Ministry of Infrastructure and the Environment

International comparability of statistics on road traffic injuries

62-session Working Party on Transport Statistics

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Why international comparison of statistics?

- Is comparison necessary? Yes

But why?

- For benchmarking
- To learn of each other
- To exchange knowledge about safety measures
- To cooperate international to develop together knowledge how to improve quality of life.

But also

- the possibility to get international insight in total volumes
- To develop international measures, for instance vehicle safety.

The base is formed with good statistics

International comparison

It requires comparable data but also exposure data, depending on the topics we compare.

For instance:

- Number of roads fatalities or injuries i.r.t.
  - the number of inhabitants
  - kilometres travelled
  - time spent in traffic
  - number of trips etc.
- Number of fatalities or injuries caused by sporting i.r.t
  - The number of inhabitants
  - hours spent on sporting
  - Etc etc
- Etc etc

presentation

- Definitions
- Why data collection
- Data collection
- Linking data
- Conclusions

Definitions ITF/Eurostat/UNECE

Traffic accidents which occurred or originated on a way or street open to public traffic: which resulted in one or more persons being killed or injured or material damage and in which at least one moving vehicle was involved. (suïcide excluded) UNECE

Road traffic crash: a collision or incident involving at least one road vehicle in motion, on a public road or private road to which the public has right of access. WHO

NOT: an accident is a reported accident

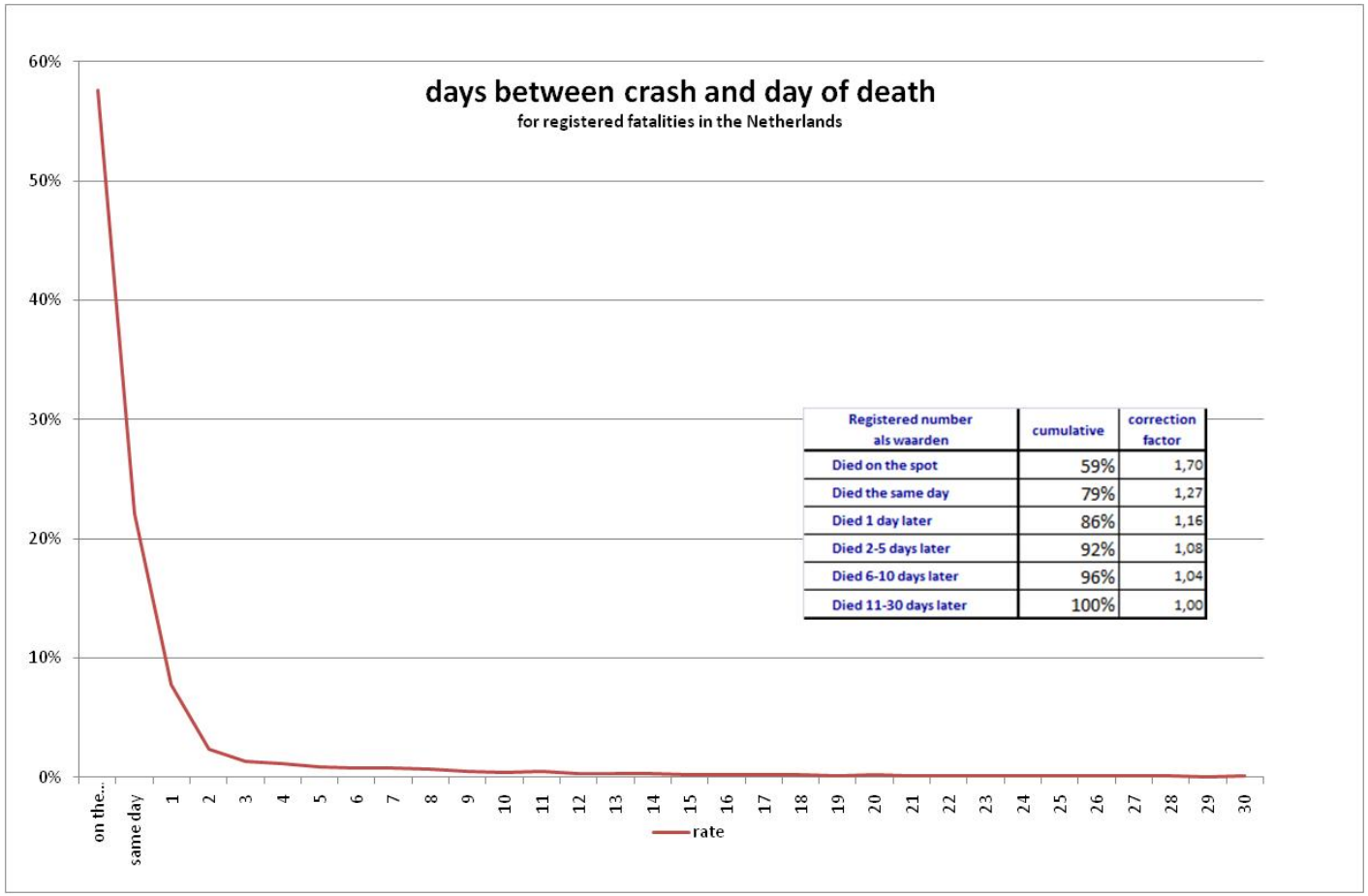
Definitions 2

- A road fatality: a person who died within 30 days of a traffic accident (Irtad)
- A road traffic fatality: any person killed immediately or dying within 30 days as a result of an injury crash, excluding suicide.

- Person injured: any person who sustained an injury normally needing medical treatment (not killed) (ITF/Eurostat/UNECE)
- Road traffic injury: a person who has sustained physical damage (i.e.) injury as a result of a rtc.

