

The role of learning processes in road safety trends

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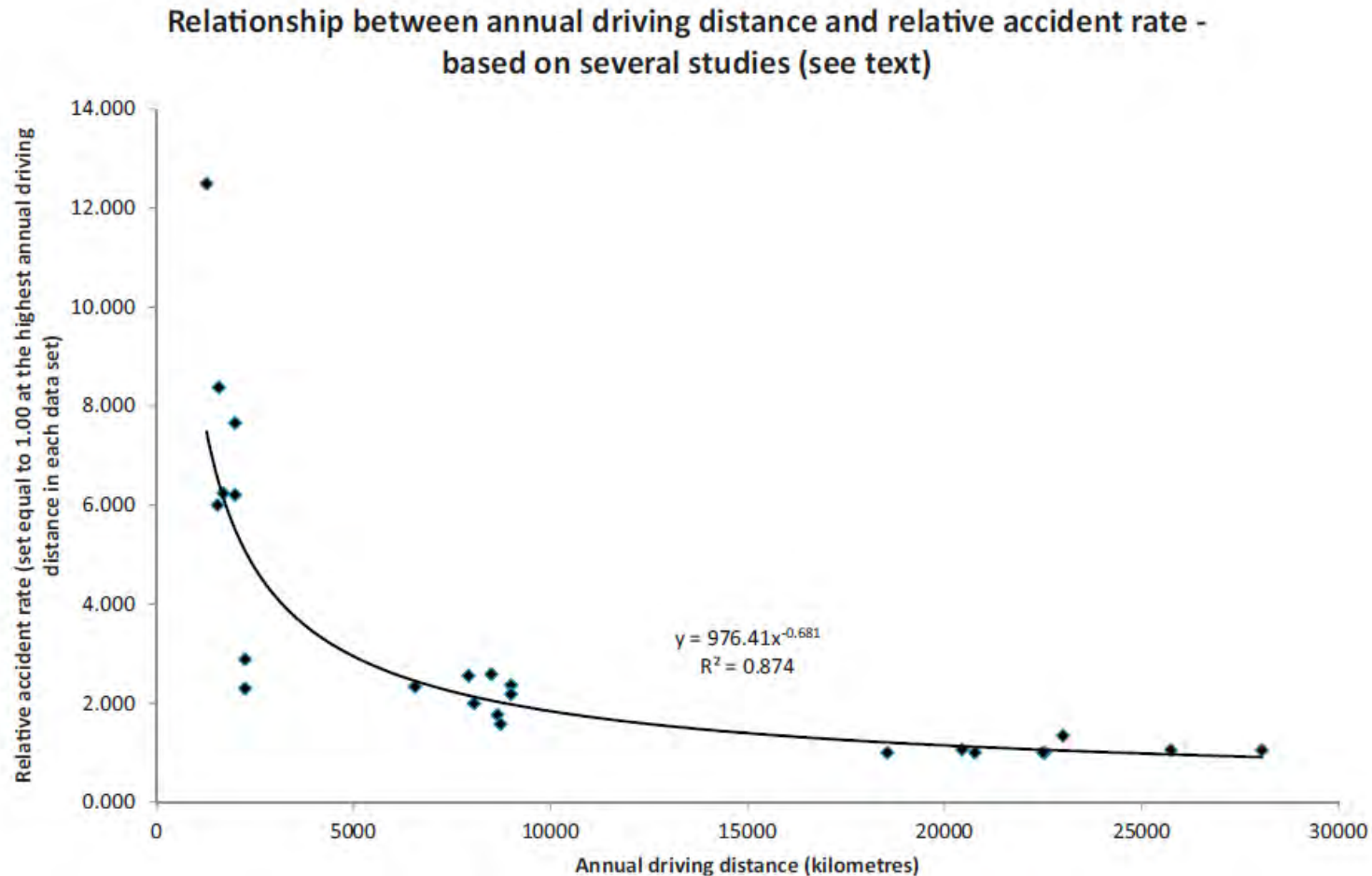
