

#### SafetyCube

# Socio-economic costs of road crashes in Europe

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Wim Wijnen (W2Economics/SWOV), Annelies Schoeters (VIAS), Wendy Weijermars (SWOV), Robert Bauer (Austrian Road Safety Board), Laurent Carnis (IFSTTAR), Rune Elvik (TOI) & Heike Martensen (VIAS)



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#### Introduction

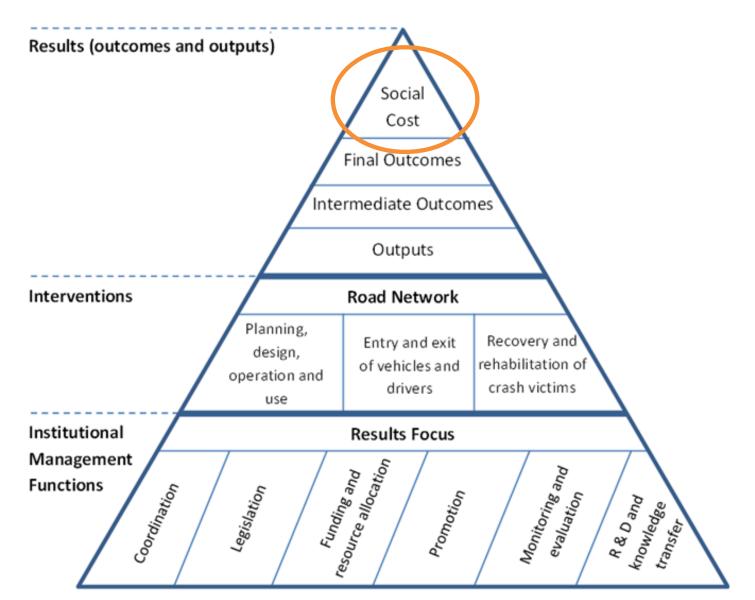




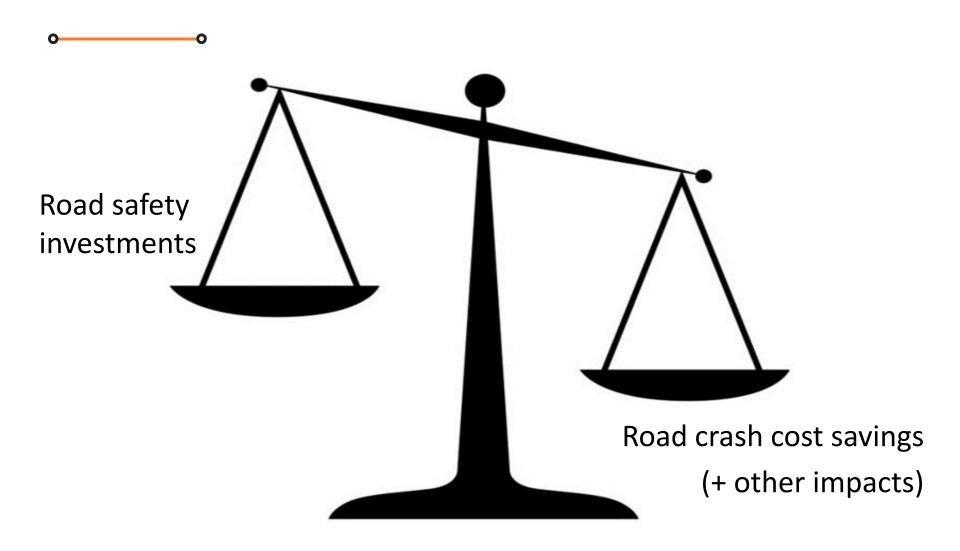
# Research and consultancy, specialized in economic analysis of road safety

- Costs of road crashes
- Economic evaluation of road safety programs
- Economic valuation of saving lives, quality of life
- Financing road safety investments
- Impact of economic development on road safety

