Road safety policy based on evidence and efficiency

How large are the benefits that can be attained?

Transports for a Sustainable Development 2007

Rune Elvik, Institute of Transport Economics, Oslo, Norway

Road safety: some issues

- To what extent do we know how to improve road safety?
- Are there still areas where knowledge is lacking – can we think of an agenda for research?
- Are we sensibly applying knowledge of effective road safety measures – is road safety policy evidence-based?
- How far can we improve road safety by relying on cost-effective road safety measures?
- What are the main factors that may prevent priorities for road safety measures from being set according to efficiency analyses?

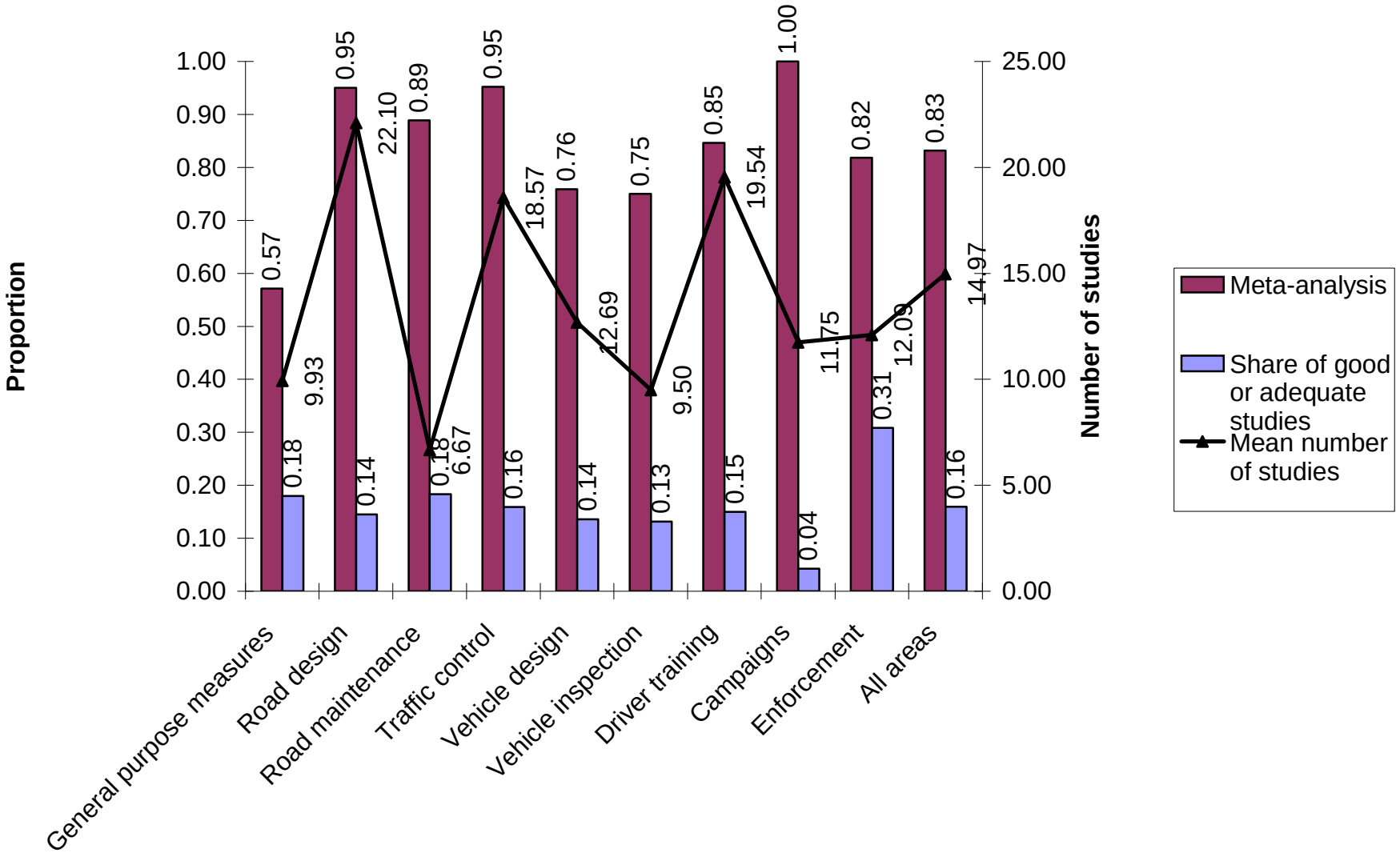
Levels of knowledge and synthesis

- Several studies of good methodological quality synthesised by means of meta-analysis
- A few good studies, or many studies of moderate or poor methodological quality synthesised by means of meta-analysis
- A few studies not amenable to synthesis by means of meta-analysis
- No studies or only studies that do not quantify effects on accidents or killed or injured road users

