

**A decade of road casualty reduction
in Europe
100 000 premature deaths prevented
2001-2010**

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Overview

- **Responsibilities for road safety across the European Union (EU) up to 2001**
- **The road safety situation in 2001**
- **The target to halve road deaths by 2010**
 - **rising to the challenge at the EU level**
 - **rising to the challenge in Member States**
- **Achievement by 2010 and its social value**
- **Looking towards 2020**

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EU responsibility for road safety

Until 1993 Mainly vehicle type approval, driver licensing and commercial drivers' working hours – in pursuit of Single European Market

Since 1993 Empowered to act to improve road safety subject to Principle of Subsidiarity

1993 First action programme for road safety – common database on road accidents, some action on dangerous goods, some research

1997 Second action programme for road safety – cost-effectiveness criterion: cost of safety measure should be < 1 million Euros per death prevented, consumer information on safety of new vehicles on the market

2000 Progress report on road safety priorities

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European Transport Safety Council

Founded in 1993 as a non-governmental organisation dedicated to reducing death and injury in transport in Europe

bringing together practitioners, researchers and parliamentarians from across Europe

to provide independent advice at the European level on transport safety matters

seeking to promote transport safety strongly but constructively with the European Parliament and European Commission

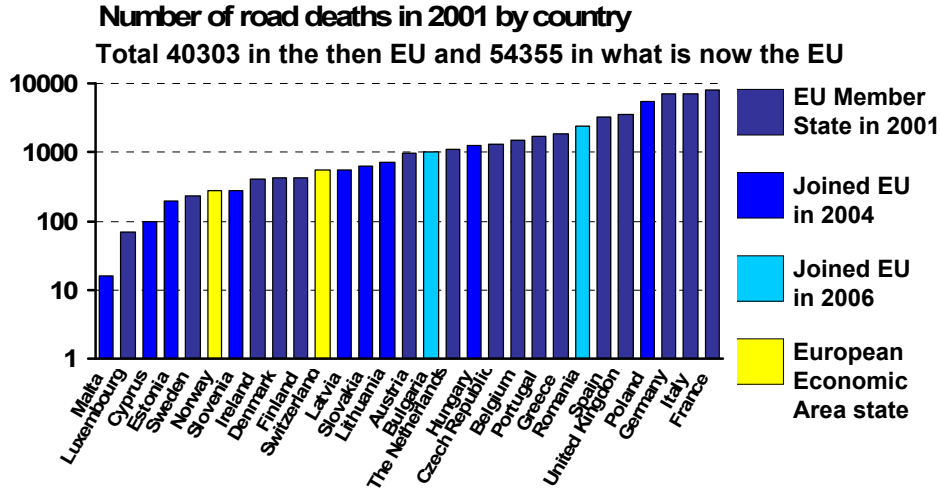
See www.etsc.eu



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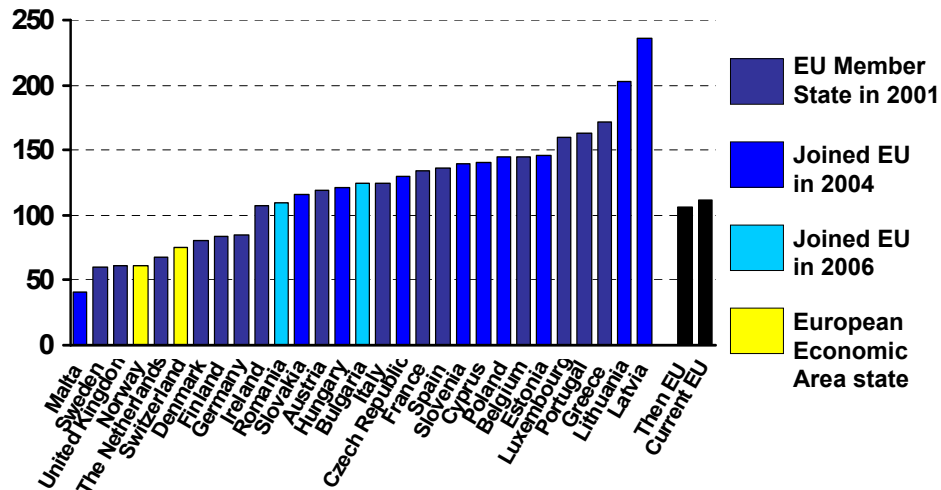
Road deaths in the EU in 2001