#### Costs as road safety indicator



### Cost-benefit analysis (CBA)



### Road crash cost as input for CBA



#### E<sup>3</sup>-calculator

### User input Info on measures

#### **Effectiveness**

Saved crashes per unit (fatal, serious, slight, pdo)

Time horizon

**Costs of measures** 

### **Output Economic evaluation**

#### Cost Effectiveness Analysis

 Costs per crash prevented (fatal, serious, slight, pdo)

#### **Cost Benefit Analysis**

- Net present value (benefits – costs)
- Benefit-cost ratio(benefit / costs)

SafetyCube input Info per country

**Crash & casualty costs** 

(fatal, serious, slight, pdo)

Discount rate

### Analysis of road crash costs

- Literature review to identify
  - All relevant cost items
  - Methods
  - Best practices
- 2. Survey among EU countries
- 3. Data analysis
- 4. Developing harmonized EU-values

### The SafetyCube-InDeV cost team

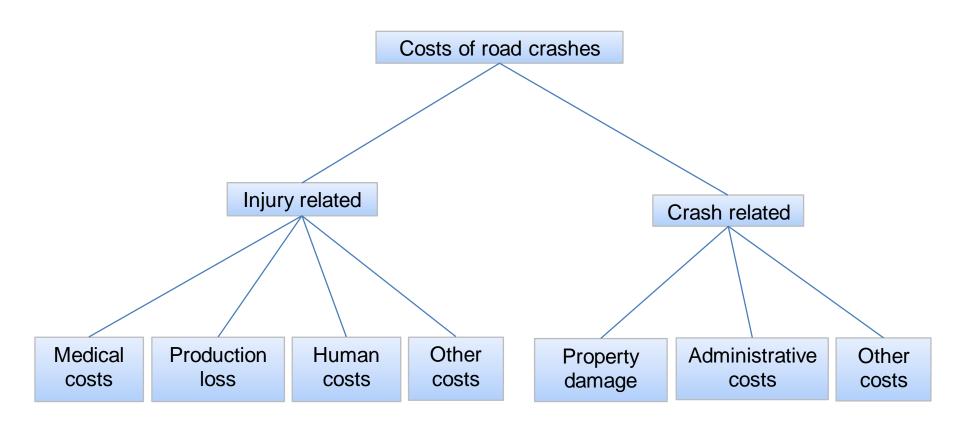
#### SafetyCube partners:

