

FEDERAL ROAD SAFETY CORPS



THIRD ANNUAL LECTURE SERIES

14 November, 2011

COMPENDIUM OF PAPERS



Lecture Series No.3

Traffic crashes also affects poverty and social inequality because they disproportionately affect the economically active group and the poor. Road crashes are estimated to cost developing countries over \$65 billion per year and expected to increase by 80% by 2020 (WHO, 2004).

However, road crashes are largely preventable.

- Economic development and traffic safety can flourish together.
- Road safety can be incorporated into land-use and development plans.
- Investments in road safety have high rates of return (10-20 times).

PICTURES: 2011 Annual Lecture Series



PICTURES FROM 2009 AND 2010 EDITIONS



Driver training and education sector should be more professional.

- Change focus from skills and vehicle handling (basic is needed) to hazard perceptions and risk management, especially for post-licensing training.

- Implement Graduated Driver Licensing to manage risks

Communication professionals should focus on changing driver behavior and not simply trying to raise awareness.

- Need to adopt a more scientific approach
- Message should be designed using established behavior change models not simply using focus group.
- Campaigns should be evaluated for their effectiveness in changing driver attitudes, behaviors and crashes not recall or advertising awards.

Lead agency must ensure that road safety professionals have the basic core competency:

- Understand the management of highway safety as both a complex multi-disciplinary field and one which must be understood systematically.

□ Understand and explain the history of highway safety and the institutional setting in which safety management decisions are made.

□ Understand the origins and characteristics of traffic safety data and information systems and their use in managing highway safety.

□ Knowledge and skills to: assess factors contributing; identifying potential counter-measures; applying countermeasures; implement and evaluate the effectiveness of the countermeasures.

□ Developed, implement and administer a highway safety management program.

All major or continuing countermeasures should be independently and scientifically evaluated.

15. Summary

Road crashes are a leading cause of deaths and serious injuries and extract a high cost on society.

▪ Social costs: medical cost, loss productivity, material damage, etc

□ Reduce economic output: loss productivity from labour supply disruption and disruption in transportation services

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INTRODUCTION

The Federal Road Safety Corps (FRSC) Nigeria is the Lead Agency on road traffic safety administration and management in Nigeria. The FRSC in its bid to attain clear cut constitutional obligations collaborates and share experiences with both local and international organizations as well as relevant agencies. One major strategy being adopted by the Corps in canvassing support and creating massive awareness for the reduction of road carnage is the area of public enlightenments.

In the last two years, FRSC organized Annual Lecture Series programmes. The maiden edition of the Corps' Annual Lecture Series took place on 27th October, 2009 at the Abuja Sheraton Hotel and Towers with the Theme "**Sustainable Development and Road Safety**". The Guest Speaker, His Excellency, Chief Emeka Anyaoku, CON, CFR, GCVO delivered a paper titled "**Capital Waste on Nigerian Road**" in year 2010 the event was tagged "**Decade of Action for Road Safety: Imperatives for Developing Economics**". His Royal Highness, Prince Michael of Kent GCVO chaired the occasion while the Guest Speaker was Mr Kiran Kumar Kapila, the Chairman, International Road Federation (IRF), Geneva Programme Centre.

The 2011 edition being third in the Series was held on 14th November, 2011 at Nicon Luxury Hotels, Abuja with a Theme "**Achieving the Decade of Action on Road Safety 2011 2020**". The lead paper titled "**Integrating Road Safety into National Development**" was presented by Prof. Richard Tay, PEng, CPEng, of La Trobe University Melbourne-Australia as the Guest Speaker.

Establish a strong lead agency to ensure:

- Cooperation among stakeholders
- Development of action plans from strategic plans
- Monitoring and evaluation of all major programs
- Institution capacity and training are available
- Political and public support (include private sector)
- Accountability to legislators and public

More involvement from health sector:

- Health resources (national and international)
- Reduce the burden on the health system
- Expertise (health promotion)

Better integration of traffic enforcement into road safety:

- Focus on crash prevention not apprehension of violators
- Balance between general deterrence and specific deterrence
- More reliance on theory and evidence to optimize resources
- More reliance on theory and evidence to optimize resources
- Improvement of data collection enforcement and collision data
- Formal evaluation of enforcement efforts
- Public accountability oversight and availability of information
- Promotion of enforcement by independent and credible sources

Establishment of independent research centers. The importance of using theory and evidence-based approached cannot be over-emphasized.

Transportation engineers and planners must be more proactive.