- Seriously injured: any person injured who was hospitalized for a period of more than 24 hours

Definitions 3



Registered number als waarden	cumulative	correction factor
Died on the spot	59%	1,70
Died the same day	79%	1,27
Died 1 day later	86%	1,16
Died 2-5 days later	92%	1,08
Died 6-10 days later	96%	1,04
Died 11-30 days later	100%	1,00

Why are data about consequences of road accidents important?

- Injuries and fatalities is a health problem

and

- It is road safety problem

Why are health statistics important

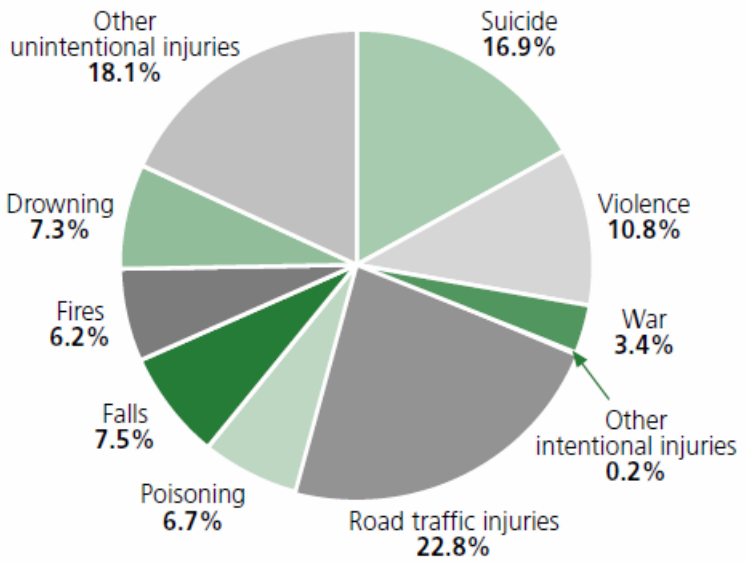
data of death causes and injuries are essential:

- for medical purposes
- for administrative financial purpose
- for monitoring and evaluation
- to develop improvements
- for priority setting
- etc
- etc

WHO

FIGURE 2.1

Distribution of global injury mortality by cause



Source: WHO Global Burden of Disease project, 2002, Version 1 (see Statistical Annex).

WHO

TABLE 1.2

Change in rank order of DALYs for the 10 leading causes of the global burden of disease

1990		2020	
Rank	Disease or injury	Rank	Disease or injury
1	Lower respiratory infections	1	Ischaemic heart disease
2	Diarrhoeal diseases	2	Unipolar major depression
3	Perinatal conditions	3	Road traffic injuries
4	Unipolar major depression	4	Cerebrovascular disease
5	Ischaemic heart disease	5	Chronic obstructive pulmonary disease
6	Cerebrovascular disease	6	Lower respiratory infections
7	Tuberculosis	7	Tuberculosis
8	Measles	8	War
9	Road traffic injuries	9	Diarrhoeal diseases
10	Congenital abnormalities	10	HIV

DALY: Disability-adjusted life year. A health-gap measure that combines information on the number of years lost from premature death with the loss of health from disability.
Source: reference *2*.

Why are data about consequences of road traffic accidents important?

- Policy planning and target setting
- Development of measures /interventions
- Insight in accident causes
- Insight in medical consequences
- Monitoring and evaluation (ex post and ex ante)

but also

- To inform policy and society about this negative aspect of traffic
- To calculate social costs
- For benchmarking (regions but also other domains) as well real numbers/rates as the trends between countries

Costs of road traffic accidents

Costs associated with traffic crashes in NL 2003, AVV(2006):

	Million €
Medical costs	232
Material costs	3,866
Settlement costs	1,262
Production loss	1,294
Traffic jam costs	125
Human costs	5,549
Total	12,327

	Million €	Per Casualty
Fatalities	2,640	2.5
Hospitalized casualties	4,655	0.25
A&E casualties	767	0.008
Slightly injured casualties	352	0.002
Material Damage Only	3,912	0.002
Total	12,327	11,7