The Handbook of Road Safety Measures (Elvik and Vaa 2004)

- A systematic review of evaluation studies comprising 124 road safety measures
- Evidence from these studies has been summarised by means of meta-analysis if possible
- Study quality has been assessed in terms of how well studies control for confounding factors:
  - Experimental studies
  - Well-controlled non-experimental studies
  - Less well-controlled non-experimental studies

Summary of evidence of effects of road safety measures



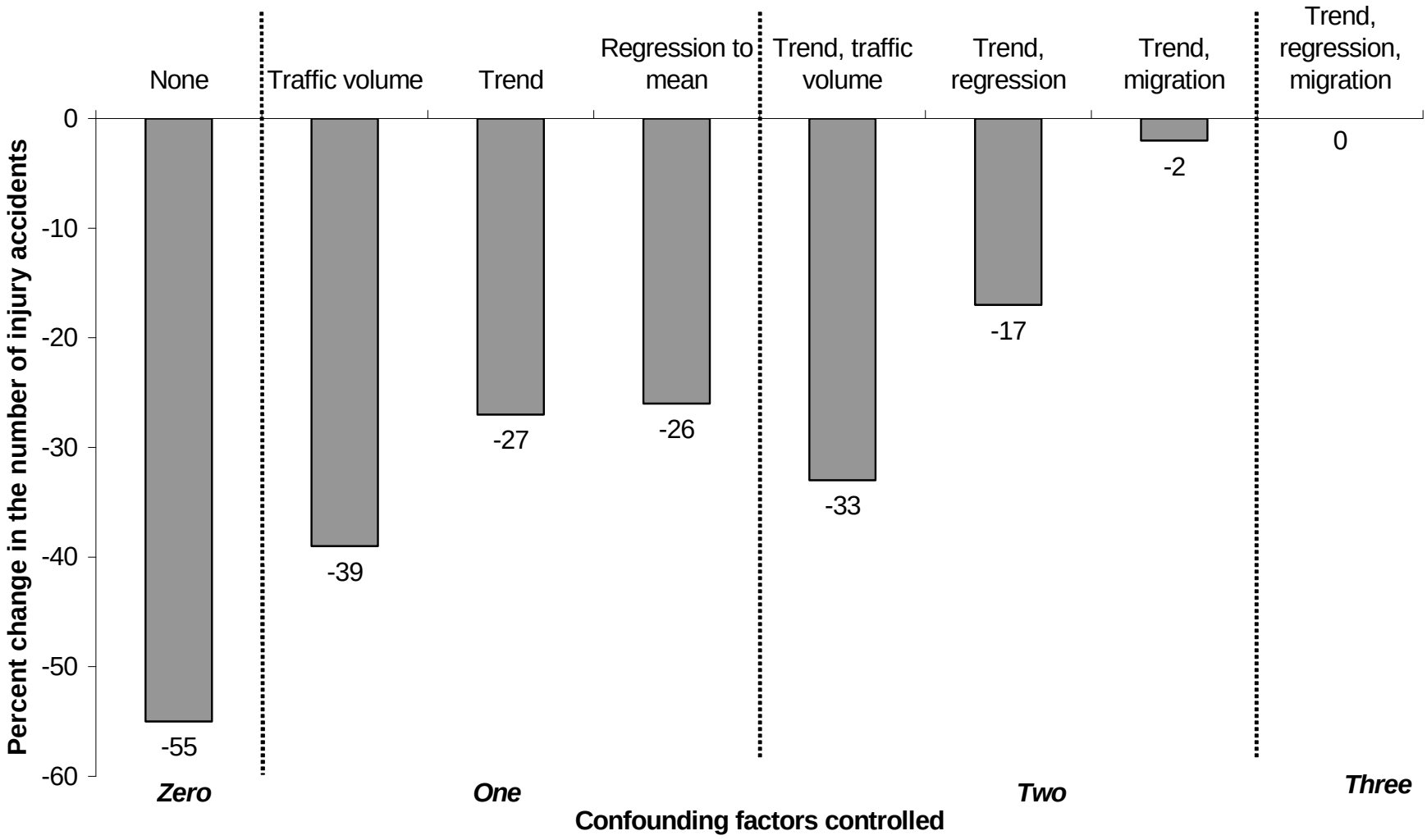
The state of current knowledge

- Evidence of the effects of a broad range of road safety measures exists
- Research has been carried out in all main areas of road safety
- For very many road safety measures, several evaluation studies are available
- The mean number of evaluation studies for a road safety measure is about 15
- Meta-analysis has been applied for 83 percent of the road safety measures included in the Handbook

