Safety of vulnerable user: pedestrian zone project

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1. Problematic
2. Pedestrian Safety
3. Pedestrian Zone Project
ESCAP has 12.48 deaths per 10,000 vehicles compared to OECD showing 1.12 killed. More than 50% of fatalities are subject to pedestrians in Bangladesh, Philippines. With similar registered vehicles, however, Cambodia and Kazakhstan have smaller than 20% pedestrians killed on roads.
The higher the speed limit in built-ups is, the more probable would happen that pedestrians be killed on the streets.

In those countries like Bangladesh, Philippines are pedestrians poorly protected with facilities though laying speed limits in cities relatively low.
Pedestrian fatality by accident form

**1. Problematic**

- Risky while crossing the crosswalk
- No protected right-of-way of pedestrians even on feeder roads
This place is a hot-spot involving pedestrians who jaywalked a pedestrian crossing. Look left and right prior to making use of crosswalk lest you should get run over.

fences for what?

curbstone (0.2 m)

three-lane (9 m)
2. Pedestrian Safety

Bad example of 30-zone

- lane, width, fence, strip
- width, parking, pavement
- width, parking, pavement
- width, school bus
2. Pedestrian Safety

Bad example of 30–zone

source: Choe et al., Traffic Safety Planning for Ansan, 2012
2. Pedestrian Safety

Bad example of 30-zone

Jinhung

Such spots exceeding 38 km/h are equipped with fences, image humps, excessive widths.

Sungan

source: Choe et al., Traffic Safety Planning for Ansan, 2012
2. Pedestrian Safety

### Speed measurement in 30-zones

<table>
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<tr>
<th>spots</th>
<th>number of lane</th>
<th>width of lane</th>
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25 traffic calming zones in ANSAN are observed using speedometer, with a view to verifying the effect of road equipments upon speed.

12 spots (red-tinged) do not function adequately due to exceeding 38 km/h.

Source: Choe et al., Traffic Safety Planning for Ansan, 2012
2. Pedestrian Safety

Factors impacting on speed

Analyzing speed for periods of time, number and width of lanes are supposed to be related with speed.

The more lanes, the broader the road, it is very likely to exceed speed limit.

source: Choe et al., Traffic Safety Planning for Ansan, 2012
2. Pedestrian Safety

Effect of forcing functions

Speed $V_{85}$ [km/h]

- 49: fence, broad, coloring
- 26: narrowing, hump

source: Choe et al., Traffic Safety Planning for Ansan, 2012
2. Pedestrian Safety

Good examples of 30-zone

source: Choe et al., Traffic Safety Planning for Ansan, 2012

Bono

Such spots complying with speed limit are equipped with narrowing, hump, and no fences that make kids visible all around.

Sungmo
2. Pedestrian Safety

The longer visual point of focus the higher the driving speed!
For pedestrian safety, driving scanned is better to design than being focused.

source: Choe et al., Traffic Safety Planning for Ansan, 2012
source: Choe et al., Study on Hot-Lengths involving Pedestrian, 2009
source: Choe et al., Study on Hot-Lengths involving Pedestrian, 2009
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Crossing aids for pedestrian

- chicane
- speed cushion
- narrowing
- chicane
Crossing aids for pedestrian

pedestrian island

central reserve

pedestrian island

pedestrian island
2. Pedestrian Safety

Crossing-over accidents

source: Choe et al., Traffic Safety Planning for Yongin, 2009
2. Pedestrian Safety

Improvement scheme

source: Choe et al., Traffic Safety Planning for Yongin, 2009
2. Pedestrian Safety

Crossing-over accidents

source: Choe et al., Traffic Safety Planning for Ansan, 2012
2. Pedestrian Safety

Desire lines of pedestrians

- traffic violations are mostly done by adults (42%), followed by teenagers (34%)
- crossing outer crosswalk is seen mainly by senior (38%), followed by adults (30%)
2. Pedestrian Safety

**Improvement scheme**

source: Choe et al., Traffic Safety Planning for Ansan, 2012

1. Adding 1 crosswalk reflecting desire line of pedestrians
2. Extending and raising sidewalks for means of minimizing conflicts
3. Installing central reserve for means of assisting the crossing safely
2. Pedestrian Safety

Recommendations for pedestrian safety

☞ school zone, senior zone designated by police due to lack of differentiation in design concept have to be subsumed in pedestrian zone.

☞ pedestrian zone has to be equipped with forcing functions, otherwise disapproved of installation.

☞ installing no more fences, no more traffic islands, applying extensively chicane, pedestrian islands.

☞ obligation of RSA on 30–zone before designation.

☞ compulsory monitoring and data based follow-up saving potentials for which kinds of road facilities.
3. Pedestrian Zone Project

- pedestrian safety takes precedence over fluidity
- roads shared due to difficulty of separation
- as of 2007 pilot projects in 23 cities in progress

National plan for disseminating pedestrian zones

- 1. period (9 sites)
- 2. period (6 sites)
- 3. period (3 sites)
- 4. period (3 sites)
- 5. period (2 sites)
### Decision criteria for selecting project sites

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</table>

- to sort out sites in view of making grants for either design or construction
- to evaluate road functions and meanings of sites of concern
- to evaluate possibility of making sure funds needed
- to evaluate strength of will to get through

주: ◯=적합(가능성 높음, 매우적합), ◯=적합(가능성 있음, 적합), ◯=부적합, ◯=부적합
3. Pedestrian Zone Project

Resolution of pedestrian zone by consent

**problems defined**

- insufficient connection
- narrow at bus stop
- narrow sidewalk
- break-off walking line
- hazards, poor marking
- wide carriage way, confined sidewalk
- illegal parking on sidewalk
- high traffic
- conflict with car
- break-off walking line
- narrow sidewalk

**measures adjusted**

- road diet
- public garden
- forcing functions
- chicane with parking lots
- rugged pave
- sidewalk, forcing function
- sidewalk remove
- sidewalk extend
- sidewalk extend
3. Pedestrian Zone Project

**Improved pedestrian safety**
- **local authority**: no cuts 50%
- **inhabitants**: no cuts 26.7%
- **speed reduced**: 58.8%

**Improved walk-ability**
- **local authority**: room for walkers 66.7%
- **inhabitants**: room for walkers 66.7%
- **no illegal parkers**: 66.7%

**Project satisfaction**
- **local authority**: discontent 16.7%, content 83.3%
- **inhabitants**: discontent 25.5%, content 74.5%
3. Pedestrian Zone Project

Outcomes of pedestrian zone

- speed in traffic of 23 km/h has been reduced to 16 km/h
- illegal parking of 59 vehicles/m has been reduced to 33 veh./m
- traffic volume of 427 vehicles/h has been reduced to 289 veh./h
- casualties of 10 pedestrians/km has been reduced to zero
- sales of stores have shown a 89.5% increase over preceding years
3. Pedestrian Zone Project

Further considerations

☞ making it a rule to **ban vehicles** in pedestrian zone
  - 70% of accident rate is explained by **vehicle mileage**
  - the lower vehicles in traffic the fewer casualties

☞ putting **one-way and cul-de-sac** as integral elements

☞ permitting **no through traffic** of heavy goods vehicles

☞ applying **street furniture** typical of shared space

☞ imprinting pedestrianism through steady **road-diet**

☞ integrating road safety with **criminal safety**
  - **Gender Mainstreaming** as a special part of RSA
  - virtual use of carriageway in view of transparency, easiness of jaywalking, visibility, social control etc.
  - subjective fear spaces out of **feminine perspective**
PEDESTRIAN ZONE
No vehicles