This equals 2,6% of the GNP

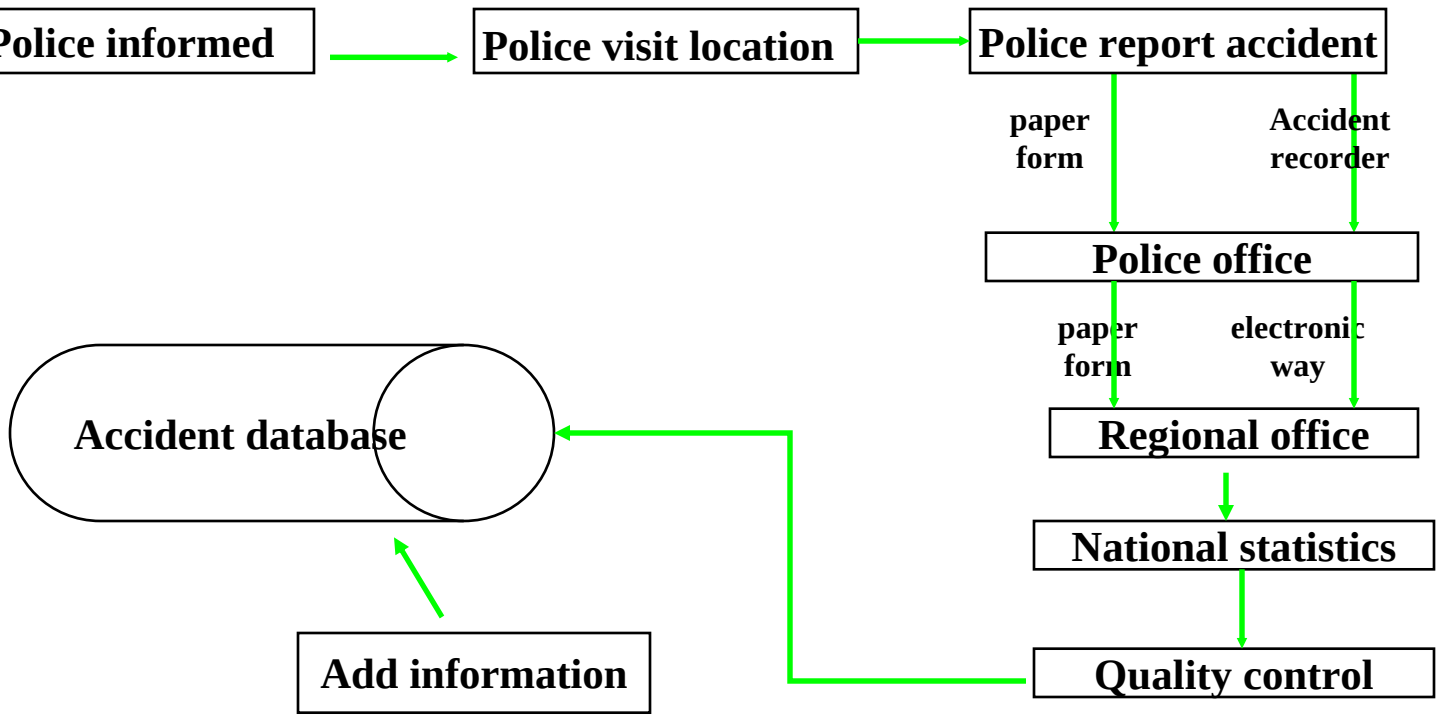
Datacollections

- Each dataset has it’s own purpose
- Accident data

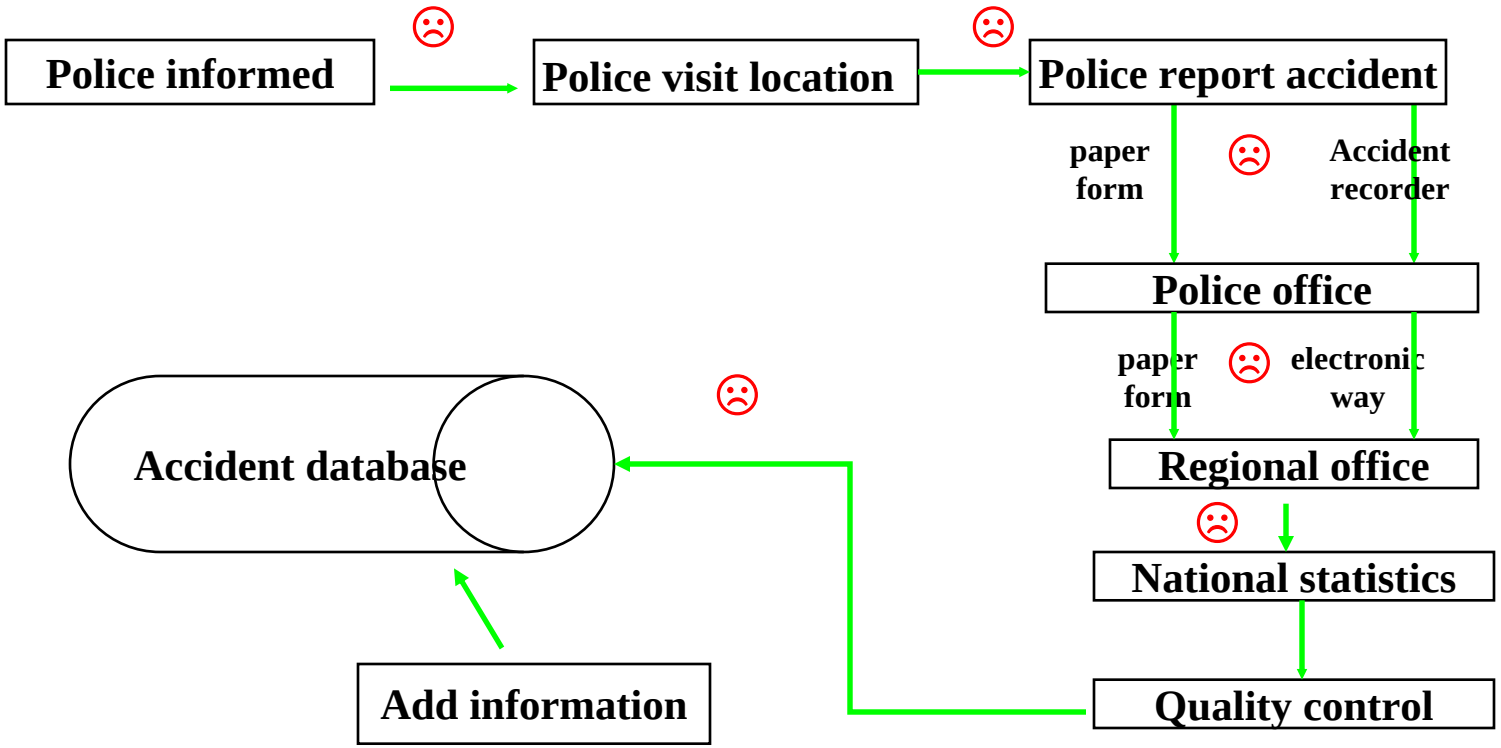
- Medical/health data

Road traffic accident data

accident reporting system



accident reporting system



accident reporting system

Police informed

Police visit location

Police report accident

paper form

Accident recorder

Police office

paper form

electronic way

Regional office

National statistics

Quality control

n

Adm in hospital

n

Police informed

Hospital database

Accident database

Add information

Traffic accident reporting systems

- *accident database not complete*
- *accident database not representative*
- *registration of accidents not stable over the years*

