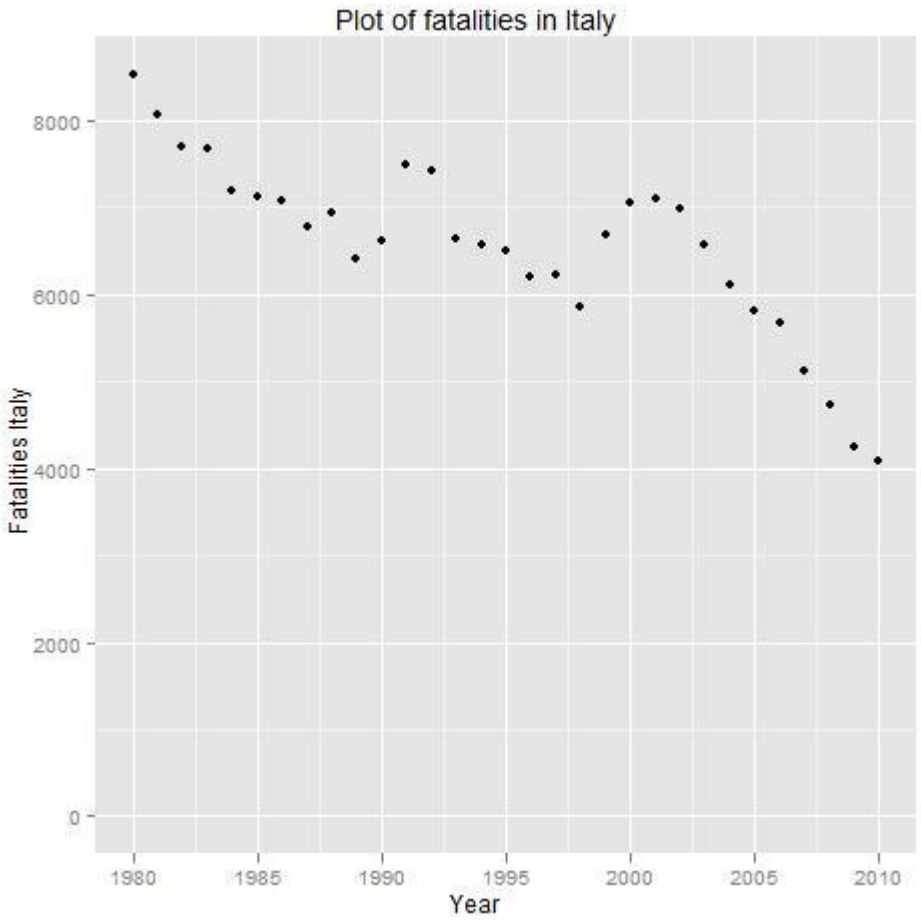
Italy

Fatalities



– During the considered period (1980-2010) the number of fatalities is more than halved in Italy. The number of fatalities observed at the end of the series (4090) is 2.09 times lower than the starting value (8537).

Registration of fatalities

– Changes have occurred in the registration of fatalities:
  - In 1991, the registration form and survey methods were adapted. From this year on, property damage accidents were removed from the survey.
  - From 1999, the definition of a road accident fatality has been extended from 7 to 30 days.
– Both changes in registration were accounted for in the forecasting model.