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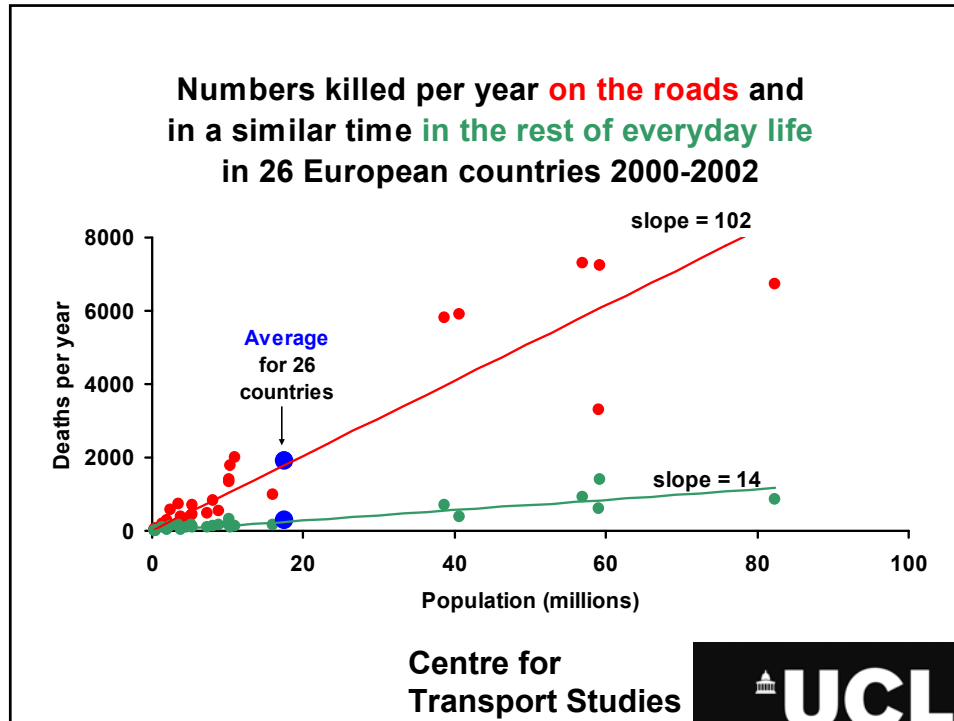


Road deaths/million population 2001



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Setting a target for 2010

- 1997** ETSC publishes a strategic road safety plan for the then EU of 15 Member States, with a target of fewer than 25,000 road deaths in 2010 (from 45,000 in 1995)
- 1998** European Parliament Transport Committee endorses setting this target
- 2000** European Commission Transport Directorate states case for a realistic but ambitious target
- 2001** European Commission Transport White Paper identifies road safety as one of 13 areas of action – **and sets a target for 2010**

A doubly challenging target

- The target was to **halve the annual number of road deaths from the 2001 number by 2010**
- This was ambitious – even aspirational
- The more so because it was set not by the road safety proponents of a target (who would have set a more cautious one) – but by those concerned with wider transport policy who would not themselves be responsible for delivering on it

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EU level response – programme

- 2001** Consultation on a third road safety action programme with the theme *a partnership for safety*
- 2003** Road safety action programme – *halving the number of road accident victims in the EU by 2010: a shared responsibility*
- 2006** Mid-term review of progress under the action programme – **target taken to apply to the EU enlarged by 12 States**

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EU level response – Directives

- 2002-3** Professional driver training and conditions
- 2003** Rear-view equipment in large vehicles
- 2004** Safety requirements for tunnels *
- 2006-9** Driving licences – updated practice
- 2007** Vehicle type-approval framework
- 2008** Inland transport of dangerous goods
- 2008** Road infrastructure safety management *
- 2009-10** Vehicle roadworthiness tests & inspections
- 2010** Framework for ITS in road transport
- 2011** Cross-border enforcement of traffic law

* Applying only to the Trans-European Road Network, but also expected to influence practice on national and local roads

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EU level response – research