Current knowledge, continued

- The highest mean number of studies evaluating a road safety measure is found for road design (22.1)
- The lowest mean number of studies evaluating a road safety measure is found for road maintenance (6.7)
- The quality of the studies is generally low
- Out of 1871 evaluation studies:
  - 43 (2.3 %) were experimental
  - 255 (13.6 %) were well-controlled non-experimental studies
  - 1567 (84.1 %) were less well-controlled non-experimental studies

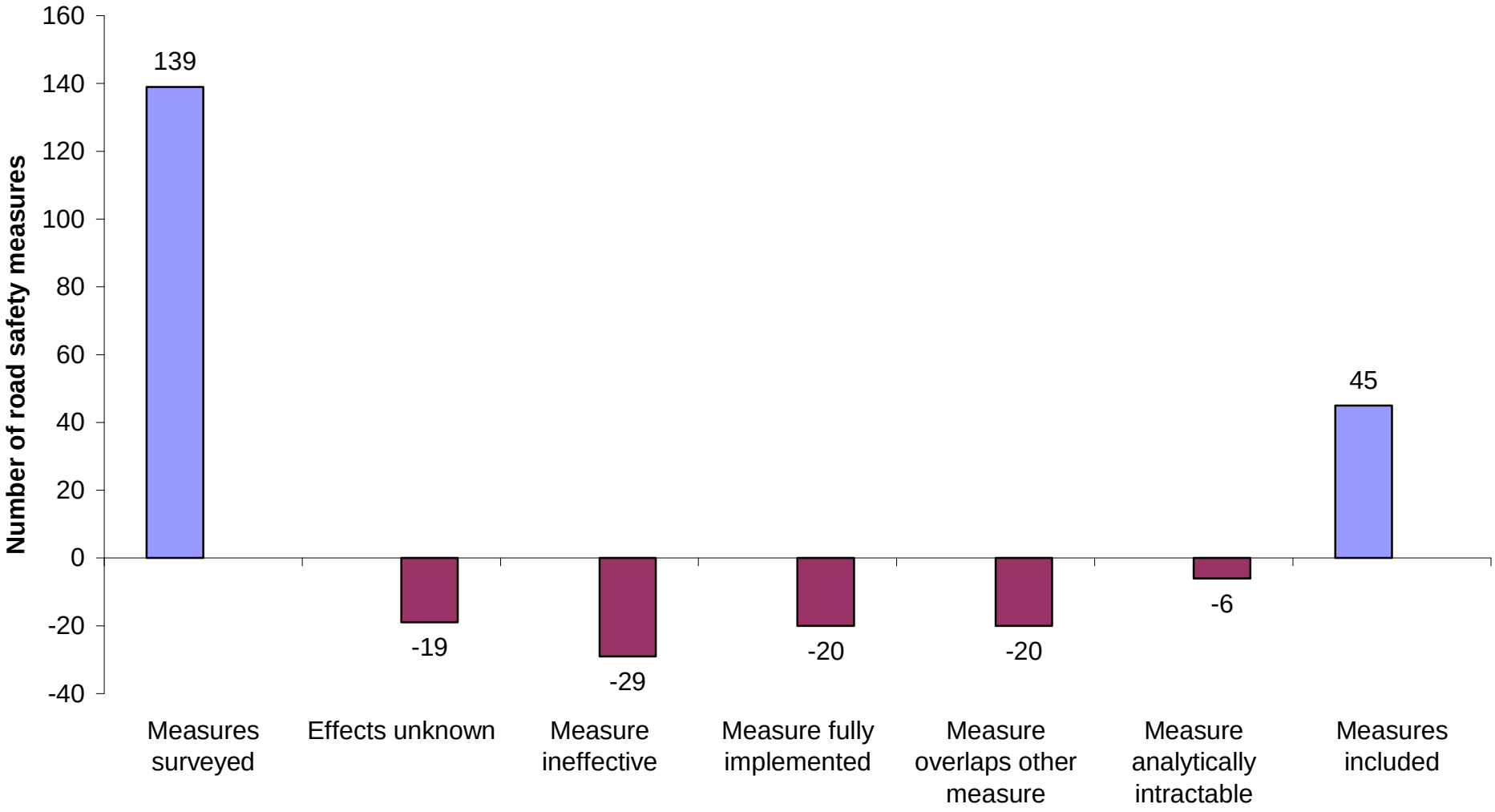
Test of control of confounding factors - blackspot treatment