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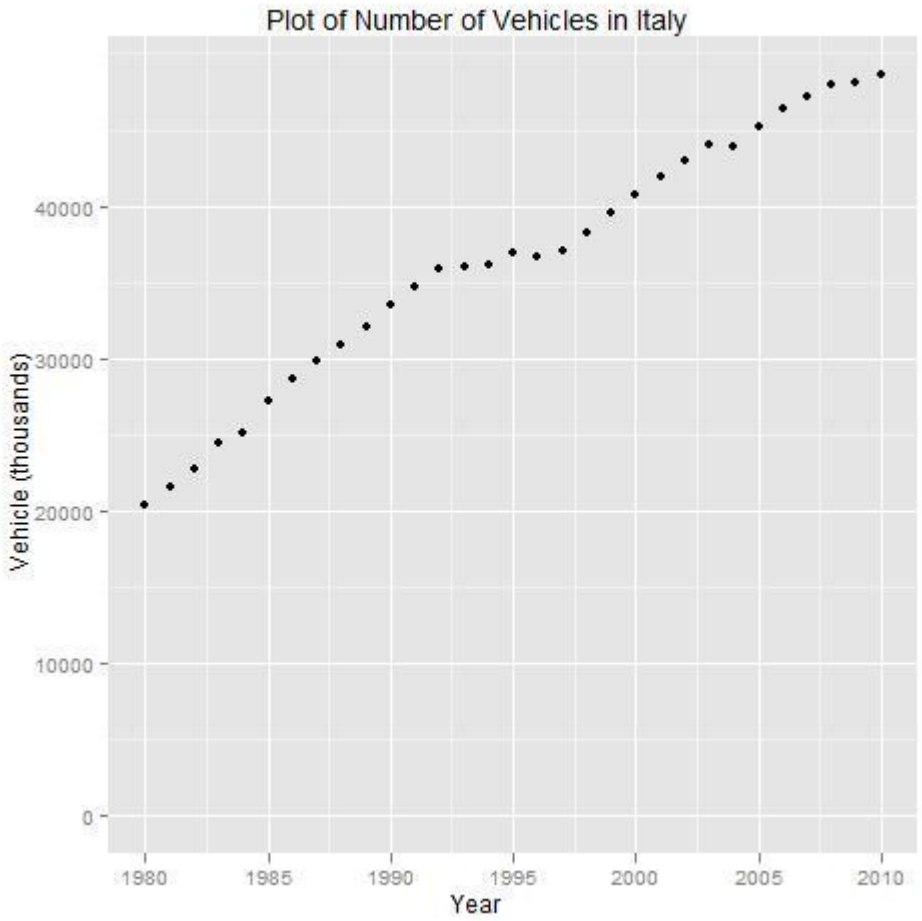
Traffic Volume



- The number of fatalities depends strongly on the amount of traffic. As official traffic volume measures are not available at national level, a surrogate measure, the number of vehicles, has been used to forecast the fatalities.
- Development:
  - Between 1980 and 1992: number of vehicles in Italy has been increasing at the average rate of 4.8% per year.
  - Between 1992 and 1997 a stagnation period can be observed.
  - From 1997 on: the rate of increase varies between 2% and 3% until 2008 with a little decrease in 2004.
- Measurement:
  - From 2009, trailers and semitrailers with weight lower than 3,5 tons are no more included in the calculation of the total vehicle fleet, this caused a little drop in the rate of increase, which was accounted for in the forecasting model.

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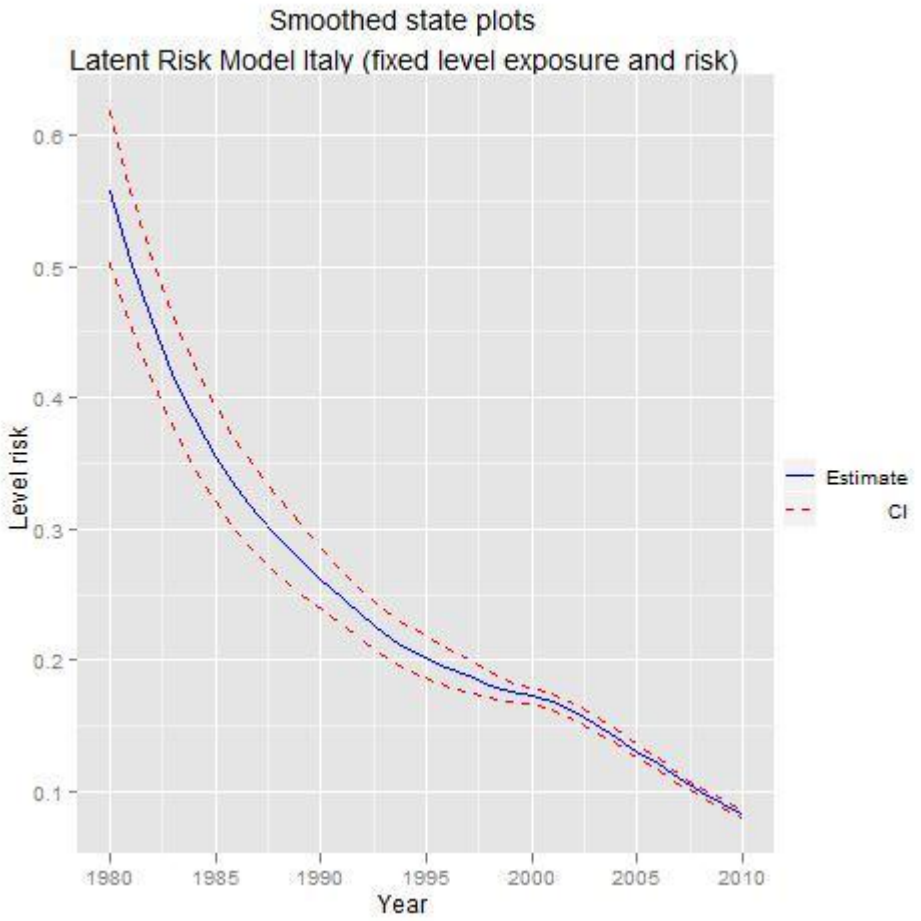
Fatality Risk

