# SPEED - IS IT RELEVANT?

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## SOUTH AFRICAN SPEED LIMITS OVER THE YEARS

The purpose of speed limits is to reduce the number and severity of accidents to minimum levels consistent with the provision of smooth and efficient traffic flow.

During 1970 and early 1971 the speed limits on urban and rural roads were 35 mph (56,3 km/h) and 70mph (112,7 km/h) respectively. On 1 April 1971 the speed limits were metricated and adjusted upwards to 60 and 120 km/h. These limits were regulated by the Provinces by means of the Provincial Road Traffic Ordinances.

In late 1973 OPEC countries reduced oil production, applied embargoes against certain countries, including South Africa, and increased the price of oil substantially. The Government reacted by introducing a number of fuel conservation measures which included reducing the urban and rural speed limits to 50 and 80 km/h respectively. These restrictions were imposed by means of regulations under the National Supplies Procurement Act, which took precedence over the Provincial Ordinances; they came into force on 14 November 1973.

On 25 January 1974 the speed limit was restored to 60 km/h; it has remained at this value since.

On 16 May 1975 the rural limit was raised to 90 km/h. It stayed at this level until 1979 when the Iranian civil war threatened the nation's oil supply again. On 8 June 1979 the Government imposed a 70 km/h speed limit on rural roads in designated magisterial districts surrounding the seven largest metropolitan areas. This restriction was very unpopular and the number of metropolitan areas to which the 70 km/h limit applied was reduced to three on 31 August 1979. On 28 September 1979 the 90 km/h speed limit was reinstated on all rural roads.

The rural speed limit was raised on 1 April 1981 to 100 km/h on rural freeways and the national road network; this limit was extended to the remainder of the rural system on 6 November 1981.

During the 1970s the Provinces had reduced the maximum speed limit on non-freeway rural roads from 120 to 100 km/h - freeways remained at 120 km/h. These limits did not apply, of course, in view of the Government's fuel conservation legislation. However on 1 August 1984 the Government was sufficiently confident that the country's fuel supplies were secure and removed speed limits from the regulations. The responsibility for speed limits reverted to the provinces, with the result that the limit on rural freeways increased from 100 to 120 km/h. During 1985 the speed limit was raised to 120 km/h on certain non-freeway rural roads.

According to the National Department of Transport Research Report 96/006 ‘The Setting of Speed Limits in South Africa’ the current Act in South Africa only provides three general speed limits for light vehicles and one for heavy vehicles. It goes on to say 'In South Africa, it appears that many drivers are unaware of all the general speed limits. These are particularly the 100 km/h limit applicable to rural areas and the 80 km/h limit for heavy vehicles. This is reflected in the extent to which these two limits are exceeded in South Africa. It is therefore important that attention should be given to these two limits and steps taken to address the above problem.'(1)

More recently Government Gazette - Regulation Gazette No 6748-Vol.417/No.20963 of the 17 March 2000 schedules the following:

Part II
Speed limits

General speed limits

**292.** A general speed limit of-

(a) 60 kilometres per hour shall apply in respect of every public road or section thereof, situated within an urban area,-

(b) 100 kilometres per hour shall apply in respect of every public road or section thereof, other than a freeway, situated outside an urban area; and

(c) 120 kilometres per hour shall apply in respect of every freeway.

Speed limit for particular class of vehicle

**293.** (1) In terms of section 59(3) of the Act, a speed limit of-

(a) 80 kilometres per hour shall, subject to the proviso to the said section, apply in respect to -
  (i) a goods vehicle the gross vehicle mass of which exceeds 9 000 kilograms;
  (ii) a combination of motor vehicles consisting of a goods vehicle, being the drawing vehicle, and one or two trailers of which the sum of the gross vehicle mass of the goods vehicle and of the trailer or trailers exceeds 9 000 kilograms; or
  (iii) an articulated motor vehicle, of which the gross combination mass of the truck-tractor exceeds 9 000 kilograms;

(b) 100 kilometres per hour shall, subject to the proviso to the said section, apply in respect to :-
  (i) a bus, and
  (ii) a minibus used for the conveyance of persons for reward.

