



# Long-term trends in road safety in Finland - evaluation of scenarios towards 2020 and beyond

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# Background

- In early 2000s, the presenter was involved in analysing the future outlook and depicting road safety scenarios towards year 2020 in Finland.
- This study was published by the Finnish road administration\* in 2004.
- As we are approaching year 2020, it is interesting to examine to what extent the development has been as projected and to what extent the development has differed from the projections and forecasts made about 15 years back.



# Description of the project in 2003-2004

- The goal was to produce futures oriented information to support strategic planning
- Identifying changes in the operational environment of road safety towards year 2020
  - Which factors have influenced the historical development?
  - What are the trends in road fatalities?
- Analysing the entity, creating alternative futures images and scenarios
- To support the future outlook, historical development was analysed for the past 40 years (about 1970-2002)



# Outline

- Long-term trends in road fatalities in Finland from 1970
- Issues affecting the development of road safety
- Trend-based scenarios for 2002 - 2020
  - Trends among different age groups
  - Trends among women and men
  - Trends among different road user groups
- Update: Trend-based forecast for 2018 - 2030
- Discussion and conclusions



# Road fatalities 1970-2002 in Finland and some key interventions

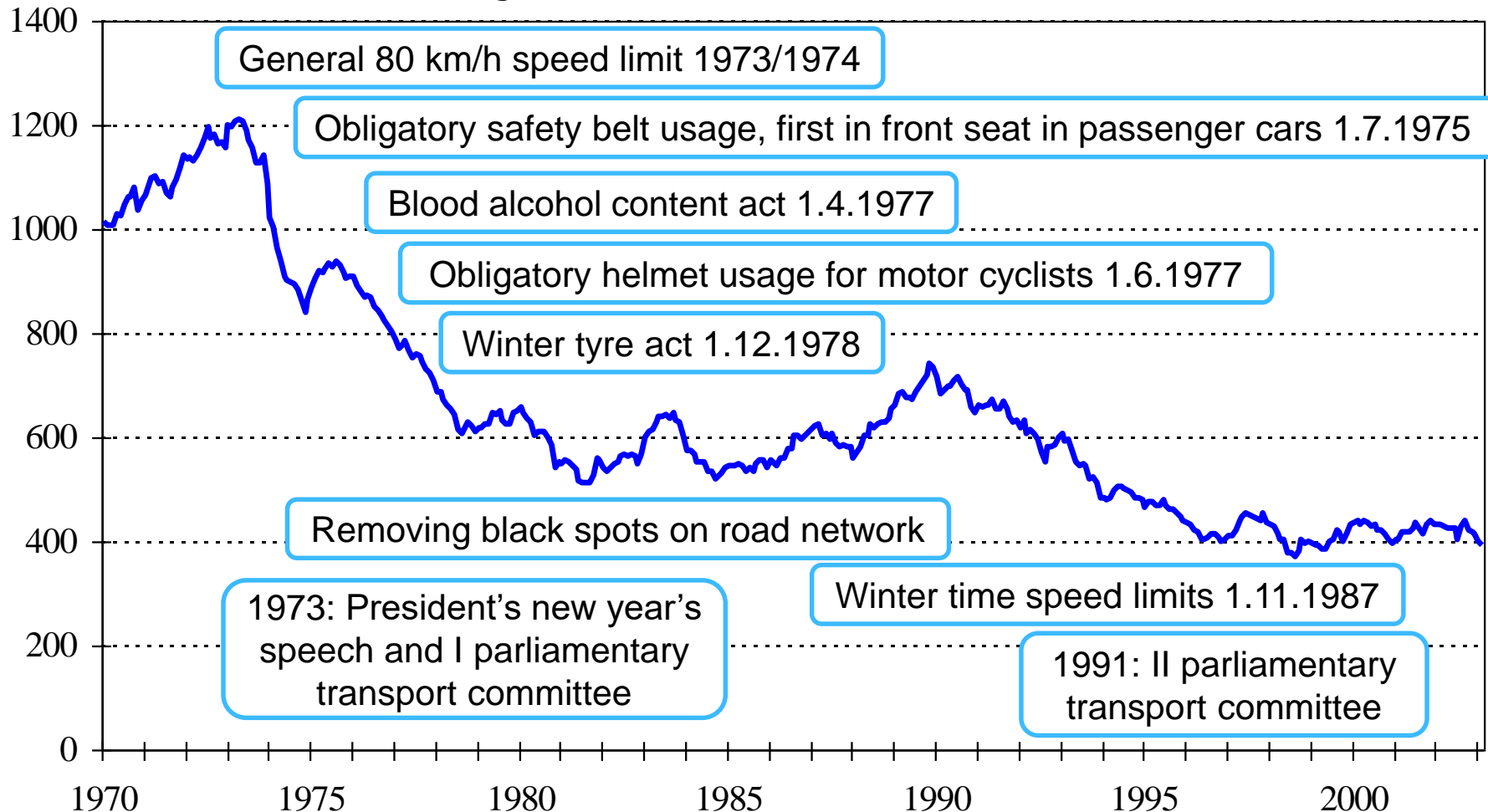
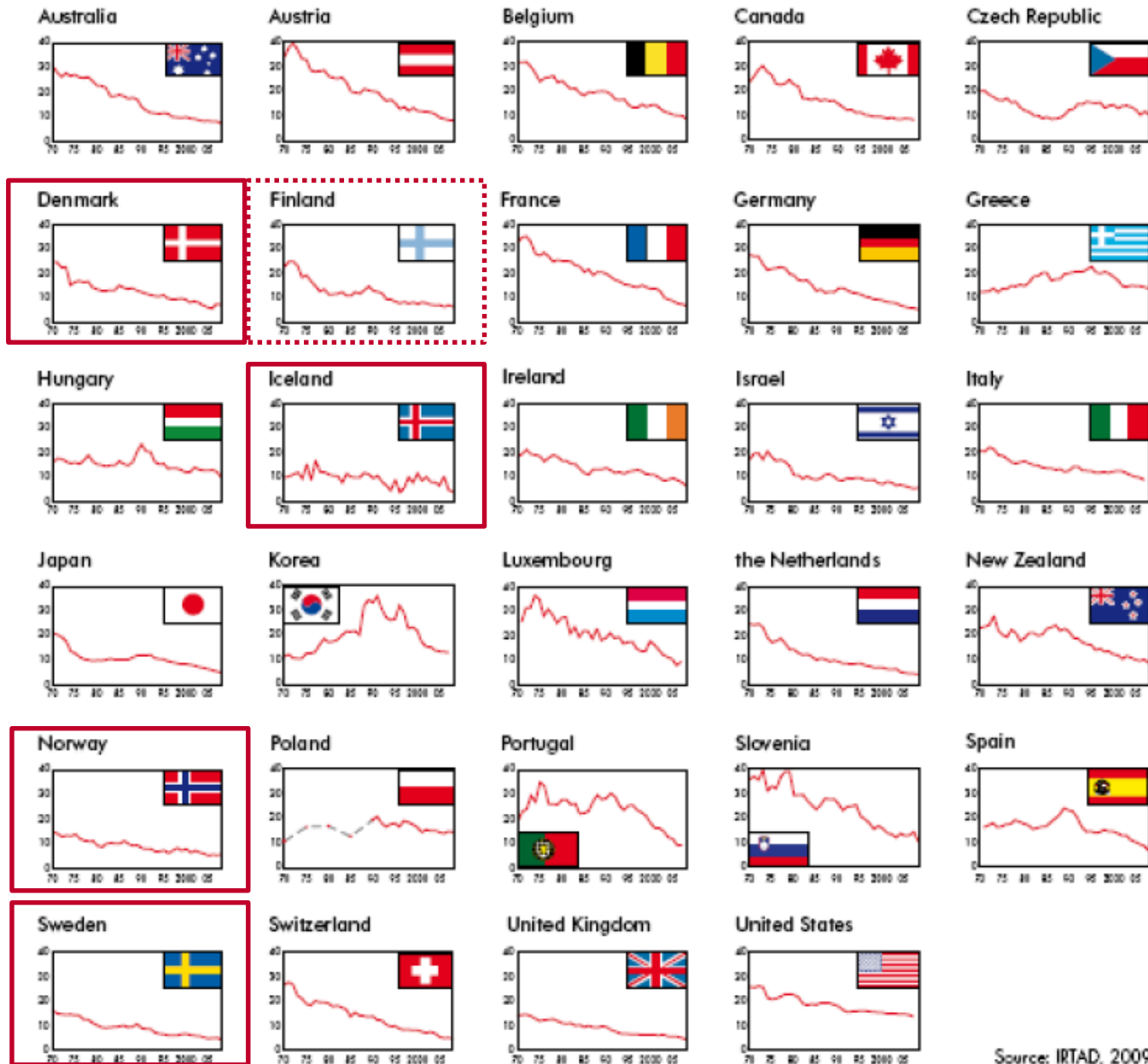


