The effect of an ageing population on road safety

Kurt Van Hout

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- Why?
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Why?

- Changes in society will affect road safety?
- Prognosis helpful to anticipate
- Policy tool

- But:
  - most prognoses are based on trends of accident figures
  - which learn nothing about causes or influencing factors

Why?

- Differences between age groups
  - Travel behaviour
  - Accident risk
- Differences between generations
  - Elderly past ≠ elderly present ≠ elderly future
- Changes
  - Population numbers and composition
  - Socio-economics
  - Drivers’ license possession
  - Risk
Decomposition

KSI = Exposure * (injury) Risk

Σ (person_i * travel distance_i)
Decomposition

- KSI = (Exposure) * (injury) Risk
- \[ \sum (\text{person}_i \ast \text{travel distance}_i) \]
- synthetic population

How?

Synthetic population

- population numbers
  - existing population forecasts for Flanders 2009-2030
  - by age, gender and municipality
Synthetic population

- population numbers
  - existing population forecasts for Flanders 2009-2030
  - by age, gender and municipality

- work status
  - based on prognosis (1995-2050) of activity rate
  - by age, gender
Activity rate

How?

- Synthetic population
  - population numbers
    - existing population forecasts for Flanders 2009-2030
    - by age, gender and municipality
  - work status
    - based on prognosis (1995-2050) of activity rate
    - by age, gender
  - drivers’ license possession
    - modeled based on travel surveys
    - by age, birthyear, gender, work status, education, municipality
Drivers’ license

How?

- Decomposition

  - KSI = Exposure * (injury) Risk

  - Σ (person, travel distance)

- synthetic population
How?

- **Travel distance**
  - modeled based on travel surveys
    - by age, birthyear, gender, work status, education, municipality and travel mode
    - on the individual level

- **Exposure**
  - summed by age group, gender and travel mode
  - \( \Sigma (\text{population}_i \times \text{travel distance}_i) \)

Exposure

Relative increase exposure (compared to 2001)
Exposure

Distance traveled by men

Distance traveled by women

Risk past disaggregated by age group, gender and travel mode victims/exposure

future extrapolating existing trends

Risk of women aged 65-74 as a driver

$y = 0.144e^{-0.0747x}$

$R^2 = 0.6101$
Results

- Victims
  - calculated exposure * extrapolated risk

- only demographic changes: +5.7%
- + socio-demographic changes: +6.4%
- + changes drivers’ license: +8.0%
- + trends in risk: -57%
  
  (2020 compared to 2001)
Questions?