- 2002–** Continuation of SUNflower
- 2003–** e-safety: ICT for safe and intelligent vehicles
- 2004–** SafetyNet: data resources enabling the European Road Safety Observatory
- 2009–** PRAISE: employee safety on the road
- 2009–** Continuation of SARTRE: social attitudes to road traffic risk
- 2010–** DaCoTA: collection, transfer and analysis of road safety data

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Mobilising Europe's consumers

- **EuroNCAP** – continuing previously established published rating of new cars for occupant and pedestrian protection based on independent crash testing
- **EuroRAP** – providing independent safety ratings for stretches of main roads in many European countries to inform road users and road authorities about levels of risk

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Response by Member States

- The EU action programmes recognised that responsibility for much of what was needed to reach the target lay with national and local government and all road users
- **SUNflower** and others had identified the need for national road safety policies and their effective implementation
- Alongside the OECD, WHO and World Bank, the **ETSC** has helped by **advising on methodology** and **benchmarking progress**

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ETSC checklist for national road safety policies

Based on best practice, the checklist covers four phases of formulation and implementation of policy:

- 1 Adopting a road safety strategy**
- 2 From strategy to plan of action**
- 3 From plan of action to implementation and updating**
- 4 Establishing and enhancing underpinning capabilities**



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1 Adopting a road safety strategy

- Build political support and commitment**
- Build public and private sector awareness and involvement**
- Consider safety holistically with social inclusion, sustainability and mobility**
- Create a vision or philosophy for the safety of the road transport system**
- Commit to a strategy for movement towards the envisaged safer system**



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2 From strategy to plan of action

- **Keep under review the legal framework for use of the roads**
- **Treat risk of death or injury on the roads as a public health problem**
- **Analyse road safety problems from a systemic perspective**
- **Set challenging yet achievable quantitative targets**
- **Create a road safety action plan for timely achievement of the targets**



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3 From plan of action to implementation and updating

- **Identify institutional roles clearly**
- **Choose measures scientifically**
- **Allocate responsibility for each measure close to the problem it addresses**
- **Secure enough government and other funding to make the targets achievable**
- **Establish transparent and trusted monitoring and evaluation procedures**



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4 Establishing and enhancing underpinning capabilities

- Effective enforcement of laws requiring safety-related behaviour
- Emergency response and trauma management to mitigate injury in collisions
- Accident and casualty data collected systematically – and accessible to users
- Exposure data and performance indicators
- Research to inform strategy and measures
- Training for all relevant professional staff
- Exchange of knowledge about best practice



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Benchmarking – the PIN programme

Benchmarking of countries' progress in road safety through performance indices can help national decision-makers by

- recognising achievement
- identifying shortcomings

ETSC is supported by the **Swedish Transport Administration, Norwegian Public Roads Administration, Volvo Group & Volvo Trucks** and **Toyota Motor Europe** to carry out such benchmarking in the programme PIN which has been running since 2006



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Performance indices

- The only outcome that is (approximately) comparably recorded in different countries in the EU is the number of deaths
- So most indices used in PIN are average annual percentage changes in numbers of deaths in total or in particular categories
- But numbers of seriously injured, observed wearing of seatbelts, observed speeds, safety ratings of national car fleets and taking particular steps in road safety policy have also been indexed



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Average annual percentage change

Let D_n be the number of deaths in year n

With an annual percentage reduction of p per cent

$$D_n = KD_0(1 - p/100)^n \dots\dots\dots (1)$$

where K (typically ≈ 1.0) allows for D_0 being unusually high or low

To fit Equation (1) to numbers of deaths recorded in years 0 to N

we can fit the line $\ln(D_n/D_0) = a + bn$ by least squares

Then a is an estimate of $\ln K$

b is an estimate of $\ln(1 - p/100)$

and p is estimated by $100(1 - e^b)$



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A particular percentage reduction