- Road safety audits and in-service review
- Systematic reviews tools (iRap and others)

14. Critical Success Factors

- Top leadership commitment.
- Funds to achieve safety objectives.
- Strategic highway safety plan.
- Program management
- Organizational capacity.
- Flexibility in directing investments
- Data driven decision making.
- Evidence-based solution.
- Comprehensive mix of solution.

High level political commitment ensures that resources are provided.

- Leadership can originate from government (top down)
- Champion can be private groups or individuals (bottom up)
- Besides resources, high level political commitment is also needed for legislative initiatives.
- High level political commitment is also needed to ensure inter-agency co-operations.

Countries that set targets performed better than countries that don't (Wong et al, 2006; Elvik, 1993, 2001, 2003). Most targets range from 30-50% reductions. Administrators are held accountable for results of safety initiatives.

Public forums and conferences that brings together administrators, legislators, law enforcement, engineers, health officials, researchers, advocates, educators, and community groups for the exchange of information.

KEYNOTE ADDRESS DELIVERED BY THE VICE PRESIDENT FEDERAL REPUBLIC OF NIGERIA ARC. NAMADI SAMBO (GCON) ON THE 3RD FRSC ANNUAL LECTURE SERIES 2011

It gives me a great pleasure to address you all on this important occasion of the 3rd Road Safety Annual Lecture Series. **"Achieving Decade of Action on Road Safety 2011-2020: Integrating Road Safety into National Development."**

Every moment of the day, economic systems, political configurations, geographical landscapes, social culture, etc are in a state of flux. The environment in which we operate is always changing. Change is so spontaneous, routine and pervasive that it can be safely be asserted that it is the only phenomenon in life that remains constant. Thus as technologies demand patterns, socio-political circumstance change, so do the new structural challenges emerge without notice.

2. The decade of action is a planning document which will serve as a tool to support the development of national and local plan of action to reduce the fatalities towards the end of the next decade while providing a framework to allow coordinated activities at the global level.

3. In a representative democracy like ours, the greatest happiness for the number of people is the overriding pre-occupation of those in government. It is the conviction of the present administration as propelled by its transformation agenda to holistically x-ray policies, processes and actions that would engender dividends of democracy. Thus, such measures and actions taken by the corps that will ensure the realization of the decade of action will be supported by this administration,

Government is equally aware of your present challenges in terms of resource and operational environment.

4. The FRSC in the last three years has been aggressively involved in pursuing policies aimed at ensuring good governance and attaining national security for the country with the introduction of enhanced national driver licence and customized number plate in vehicle administration. The Corps in search of a credible and effective response to the challenges posed by road traffic crashes has been proactive in its statutory functions of making the highways safe for motorists and other road users, recommending works and devices designed to eliminate or minimize road traffic crashes on the highways in addition to educating road users on the importance of road discipline. Provision of emergency care to victims of road crashes has remained one of the core values of the FRSC in its drive to achieve a 50% road crash reduction in 2015 in line with Accra Declaration of 2005 and transition from present trend of 10 to 2 deaths per 10,000 vehicles on Nigeria road by 2020.

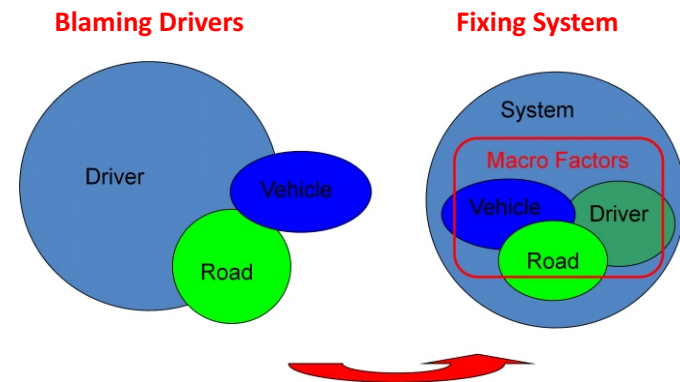
5. I have no doubt judging from theme and topic that this will provoke a paradigm shift necessary for further discuss.

6. Thank you.

Decade of Action

- UN Decade of Action for Road Safety (2011-2020).
- FRSC planning document that includes specific objectives, activities to objectives, funding of activities and evaluation.

10. Paradigm Shift



11. Broken System

- 5 star car crash tested at 60 km/h but driven on roads with 110 km/h speed limit.
- 5 star pedestrian survive crash at 30 km/h but walks on road with 60 km/h speed limit.

12. System Approach

We need go beyond the traditional approach of examining only the vehicle, road and the user. We need to look at the entire system, including the macro-environment (socioeconomic, political, transport planning, etc). We need to control exposure, especially high risk exposure and improve the emergency response and health care system.

