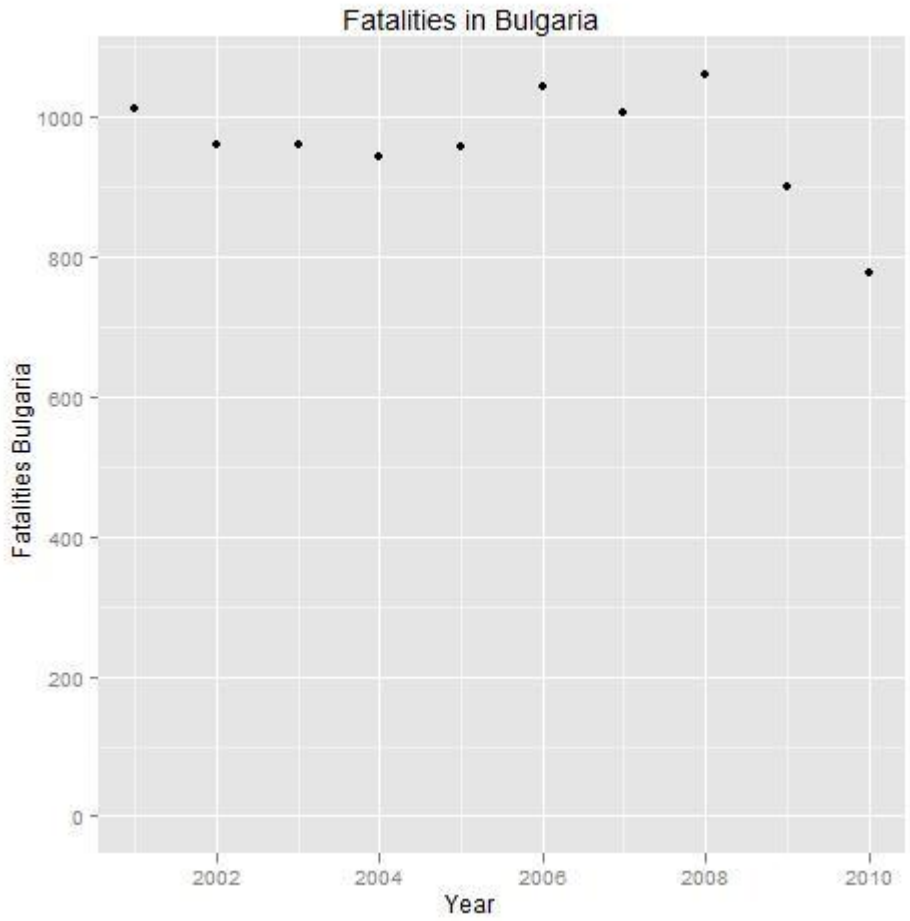
Bulgaria

Fatalities



Road traffic fatalities have been registered since 2001.

Fatalities had been stagnating or increasing until 2008.

- The number of fatalities has been more or less stagnating between 2001 and 2005, then it was rising, and eventually it has been decreasing since 2008.
- The development mirrors some aspects of the economic development. In the years up to 2008 there was a stable growth in GDP and growing oil sales, all indicating a rising mobility [2]. After 2008 the recession started which might have (partly) caused the reduction in fatalities.
- At the same time the fatalities also mirror the efforts in road safety management. In 2008 Bulgaria, had a road safety management review executed by the world bank [3]. A lack of funding and of a coherent strategy was diagnosed. Moreover it was asserted that the know-how and equipment applied was often not up to date. Since then, big efforts are undertaken to improve road safety in the sense that a strategic plan has been worked out concerting actions of public institutions, regional and municipal authorities, nongovernmental organizations, the private sector and civil society [2].

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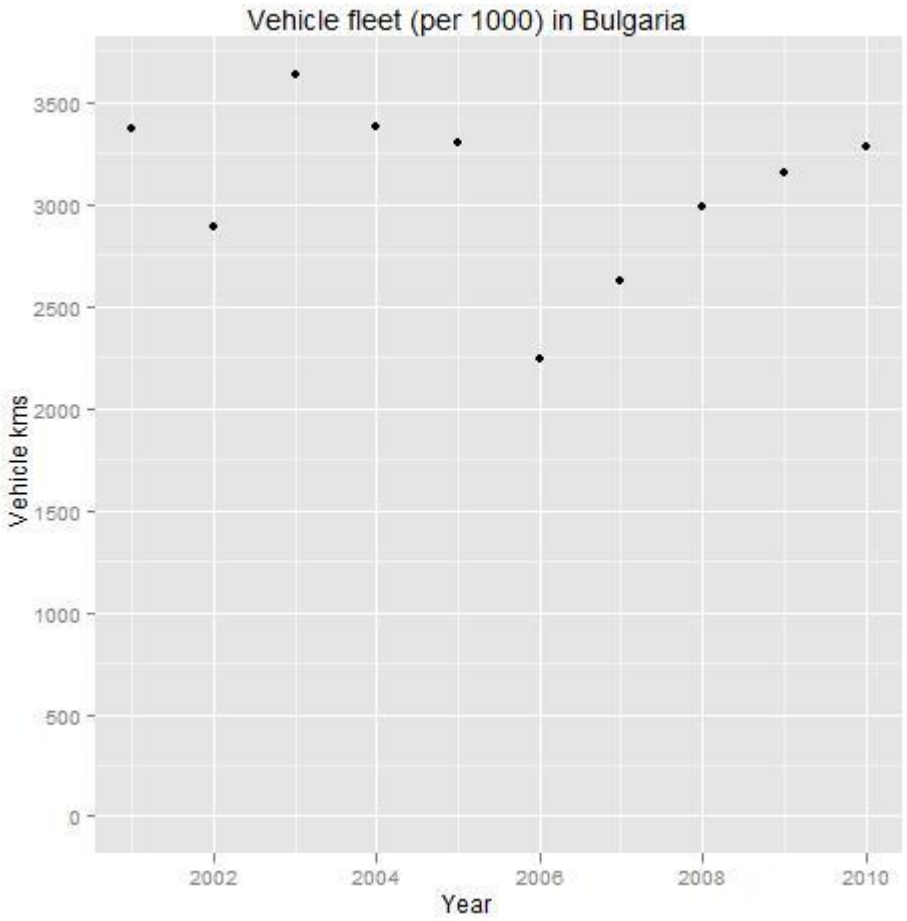
Traffic Volume