The average annual percentage reduction p that halves the number of deaths in 9 years (eg from 2001 to 2010) is given by

$$(1 - p/100)^9 = 0.5$$

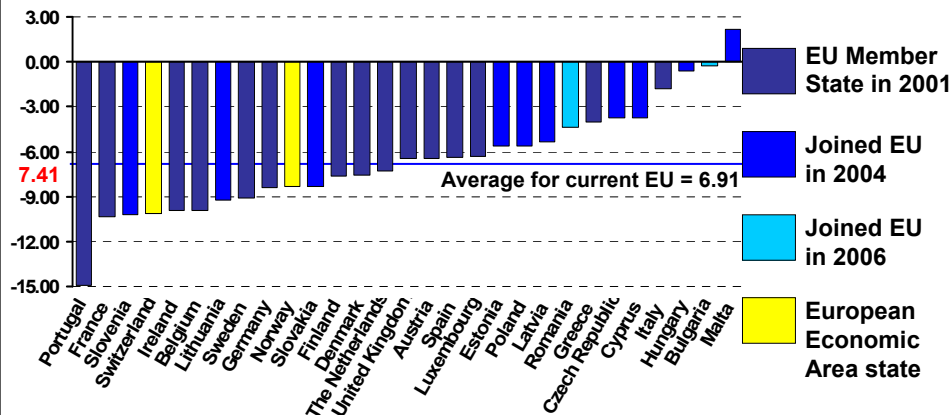
$$p = 100[1 - (0.5)^{1/9}] = \mathbf{7.41 \text{ per cent}}$$


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Deaths among children 1998-2007

Average yearly percentage change in road deaths among children aged 14 or under



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Measuring progress against drink driving

General measures to reduce deaths on the roads also work to reduce drink driving deaths

Measures to tackle drink driving in particular should make deaths attributed to drink driving fall in number faster than other road deaths

So ETSC's chosen indicator of progress over the years in tackling drink driving is the

Difference between the **average annual percentage reduction in deaths attributed to drink driving** and the **corresponding percentage reduction in other road deaths**



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Effect of drink-driving countermeasures

Suppose that in a certain country there are a total of T road deaths per year, of which A are attributed to drink driving. Then $N = T - A$ are not so attributed

Let the average annual percentage reductions in A and N be $p(A)$ and $p(N)$ respectively

Then if safety measures producing the reduction in N have a similar effect in reducing A , the average extra percentage reduction $p(D)$ in A due to changes in drink driving is given by

$$100 - p(A) = [100 - p(D)][100 - p(N)]/100$$

So $p(D) = 100\{1 - [100 - p(A)]/[100 - p(N)]\}$ is an indicator of effectiveness of tackling drink driving

and it follows that $p(D) \approx p(A) - p(N)$

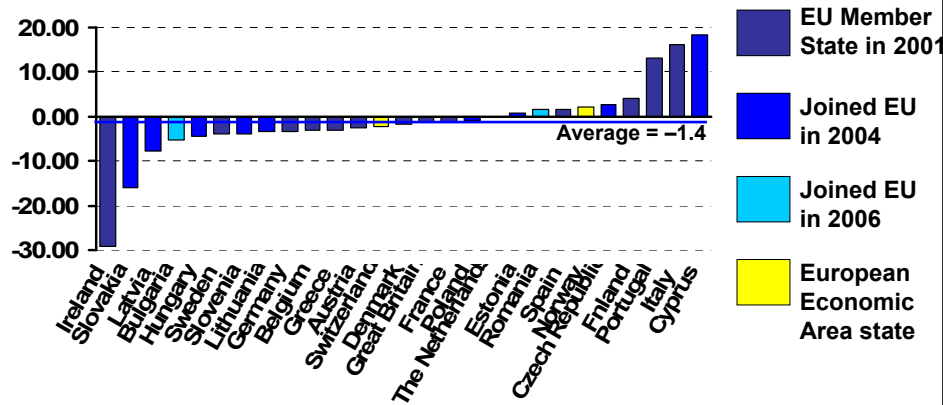


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Progress against drink driving

Difference between the average annual percentage reduction in deaths attributed to drink driving from 2001 to 2010 and the corresponding percentage reduction for other deaths