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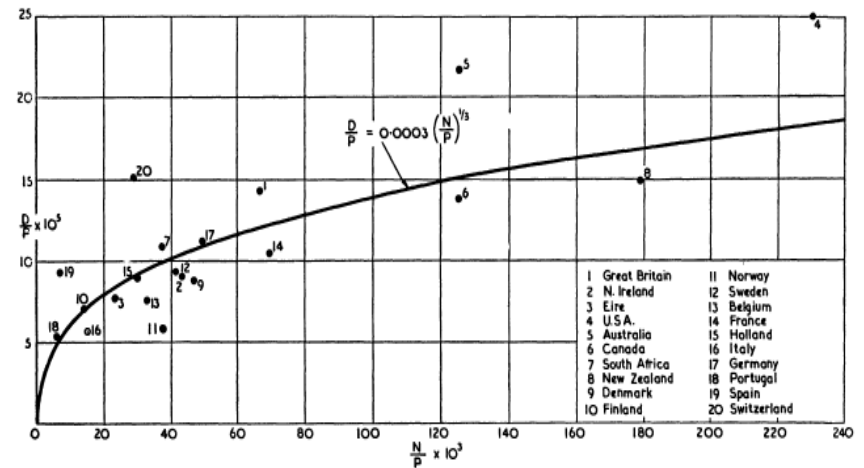
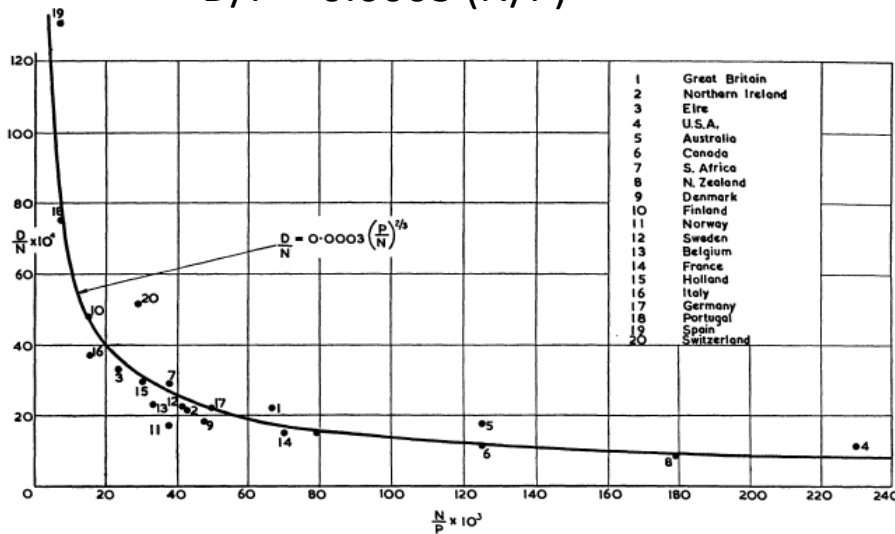
Individual learning