Application of knowledge in planning road safety policy

- Conduct a broad survey of potentially effective road safety measures
- A road safety measure is potentially effective if:
  - It has been found to improve safety in methodologically credible evaluation studies
  - It has as yet not been evaluated by means of accident data, but is known to favourably influence risk factors
  - It has still not been implemented to a full extent
- A recent road safety impact assessment in Norway surveyed 139 potentially effective road safety measures

Road safety impact assessment for Norway

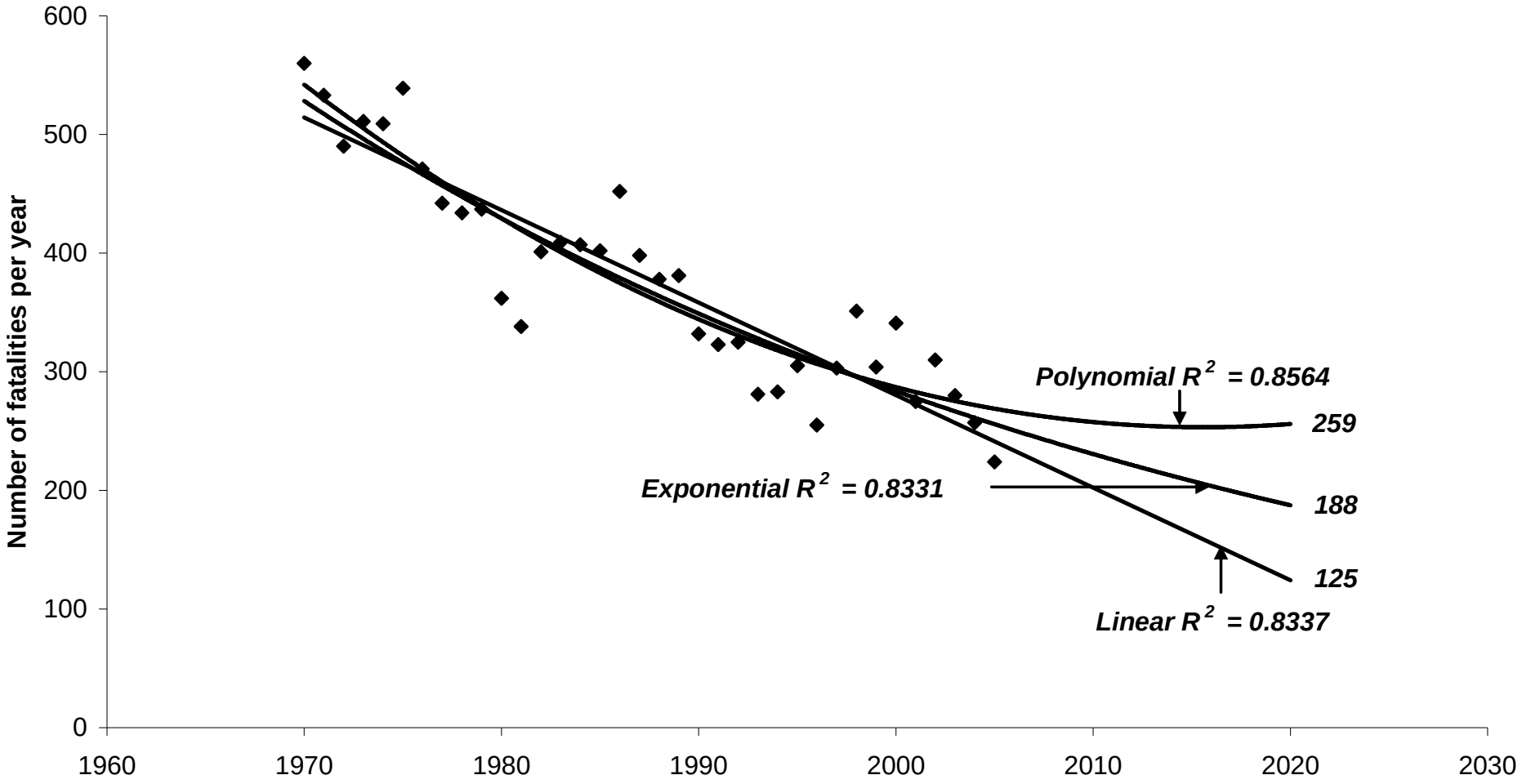


Main options for road safety policy

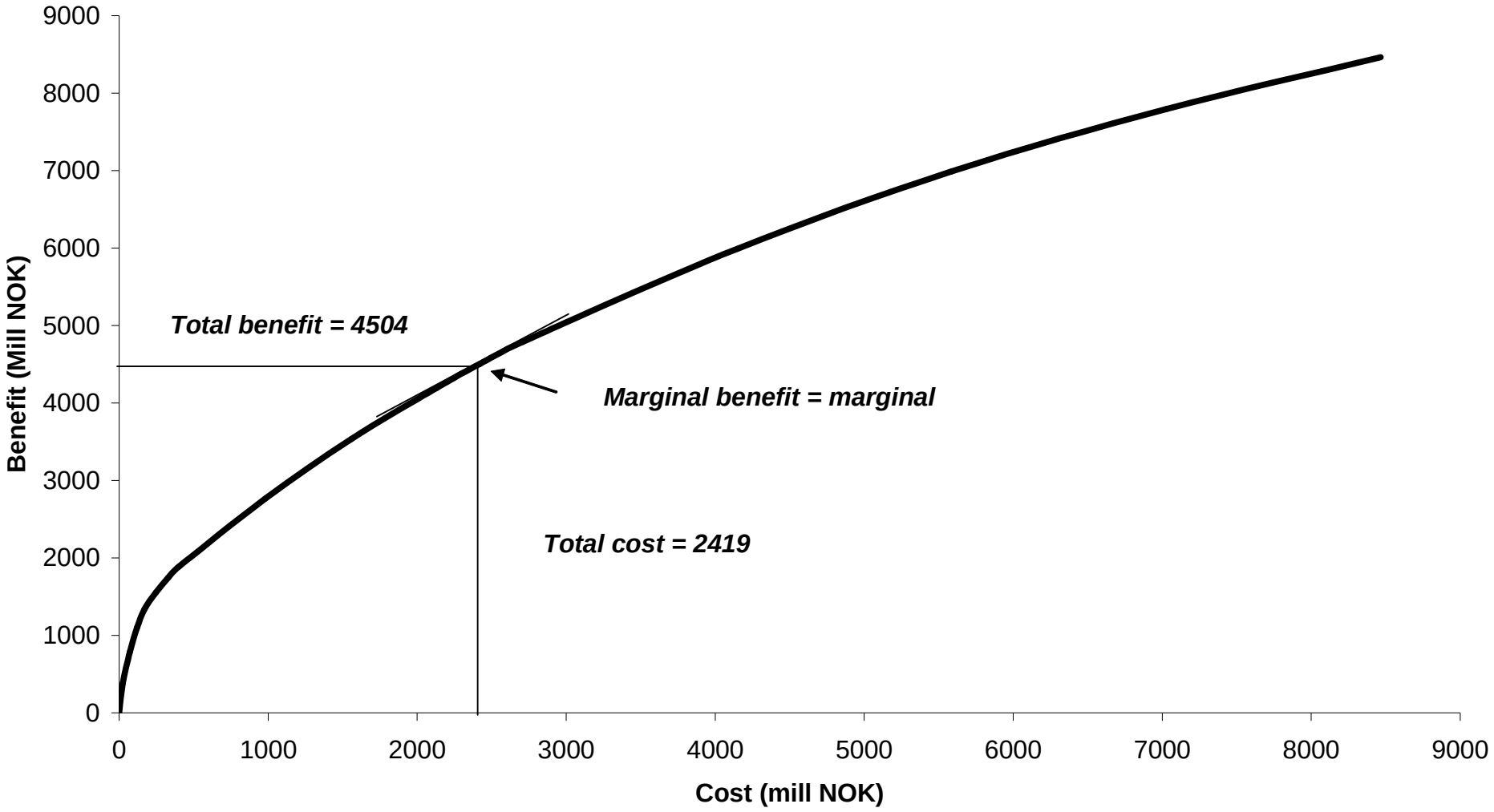
- ”First best” optimal use of all road safety measures
- Optimal use of road safety measures controlled by the Norwegian government
- Continuing present policies
- Strengthening present policies

