

# Perspectives on the future of personal transport in South Africa



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## INTRODUCTION

Out of 190 recognised countries, South Africa had the 32<sup>nd</sup> largest economy in the world in 2015, according to the IMF<sup>1</sup> and the World Bank (see Table 1). On income per capita basis South Africa is rated 84<sup>th</sup> in the world.

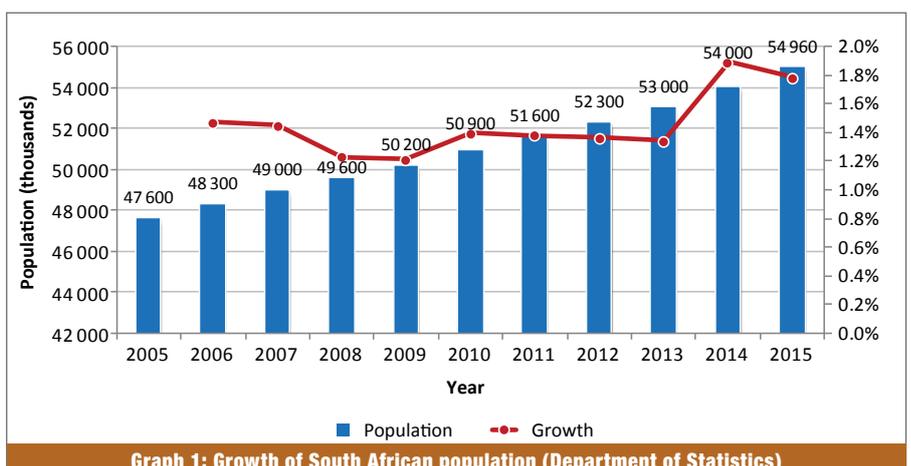
Motor vehicle (car) ownership in South Africa is currently around 210 vehicles/1 000 population. If compared to developed nations, such as the USA, which might have reached saturation at around 800 vehicles/1 000 population, it is clear that potential for higher vehicle ownership in South Africa exists.

In many South African cities the modal split of motorised trips is approximately 50/50 between private trips and

public transport trips on a daily basis. For workers, the countrywide modal split on a daily basis is 40/40/20 (public transport / private transport / walking).<sup>2</sup> Currently around 600 000 new cars are sold every year, and the number of registered vehicles have increased at a relatively high rate since 2004 (see Graph 2).

The purpose of this article is to illustrate current personal transport trends and to provide some perspective on future direction with respect to the following:

- What are the consequences of the relatively high growth in vehicle ownership?
- What can be expected of the provision (affordability) of new road capacity and the resultant congestion levels in our cities?



Graph 1: Growth of South African population (Department of Statistics)

- What are the requirements for the provision of public transport to retain reasonable levels of mobility? Can it be afforded?
- Can land use patterns be changed to achieve higher densities in support of more effective public transport?
- What is the situation with regard to transportation/road crashes (fatalities)?

### SOUTH AFRICAN DEMOGRAPHICS AND TRANSPORT

#### Population

The South African population growth for the period 2005 to 2015 is depicted in Graph 1 (Source: Department of Statistics). The official number for 2015 is 54.96 million, representing a 1.8% growth during 2015, and an average growth of 1.5% per annum over the ten-year period between 2005 and 2015. Will flattening off in the population number occur? If not, the total population could be heading for 65 to 70 million by 2030.

#### Economy

The size of the South African economy, and the average per capita income for

2015 according to the International Monetary Fund (IMF), are shown in Table 1 (in total approximately 190 countries are listed).