Elvik, R., 2015. Some implications of an event-based definition of exposure to the risk of road accident, AAP 76 15-24

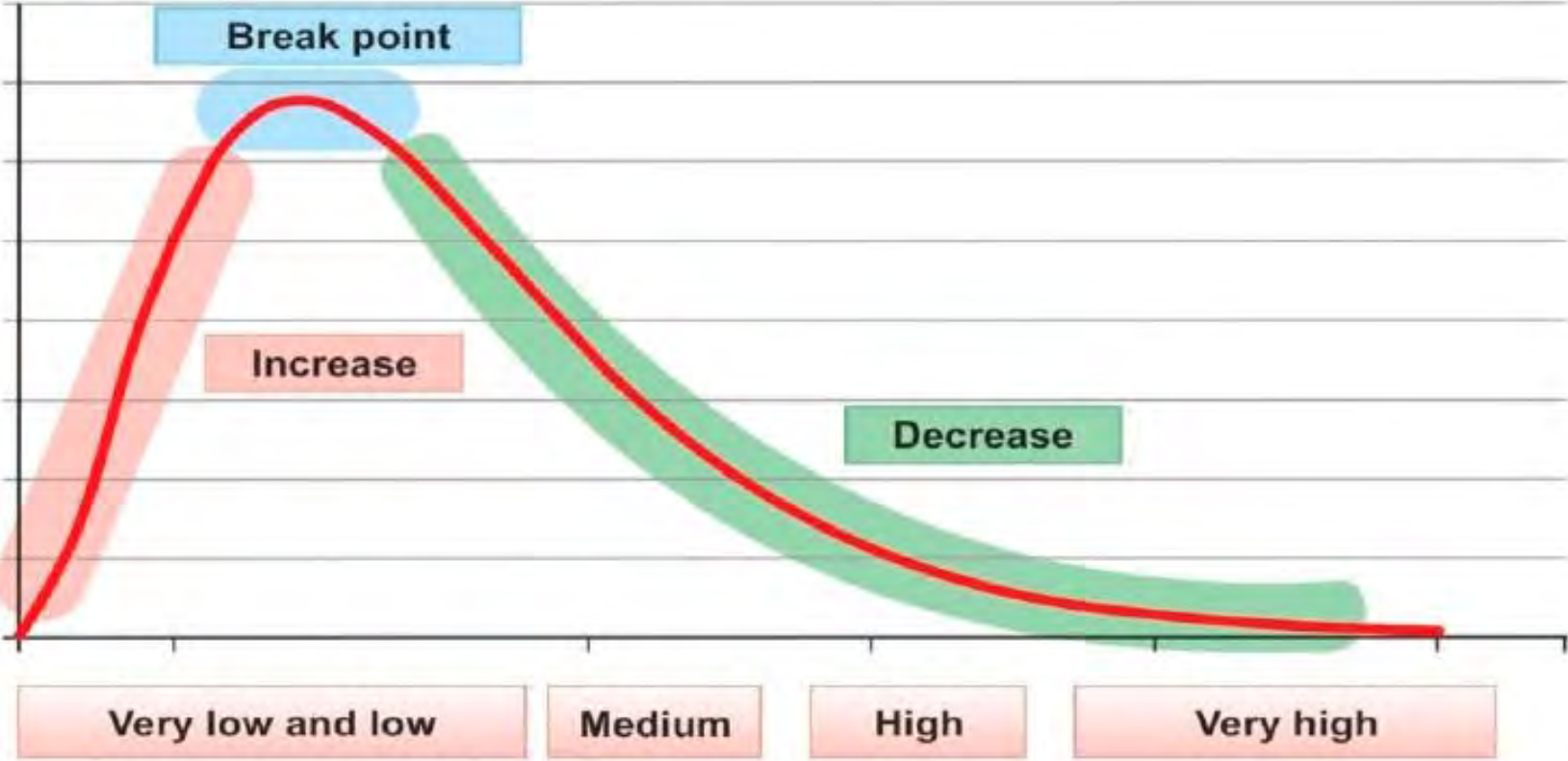
Smeed's law

- Smeed's formula (1949): $D = 0.0003 (N \cdot P^2)^{1/3}$
 - D – road fatalities
 - N – number of registered vehicles
 - P – population
- Two ways of interpretation:
 - $D/N = 0.0003 (N/P)^{-2/3}$
 - $D/P = 0.0003 (N/P)^{1/3}$



