Rapid socio-demographic change and concurrent consideration in licensing older drivers: A report from Japan

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This presentation is about

1. Describing licensing intervention in Japan

2. Presenting trend of accident statistics involving older road users

3. Discussing efficacy of licensing practices
**Background (1) Projected % 65+ population**

*We are experiencing extremely rapid ageing of society*

United Nations (1950-2010), Ministry of Internal Affairs and Communications (medium estimate), Statistics Korea, BASt-Bericht M231 (2012), United States Census Bureau (middle series).
Background (2): Unprecedented change in lifestyle, mobility and other concerns

- More people live in metropolitan area
  Private cars may become more of a luxury

- Fewer people live in rural area
  Mobility with private car is indispensable

- Less financial resources are available for road traffic infrastructure.
Many older women will be without license for the next 20-30 years.
1. Licensing practices

* Shorter license renewal intervals (=3 years) for drivers 70 and older (1998/2002)

- Cognitive screening test (2009)
- 2.5-hour educational course (2002)
- Declaration of medical condition (2002/12)
Cognitive screening test

a. Orientation (date and time)
b. Memory (cued recall)
c. Clock drawing

\[
\text{Total score} = 1.15 \ a + 1.94 \ b + 2.97 \ c
\]

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Cognitive Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \geq 76 )</td>
<td>Cognitive function unimpaired</td>
</tr>
<tr>
<td>49 - 75</td>
<td>Slightly impaired</td>
</tr>
<tr>
<td>49 (&lt;)</td>
<td>Impaired</td>
</tr>
</tbody>
</table>

If combined with certain preceding violations, further assessment is required.
以下の質問にお答えください。

<table>
<thead>
<tr>
<th>質問</th>
<th>回答</th>
</tr>
</thead>
<tbody>
<tr>
<td>今年は何年ですか？</td>
<td>年</td>
</tr>
<tr>
<td>今月は何月ですか？</td>
<td>月</td>
</tr>
<tr>
<td>今日は何日ですか？</td>
<td>日</td>
</tr>
<tr>
<td>今日は何曜日ですか？</td>
<td>曜日</td>
</tr>
<tr>
<td>今日は何時何分ですか？</td>
<td>時 分</td>
</tr>
</tbody>
</table>

※指示があるまで止めないでください。
2.5-hour educational course

- Lecture on traffic safety
- Psycho-visual testing
- Drive check
* Promotion of voluntary license surrender for older people (1998-)

In 2013, 1% of 65+ license holders
2% of 75+ license holders

* Promotion of “older driver sign” (1997-)

![Older driver sign](image)
2. Accident statistics

- Fatalities by age group and gender per population
- Trend of fatal injuries during 1994-2013
- Generalised linear models to explain relative risk of fatal injuries by age and road user group
Fatalities by gender and age per 100,000 population (2013)

- **Men**
  - Highest fatality rate of older pedestrians
  - Also high fatality rate of older male drivers

- **Women**

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- Pedestrian
- Cyclist
- Driver
- Passenger

![Bar chart showing fatalities by gender and age per 100,000 population (2013)](chart_image)
Trend of fatal injuries by road user and age group

Pedestrian

Cyclist

Driver

70+

60-69

20-59
Generalised linear regression on fatalities using data 1994-2013

with negative binomial models

<table>
<thead>
<tr>
<th>DV</th>
<th>EV (factor)</th>
<th>EV (covariate)</th>
<th>Offset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatalities</td>
<td>Age group (20-59; 60-69; 70+)</td>
<td>Year</td>
<td>Licensee*</td>
</tr>
<tr>
<td></td>
<td>Road user (Ped; Cycl; Driver)</td>
<td>Total vehicle-kilometer*</td>
<td>Population*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Employees 65+*</td>
<td></td>
</tr>
</tbody>
</table>

* log-transformed

interaction term
Results

1. Overall fatality risk per population
   - reduced 6% every year.
   - suggested significant age * road user interaction effects

2. Relative risk of fatality within road user group

<table>
<thead>
<tr>
<th>Road User Group</th>
<th>70+</th>
<th>60-69</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian (per population)</td>
<td>9.7</td>
<td>3.4</td>
</tr>
<tr>
<td>Cyclist (per population)</td>
<td>8.6</td>
<td>3.9</td>
</tr>
<tr>
<td>Driver (per licensee)</td>
<td>3.1</td>
<td>1.4</td>
</tr>
</tbody>
</table>
3. Discussion on efficacy of licensing practices

Statistics show;

- Prevention of older pedestrian crash is the priority both with regard to fatality counts and fatality rate.
- Fatally injured older drivers (70+) has doubled in the last 20 years,
- but both fatality counts and fatality rate involving older drivers are smaller compared to pedestrians.
Current licensing practices

Pros

* Intuitive
* Can address potential cognitive changes
* Help to identify relevant conditions/unfit drivers

Cons

* Lack of scientific evidence to support current intervention
* Symbol of ageism and discrimination?

- Scientific evidence to balance between independent mobility and general safety
- Social discussion/consensus about functions of license
Thank you for your attention

We thank Drs Jaehoon Sul and Sangjin Han of Korea Transport Institute for providing useful information on older road user safety in Korea.