

Monetary Valuation of EU-wide road safety developments in 2012

Based on the relevant figures presented in the 5th PIN report and updated in the 6th PIN report, ETSC estimated the monetary valuation of the road safety developments in 2012. However, the monetary valuation of preventing one road death (VPF) presented in the 5th PIN report was estimated at 2009 factor prices and in 2009 euro to be 1.70 million EUR¹. For the purpose of the 7th PIN Report, this value needs to be updated to reflect the economic conditions for the relevant year, in this case 2011.

There are two components that need to be taken into account in the updating of the VPF value: the change in GDP per head and the conversion from 2009 euro to 2012 euro. The latter will be done by taking into account the year-to-year inflation rate for the EU27 as a whole between 2009 and 2012. The former will be done by considering the corresponding change in the real GDP for the EU27 as a whole and adjusting by the increase in the EU population between 2009 and 2012.²

Consequently, having regard to the fact that all the percentage changes are small, the formula used to update the VPF figure is the following:

$$\text{VPF}(2012)=\text{VPF}(2009)*(\text{GDP_growth}(2010)-\text{POP_growth}(2010))*\text{inflation}(2010)*(\text{GDP_growth}(2011)-\text{POP_growth}(2011))*\text{inflation}(2011)*(\text{GDP_growth}(2012)-\text{POP_growth}(2012))*\text{inflation}(2012).$$

By plugging in the respective numbers we obtain the following calculation

$$\text{VPF}(2012)=1,700,000*(1.021-0.0028)*1.021*(1.016-0.0026)*1.031*(0.997-0.0026)*1.026=1,884,007 \text{ EUR}$$

There were 2,661 fewer road deaths in 2012 compared to 2011 for the entire EU, thus the benefit for society gained through the prevention of those deaths is valued at $2,661*1,884,007=5,012,966,144$ EUR.

Setting an ambitious target for reducing the number of road traffic serious injuries in the EU

As the number of serious injuries is another indicator, in addition to the number of road deaths, used to measure road safety, ETSC has been advocating that an EU-wide target for reducing the number of those seriously injured should follow at least the same level of ambition as the target for reducing road deaths. Additionally, ETSC has advocated that the fairest way of moving towards achieving the EU target of halving road deaths over the 2011-2020 period is to do so through constant annual reductions. Taking these two propositions together, it follows that an

¹ For the full VPF calculation method, please read the 2011 PIN report methodological note at http://www.etsc.eu/documents/Methodological_Note_PINReport2011.pdf

² The economic and population data was retrieved from EuroStat on 03.06.2013.

equally ambitious target for reducing the numbers of serious injuries as those for road deaths would amount to constant annual progress at the same pace for both indicators.

The method for calculating the annual percentage reduction in road deaths in order to halve road deaths by 2020 compared to 2010 was presented in the methodological note accompanying the 6th Road Safety PIN Report.³ This value is -6.7% per year.

In its document “First Milestone towards a Serious Injury Strategy” published in March 2013, the European Commission announced that Member States would report annually, starting with 2015, on the number of road traffic casualties diagnosed with an injury of MAIS 3 or more recorded in the previous year. This means that the number of serious injuries (MAIS 3+) for 2014 will constitute the baseline for setting a target covering the period up to and including 2020.

Let p be the constant annual reduction in the number of serious injuries recorded on EU roads and $SI(2014)$ be the reported number of MAIS 3+ injuries reported for the year 2014. For the following years this translates into:

$$SI(2015)=SI(2014)*(1-p)$$

$$SI(2016)=SI(2015)*(1-p)=SI(2014)*(1-p)^2$$

$$SI(2017)=SI(2016)*(1-p)=SI(2014)* (1-p)^2*(1-p)= SI(2014)*(1-p)^3$$

$$SI(2018)= SI(2017)*(1-p)=SI(2014)* (1-p)^3*(1-p)= SI(2014)*(1-p)^4$$

$$SI(2019)= SI(2018)*(1-p)=SI(2014)* (1-p)^4*(1-p)= SI(2014)*(1-p)^5$$

$$SI(2020)= SI(2019)*(1-p)=SI(2014)* (1-p)^5*(1-p)= SI(2014)*(1-p)^6$$

The percentage reduction over the 2014-2020 period in the number of serious injuries will be equal to:

$$\% = \frac{SI(2014) - SI(2020)}{SI(2014)} = \frac{SI(2014) - SI(2014) * (1 - p)^6}{SI(2014)} = \frac{SI(2014) * (1 - (1 - p)^6)}{SI(2014)}$$

$$\text{So } \% = 1-(1-p)^6$$

However, we know that p has to be equal to 6.7% to have the same level of annual ambition in reducing both road deaths and serious injuries.

By plugging in the value of p in the mathematical formula above we obtain just above 34%.

For reasons of simplicity ETSC has rounded this figure by recommending a target of reducing the number of serious injuries on EU roads by 35% between 2014 and 2020.

³ The methodological note is available here:

http://www.etsc.eu/documents/methodological_note_6_PIN_Report.pdf