Societal learning

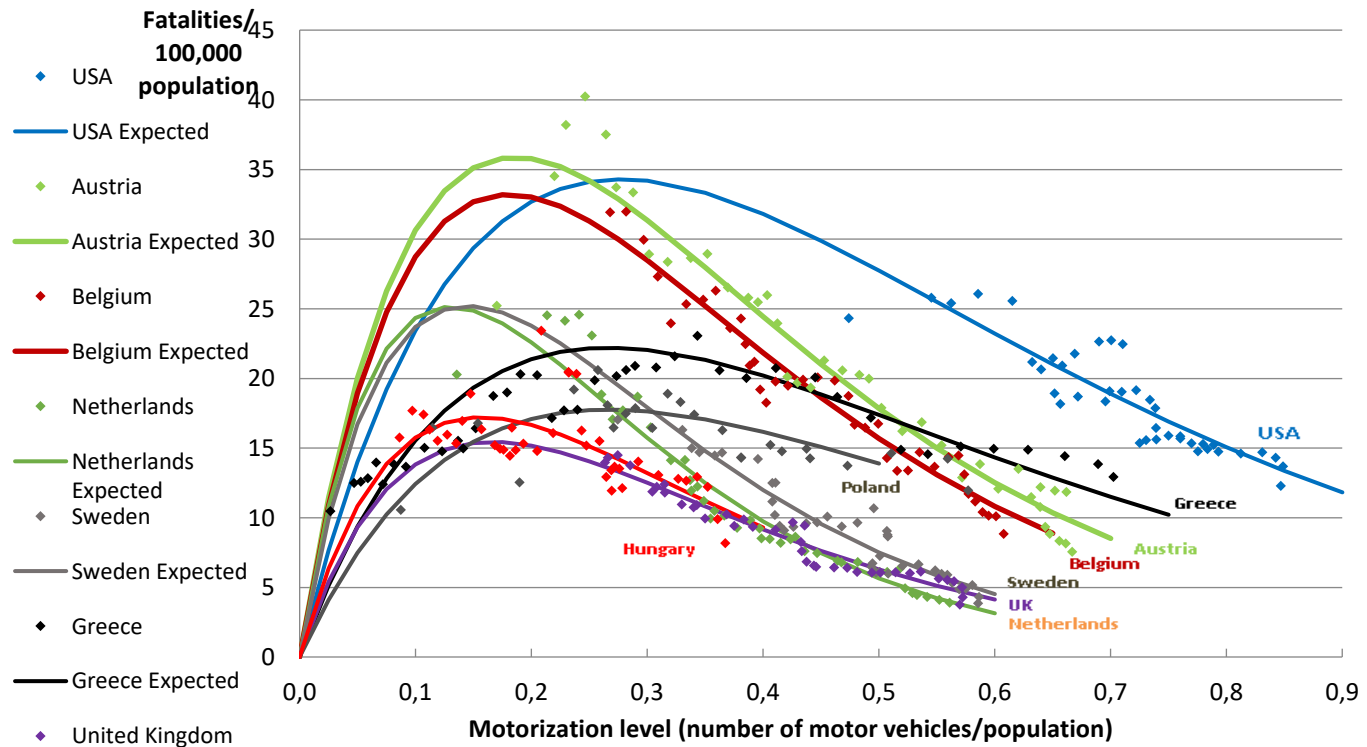
Mortality rate



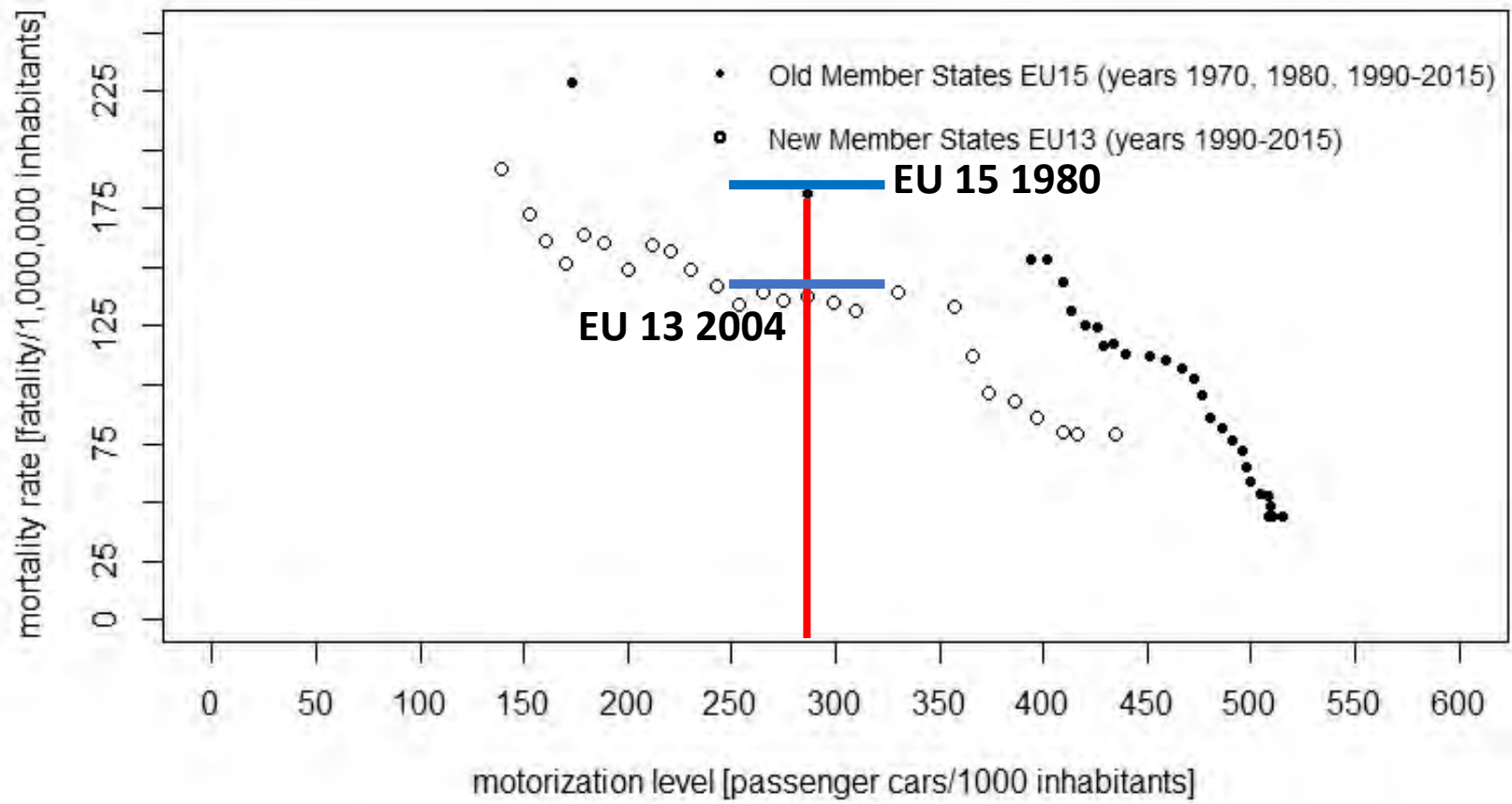
Motorization

Road safety evolution phases