Another possible explanation is that these results are driven by some external factors more comprehensive data needed to for advanced statistical modelling.

9. Road Safety National Development

Economic growth and development enriches the lives, especially in developing countries and should be supported and pursued. However, the negative impacts need to be carefully managed

Reducing road casualties and fatalities will unlock growth and free resources for more productive use (FRSC 2010 Annual Report). Nigeria has a much younger population than most western countries traffic crashes are a leading cause of deaths and serious injuries among young adults.

Economic development and investment in road safety can and should go hand in hand!! Careful investments and strategic planning

- Social cost can be reduced
- Economic development can maximised

Road Safety Strategy and Decade of Action

FRSC's Vision

- To eradicate road traffic crashes and create safe motoring environment in Nigeria

FRSC's Goals

- 50% reduction in deaths and injuries on Nigeria's road by year 2015 compared to 2007.
- Being in the top 20 countries in the WHO ranking by 2020.

GOODWILL MESSAGE ON THE 3RD FRSC ANNUAL LECTURE SERIES BY SECRETARY TO THE GOVERNMENT OF THE FEDERATION SENATOR ANYIM PIUS ANYIM (GCON) PROTOCOL

I acknowledge the presence of all the dignitaries and the invited guests to this important occasion of the FRSC 3rd Annual Lecture Series tagged "Achieving Decade of Action on Road Safety 2011-2020: Integrating Road Safety into National Development."

2. Efforts at developing global partnership are pivotal to national growth and the Federal Road Safety Corps via this forum has shown resilience by sustaining the Lecture Series to take the Corps and by extension the country to an appreciable height. Economic development is hinged on safety on the roads as a great percentage of social economic activities transcends on the road.

3. It is therefore heart warming to know that inspite of challenges posed by Road Traffic Crashes coupled with poor road condition and attitudinal deficiency of average drivers/road users, FRSC is resolute in its stance to make Nigerian roads one of the safest worldwide.

4. Government commitment to this course is evident in the on-going construction and repairs of vital road segments aimed at achieving an improved road network and ease traffic congestion at certain routes on our nation's highways.

5. It is pertinent to state also that the Federal Government recognises the continued increase in vehicular and driver density, hence the need and commitment to improve on recent funding and road rehabilitation/construction.

6. At the heart of the present Government Transformation Agenda is institutionalizing attitudinal change and security of lives and properties which therefore underscores the effort of the Corps in reforming drivers and vehicular licensing regime nationwide. In the face of contemporary security challenges, this strategic initiative no doubt will assist in actualizing government constitutional mandate of protecting lives and properties.

7. I applaud this huge and on-going approach by FRSC through a medium as this to salvage the economic prowess of the country and return sanity to our roads.

8. Thank you for been a wonderful audience.

The relationship between road safety and economic output or growth is strong and significant. Simple correlations between changes in the national output of most sectors and traffic crashes (total # crashes and # killed) are statistically significant.

However, the relationship is quite complex and difficult to disentangle with a comprehensive database to be used in advanced econometric modelling. Hence, the results of the preliminary analyses shown have to be interpreted with extreme caution.

Note that the relationship between traffic safety and economic development changes:

- over time as the country develops
- across sectors due to difference "production" functions
- across states due to differences in social & economic structures

For example, results from some preliminary analyses suggest that:

- Changes in national crop output over the years (1990-2006) is negatively related to changes in the number of all crashes, number of fatal crashes and number of road users killed.
- Changes in state level employment in the crop sector are positively related to the number of road users killed in 2006.

One possible explanation:



Air Transport	-0.859*	-0.663*	-0.001
Transport Services	-0.837*	-0.598*	0.064
Telecom	-0.651*	-0.506*	-0.040
Post	-0.855*	-0.646*	0.025
Finance	-0.694*	-0.527*	-0.027
Insurance	-0.695*	-0.529*	-0.031
Real Estate	-0.865*	-0.693*	-0.044
Bus Services	-0.870*	-0.688*	-0.037
Public Administration	-0.866*	-0.739*	-0.180
Education	-0.874*	-0.745*	-0.174
Health	-0.838*	-0.716	-0.180
Non Profit	-0.488*	-0.345	-0.058
Other Services	-0.860*	-0.660*	0.003
Broadcast	-0.859*	-0.668*	-0.017
Total	-0.884*	-0.709*	-0.051
*denotes statistically significant at 95% CI			

Finally to shortlist a few sectors that statistically had the strongest correlations between output and traffic fatalities, a simple step-wise regression was estimated.

