United Kingdom (UK)

Fatalities

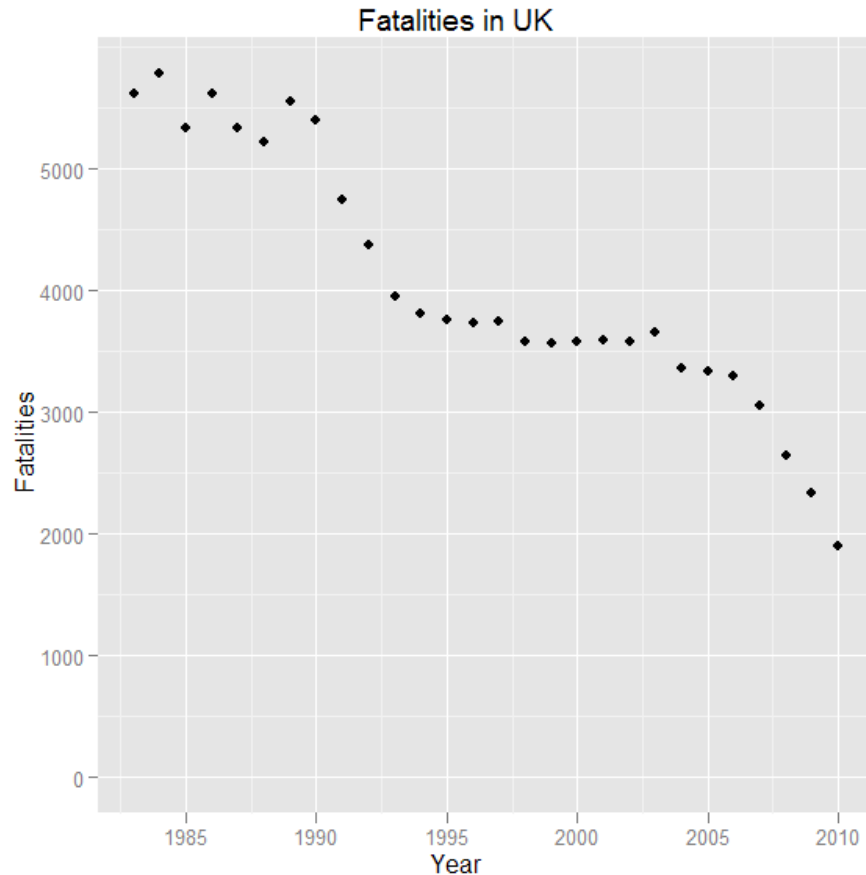Fatalities in UK

- The number of people killed in the UK has varied fairly erratically, with periods of slow decline in 1983-1990 and 1994-2006 separated by a period of more rapid decline between 1991 and 1993 and 2007 to 2010. These periods of rapid decline were during times of economic recession in the UK.
- The number of fatalities observed in 2010 (1905) is around 3 times lower than in 1983 (5616).

Registration of fatalities

The data used in the modelling are the annual numbers of fatalities for Great Britain and Northern Ireland, the sum of which gives the UK. The data come from national databases. Road accidents and casualties for Great Britain come from the national STATS19 database. Since 1949, police throughout GB have recorded details of road accidents that involve personal injury using a single reporting system that is reviewed and updated regularly. Road accident casualties for Northern Ireland come from the database of T1 accident reports compiled by the Police Service of Northern Ireland. Very few, if any, fatal accidents do not become known to the police.

