

Road Safety – Accidents - PMGSY to Tackle from Planning Stage

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India- Deadly Statistics

- Over 4.98 lakh road accidents during 2011
- Claiming a whopping **1.42 lac lives** and
- Rendered over 5 lac persons disabled, many of whom were the family sole bread winner.

Deadly Statistics

- The number of deaths in road accidents across the 35 Indian States and Union Territories, as expected, has a very strong correlation with the State/UT wise
 - Population,
 - Total road Length,
 - Total Surfaced Road length,
 - But does not much with being or not being a Hill State.

Persons Killed in Road Accidents- 2011

- Coefficients of correlation
- Road length:
 - Surfaced 0.91
 - Total length 0.83
- Population 0.91
- Total no. of vehicles 0.90
- Being a Hill State(Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, Uttrakhand) -0.44
- Strong correlations are a cause of nightmare for an econometrician.

Panel Data – Dying to Drive!

- Panel 1970 to 2000 (decadal) then annual till 2011
- Dependent variable:
 - (ln) No. of Road Accident Deaths in India
- Explanatory Variable – (ln) No. of Vehicles –

	Coefficients	Standard Error	t Stat	P-value
Intercept	6.008	0.113	53.170	0.000
(ln) number of Vehicles	0.489	0.010	46.908	0.000

Hill States – Safer!

- Surprisingly, being a Hill State indicates a lower yet negative correlation.
- This points out that in hill States the factors restraining deaths due to road accidents (like extra caution taken in driving, speed restrained by road bends etc.) outweigh the factors enhancing accidental deaths (landslides, slippery patches etc.)

Can the Tide be Turned?

- While the number of accidents was rising in India (up by 13% from 2004 to 2009) it was diminishing in China (down by 54%).
- The total number of accidental deaths during 2004-09 monotonically diminished in China from 1,07,077 to 67,759 i.e. by 37%,
- While during the same period it monotonically increased in India from 92,618 to 1,25,660 i.e. by 36%.

Nagaland Story – Sustainable? Replicable?

- No. of accidental deaths diminished in Nagaland over the years 2008 to 2011 being 70 (2008), 55 (2009), 40 (2010) and 25 (2011).
- But it needs to be taken with a pinch of salt due to severity of road accidents (persons killed per 100 accidents)
 - As per the 2010 Road Accident Statistics, Nagaland was the only State with the index exceeding 100 (the second highest being 66).
 - The 2011 statistics again endorsed severity, though it reduced to the fifth highest to 64.1 in 2011 .

States to Focus upon

- In some Indian States the rise in accident deaths far surpasses the even otherwise high national death figures.
- For instance, the shares in National data on accidental deaths during 2008 to 2011:
 - Bihar up from 3.3% to 3.6%,
 - Punjab up from 2.7% to 3.5% and
 - UP up from 11.0% to 15.1% and so on.

Rural India 2011 – High Accidental Deaths

- The number of accidents in rural areas (2,66,231) larger being 53.5% compared to urban areas (2,31,455) at 46.5%.
- In fact the percentage of injured persons (59.4%) also higher.
- And so also, fatalities (63.4%) being even higher.

Non -NHs SHs Category

❖ The MDR-cum-Rural road segment witnessed

- 45.3% of road accidents,
- 43.4% of injured persons and
- 35.5% of accidental deaths in 2011

Safety Provisions in PMGSY Roads

- The State Level Standing Committee (SLSC) to quarterly review the Road safety issues.
- At the Planning stage kilometer wise assessment of safety features.
- At the time of 'Transect Walk', interaction held with the stakeholders including the local people; a very critical instrument in Road Safety as a safe design emanating from a proper alignment taking care of geometric deficiencies is evolved right from the word go.

Crucial DPR Stage

- The Detailed Project Report:
 - A Chapter covering Safety Audit carried for the road, so that the issue is not procrastinated till the construction or post-construction identification of actions warranted.
 - Concerned Superintending Engineer (SE) entrusted with the task of Safety.
 - Moreover, the State Technical Agencies (STAs), which are independent bodies to assist in analysis of DPRs, are assigned the task of scrutiny *inter alia* from Safety angle.

Geometrics

- For a safer road, the provision of Surface Drainage stipulates that the cross-slope of the shoulder should be 1% steeper than the cross-slope of the carriageway, subject to a minimum of 4%. Further, in normal cases 0.3% longitudinal gradient be ensured in roadside drains/ ditches.
- The provisions for wider pavement and requisite super-elevation at horizontal curves and proper wider merger at junctions and other road geometrics are stipulated, and road humps and rumble strips are required near schools etc.
- In Hills, a provision for suitable summit and valley curves and vision berms at blind curves are laid.

Thank You