Number of Observations		17	
R-Square		0.957	
F-Statistic		65.99	
P-value		<0.0001	
Variable	Std Beta	t-stat	p-value
Constant	-	12.17	<0.001
Other Manuf	-2.68	-5.97	<0.001
Oil Refinery	2.13	7.17	<0.001
Water Transp	1.11	4.48	0.001
Crop	-1.33	-3.81	0.002

SPEECH BY THE CHAIRMAN OF THE 3RD ANNUAL LECTURE SERIES 2011: DEPUTY SENATE PRESIDENT OF THE FEDERAL REPUBLIC NIGERIA, SEN. IKE EKWEREMADU (CFR).

Let me start by acknowledging the very daunting task which this organization has been performing since its inception 23years ago. I am sure you will agree me that the road transport system remains the back bone of our socio-economic well-being and development.

In recent times, we at the National Assembly have had course to ventilate on the current dilapidated state of our roads. Obviously, this sordid state of affairs negates safety and puts pressure on agencies responsible for our safety on our roads. I am therefore, most delighted to be part of this occasion aimed at providing the needed platform for cross-fertilization of ideas and proffering solution to this endemic problem.

The Decade of Action encapsulates three underlying principles as follows:

The first principle is to develop a safe system approach that is able to accommodate human error and take into consideration the vulnerability of the human body.

Secondly is to ensure that activities geared towards achieving the goals of the Decade of Action should be implemented at most appropriate levels, encouraging ownership at national and local levels as well as multi-sectoral involvement.

Finally it is to ensure inclusive approach, so that all the stakeholders are included to work towards the achievement of the objectives; non-governmental organizations, civil society the private sectors should be included in the development and implementation of national and international activities towards meeting the decade's goals.

Let me therefore, reassure you on behalf of the National Assembly that we will continue to support all efforts aimed at achieving the laudable programmes of the Decade of Action through appropriate legislation. Once again, I wish you a fruitful deliberation.

Using national data from 1990 to 2006, simple correlations between economic output of the various sectors and the total number of traffic crashes were estimated.

Sectors	Crashes	Killed	Injured
Crop	-0.879*	-0.698*	-0.019
Livestock	-0.903*	-0.717*	-0.046
Forestry	-0.866*	-0.672*	-0.007
Fishing	-0.877*	-0.686*	-0.018
Coal	0.745*	0.639*	0.070
Petrol & Gas	-0.863*	-.0697*	-0.076
Metal Ores	-0.855*	-0.649*	-0.051
Quarry	-0.859*	-0.685*	-0.040
Oil Refinery	-0.806*	-.610*	0.014
Cement	-0.855*	-0.695*	-0.073
Other Manufacture	-0.910*	-0.741*	-0.069
Electricity	-0.692*	-0.526*	0.067
Water	-0.918*	-0.721*	-0.055
Construction	-0.857*	-0.687*	-0.040
Wholesale & Retail	-0.887*	-0.711*	-0.050
Hotel & Restaurant	-0.830*	-0.694*	-0.073
Rd Transport	-0.877*	-0.725*	-0.055
Rail Transport	0.541*	0.527*	0.417
Water Transport	-0.869*	-0.643*	0.020

Most studies have simply assumed a one-way cause-and-effect relationship from economic activities to traffic crashes through motorisation (top figure).

To capture the effect of traffic crashes on economic development would require rich dataset and advanced econometric modelling. Nevertheless, simple statistical analyses would still provide us with some useful preliminary results.

8. Traffic Crashes and Nigerian Economy

Using cross sectional data from 37 states in 2006, correlations between potential social economic factors and traffic crashes were estimated.

Factors	Crashes	Killed	Injured
Asphalt Road	0.439*	0.658*	0.641*
Total Fed Rd	0.124	0.280	0.284
Land Size	-0.203	0.037	-0.005
Population	0.382*	0.482*	0.380*
Edu (5 credits)	0.136	-0.003	-0.015
Enhanced License	0.035	0.005	-0.084
Uniform License	0.109	0.036	-0.027
Vehicles	0.193	0.254	0.123
Police	0.335*	0.444*	0.318
Crop Employment	0.062	0.404*	0.222
*denotes statistically significant at 95% CI			

GOODWILL MESSAGE ON THE 3RD ANNUAL LECTURE SERIES BY THE HONOURABLE MINISTER OF THE FEDERAL CAPITAL TERRITORY

PROTOCOL

First let me thank you for choosing the Federal Capital Territory to host this programme. Importantly, I appreciate the FRSC for having in place such an auspicious programme as the Annual Lecture Series which seeks to draw the attention of the motoring public to frequent crashes on our roads.