#### Vehicles

The growth in registered vehicles for South Africa between 2004 and 2014 is shown in Graph 2.<sup>3</sup>

**Table 1: Extract of South African Economy versus other countries (IMF World Economic Outlook October 2015)**

Rank	Total GDP (billion US\$)		Rank	Average GDP/capita (US\$)	
	Country	GDP		Country	US\$/capita
1	USA	17 968	1	Luxembourg	103 187
2	China	11 385	2	Switzerland	82 178
3	Japan	4 116	3	Qatar	78 829
4	Germany	3 371	4	Norway	76 266
5	UK	2 865	5	United States	55 904
28	Iran	397	80	Montenegro	6 373
29	Thailand	374	81	Botswana	6 150
30	Austria	373	82	Ecuador	6 077
31	UAE	339	83	Namibia	5 787
32	South Africa	317	84	South Africa	5 784
33	Malaysia	313	85	Columbia	5 687
34	Hong Kong SAR	308	86	Peru	5 638
35	Philippines	299	87	Jordan	5 600
36	Israel	299	88	Thailand	5 426

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The number of registered vehicles have been growing at 4.0% per annum (on average) over the ten-year period. This is much higher than the population growth, and also higher than the real growth of the economy (average 2.7% per annum over this period – Department of Statistics).

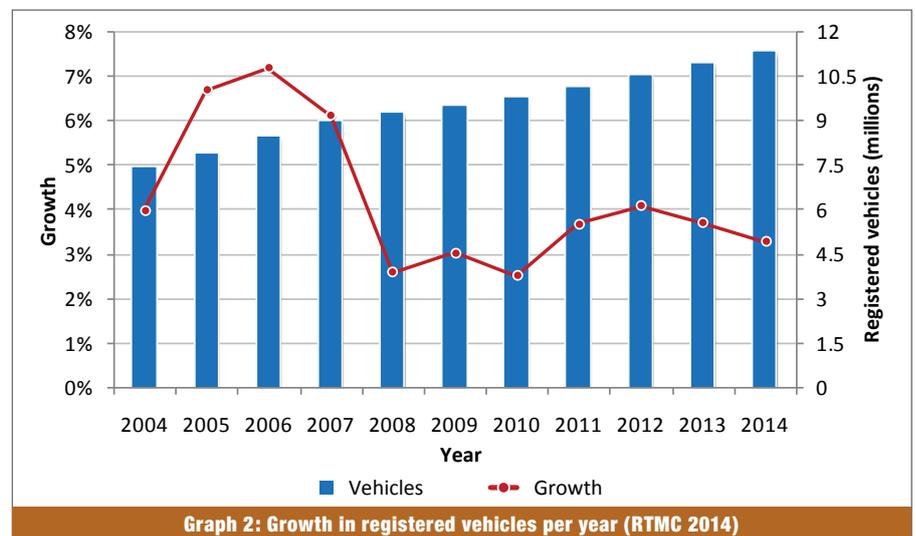
As mentioned earlier, vehicle ownership in South Africa in 2014 equalled 210 vehicles/1 000 of the population. Compared to developed countries (with ownership of 500 to 800 vehicles/1 000 population), significant growth in vehicle ownership is therefore possible in South Africa. The growth in registered vehicles followed the economic growth pattern of the country quite closely during the boom years between 2004 and 2007, showing approximately double the

growth rate then than since 2008. New vehicle sales according to NAAMSA<sup>4</sup> are shown in Table 2.

Annual new vehicle sales in South Africa show a decline since 2013 (e.g. 2015 shows a 4.1% decline when compared with 2014). However, due to the increase in vehicles being exported, the domestic production of motor vehicles in South Africa is expected to show an increase from 615 000 in 2015 to 660 000 in 2016. According to NAAMSA, the official motor industry vision is to produce around 1 million new vehicles in South Africa by 2020. At least three conclusions can be made:

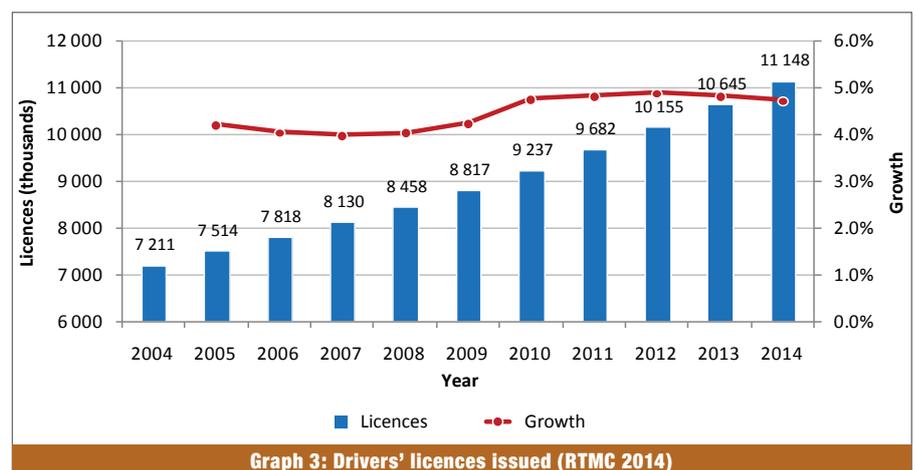
- Due to improved personal economic conditions, the motor vehicle population (i.e. motorisation) of South Africa is growing at a relatively high rate.