- These options were applied to the period 2007-2020

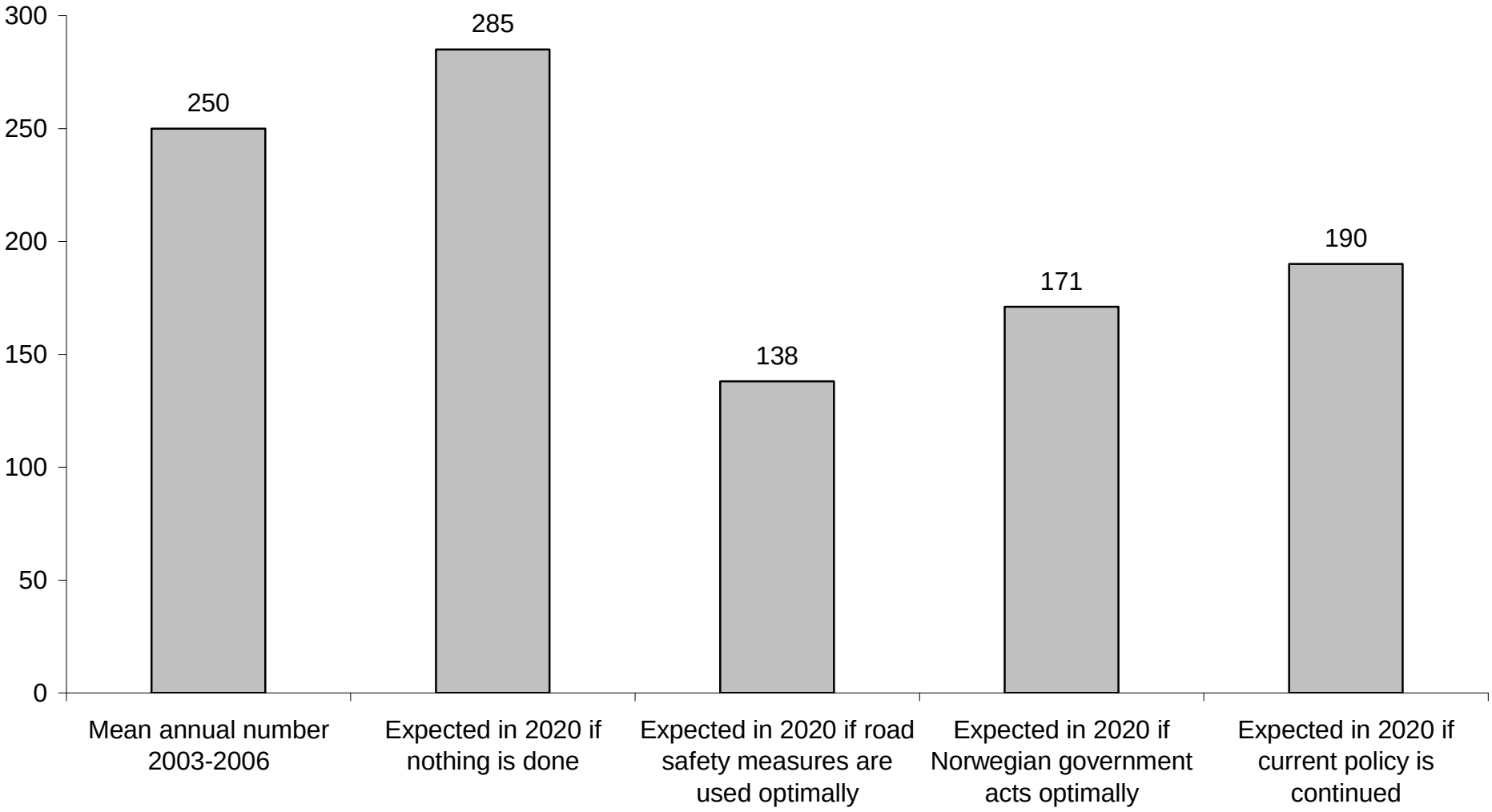
Number of road accident fatalities in Norway and projections based on past trends



