



Science.  
Applied to Life.™

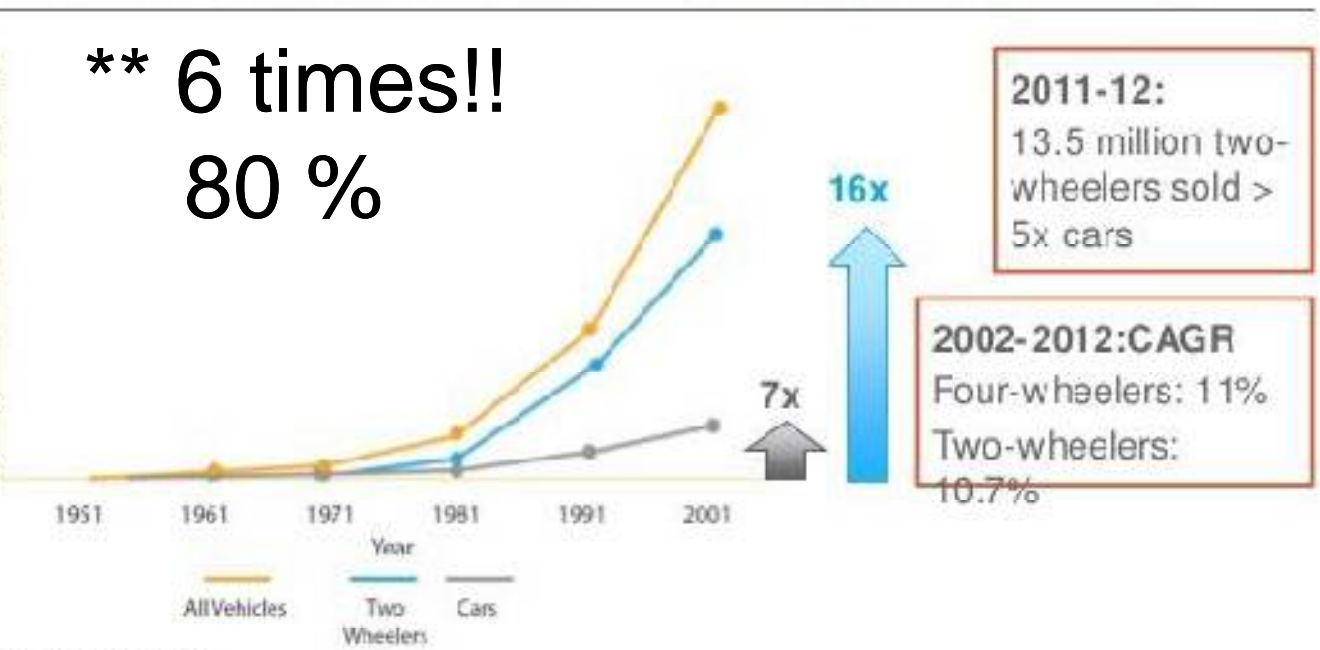
# Speed of Conspicuity on Smaller Vehicles

## Bicycles and Motorcycles

# Ends: Smaller Wheeler Population & Accidents

## Growth Trends: Two-wheelers, Cars in India

**\*\* 6 times!!  
80 %**



Worl South Associates 2008

March 2012: 115.4 million registered two-wheelers in India ~ 72% of all vehicles, compared to 13% of cars

Motorization Rate: 96 two-wheelers to 15 cars / 1000 persons

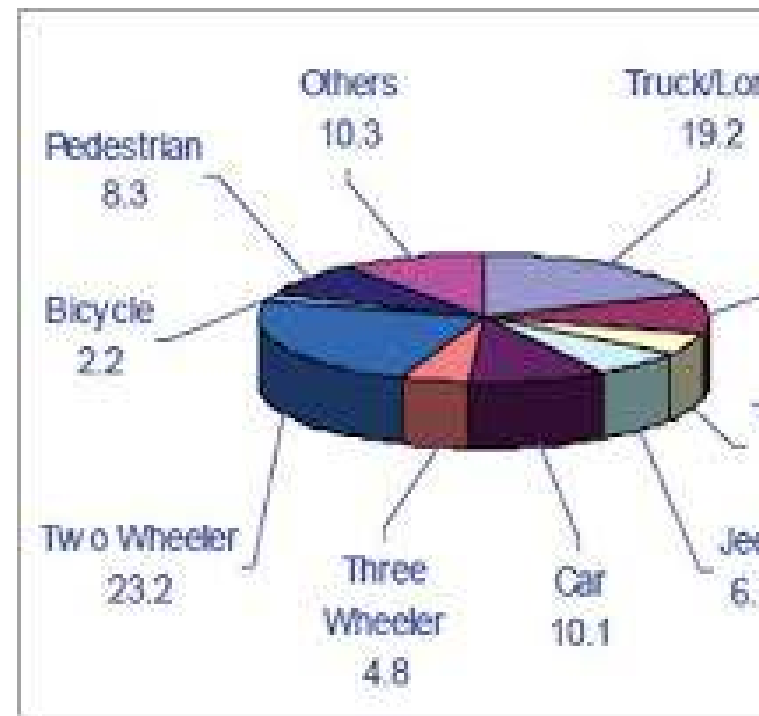
World Road Transport Year Book (2011-12)