2. Globally, road traffic crash has become an enigma that is as worrisome as it is unacceptable therefore, Nations, Governments and Authorities are leaving no stone unturned in a bid to taming if not totally eradicating it. Presently taking the lead in the hierarchy of threats to human existence and by extension a great challenge to the socio-economic well being of nations, Road Traffic Crashes must not be left to exist.

3. I believe that this 3rd Annual Lecture Series today tagged "**Achieving Decade of Action on Road Safety 2011-2020**"; **Integrating road safety into National Development**" is very timely and significant, because it will provide us with the opportunity to discuss and pool our wisdom regarding how we can evolve to meet the demands of our time as it relates to mishaps on our roads.

4. FRSC has metamorphosed into an enviable height via its strategic approach to ensuring a safe motoring environment for the Nigerian populace thereby transforming the country into a safe haven for businesses to thrive as well as enabling safety of lives.

5. The Resource Persons for this Lecture Series are experienced professionals hence I have no doubt that efforts will be exhausted in ensuring a most fruitful outcome.

6. In conclusion, I congratulate the Management Team of the Federal Road Safety Commission led by the amiable Corps Marshal and Chief Executive and wish you all a relaxed stay in the FCT.

7. Thank you all and God bless.

In China, police recently stopped a minivan that carried 66 children the van was designed to carry a maximum of 8 passengers.

Road safety will have a significant effect on efforts to reduce poverty and social inequality in developing countries.

7. Safety and Economic Output

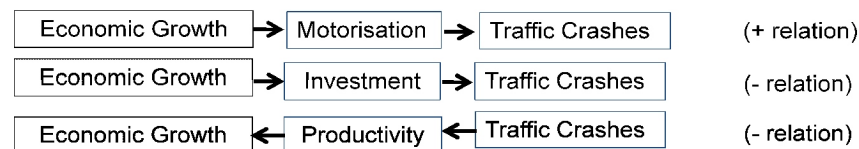
The impact of traffic crashes on economic growth depends on many factors, mainly through the economic and social costs of these crashes. However, not all costs have a direct impact on economic output as measured using current indicators.

□ The effect of a disruption in labour supply will depend on the excess capacity (unemployment rate) and the substitutability of labour.

□ For example, death and injury to a skilled operator of an expensive and highly specialized equipment versus an unskilled labour.

□ The effect of a disruption in traffic will also depend on how critical delays in transportation services are to that particular sector of the economy (e.g., just-in-time production, perishable items, etc).

It is very difficult to disentangle the various causes and effects between economic growth and traffic crashes.



These costs can often amount to about 1%-3% of GNP of many countries (WHO, 2004; TRL, 1997).

6. Traffic Crashes and Economic Development

The economic cost of traffic crashes and fatalities are very high in developing countries. The most productive age group (15-44 years of age) accounts for the highest rates of traffic crashes and fatalities.

As motorisation in developing countries increases, there is an increase in the likelihood of collisions between motor vehicles and vulnerable road users like cyclists, pedestrians and other motorised road users who are not well protected.

Moreover, unlike developed countries, much of the initial increase in motorisation often results from an increase in motorised two wheelers that are also not well protected. In Nigeria, for example, there were 643,424 plate numbers processed in 2010 and 306,234 (47.6%) were for motorcycles.

Another key aspect of economic development and traffic fatalities in developing countries that is not often seen in developed countries is the overloading of heavy vehicles. Overloaded converted pick-up trucks and minibuses are often the only affordable means of motorised transport for many of the poorer members of society (Befeki, 2006). In Nigeria, for example, such vehicles are called "molue" (moving morgues) or "danfo" (flying coffins) (Befeki, 2006).



WELCOME ADDRESS BY CORPS MARSHAL AND CHIEF EXECUTIVE DURING THE THIRD ANNUAL LECTURE SERIES, 16TH NOVEMBER, 2011, AT THE NICON LUXURY HOTEL, ABUJA.

PROTOCOLS

The global focus on the effect of road traffic crashes was heightened in 2004 with the publication of the World Report on Road Traffic Injuries which also offered six key recommendations for governments that are desirous of reducing road traffic crashes:

- Identify a lead agency in government to guide the national road traffic effort.
- Assess problems, policies and institutional settings relating to road traffic injury (RTI) and the capacity for RTI prevention in each country.
- Prepare a national road strategy and plan of action.
- Allocate financial and human resources to address the problem.
- Implement specific actions to prevent road traffic crashes (RTC), minimise injuries and their consequences and evaluate the impact of these actions.
- Support the development of national capacity and international cooperation.

