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# An Investigation on Road Safety within the Port of Durban

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*Abstract— Over the past years there has been a slight decrease in road accidents within the Port of Durban. Roads are considered as the most important transport mode at the Port of Durban. Road transport has taken almost 80% of the import and export cargo while railway transport is left with approximately 20%. According to United Nations, it is estimated that 75 million lives in the world will be lost and 750 million people injured in road accidents in the first half of the 21st century. The Port of Durban is an important vehicle for facilitating economic growth of local, regional and national industries. For the Port to maintain global competitiveness with the current trend of globalization, it has to ensure that roads are safe, well maintained and vehicles travelling on these roads are roadworthy. The purpose of the paper is to provide an overview of the status of road safety within the Port of Durban. The road accidents were analyzed on eight major roads within the Port of Durban based on probable causes of accidents. The number of deaths on each road was also identified. Recommendations were drawn based on the findings.*

*Index Terms— Road Safety, Road Accidents, Law Enforcement, Port of Durban.*

## I. INTRODUCTION

The Port of Durban is the busiest Port in Africa and is rated as amongst the top 10 fastest growing Ports in the world. Transport National Ports Authority is the landlord for the Port of Durban in KwaZulu Natal, South Africa. Private companies and other Transnet divisions such as Transnet Port Terminals and Transnet Freight Rail leases land from Transport National Ports Authority. EThekweni Municipality is the local government for the City of Durban, in which the Port of Durban is located.

### A. Background of the study

National Department of Transport sent a delegation from KwaZulu Natal (KZN) in 1996/1997 to Victoria, Australia to investigate the "World's Best Practice" on road safety in that state. This was then introduced in KZN originally as Project Victoria, and then rolled out nationally as the Short Term Implementation Project (STIP) prior to the Arrive Alive Road Safety Campaign. The success in KZN of 31% reduction between 1996 and 1999 was unprecedented in the developing world [1].

The Department of Transport then launched the Arrive Alive Road Safety Campaign as a short term initiative to reduce the carnage on South African roads in 1997. The first campaign ran from 1 October 1997 to the end of January 1998. This formed part of a R53 million national campaign and involved spending an additional 250,000 man-hours on the roads, in mobile courts, on daily roadblocks, on patrols and in administrative offices. Although this campaign involved all nine provinces, the campaign specifically targeted Gauteng, KwaZulu Natal and the Western Cape [1].

Each year nearly 1.3 million people worldwide die as a result of a road traffic collision, more than 3000 deaths each day and more than half of these people are not travelling in a car. Twenty to fifty million more people sustain non-fatal injuries from a collision, and these injuries are an important cause of disability worldwide. Ninety percent of road traffic deaths occur in low- and middle-income countries, which claim less than half the world's registered vehicle fleet. This is, in part, a result of rapid increase in motorization without sufficient improvement in road safety strategies and land use planning. The economic consequences of motor vehicle crashes have been estimated between 1% and 3% of the respective Gross National Product (GNP) of the world countries, reaching a total of over \$500 billion. Reducing road casualties and fatalities will reduce suffering; unlock growth and free resources for more productive use [2].

Through the road safety campaigns or studies such as Project Victoria (Short Term Implementation Project), Arrive Alive Road Safety Campaign of 1997, Transport Month of 2006, International Ship and Port Facility Security (ISPS) Code of 2003 and Global Plan for Decade of Action for Road Safety of 2011-2050 that have been conducted over the past years, it was noticed that the road accidents is slightly decreasing but there is still a lot of



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work that needs to be done. The introduction of security control system known as International Ship and Port Facility Security (ISPS) Code has also assisted on improving Port security which plays a major role on driver behaviour. The Port now has a clear boundary which is fenced all around and there are security check points on each and every Terminal entrance. Most of the time the law enforcement agencies such as Metro Police, South African Police Services (SAPS) and South African Revenue Services (SARS) are working hand in hand on operations. Currently the weigh bridge at Bayhead Road is not working due to ownership and operational issues. This weigh bridge used to assist on ensuring that all vehicles carry legal goods and weight, and that vehicles are in a good condition.

