Tackling a million deaths: Paving a path for Trauma Systems Development in India

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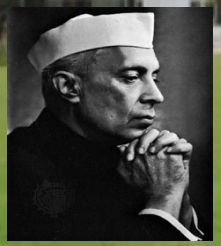
All India Institute of Medical Sciences



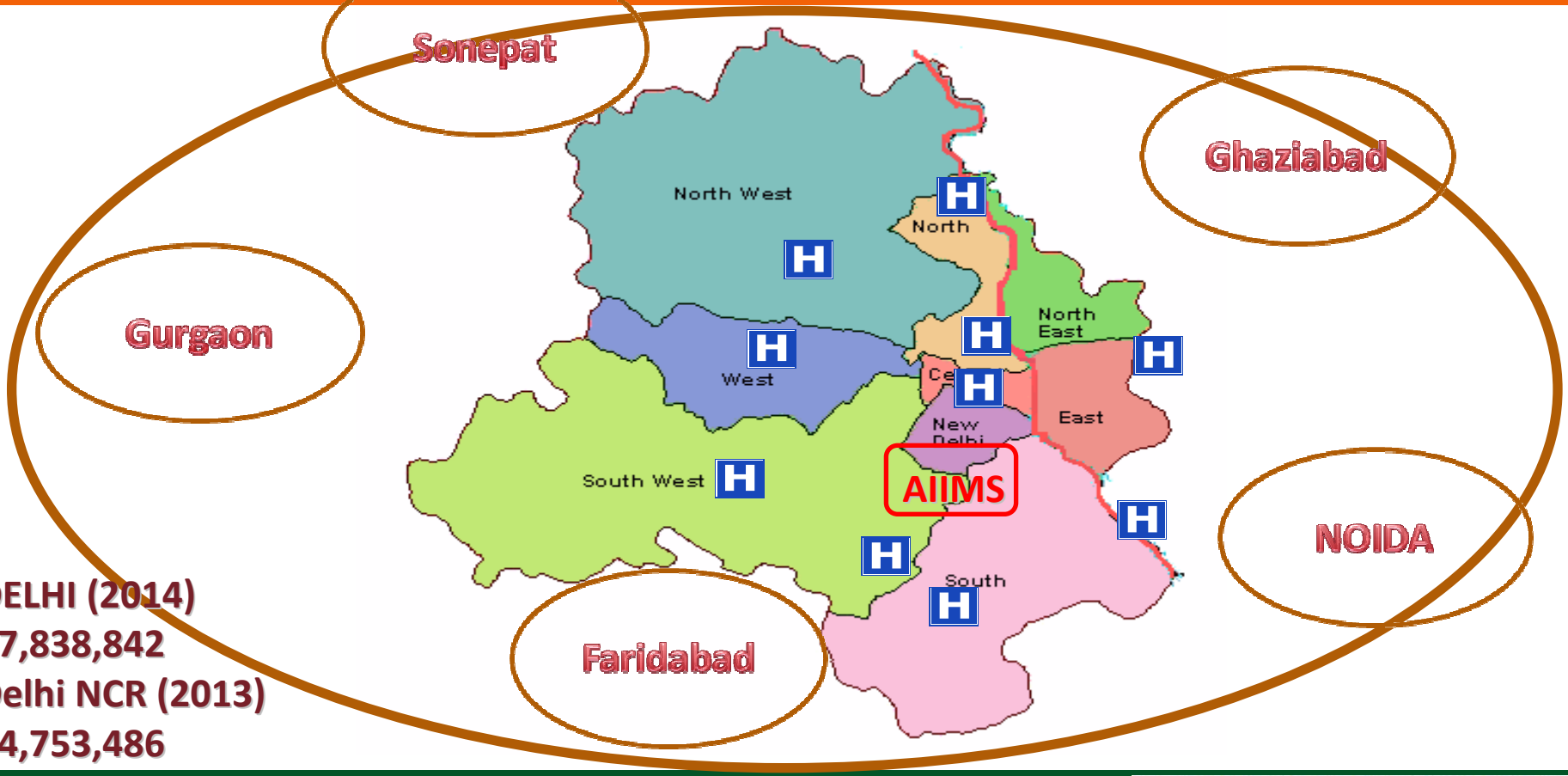
Pt Jawaharlal Nehru First Prime Minister Republic of India

Rajkumari Amrit Kaur, First Union Health Minister Republic of India

JAI PRAKASH NARAIN APEX TRAUMA CENTER
AIIMS, New Delhi Estd. 2006

- Level I - State of the art Patient Care
- Trauma Education
- Trauma Research
- Design Systems
- Role Model

Our aim is " to provide state of the art, efficient and compassionate trauma care, from resuscitation to rehabilitation, to all Acutely injured patients and those requiring its specialized services. Develop patterns of teaching, training, research and preventive strategies related to injury of highest standard."



DELHI (2014)
17,838,842
Delhi NCR (2013)
24,753,486

JPN Apex Trauma Center
All India Institute of Medical Sciences

RACS ANNUAL SCIENTIFIC CONGRESS AND
ANZCA ANNUAL SCIENTIFIC MEETING

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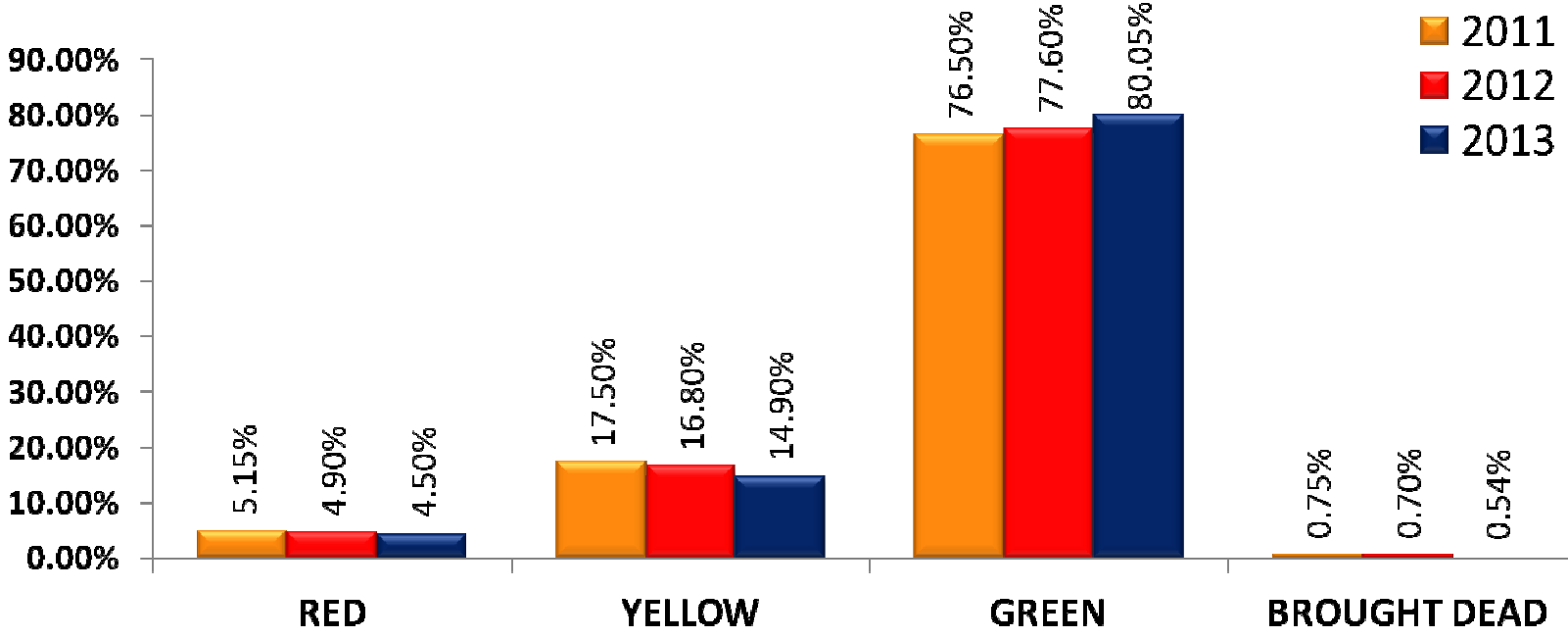
Injury Surveillance Data