Medical injury data

Medical databases

- Death cause statistics

- Hospital databases LMR
  persons admitted in a hospital

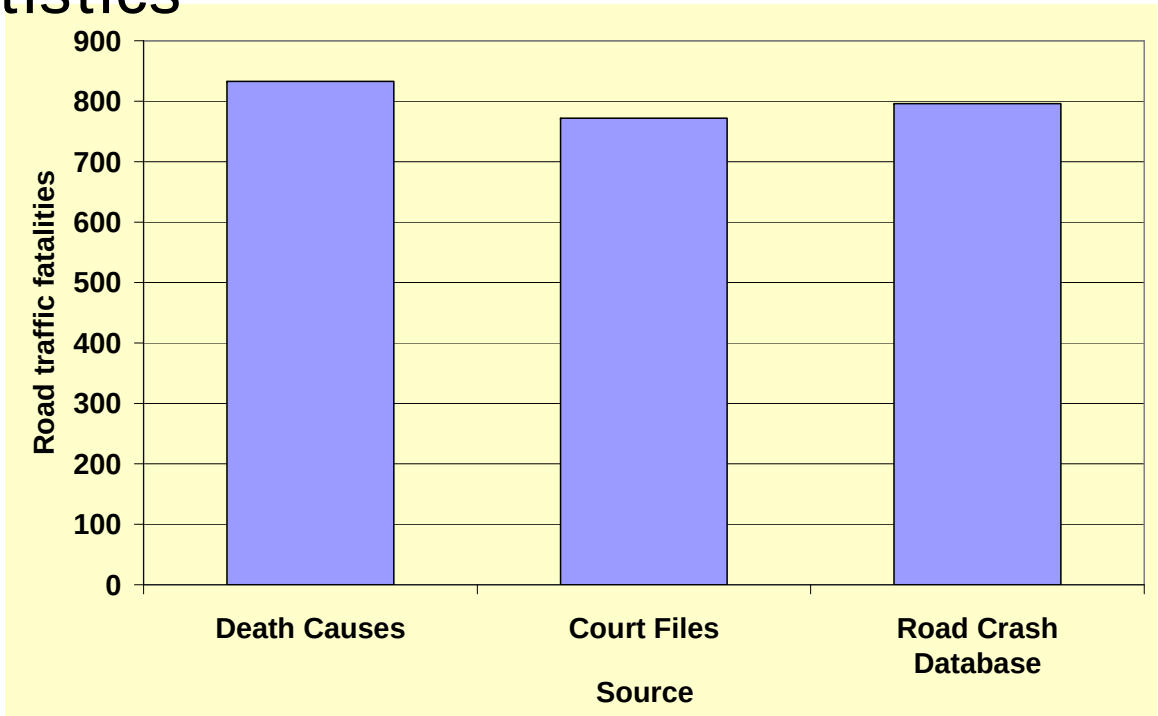
- Injury Information System (Consumers & Safety) LIS
  persons treated at a first aid department

- Injuries and Physical Activities (OBiN)
  persons injured by road traffic accidents, sport participation, work, domestic activities, violence etc.

