



**3M** Science.  
Applied to Life.™

# Role of **3M** in Road Safety Education



**\$32.2 B**  
**Global Sales**

96,000+  
Talented Minds

70  
Countries

4  
Business Groups

51  
Technology Platforms

126,416  
Patents awarded in Company  
history (2019 data)

# 3M in India: 35 years of Innovation



Incorporated in  
1987

5 legal entities.  
3M India Publicly listed since  
1991



**INR 26.30 million**  
*(consolidated)*  
FY 2020-21

**USD 448K**  
(2021)



5 Branch Offices  
3 Manufacturing facilities  
3 Innovation Centers  
(+ 2 KCI, 1 Tri-Modal offices)



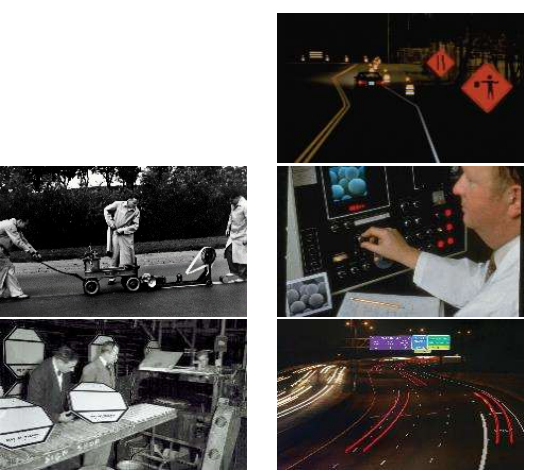





1200+  
Employees

100 R&D Professionals  
*(March 31, 2021 data)*



# Transportation Safety Division

We help bring families home safely

THEN	NOW			FUTURE		
						
<p>First 3M Reflective Sign went up in Minneapolis on September 1st, 1939</p>	<p>First “full cube” reflective sheeting – 3M™ Diamond Grade™ DG3 – is introduced in 2005</p>	<p>Precision Plate Printer High Definition License Plates</p>	<p>Pavement Marking Technology for ADAS</p>	<p>Digitally printed signs Transportation Safety Road Show</p>	<p>Connected Roads &amp; Machine Vision</p>	<p>Improved Infrared Camera Readability &amp; Security</p>

# Causes of Road Accidents

## Human Error



Over speeding



Mobile Phone Menace



Drunken Driving



Lane Indiscipline

Not using safety devices like Helmets and Seatbelts

## Road Environment



Poor Quality Road Infra



Lack of signs/ markings



Lack of awareness

## Vehicular Condition



Accidents in over-aged vehicles



Overloading

[Ref-indianexpress.com/article/explained/vehicle-scraping-policy-indian-economy-environment-7452803/](https://www.indianexpress.com/article/explained/vehicle-scraping-policy-indian-economy-environment-7452803/)

MoRTH Road Accident data 2019

<https://www.google.com/url?sa=i&url=https%3A%2F%2Fblog.trucksuvidha.com%2F2014%2F11%2Foverloaded-vehicles-a-major-problem%2F&psig=AOvVaw3ijy16ZMggeVV5tfoDvv&ust=1651470193441000&source=images&cd=vfe&ved=0CA0QjhqFwoTCLDE37nMvfcCFQAAAAAAdAAAAABAD>

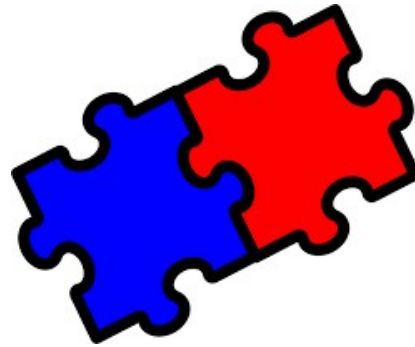
# 3M Road Safety Program started with School zone.....

1.6M Schools in India

over 11,000 children below the age of 18 were killed in road crashes in 2019 in India\*

1.5M Road Fatalities every year\*

Are the school zones safe for children?



Could early road safety education save lives?

How can 3M make school zones safer?