(2) (a) There may be displayed on the rear of a goods vehicle contemplated in sub-regulation (1)(a), a sign denoting that such goods vehicle is subject to a speed limit of 80 kilometres per hour, and such sign shall comply with the requirements of standard specification SABS 1329 “Retro-reflective and Fluorescent Warning Signs for Road Vehicles", Part 3: "Signs other than triangles, chevron signs and abnormal load vehicle signs" with respect to the colours displayed on such sign.

(b) There shall from 1 May 2000, be displayed an the rear of a bus, a sign denoting that such bus is subject to a speed limit of 100 kilometres per hour, and such sign shall comply with the requirements of the standard specification referred to in paragraph (a) with respect to the colours displayed on such sign.

Section 293 (b), setting specific provisions for a 100 km/h speed limit was promulgated in an endeavour to constrain the speed of' buses and combi-taxis. Unfortunately compliance and enforcement has been singularly lacking.

## INTERNATIONAL EXPERIENCE

The current British Highway Code sets the national speed limits for various classes of vehicles on different road as follows:

**Table 1 - National speed limits on UK roads mph (km/h)**

| | Built-up areas | Elsewhere | | Motorways |
|---|---|---|---|---|
| | | Single carriageway | Dual carriageway | |
| Cars and motorcycles | 30 (48) | 60 (96) | 70 (112) | 70 (112) |
| Cars towing caravans or trailers | 30 (48) | 50 (80) | 60 (96) | 60 (96) |
| Buses and coaches | 30 (48) | 50 (80) | 60 (96) | 70 (112) |
| Goods vehicles < 7,5 tonnes | 30 (48) | 50 (80) | 60 (96) | 70 (112) |
| Goods vehicles >7,5 tonnes | 30 (48) | 40 (64) | 50 (80) | 60 (96) |

The minibus-taxi is obviously not a class of vehicle requiring special attention in the UK. Also notable is the differentiation between light and heavy goods vehicles at 7,5 tonnes, not 9 tonnes. Goods vehicles speeds limits are higher than South Africa's 80 km/h speed limit on dual carriageway roads and freeways, which result in less speed variation.

The Federal Highway Authority of the USA did a study tour for speed management and enforcement technology in 1995 and reported the general speed limits of 5 counties, along with selected demographic information. Table 2 only show the general speed limits extracted from this source.

**Table 2 - General speed limits of Countries Visited**. (1995) (1)

| Category | The Netherlands | Germany | Sweden | Australia | United States |
|---|---|---|---|---|---|
| Freeway<br>Rural Road<br>Urban Area | 120<br>80<br>50 | No limit<br>100<br>50 | 110<br>80<br>50 | 110<br>100-110<br>60 | 105<br>89<br>40-56 |

Source: BASt, based on International Road Traffic and Accident Database, January 1995.

In the International Context, Table 3 illustrates some speed limits and fatality rates in various countries. (2)

**Table 3 - Speed Limits and Fatality Rates in Various Countries (2)**

| Country | Speed Limits – km/h | | | | Fatality rate / 100 000 000 vehicle kms |
|---|---|---|---|---|---|
| | Urban | Rural | | | |
| | | Free-way | Express-Way | Other | |
| Austria | 50 | 130 | 100 | 100 | 5.0 |
| Belgium | 60 | 120 | 120 | 90 | 5.1 |
| Bulgaria | 60 | 120 | 80 | 80 | - |
| Cyprus | 48 | - | - | 97 | - |
| Czechoslovakia | 60 | 110 | 90 | 90 | - |
| Denmark | 60 | 100 | 80 | 80 | - |
| Finland | 50 | 120 | 80 | 80 | 2.0 |
| France | 60 | 130 | 110 | 90 | 4.4 |
| Germany (East) | 50 | 100 | 80 | 80 | - |
| Germany (West) | 50 | 130 | 130 | 100 | 3.4 |
| Hungary | 60 | 100 | 80 | 80 | - |
| Ireland | 48 | 97 | 97 | 97 | - |
| Italy | 50 | 140 | 110 | 110 | 2.8 |
| Luxembourg | 60 | 120 | 90 | 90 | 3.4 |
| Netherlands | 50 | 100 | 100 | 80 | 2.3 |
| Norway | 50 | 80 | 80 | 80 | 2.2 |
| Poland | 60 | 110 | 110 | 90 | - |
| Portugal | 60 | 120 | 90 | 90 | 10.3 |
| Romania | 60 | 90 | 90 | 90 | - |
| Spain | 60 | 100 | 90 | 80 | 6.7 |
| Sweden | 50 | 110 | 110 | 70 | - |
| Switzerland | 50 | 120 | 80 | 80 | 2.7 |
| USSR | 60 | 90 | 90 | 90 | - |
| UK | 48 | 112 | 112 | 97 | 2.1 |
| USA | 48 | 88 | 88 | 88 | 1.6 |
| Yugoslavia | 60 | 120 | 100 | 80 | - |
| South Africa | 60 | 120 | 120 | 100 | 86 |
| Mean | 55 | 115 | 96 | 88 | 4.7 |

