



Dr. S. Gangopadhyay

CRRI, India

Road User Behaviour in Developing Countries



Dr . S. Gangopadhyay
Director

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CSIR-Central Road Research Institute, New
Delhi

Road User Behaviour=Traffic Accidents

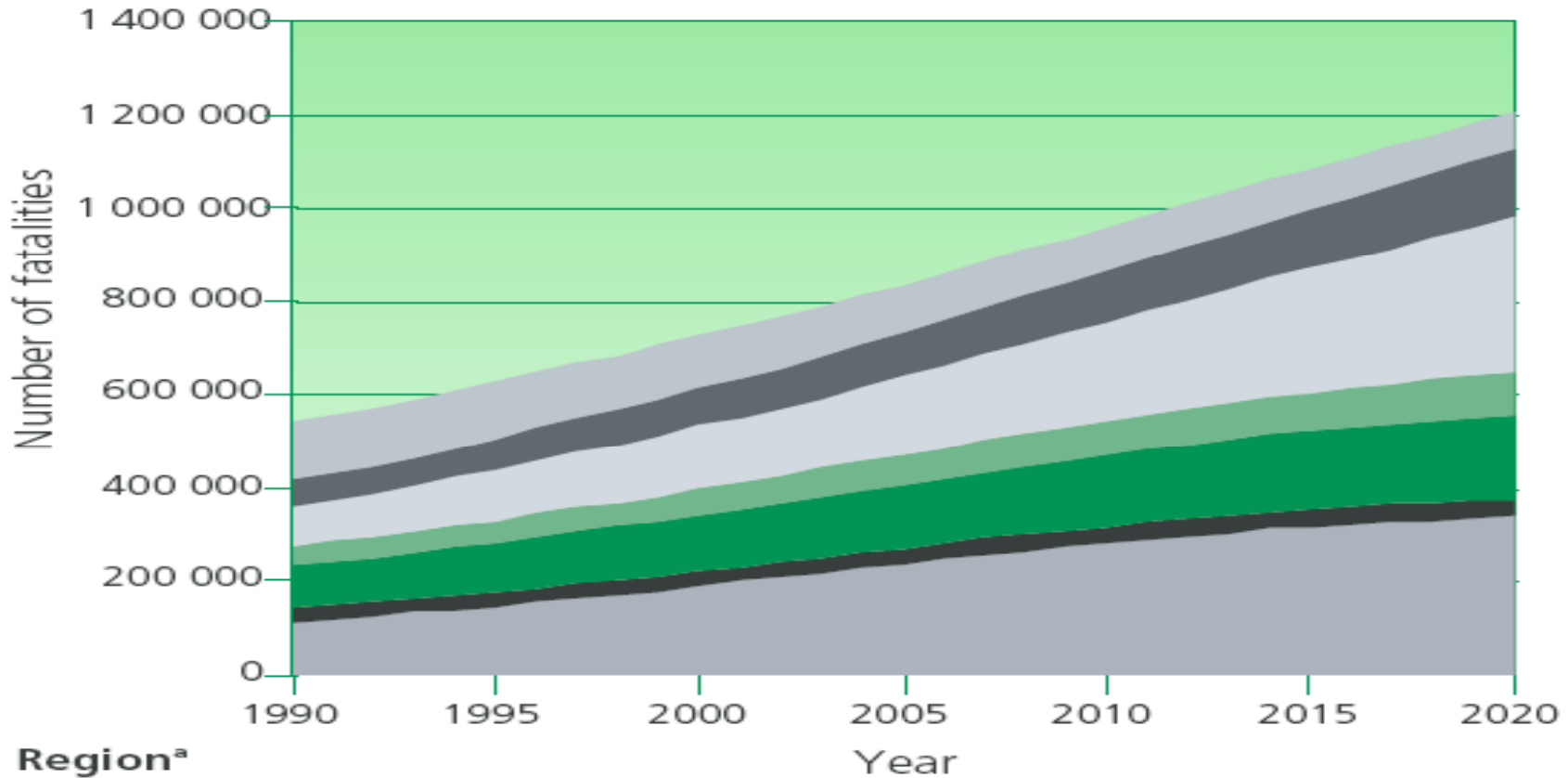
Generally , studies highlight that road users behaviour are linked with the accidents , but in-depth study of the road user behaviour done in different countries highlight that uncorrelated interaction of several factors lead to an accident .For example :

- **Open access of pedestrians on high speed corridors**
- **Commercial complexes, malls, and villages ,**
- **Novice/semi/unskilled drivers on luxury cars,**
- **Poor road crossing facilities**
- **poor driver training procedures**