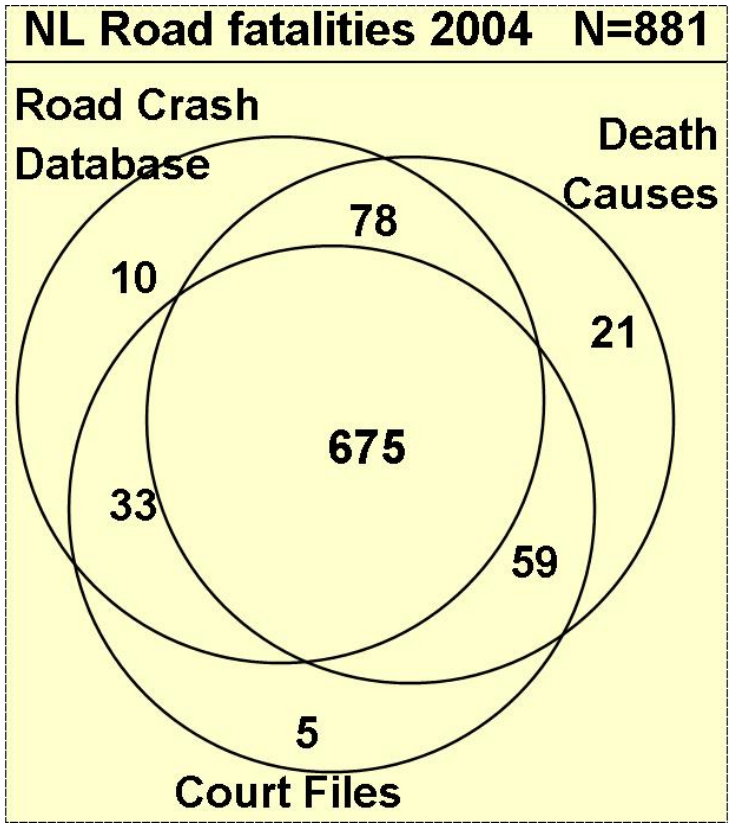
Estimating procedures

Estimation of road traffic fatalities

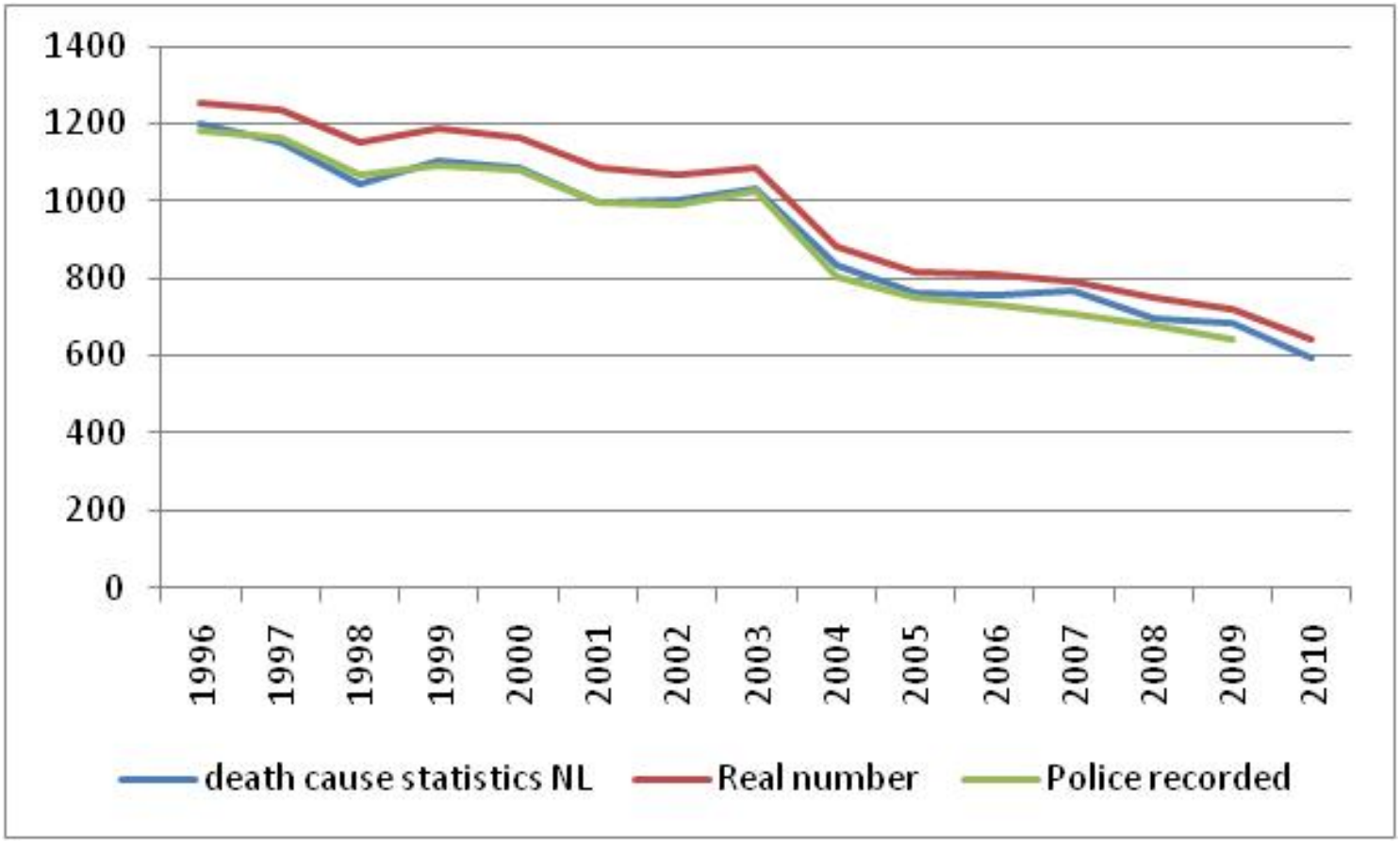
3 sources
1. Accident database
2. Death cause statistics
3. Court files



Estimation of road traffic fatalities 2



- A total of 881 different cases have been recognized
  of which are present
- 77% (675) of the cases are present in all three sources
- 95% (833) in the Death Cause statistics
- 88% (772) in the Court Files (88%)
- 90% (796) in the Road Crash Database


1400
1200
1000
800
600
400
200
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
death cause statistics NL
Real number
Police recorded

Estimation of serious injured persons 1

Data 1993-2008 were linked.

Annually:

- About 14.000 injuries in medical hospital records (traffic ecodes)
- 46,000 road casualties police recorded (of which 11,000 hospitalized)

- New definition of seriously injured (Mais 2+)

Estimation of serious injured persons 2

No ID present

Variables common to both files:

- Date/time of crash / hospital admittance
- Date of birth
- Gender
- Region of hospital
- Severity in police record (killed, not on the spot, hospitalized, A&E treated, slight)
- External cause of injury in hospital record (E-code within the range E810-E829)

Estimation of serious injured persons 3

Distance function

- If records have an identical value for a variable, their distance is 0
- If there is a small difference in a variables value, a small distance is added
- Links are established between pairs that have each other as closest neighbour
- Links with low distance and high selectivity are matched

Small differences are tolerated

Matching principles

Mais 2+		LMR			
		Crash without motor vehicle	No Traffic crash	Crash with motor vehicle	**SUM**
In BRON	Motor vehicle crash	$M \cdot P_M \cdot a_1$	$M \cdot P_M \cdot a_2$	$M \cdot P_M \cdot (1 - a_1 - a_2)$	$M \cdot P_M$
	Crash without motor vehicle	$N \cdot P_N \cdot (1 - b_1 - b_2)$	$N \cdot P_N \cdot b_2$	$N \cdot P_N \cdot b_1$	$N \cdot P_N$
Not in BRON	Motor vehicle crash	$M \cdot (1 - P_M) \cdot a_1$	$M \cdot (1 - P_M) \cdot a_2$	$M \cdot (1 - P_M) \cdot (1 - a_1 - a_2)$	$M \cdot (1 - P_M)$
	Crash without motor vehicle	$N \cdot (1 - P_N) \cdot (1 - b_1 - b_2)$	$N \cdot (1 - P_N) \cdot b_2$	$N \cdot (1 - P_N) \cdot b_1$	$N \cdot (1 - P_N)$
SUM		N_{LMR}	$Other_{LMR}$	M_{LMR}	$N+M$