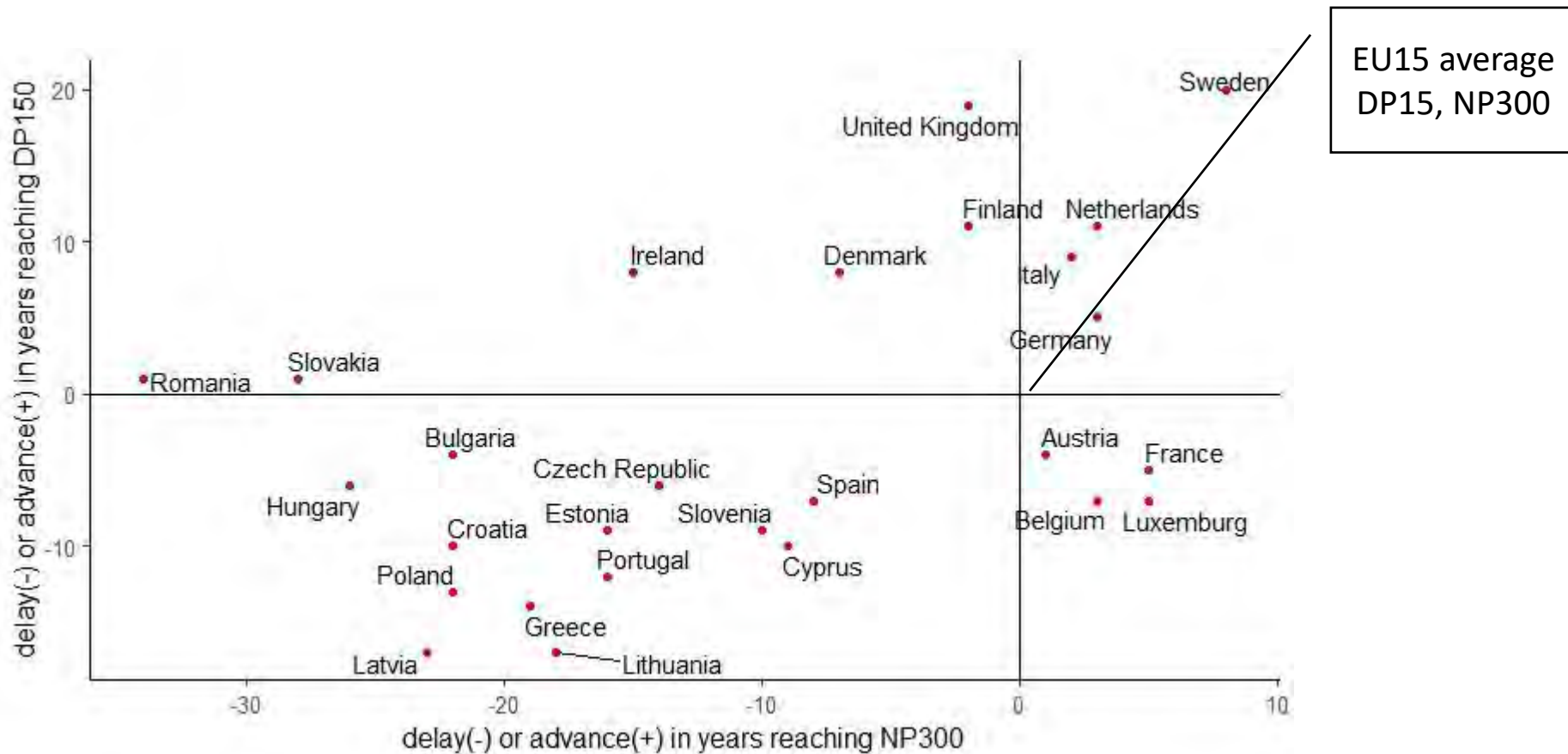
- $D/P = a \cdot N/P \cdot e^{-b \cdot N/P}$
- $a \cdot N/P$: increasing exposure due to the growing number of vehicles
- $e^{-b \cdot N/P}$: decreasing risk due to the development in EEE



Fatality rates vs. motorization (EU 15, EU 13)



