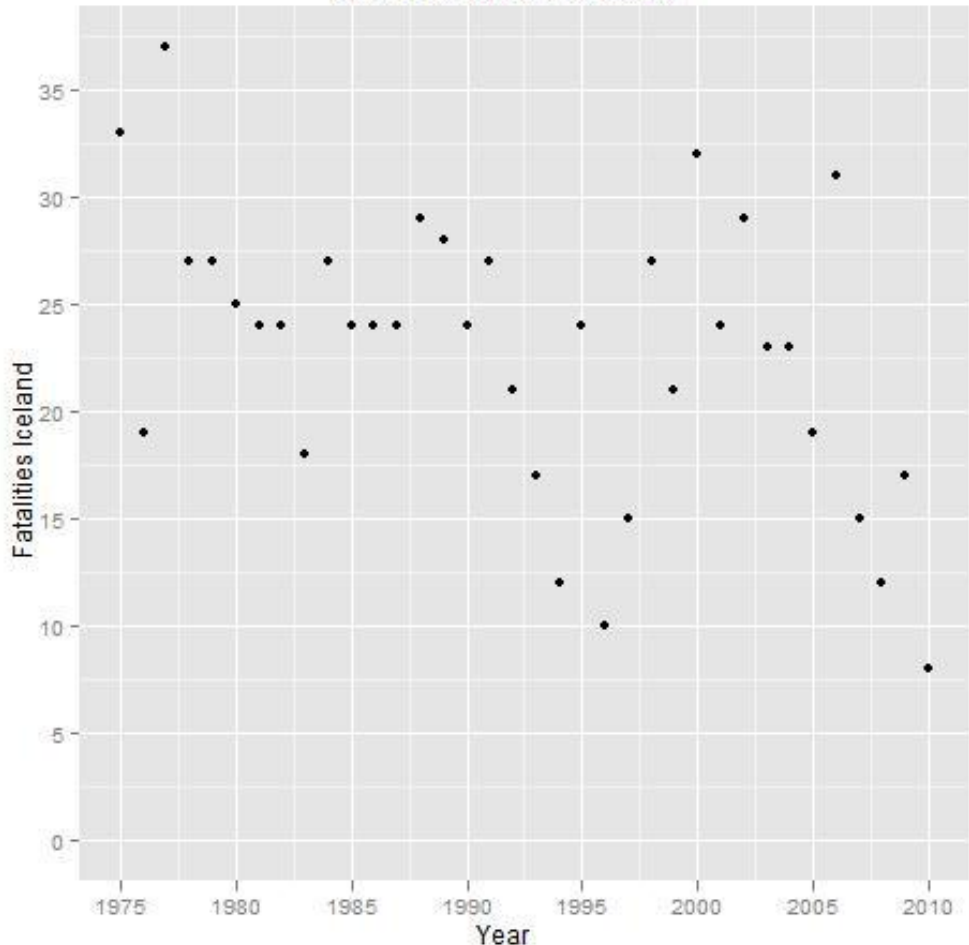


Road Safety Development

Iceland

Fatalities

Plot of fatalities in Iceland

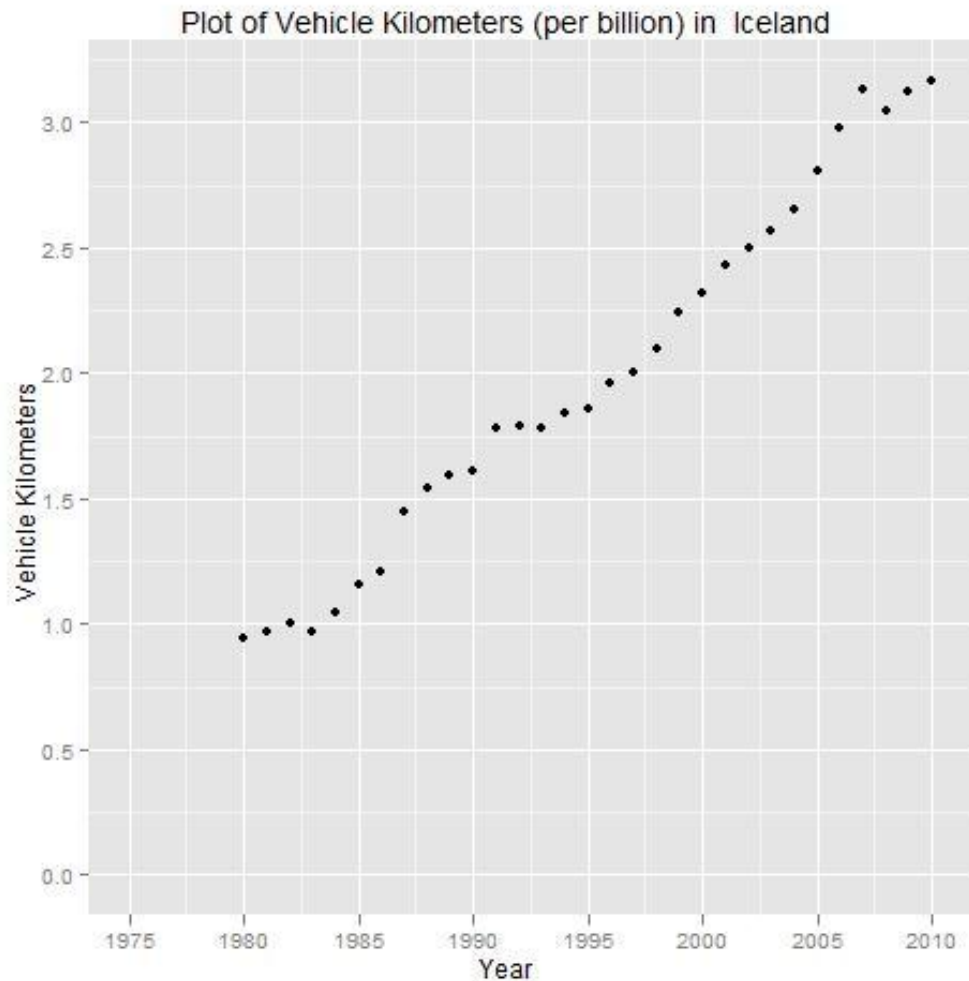


- The plot shows the number of fatalities in Iceland from 1975 to 2010).
- There is some variation between years due to the small number of casualties (one severe accident can strongly affect the fatality data).
- However, there has been a positive development over time.
- Possible explanations for the recent positive trend are [1]:
 - o campaigns since 2005
 - o increased focus on education in schools
 - o important focus on black spots and infrastructure (side barriers along the roads where necessary; separating lanes with opposite driving directions, widening of roads where necessary because of traffic quantity ...)
 - o increased number of controls (road side checking, speed cameras...).

In general, there is a positive development in the number of fatalities over time.



Traffic Volume



- The number of fatalities normally depends strongly on the amount of traffic.
- The best estimate for traffic volume available is the number of motor vehicle kilometres (per billion) that has been measured since 1980.
- The plot shows a gradual increase over the years. In the years 1987, 1991, 1999 and 2004-2007 there was a larger increase in vehicle kilometers.
- The sudden rise between 2005 and 2007 is due to an economic growth and the fall in 2008 is again due to the economic collapse [1].
- Relation between traffic volume and fatalities:
 - No clear relation between fatalities and vehicle kms can be established.
 - No mobility scenario can be calculated.

Forecasting model:

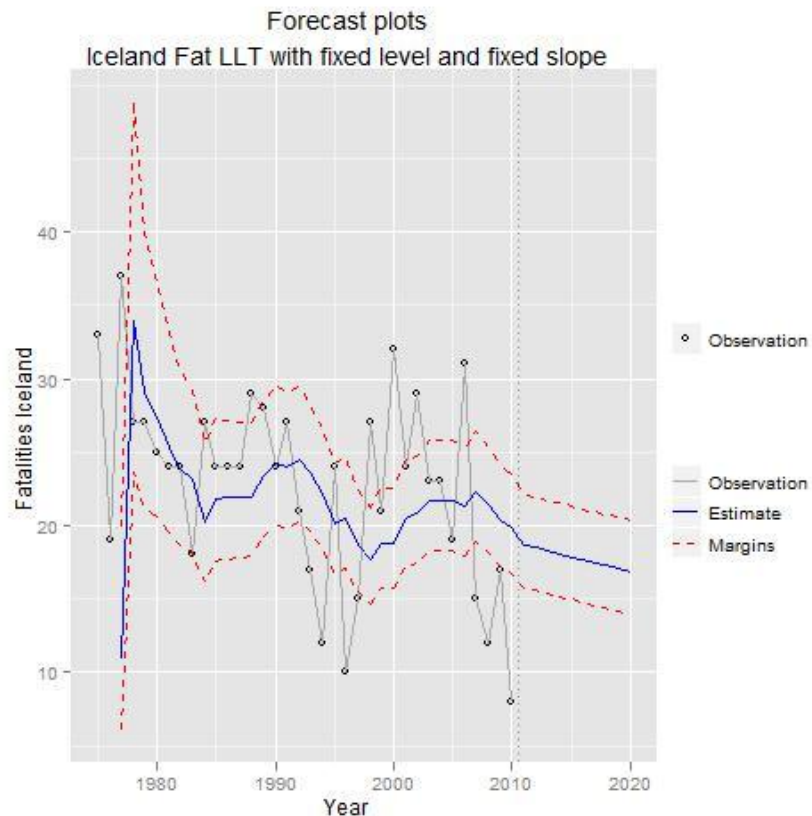
- Technical definition
 - Local Linear Trend model [2].
 - Variable: yearly number of fatalities.