These values were relevant in the 1983-1985 period. More recently in South Africa it appears that there has been a marked improvement in the Fatality Rate per hundred million vehicle kms. For 1998 (the most recent finalised South African statistic) an estimated 98 000 million vehicle kms of travel took place during which 511 605 traffic crashes took place and 9 086 Fatalities occurred. As a result there were 522 crashes per every 100 million vehicle kms per annum and 9,3 Fatalities per hundred million vehicle kms per annum. (3) Still far too high !

**DISCUSSION ON SPEED LIMITS**

**Freeways**: Half of the countries listed in Table 3 have freeway speed limits of 120 kph or more. Freeway accident rates are typically very low and represent a low proportion of travel in South Africa. The speed limit debate should not focus on these high order facilities.

**Expressways**: Only 2 of the 25 countries allow speeds of 120 kph or more on expressway (typically multilane roads with medians, but at-grade intersections). Four others allow speeds in the order of 110 kph, but the majority (19) have limits below 100 kph. South Africa seems to be out of line on the applicable speed limit for these roads, as lane changes, crossings and control measures on expressways are not compatible with 120 kph operations.

**Other rural roads**: Italy is alone in allowing speeds of 110 kph, while 6 countries have speed limits above 97 kph. The speed limit of 80 kph occurs 10 times and that of 90km/h occurs 8 times. The South Africa practice of signing rural road speed limits of 120 kph is thus out of line with international practice. This is the class of road of which the road length is the longest, on which the proximity of emergency services are the furthest and on which a large proportion of long distance public transport and accidents involving multiple victims take place.

**Urban roads**: The sample of 26 is split into 13 at 60 kph and 13 at 50 or 48 kph.

South Africa is consistently in the highest speed limit brackets for the different classes of roads. To get in line with international convention, the speed limits can be adjusted downwards. The UK Highway Code indicates some more differentiation between vehicle types and a higher heavy vehicle speed on dual carriageway road and freeways leads to less speed variance and improved flow.

It is interesting to observe that while in Europe the transport operator is happy with a maximum speed of 86 km/h, recent research has revealed that South Africa has the highest average speed of transport in the world. Not only are our legal loads with a GCM of 56 tons (plus 5% legal overload) one of the highest in the world, S.A. operators suffer the “goeie vrag” (a good load) syndrome where they “forget” about limits. This compares with a European maximum load of 40 tons (that is strictly enforced) at a velocity of 86 km/h. Is it any wonder that we are notorious for having one of the highest accident records in the world?

Recent overseas reports indicate that in the United Kingdom consideration is being given to introducing legislation requiring all heavy vehicles to be fitted with governors to prevent these vehicles exceeding the prescribed speed limits. Naturally strict enforcement will be applied to ensure compliance.

From its many years of experience with its sophisticated computerised electronic system (ERP) introduced in 1998 - and more- recent monitoring using equipment fitted to the island state's 6 000 taxis - the land Transport Authority of Singapore has now determined that available road space is best used when average speeds on expressways are maintained at 45 - 80 km/h, and kept at 20 - 30 km/h on other roads. If average speeds fall below these criteria it means there are too many vehicles on the road concerned, so either road pricing charges are increased at the 3- monthly reviews or - now - ERP will be extended to other roads beyond the Central Business District. (4)

OR MAYBE what about reinventing the WHEEL and follow the lead of the United States of America by introducing 'GINGER' as an alternative to Urban Transport!