Accident Trends in Developing Countries

- ✿ Injuries from road traffic accidents (RTAs) are the most significant problem, so that motor vehicle-related mortality has been described as a 'disease of development' (Wintemute, 1985)
- ✿ There have been 'Dramatic increases in proportion and absolute number of traffic fatalities in a number of developing countries (Odero *et al.*, 1997)
- ✿ Of all road related fatalities occurring globally each year, 74% are in developing countries .
- ✿ 5-fold increase in traffic-related deaths in Nigeria over the last 30 years (Odero *et al.*, 1997)
- ✿ Focus on RTAs is essential as these accounted for 10% of deaths between the ages of 5 and 44 in 11 developing countries (Jacobs and Sayer, 1983)

Projected Road Safety Scenario

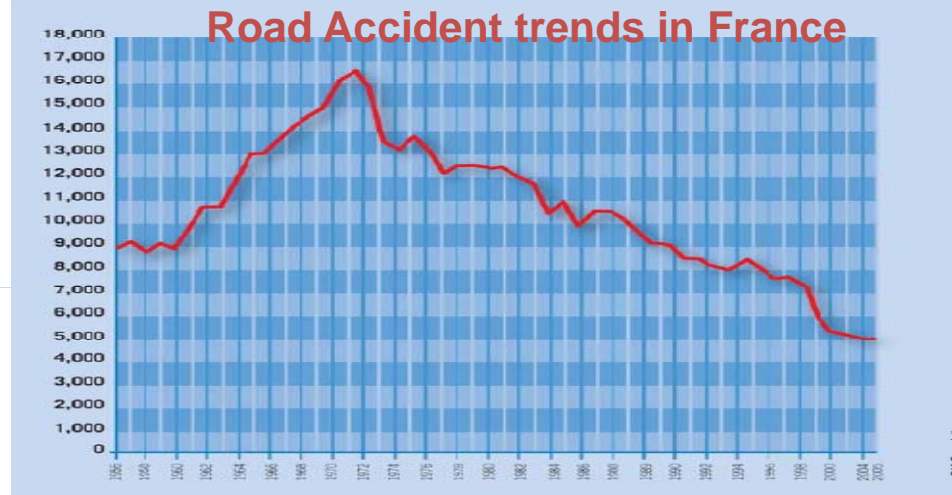
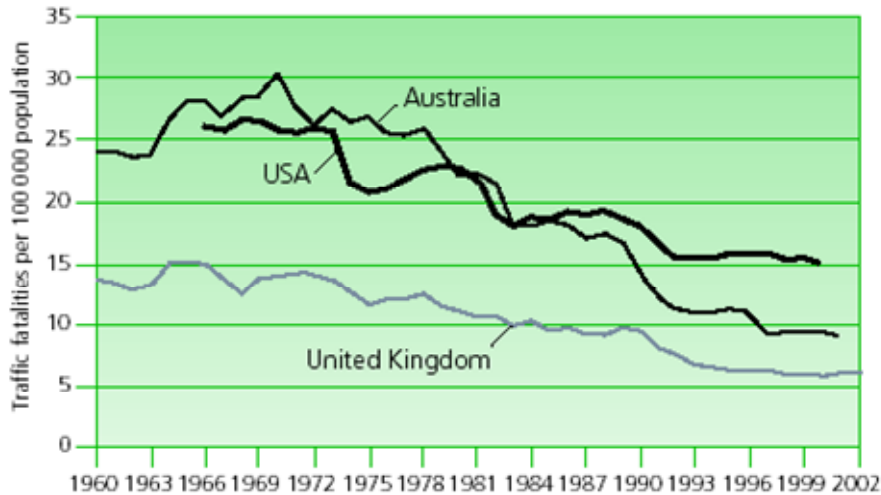