Bron= police recorded; LMR = Hospital database

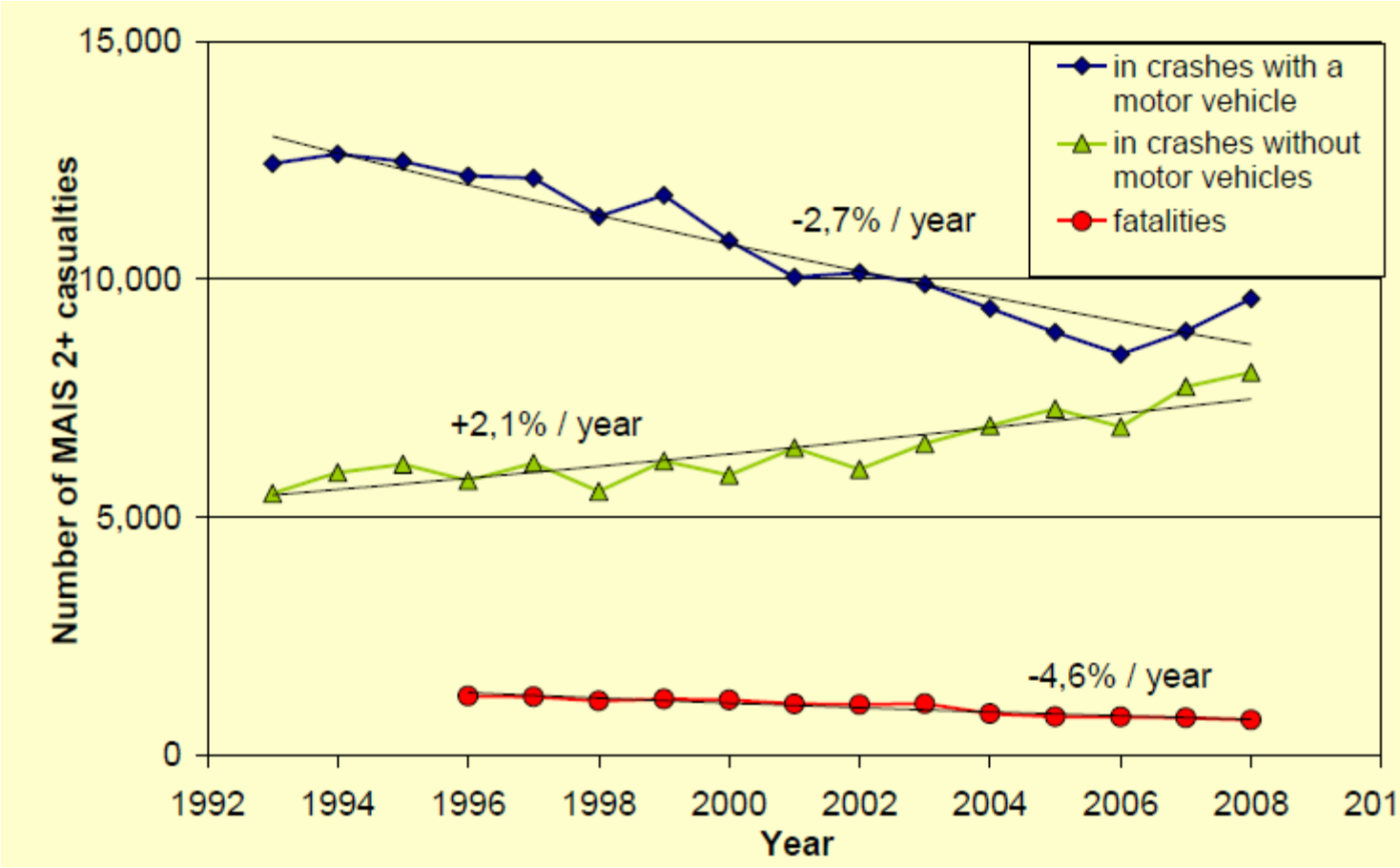
The white cells should be estimated

The matching result and the estimates of the unknown cells

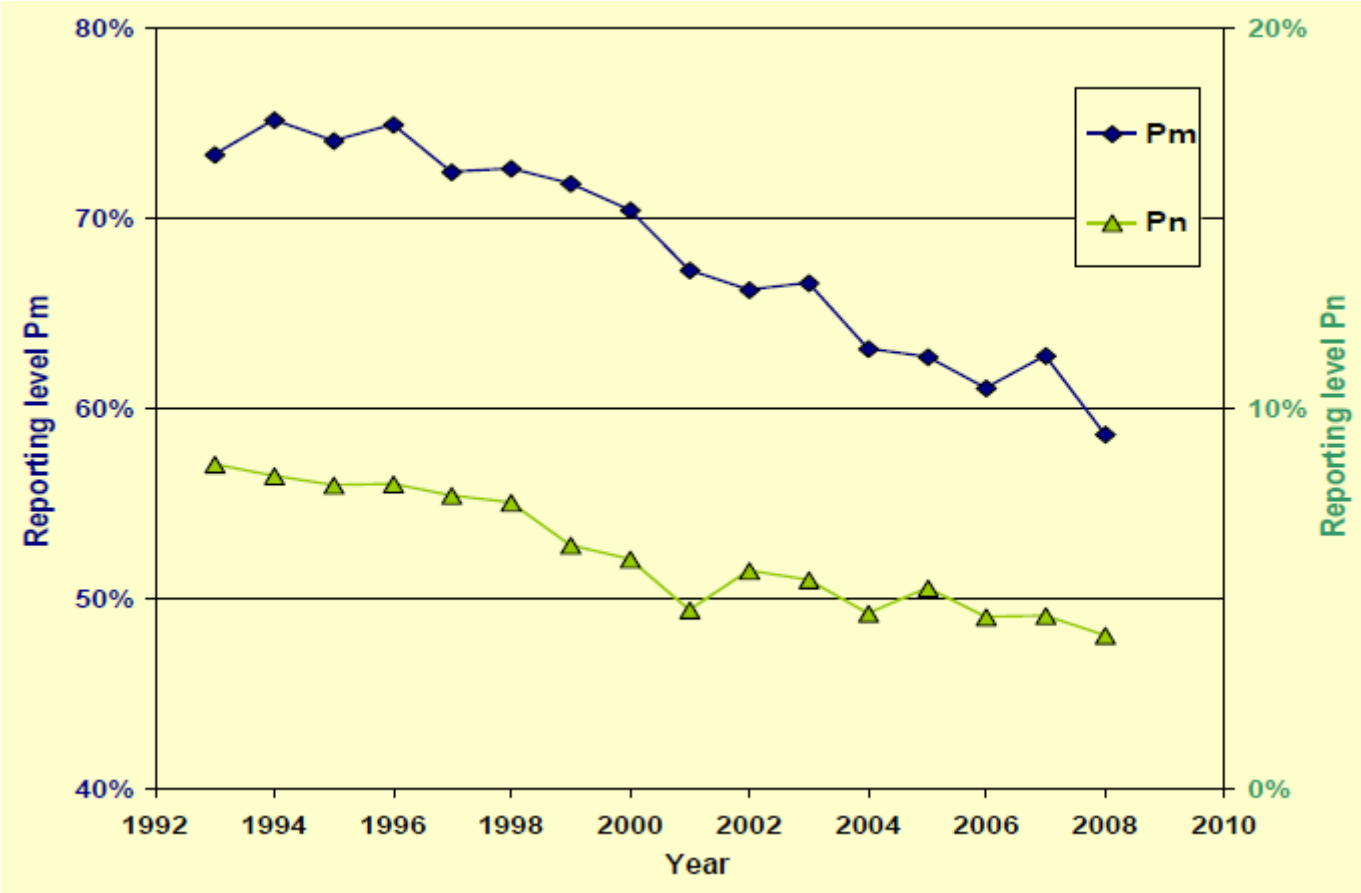
	MAIS 2+	LMR			
		Crash without motor vehicle	No Traffic crash	Crash with motor vehicle	**SUM**