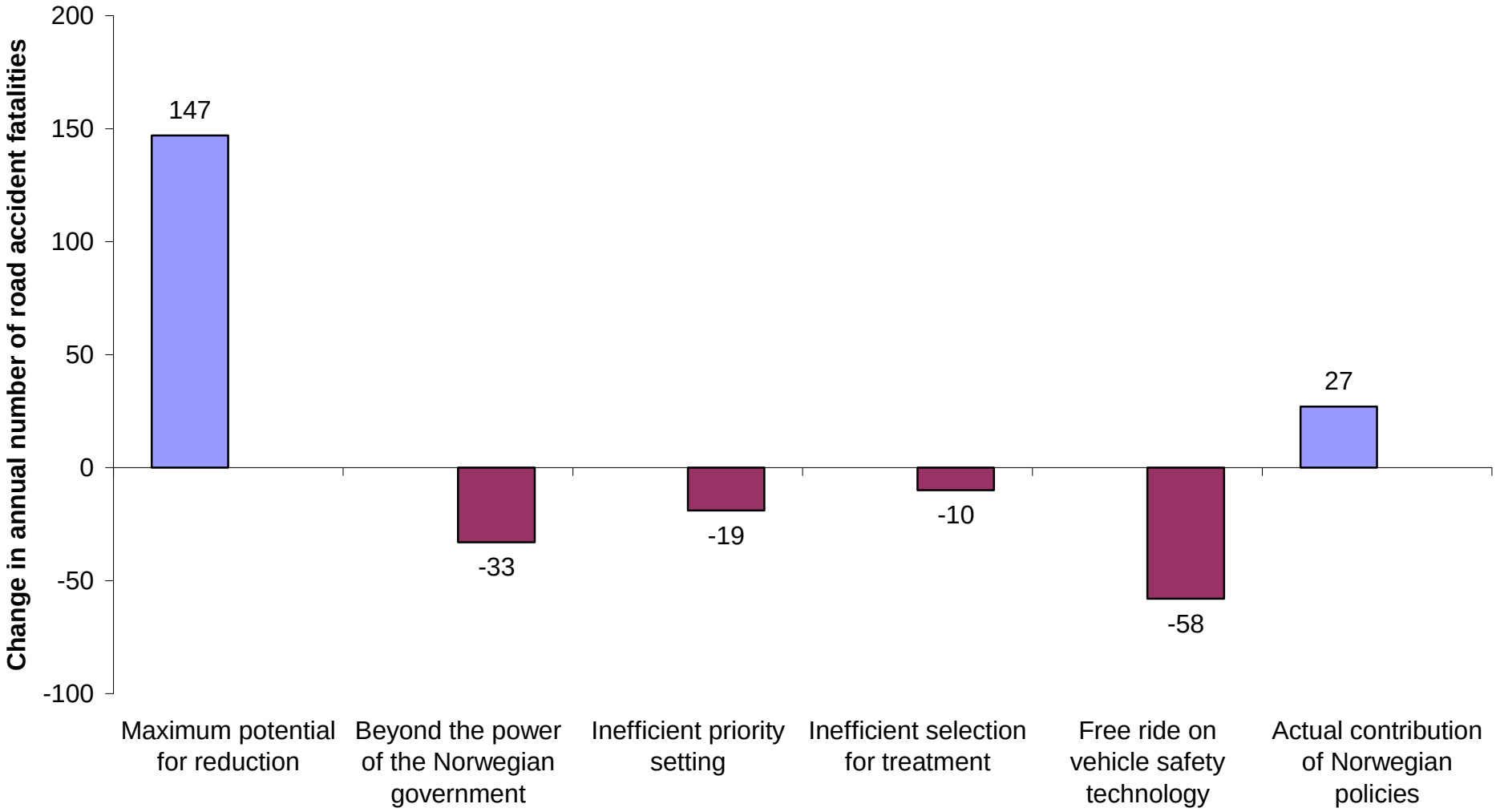
Costs and benefits of converting T-junctions to roundabouts in Norway



