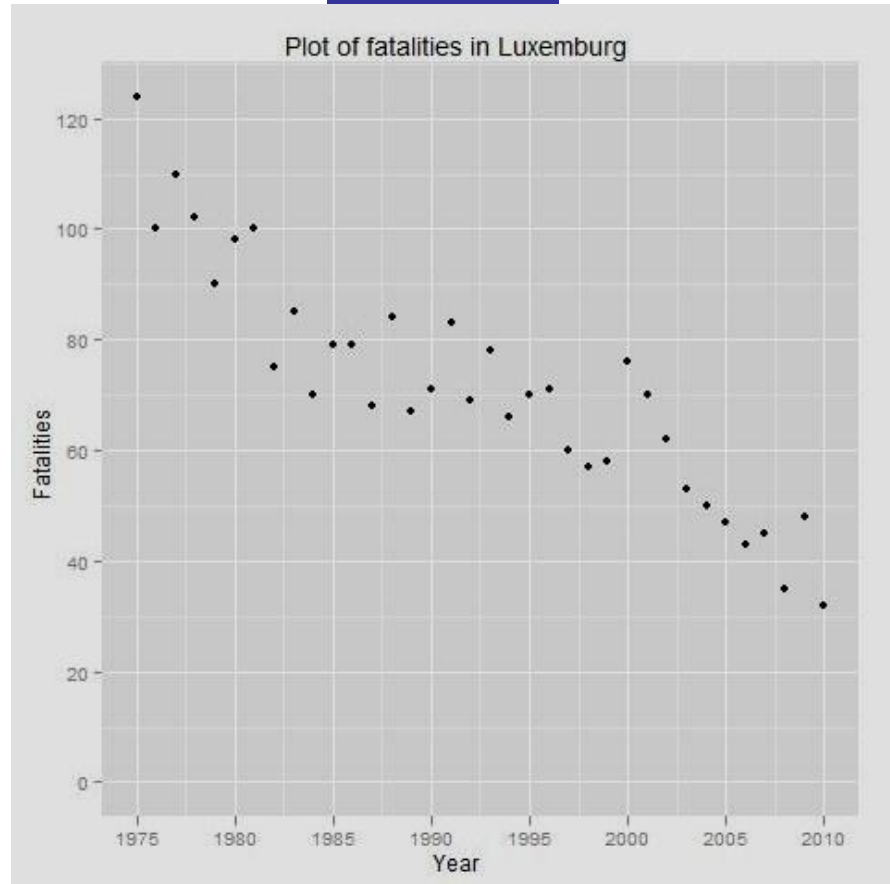


## Luxembourg

### Fatalities



Since 1975, the annual number of fatalities has decreased by 3% per year on average

- Around 125 fatalities have been registered in Luxembourg in 1975 against 32 in 2010, so almost 4 times less.
- The average annual decrease in the number of fatalities is 3%.