Figure 2. Traffic deaths per 100 000 population since 1970



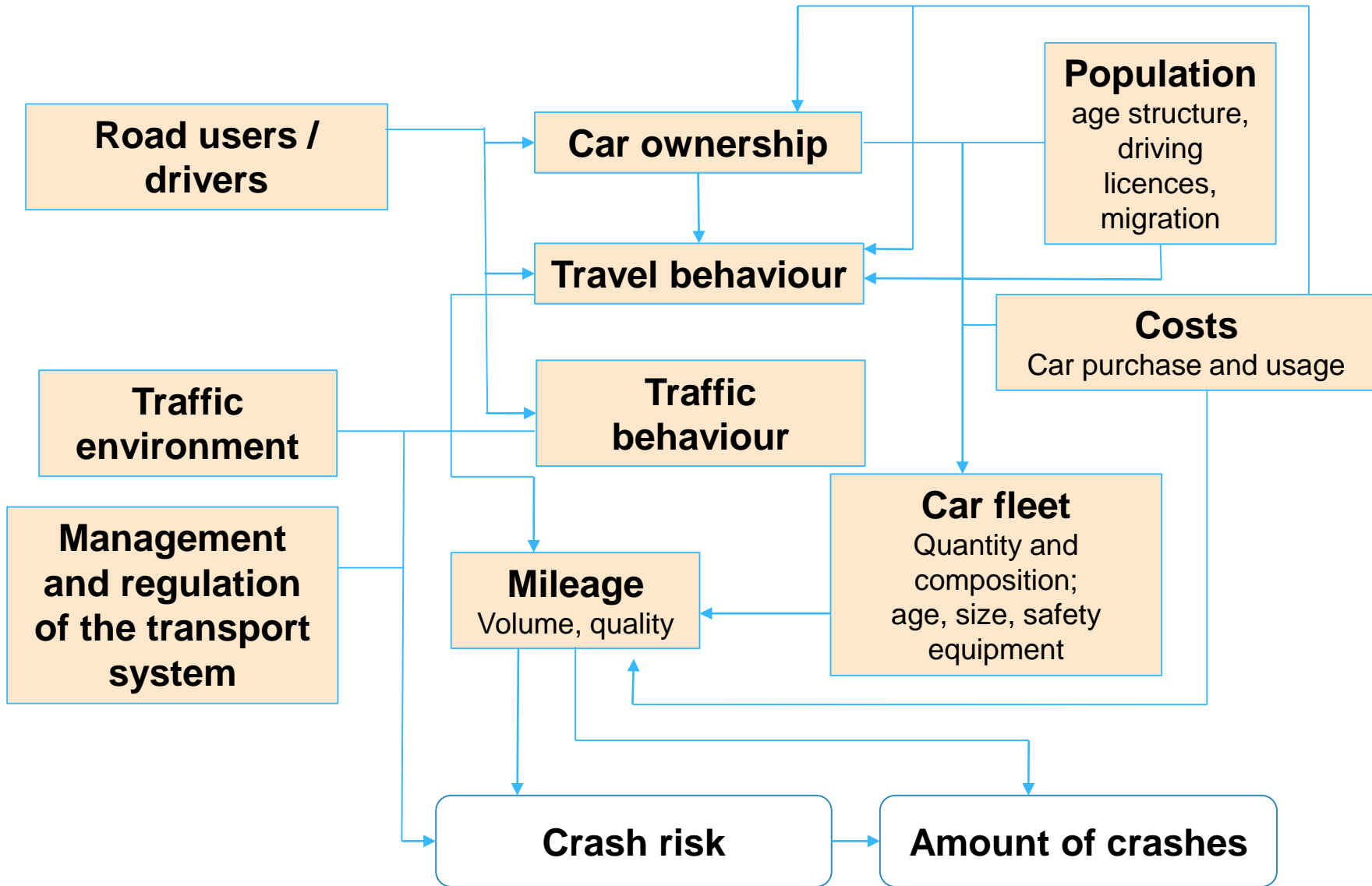
Source: IRTAD, 2009



# Issues affecting the development of road safety

- **Demographical development:** urbanisation, aging population
- **Economical development:** GDP growth, which affects e.g. transport volume and new vehicle registration
- **Transport costs:** differences in costs in different modes, fuel prices
- **Transport infrastructure:** improving road network, transition from building new to maintaining existing roads
- **Transport policy:** allocating funds, prioritising between different aims (e.g. travel time vs. safety) and transport modes
- **Vehicle fleet:** strong growth in many vehicle types, improvements in vehicles' passive and active safety
- **Transport demand:** continuous growth in transport volume (except of some financial crises)
- **Other issues:** e.g. improvement in medical sciences and first aid