Region^a

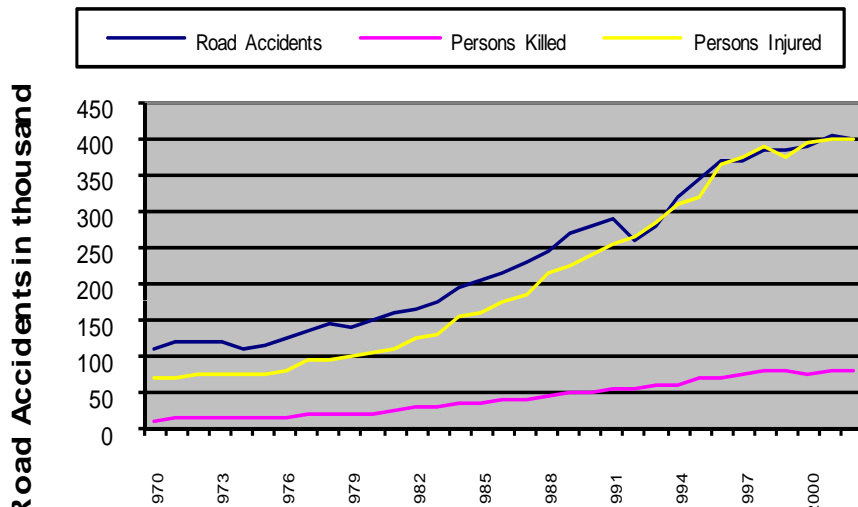
- High-income countries^b
- Sub-Saharan Africa
- East Asia and Pacific
- East Europe and Central Asia
- Latin America and Caribbean
- Middle East and North Africa
- South Asia

Road Accidents are not Inevitable

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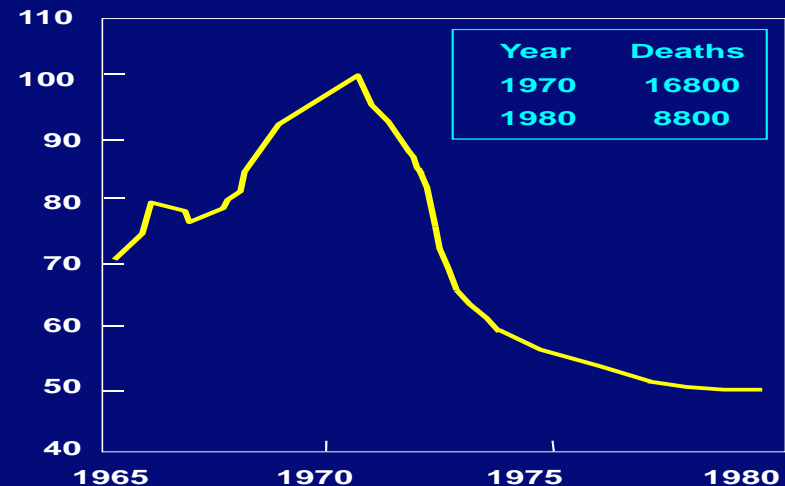