- The number of fatalities normally depends strongly on the amount of traffic.
- The only available estimate for traffic volume is the number of registered vehicles (vehicle fleet per 1000).
- Development and measurement:
  - Erratic between 2001 and 2005.
  - Drop by 1 million vehicles between 2005 to 2006 due to removing unused vehicles from database.
  - Rising trend since 2006.
- Relation between traffic volume and fatalities:
  - No relation can be established between the number of fatalities and this estimate for the traffic volume (neither with nor without the assumption that the vehicle database was cleaned in 2006).
  - No mobility scenario can be calculated.
- Forecasting model (technical definition):
  - Local Linear Trend model [6, 1] .
  - Variable: yearly number of fatalities.
  - Fixed components: slope.

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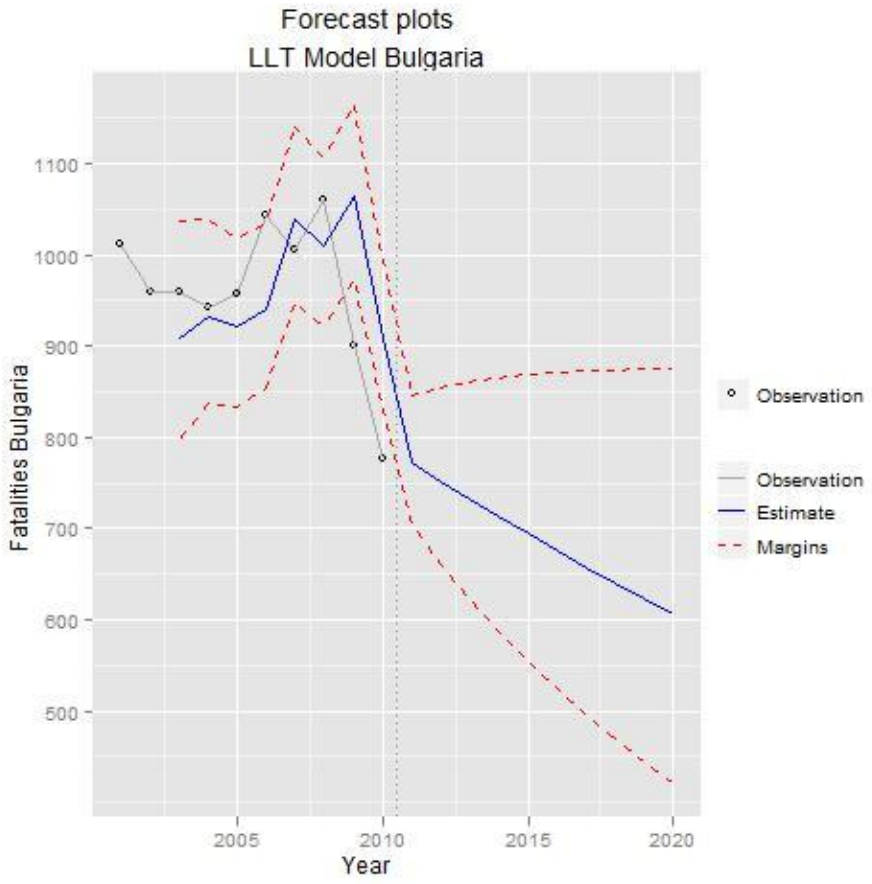
Forecasts to 2020

– If road safety is improved at the same rate as previously, 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 607.

Forecast of road-traffic fatalities in Bulgaria up to 2020

Year	**Prediction**	Lower CI	Upper CI
2011	**772**	646	922
2012	**752**	583	969
2013	**732**	531	1008
2014	**713**	486	1044
2015	**694**	446	1079
2016	**675**	410	1113
2017	**658**	377	1147
2018	**640**	347	1182
2019	**624**	320	1216
2020	**607**	295	1251

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

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

[3] COWI (2008) Review of road safety management capacity in Bulgaria for the World Bank.

[4] 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.

[5] Martensen & Dupont (Eds.) 2010. Forecasting road traffic fatalities in European countries: model and first results. Deliverable 4.2 of the EC FP7 project DaCoTA.

[6] Commandeur, J. & Koopman, S.J. (2007). An Introduction to State Space Time Series Analysis. Oxford University Press.