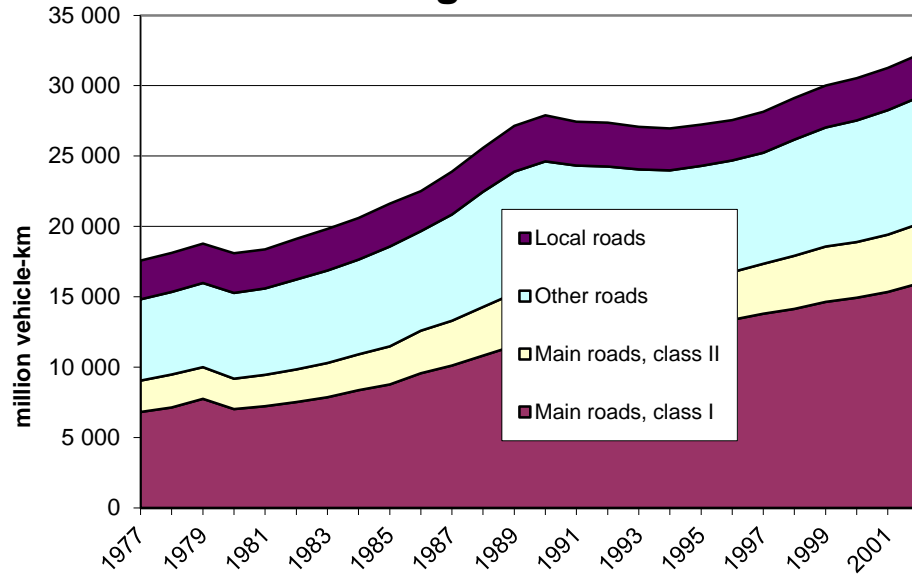




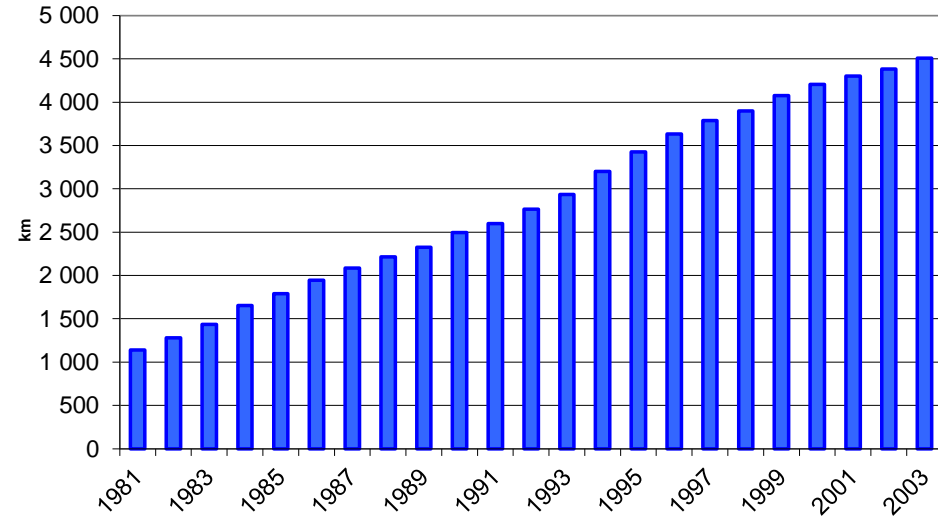


# Strong growth in ...

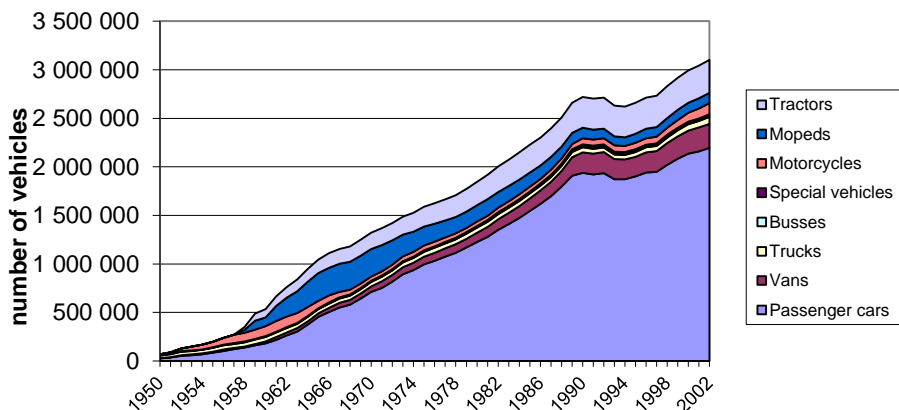
## Vehicle mileage 1977 - 2002



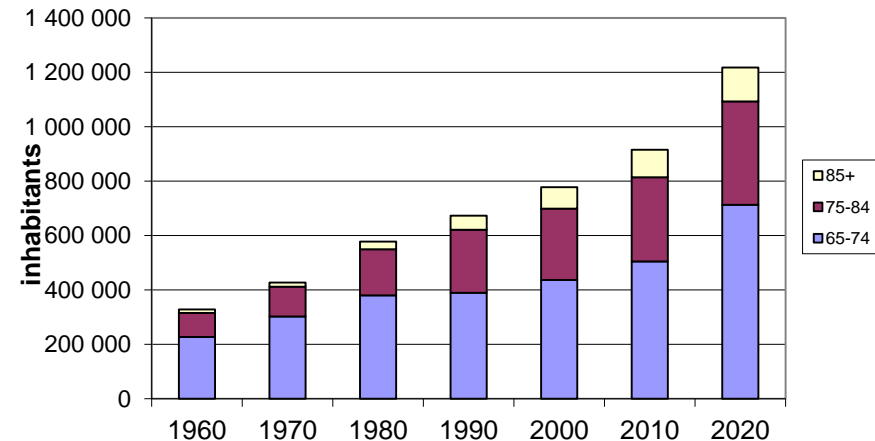
## Separate pedestrian and cycle ways along national roads 1981 - 2003



## Vehicle fleet 1950 - 2002



## 65+ year old population 1960 - 2020

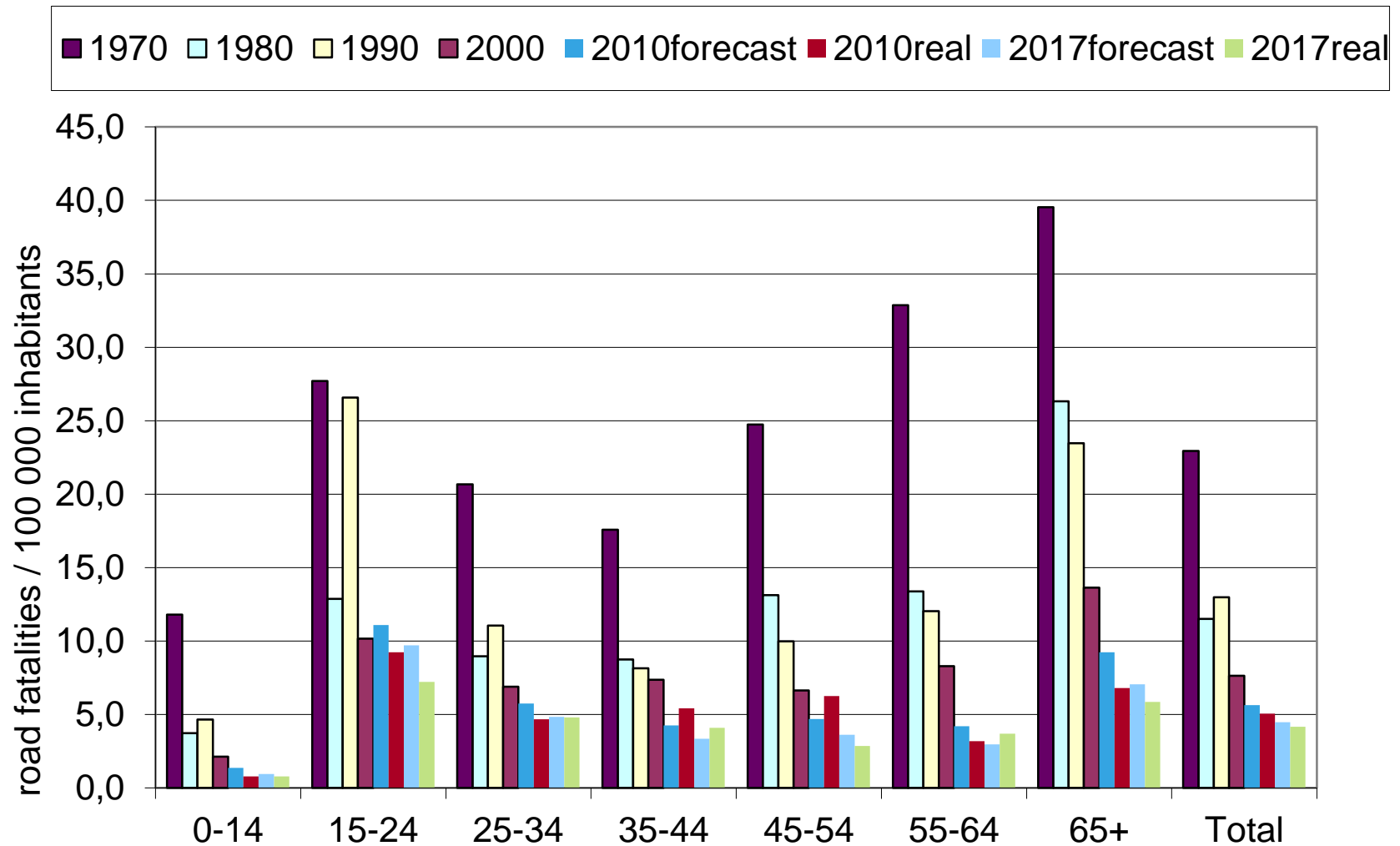


# Analysing the trends in road fatalities

- The long-term trends in road fatalities per population (i.e. per 100 000 inhabitants) are analysed
  - among different age groups
  - among men and women
  - among different road user groups
- The extrapolated development 2003 - 2020, based on trends 1970-2002, is compared with the actual development (figures marked next as 2010<sub>real</sub> and 2017<sub>real</sub>)

