincial contribution to GDP provides an indication of economic activity and change in economic activity in each province (see Figure 3-9). Figure 3-9 shows that the changes are minimal in the majority of the provinces. However, constant increases in the GDP contributions of Gauteng and Limpopo and constant decreases in those of KwaZulu-Natal and the Eastern Cape are notable.

A comparison of the average real economic growth rate from 2001 to 2011 recorded by the provincial economies and the total economy is shown in Figure 3-10. The South African economy recorded an average growth rate of 4.0%. Gauteng and the Western Cape have growth rates that are above the national average – 4.6% and 4.1%, respectively. KwaZulu-Natal recorded the same growth rate as the national average rate with all the other provincial economies recording lower growth rates than the national average. The Northern Cape recorded an average economic growth rate of 2.4% over the period 2001 to 2011, for example.
3.3 Future Demographic and Socio-Economic Characteristics

Several models are used to project the population of South Africa. The NATMAP 2050 used several population growth scenarios to estimate the transport demand for the 15-, 20- and 40-year horizons. During the development of the transport demand models, several assumptions were made in relation to economic growth, land use patterns and population growth rates. For each of the horizon years, three scenarios were developed: a low, medium and high growth scenario. Figure 3-11 illustrates the projected population to 2050 comparing the NATMAP 2050 demand models to the Actuarial Society of South Africa (ASSA) population model of 2011. The figure shows that, for each of the NATMAP 2050 horizon years, the developed scenarios align very well with the latest ASSA model. The significance of the ASSA model is that it is regularly updated with the latest available fertility, mortality and HIV data and is, therefore, a very good comparative data set. The inference drawn from this comparison is that the demand models developed for the NATMAP 2050 remain relevant, especially when looking at the low scenario forecast for 2025, the medium scenario forecast for 2030 and the low scenario forecast for 2050.

The NATMAP 2050 population projections were also carried out at national, provincial, and local government level. The results of the socio-economic scenarios provided input into the transportation demand model. The middle scenario was used to evaluate the impact of the proposed development model on the transport system. Proposals were made per scenario to provide an effective and efficient transport system.

The main population and socio-economic projected outcomes from the NATMAP scenarios are:

- **Population increase**: The total population for the years 2030 and 2050 is expected to be between 52 and 57 million and between 55 and 63 million respectively – a potential increase of almost 15 million people by 2050.
- **Population density**: The total population density in Gauteng is expected to almost double from 58 persons per hectare to 105 persons per hectare between 2005 and 2050. KwaZulu-Natal will increase from 10 to 12 persons per hectare and the Western Cape from 3 to 6 persons per hectare. Nationally, the population density will remain the same.
- **Unemployment**: Unemployment is expected to decline from 38% in 2005 to between 8% and 20% by 2050.
- **Employment shift**: The structural shift away from primary sector employment is projected for the agricultural and mining sectors.
- **Rural provinces**: Rural provinces have a predominantly low-income-earning population who typically travel longer distances to destinations offering opportunities. These longer travel distances imply higher transport cost to these travellers, who are least able to afford it.

![FIGURE 3-11: NATMAP PROJECTED POPULATION COMPARED TO ASSA 2011](Source: ASSA, 2011)
The following issues and concerns relating to the South African future population include:

- **Continued uneven population distribution** ranging from very low density in deep rural areas to densely populated metropolitan areas. Uneven population distribution is also associated with economic activity that is concentrated in metropolitan areas. It gives rise to the effects of urbanisation and the tendency of the population to migrate from rural areas to urban areas.

  The 2030 provincial population share in comparison with Census 2011 (illustrated in Figure 3-12) shows that the highest increase in population – an increase of about 8% – will occur in Gauteng.

  All the other provinces will experience a slight increase in population by 2030 as compared to 2011, except for the Eastern Cape, the North West and the Free State.

- **Economically attractive provinces**: Gauteng and the Western Cape have been and are projected to continue to be more economically attractive for people from the other provinces.

- **Emigration and immigration**: At international level, South Africa has experienced significant emigration – particularly skilled labour. There is also concern about large numbers of immigrants entering the country from neighbouring countries in search of economic opportunities and socio-political security.

  Informal settlements: The urban areas of South Africa are faced with the challenge of informal settlements mushrooming over a short period. Some people move to urban areas and settle in informal areas in the hope of eventually securing employment. This creates settlements that become pockets of poverty within urban areas, putting pressure on the provision of housing, basic services, and public transport services.

- **High unemployment rates in South Africa are a persistent challenge**: Some industries, particularly agriculture and mining, are on the decline due to increasing production costs and a shrinking resource base. It is noteworthy that these are the primary industries that employ a large percentage of the unskilled population.

  HIV/AIDS: HIV/AIDS have had a significant effect in shaping the demographic profile of South Africa's population in the past and is predicted to continue to do so, though perhaps at a lower rate, in the future.

  **Education**: The level of education of many South Africans is another concern. Figure 3-13 illustrates persons aged 20 years and older with no formal schooling. Persons with no schooling decreased significantly since 2002. However, Limpopo and Mpumalanga reported that more than 10% of persons aged 20 years and older have no formal schooling.

- **Travel and freight costs**: The fragmentation of population settlements and associated economic activity in the various areas of South Africa pose a challenge to the transport industry. High travel costs are associated with the movement of workers over long distances and inappropriate land use planning (e.g. apartheid planning). The transportation of freight from place of extraction/production to place of processing/sale is significant enough to require attention when planning transport infrastructure. On the other hand, increased urbanisation and infill development will promote more efficient transport systems due to higher population and activity densities.
3.4 The Socio-Economic Role of Transport

Transportation means personal mobility as well as access to goods, services and information. It is an essential human activity that makes a critical input to social development and national and global economies. The transport sector has a fundamental influence on socio-economic development. Therefore, all players in the transport sector have an important role in making sure that the transport services necessary to economy and quality of life are provided in the most sustainable manner.