Rapid Urbanization  
Poor infrastructure  
High vehicle!

Mode of transport –Family/Kids

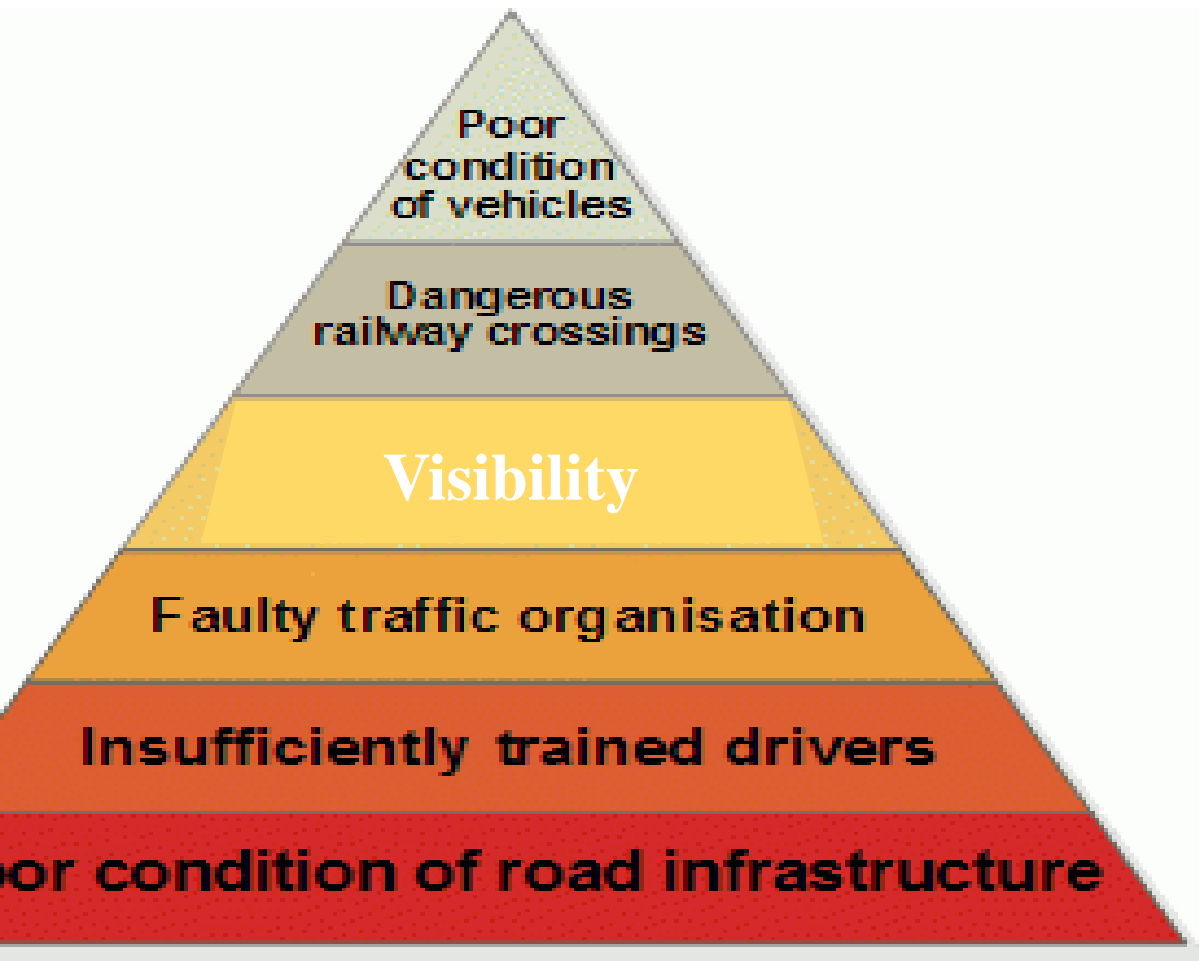


Most Vulnerable in case of accidents...