APEX TRAUMA CENTRE
AIIMS, NEW DELHI

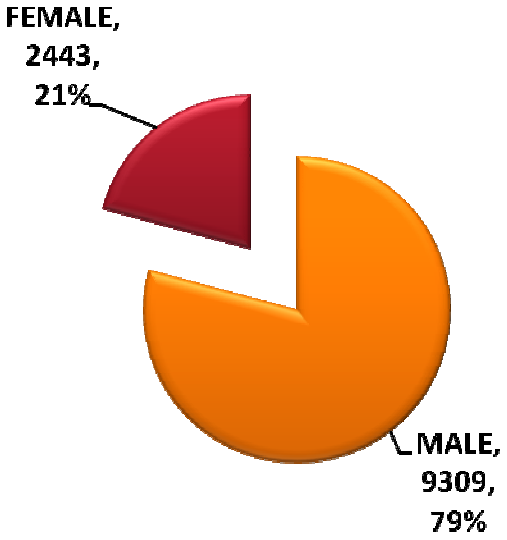
Initial Triage ED

YEAR	2011	2012	2013
E.D. FOOTFALL	49894	55698	58923
DATA ANALYSED FOR	11752	12601	11814

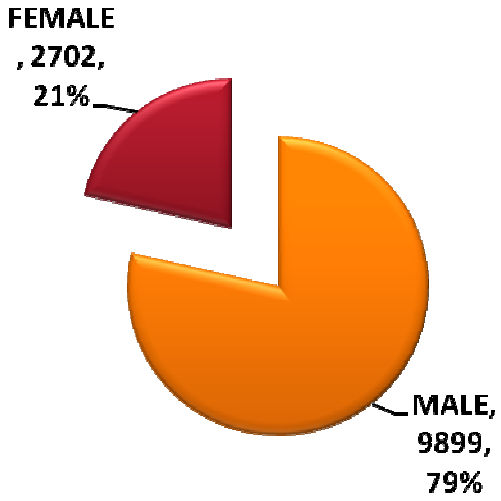


Gender Distribution

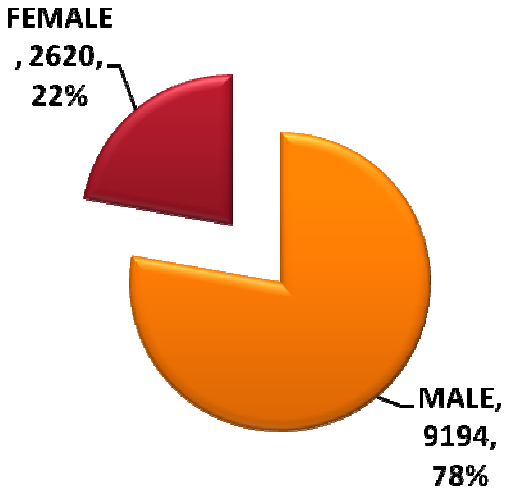
2011,N = 11752



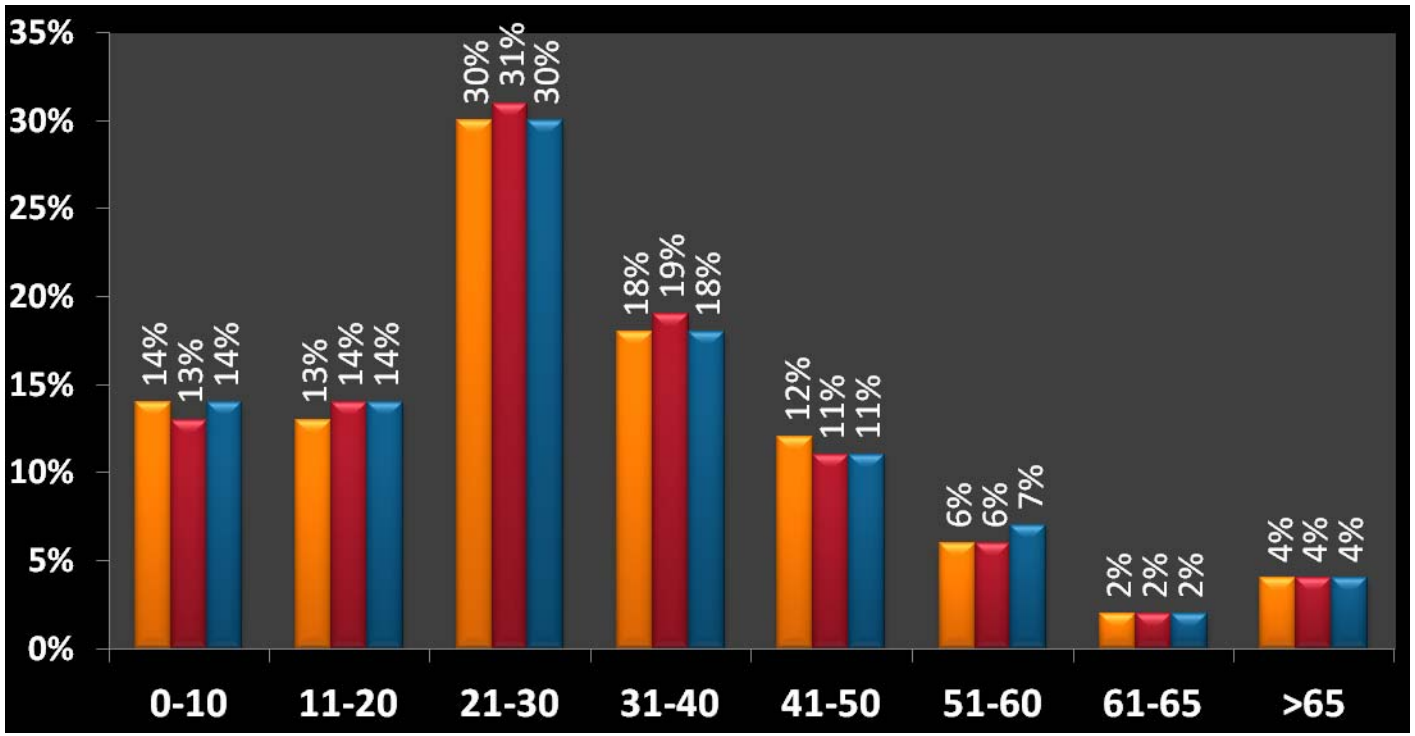
2012,N = 12601