- The fatality risk is the number of fatalities per thousand vehicles.
- Estimation model – technical definition: Latent Risk fixed level exposure and risk (Bijleveld at al., 2010)
- CI: 68% confidence interval



The fatality risk has been decreasing by 6% yearly

- The risk for fatalities has been reduced in Italy from 0.55 per 1,000 vehicles in the early 80s to less than 0.1 per 1,000 vehicles in the most recent years.
- This amounts to an average decrease of -5% per year.

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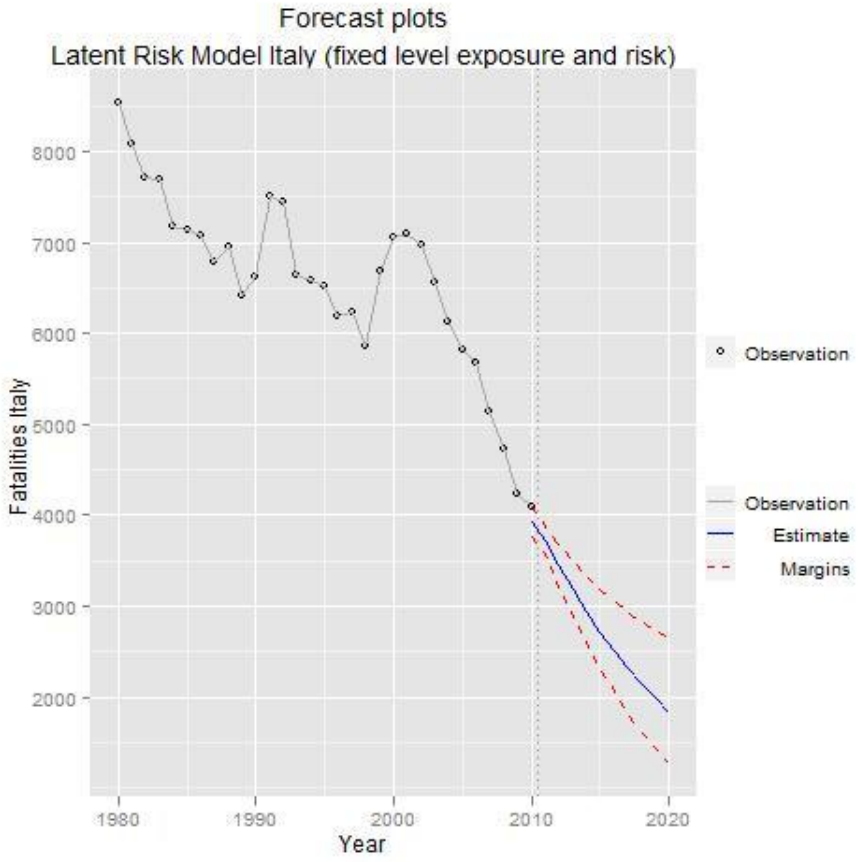
Road Safety Development - Italy

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 1836.