The objectives of the ISPS Code was to establish an international framework involving co-operation between contracting governments, government agencies, local administrations and the shipping and port industries to detect/assess security threats and take preventive measures against security incidents affecting ship or port facilities used in international trade. In order to achieve its objectives, the Code embodies a number of functional requirements, one of which was to prevent unauthorized access to ships, port facilities and their restricted areas [3].

### B. Objectives of the study

The main purpose of the study was to determine the following:

- The current status of road safety which include road accidents and road deaths,
- The contributing factors on road accidents,
- The status of law enforcement within the Port,
- Recommend measures that will assist on reducing road accidents.

### C. Study limitations

The study covers the road safety aspect within the Port of Durban. The following Fig. 1 shows the eight major roads within the Port of Durban that connect the South, West and North of eThekweni Municipality namely Bayhead, Quayside, Maydon, Rick Turner, Wisely, South Coast, Bluff and Iran Roads.

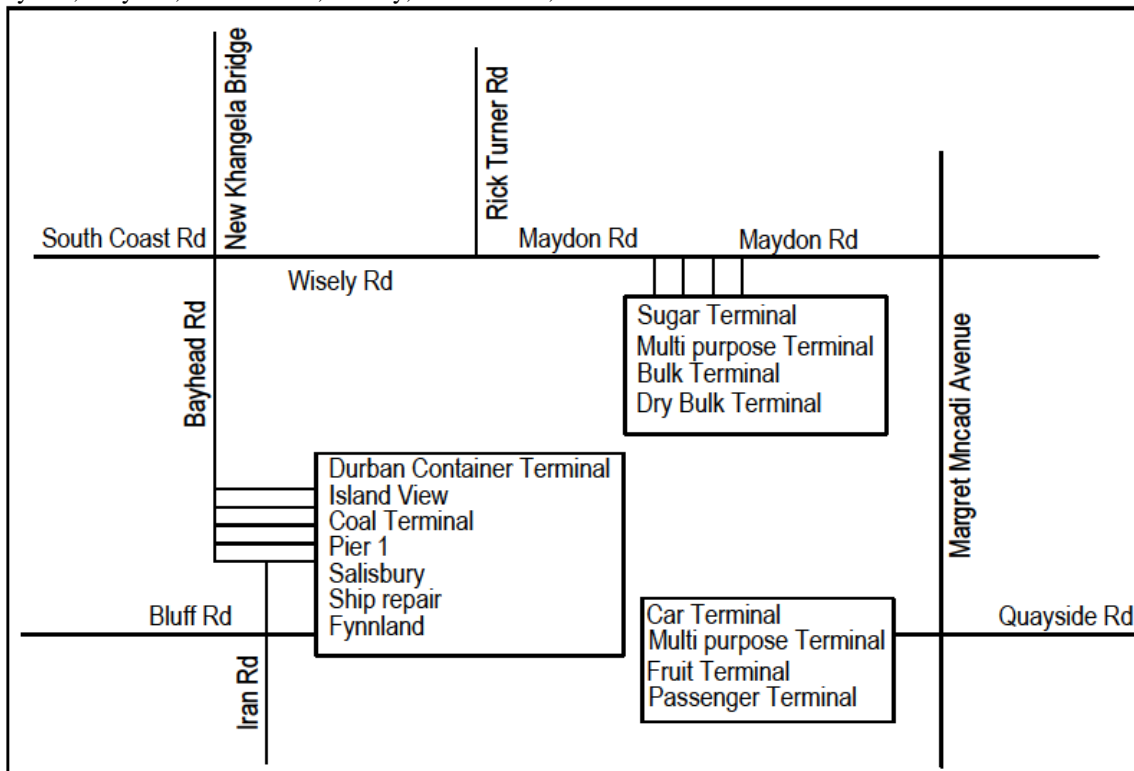


Fig. 1: Road network within the Port of Durban

## II. METHODOLOGY

The reports for road accidents within the Port for year 2007 until year 2010 were obtained from eThekweni Transport Authority. The number of registered vehicles in South Africa was identified in each Province. Road



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accidents were analyzed based on probable causes of accidents on each road. The number of deaths on each road was also identified.