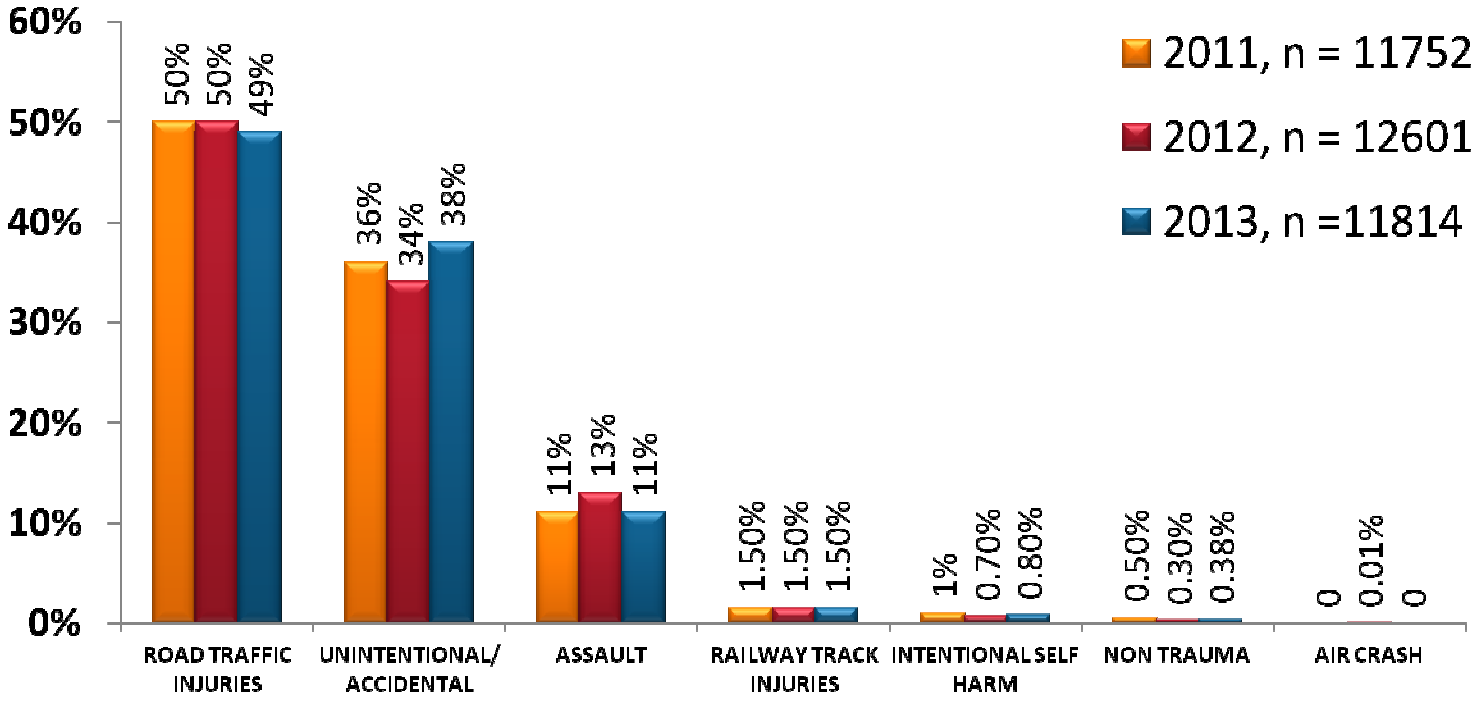
2013,N = 11814



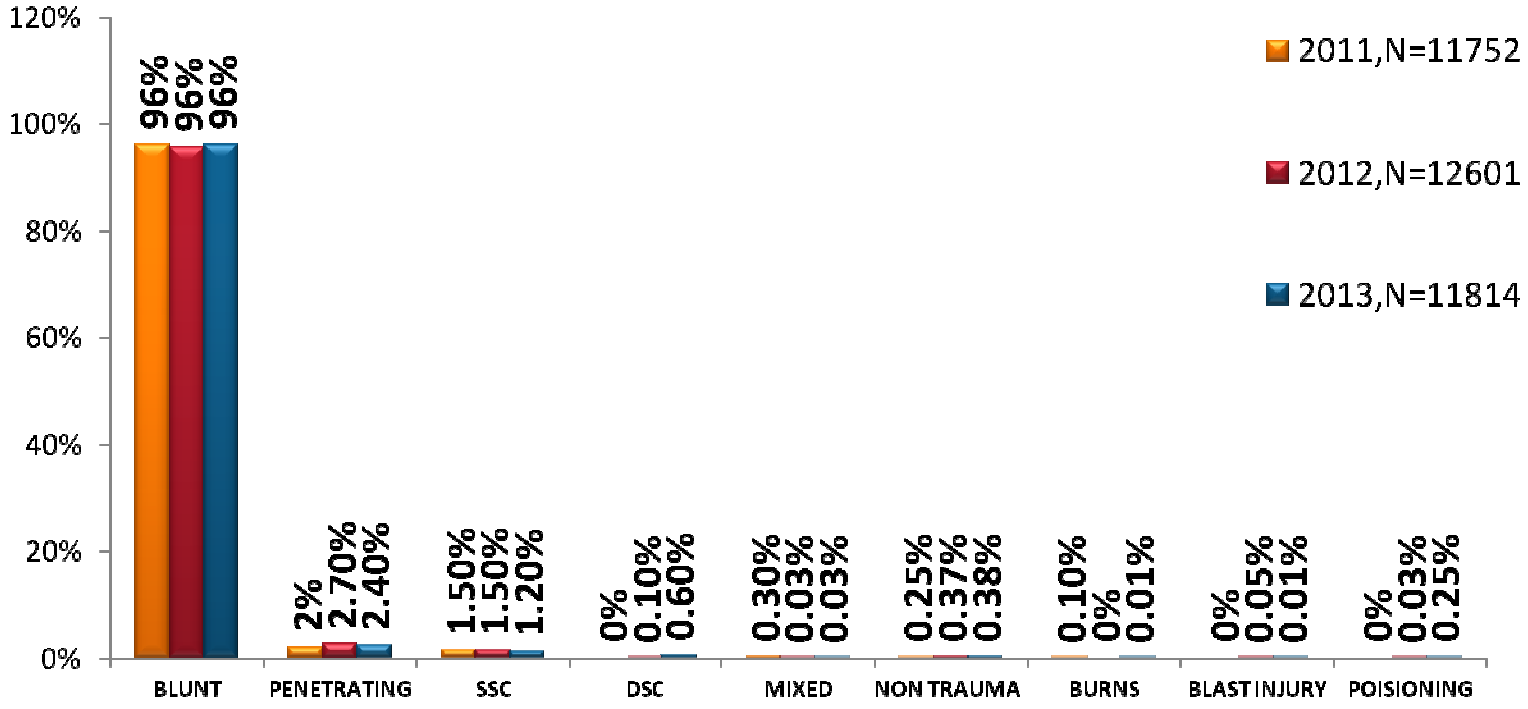
Age Distribution



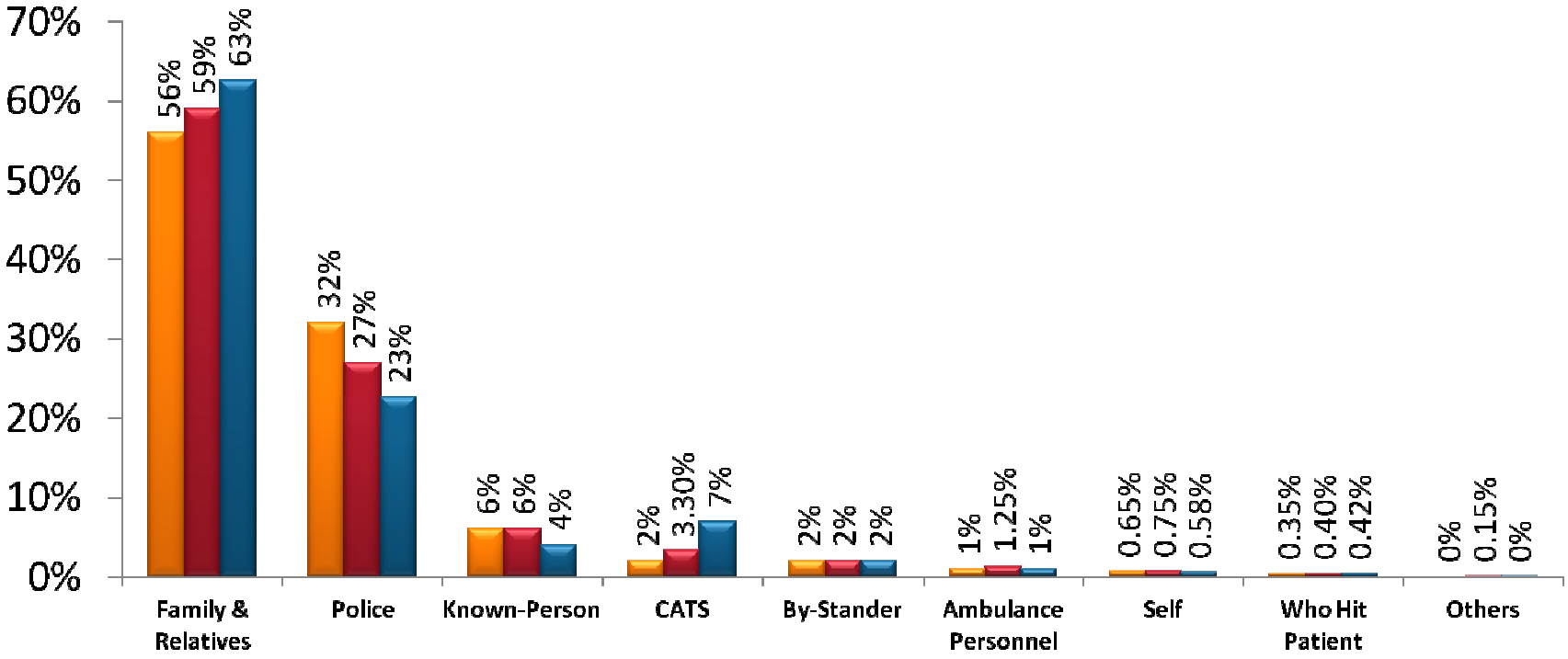
Broad Classification by Cause of Injury



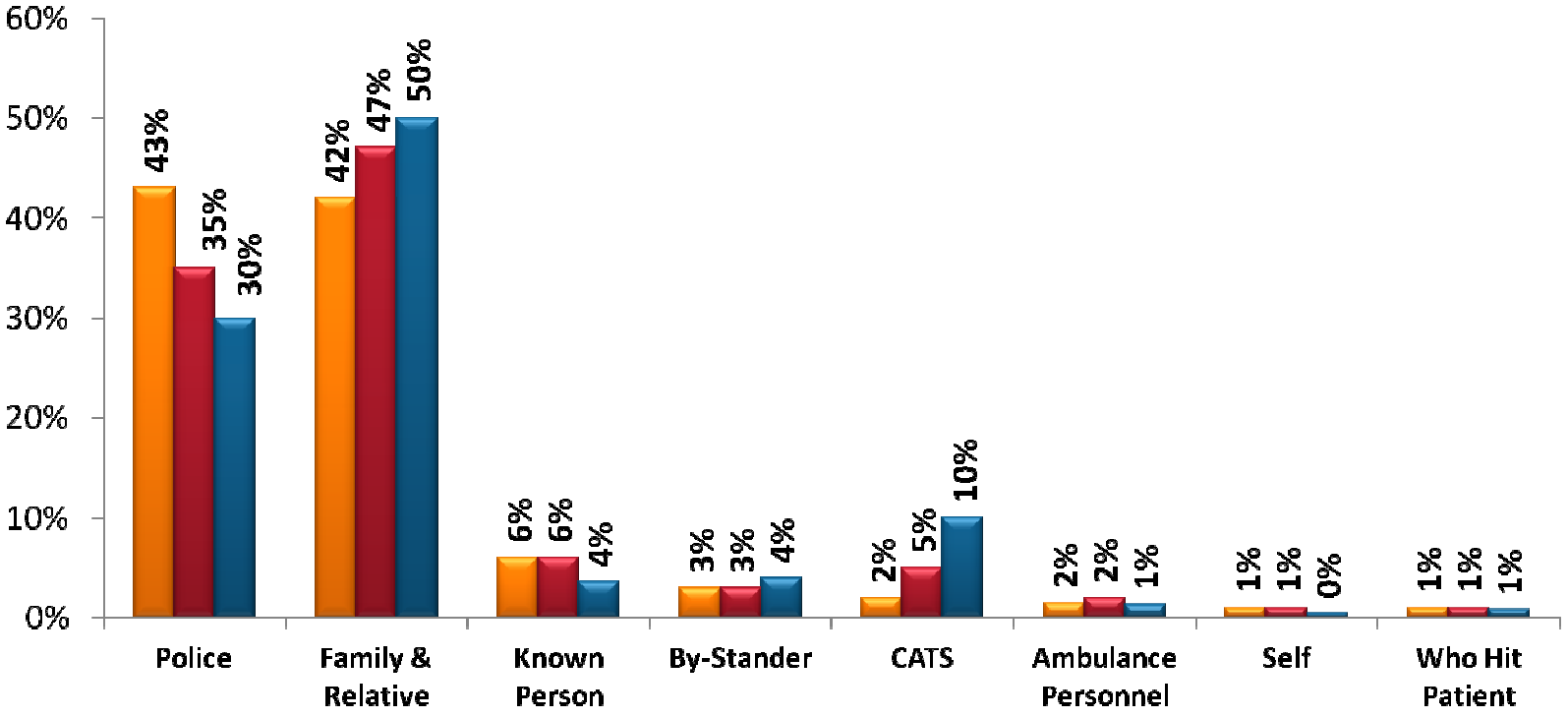
Mechanism of Injury



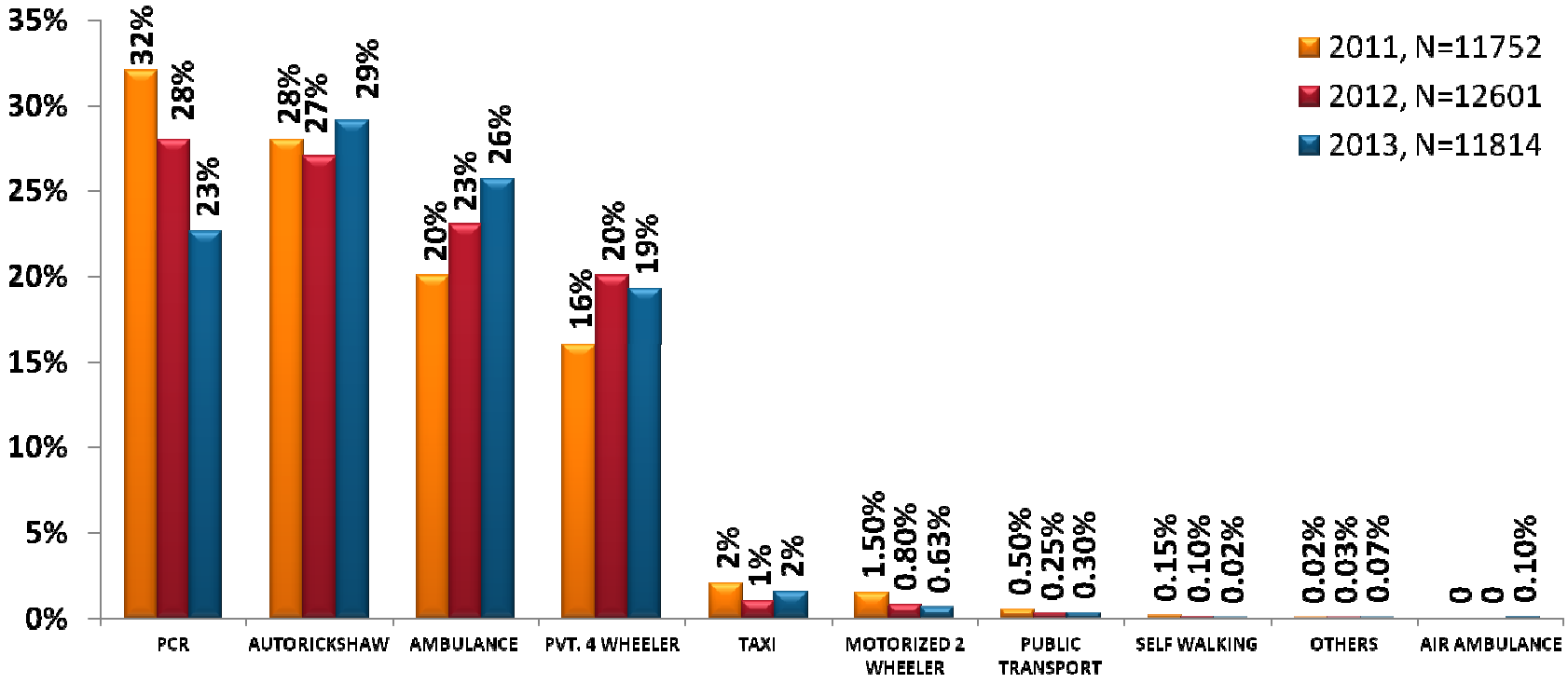
Who brought Injured Victims to Hospital?