*The high growth in motorisation is expected to eventually be influenced by a shift from car ownership to what is referred to as “mobility as a service” (MAAS).<sup>15</sup> This basically is the reduction of individual vehicle ownership due to car/ride-sharing, public transport and fleets of self-driving cars blended together as a single service. The introduction of Uber services is a step in this direction. Exactly when the impact of MAAS on vehicle ownership will be visible in South Africa is difficult to say. Also, due to new energy sources, the so-called “peak oil demand” is predicted by some to occur as soon as 2020.<sup>15</sup>*



New vehicles	2010	2011	2012	2013	2014	2015
Sales in SA*	492 907	572 249	630 629	649 216	644 259	617 927
Exported	239 465	272 457	277 992	276 404	276 936	337 748
Total*	732 372	844 706	908 611	925 620	921 195	955 675

\*Note: These numbers include domestic production, as well as imported vehicles.



- The growth in vehicle numbers will undoubtedly add to congestion and the need for road space.
- Based on an estimated average selling price per new vehicle of R250 000, the new car industry in South Africa is worth around R240 billion per annum (2015). This excludes servicing, maintenance, repairs, etc. In terms of the creation of work opportunities, and boosting exports, this industry is important for the economic wellbeing of the country.

#### Driver's licences

The total number of licences (all licences issued) are summarised in Graph 3 for the period 2004 to 2014.<sup>3</sup> The indicated 11.1 million licensed drivers in South Africa at the end of 2014 imply some discrepancy with the data from the NHTS<sup>2</sup>, which indicates that 9.1 million persons were in the possession of a driver's licence in 2013.

Between 2004 and 2014, the average increase in the number of persons with a driver's licence has been 4.45% per

annum, which is even higher than the growth in registered vehicles.

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#### Revenue from road users and transport expenditure

Private road users have over the years contributed substantially to government revenue through the payment of tolls, licence fees, fuel levies, carbon taxes, import duties, fines and other taxes. It has recently been shown<sup>5</sup> that the fuel

levy (Road Accident Fund (RAF) excluded) has grown from R14.8 billion in 2003 to a budgeted value of R48 billion for 2015/16. This represents a growth (in nominal terms) of more than 10% per annum, or in real terms, of almost 5% per annum. This is higher than the economic growth, vehicle population growth, fuel sales growth and kilometres travelled over this period, and illustrates the notion of road users being a tax milking cow. The general fuel levy was increased by 30.5 cents (13.6%) to 255 cents/litre on 1 April 2015 and the RAF levy was increased by 50 cents (48%) to 154 cents/litre on that date. Every 5 cents/litre increase in fuel taxation, results in R1 billion of extra revenue. For the 2015/16 financial year an additional R16 billion has therefore been collected from road users (RAF plus fuel levy). The astonishing fact is that the April 2015 increases did not lead to a national outcry or drastic reduction in car travel. The Minister of Finance has increased the general fuel levy by another 30 cents/litre



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(to 285 cents/litre) in February 2016 (i.e. by 12%) and expects a revenue of R64.5 billion for 2016/17 from this source.

It has been shown before<sup>6</sup> that the taxes collected from private road users exceed the amounts spent on the road network (for private users), so the road users are good business for government. Public transport (road and rail) is currently (2015/16 financial year) being subsidised to the extent of R(11.5 + 18.3) = R29.8 billion<sup>7</sup> (capital and operating expenditure).