- Contributes to more than 1/3<sup>rd</sup> of fatalities
- 2 wheeler accidents reported to increase at rate of more than 25% each year

## Reasons of accidents-



- Controllable (Visibility, Rules regulations, Road conditions)
- Uncontrollable (Vehicle Condition, Poor condition of road infrastructure)
- Human Error (Enforcement, Untrained Drivers, Drunk Driving)

BMJ, doi:10.1136/bmj.37984.574757.EE (Published 2 Feb 2004)

cycle rider conspicuity and crash related injury

Conspicuity, Visibility, lighter colors, headlights could reduce fatalities to 1/3rd

# Proven Solution for Big Vehicles

## CMVR Requirements

Vehicle	Front (white)	Rear (Red)	Side (Yellow)	Width reqd as per the Notification
N1 (upto 3.5 t)	✓	✓		≥20mm
N2 (3.5t < 7.5t)	✓	✓		≥20mm
N2 (7.5t ≥ 12t)	✓	✓	✓	≥50mm
N3 (above 12t) Incl Trailers	✓	✓	✓	≥50mm
M2	✓	✓		≥50mm
M3 (above 5T)	✓	✓	✓	≥50mm

- Black colour "3M" and "C" Mark signifies 3M genuine material.
- Certificate to be issued with 3M 983 series Retro-reflective tape only.
- In case of any discrepancy please contact 3M Toll Free Number 18004253030.