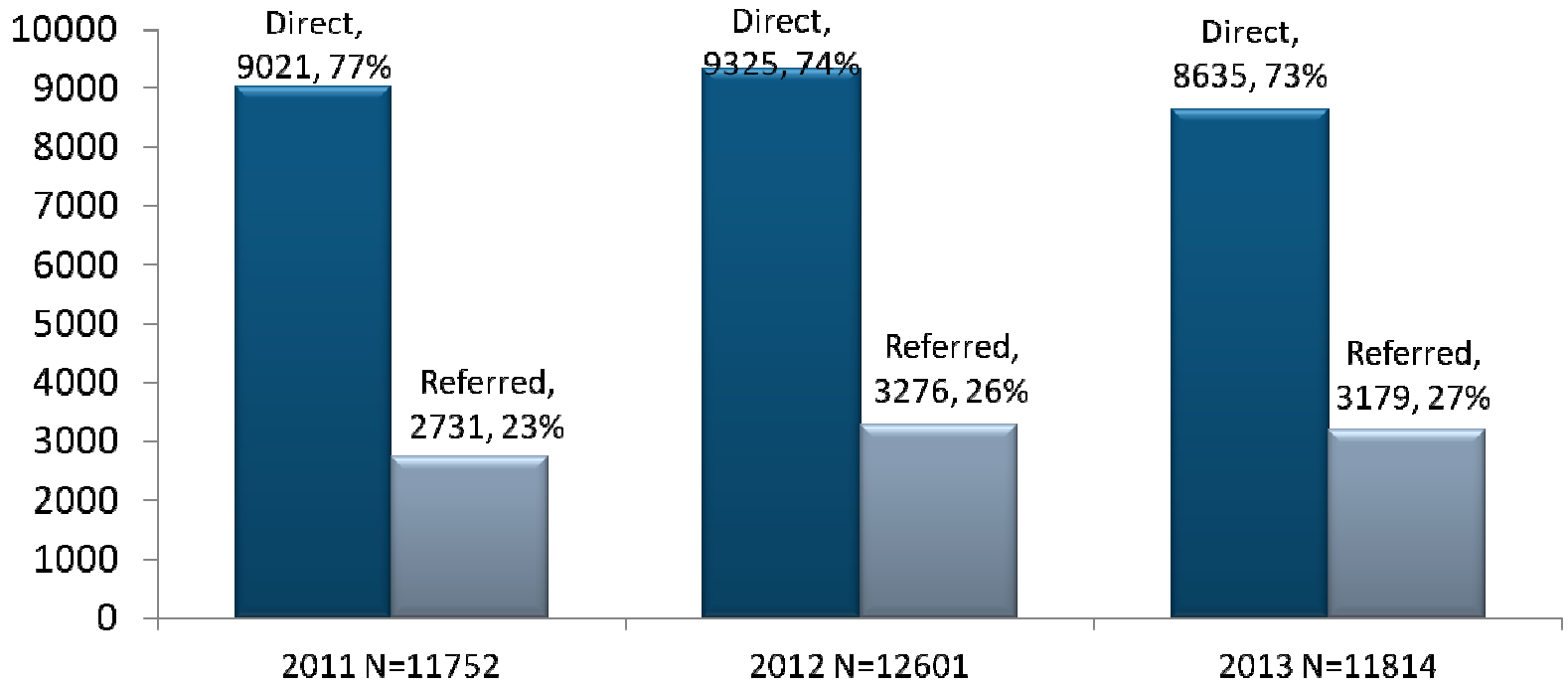
Who brought the R.T.I. Victims?



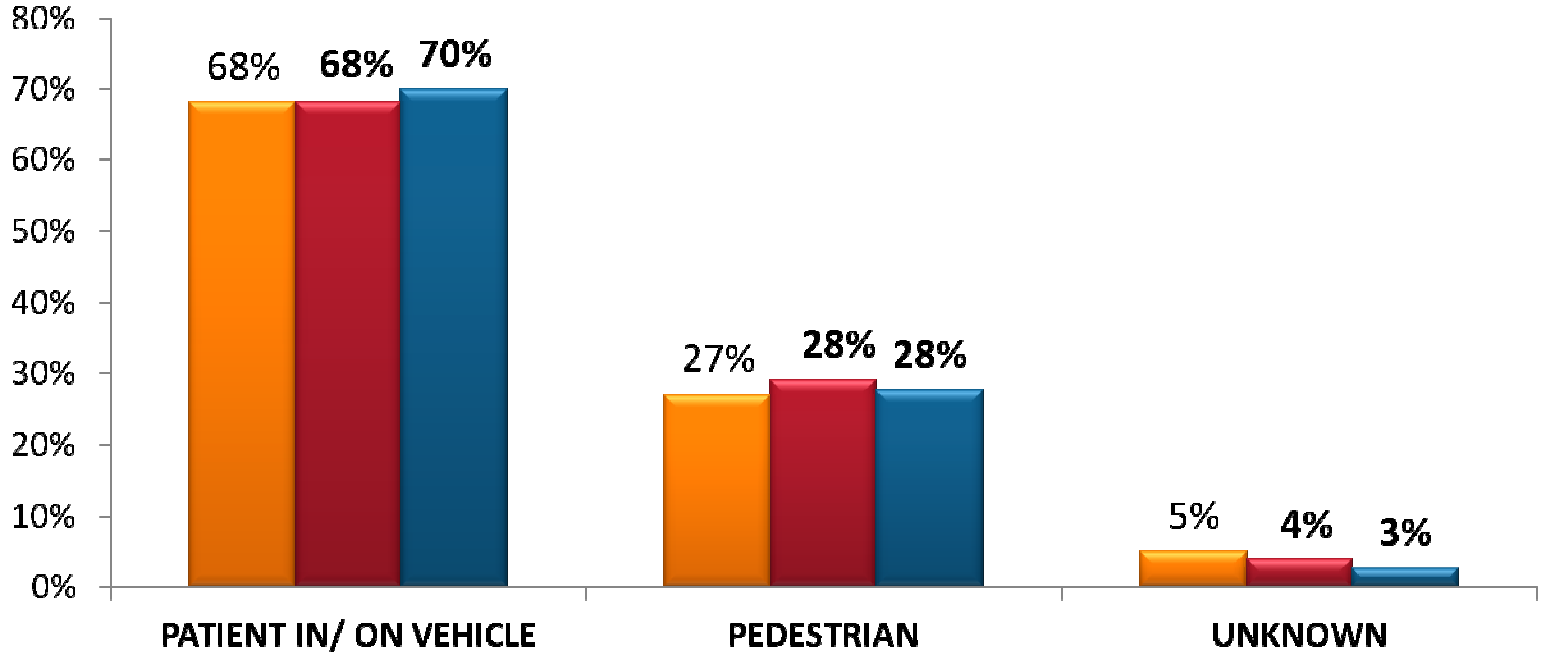
Vehicles used to bring patients



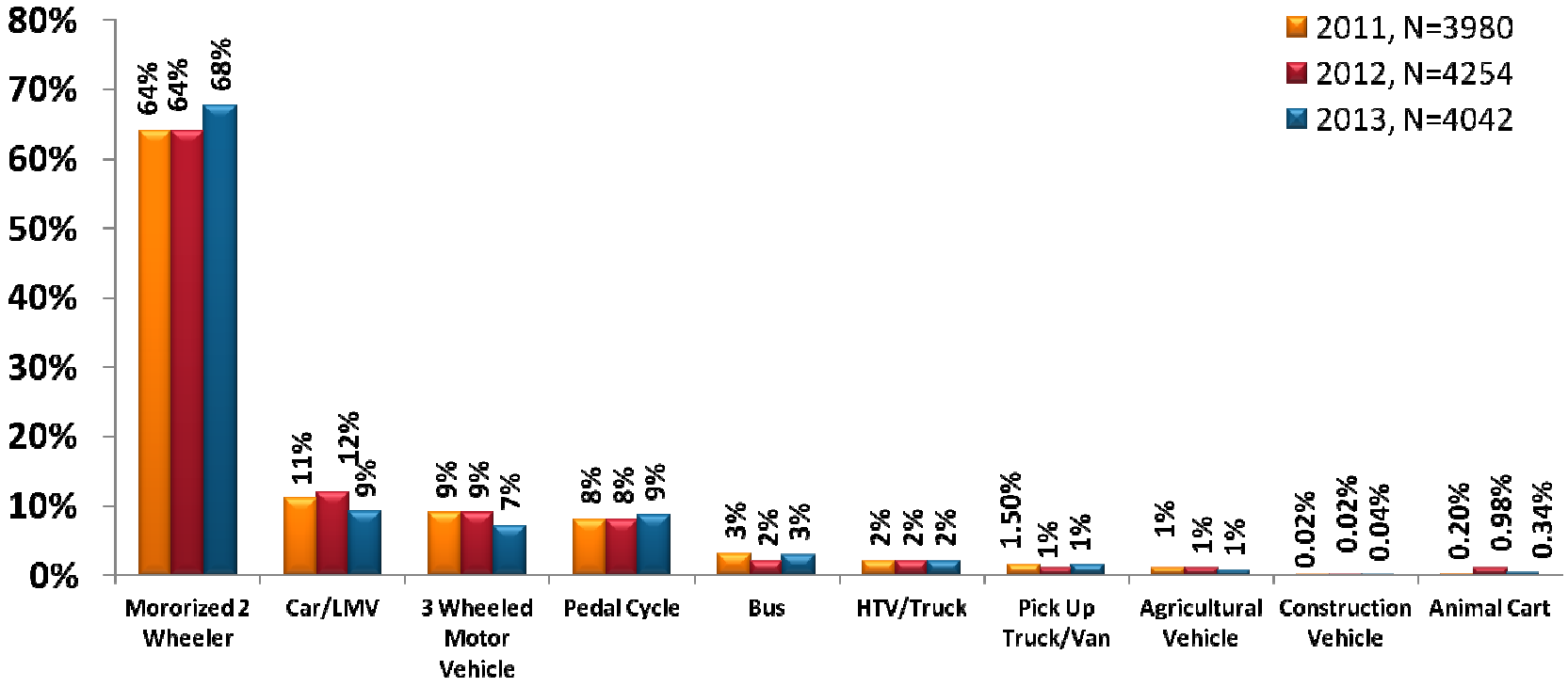
Referral


10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Direct, 9021, 77%
Referred, 2731, 23%
Direct, 9325, 74%
Referred, 3276, 26%
Direct, 8635, 73%
Referred, 3179, 27%
2011 N=11752
2012 N=12601
2013 N=11814