Accident Trends in India

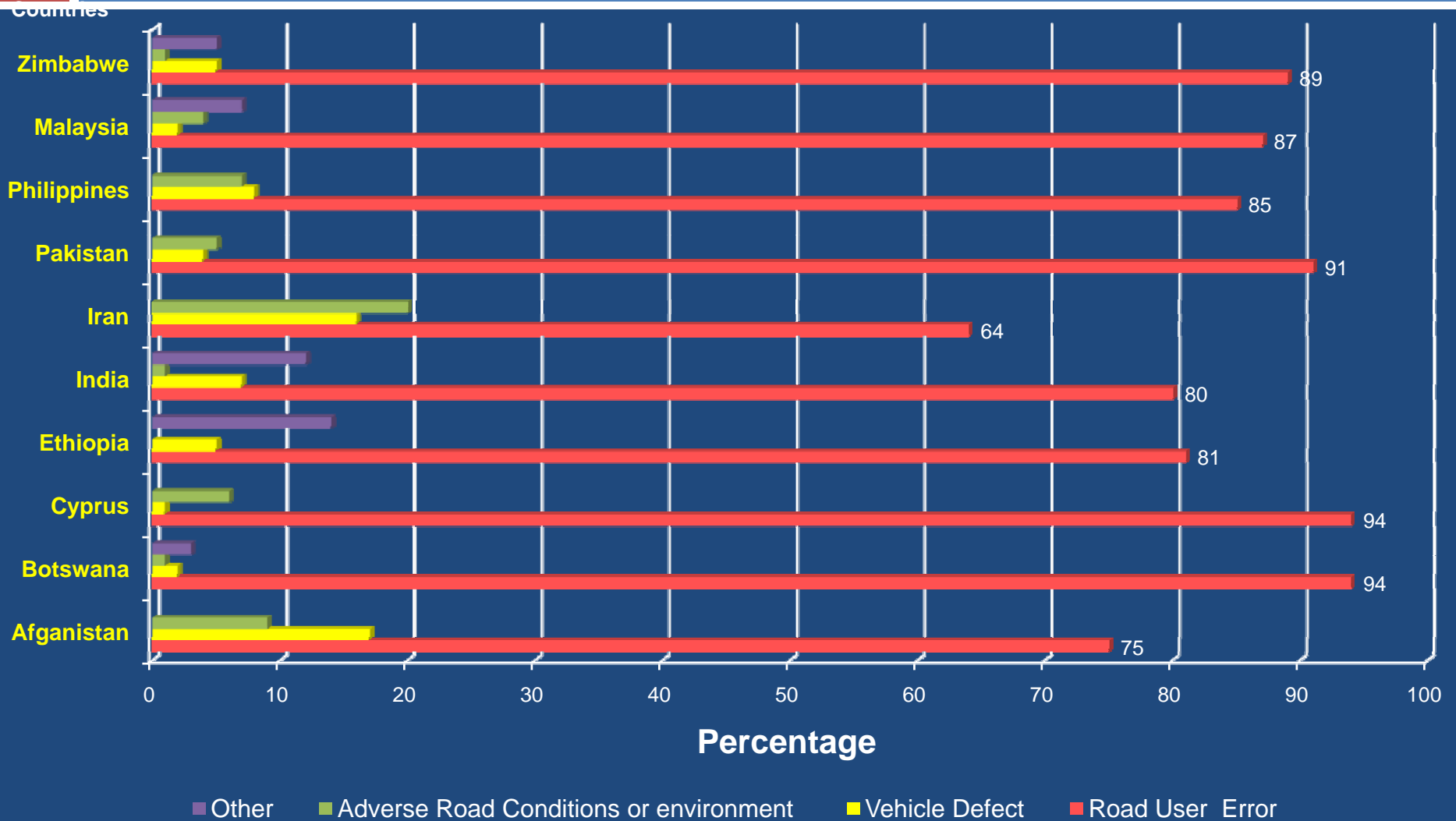


Road Deaths Index (1971=100)

Accident Trends in Japan



Causes of Road Accidents

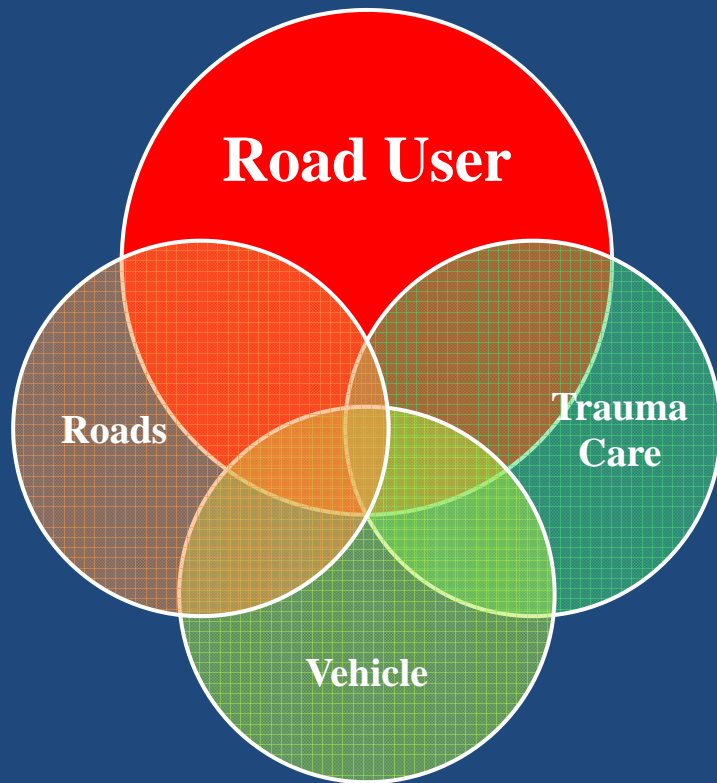


(Greg Chen, 2010)

Factors for Risk Taking Behaviour

- ❑ Limited Psycho-motor Abilities and Coping Behaviour
- ❑ Life constraints among commercial drivers
- ❑ Poor psycho-physical capacity for attending all road side hazards
- ❑ Bullying /Me First Attitude of Driver vs. NMT Users (Psychological Right of Way)
- ❑ Varying Reaction Time of driver vs. NMT users
- ❑ Judgment capacity of speed and distance of oncoming vehicle of Drivers vs. NMT users.
- ❑ **Young Drivers.**
- ❑ **Thrill Seeking Attitude Among Young Drivers**

Major Factors for Accidents



Road User Factors involve:

- Over speeding
- Drunken Driving
- Not using safety devices
- Ignorance of traffic rules
- Mental Stress
- Excessive Driving Time