3M Young Change Agents for Road Safety Program

How can 3M impart early road safety education?

# Current Situation of School Zones in India

Survey highlights gaps in road safety for schoolers-The study covers 14 Indian cities finds lack of footpaths near school zones, among other issues plaguing cities and its children

## Lack of proper Guidance, Awareness & Enforcement

BENGALURU: While a number of states are preparing to open schools completely, a national level survey on road safety has found that an alarming 30% of children witnessed a crash during their commute to school, while 6% of them were themselves involved in a road crash or a near-miss situation during their commute to and from school.

In Bengaluru (887 respondents of which 428 are children) alone, 8% of the parents said their ward was involved in a road crash; 19% of the children reported that they had witnessed a road crash. About 44% of the children respondents reported that no action was taken. Two out of three respondents from Bengaluru said that there was road safety workshop conducted in schools.

The “National Study on Safe Commute to School” by SaveLIFE Foundation and Mercedes-Benz Research and Development India that surveys 11,845 respondents, including 5,711 children (of classes 6-12) and 6,134 parents (with children in classes 1-12) across 14 cities in India was conducted during the first national lockdown (25 March 2020 to 31 May), the interviews were conducted telephonically . The report highlights gaps in road safety for children — from lack of footpaths near school zones, to being involved in a road crash, concerns continue to plague cities and its children . Cities surveyed were Ahmedabad, Bengaluru, Bhopal, Chennai, Delhi, Jaipur, Jamshedpur, Kanpur, Kolkata, Lucknow, Mumbai, Patna, Pune, and Vijayawada.

The footpath problem faced by the city was also seen captured in the survey. Of the Bengaluru students who walk to school, 79% reported that they never used retro reflective stickers and 33 percent students (national average is 30 percent) said there was no footpaths present around their school zone. Of those who cycle to school, one in three students (lesser than national average of 47%) reported that there were no cycling paths at the school zone.

Source:  
<https://www.newindianexpress.com/cities/bengaluru/2021/oct/09/survey-highlights-gaps-in-road-safety-for-schoolers-2369410.html>

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# Need for Safer Access to Schools



The future lies in our Children.  
By making them more aware and empowering them to be agent of change.  
For safer roads. Around their schools. Outside their homes. Anywhere.



# School Zone Safety

School zones are one of the busiest areas in town, many recent incidents bring to light the gap in safety system for students and parents around school zones. In India schools are often located in these busy and vulnerable areas where a new safety system and language is a must.



## Challenges

- Lack of regulated safety system.
- Lack of awareness on road safety.
- Lack of a road safety visual language for threats and warnings on road.
- Lack of visual cues around schools for drivers.

## Need

- A strong, legible visual language for school zone safety.
- A new set of regulated sign language for school zones.

## How

- A thorough study of student and parents behavior around school zones.
- Study of traffic movement and various hazards around school zones.
- Regulation and implementation of new visual sign language

# School Zone Safety

Encountering this need for a new well designed system the school zone safety is characterized in the following:

## Pedestrian Safety

Most children in India (57%) walk to and from school which requires them to cross roads, navigate through traffic etc.



## On Road Safety

Use of bicycle (6%) or being escorted by parents or use of other services like school bus and auto rickshaws etc.



## Safe Driving Practices

Use of roads around school zones by other users and their driving practices.



Image source: Bangalore School zone prog 2019 conducted by 3M

Source :<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5070088/>

# Improving School Zone Safety

Three E's of Road Safety very Critical in School Zone

Education



Engineering



Enforcement



The background of the slide is a complex, abstract geometric pattern composed of numerous overlapping triangles and polygons in various shades of blue, ranging from light cyan to deep navy. The shapes are arranged in a way that creates a sense of depth and movement, resembling a low-poly or crystalline structure.