### III. ANALYSIS OF ROAD ACCIDENT REPORTS

South Africa consist of nine provinces namely Gauteng, KwaZulu Natal, Western Cape, Eastern Cape, Free State, Mpumalanga, North West, Limpompo and Northern Cape. The number of registered vehicles in South Africa has increased by 266 032 (2.75%) from 9 678 989 on March 2010 to 9 945 021 vehicles on March 2011 as per Fig. 2 [4]. Gauteng province has the highest number of registered vehicles which is approximately 3 865 050 followed by Western Cape and KwaZulu Natal.

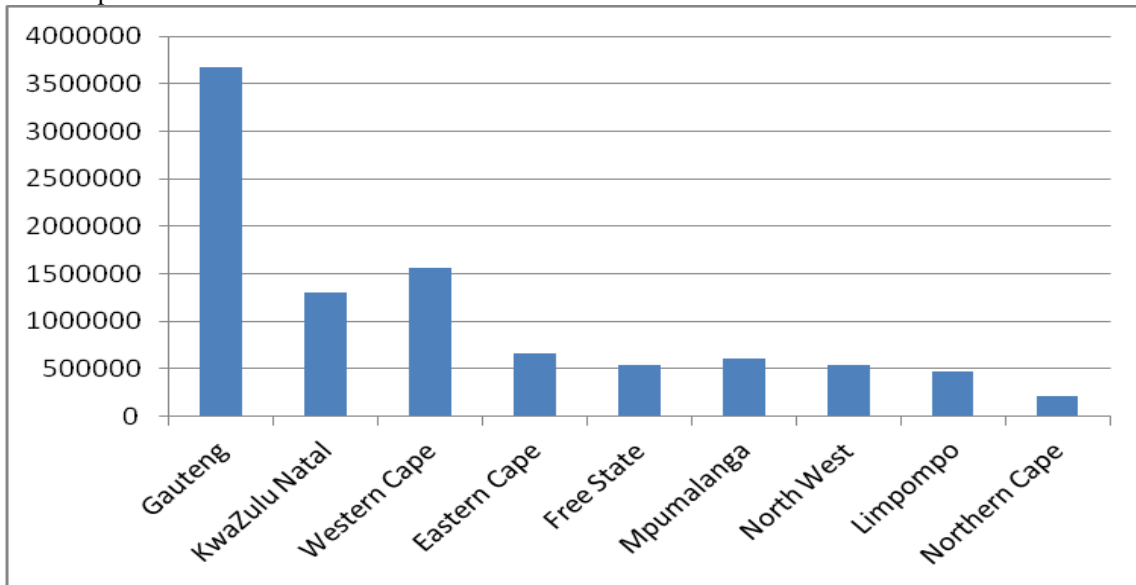


Fig. 2: Number of Registered Vehicles in South Africa [4]

Fig. 3 indicates that out of 9 945 021 registered vehicles 57.1% are motorcars followed by 20.4% of bakkies. The trucks equates to 3.3% and 10.2% are towed vehicles.