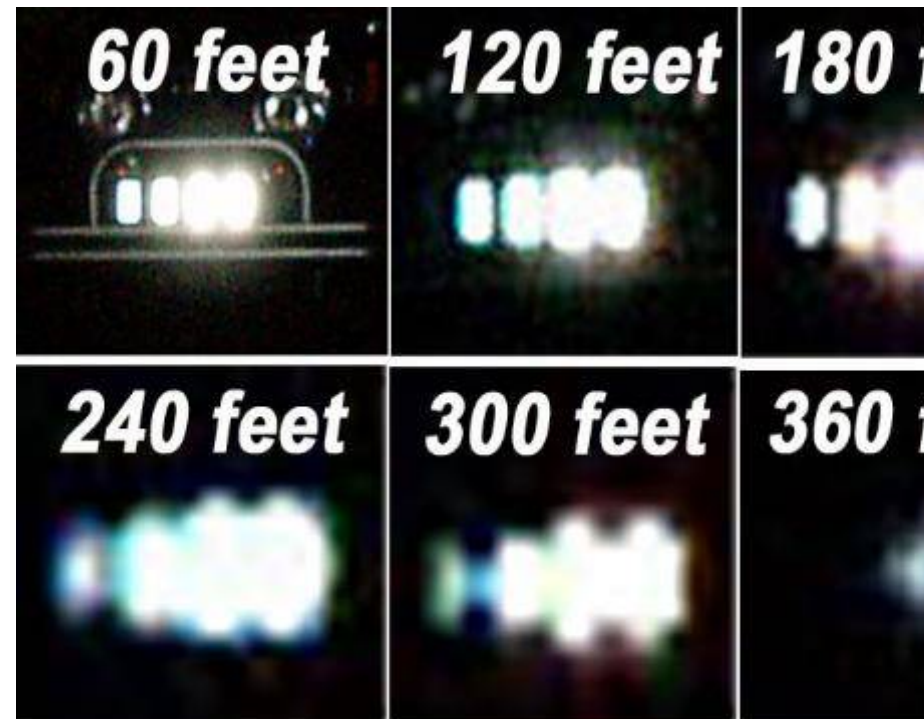
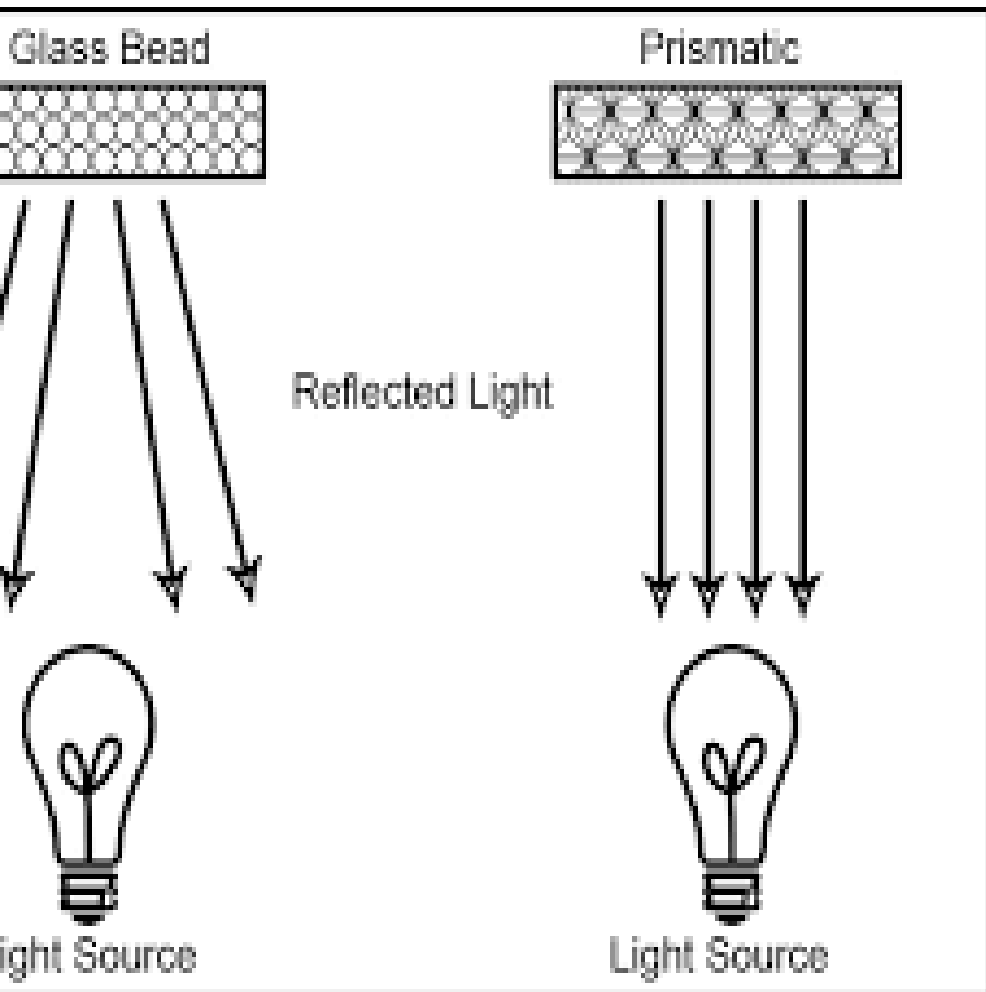
**3M**

Traffic Safety and Security Division

3M India Limited  
Concorde Block, IIB City  
24, Vittal Mallya Road, Bangalore-560 001  
Tel : +91-80-22231414/66595759 / Fax : (080) 22231450

- Many research suggests that the conspicuity of prismatic grade retro-reflective tape proves the vehicle safety by enhancing its visibility.
- Adopted all across globe
- M1 not covered under CMVR rule
- Indian conditions can not be compared with developed nations, we need to learn and adapt as per our requirement

# Increase Visibility- Retroreflection



- 1st - Type 1 / Engineer Grade**
- 2nd - Type 3 / High Intensity**
- 3rd - Type 8 / Prismatic**
- 4th - Type 11**

# Current Solution for Smaller Vehicles



Product Details	White Front Stem	White Lamp Bracket	Yellow Front Fork	Yellow Seat Stay	Red Rear Fender
Piece Size (mm)	15 x 50	36 x 27	15 x 90	15 x 90	
No. of Pieces in 1 Kit	2	1	2	2	



Front Viewing



Side Viewing



Rear Viewing

the reflective & accessory  
was governed by IS1422  
S 6742, which were  
only glass reflective.

- Standards Upgraded
- Enforcement in process
- 15.7 square inches area
- OEM
- Existing Users!

# Sample of Implementation



14 -> IRF+DP+MORTH -> To put reflectors on 1 million cycles!