WHO estimates that over 1.3 million people are killed by Road Traffic Crashes and 50million injured on the world's road annually. Over 80% of this figure occurs in the developing countries with Africa having the highest death rate.

It also predicts that if nothing is done by countries to stem this tide, death by RTC would increase by 65% by 2015-2020 overtaking malaria and tuberculosis.

The United Nations General Assembly has designated 2011-2020 as a "Decade of Action on Road Safety" for dedicated intervention by governments to bring down the estimated rise in RTC deaths by 50%. Currently in Nigeria RTC data on death rate is 162 deaths per 100,000 population. It means that this figure must come down to 81 deaths per 100,000 population. Nigeria is also currently 191st out of 192 countries of the world's un-safest roads. This calls for concerted efforts to ensure that Nigeria improves on its current ranking.

The United Nations advocates collaboration as a means to achieving road safety awareness in countries. Consequently we must re-establish our working relationships/and engage our stakeholders more regularly for the achievement of our goals. The corps must refocus and re strategize her various campaigns for greater effectiveness while new areas of concern such as drink drive, phoning and texting while driving, over speeding will be vigorously pursued.

One of the ways the Federal Road Safety Corp has therefore designed to keep the issue alive in the psyche of the motoring public is through the institutionalisation of the annual lecture series.

Many developing countries are going through these cycles of development and traffic fatalities.

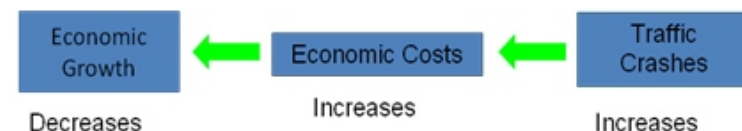


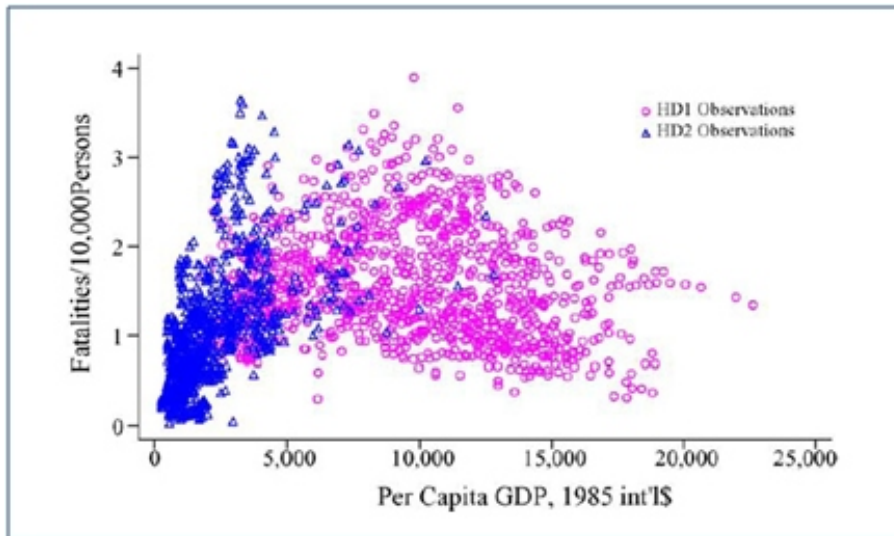
5. Economic Costs of Road Crashes

Road traffic crashes extract a very high cost from society. These costs include:

- Intrinsic cost (value of life, pain and suffering, etc).
- Loss productivity due to deaths and injuries
- Material damage to vehicles, infrastructures, etc
- Healthcare cost (emergency, hospitalisation, outpatient, etc)
- Administrative cost (police, insurance, transport, etc)
- Travel cost (congestion, disruption in transportation services, etc)

The economic cost of traffic crashes and fatalities in developing countries has been estimated at \$65 billion per year (WHO, 2004).





Source: Kopits & Cropper (2005); 88 countries; 1963-1999

As a country develops, the rate of motorisation tends to increase and this increase in motorisation will likely result in an increase in traffic crashes. In many low income countries, economic development has a very high priority, and hence a positive relationship is often observed between growth and traffic fatalities.

According to the International Energy Agency, the road vehicle population is estimated to increase from 170 million in 1996 to 454 million in 2020 in developing countries (Bekefi, 2006). In low and middle income countries, traffic crashes are expected to increase by 80% (WHO, 2004).

However, as a country becomes a developed country, the rate of motorisation is likely to slow down. In addition, the demand for safety increases and becomes increasingly important. This shift will often lead to more investments in road safety, thereby resulting in fewer traffic crashes and deaths.