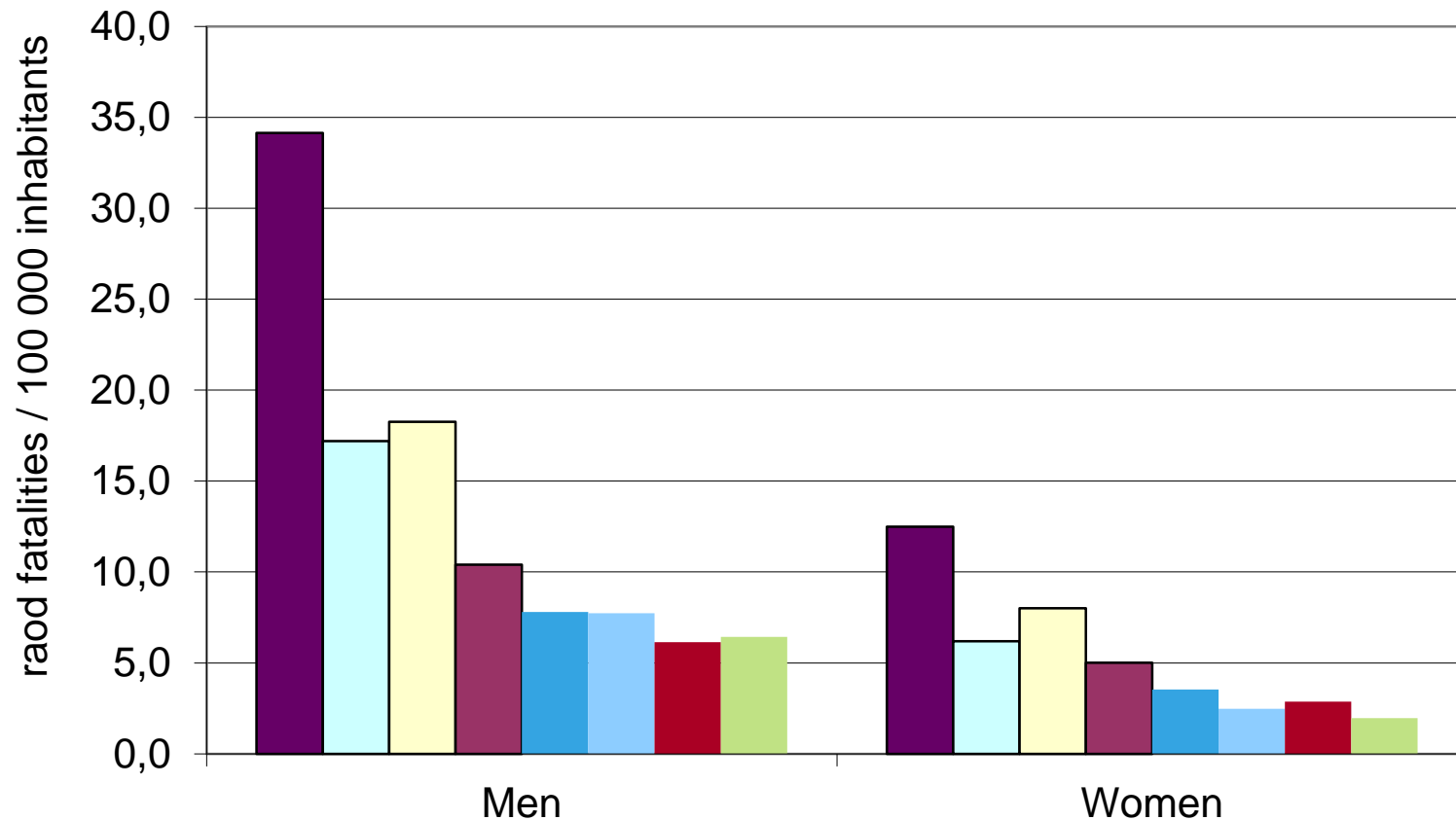


# Trends among different age groups

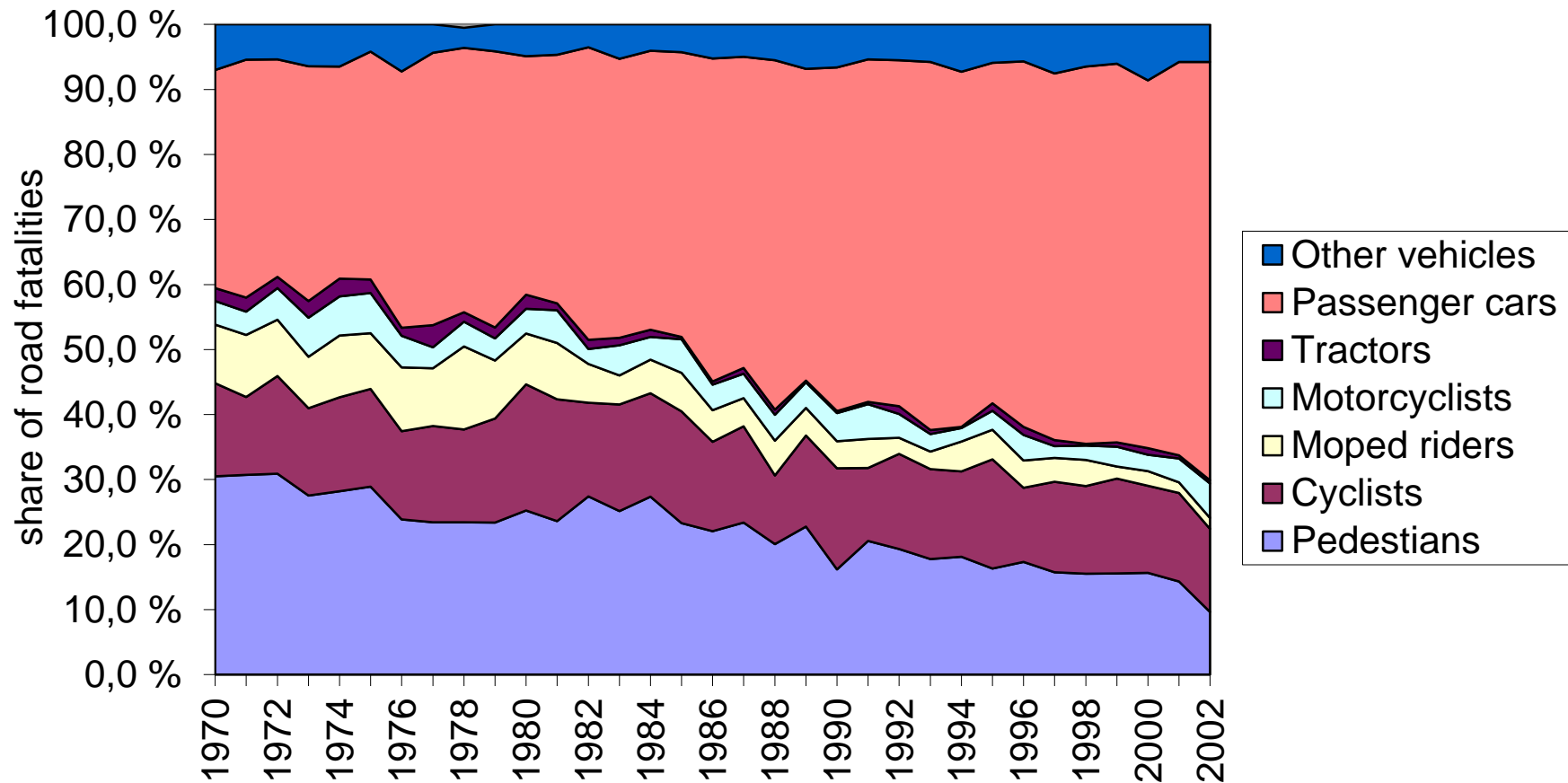


# Trends among women and men

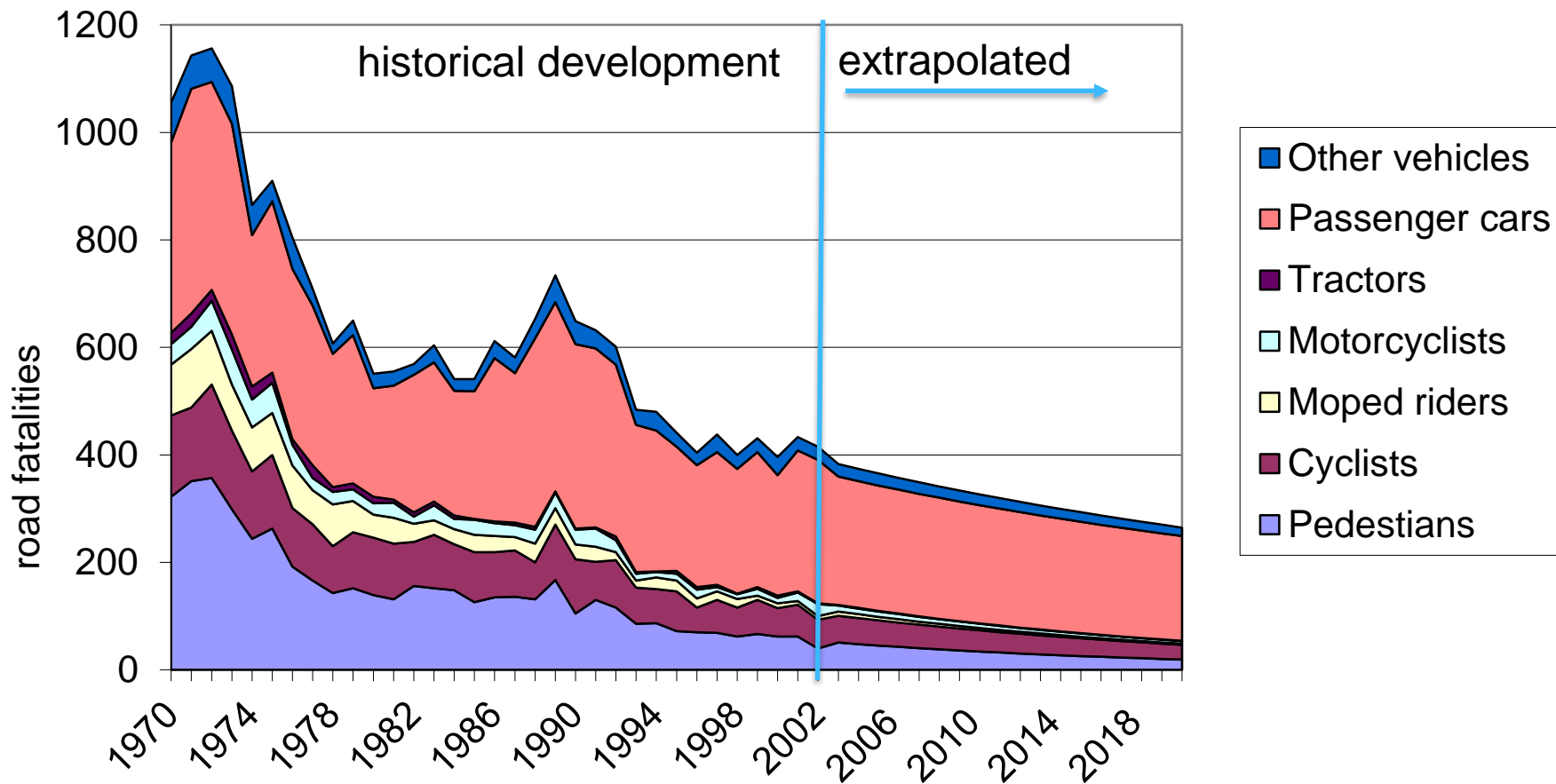
■ 1970 ■ 1980 ■ 1990 ■ 2000 ■ 2010forecast ■ 