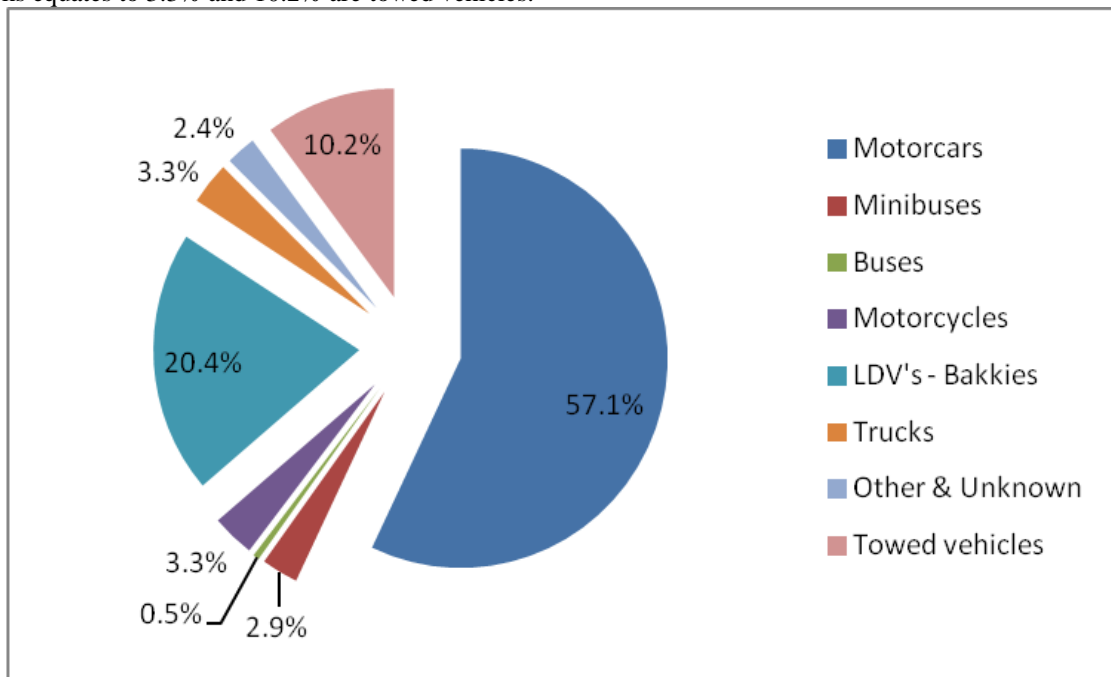


Fig. 3: Various Types of Registered Vehicles in South Africa [4]

As illustrated in Fig. 4, there has been a decrease in the number of road accidents within the Port of Durban over the past years from almost 3972 to 2729 per annum.