In BRON	Motor vehicle crash	*287*	*1.351*	*5970*	*7.608*
	Crash without motor vehicle	*256*	*70*	*28*	*354*
Not in BRON	Motor vehicle crash	4.120 = 121 + 3.999	568	2.947 = 2.510 + 437	3.198
	Crash without motor vehicle		1.094		5.530
SUM		*4.663*	*3.082*	*8.945*	*16.690*

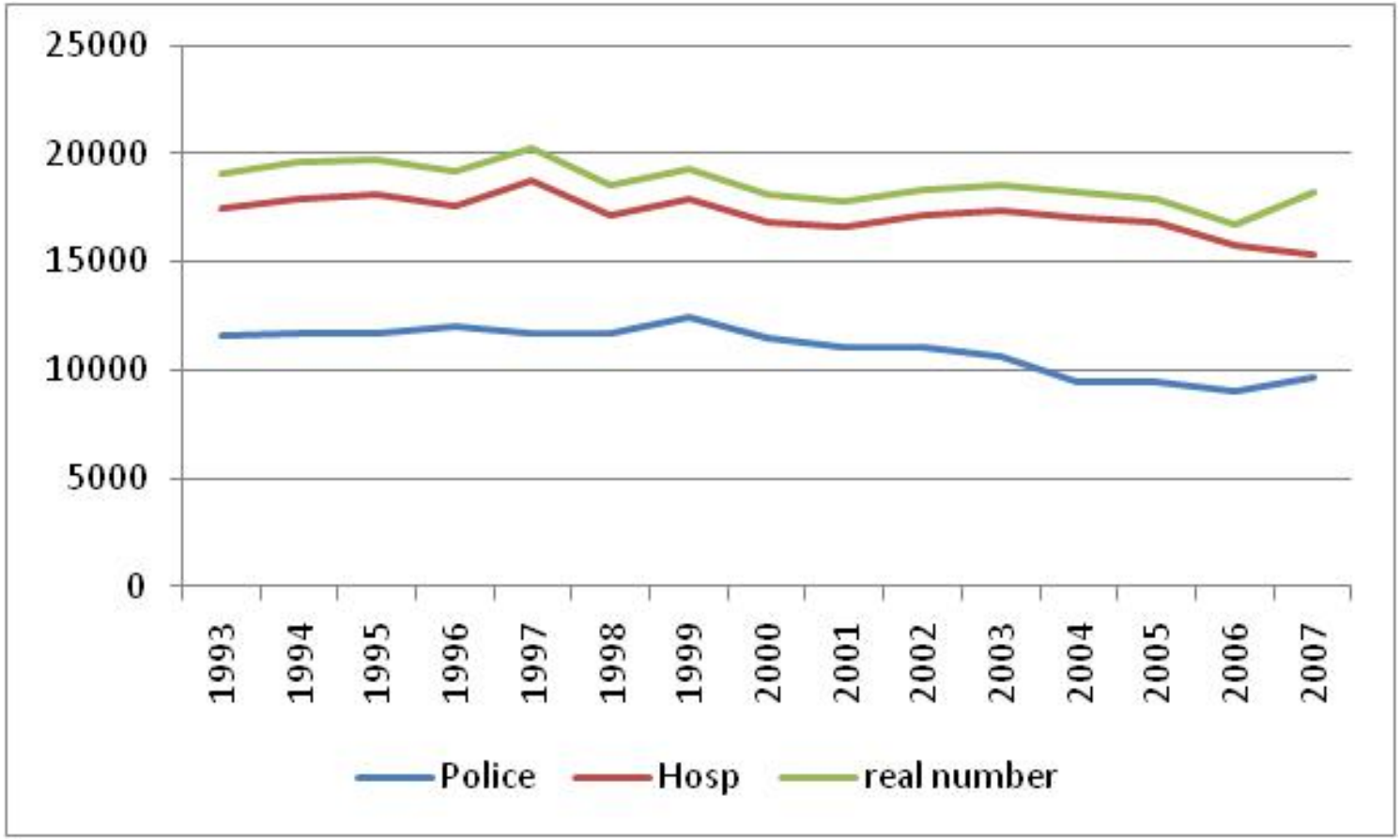
Result in 2000: M= 10806 N= 5884 total: 16690