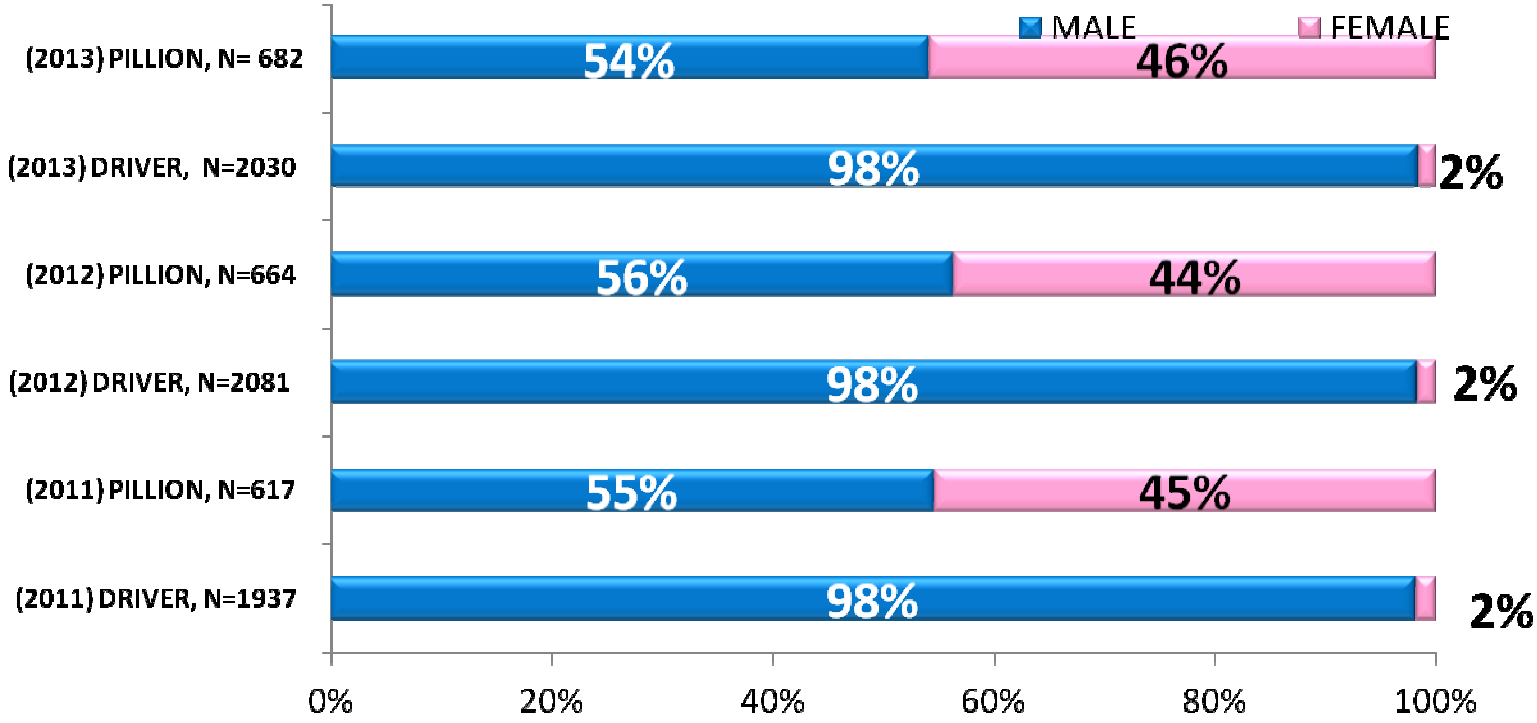
Road Traffic Injuries



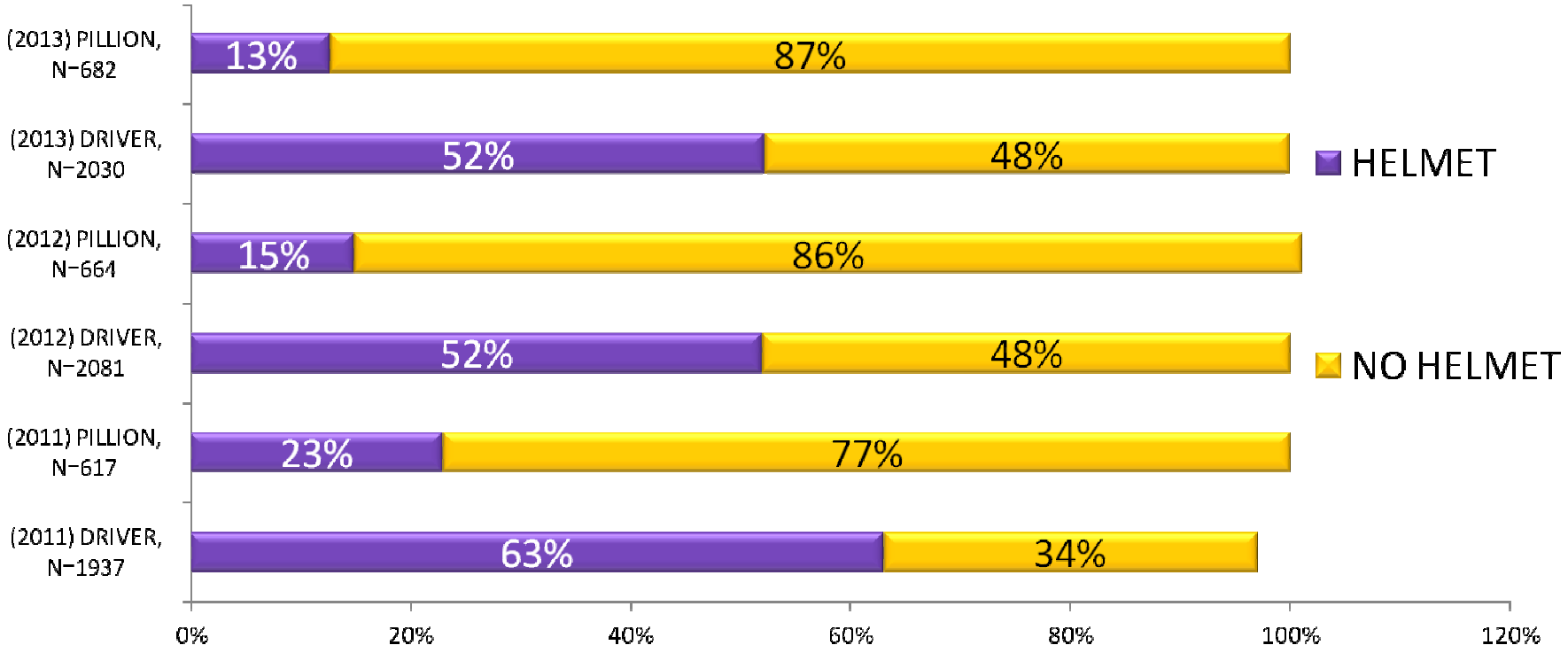
Victims Vehicle



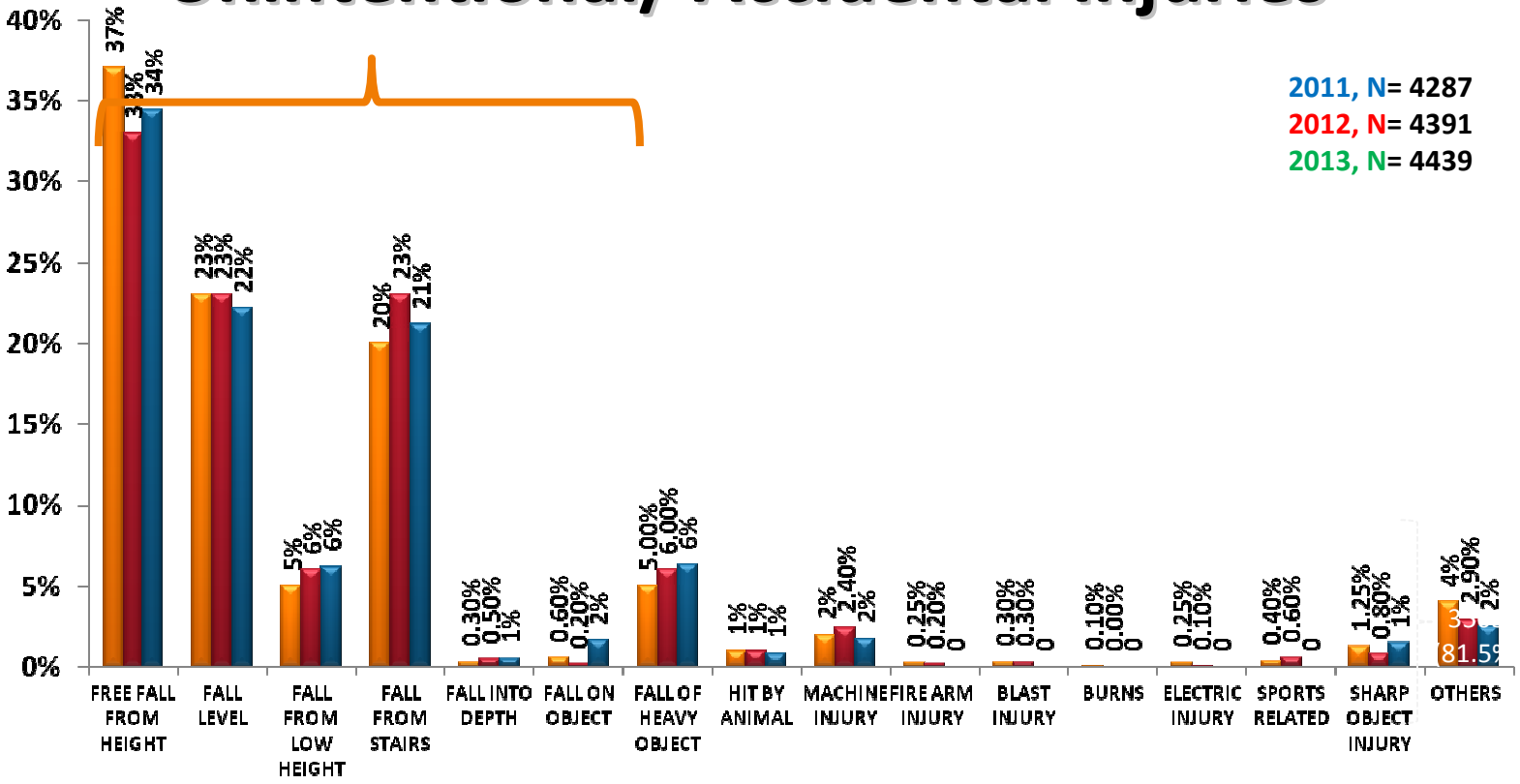
Motorized 2 wheeler- Who is injured



Helmet Usage by Status of Patient



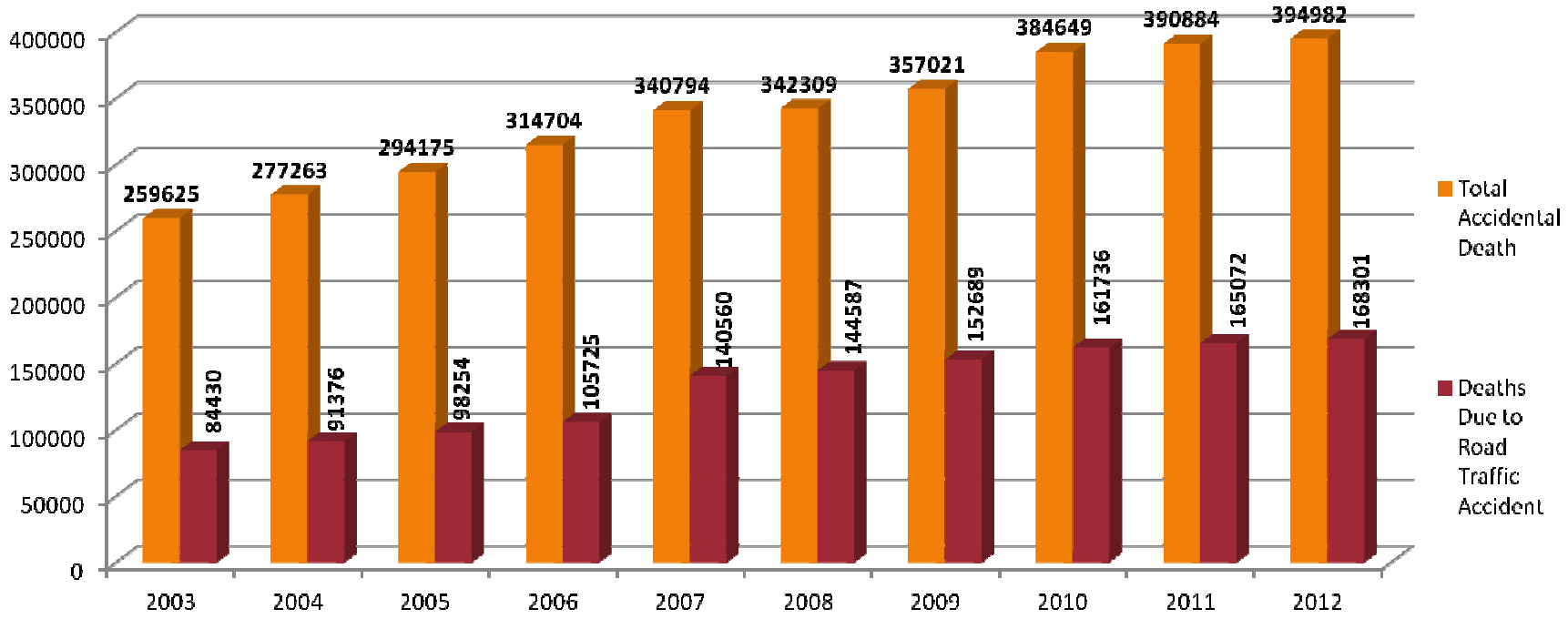
Unintentional/ Accidental Injuries



2011, N= 4287
2012, N= 4391
2013, N= 4439

NATIONAL SCENARIO

Mortality data: Accidental Deaths



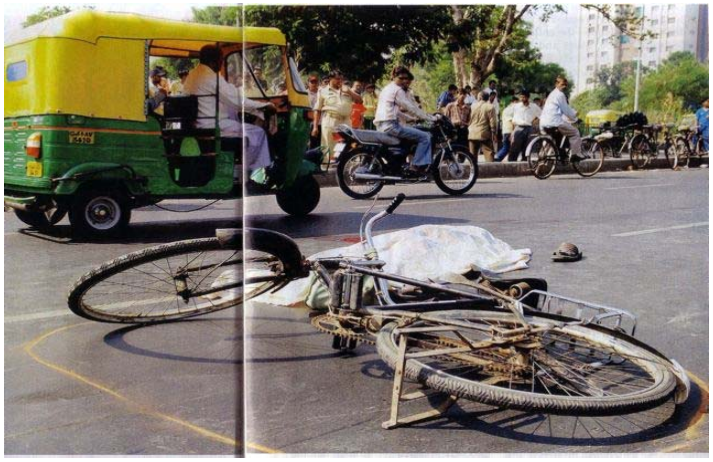
National Crime Records Bureau, Govt. of India

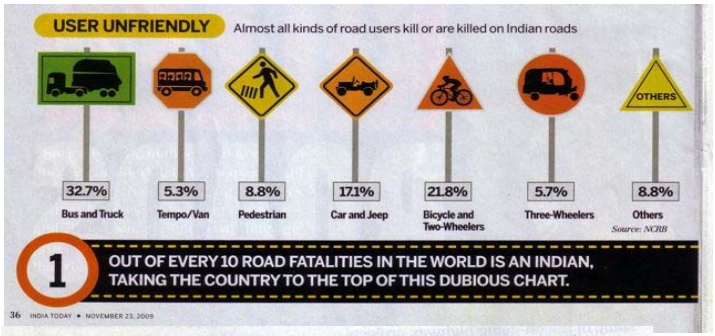
RTI: Disastrous Proportions