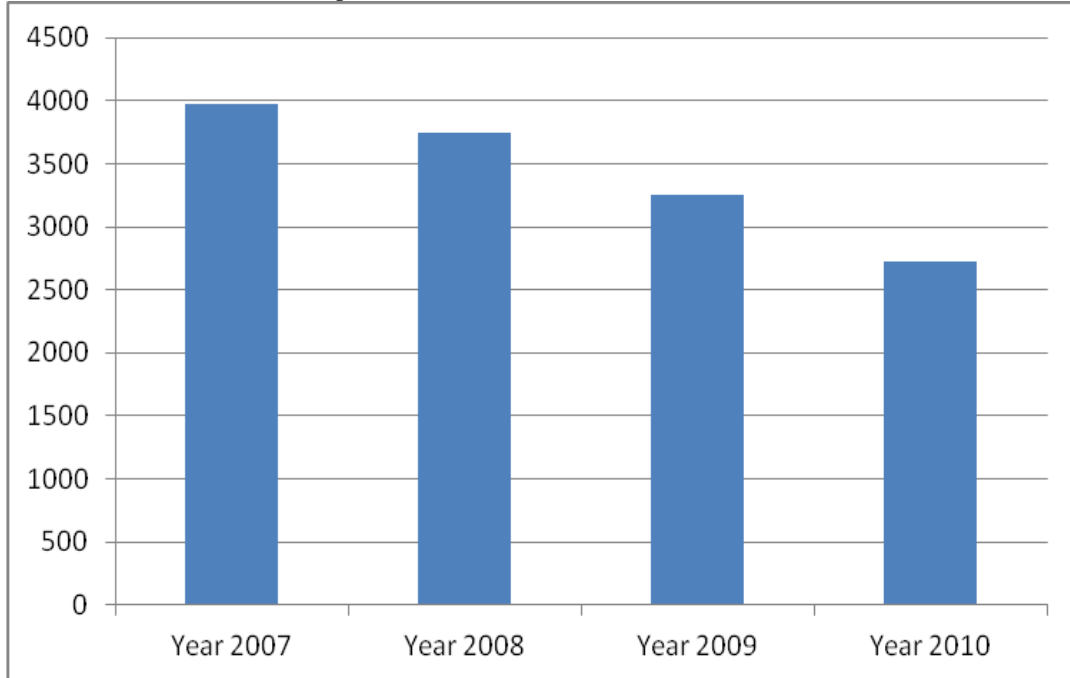


Fig. 4: Road Accidents within the Port over the Past Years [5]

Fig. 5 shows a road accident at the intersection of Bayhead and South Coast Roads where two trucks were involved.



Fig 5: Road accident at Bayhead Road

As illustrated in Fig. 6, South Coast Road has the highest number of road accidents but is slightly decreasing over the past years.

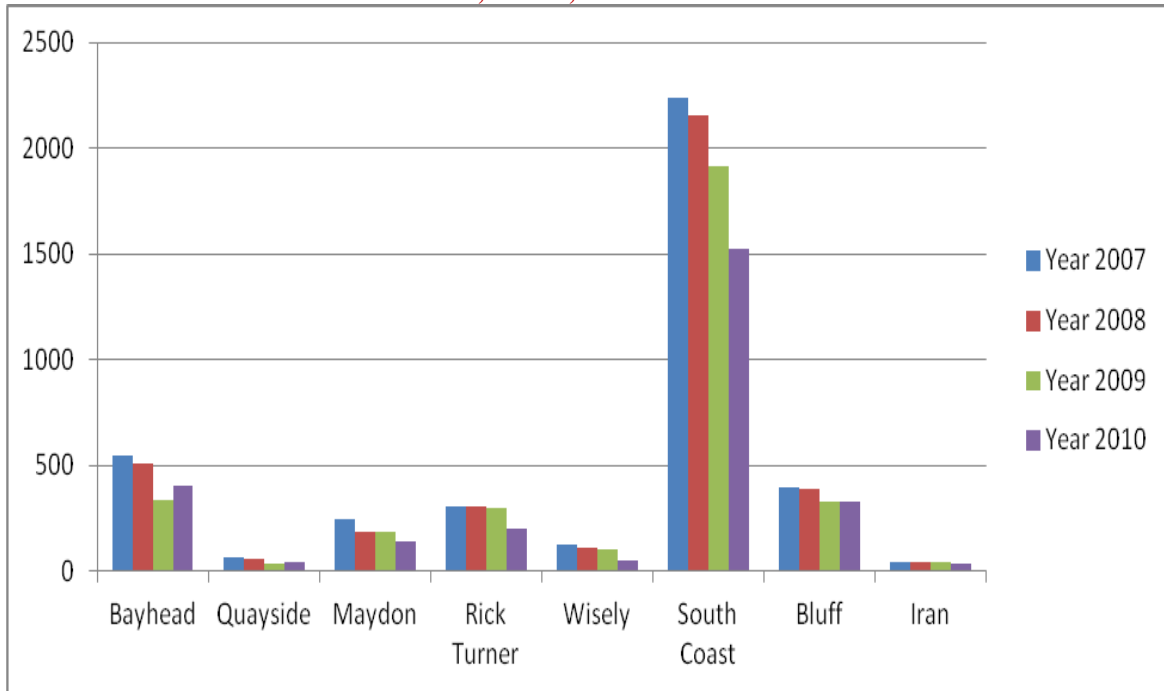


Fig. 6: Road Accidents over the Past Years [5]

Fig. 7 indicates that 1527 accidents occurred on South Coast road in year 2010, 1318 (86%) people were not injured, 155 (10%) people were slightly injured, 41 (3%) people were seriously injured and 13 (1%) had fatal injuries.