Every year, a carefully selected topic is brought to focus aimed at provoking discuss that would further give direction to the activities aimed at achieving safer motoring environment.

The Corps is not unmindful of the role of other Government agencies whose inputs impact directly on road safety and is poised to actively work with these to achieve a road safety friendly country where people can travel without fear of not reaching their destinations and motor parks have become mini churches.

I call on Governments at the various levels to support road safety initiatives that are geared towards saving the lives of our citizens as this is also the primary responsibility of any government and the private sector to give support not only financial but to share best practices with relevant stakeholders to improve processes.

We call on all Nigerians to join hands with us to ensure Safer Roads and Fuller Lives. Let us commit to the activities of the Decade of Action.

Thank you and God Bless.

Decade of Action for Road Safety: Integrating Road Safety into Economic Development

By
Professor Richard Tay

Good Morning His Excellency, distinguished guests, ladies and gentlemen. I like to thank the Federal Road Safety Corps, especially Corps Marshal Osita Chidoka and Deputy Corps Marshal Adeyemi Omidiji, for inviting me to this beautiful country. It is an honour and privilege to share with you, and to learn from you, through mutual exchange of knowledge on a subject that is very important to all of us here today - Saving Lives on the Roads

1. Background

Road crashes are a leading cause of deaths and injuries in many developed and developing countries. Around the world, about 1.2 million people are killed on the roads each year (WHO, 2004). This tragic loss of lives is more than the total losses resulting from all the wars.

Second, as the economic activities increase, the demand for risky driving activities also tend to increase, including speeding, drinking and driving, driving while fatigued, recreational driving, etc.

A variety of economic indicators have been used in the literature including employment, leading index, retail index, new cars sales and unemployment rate. Overall, there appears to an inverse relationship between economic activities and road safety in developed countries (economy booming more crashes).

1. Economic Development and Traffic Fatalities

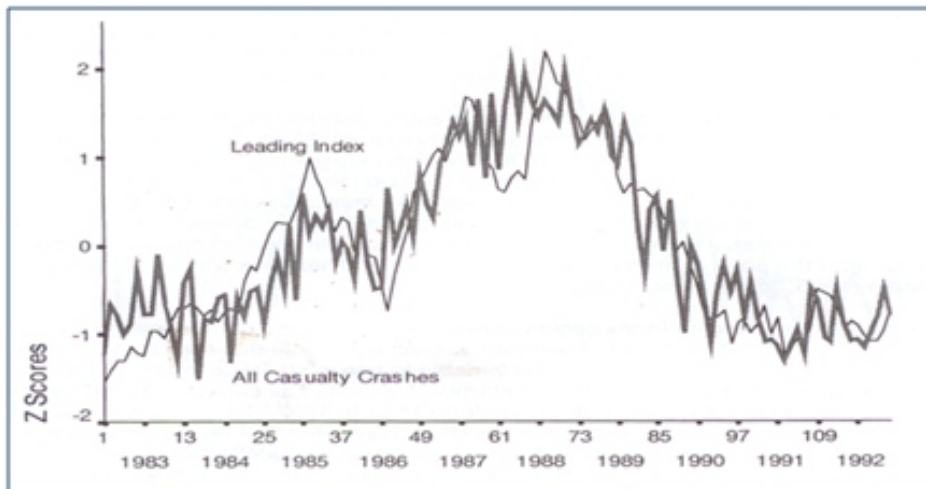
There is a close relationship between economic development and growth in transportation services. First, an increase in economic activities will likely result in an increase in travel. Second, better transportation services will also likely lead to higher economic growth.

One reason for the fluctuations observed would be the influence of economic activities and business cycles.

1. Economic Activities and Traffic Safety

Economists have long realized that there is a relationship between the level of economic activities and traffic safety (Tay, 2004).

Trends in Leading Index and Serious Crashes in Victoria, Australia



There are two major factors influencing the relationship between economic activities and traffic safety. First, as the level of economic activities increases, the level of traffic on the road also tends to increase. This increase in exposure is likely to result in more traffic crashes.

and terrorist attacks combined. In the United States alone, about 42,000 are killed every year equivalent to one 9/11 attack every month. Traffic deaths and injuries worldwide are forecasted to increase by 65% between 2000 and 2020 and increased by 80% in low and middle income countries (WHO, 2004).