2010real ■ 2017forecast ■ 2017real



# Trends among different road user groups



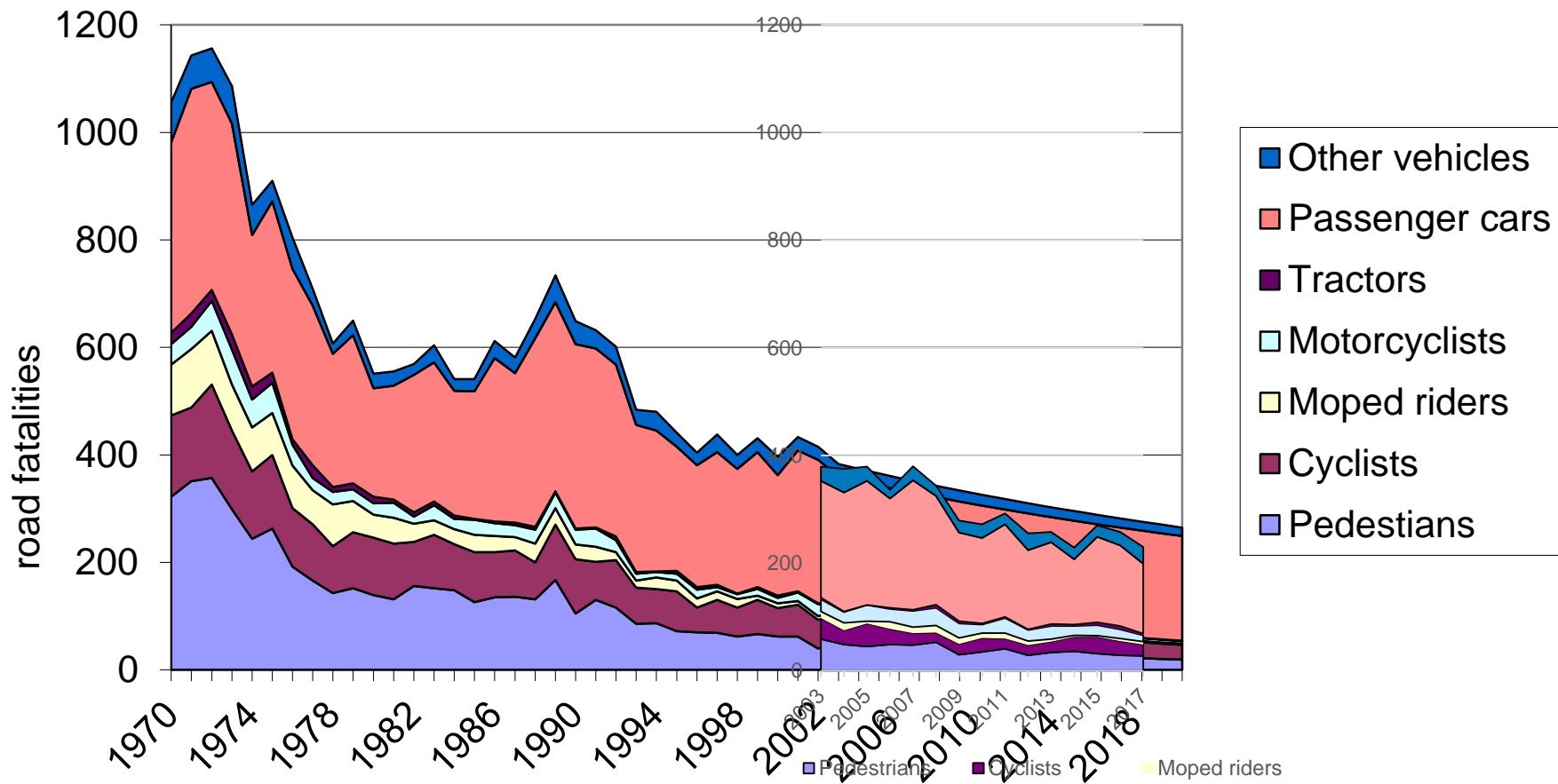
# Road fatalities in different road user groups, 2003-2020 extrapolated based on historical trends in 1970-2002