Pilot School : A govt School in Pune

# Current School Zone Scenario



Left Approach



School Main Entrance



School Side Gate



Right Approach

- Only “Cycle” and “No Parking” signage
- One Street Light
- Pavement on both sides of the road

- No school zone, speed limit signage
- No Zebra crossings or other road markings
- No demarcation of drop off/ pick up zone
- No speed breakers or ruble strips
- No road furniture (RPMs, delineators etc)

# Skills development through 3M Young change agents for Road Safety (YCARS) initiative

Day 1

**Understand**

**Road as a Shared Space**

Students learn empathy towards all road users. Importance of road signs through role play and group discussions



Day 2

**Experience**

**Hazard perception**

Students learn hazard perception through interactive videos to understand the road from a driver's perspective.

Day 3

**Observe**

**Road Safety Audits**

Students conduct safety audit of their school zone and provide inputs on improvements in their school zone.



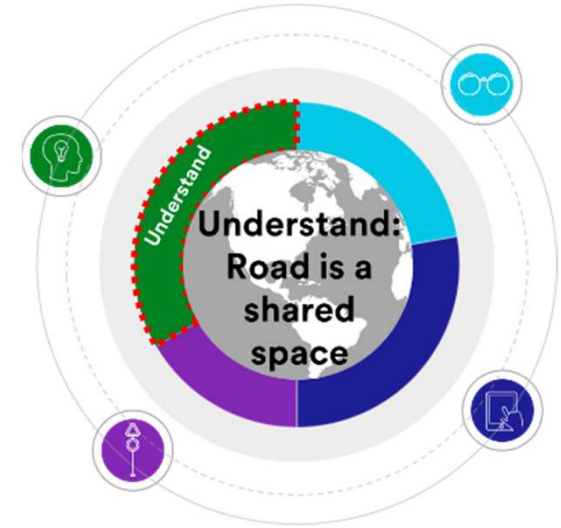
Day 3

**Act**

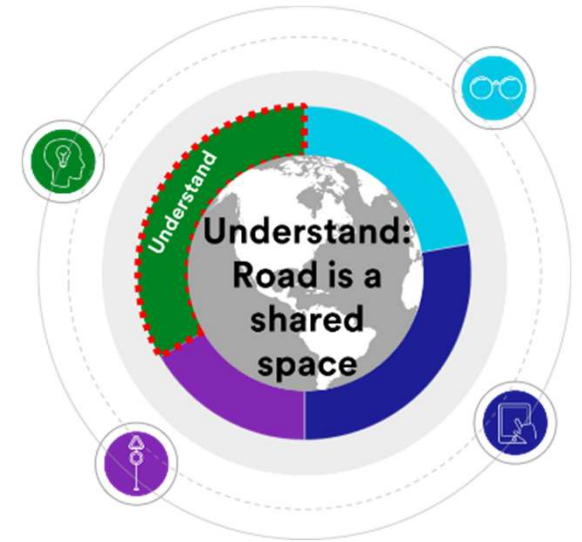
**Safe School Vision & Pledge**

Student recommendations for Safe School Zone, Certification & Pledge

# Day1: Understand Road as “Shared Space”

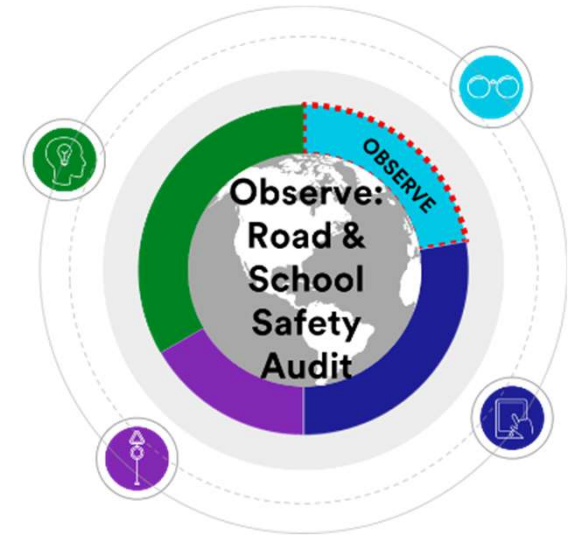


# Day 1: Road Signs & Markings

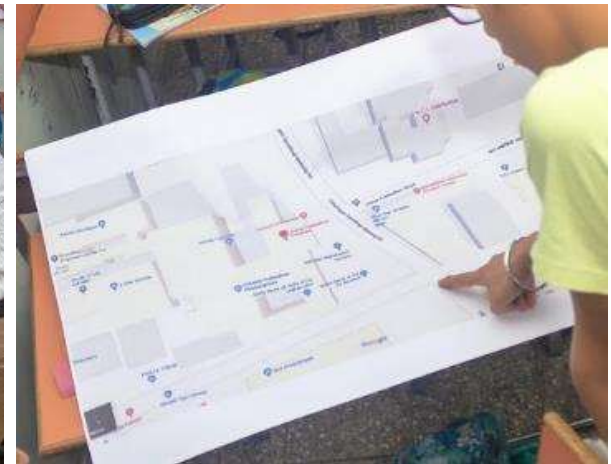




# Day 2: Road Observation & Safety Audit



# Day 3: Perceive Hazard from a driver's view



# Day 4: Pledge Ceremony



# For Example, recommendation by the children of School in Pune (pilot school 1)

Key recommendations



- School Zone Sign to mark the safe zone
- No honking sign for reducing noise
- School sign to alert drivers to be cautious of movement of children
- Speed breakers to reduce speed of vehicles
- Zebra crossing and road markings for pedestrians and guiding vehicle movement
- Designated Parkingsign for even and odd days to avoid congestion
- Two way road mirrors to ensure vision on blind turns to avoid crashes