Traffic Volume

Vehicle kms (billions) in UK
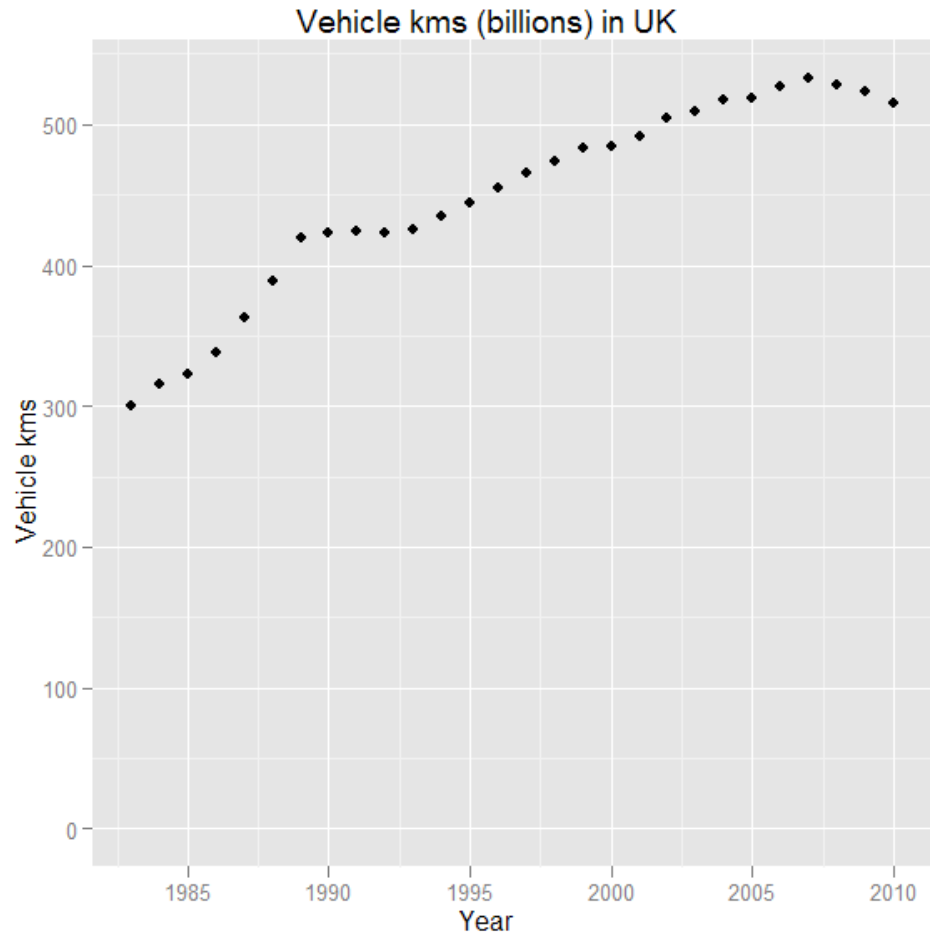
- Annual vehicle kilometers (traffic volume) are available for Great Britain from 1947 and for Northern Ireland from 1991.
- Initially forecasting models were fitted to the UK data using data from 1991. However, better fitting models can be developed using a longer time series. 1983 was chosen as a start year. This has the advantage of minimising any effects of the compulsory wearing of seatbelts law introduced at the start of 1983 and minimising the number of traffic data that need to be imputed for Northern Ireland (8 years) in the modelling process.
- The annual volume of car traffic for GB is measured by the National Road Traffic Survey (NRTS). The road traffic estimates are calculated by combining data collected by some 180 Automatic Traffic Counters (ATCs) and manual counts at approximately ten thousand sites per annum.
- Overall, vehicle kilometers in the UK increased from 1983 to 2007 but have started to fall in recent years.
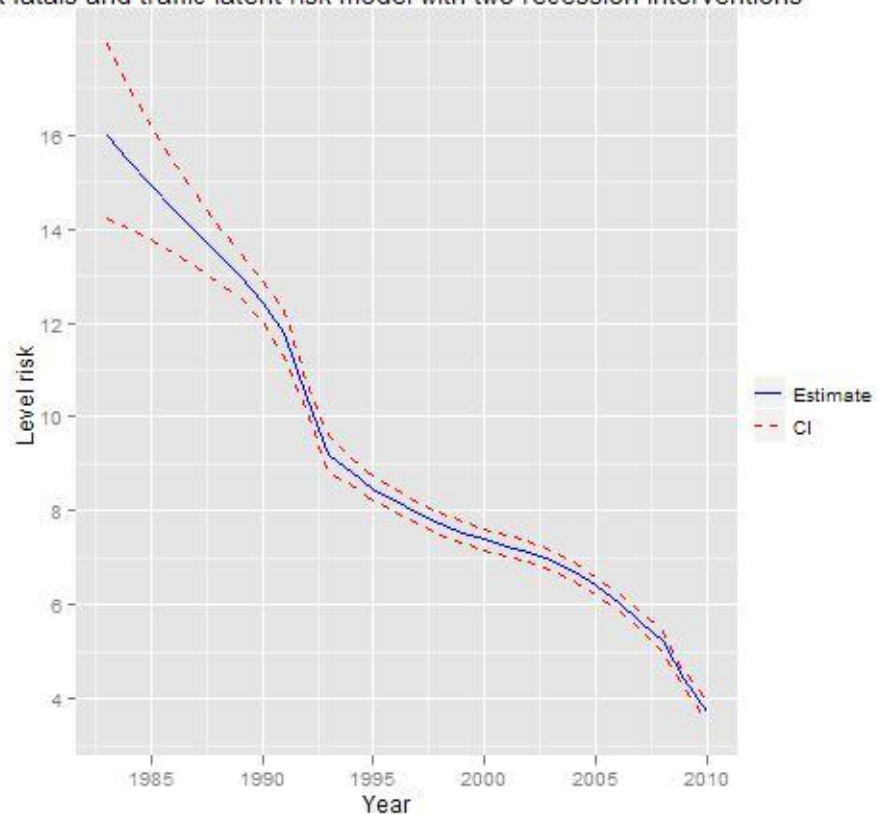
Fatality Risk