- SWOV
- VIAS
- KfV
- IFSTTAR
- TOI



### **Cost components**

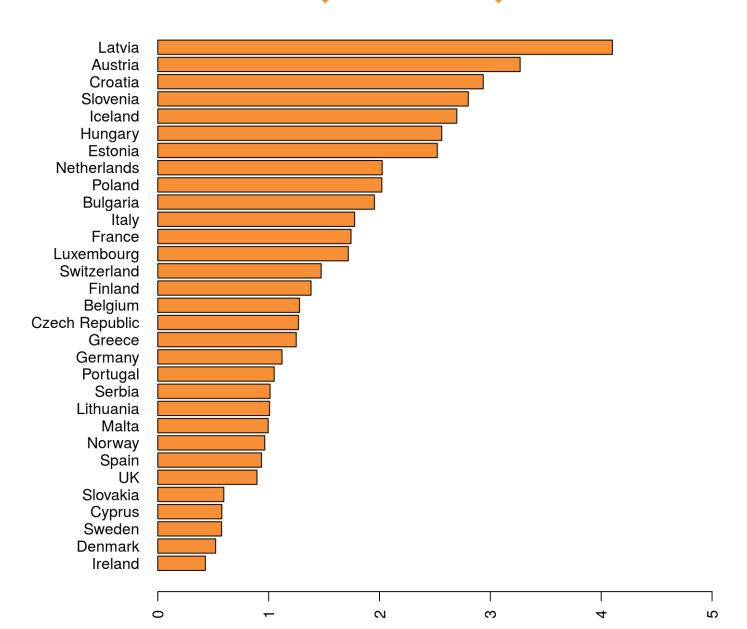




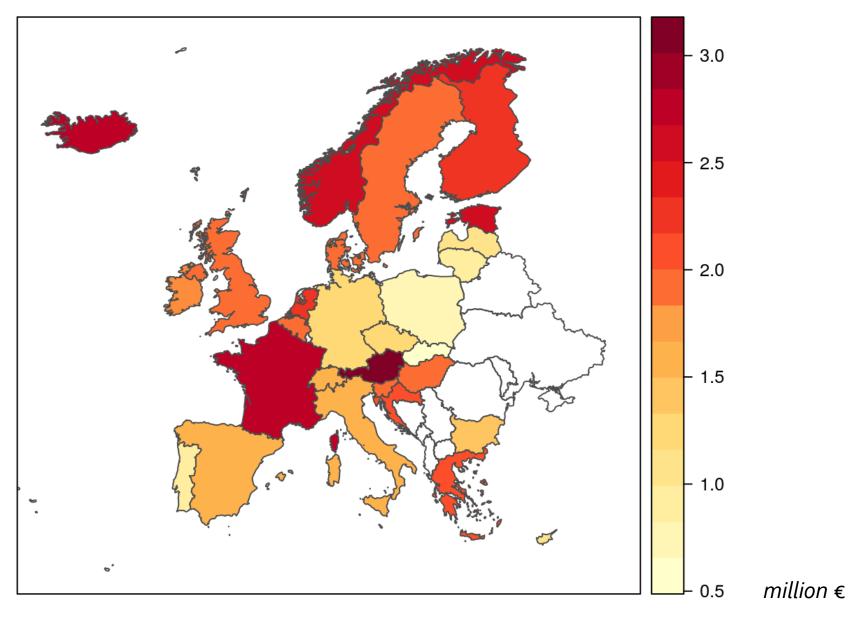
### The survey

- Survey among the 28 EU member states + Iceland, Norway, Serbia and Switzerland
- Data received from 31 countries
- Issues:
  - Which cost items included?
  - Method(s) per cost item
  - Total costs (value, % of GDP)
  - Distribution costs over cost items
  - Costs per casualty and crash
  - Total costs by severity level
- Official values used by national governments