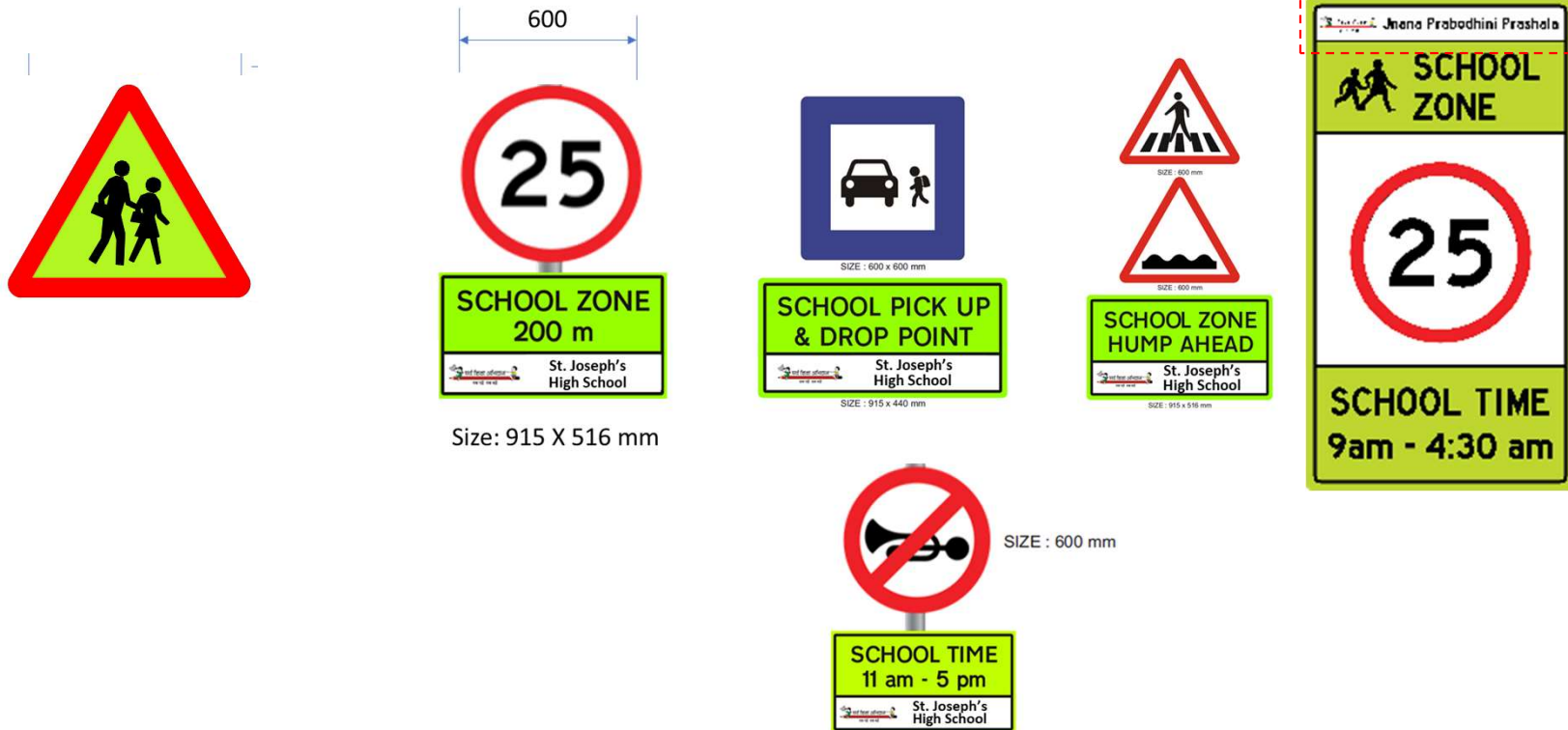


Electric Pole is risky and could cause possible injury. Should be marked with Danger sign

And installed (Post Workshop) by 3M to make this school a Safe School Zone



# With complex, digitally printed signage concepts



Can be customized to each and every school using the digital printing solution.

The solution gives us the advantage of using logo's and complex artworks along with content in various languages.

That introduce Fluorescent Diamond Grade as a standard for visually differentiated school zones across India

# 3M Solutions for School Zone Safety (contd)

## Signages



### Products

- Type XI Retro Reflective Sheeting
- 10 Year Warranty
- School Ahead, Pedestrian Crossing, Speed Limit, No Horn, No Parking, Pick & Drop, Speed Breaker signs, etc

## Pavement Marking



### Products

- All Weather , Reflective, Highly Durable Preformed Tapes
- Precut Symbols
- Durable Floor Marking Solutions
- 2 Year Warranty