Vulnerable Road Users

- **PEDESTRIANS** (40% - 50%)
- **CYCLISTS** (15% - 20%)
- **TWO-WHEELER RIDERS**(15% - 25%)

Risk taking Behaviour of Pedestrians

- **Wrong Choice of Crossing Place**
- **Avoiding designated Cross over Facilities.**
- **Lack of Pedestrian infrastructure.**
- **Lack of Patience.**
- **Ignoring Traffic Signals.**
- **Dividing Residential Areas by Access Controlled high speed corridors.**



Dangerous Practices by Road Users





Situational Factors & Road Users Limitations

Mr. X, age 55, is driving down on a road. He is late because he promised to pick up his wife at 8:45. Mr. X is listening to the hockey game on the car radio while he looks for Front road, where his wife was to meet him

Ms. Y, wearing a dark blue coat and white hat, crosses in the middle of road without looking. Mr. X does not see her and strikes Ms Y.

Police arrive and question Mr. X, who says that he never saw the pedestrian. Mr. X admits that he has had a few beers but his blood alcohol content is .06, within the legal limit.

What caused the accident?

Contributing Factors

- ❑ Distracted driving
- ❑ Night time low visibility
- ❑ Dark clothing of Ms Y
- ❑ Ms Y walking ignorantly
- ❑ Unfamiliar part of the town
- ❑ Drunken driving.
- ❑ Slower Reaction Time of Mr X due to age

Drinking, Driving and Psychomotor Impairment - Case Study I

Objectives:

- a) To study the Drivers' Hand Steadiness with the increase in BAC level
- b) To study the Drivers' Hand Grip with the increase in BAC level

To Compare the Drivers' Hand Grip and Hand Steadiness performance between two groups of drivers i.e. Drivers' who consumed alcohol and Control Group (without alcohol)

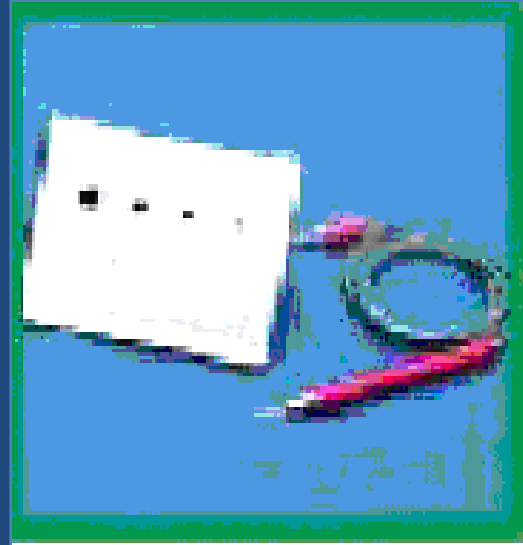
Sample:

250 drivers from Delhi, U.P. and M.P. states were randomly selected .

Instruments Used



Lion's Alcometer



Hand Steadiness Tester



Hand Grip Tester

Driver's Hand –Steadiness & Grip Test Performances at Different BAC Levels

Test S.No.	Time	BAC Level g/ 100ml	Hand Steadiness (Hole completed)	Hand Grip (LH)	Hand Grip (RH)	Hand Grip (B.H.)
919	14:44	0	8	25	30	40
1151	15:40	.099	7	24	27	38
1152	15:48	.100	7	23	25	38
1154	16:06	.100	7	25	25	39
1155	16:14	.102	6	23	22	35
1156	16:30	.110	5	21	22	35
1159	16:40	.120	5	20	19	27

Table 1: Showing % Alcohol Consumption Level Among Different Groups of Drivers (Random Sampling)

Age-Groups	Group A	Group B
>18-21	14	86
22-25	8	92
26-35	19	81
36-45	27	73
46-60	28	72