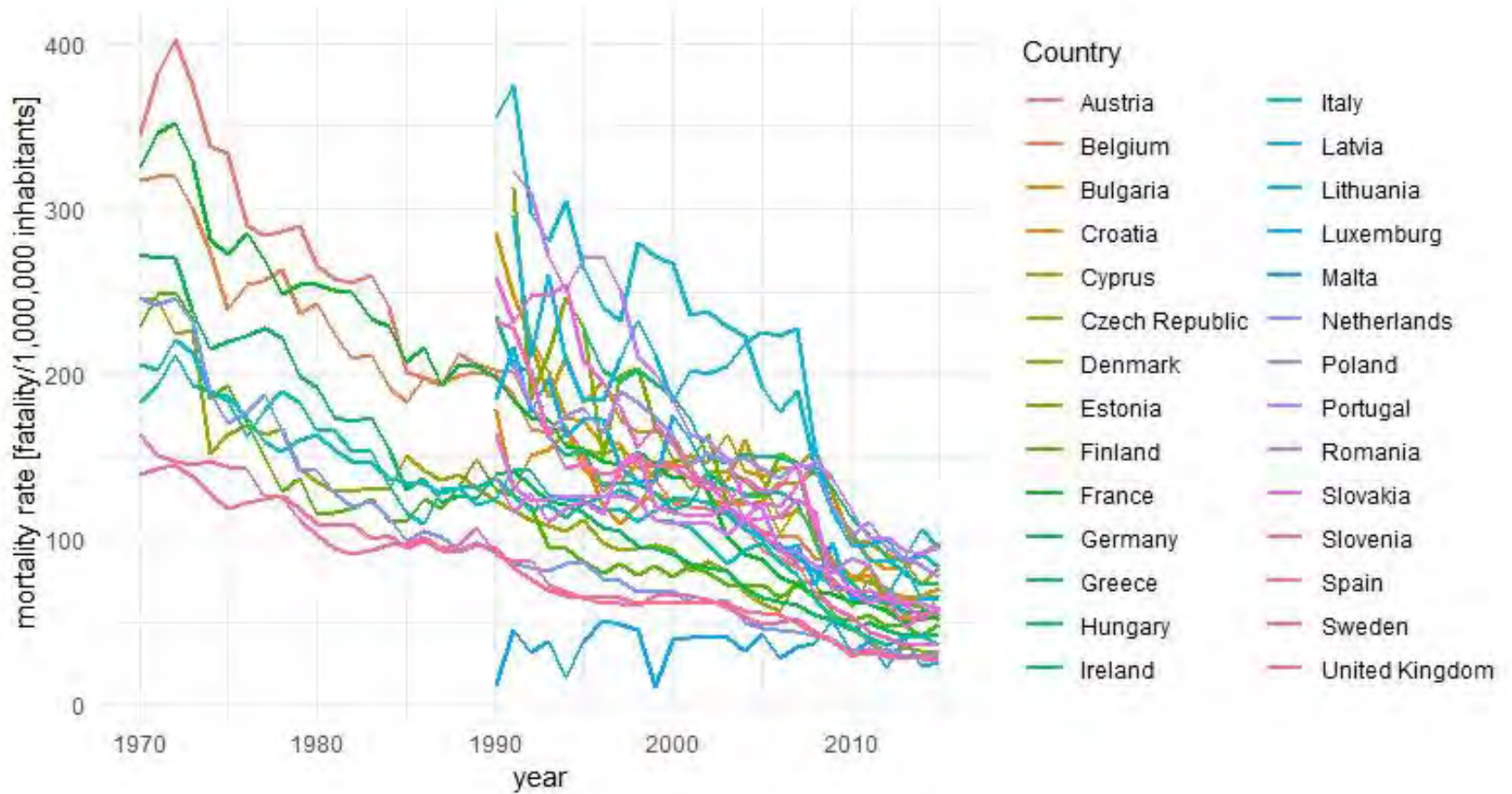
Delays of countries in reaching EU15 average



Advantage of latecomers

- Latecomers can improve their safety performances quicker than other countries due to:
 - the free movement of new technologies;
 - the international exchange of safety experiences;
 - the social attitude towards safety is increasing and also converging in the European countries.