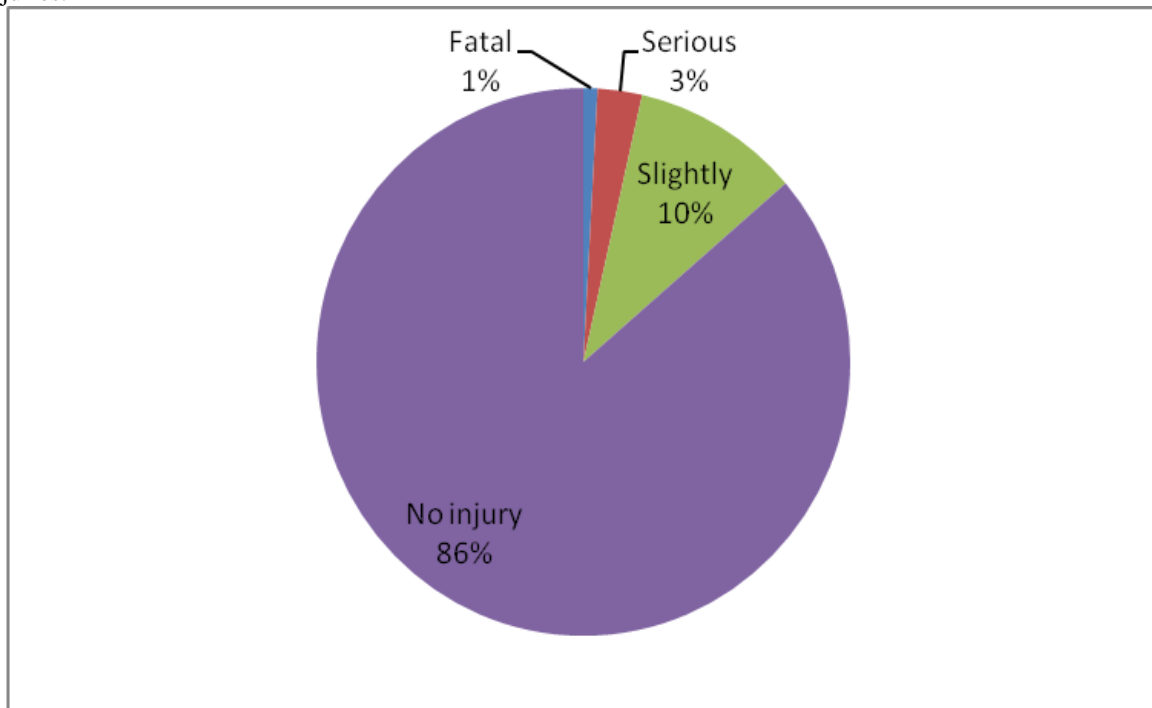


Fig. 7: Road Accidents on South Coast Road in Year 2010 [5]

#### IV. ANALYSIS OF ROAD DEATH REPORTS

In 2007, 20 people died on these roads and in year 2010 it still remained at 20 deaths as shown in Fig.8. South Coast Road had the highest number of deaths. No deaths were reported on Quayside (rated as B category – very good condition) and Iran Roads (rated as C category – good condition) since year 2007.