It is agreed that a balance between the provision of private and public transport is required – where the balance for South Africa should be difficult to define, but disturbing the current balance will have financial impacts. The introduction of high-standard Bus Rapid Transit (BRT) services is a case in point. In the City of Cape Town<sup>12</sup>, the fare box recovery of operating costs for the BRT service in 2014/15 has only been 40%, versus the target of 85%. Every passenger trip on the Gautrain requires an operating subsidy of R60.<sup>12</sup>

The Financial and Fiscal Commission<sup>16</sup> concluded in 2014 that current public

transport subsidies “are based on the historic practice of providing financial relief to households” and, due to the lack of policy implementation, led to “unsustainable practices”. See Graph 4 for modal split trends.

It is concluded that the taxation of private road users is an important revenue source for Treasury and it is expected to remain so for the foreseeable future. The expenditure on public transport (capital and operational) has grown over the years, and, if current practices continue, will require ever increasing allocations.

### MODAL SPLIT

The main modes of transport for workers in South Africa are:<sup>2</sup>

Public transport	39.1%
Private transport	38.4%
Walking	21.1%

The public transport trips/weekday have been estimated to be 5.4 million (slightly higher than the 5 million estimated in 2003), implying that the total number of work trips/weekday are

around 13.8 million – roughly 7 million workers making two trips per weekday (to and from work). The minibus-taxi trips are estimated to be 3.7 million, implying that minibus-taxis are responsible for 70% of all public transport trips of workers.

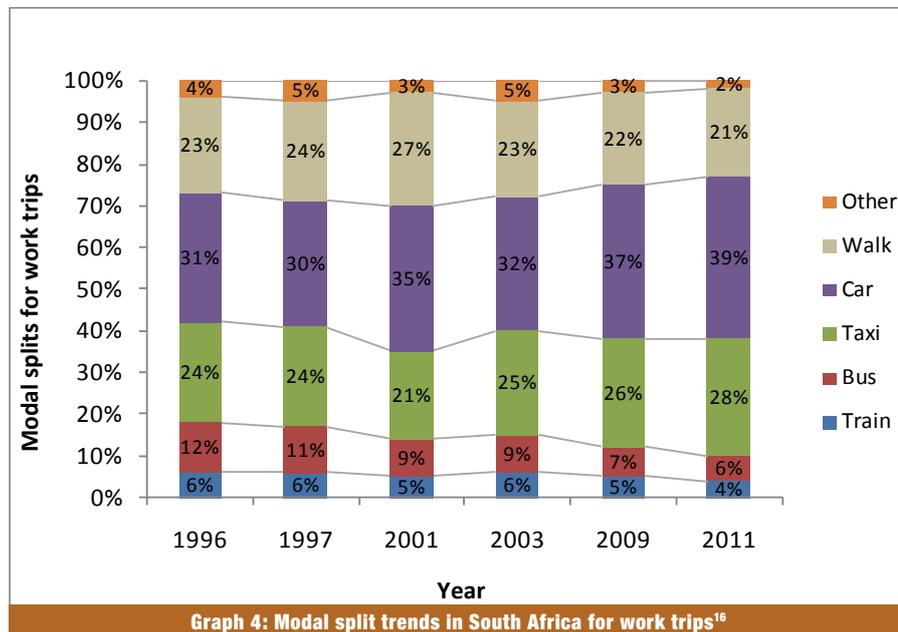
It is concluded that the minibus-taxi industry is in fact the most important element of public transport services in South Africa, and by executing 70% of public worker trips, is saving government huge amounts of subsidies.

### LAND USE

Being a relatively young country, i.e. no old compact cities such as in Europe, urban sprawl has occurred to a serious extent, and efforts for densification have limited success. In addition, being relatively poor (on a per capita basis) makes high-rise residential living (such as in some Chinese cities), unaffordable. Mostly medium-density housing (40 to 50 dwellings/ha) on ground level, and located remotely from work opportunities, can be afforded.

A relatively large portion of the population is dependent on walking as their major mode of transport, and this leads to many people having to cross busy roads on foot. As an example, surveys<sup>13</sup> have shown that approximately 18 000 pedestrians cross the N2 freeway (at grade) between Cape Town and Somerset West on a daily basis – this road carries between 60 000 and 100 000 vehicles/day. South Africa is considered one of a few countries in the world with this enormous extent of conflict between pedestrians and high-speed traffic.