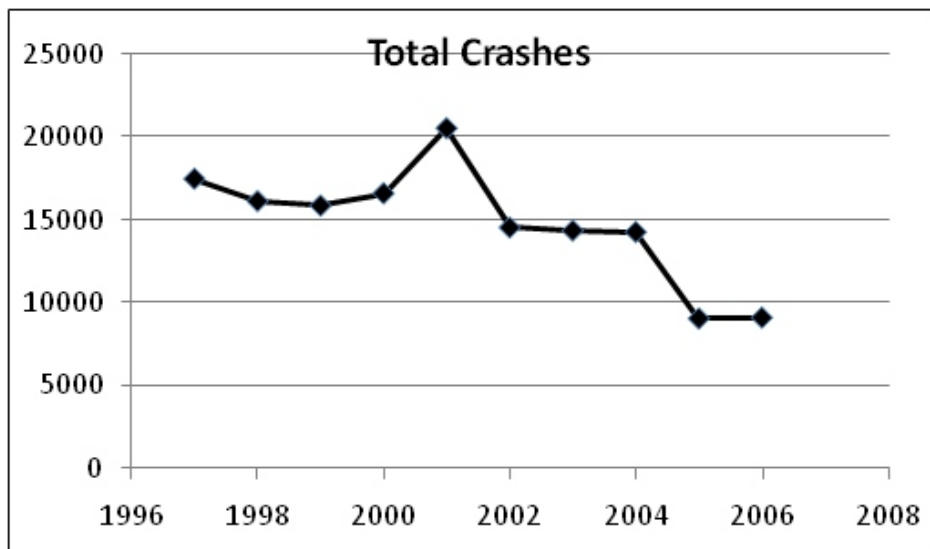
1. Road Traffic Fatalities in Nigeria

Table 27 Road safety indicators for 10 African countries

			Fatality risk (deaths/ Road 100,000 fatalities pop)	Motor -isation level (mv/1000 pop)	Fatality rate (deaths/ 10,000 mv)	GNP per capita (US\$)
Year						
South Africa	1994	9,981	27	158	17	3458
Nigeria	1993	8,958	8	12	65	291
Algeria	1993	3,678	13	52	24	1529
Kenya	1993	2,516	9	14	64	353
Ethiopia	1996	1,693	3	1	195	112
Uganda	1995	1,594	8	7	122	335
Tanzania	1994	1,548	5	5	111	217
Zimbabwe	1996	1,205	11	64	17	730
Malawi	1996	1,090	11	6	193	213
Zambia	1996	928	10	26	39	384

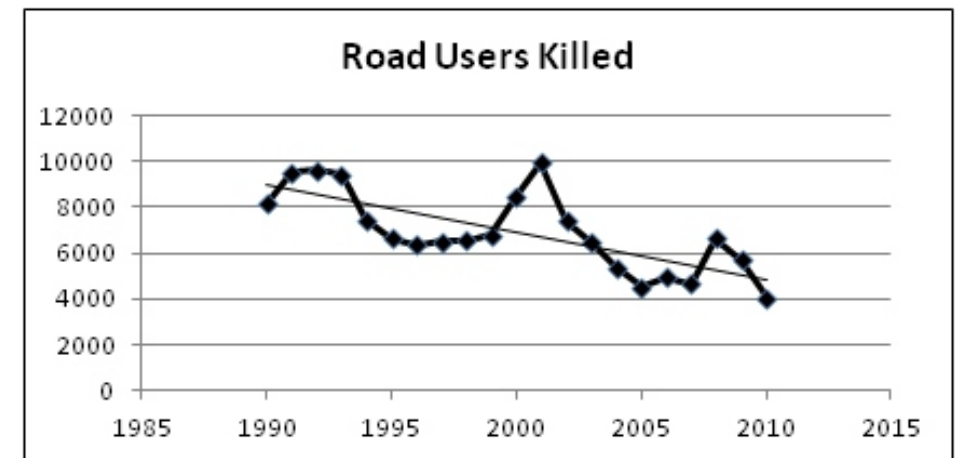
Source: IRF 1999 and country studies

Among the African countries, Nigeria has a relatively good road safety record. In 1993, it had 8958 traffic fatalities which would result in about 8 fatalities per 100,000 population and about 65 fatalities per 10,000 vehicles (TRL, 2000). More importantly the situation here has been improving over recent years. In 2010, the number of deaths on the road had dropped to 4065, which is a rather impressive achievement.



Similarly, the number of traffic crashes had also decreased significantly from 1997 to 2006, except in 2001 which experienced a spike in total crashes.

In terms of the number of road users killed, there was also general downward trend from 1990 to 2010.



From the figure above, it is clear that traffic fatalities are random events, with fluctuations, although there is a clear downward trend. Hence, it would be important to consider most road safety measures using at least 3-5 years of data.