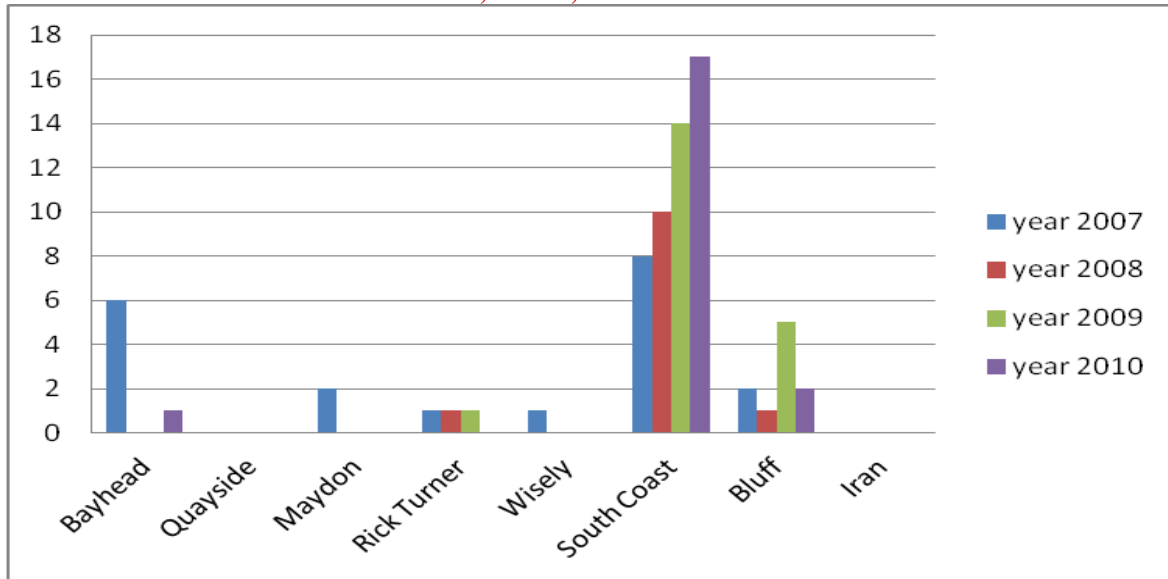


Fig. 8: Number of People Died Over the Past Years [5]

### V. CONTRIBUTING FACTORS ON ROAD ACCIDENTS

Driver error, pedestrian error, road condition and vehicle defect have major impact on road accidents within the Port of Durban. Road accidents do not just happen – they happen because of certain real contributory factors. These contributory factors are circumstantial elements that are present at the time of the road accident and are generally classified under four main categories, namely: human, vehicle, roadway and the environment. The first three factors reflect human and authority behavior, attitude and performance, while the fourth factor, the environment could, to a certain extent, be regarded as being beyond the control of the driver or the authorities. The contributory factors to road accidents are generally classified under 3 main categories as follows:

- Human
- Vehicle
- Road environment

It should be noted that it is very seldom that a road accident happens because of only one contributory factor. In most cases there are 2, 3 and even 4 or more factors from any one or more categories present simultaneously.