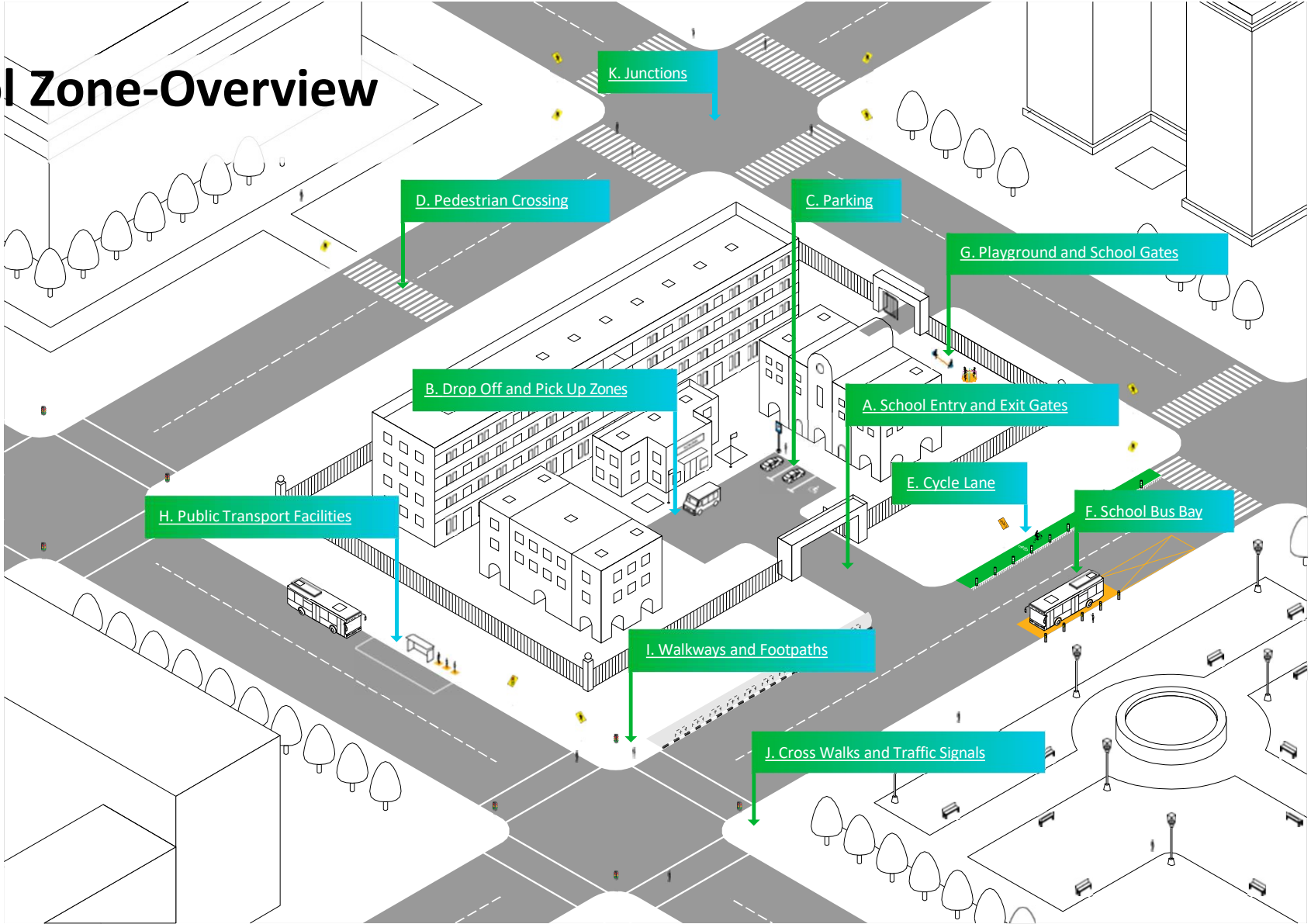
## Channelizing & Safety Measures



### Products

- Reboundale Sheeting
- Traffic Signal backing board
- Flexible Sheeting

# School Zone-Overview





# New Concepts



Yellow Carpet














Driver Feedback System



Padestrian Marking



Zig Zag Marking\*

Understanding Traffic Signs			
Regulatory Signs	 Speed Limit	 Overtaking Prohibited	 Honking Prohibited
	 Restriction Ends		
Cautionary Signs	 School Zone	 Pedestrian Crossing	 Speed Breaker
		 Hearing Impaired Person	
Informatory Signs	 Pedestrian Crossing Informatory	 Speed Breaker Informatory	 Pick up and Drop off Facility