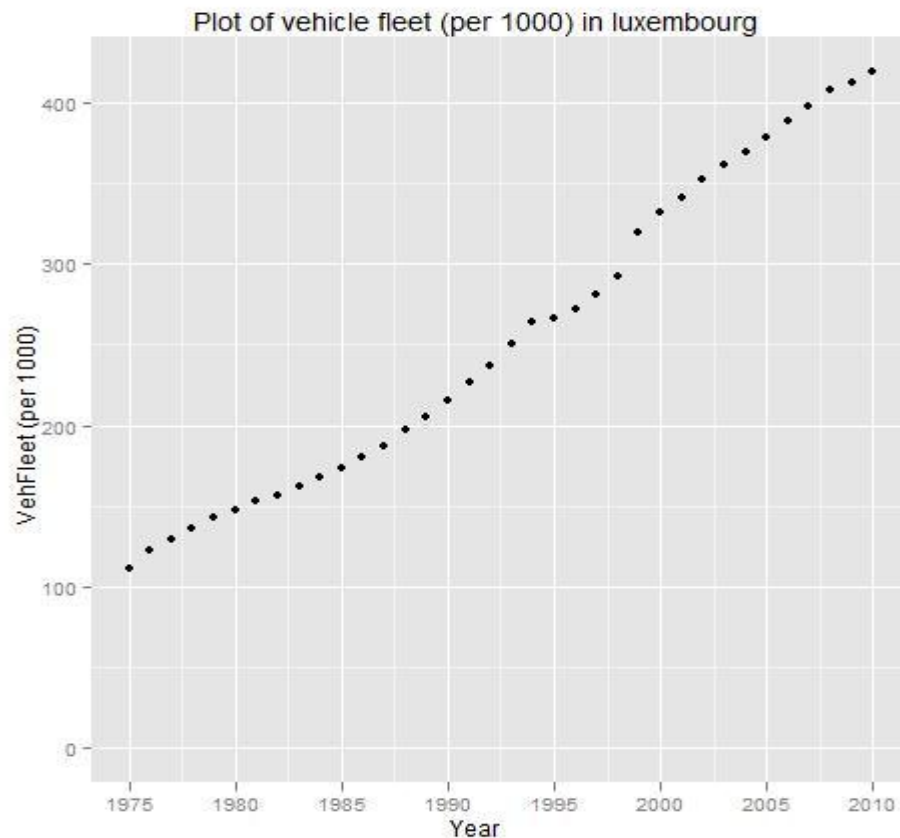
#### **Registration of fatalities**

- A fatality is defined as a death occurring within 30 days following an accident. A 100% registration can be assumed with confidence in the case of Luxembourg as far as fatalities are concerned.



# Road Safety Development - Luxembourg

## Traffic Volume



Traffic volume in Luxembourg is for an important part attributable to foreign vehicles.

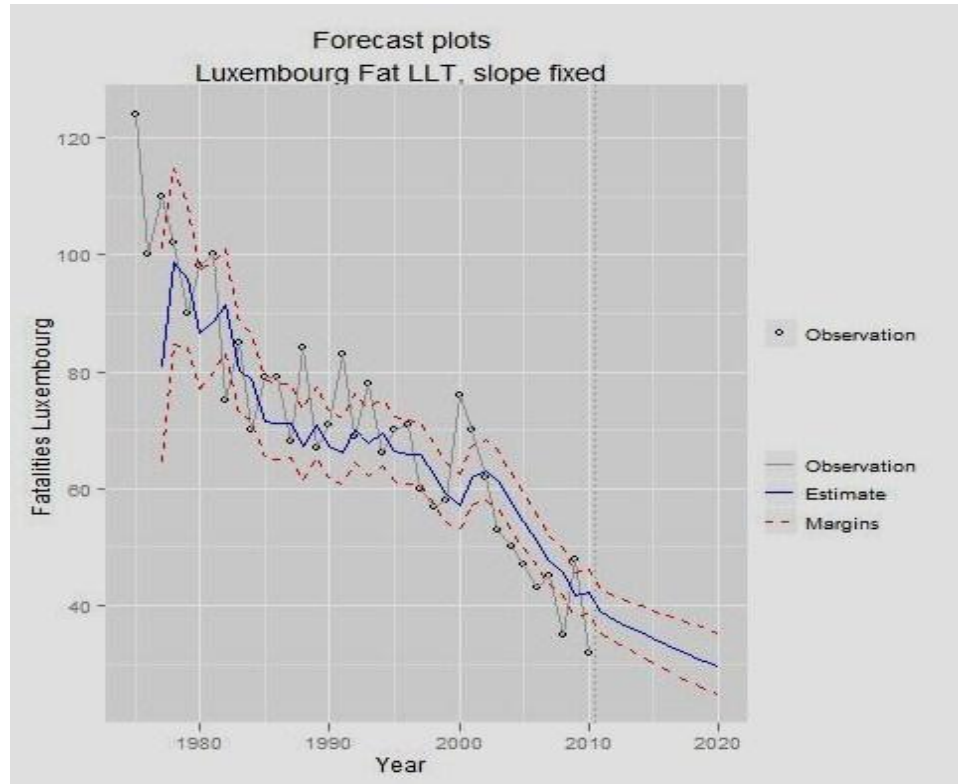
- The number of fatalities depends strongly on the amount of traffic (exposure). To forecast the fatalities, the development of exposure has to be forecasted first.
- The only estimate for exposure that is available in Luxembourg is the number of registered vehicles. This data is available from 1975 onwards.
- Traffic volume in Luxembourg depends to a large extent on foreign vehicles (workers living in the surrounding countries). The adequateness of vehicle fleet as an exposure indicator is thus questionable in this case.
- Development:
  - o The number of registered vehicles has been increasing steadily since 1975
- Relation between traffic volume and fatalities:
  - o No relation can be established between the number of fatalities and vehicle fleet.
  - o No mobility scenario are calculated
- Forecasting model (technical definition):
  - o Local Linear Trend model [1]
  - o Variable: yearly number of fatalities.
  - o Fixed components: slope.



# Road Safety Development - Luxembourg

## Forecasts to 2020

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



If RS efforts continue at the same level, around 30 fatalities are to be expected in 2020.

### Forecast of road-traffic fatalities in Luxembourg up to 2020

Year	Prediction	Lower CI	Upper CI
2011	<b>39</b>	32	46
2012	<b>38</b>	31	46
2013	<b>37</b>	29	46
2014	<b>35</b>	28	45
2015	<b>34</b>	26	45
2016	<b>33</b>	25	44
2017	<b>32</b>	24	44
2018	<b>31</b>	23	43
2019	<b>31</b>	22	43
2020	<b>30</b>	21	42

#### 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.