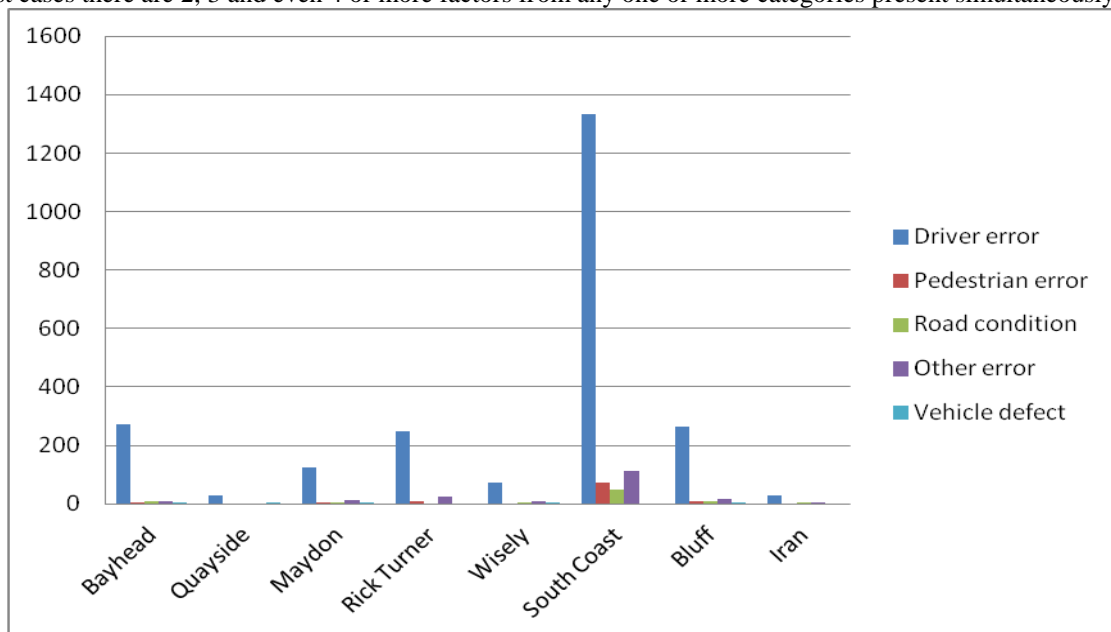


Fig. 9: Probable Causes of Road Accidents in Year 2010 [5]



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Fig. 9 indicates that the driver error is the most probable cause of the road accidents within the Port of Durban. South Coast Road has the highest number of road accidents followed by Bayhead, Bluff and Rick Turner Roads.

## VI. CONCLUSION AND RECOMMENDATIONS

There is a high number of road accidents on South Coast Road because of human factor and poor road condition. Most deaths took place on this road and the number of deaths is increasing each year. However, road accidents have slightly decreased over the past years. It has been noted that most of the road accidents taking place within the Port involve heavy vehicles. There is a high number of light vehicles that are registered in South Africa compared to heavy vehicles. It is accepted that 95% or more road accident happen as a direct result of traffic offences or non-compliance with prescribed norms and standards. In this regard the human element plays a major role. For example, should a road accident result from a tyre burst, generally classified under vehicle factors, it still is the responsibility of the driver or owner of the vehicle to see that the worn or damaged tyre is replaced timorously.

In case of a road accident happening as a result of a pothole in the road or a smooth road surface, generally classified under road factors, it is the responsibility of the driver to reduce speed and drive more carefully under such circumstances. In such a case it is also the responsibility of the roads authority to detect the unsafe conditions through regular inspections and efficient routine maintenance programmers and either effect the required remedial measures as soon as possible or, to at least provide the required road signs to warn road users of the unsafe condition of the road.

It is recommended that road maintenance work such as replacement or repair of traffic signals, road signs, potholes and road marking need to be improved which will assist in reducing road accidents. Also, improve response time for road maintenance as per EThekwini Municipality's service level agreement where reasonable time for repair of potholes is within 48 hours, sink hole and traffic signals are within 24 hours, road, sidewalk repairs, reinstatements of trenches, broken kerbs and road signs are repaired within 10 days. It is also recommended that law enforcement be improved to effectively address the following:

- Illegal parking especially on Maydon Road,
- Use of cell phones while driving,
- Lack of seat belt usage,
- Disobeying traffic signals and road signs,
- Speedsters, un-roadworthy vehicles, drinking and driving,
- Disobeying of road rules by pedestrians.

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Oscar Kunene holds a Bachelor's Degree in Technology (Civil Engineering) and he is currently studying towards a Masters Degree in Technology (Civil Engineering) at the Durban University of Technology. He is registered with the Engineering Council of South Africa as a Professional Engineering Technologist (Pr. Tech. Eng) and is a member of the South African Institute of Civil Engineering (MSAICE). He is also registered as a Project Management Professional (PMP) with Project Management Institute. He worked at Transnet National Ports Authority for six and half years where he was involved in capital projects and maintenance of Port infrastructure including roads, railways, buildings, water reticulation etc. In year 2009 he joined eThekwini Municipality where he is currently working under Human Settlement and Infrastructure Cluster.



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