### Total costs (%GDP)



# Costs per fatality

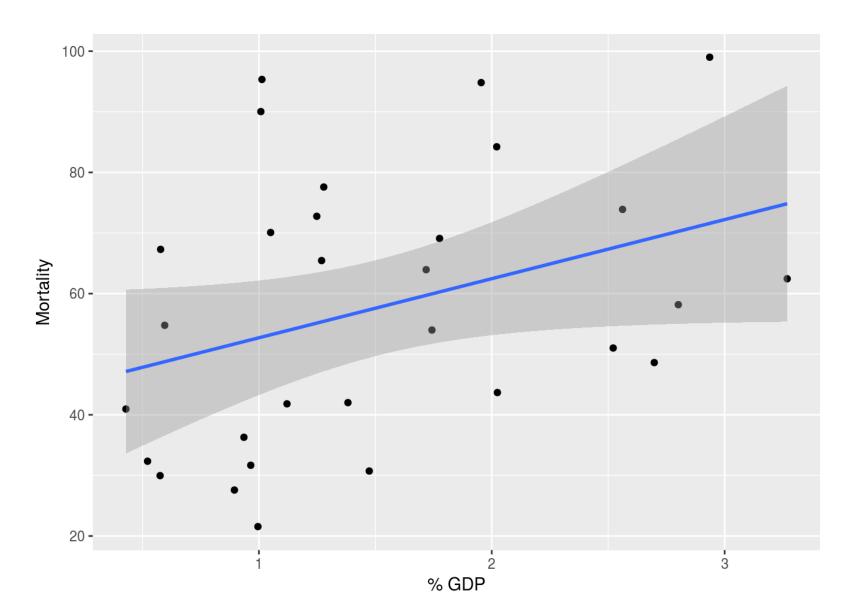


#### What explains the cost differences?

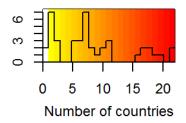


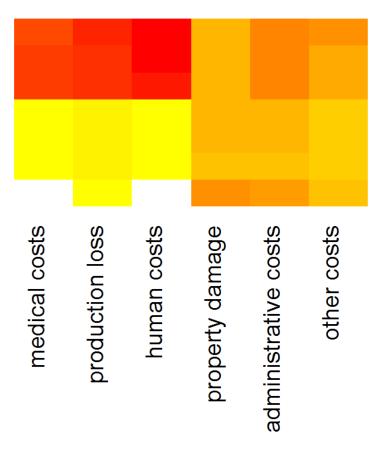
- Total costs: road safety performance (number of casualties / crashes)
- Methodological differences