## ROAD TRAFFIC ACCIDENTS

There is no denying that every life is important and it is the responsibility of every Road Authority to do everything in its power to preserve life.

The Road Safety Steering Committee of the National Institute for Transport and Road Research in the early Nineteen Eighties reached the point of despair in thinking that not until every family in South Africa had lost a member of their family would we be able to get across to the public the seriousness of the Fatal Road Accident Rate. At this time we managed to motivate and obtain the financial support for the Research Report No RV/26 entitled 'The Rural Speed Limit and Traffic Accidents. See Ref. 2:

The effect on road accidents of the many changes in speed limits in South Africa from 1972 as a result of fuel conservation measures motivated this thorough and meticulous research. Similar research in the United States of America had supported justification for this research.

A Study of Road Accident Fatalities over the last, approximately seventy years, see Ref. 3&5, provides a chilling condemnation of South African Road Authorities. A Road Accident Fatality level which has crept up from less than 900 in 1936 to nearly 9 900 in 1996 can never be said to be acceptable. In this period Total Casualties have escalated TEN TIMES! This notwithstanding the definition of road fatality changing in 1977.

It is of particular concern that of all travellers, in fact more than 50 000 per annum, are passengers travelling by public transport , who are killed every year.

At a Total Annual Cost of road accidents of R13,8 Billion for the year 2000, a quantum leap in the provision of funding for Road Traffic Enforcement is not only justified but demanded.

The effects of the lowering in general speed limit in 1974 resulted in a drop in the number of fatalities, as illustrated in Table 4, extracted from Department of Transport. 2001. *Historic Accident Statistics*. The selection is limited to the period from 1972 to 1976, as the definition of a road fatality changed in 1977, resulting in a new reference base. The speed limits shown reflect the values that were applied for the longest part of the year.

**Table 4 - Selected statistics: 1972 to 1976**

| Year | Number of Casualties | | | | Speed Limit | |
|---|---|---|---|---|---|---|
| | Killed | Serious | Slight | Total | Urban | Rural |
| 1972 | 8713 | 19369 | 47105 | 75187 | 60 | 120 |
| 1973 | 8580 | 19378 | 45624 | 73582 | 60 | 120 |
| 1974 | 6346 | 16276 | 39953 | 62675 | 60 (50?) | 80 |
| 1975 | 8001 | 20674 | 48042 | 76717 | 60 | 90 |
| 1976 | 9030 | 20693 | 48755 | 77478 | 60 | 90 |

The validity of many of the figures, as well as the reliability of statistical inferences made on such a selected sample, is open to questioning. The approach taken is, however, to show that the intervention taken in 1974 saved lives! By taking the average of 1972, 1973, 1975 and 1976 to get an expected value of accidents for 1974 if no intervention was made and comparing it with 1974 values, the estimated reductions due to the lower speed limit are as shown in Table 5. The traffic safety community should endeavour to save lives and prevent injuries. This intervention saved a significant number of lives.

**Table 5 - Reduction in expected casualties due to 80 km/h general speed limit 1974**

| | Killed | Serious | Slight | Total |
|---|---|---|---|---|
| Expected number | 8581 | 20029 | 47382 | 75741 |
| Actual number | 6346 | 16276 | 39953 | 62675 |
| Reduction | 2235 | 3753 | 7429 | 13066 |
| % | 26 | 19 | 16 | 17 |

The Historic Accident Statistics show that for the years 1995 to 1998, fatalities declined as follows: 10256, 9848, 9691 and 9068. While this is good news, the number of fatalities and the accident rate relative to vehicle population and vehicle km travelled is still too high for the level of development that South Africa has achieved. The present approach is to set objectives based on these positive trends: “To reduce crashes, deaths and injuries on South Africa’s roads by 5% year on year until the year 2005..” (DoT, 2001) To get a dramatic reduction, it will be necessary to intervene drastically, such as reducing the general speed limit again. Recent research provided a large measure of justification for these results.