Work carried out by the Asian Development Bank Institute (ADBI, 2010) reveals that investment in and the expansion of transport infrastructure and trade facilitate national poverty reduction and enhance socio economic development. These elements also reduce transaction and opportunity costs and enhance market penetration with improved access and mobility. Improved transportation infrastructure gives rise to complex economic interactions, with the exact causal relationship between economic growth and infrastructure and transport investment being unclear. However, the linkages create positive effects. Essentially, the benefits of improved accessibility and mobility in transport are transmitted between markets and to households, including implications for poverty alleviation.

The increased exposure to new businesses that comes with greater connectivity increases the opportunities for improved technological adaptation. Indeed, it has been shown that improving connectivity has been shown to raise work force productivity, increase school attendance and improve working conditions and even wage levels.

If we, then, agree that transport supports socio-economic development, one of the questions in our local context is – what strategy do we employ to enhance transport’s role in socio-economic development? Here we have to consider, for example, the level of investment or subsidisation required in public transport to enable it to support socio-economic needs. Accessibility and mobility in rural areas, especially in relation to those who cannot afford to travel to reach opportunities, are crucial to allow all members of society to access the economy and have a better quality of life. A balance has to be struck, though, between demand, needs, priorities and funding constraints.

It is recommended that this question be explored and definitive guidelines be provided about the socio-economic role of transport in South Africa and the financial implications it will have in the future.

3.5 Implications for Transport Planning

The findings and projections highlighted above have the following implications for transport:

- **Demand shift for transport**: The decline in population levels in some provinces and the increase in the more economically viable provinces will shift the demand for transport towards economically attractive provinces.

- **Pockets of poverty and infrastructure maintenance**: The pockets of poverty dispersed across several provinces present a public transport planning challenge, as emigration from these areas makes it difficult to project demand patterns and, in turn, the return on investment.

- **Public transport dependence**: The proportion of the population earning a low income will remain dominant over the planning period. Hence, continued dependence on affordable public transport.

- **Transport infrastructure**: Most of the provinces’ rates of formal employment have been projected to increase over the period leading to 2050. The demand for transport will grow, as will car ownership, resulting in more pressure to improve transport infrastructure and the quality of public transport systems. Improved public transport with a wider geographical network will help suppress the dependency on single-occupancy vehicle trips over time.

- **Emigration from rural areas to urban areas**: This phenomenon will persist if the lack of or limited development and poor service delivery continue in these areas. Improved service delivery needs to be supported by economic growth in industries within rural areas. Beneficiation around the primary sector needs to be strengthened to support and enhance economic growth in rural areas.

- **Investment**: Rapid urbanisation in the major metropolitan and more economically developed areas necessitates
3.6 Recommendations and Interventions Proposed

- **better transport infrastructure**, which will require a greater focus on investment needs in transport and related services. This investment is necessary to ensure that mobility and accessibility levels are maintained to continue supporting economic growth, efficiency and productivity.

- **Informal economic activity survey**: The analysis of economic activities and population needs in the informal sector of the economy and commercial and subsistence agricultural activities requires research and detailed data collection. The purpose of collecting the data is to determine the needs of the population that earn their income in these segments to enable spatial, infrastructure and transport planners to provide context-sensitive solutions and to enhance and build on the existing economic activities. Furthermore, changes required in policy and legislation can be informed through this data.

- **Land policies**: Given the continued influx of the population to more economically developed metropolitan and other urban areas, an integrated approach between land use planning, housing provision, municipal services, social amenities and public transport provision should be implemented by all spheres of government. Detail policies relating to land use and transport planning are provided in later chapters of this report.

- **Densification and corridor infill development**: The use of vacant land and property within built-up areas should take place along public transport corridors to improve public transport ridership. The provision of community facilities should become a priority in nodes supported by transport corridors.

- **Development of rural areas**: The development of rural areas to provide infrastructure that promotes sustainable economic activity is required in order to minimise the emigration of people from rural areas, and to maintain rural transport infrastructure. Beneficiation (industrialisation) around the primary sector needs to be strengthened to support and enhance economic growth and job creation in rural areas.

- **Demand-driven, developmental and responsive public transport systems planning**: A large proportion of South Africans fall in the low-income bracket and are dependent on public transport to access opportunities. This statistic is projected to reduce over time, given the implementation of sufficient supporting economic job-creating measures. Whilst it is financially unsustainable to provide full demand-responsive public transport as a social service (heavily subsidised) up to 2050, due consideration must be given to a package of measures lifting many South Africans out of poverty to enable the provision and affordability of world-class public transport – so that public transport does not continue to be seen as a mode of transport that caters for the poor but, rather, as one that caters for all as a mode of choice.

- **Investment in infrastructure**: Promote continued investment in infrastructure in urban and rural areas.

- **Guidelines**: Establish guidelines about the socio economic role and financial implications of transport in South Africa.

- **Development of Special Economic Zones (SEZs)**: SEZs are critical to the government’s objectives to advance industrialisation, rural development, job creation as well as attracting Foreign Direct Investment (FDI). Special arrangements must be made for supporting infrastructure to support these developments. Transport network planning and transport services implementation should be aligned with and support SEZs.