Data on road fatalities 1970-2002 from Statistics Finland. Projection is based on trend extrapolation (road fatalities per population in each road user group) and population forecast 2003-2020 by Statistics Finland.



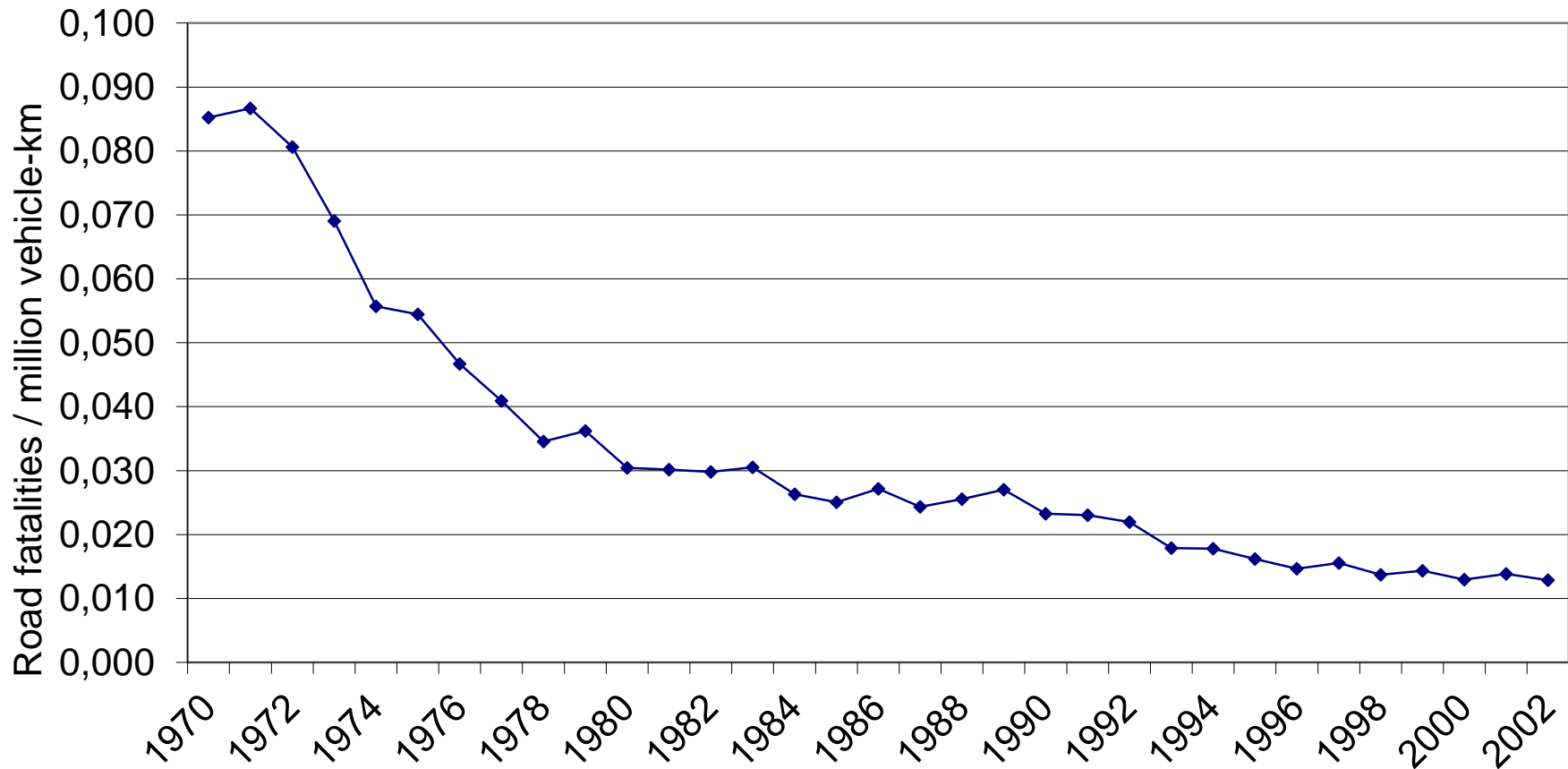
# Road fatalities in different road user groups - actual development 2003-2017 compared with the extrapolation



Data on road fatalities 1970-2017 from Statistics Finland. Projection is based on trend extrapolation (road fatalities per population in each road user group) and population forecast 2003-2020 by Statistics Finland.

