Rural Road Safety Policy in Korea: Lesson Learned

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1. Trends of road safety in Korea

- The number of fatalities peaked at 13,429 in 1991.
- Halved this number in 2004 reaching at 6,563.
- It has shown steady decrease so far, now it is 4,762 in 2014.
- Road accident costs: 38 trillion KRW (38 billion USD) ➞ 1.5% of GDP

<table>
<thead>
<tr>
<th>Year</th>
<th>Crashes</th>
<th>Fatalities</th>
<th>Causalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>223,656</td>
<td>5,392</td>
<td>341,391</td>
</tr>
<tr>
<td>2013</td>
<td>215,354</td>
<td>5,092</td>
<td>328,711</td>
</tr>
</tbody>
</table>

* 50.2 million population
* 19.4 million registered vehicles
* 106,414 km road length (4,111km of motorway)
1. Trends of road safety in Korea

Fatalities per day: 13.95
Fatalities per month: 422.3.
* Fatalities and missing people from Sewol ferry: 304

Fatalities per 100,000 people: 10.1 (OECD average is 6.8)

Fatalities per 10,000 vehicles: 2.2 (OECD average is 1.2)
2. Main findings from crash statistics (2013)

More than 70% of fatalities occurring in urban roads

Pedestrians represent 38.9% of total fatalities

**Fatalities by road types**

- Urban roads: 2,361 (46%)
- National Highway: 974 (19%)
- Metropolitan roads: 1,156 (23%)
- Others: 303 (6%)

**Fatalities by road users**

- Pedestrians: 1,982 (40%)
- Vehicle occupants: 1,816 (37%)
- Motorbikes: 830 (17%)
- Bicycles: 281 (6%)
64.5% Hit by Cars while Crossing Roads (2014)

Pedestrian fatalities

- Walking facing cars (48, 3%)
- Walking in the same direction as cars (80, 4%)
- On the crossings (388, 20%)
- Nearby crossings (112, 6%)
- Near foot bridge (21, 2%)
- Crossing roads in other areas (711, 37%)
- Walking along fringes (53, 3%)
- Others (476, 25%)

Total: 1,910
56% of fatalities occurs in road width less than 9m (2014)
38% of fatalities occurs in the age group over 65 (2014)

- Age group over 65 accounts for only 12.7% of the population

48% of pedestrian fatalities occurs in the age group over 65

- Pedestrian fatalities is 1,910
- Pedestrian fatalities over 65+ is 919
2. Main findings from crash statistics (2013)

Implications of crash statistics

- Need to reduce pedestrian fatalities at crossings and narrow roads
- Need to reduce fatalities of the olds
- Need to reduce fatalities in junctions

☞ Pedestrian priority zones (Zone 30) in villages
☞ Sidewalks in roads around high land use
☞ Safe crossings facilities
☞ Road safety educations for the olds
☞ Roundabouts in junctions
3. Village Zones in National Highway

Typical Problems in Rural Roads in Korea

- Less sidewalks
- Less crossings
- Less lights
- High Speed all the way

Less Consideration for People in Highway Design

- Children to school
- Farmers (walking late but drunken)

Source: http://blog.jinbo.net/nongbu/tag/%EB%A7%88%EB%9F%89%ED%95%AD
3. Village Zones in National Highway

Why?: High fatality Rate in crashes occurred in National Highways
fatalities/pedestrian crashes (National Highway) = 13.4%
3 times higher than the average

How?: Speed Reduction Measures around Villages along NH
80km/h → 60 or 70km/h
Particularly before and after village (100 m)
3. Village Zones in National Highway

- Entrance sign
- Color pavement
- Crossing: refugee, lights
- Sidewalks
- Curbs
- Speed Cameras
### Pilot Studies

<table>
<thead>
<tr>
<th>Counties</th>
<th>Gapyong</th>
<th>Youngam</th>
<th>Hogngsung</th>
<th>Chilgok</th>
<th>Uljoo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sections and Length</td>
<td>3 sections 3.10km (NH 46, 37)</td>
<td>2 sections 2.43km (NH2, 13)</td>
<td>2 sections 1.35km (NH 21, 29)</td>
<td>3 sections 3.40km (NH 4, 5)</td>
<td>4 sections 1.97km (NH14, 35)</td>
</tr>
<tr>
<td>No. of crashes</td>
<td>88</td>
<td>62</td>
<td>26</td>
<td>116</td>
<td>57</td>
</tr>
<tr>
<td>Main counter-measures</td>
<td>Crossings Lights Railings</td>
<td>Junction layout Warning signs</td>
<td>Junction Lights Sidewalks Markings</td>
<td>Crossings Signals</td>
<td>Junction closure Taxi bay</td>
</tr>
</tbody>
</table>
|                | All includes entrance signs, speed limits signs, speed cameras, and red pavement

### Expectations

- 380 savings in pedestrian fatalities
- USD 190 billion savings
3. Village Zones in National Highway

- Village Zones are designated along National Highways to control traffic and enhance safety. Various signs and markings are used to inform drivers about speed limits, road conditions, and potential hazards.

- The signs and markings include:
  - Speed limits
  - Traffic control signals
  - Lane markings
  - Road signs for pedestrian crossings
  - Emergency stop zones

- The map illustrates the distribution of these zones along the highway, with detailed information on each section.