Forecast of road-traffic fatalities in Italy up to 2020

Year	**Prediction**	Lower CI	Upper CI
2011	**3,725**	3,426	4,050
2012	**3,443**	3,036	3,906
2013	**3,183**	2,661	3,808
2014	**2,942**	2,314	3,742
2015	**2,720**	1,998	3,703
2016	**2,514**	1,715	3,687
2017	**2,324**	1,464	3,691
2018	**2,148**	1,243	3,714
2019	**1,986**	1,050	3,755
2020	**1,836**	884	3,814

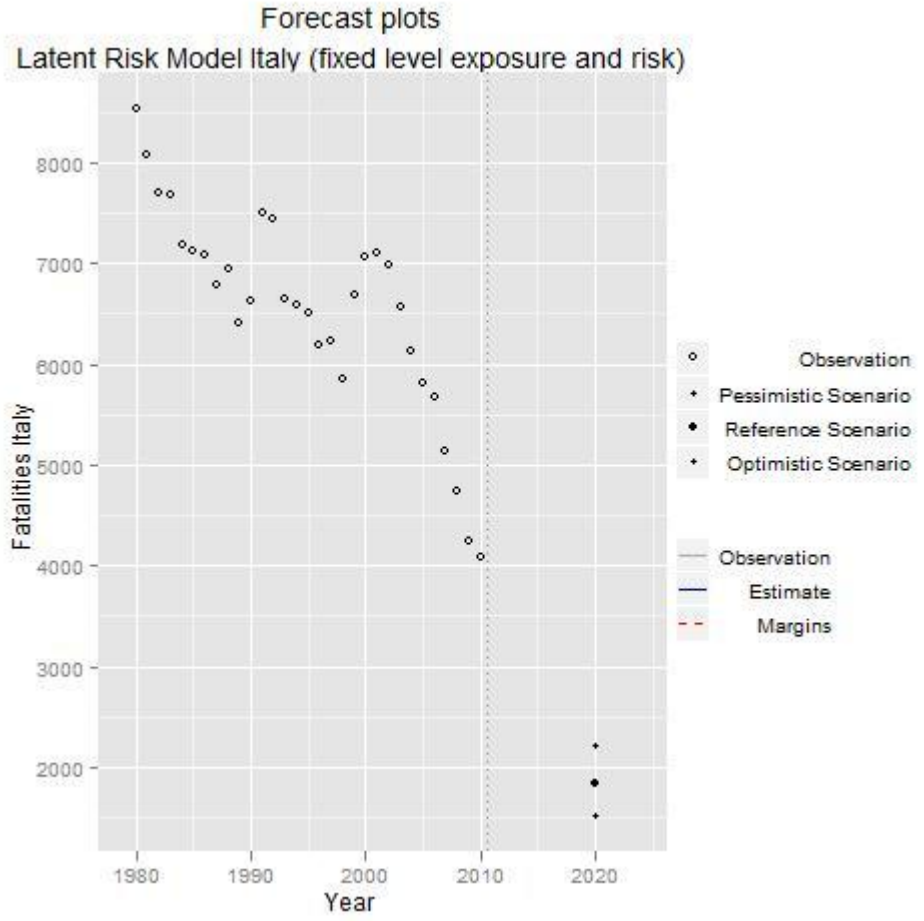
Disclaimer

– 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%).

Road Safety Development - Italy

Scenarios

- The strong uncertainty about the development of the fatalities in Italy is for a good part due to the development in exposure.
- To illustrate that, three point-estimates for fatalities in Italy 2020 are plotted assuming three different scenarios for exposure.



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)

	Vehicles (millions)	Road traffic fatalities
Situation 2010	48.7	4,090
Prediction 2020 according to mobility scenarios		
Continuation of development	54.6	1,836
Stronger growth	66.5	2,222
Stagnation	45.9	1,516

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.