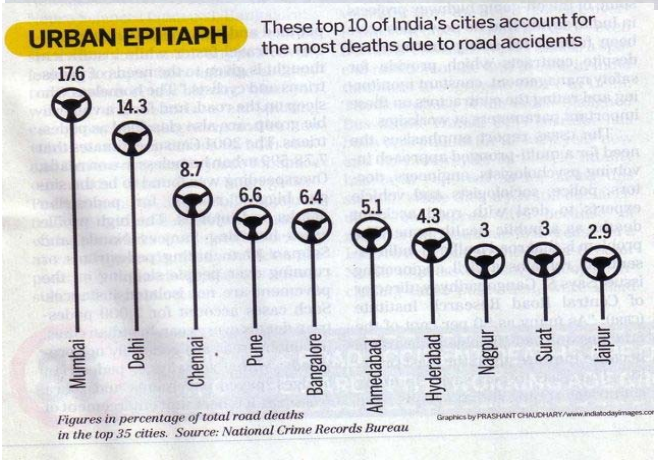
- A Boeing 747 jet carries about 400 passengers

- Deaths in 2012 from **road traffic accidents** are equivalent to more than a jet crash every single day.

Killer Roads



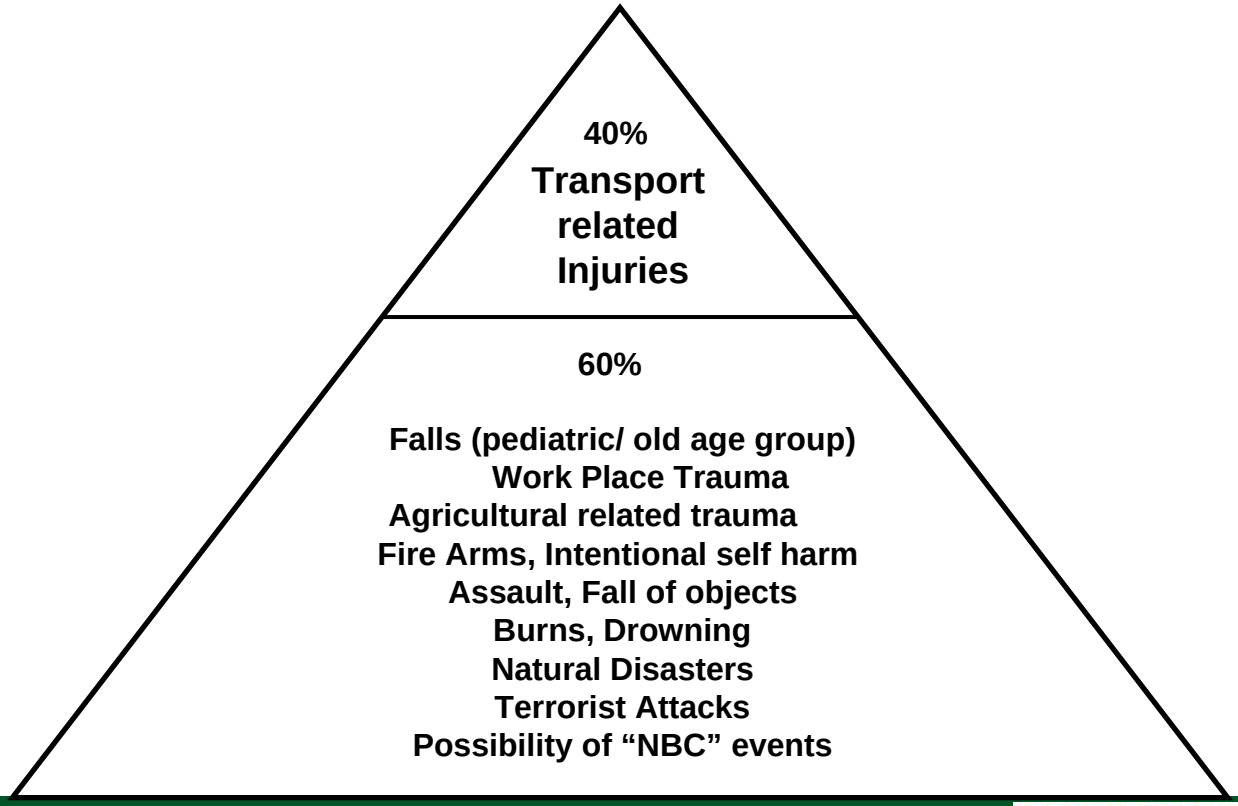




Road Traffic Injuries PUBLIC HEALTH PROBLEM

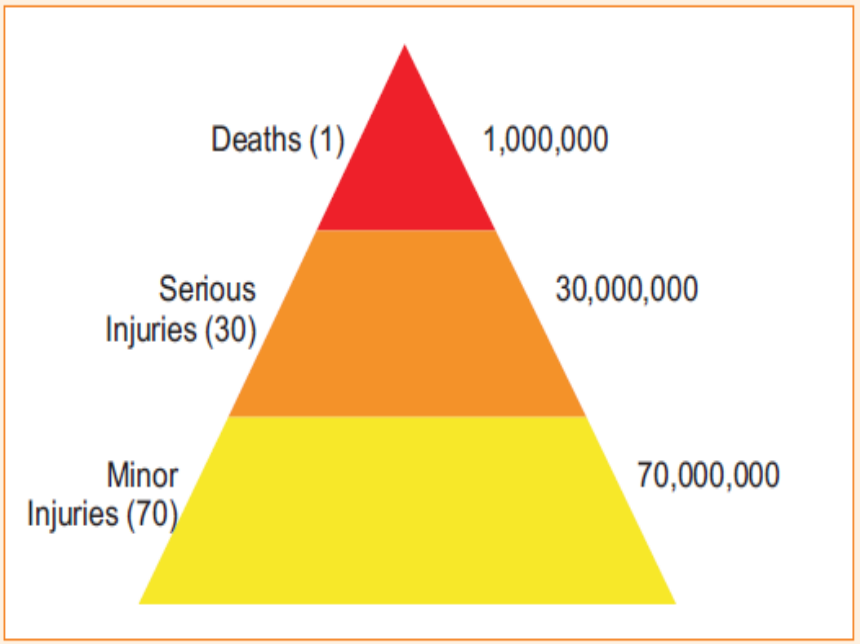
- INCREASING AT AN ANNUAL RATE OF 3%
- 168000 RTI DEATHS ANNUALLY
- ONE DEATH EVERY 2-3 MINUTES
- 12% OF ALL DEATHS
- 78% MEN IN AGE 20-44
- APPROX 75,00,000 INJURED IN RTI
- APPROX 3% OF GDP IS LOST ON RTI ALONE
- MORTALITY FOR SAME INJURY 6X MORE