- The village zones are crucial for managing high traffic volumes and ensuring the safety of both drivers and pedestrians.
4. Sidewalks along National Highways

Success of 1st Sidewalk Installation (05~07)
'04: 823 fatalities → '07: 619 fatalities

Success of 2nd Sidewalk Installation (08~14)
371km (USD 121.6 billion)

Source:
http://blog.jinbo.net/nongbu/tag/%EB%A7%88%EB%9F%89%ED%95%AD

Around School and Villages

http://www.nsinews.net/Gosung/contents/cat2_2_00/18719

### Main strategies and actions

<table>
<thead>
<tr>
<th>Strategies</th>
<th>Areas</th>
<th>Actions</th>
</tr>
</thead>
</table>
| Improvement of road user behaviours | Better safety for school routes | · Walking school bus  
· Registration of school buses  
· Child car seat enforcement |
| | Children - oriented road safety education | · Development of education textbooks  
· Increase of road safety classes  
· Promotion of road safety instructors |
| | Better safety for the olds | · **Self-diagnosis manual for the olds**  
· Education program for the olds  
· Provision of the old-friendly cars |
| | Enforcement on drink driving | · Reinforcement on BAC level  
· **Installation of ignition interlock device**  
· Increase of penalties for violation |
| | Improvement in insurance policy | · Premium reduction for cars with safety equipment  
· Differentiation of premiums by regions  
· More responsibility to rental car drivers  
· **Distance based insurance** |
| | Working hour limit for commercial vehicle drivers | · Research on working hours per day for various types of drivers  
· Amendment of Labour Act |
| | More education and promotion | · **Passing priority at unsignalised junctions**  
· More TV advertisements  
· Road safety experience centre |

Main strategies and actions

<table>
<thead>
<tr>
<th>Strategies</th>
<th>Areas</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provision of safe transport infrastructure</td>
<td>Safe and comfortable pedestrian space</td>
<td>· Sidewalks for roads in residential areas</td>
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<tr>
<td></td>
<td></td>
<td>· More pedestrian priority zones</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· LED lights over pedestrian crossings</td>
</tr>
<tr>
<td></td>
<td>Special zones for vulnerable road users</td>
<td>· Silver zone increase</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· More safety facilities for the disabled people</td>
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<tr>
<td></td>
<td>Better safety facilities</td>
<td>· Installation of signal posts before junctions</td>
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<tr>
<td></td>
<td></td>
<td>· Safety improvement at entrance to villages</td>
</tr>
<tr>
<td></td>
<td>Area-wide road safety improvement</td>
<td>· Designation of pilot road safety cities</td>
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<tr>
<td></td>
<td>Bicycle safety</td>
<td>· Better cycle paths and education</td>
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<tr>
<td></td>
<td>Sharing road safety information</td>
<td>· National road safety data sharing system</td>
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<tr>
<td></td>
<td></td>
<td>· Sharing in-depth crash investment data</td>
</tr>
<tr>
<td>Operation of smart transport system</td>
<td>Advanced safety assistance equipment</td>
<td>· Introduction of various sensors, alarms, and occupants protections to reduce vehicle to vehicle accidents</td>
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<tr>
<td></td>
<td>Safety equipment for commercial vehicles</td>
<td>· More installation of maximum speed limiters and digital tachometers</td>
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<td></td>
<td>Meeting global standards in vehicle safety</td>
<td>· More testing areas in NCAP</td>
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<td></td>
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<td>· Life-cycle management for motorbikes</td>
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<td></td>
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<td>· Safety standards for Green Cars</td>
</tr>
</tbody>
</table>
### 5. National Road Safety Plan (2012~2016)

#### Main strategies and actions

<table>
<thead>
<tr>
<th>Strategies</th>
<th>Areas</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enforcement of safety management system</td>
<td>Speed management for people</td>
<td>· 60km/h limit for minor arterial roads</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· 30km/h speed limit in residential areas</td>
</tr>
<tr>
<td></td>
<td>Scientific investigation of accident causes</td>
<td>· More in-depth investigation on major crashes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Introduction of Korea Road Assessment Program</td>
</tr>
<tr>
<td></td>
<td>Safer logistics systems</td>
<td>· Information system for hazardous materials movement</td>
</tr>
<tr>
<td>Enhancement of emergency response system</td>
<td>Emergency response by areas</td>
<td>· e-Call system</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Emergency routes along congested areas</td>
</tr>
<tr>
<td></td>
<td>Weather information system</td>
<td>· Provision of weather forecasts along roads</td>
</tr>
</tbody>
</table>

☞ Good plans, and need evaluation what has been done, what is not and why?
6. Some reasons of high road fatalities

- Culture of “**Hurry-Hurry**”: Good for IT, Bad for road safety
- Some **drivers never understand** what is safe or dangerous driving behaviour.
- Some **reckless pedestrians** cross roads without care.
- **Generous to alcohols**
- Common to come across **wide junctions** particularly in new town.
- **Sidewalks are not found in rural highways** in certain sections.
- **Speed limit in urban areas is set at 60km/h (80km/h)**
- **Parking cars hinder** sight distance of drivers
6. Some reasons of high road fatalities

- No change in traffic signal times. It causes speeding.

- Low penalty fines or demerit system
  * this money is not used for road safety

- No road safety program for high schools

- The priority of road safety is still very low for most local governments.

- The law not to prosecute people who caused accidents if they are not caused from major violations
7. Success stories in Korea

Child road safety
- Child road fatalities from 1,776 to 82 (-95%) between 1988 and 2013.
- **9,021 School Zones** spending 1,456 billion KRW (2003~2012)
- 30km/h speed limit and parking prohibition in School Zones.
- ‘**Green Mothers Organization**’ to help children crossing roads

Black box installation for cars
- More than **2 million cars** with black boxes (2012)
- Can be an **evidence when crash occurs** (reduce disputes)
- Fatalities from taxies have been reduced by more than 15%
- **B/C ratio** should be around 1.7 if all cars install black boxes
- Car insurance companies **reduce insurance premiums** by 3 % to 5%