## Relation mortality – total cost



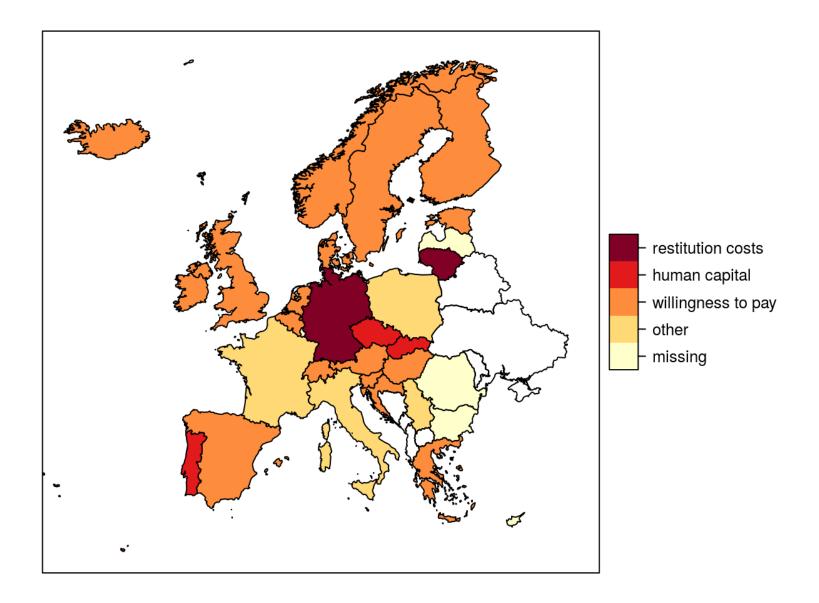
### Cost components included

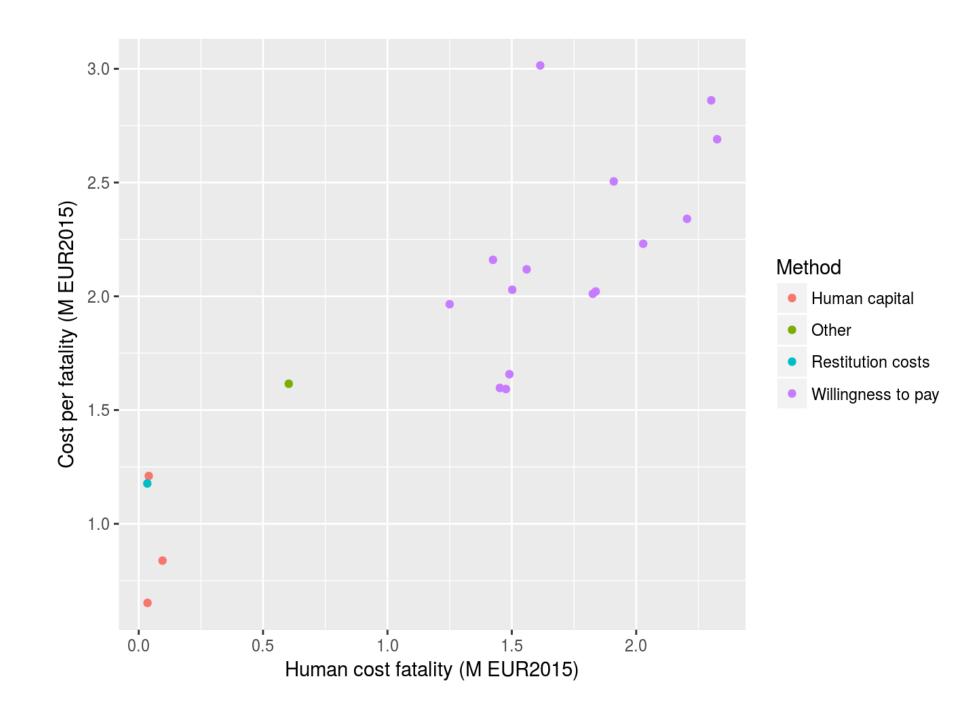




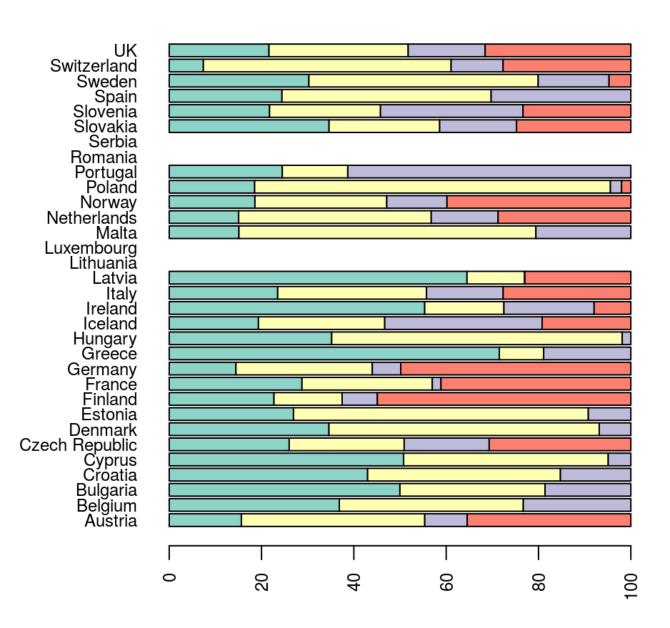
fatalities
serious injuries
slight injuries
fatal crashes
serious injury crashes
slight injury crashes
property damage only