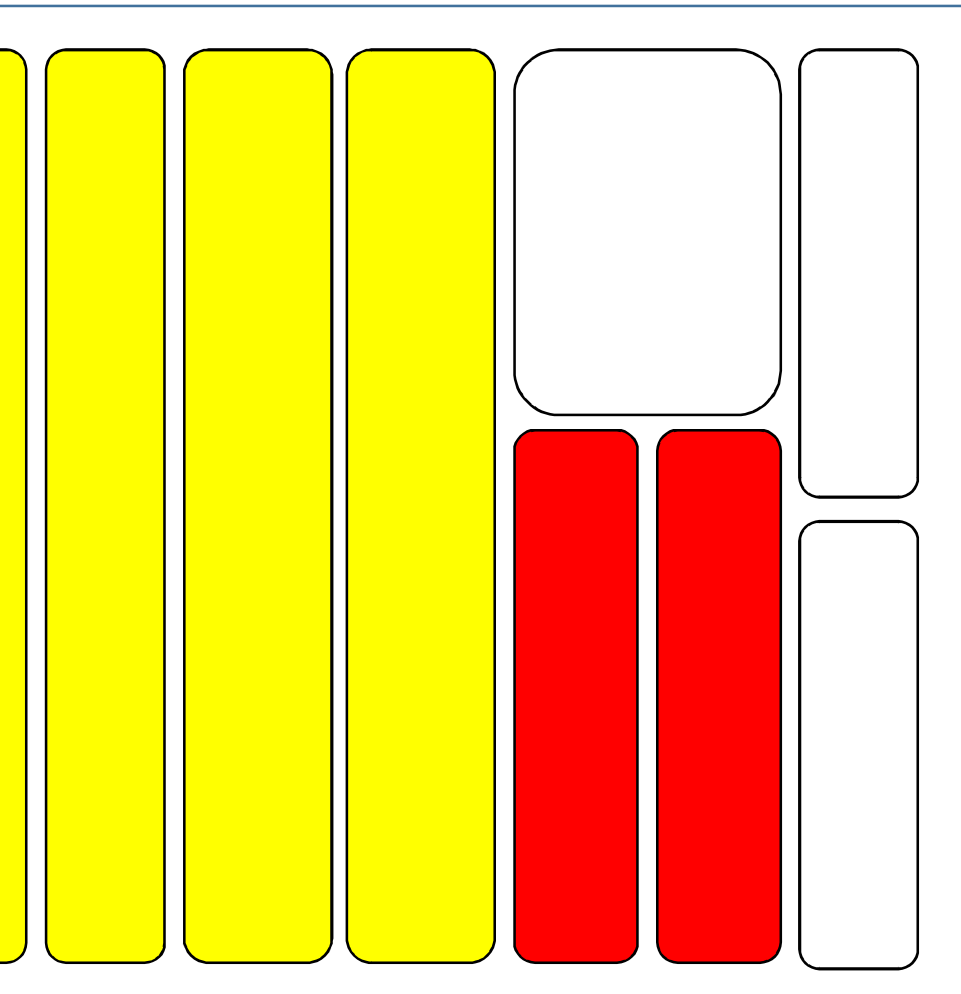
Work to be done on -



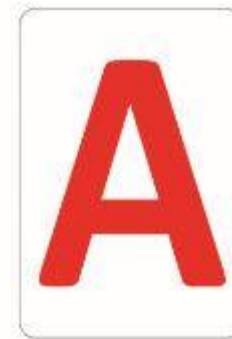
reflective, florescent clothing, jacket, vest, apron, wrist band, backpack.  
ng riders are at more risk.. Inexperienced drivers are increasing in cities  
n speed zones have more fatalities!

# Possible Solutions-

## DIY (Do It Yourself)



## Sponsored



**IL&FS**

**DABUR**

**SHELL**

**YES BANK**

**GAMMONS**

**TOYOTA**



## Conclusion:

Unique Nation with unique challenges

Wheeler's segment is growing very fast

Most vulnerable users on road

Unfortunately contributing to maximum fatalities

Specific reasons of accidents need to be studied in detail

Data on exact reasons of accidents need to be detailed

Controllable solutions such as visibility must be enforced

Indian specific studies on before & after should be carried out, to

Get the best practice and solutions

Set target – “Zero Accidents/Fatalities” for better future



**Thank You**

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