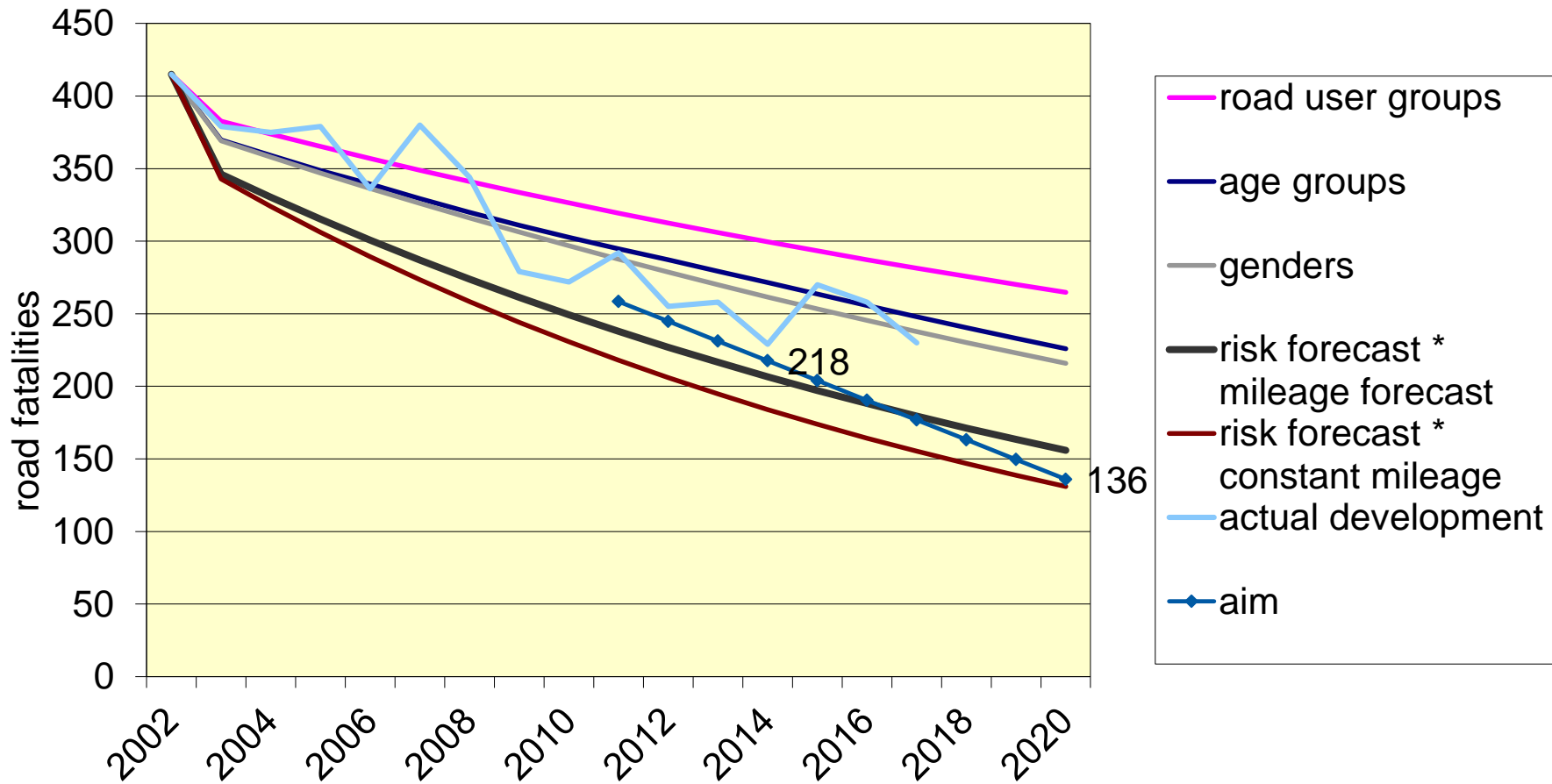


# The trend of road fatalities per vehicle mileage 1970-2002



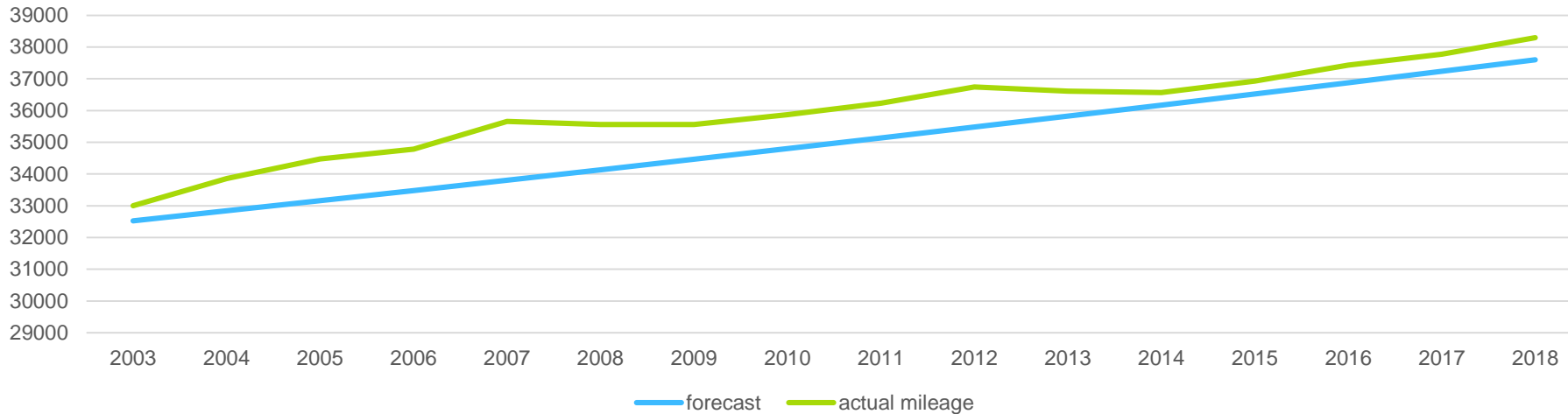


# Trend-based scenarios for 2002-2020, actual development 2002-2017 and road safety aim (-50% 2010-2020)

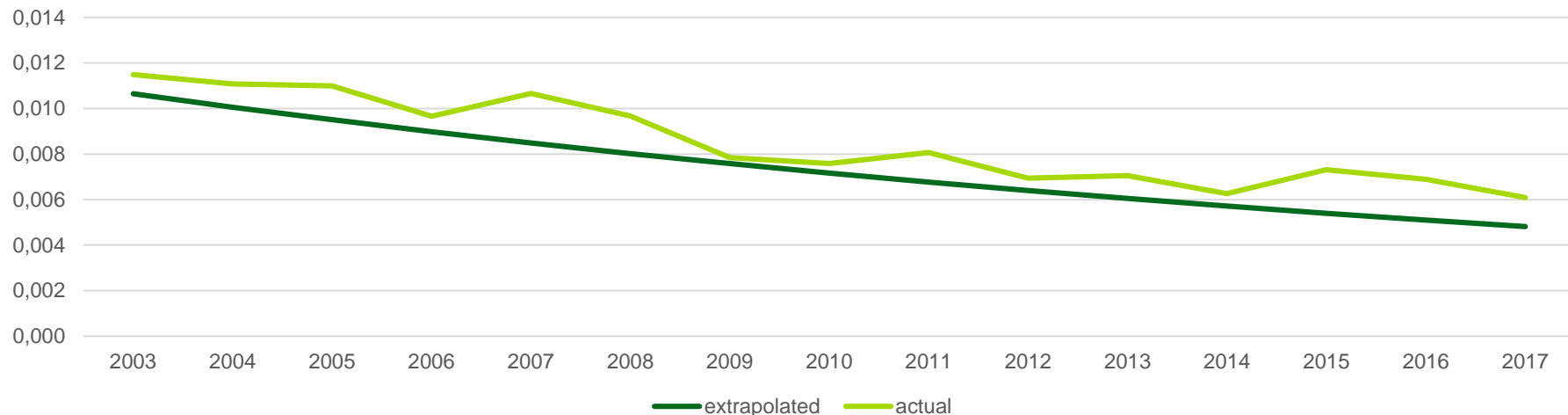


# Actual vs. forecasted development

Vehicle mileage, national road network (million vehicle-km)