Trauma: Silent Genocide



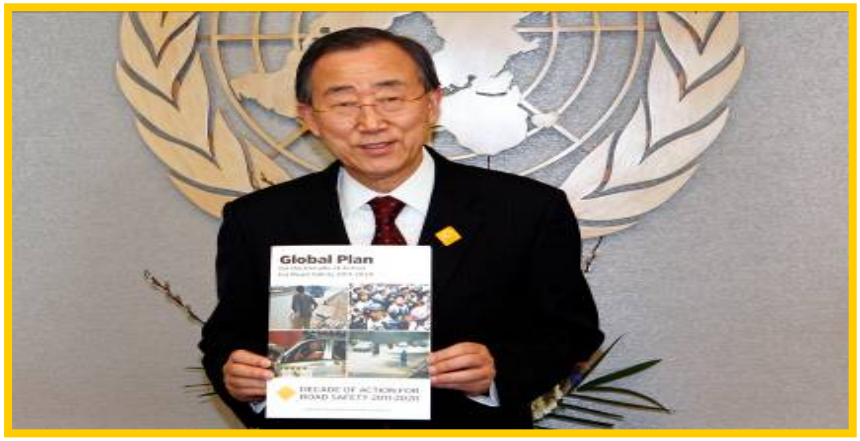
Injury Pyramid

- Each Death ~ 30 Severely Injured Patients
  - Will have considerable post injury disability
  - Brain Injury, Spinal Injury, Amputations
  - 4 million
- Each Death ~ 70 Non-Life threatening and minor Injuries
  - 9 million
  - Transport related trauma



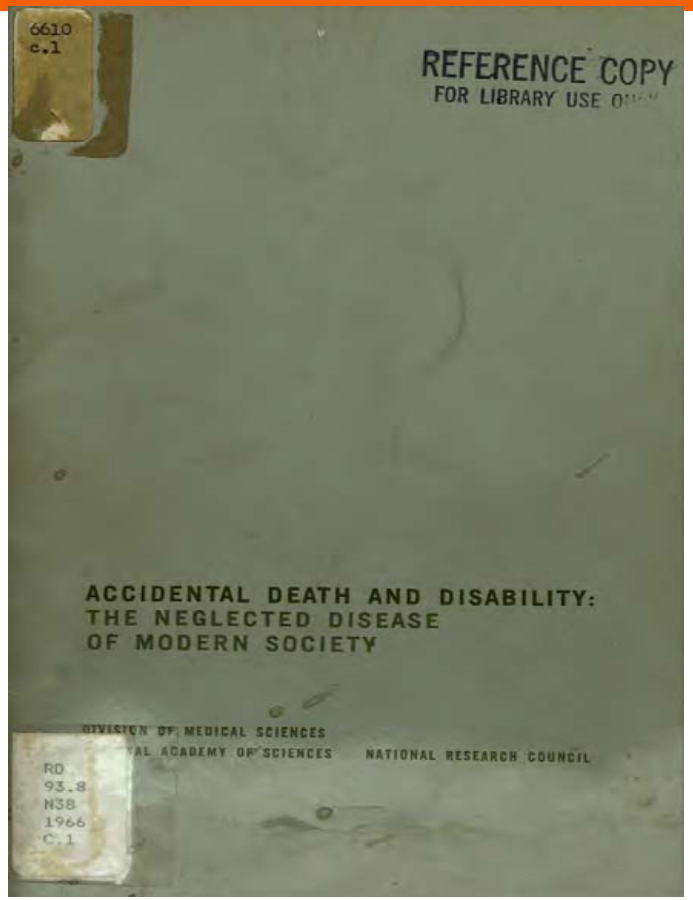
Gururaj et al, NIMHANS, Bangalore

DECADE OF ACTION FOR ROAD SAFETY 2011-2020



- Road safety management
- Safer roads and mobility
- Safer vehicles
- Safer road users
- Post-crash response

Accidental Death and Disability: Neglected Disease of Modern Society



White Paper – 1965
Division of Medical Sciences
National Academy of Sciences
US Senate & White House

Care of the severely Injured

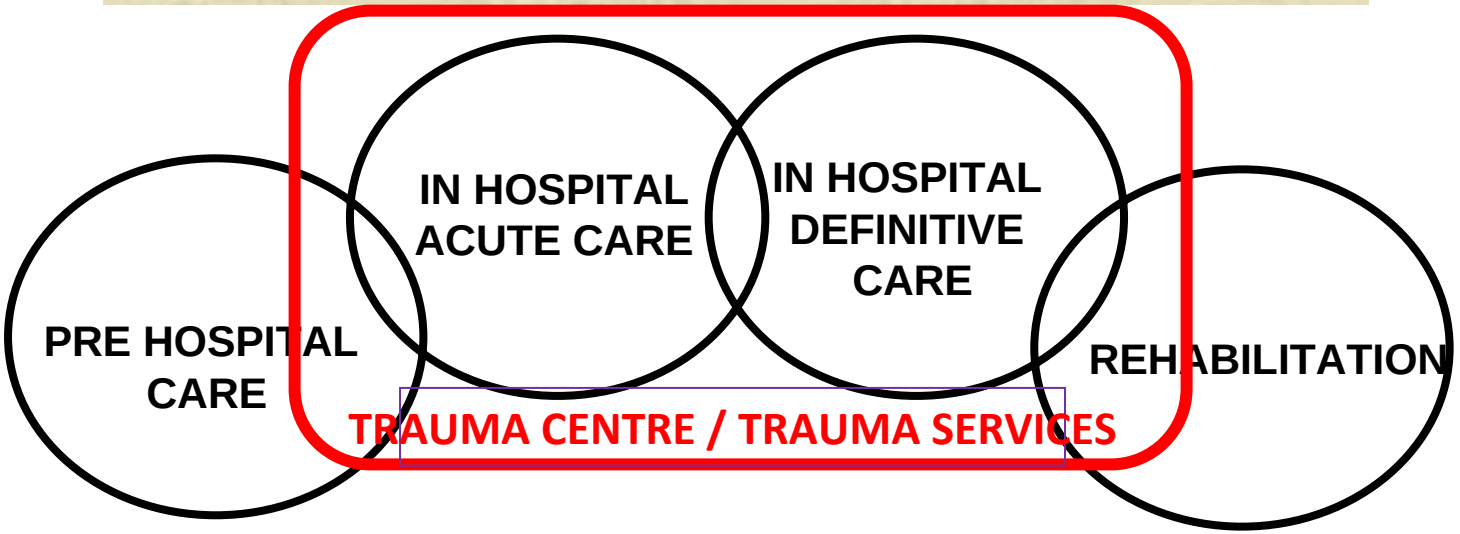
- Requires a broad framework of policies and protocols in a given geographical area
- Seamless transition between each phase of care, integrating health resources
- Team work between various agencies

'Getting the right patient to the right place at the right time for the right care'

Very high mortality and morbidity (16 times) for the same Injury severity in India as compared to western data

- Primitive or no existence of **TRAUMA SYSTEMS**
- Lack of dedicated Pre-hospital care
- Absence of trained manpower in Prehospital; In-hospital Acute trauma care and rehabilitation
- Lack of Trauma related hospital data (registry) and Trauma Quality improvement programs.

TRAUMA SYSTEM



RESUSCITATION TO REHABILITATION

- TRAUMA CENTERS CANNOT FUNCTION ALONE
- HAVE TO BE A PART OF TRAUMA SYSTEM

Assessment of Critical Gaps

- **Physical Resources:** Infrastructure, Equipment and Technology
  - Medical Care
  - Communication
- **Human Resources:** Staffing and Training
- **Process:** Organization and Administration

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Pre Hospital Care – India Lives in 2 Centuries Simultaneously

Pre-Hospital Scenario – Rural India

- **Virtually non-existent** in most rural and semi-urban areas in India
- **'Golden hour'** concept is still an unachieved goal
- **Gross discrepancy** in pre-hospital services between **urban and rural** settings, as well as between paying and non-paying patients.

Pre-Hospital Scenario – Urban India

- **Physical Resources**
  - Formal Ambulance licensing not mandatory
    - Poor Quality – Ill equipped ambulances
  - Multitude of organizations
    - Government
    - Police
    - Fire brigades
    - Hospitals
    - Private agencies
  - No Single number exists
  - Absence of robust and centralized communications center

- **Human Resources**
  - Absence of cadres of paramedical staff
  - Absence of minimal educational and training standards for paramedics
- **Organization**
  - Absence of guidelines
    - triage, patient-delivery decisions, pre-hospital treatment plans and transfer protocols
  - No Integrated EMS/Trauma Council

Definitive Trauma Care Scenario

- **Physical Resources**
  - **Definitive Trauma Care**
    - Government hospitals
    - Corporate hospitals
    - Small clinics across the country
  - **Government Sector**
    - Have to cater to enormous numbers
    - Free, but quality of Care very variable
    - Most University Hospitals fulfill the criteria of Level I Facility
    - » Acute care Infrastructure/ ED (Weak Link)
  - **Corporate Hospitals**
    - Good Infrastructure but no numbers (Insurance penetration Low)
    - Located in Large cities
    - No norms to govern standards & relations with the public trauma system
  - **Mushrooming of Small Trauma Centers**

- **Human Resources**
  - No trained Manpower in Acute care of Injured
    - Medical Professionals
    - Nursing
  - Absence of ED Protocols
  - Level of training and experience in providing life support is not uniform
  - Dedicated Trauma teams ??
  - No dedicated Trauma surgeons/ ED Physicians/ Nurses
- **Result**
  - Responsibility is not clearly defined
  - Clinical decisions are often delayed
  - Absence of clear perceptions of clinical responsibility amongst specialists

Gap Analysis

	Pre-Hospital Care		In-Hospital Acute Care	
	Rural/ Semi Urban	Urban	Rural/ Semi Urban	Urban
Infrastructure	-	+	±	+
Trained and Skilled Manpower	-	±	-	±
Organization	-	-	-	-

National Trauma Policy

- "Guidelines on Essential Trauma Care" – 2004
  - Low and Middle Income Countries
- First National Consultation on Essential Trauma Care - Ahmedabad 2005
  - Laid down the thrust areas for National Trauma Policy