- The fatality risk is the number of fatalities per billion vehicle kilometres.
- Estimation model – technical definition: Latent Risk with interventions in slope fatalities & exposure (1991-92 and 2008-2011) [2]
- CI: 68% confidence interval

Smoothed state plots
fatals and traffic latent risk model with two recession interventions

The fatality risk has been decreasing

- The risk for fatalities in the UK has reduced from 16 per billion vehicle kilometres in the early 80s to less than 4 per billion vehicle kilometres in the most recent years.
- This amounts to a mean decrease of 2.8% per year.

Transport

Forecasts to 2020

If the change in slope seen in 2008-2010 returns to the trend seen prior to 2008 in 2012, the following forecasts can be made for the number of fatalities in 2020:
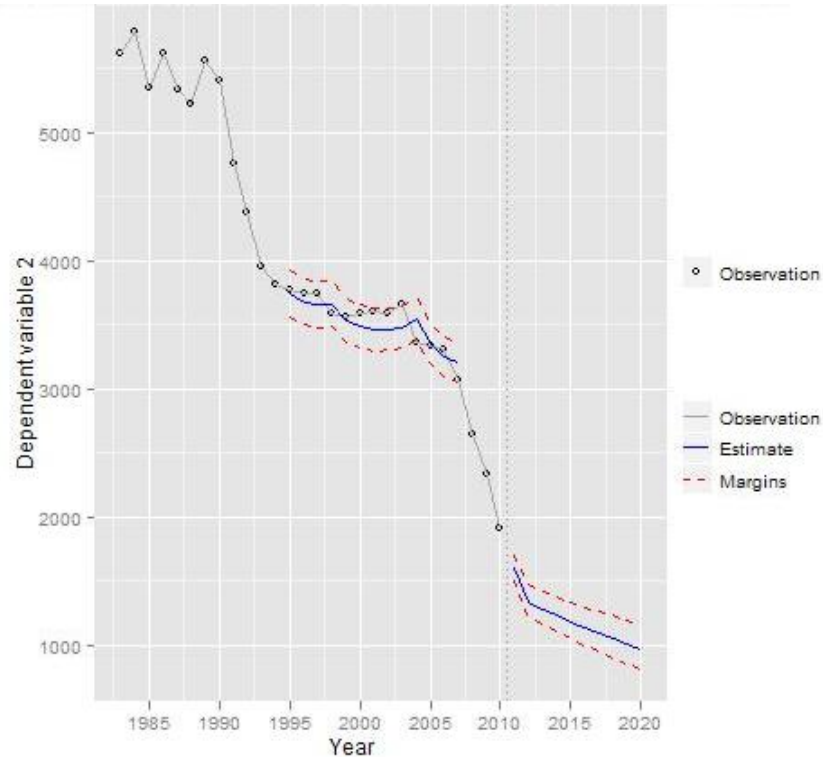
If road-safety returns to the trend seen prior to 2008 by 2012, the expected number of fatalities in 2020 is 979