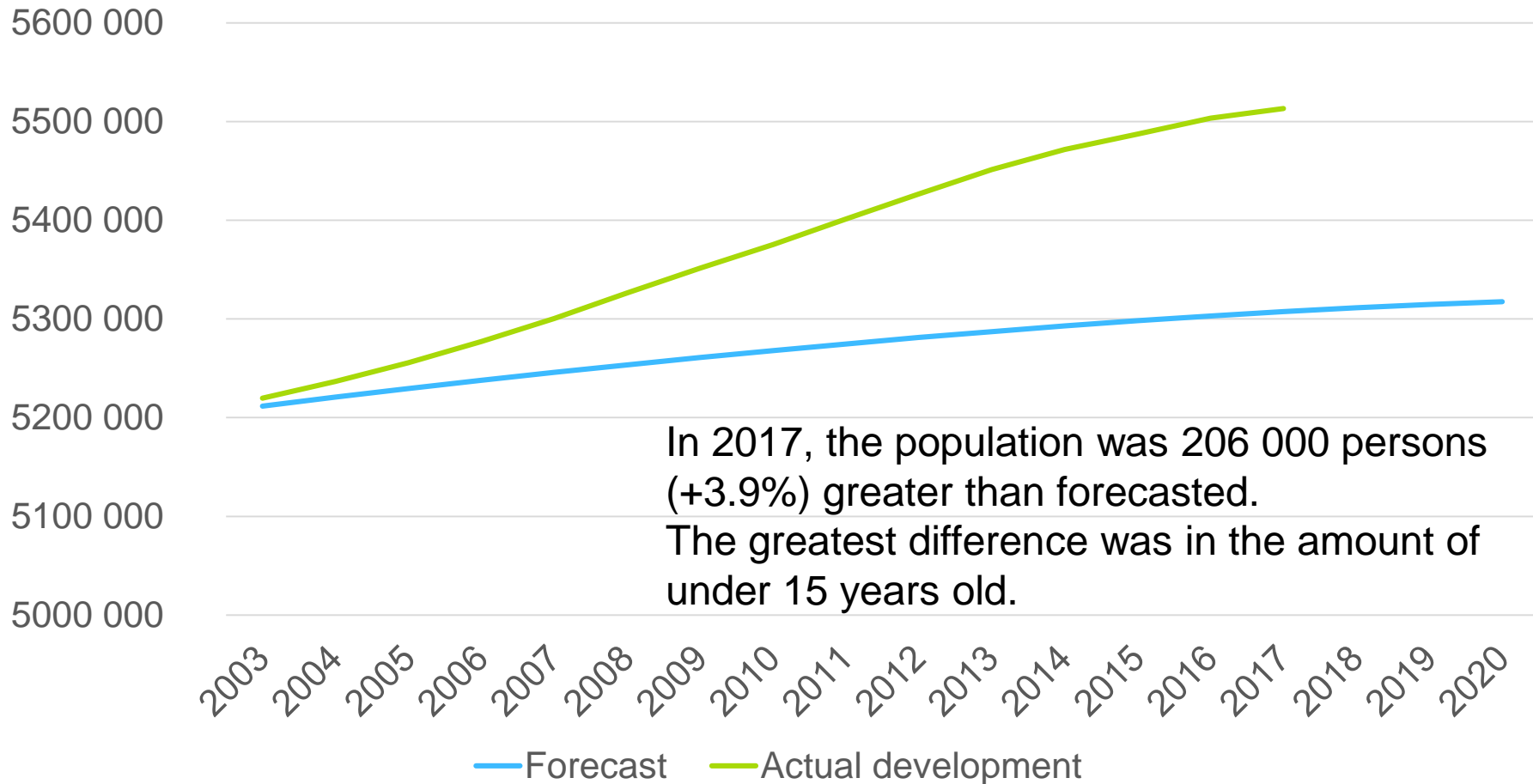


Risk (road fatalities per million vehicle-km)

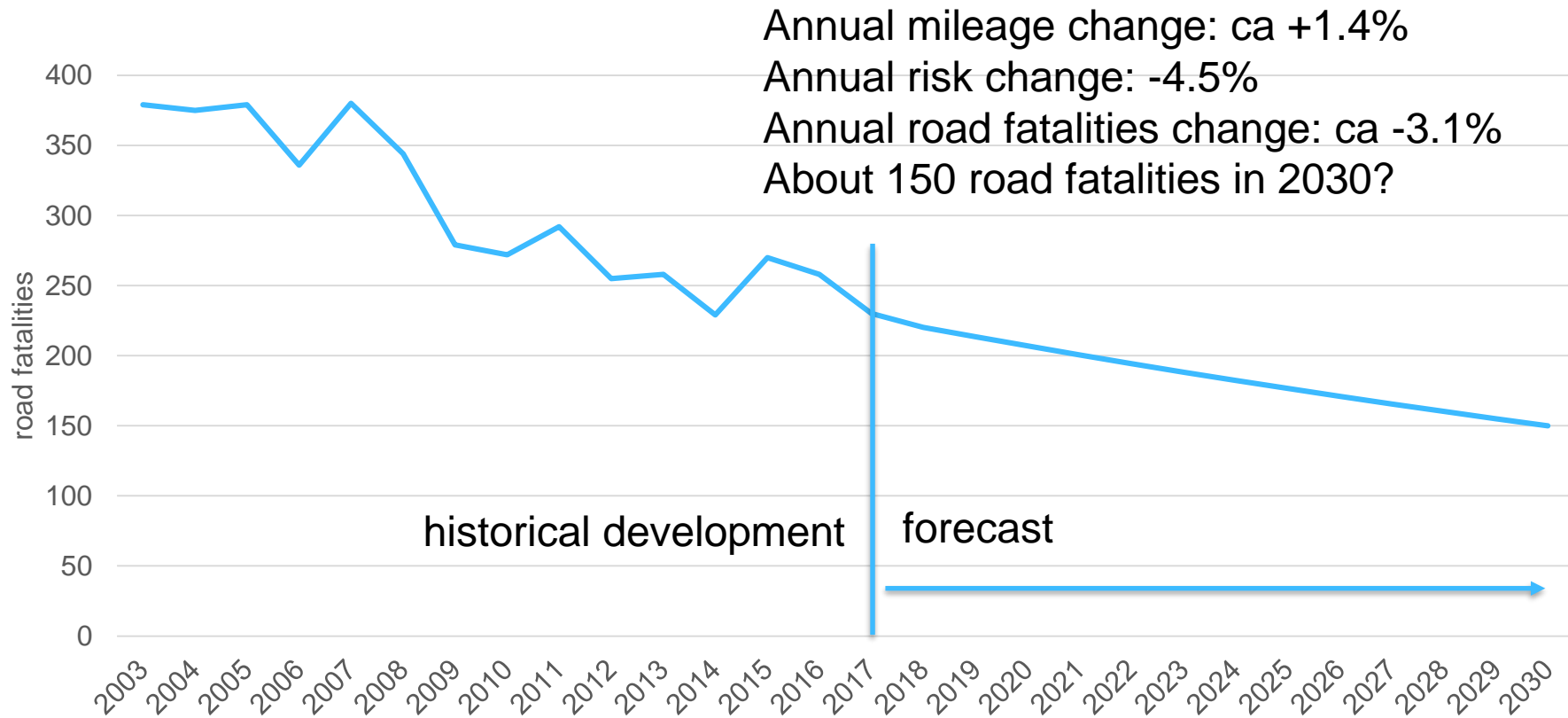


# Actual vs. forecasted development

## Population development



# Trend-based forecast 2018-2030



**Risk (fatalities per mileage) of 2003-2017 extrapolated to years 2018-2030 \* forecast of vehicle mileage 2018-2030**



# Please note!

- We haven't got, and in future will not get the positive trends for free
- To reach the extrapolated development, the development should be similar and implemented measures of the future should have similar effect as those of the past
- There is no automatic mechanism that produces road safety improvement



# Discussion

- Even though the actual development of population or vehicle mileage has not been as forecasted, the difference is not big, and the trend extrapolations from early 2000s have been surprisingly similar to the actual development in road fatalities
- There is great safety potential in affecting transport mileage and its expected growth as well as the crash risk
- Additionally, the seriousness of crashes can be affected (e.g. eCall, medical services, use of safety equipment)
- How will automation affect road safety in future?
- Quantitative trends are only one part of the big picture, also the qualitative trends and aspects should be considered



# Conclusions

- Higher risk still among men, the young (15-24 year old), and seniors, but the risks have continued to decrease
- Road fatalities continue to be especially in passenger cars (57%)
- In Finland, Vision Zero in road safety is still very far away, but the trends are pointing to the right direction
- To reach the road safety target (-50% road fatalities in a decade, also during 2020-2030), there is a need for further commitment in road safety measures and strict actions