For Children-Understand road signs

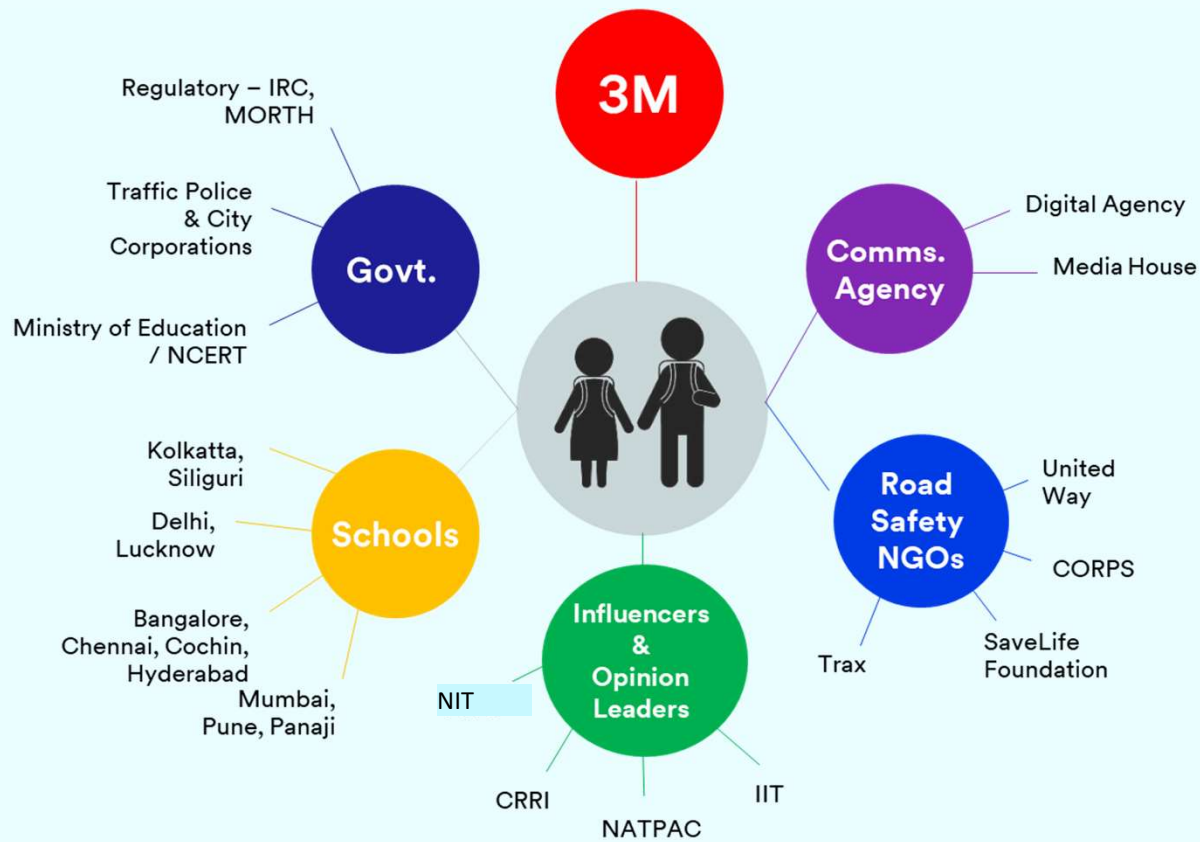
# Vehicle Safety

## Making Vehicles visible in the Dark with 3M Retro Reflective Conspicuity Tapes

- Vehicles are visible in daytime, but disappear in the night
- 32.9% of road accident type of collision happening by either hit from back or from side
- Roughly 50% of all accidents occur due to poor visibility
- Conspicuity tape enhances vehicle recognition and gives drivers more time to react

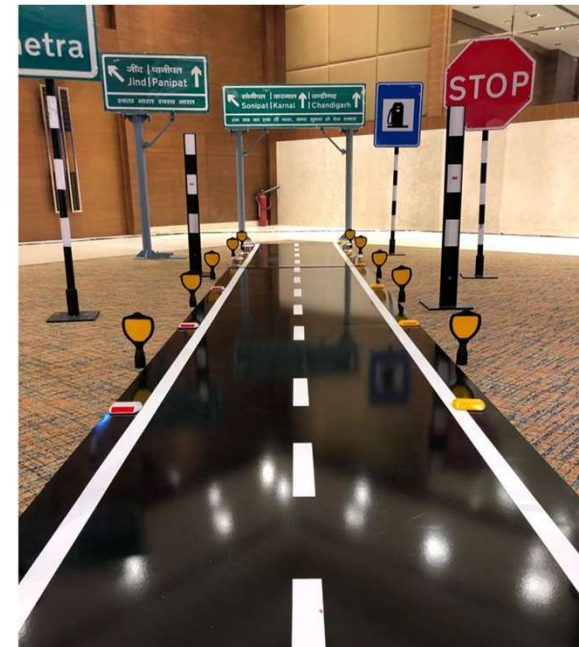


# To create a movement for School Zone safety in India



**3M**

# Education session with Contractors, Consultants



# Education session with PWD, NHAI and other stakeholder



# Education session with Enforcement Authority- Transport officers and Traffic Police



# Thank you

For more details, please contact your 3M Sales representative or drop an email to [transportation\\_safety.in@mmm.com](mailto:transportation_safety.in@mmm.com).

3M India Limited,  
48-51, Phase 1, Electronics City  
Hosur Road, Bangalore -  
560100 | Karnataka | India  
Website: [https://www.3mindia.in/3M/en\\_IN/road-safety-in/](https://www.3mindia.in/3M/en_IN/road-safety-in/)

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