EU safety trends

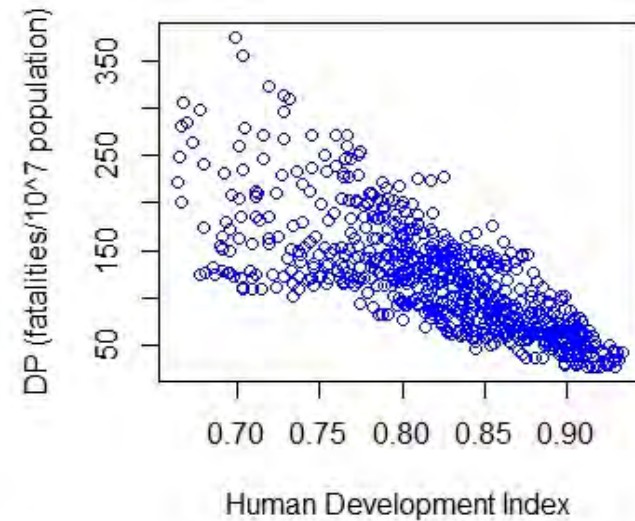
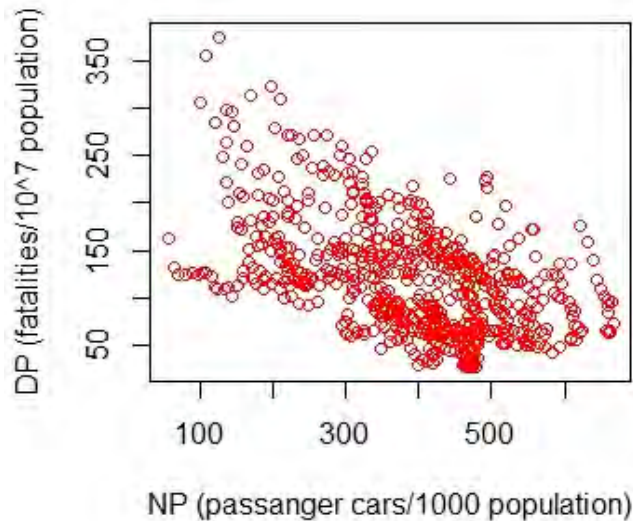


Learning across nations

- Research funding received by a country in the frame of road safety related international projects.
- Intensity of collaborations in road safety between countries.
- Transfer of knowledge on new technological, design etc. solutions.
- A country's ability to receive and adopt safety related knowledge.
- ...

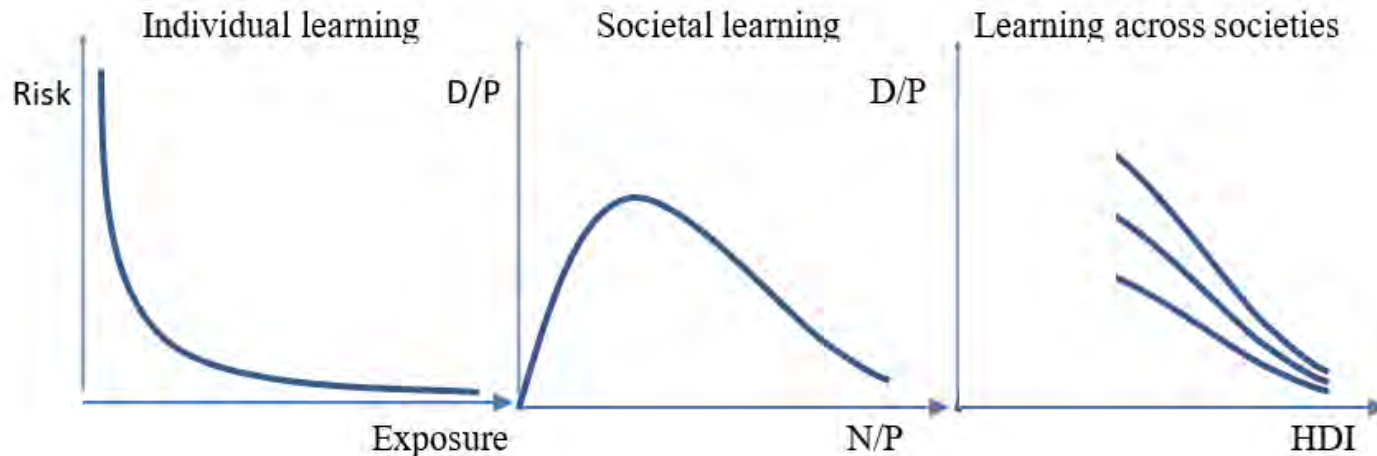
Human Development Index as a proxy

- HDI components:
 - life expectancy index – human life is valued
 - education index – intellectual values
 - Gross National Income (GNI) – income level



Summary

- 3 layers of learning
- Learning across nations is proposed
- Hard to be proven statistically



- Further steps: testing other variables

Thank you for your attention!