Based on city developments in South Africa over the past 40 years, the authors conclude that, even though many South African cities have densification policies, real densification is taking place slowly, and only limited success can be expected.



Graph 4: Modal split trends in South Africa for work trips<sup>16</sup>

Table 3: Congestion indicators for South African cities (TomTom 2013)

Indicator	Cape Town	Johannesburg	Durban	Pretoria
Daily (%)	26	30	18	24
Morning peak (%)	78	79	47	57
Afternoon peak (%)	58	66	40	50
Delay/hour (peak – min)	39	26	43	32
Delay/year (30 min commute) (hours)	90	96	69	80

### TRANSPORTATION INFRASTRUCTURE

The state of transportation infrastructure in SA is considered good when compared with developing countries. SANRAL indicated in 2014<sup>8</sup> that the maintenance backlog of the 750 000 km South African road network was R197 billion at that time. No plan of how to address this backlog has ever been developed (as far as is known).

Even the rail commuter network, for a number of years now being the focus of upgrading and “increased” investment, shows little improvement in practice.

As an example, the daily number of passengers boarding the suburban rail service in Cape Town has decreased from 675 000 in 2000 to 621 000 in 2012.<sup>14</sup>

TomTom<sup>9,10</sup> has been collecting real-time travel time information wherever their GPS equipment is being used. Some of their salient information<sup>10</sup> is shown in Table 3.

The annual amount of delay is generally higher than two working weeks. If the value of this time is estimated, the annual cost of this delay is around R21.6 billion, i.e. 80 hours/worker/year, with 2.7 million workers affected (see “Modal Split” section above) – the value of this time is equal to R100/hour. The City of Cape Town recently announced that it intends to spend R750 million over five years to relieve congestion in the city – this amount appears small in relation to congestion costs.

Congestion is costing road users dearly in terms of time lost in traffic. The monies available to address this appear

to be small, and the situation can be expected to worsen substantially.

## ROAD SAFETY

South Africa has one of the poorest road safety records in the world.

### Current situation

The number of fatal crashes and fatalities are provided in Graph 5.<sup>3</sup>

This information shows a decreasing trend of both annual fatal crashes and fatalities between 2005 and 2014 (the latter from 14 135 to 12 702). This can be put in perspective if compared to Australia, where the population is less than half of that of South Africa, the vehicle population is approximately the same, and the fatalities are ten times less ( $\pm 1\ 200$  per annum). The red dotted line in Graph 5 shows the target that the Department of Transport committed itself to in 2010 as part of the United Nations Decade of Action.<sup>11</sup>

### Major road safety issues

Addressing the road safety problem is complex. The major issues in South Africa

are considered to include the following (authors’ opinion):

- Although reasonably good legislation exists, enforcement is inconsistent and partial. The collection of fines is at such a low level that it is ignored by many and cannot be considered a deterrent.
- Lawlessness is a major challenge. Levels of crime are prohibitively high, and in fact South Africa experiences some of the highest levels of violent crime in the world. This disrespect for the law takes successful road safety strategies partly outside the realms of transportation.
- Due to corruption and incompetence within the traffic enforcement and licensing agencies, members of the public increasingly have little respect for the law. When compared to other countries, the South African road safety situation is unacceptable, and drastic measures are required now to achieve a turnaround. Political will is one of the fundamental departure points.

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## CONCLUSIONS AND RECOMMENDATIONS