Table 2: Showing Mean Values of Grip Test & Hand Steadiness Test

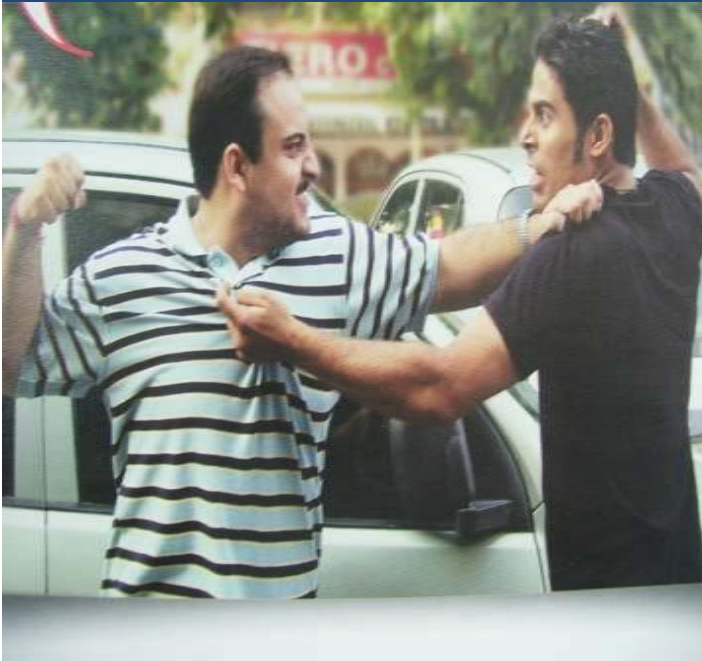
Age-Groups	Grip Test(Kg)	Hand Steadiness Test
>18-21	65.5	7.5
22-25	70.5	7
26-35	62.5	6
36-45	59	6
46-60	50.5	5.5

Table 3: Showing Mean Values of Effect of Alcohol on Grip and Hand Steadiness Performance at Different Age Levels

