Crash Data systems: Successful Implementation to Safe Systems application in India

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27/09/22
Crash Data is essential for good road safety strategy development

- Broadly available in High Income Countries
- Patchy in Low and Middle Income countries
- LMICs are where the most pressing road safety problems are globally

Background
LMICs, HICs, road safety and crash data

- The road systems in LMICs differ significantly from HICs
  - HIC approaches will not work the same in LMICS

- We need to fully understand the safety challenges in LMICs –
  - This needs good Crash Data from these countries
  - Crash data has a vital role to play in implementing Safe System solutions

- Example of real success in India
State of Himachal Pradesh (HP) – India

Features of the State

- Rural / hilly
- 7M people
- 31,000 km road
- 300+ Police stations

- 1,400+ Road fatalities per year
  - 2,541 - France

- Road death rate 12.2 per 100,000 population (2020)
TRL in Himachal Pradesh since 2015 towards institutional changes

Himachal Pradesh State Roads Transformation Programme (HPSRTP) funded by World Bank

Phase 1 – Implemented iMAAP in 2015

Data Collection (2016 – ongoing)

Evidence based interventions (2018 – ongoing)

Phase 2 - Crash data-led Safe System approach 2021-23

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Crash data innovation

- Mobile devices used to collect crash data at scenes
- Scene photographs
- Available with crash details
- Accurate locations
iMAAP implementation: RADMS

Success factors:

- Systems/ road safety review
- Training 300+ police stations
- Accident Data Management Cell (ADMC) developed
- Agreed S.O.P. for police:
  - Standard Operation Procedures
- 2017 – support project to the crash data system
  - National blackspot advice developed

STANDARD OPERATING PROCEDURE (SOP) (Version 3)
CONSULTANCY SERVICES FOR THE PROVISION OF A ROAD ACCIDENT DATA MANAGEMENT SYSTEM (RADMS)

Prepared For: Himachal Pradesh State Roads Project (HPSRP)
Contract Ref: Contract - PW-SRP/RIDC/Procurement: RADMS/2014-12

Date: 20-Apr-2017
Phase 2: Data-led interventions/ Road Safety Action Plan

Consultancy Services for Road Safety Advisory for the State of Himachal Pradesh

- Technical support/ capacity building
- Focus: Engineering and Police/ Emergency Response
- development 4 demonstration corridors
- Focus on 3 Regions
  - Trial/Testing/ Evaluation innovative approaches
- Road Safety Action Plan for the State
  - Wide roll-out of successful measures 2023+

Safe Systems based approaches – supported by good crash data
Digging in to identify real risks and safety issues

Killed and Serious Injuries in Himachal Pradesh

- Run off road: 15,870
- Head on: 7,803
- Hit pedestrian: 4,824
- Hit in side: 3,042
- Hit in rear: 1,705
- Hit parked vehicle: 646
- Hit object in road: 436
- Side swipe: 286
- Fell down from vehicle: 195
- Hit Cyclist: 171
- Hit animal: 51
- Other: 4

Top 3 crash types account for 81% of KSIs
Top 5 crash types account for 95% of KSIs

KSIs by type of road user

- Motor car & Jeep Riders: 38%
- Motorized Two wheelers: 25%
- Pedestrians: 13%
- Bus Riders: 12%
- Riders: 10%
- Auto rickshaw Riders: 3%
- Tractor: 2%
- Taxi Riders: 2%
- Traveller: 1%
- Truck Riders: 5%
Patterns – KSIs - top 3 crash types:

**Crash numbers:**

- **Head on**
- **Hit pedestrian**
- **Ran off road**

**Casualty numbers:**

- **Head on**
- **Hit pedestrian**
- **Ran off road**

HICs – expect greater casualties per crash for Head on.
Patterns – top 3 crash types – Head on, Ped and RoR

Crash numbers:

Casualty numbers:

Identifies buses/ drivers a target for interventions – across pillars

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Reactive use of crash data: Hotspots/ Blackspots

- Investigating crash prone sections
- Cluster/ route analysis
  - Barrier improvements?
  - Lighting at some locations?
  - Delineation?
  - Speed management?
Crash density analyses

Route 1 – Shimla Cart Road & MDR - 16

Length 25 Km

Cluster 1
Cluster 2
Cluster 3
Cluster 4
Cluster 5
Cluster 6
Cluster 7
Cluster 8
Cluster 9
Cluster 10
Cluster 11
Cluster 12
Cluster 13
Cluster 14
Cluster 15
Cluster 16
Cluster 17
Cluster 18
Cluster 19
Cluster 20

Total Crashes: 225
Fatal Crashes: 52
Fatalities: 55
Grievous Injuries: 79
Injuries needing Hospitalization: 220
## Route 1 - Fatalities by collision type

### Shimla Cart road & MDR-16

<table>
<thead>
<tr>
<th>Collision Type</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hit pedestrian</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>Run off Road</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Hit in-side</td>
<td>1</td>
<td>1</td>
<td></td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Hit in rear</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Fell Down from Vehicle</td>
<td></td>
<td>1</td>
<td>2</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Hit parked vehicle</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Head on</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Hit object in road</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10</td>
<td>10</td>
<td>8</td>
<td>18</td>
<td>9</td>
<td>55</td>
</tr>
</tbody>
</table>

### Fatalities (2016-2020) by Collision type

- **Hit pedestrian**: 33%
- **Run off Road**: 18%
- **Hit in side**: 7%
- **Hit in rear**: 13%
- **Fell Down from Vehicle**: 5%
- **Hit parked vehicle**: 4%
- **Head on**: 20%
- **Hit object in road**: 7%
Route Action Plan: iRAP & Crash patterns

- Footpath, walkway & safe crossing points for pedestrians
- Crash barriers
- Edge line & center lines (with chevron marking) to reduce head-on collisions
- Extra widening on curves
- Road studs on edge lines
- Speed limit signs & no overtaking signs
- Redesign of junctions

Crash data indicates pedestrian casualties occur even on rural sections
Summary: Crash data used intensively - Safe System approaches

12 minutes not enough – scratching surface – come and talk to me!

- LMIC Technical assistance projects don’t generally have good crash data
- Supports far better targeting of limited resources:
  - Focus on Crash Types resulting in most KSIs
  - Identify target regions and corridors where efforts will have greatest impact
  - Shapes the Safe System trial approaches
  - Can be evaluated
- Underlines why crash data is so relevant to Safe System strategies
  - Safety Performance Indicators reducing focus on Crash Data????

Identifies real issues, permits evaluation and identifies different patterns from HICs
Police assigned factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Number of crashes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>1400</td>
</tr>
<tr>
<td>Dangerous driving</td>
<td>1000</td>
</tr>
<tr>
<td>Turning without care</td>
<td>800</td>
</tr>
<tr>
<td>No crash barrier</td>
<td>600</td>
</tr>
<tr>
<td>Sus drugs/alcohol</td>
<td>500</td>
</tr>
<tr>
<td>Blind bend</td>
<td>400</td>
</tr>
<tr>
<td>Slippery road surface</td>
<td>300</td>
</tr>
<tr>
<td>Uneven road surface</td>
<td>200</td>
</tr>
<tr>
<td>Suspected vehicle failure</td>
<td>100</td>
</tr>
<tr>
<td>Break road rules</td>
<td>50</td>
</tr>
<tr>
<td>Dangerous weather</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
</tr>
<tr>
<td>Changed lanes, no signal</td>
<td>1</td>
</tr>
<tr>
<td>Adverse weather</td>
<td>1</td>
</tr>
</tbody>
</table>

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