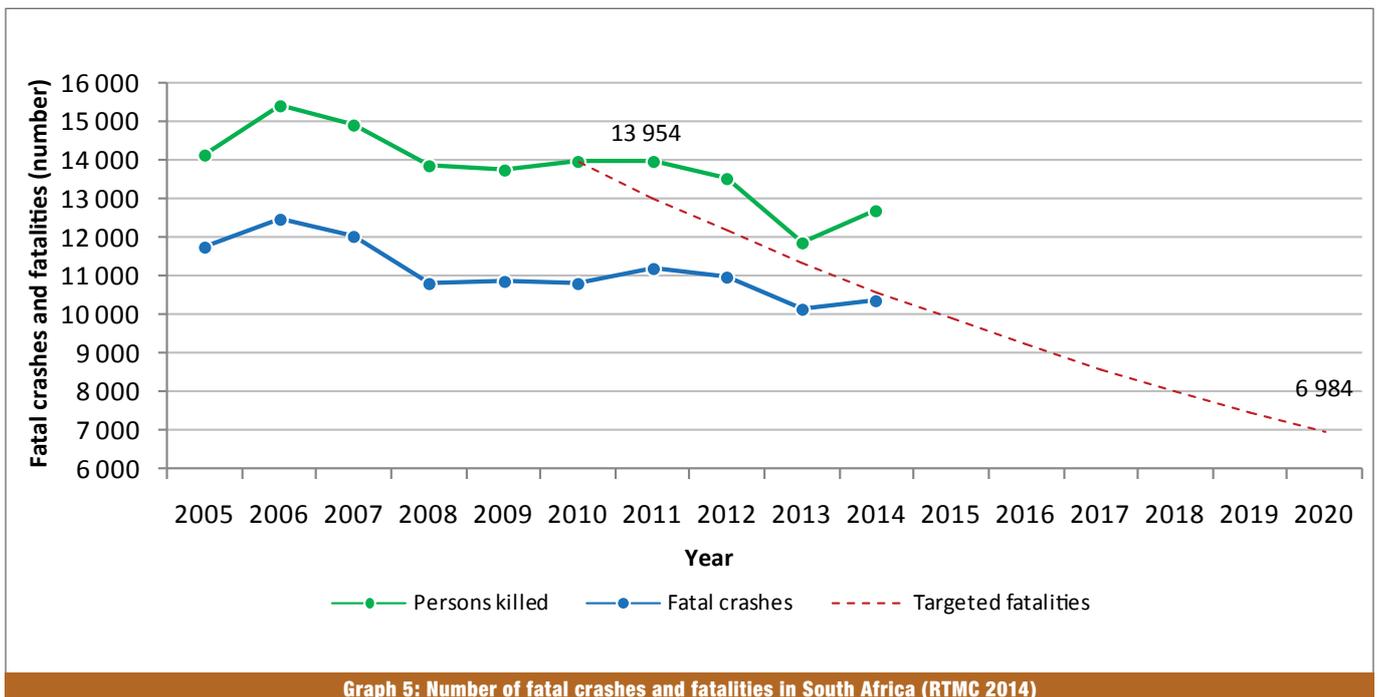
- The vehicle ownership of 210 vehicles/1 000 population can be expected to grow substantially in view of the situation reached in the developed countries.
- The growth in vehicle numbers will undoubtedly add to congestion and the need for road space, even in non-peak periods.
- The new car industry in South Africa is worth around R240 billion per annum (2015). In terms of the creation of work opportunities, and boosting exports, this industry is important for the economic wellbeing of the country.
- Between 2004 and 2014, the average increase in the number of persons with a driver's licence has been 4.45% per annum, which is even higher than the growth in registered vehicles. This confirms the relatively high growth in motorisation which is taking place.
- The taxation of private road users is an important revenue source for Treasury, and it is expected to remain so for the foreseeable future. The promotion of modal shift towards public transport, and the introduction of high-standard services (e.g. BRT, Gautrain) introduce challenges with respect to financial sustainability – the current subsidy situation is considered to be unsustainable by some.
- The minibus-taxi industry is the most important element of public transport

services in South Africa, and by transporting 70% of workers, is saving government huge amounts of subsidies.

- Even though many South African cities have densification policies, real densification is taking place slowly.
- To turn around the current severe conflict between pedestrians and motor vehicles will not be easy, and remains a huge challenge for both the affected communities and the authorities responsible for the management of major roads.
- Congestion is costing road users dearly in terms of time lost in traffic. The monies available to attend to this appear to be limited, and this situation can be expected to worsen substantially.
- Some improvement in the number of road crashes and fatalities has occurred in the past decade. The South African road safety situation is unacceptable and drastic measures are required now to achieve a turnaround.

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Graph 5: Number of fatal crashes and fatalities in South Africa (RTMC 2014)