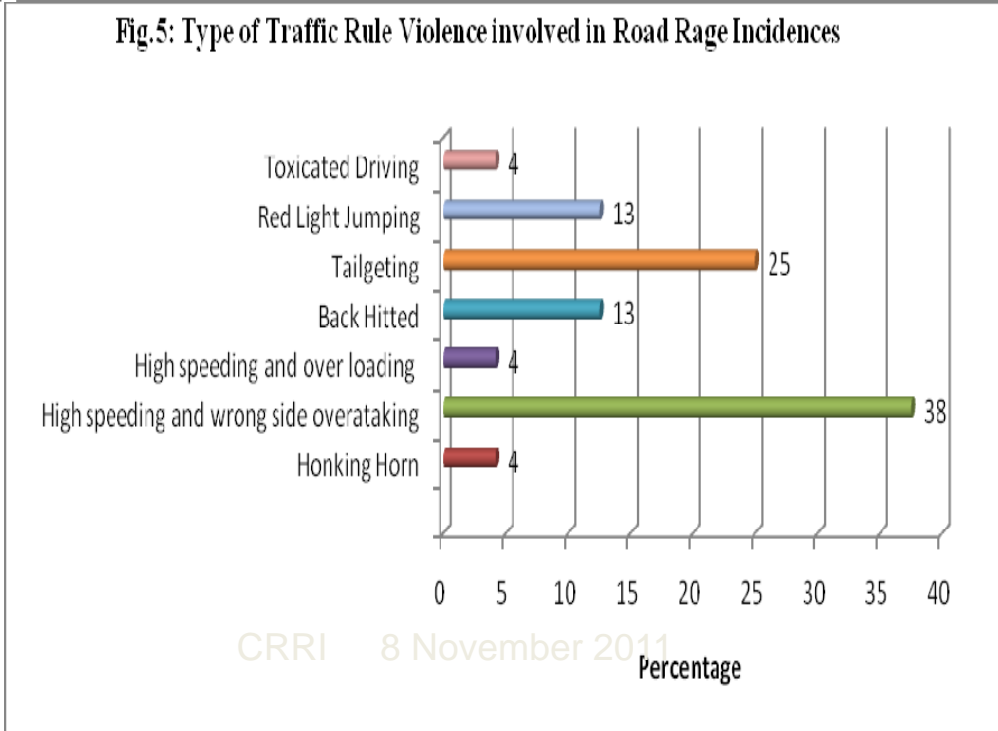
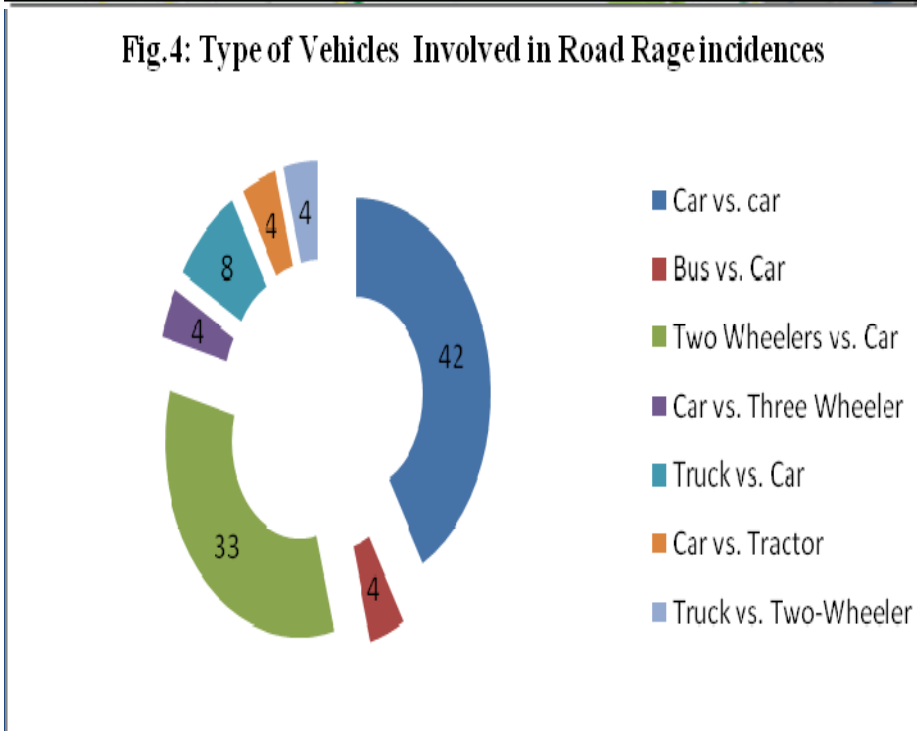
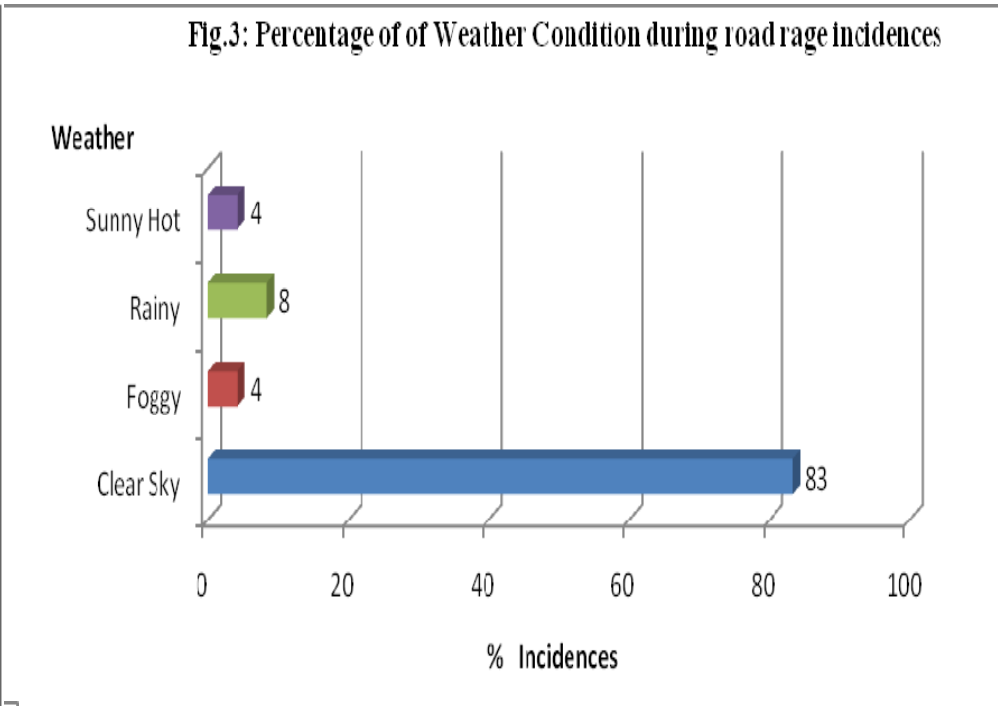
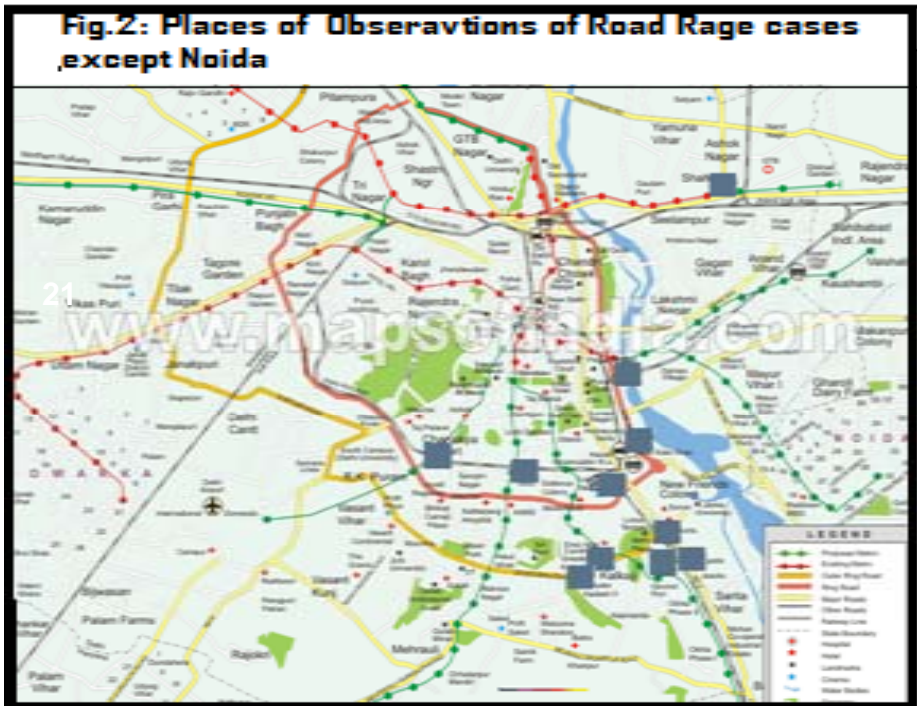
Age-Groups	Grip Test(Kg)		Hand Steadiness Test	
	Group A	Group B	Group A	Group B
>18-21	39	53	4	7
22-25	44	53	4	6
26-35	36	53	3	6
36-45	34	50	3	6
46-60	29	43	3	5