**Table 6 - Summary of the effects of the raising or lowering of speed limits (6)**

| **Reference** | **Country** | **Change** | **Results** |
|---|---|---|---|
| *Speed Limit Decreases* | | | |
| Nilsson (1990) | Sweden | 110 km/h to 90 km/h<br>(68 mi/h to 56 mi/h) | Speeds declined by 14 km/h<br>Fatal crashes declined by 21% |
| Engel (1990) | Denmark | 60 km/h to 50 km/h<br>(37 mi/h to 31 mi/h) | Fatal crashes declined by 24%<br>Injury crashes declined by 9% |
| Peltola (1991) | UK | 100 km/h to 80 km/h<br>(62 mi/h to 50 mi/h) | Speeds declined by 4 km/h<br>Crashes declined by 14% |
| Sliogeris (1992) | Australia | 110 km/h to 100 km/h<br>(68 mi/h to 62 mi/h) | Injury crashes declined by 19% |
| Finch et al. (1994) | Switzerland | 130 km/h to 120 km/h<br>(81 mi/h to 75 mi/h) | Speeds declined by 5 km/h<br>Fatal crashes declined by 12% |
| Scharping (1994) | Germany | 60 km/h to 50 km/h<br>(37 mi/h to 31 mi/h) | Crashes declined by 20% |
| Newstead and Mullan (1996) | Australia | 5-20 km/h decreases<br>(3-12 mi/h decreases) | No significant change (4% increase relative to sites not changed) |
| Parker (1997) | USA<br>22 states | 5-20 mi/h decreases<br>(8-32 km/h decreases) | No significant changes |
| *Speed Limit Increases* | | | |
| NHTSA (1989) | USA | 55 mi/h to 65 mi/h<br>(89 km/h to 105 km/h) | Fatal crashes increased by 21% |
| McKnight, Kleinand Tippetts (1990), | USA | 55 mi/h to 65 mi/h<br>(89 km/h to 105 km/h) | Fatal crashes increased by 22%<br>Speeding increased by 48% |
| Garber and Graham (1990) | USA<br>(40 States) | 55 mi/h to 65 mi/h<br>(89 km/h to 105 km/h) | Fatalities increased by 15%<br>Decrease or no effect in12 States |
| Streff and Schultz (1991) | USA<br>(Michigan) | 55 mi/h to 65 mi/h<br>(89 km/h to 105 km/h) | Fatal and injury crashes increased significantly on rural freeways |
| Pant, Adhami and Niehaus (1992) | USA<br>(Ohio) | 55 mi/h to 65 mi/h<br>(89 km/h to 105 km/h) | Injury and property damage crashes increased but not fatal crashes |
| Sliogeris (1992) | Australia | 100 km/h to 110 km/h<br>(62 mi/h to 68 mi/h) | Injury crashes increased by 25% |
| Lave and Elias (1994) | USA<br>(40 states) | 55 mi/h to 65 mi/h<br>(89 km/h to 105 km/h) | Statewide fatality rates decreased 3-5%<br>(Significant in 14 of 40 States) |
| Iowa Safety Task Force (1996) | USA<br>(Iowa) | 55 mi/h to 65 mi/h<br>(89 km/h to 105 km/h) | Fatal crashes increased by 36% |
| Parker (1992) | USA(Michigan) | Various | No significant changes |
| Newstead and Mullan (1996) | Australia<br>(Victoria) | 5-20 km/h increases<br>(3-12 mi/h increases) | Crashes increased overall by 8%<br>35% decline in zones raised from 60-80 |
| Parker (1997) | USA 22 states | 5-15 mi/h (8-24 km/h) | No significant changes |

Source: Synthesis of Safety Research Related to Speed, Publication FHWA-RD 98-154

It is timeous, that one of the main recommendations of the research, not implemented by the Cabinet of the day, needs to be re-evaluated.

The relevant recommendation follows:

> *"it is hoped that the evidence presented in this report is sufficiently persuasive to convince the National Road Safety Council and the Automobile Association that there is direct evidence that speed itself causes accidents . When viewed against the accident record of this country over the past decade, during which time a number of other countries have achieved a reduction in accidents, the performance of the authorities responsible for road safety cannot be considered to have been particularly successful. 'We believe that the active support of the National Road Safety Council for a 90 km/h maximum rural speed limit and a 50 km/h urban speed limit, unpopular though these restrictions might be, is essential for their adoption. The introduction of these two measures will bring about an immediate improvement in road safety and can only enhance the image of the Council. "*

**ENFORCEMENT**

Over a period of time there is little doubt that levels of enforcement and concurrently driver traffic behaviour have sadly deteriorated. The blatant appearance of 'road rage' has manifested itself to the extent that a respected member of the Auditing Profession recently confessed that he had been forced to recognise its appearance and subject himself to control.