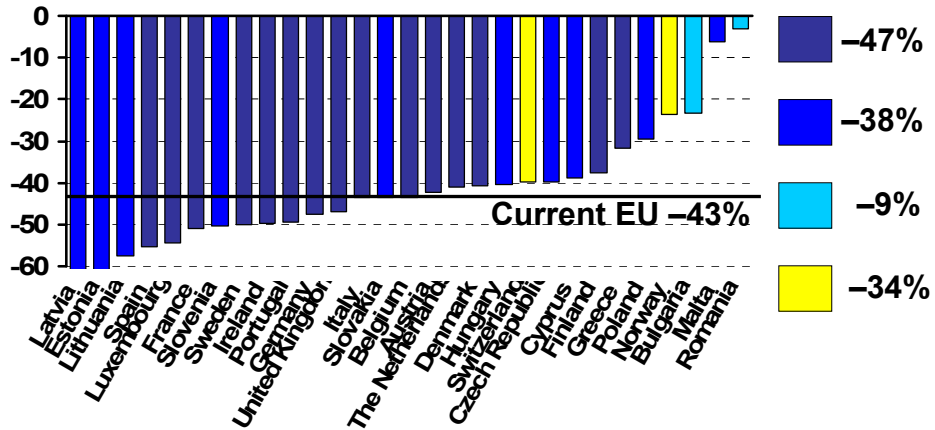


Categories of deaths indexed so far

- Deaths among children
- Deaths from drink driving
- Deaths among older road users
- Deaths among motorcyclists
- Deaths on motorways
- Deaths in capital cities
- Deaths among pedestrians
- Deaths among cyclists
- Deaths on rural roads
- Deaths among younger drivers

Achievement by 2010

Road deaths in 2010 totalling 31051 in the current EU as percentages of those in 2001 totalling 54355

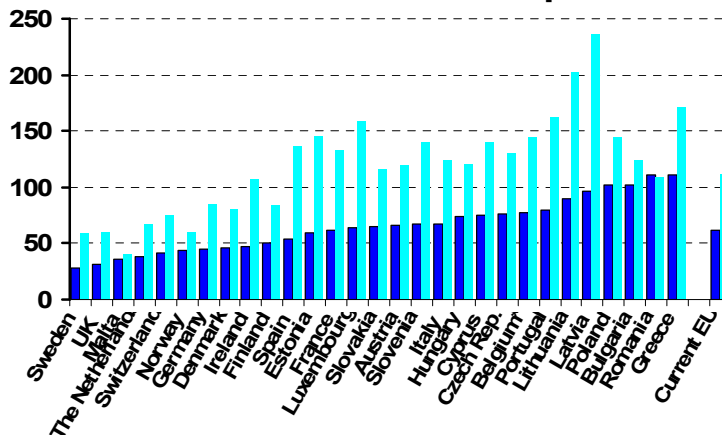


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Effect on deaths/million population

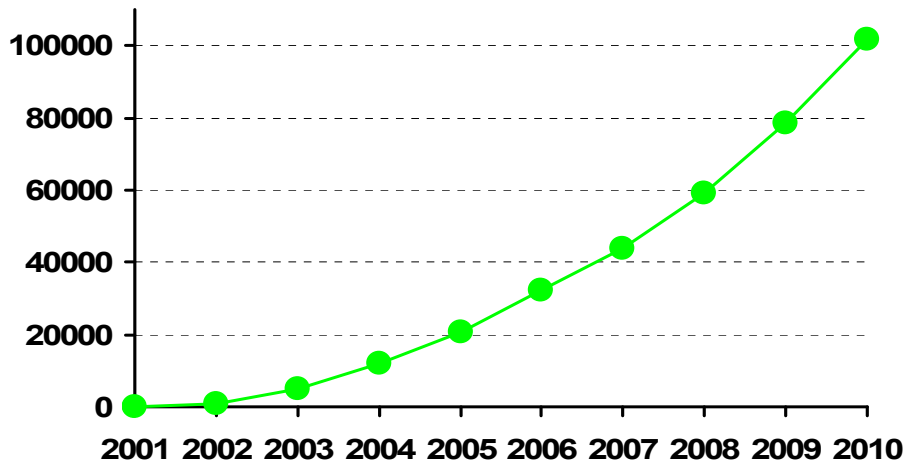
Road deaths /million population in current EU countries in 2010 compared with 2001