 - Fixed level and fixed slope.



Road Safety Development – Iceland

○ Forecasts to 2020

- If road safety is improved at the same rate as previously and the past development of mobility continues, the following forecasts can be made for the number of fatalities in 2020:



If RS efforts continue at the same level, the expected number of fatalities in 2020 is 17.

Forecast of road traffic fatalities in Iceland

Year	Prediction	Lower CI	Upper CI
2011	19	13	26
2012	18	13	26
2013	18	13	26
2014	18	13	25
2015	18	13	25
2016	18	12	25
2017	17	12	25
2018	17	12	25
2019	17	12	25
2020	17	12	25

Disclaimer

- Statistical forecasting does not offer a definite prediction of what is *actually* going to happen in the future.
- The estimates are based on the “business as usual” assumption: no *principal* changes between past and future development.
- Even in these conditions future outcomes are uncertain. This uncertainty is represented in the confidence intervals (plotted in the red margins: 68%; printed in table: 95%).



References

- [1] EC National Expert for road accident statistics and road safety performance indicators.
- [2] Dupont & Martensen (Eds.) 2012. Forecasting road traffic fatalities in European countries. Deliverable 4.4 of the EC FP7 project DaCoTA.
- [3] Bijleveld F., Commandeur J., Gould P., Koopman S. J. (2008),. Model-based measurement of latent risk in time series with applications. Journal of the Royal Statistical Society, Series A, 2008.
- [4] Martensen & Dupont (Eds.) 2010. Forecasting road traffic fatalities in European countries: model and first results. Deliverable 4.2 of the EC FP7 project DaCoTA.
- [5] Commandeur, J. & Koopman, S.J. (2007) An Introduction to State Space Time Series Analysis. Oxford University Press.