In a recent paper to the South African Transport Conference it was stated that Traffic policing has changed considerably over the last few years and is poised to change even more drastically over the next few years. Traffic Officers will have to be subjected to a program of structured training to equip them with the immense task to re-establish (traffic) order in the society. Officers in this country are generally not trained to render professional traffic policing services in an effective and efficient manner. (7)

When general police presence in some areas has been reduced by more than 80% over the last decade it is small wonder that respect for the Law has virtually disappeared and parking 'tickets' are treated as a joke. Murder and Rape have reached the level that in some areas communities are taking the law into their own hands - the situation is really very serious. High-tech equipment and sophisticated procedures and approaches are all very well but the 'Bobby on the Street' is the real essence of enforcement and no number of 'dummies in the window' will ever suffice. Something must be done to raise the level of the force and escalate their number. It was the Japanese who proved that for enforcement to be effective the local policeman had to be known and needed to visit regularly every household in his community.

The Traffic Police of KwaZulu-Natal have done a wonderful job over the last Christmas holidays with their 'Arrive Alive' campaign and their Roadside courts trapping of motorists exceeding 180 km/h. However, until these despicable members of our society are made to realise the heinousness of their crimes, by their peers, we are not going to root out this evil in our society.

Experience with the enforcement of Abnormal Load Permit control proved that monetary fines were not enough – the vehicles had to be impounded before conformity with the Permit procedure could be realised. Excessive speedsters need to have their vehicles impounded on the spot and forced to use public transport to return to their home.

The Traffic Laws in themselves have little value unless they are thoroughly implemented.

This can only occur when the levels of Traffic Officer provision have reached, at least, the levels internationally accepted as being adequate to control driver behaviour on the road system.

When this increased provision of law enforcement has been provided and control on the road system achieved, a culture of respect for fellow travellers will become transmitted into a way of life for all South Africans.

## PURPOSE OF THE PAPER

The purpose of the paper has been to endeavour to stimulate discussion with regard to the unacceptable road traffic accident situation in South Africa and to encourage action, which will not only reduce the accident rate but also engender an improved standard of behaviour on the nation's roads.

As stimulation to this discussion the following suggestions are put forward

1. Reduce the General Speed Limits in the National Road Traffic Regulations to -
   (a) 50 kilometres per hour in Section 292 (a)
   (b) 80 kilometres per hour in Section 292 (b)
   (c) 100 kilometres per hour in Section 292 (c)
   (d) 80 kilometres per hour in Section 293 (a)
   (e) 80 kilometres per hour in Section 293 (b)
2. Impound the vehicles of all drivers who exceed the speed limit by more than 50% into Police custody and make them return to their base by public transport.
3. Introduce a national certification procedure for the training of Traffic Officers - the South African Road Federation to initiate a series of courses in collaboration with the International Road Federation and under the patronage of the Global Road Safety Partnership (GRSP) (4). Day-to-day management, at GRSP, is handled by a small secretariat in Geneva, which is guided by an eight- person Executive Committee that meets twice a year.
4. Increase the minimum salaries of the lowest paid Traffic Officers by more than 50%.
5. Implement immediately the Driver's Licence Points Demerit System
6. Require all Toll Road facilities to provide 24 hr Traffic Officer surveillance, control and assistance.
7. Establish substantial urban communities where zero tolerance traffic enforcement is applied in order that a culture of responsible living may be established and the benefits and pleasures of civilised living can be exhibited - one each in Johannesburg, Cape Town and Durban.

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## CURRICULUM VITAE FOR TERENCE COURTENAY MACKEY

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Terry was born in Durban on the 31st May 1925. He is married, has two sons, two daughters and nine grandchildren and lives with his wife on a small-holding in Assagay growing avocado pears.

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