Road Rage Study in Delhi ,India -Case study II

- ▶ Road Rage is medically termed as Intermittent Explosive Disorder (IED).
- ▶ Road Ragers are mostly sufferers of disorders due to drug / alcohol or other emotional problems.
- ▶ Only 28 percent had ever received treatment for anger
- ▶ In last three years in Delhi sudden provocation prompted people to kill or physically assault each other on the road.
- ▶ In 2005-06 road rage related fatalities topped list of murder motives.
- ▶ In 2006-07 it was second highest cause in murder motives.



- Study was conducted on 191 drivers of Delhi and NCR area.
- Sample was randomly selected across age, qualification, profession and driving exposures .
- Various aggressive driving behaviour parameters were measured .



Percent Level of Aggressiveness by Age

Age of the Respondents	No Aggression	Somewhat Aggression	Aggression	Extreme Aggression
Below 18	52.5	23.1	16.8	7.5
19-25	38.2	25.2	23.7	12.9
26-35	60.7	19.7	15.4	4.2
36-45	54.9	20.1	17	8
46-55	56.1	30.8	11.5	1.6
56 & Above	63.2	22.9	9.8	4.1

Driving Distractions Study in Delhi -Case Study -III (225 Car Drivers)

Distractions		Often (%)			Sometimes (%)			Never (%)		
		M	F	T	M	F	T	M	F	T
1	Fellow Drivers	33	29	59	43	47	34	24	24	7
2	Talking to Co-passengers	49	78	55	41	18	37	10	4	8
3	Changing CD's or Cassettes	37	55	42	42	30	39	21	15	19
4	Outside Distractions	34	47	37	53	51	53	13	2	10
5	Pre-occupied	23	28	26	55	61	55	22	12	19
6	Use of Cell phone	22	18	21	37	36	37	41	46	42
7	Kids in the Vehicle	19	20	18	51	25	45	30	55	37
8	Making SMS	9	12	10	20	24	27	71	64	64
9	Alcohol, Tiredness or Medication	8	12	9	38	23	35	54	65	56

Factors Contributing to Driver Behaviour

- **Psycho-physical Characteristics of Drivers**
- **Socio-economic Characteristics of Drivers**
- **Ignorance of Traffic Signs & Rules.**
- **Long working hours .**
- **Lack of Sleep (Sleep Deprivation).**
- **Poor Eating Habits.**
- **Unfamiliar driving environment .**

Road Safety Plan

- **Ensuring Mobility for all.**
- Diagnosing and Development of Road Accidents
- **Coordinating Work of all organizations involved**
- **Procuring Funds and Resources**
- **Producing Design Guides**
- **Implementing Improvements**
- **Monitoring Implementation and Evaluating Measures**
- **Feed Back Information**

**Comprehensive Mobility Plan for all
Categories of Road Users.**



Thank You