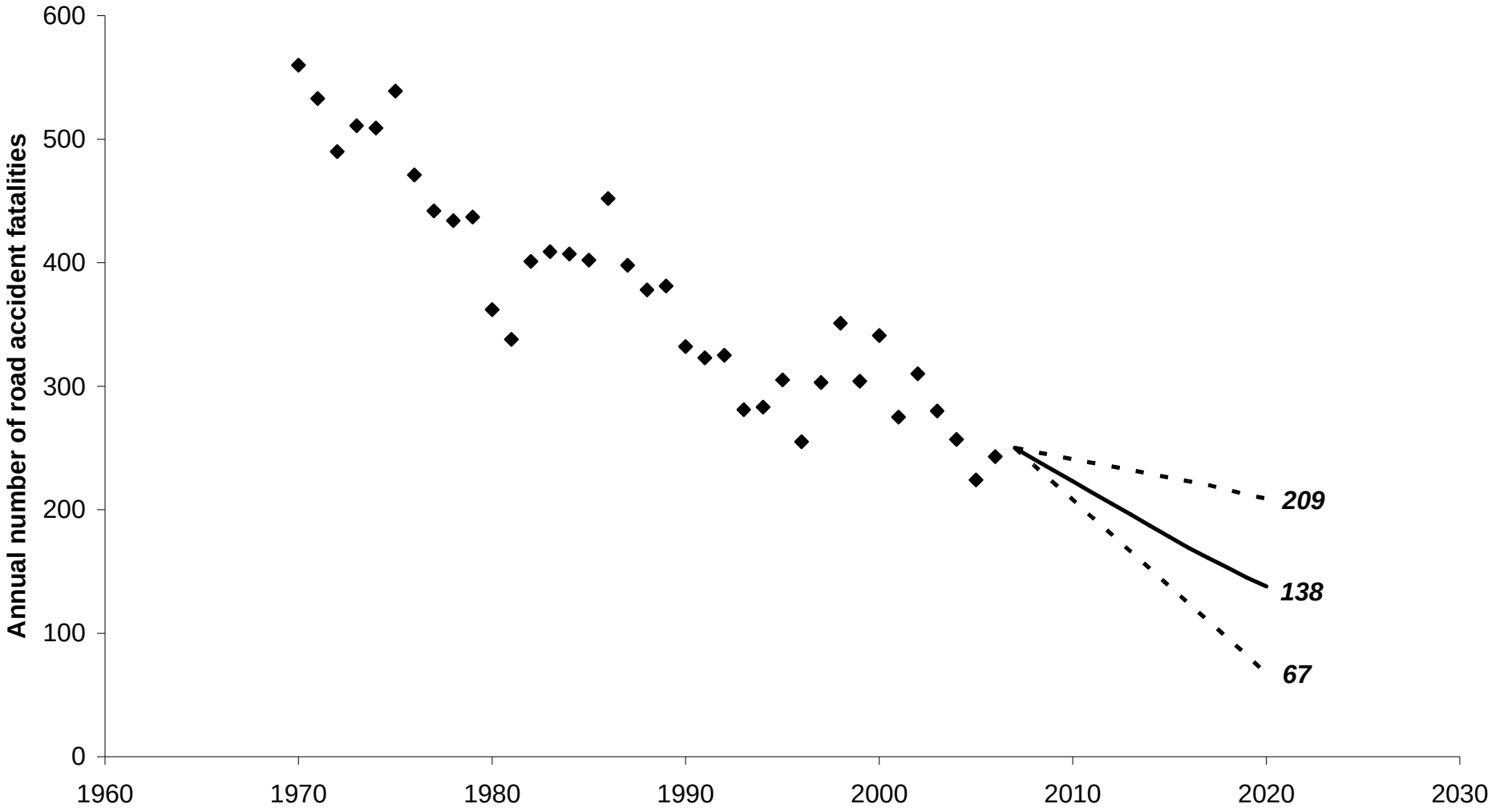
Expected number of road accident fatalities in Norway in 2020



Sources of inefficiency in road safety policy



Results are uncertain even is measures are used optimally



A research agenda

- Filling gaps in knowledge regarding effects of road safety measures
- Describing effects of road safety measures in terms of continuous functions – not simply point estimates
- Improving the methodological quality of evaluation studies and assessing it more systematically
- Evaluating the combined effects of several road safety measures forming a programme
- Assessing how various sources of uncertainty combine and how uncertainty can be reduced

Challenges for policy making

- Rule making at the international level – new vehicle safety standards
- Public acceptance of measures like event data recorders, intelligent speed adaptation (ISA) or ignition interlocks for alcohol and/or seat belts
- Getting a firmer grip on the tradeoff between efficiency and equity
- Analysing the relationship between promoting environmentally sustainable transport (walking and cycling) and promoting road safety