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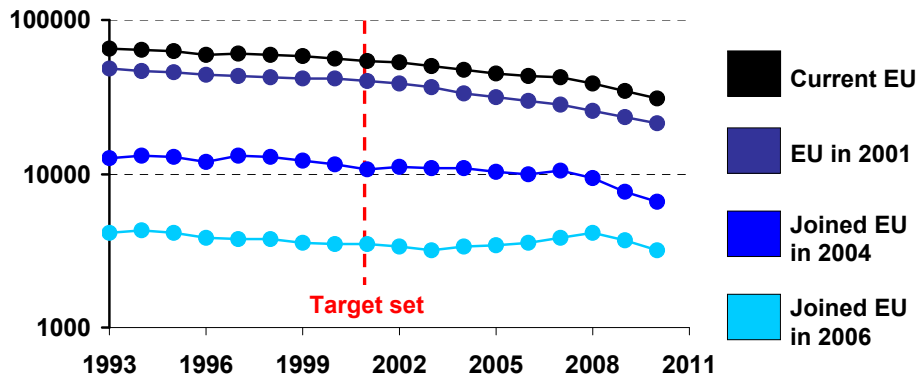


Cumulative road deaths prevented in current EU compared with 2001



Effect of setting the target in 2001?

Annual numbers of road deaths in the current EU and its parts since 1993



Changes of slope are broadly consistent with
S C Wong & N N Sze (2010) *Safety Science* 48(9) 1182-1188

How much has all this been worth?

- No-one can put a value in dollars or euros on saving someone's life, or on saving someone from lifelong disablement
- But we can estimate how much ordinary people would be willing to pay to achieve small reductions in risk to large numbers of road users so that some one of them, whose identity can never be known, escapes being killed
- This amount is called the willingness-to-pay (WTP) **Value of Preventing a Fatality (VPF)**
- The ETSC has since 1997 advocated use of VPF based on WTP estimates to inform safety policy and evaluation of measures



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Value to society of the reduction in road deaths in the EU since 2001

- Based on current practice in eight European countries that estimate VPF from WTP, the ETSC takes the VPF in 2009 at factor cost and 2009 prices to be €1 700 000 or about HK\$17million
- Applying the VPF year by year to the reduction in road deaths in EU-27 in 2002-2010 compared with 2001 gives a total value to society of about €175billion or about HK\$1800billion



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Other accompanying benefits

The policies and measures that have reduced numbers of deaths have also reduced the amount of injury, material damage and other collision costs

Numbers of injuries recorded as serious have fallen by similar percentages to numbers of deaths, but lesser injuries and material damage may well have fallen by smaller percentages

In European countries the total social value of (hypothetical) prevention of all collisions is estimated to be typically 4 to 5 times the value of prevention of all road deaths

So the total benefit to society from road safety improvements since 2001 as a multiple of the value of prevention of the 100 000 deaths is hard to estimate – but the multiple is probably in the range 3 to 4, implying HK\$5000 to 7000billion

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Looking ahead to 2020

As 2010 approached, thinking beyond then started from a broad consensus in the EU about the main problem areas and that:

- Road safety is a shared responsibility**
- A strategic and holistic approach is crucial**
- It helps to set numerical targets**
- Actions need to be cost-effective**
- Data, monitoring and research are needed**
- Newer Member States have special needs**

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A fourth EU action programme?

European Commission Transport Directorate consulted in 2009, through the Internet, 6 workshops and a stakeholder conference, about an action programme for 2011-2020 – but were equivocal about new targets

The ETSC produced a blueprint for such a programme, advocating a vision of *road safety as a right and responsibility for all* and quantitative targets for 2020 – for reducing the numbers seriously injured as well as numbers of deaths on the roads

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EC policy orientations 2011-2020

In 2010 the European Commission published policy orientations instead of an action programme, with a Memorandum on detailed measures

They aim for a structured cooperation framework for implementation across the EU, with a strategy to reduce road injuries and improve safety for vulnerable road users

They include a *target to halve road deaths in the EU by 2020 compared with 2010* – but set no target for numbers seriously injured for lack of a common definition

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One year on towards 2020

The target for deaths was endorsed in a Commission transport White Paper in 2011 with a **vision to move close to zero road deaths in the EU by 2050**

Also in 2011 the European Parliament Transport Committee welcomed the policy orientations and made many suggestions for vigorous implementation

But road deaths in the EU fell only 2% from 2010 to 2011 – less than a third of the rate needed to achieve the new target

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Thank you for your attention

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