#### Different methods: human costs



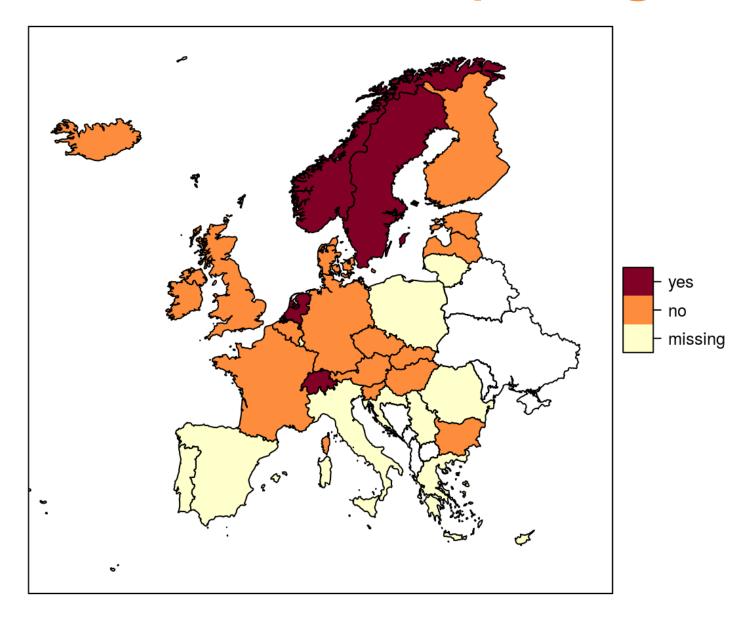


#### PDO crashes included?



severity categories
 fatalities
 serious injuries
 slight injuries
 pdo crashes

### Correction for underreporting?



#### Harmonized estimates

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Value transfer approach:

Standardized EU values per cost item

Best practices

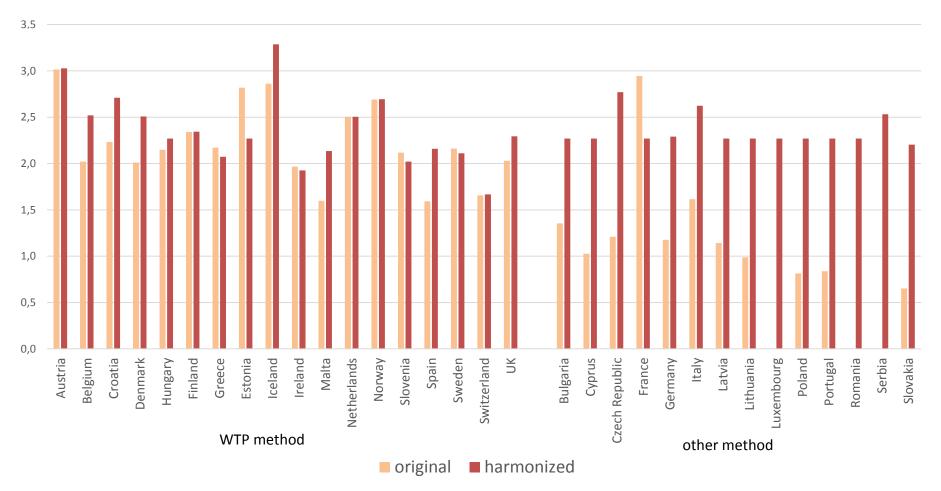
#### **Standardized EU values**

	Medical costs	Production loss	Human costs	Property damage	Administrative costs	Other costs	Total (unit) costs
Fatalities	5,430	655,376	1,587,001	11,555	6,346	3,638	2,269,346
Serious injuries	16,719	43,627	230,385	7,622	4,364	413	303,130
Slight injuries	1,439	2,669	<b>15,597</b>	5,3 <sup>1</sup> 7	1,876	519	27,418
Fatal crashes	11,757	727,616	1,809,467	17,542	8,891	3,817	2,579,089
Serious injury crashes	19,158	50,285	263,945	11,143	5,557	709	350,796
Slight injury crashes	1,957	3,629	21,212	7,231	2,677	634	37,340
PDO crashes	-	-	-	²,795	764	400	3,960

#### Harmonized estimates

Value transfer approach: Add missing values in individual countries Standardized EU values per cost item Replace values based on nonrecommended methods Best practices Harmonized costs per country Correction underreporting Total costs EU: at least €500 billion

#### Original vs. harmonized fatality costs



#### Total cost in EU:

- Original values: €200 billion
- Value transfer: at least €500 billion (corresponding to 3% of GDP)

#### Conclusions

- Official estimates of costs of road crashes in European countries range from 0.4 to 4.1% of GDP
- Costs per fatality range from 0.7 to 3.0 million EUR (2015)
- Variations mainly explained by methodological differences
- Official values (largely) underestimate the costs in most countries
- If corrections are made, costs of road crashes in the EU are at least € 500 billion Euro or 3% of GDP
- More uniformity and consistency with international guidelines is recommended for national cost studies

#### Thank you for your attention!

Wim.Wijnen@W2Economics.com