Forecast of road-traffic fatalities in UK up to 2020

| Year	Prediction	Lower CI	Upper CI
2011	**1605**	1415	1820
2012	**1344**	1113	1622
2013	**1292**	1053	1584
2014	**1242**	994	1551
2015	**1193**	935	1522
2016	**1147**	879	1497
2017	**1102**	824	1474
2018	**1059**	772	1454
2019	**1018**	722	1437
2020	**979**	674	1422

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. (plotted in the red margins: 65%; printed in table: 95%).

Scenarios

- The strong uncertainty about the development of the fatalities in the UK is due to the development in traffic volume and well as when the recession intervention ends.
- The forecast of 979 assumes that the economic downturn ceases by 2012. This could vary between 1,123 (downturn ceases in 2011) to 853 (downturn ceases in 2013).
- To illustrate the uncertainty of the traffic volume, three point-estimates for fatalities in UK 2020 are plotted assuming three different scenarios for traffic volume.
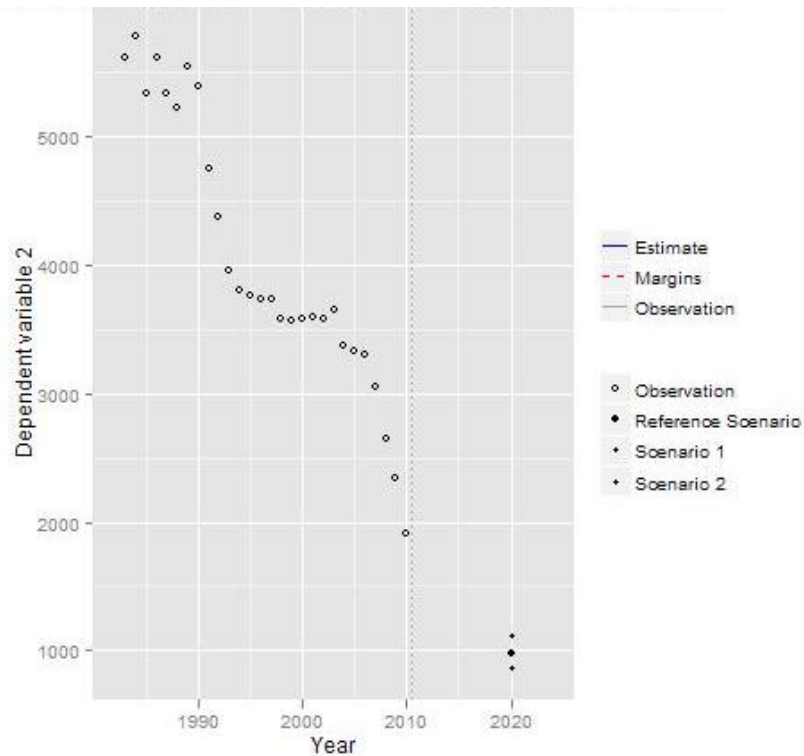
Scenarios for Traffic Volume
- Reference: continuation of development (forecasted value)
- Scenario 1: strong growth (forecasted value plus one standard deviation)
- Scenario 2: stagnation (forecasted value minus one standard deviation)

	Vehicle kilometers (billions)	Road traffic fatalities
Situation 2010	514.9	1,905
Prediction 2020 according to mobility scenarios:		
Continuation of development	525	979
Stronger growth	564	1,113
Stagnation	489	861

References

[1] Dupont & Martensen (Eds.) 2012. Forecasting road traffic fatalities in European countries. Deliverable 4.4 of the EC FP7 project DaCoTA.

[2] 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.

[3] EC National Expert for road accident statistics and road safety performance indicators.

[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.