National Trauma Policy – Thrust Areas

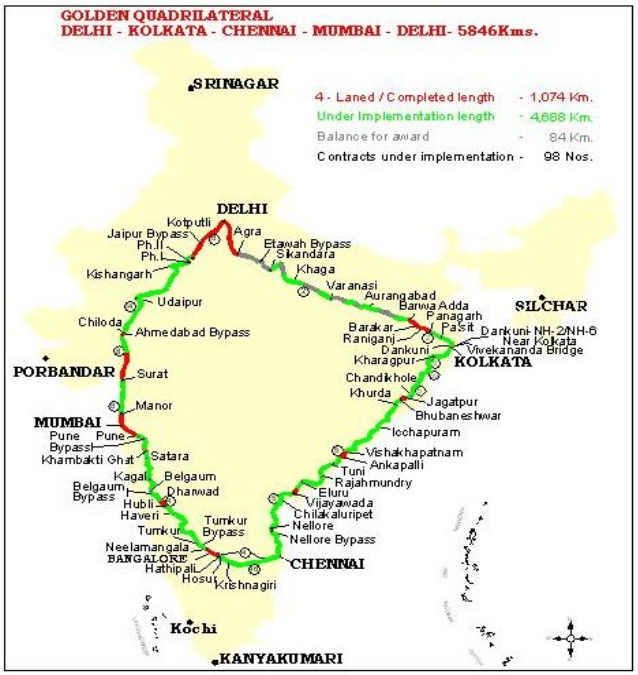
- Improvement in Health care Infrastructure at rural levels
- Strengthen organizational aspect **– Establish Trauma Systems**
  - Pre Hospital
  - Information Transfer and communications
  - Inter-facility Transfer
  - Protocol Development
- Trauma Education / Interest Generation
  - Pre-Hospital
  - Definitive Care
- Rehabilitation
- Evaluation and Research (Trauma Registries)

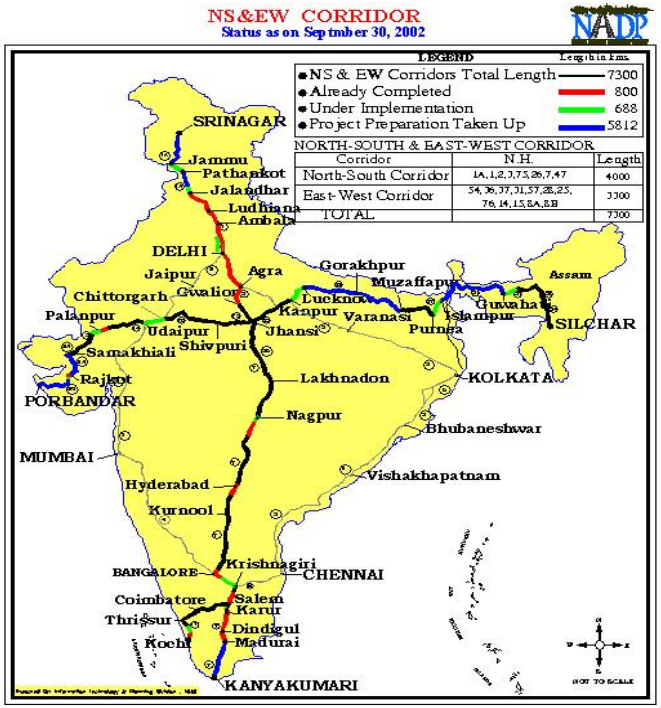
Pre-hospital Care

- Pre Hospital Care being given by a private agency with a common number “108”
- Adopted by 12 States and is in differen
  Commis
- ALS + BLS
- Short Term Trained personnel
- Communications Center with GPS enabled systems

No Legislation/ EMS Body to govern and Audit Sustainability??

Definitive Trauma Care





India's largest highway project for capacity enhancement of National Highways by four/ six laning of around 13,146 Km.

4 levels of Trauma Care

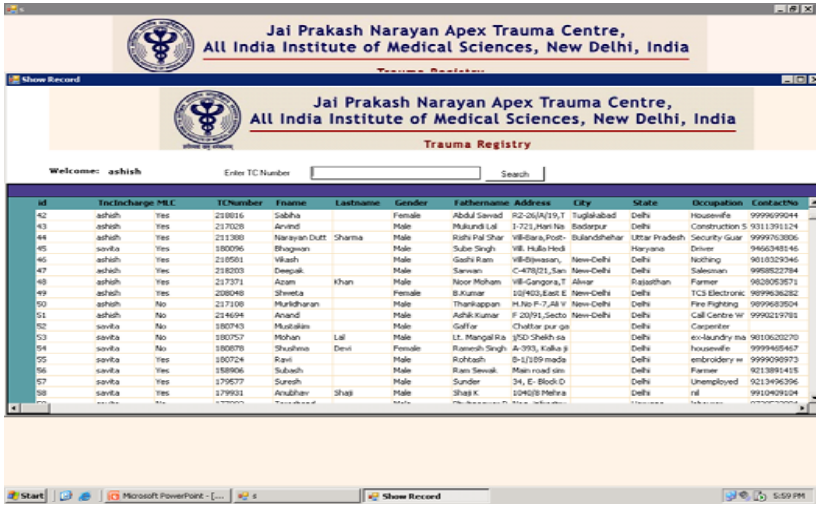
- **L IV** – Ambulance every 50 Kms
  - 271: NHAI
- **L III** - Every 100-150 Kms along the NH – Initial evaluation & stabilization to trauma patient
  - 157 Level III Centers
- **L II** - Every 300 Kms – Definitive care for severe trauma patients (Existing medical colleges)
  - 74 Level II Centers
- **L I** - Each and every state with highest level of definitive and comprehensive care of patient with complex emergencies.
  - 27 level-I trauma centers will be established

CAPACITY BUILDING – Manpower Training

- Manpower training through short term courses like: PHTLS; AIIMS-BECC; ATLS; ATCN;AUTLS; Rural Trauma Team Development Course

- Long Term Capacity building: MS (Trauma Surgery); MD (Trauma Intensive Care); M.Ch (Trauma Surg. & Critical Care)

DEVELOPMENT OF A HOSPITAL BASED TRAUMA REGISTRY AT APEX TRAUMA CENTER, AIIMS



- Basic Identification data
- Unique Hospital number
- Demographic profile
- MLC/ Non-MLC
- Detailed Event description (not coded by ICD 10 at present)
- Description of brought by personnel and vehicle (eg. Trained v/s Untrained; Ambulance v/s Non-Ambulance)
- Direct attendance or Referred case
- Condition at time of arrival (including physiological parameters)
- ED Interventions performed
- Detailed Diagnosis (coded as per AIS 2005 – Update 2008) (Coding as per ICD10 not yet started)
- Definitive Surgeries/ Procedures
- Disposition/ Outcome (Discharge/Death/ LAMA/ Abscond etc.)

Other Trauma Systems Research Initiatives

TITCO India
Towards Improved Trauma Care Outcomes

Towards improved trauma care outcomes in India

- Karolinska Instituet, Sweden
- Tata Institute of Social Sciences
- JPN Apex Trauma Center, Delhi
- LTMMC, Mumbai
- Chennai
- Kolkata
- Srinagar

Trauma Systems Research Initiatives

AUSTRALIA – INDIA TRAUMA SYSTEMS COLLABORATION

Reducing the burden of injury in India and Australia through development and piloting of improved systems of care

Australian Government
Department of Industry
Innovation, Science, Research and Tertiary Education

Government of India
Department of Science & Technology
Ministry of Science & Technology

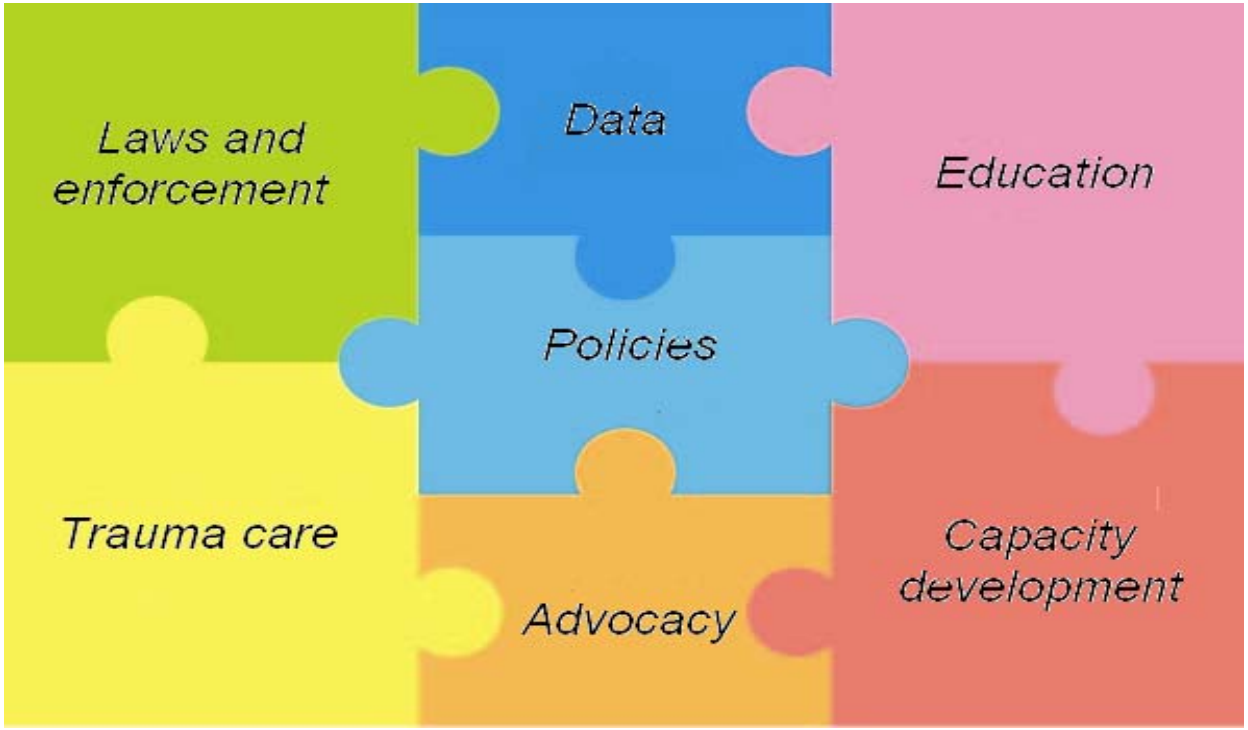
improving care of the injured
national trauma research institute
MONASH University
TheAlfred

All India Institute of Medical Sciences

Research Project will run for the next four years

Try to find the best ways of delivering needed care to injured people

Multipronged Approach



Future

Daunting, Challenging
&
Exciting

"Success is going from failure to failure without loss of enthusiasm"


PUSAT ATLS KEBANGSAAN
(NATIONAL ATLS CENTRE)
BUKIT ILMU
HOSPITAL SUNGAI BULOH
SELANGOR, MALAYSIA

THANK YOU