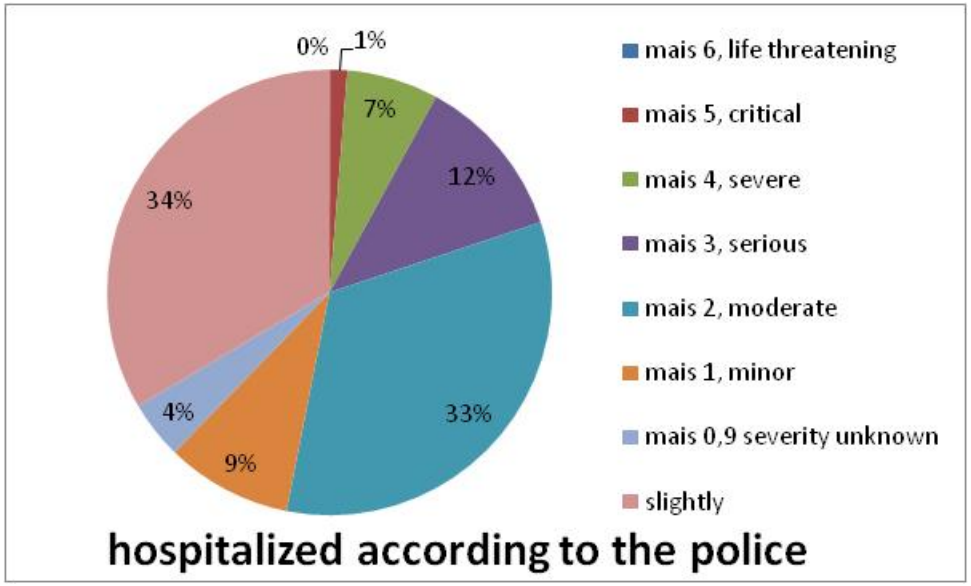
Result 1993 2008: real volume Mais 2+

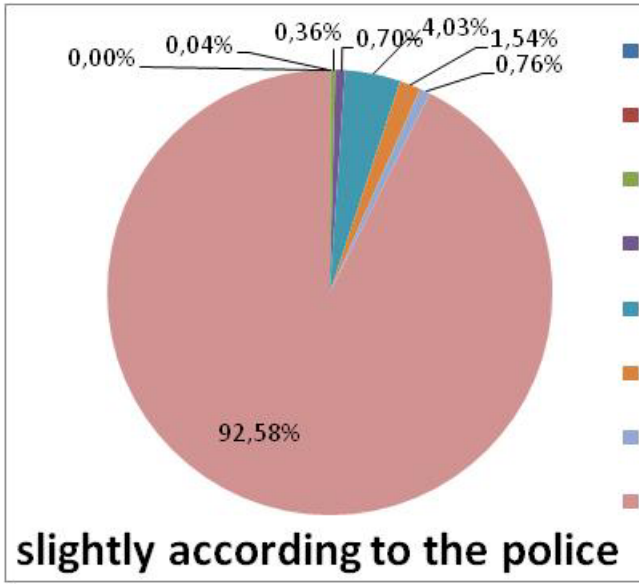


Reporting levels police registration




25000
20000
15000
10000
5000
0
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Police
Hosp
real number


0%
1%
7%
12%
34%
33%
9%
4%
mais 6, life threatening
mais 5, critical
mais 4, severe
mais 3, serious
mais 2, moderate
mais 1, minor
mais 0,9 severity unknown
slightly
hospitalized according to the police


0,00%
0,04%
0,36%
0,70%
4,03%
1,54%
0,76%
92,58%
slightly according to the police

ICD codes /transport accidents

External causes of morbidity and mortality (V01-Y98)

V01-X59	Accidents		
	V01-V99	Transport accidents	
		V01-V09	Pedestrian injured in transport accident
		V10-V19	Pedal cyclist injured in transport accident
		V20-V29	Motorcycle rider injured in transport accident
		V30-V39	Occupant of three-wheeled motor vehicle injured in transport accident
		V40-V49	Car occupant injured in transport accident
		V50-V59	Occupant of pick-up truck or van injured in transport accident
		V60-V69	Occupant of heavy transport vehicle injured in transport accident
		V70-V79	Bus occupant injured in transport accident
		V80-V89	Other land transport accidents
		V90-V94	Water transport accidents
		V95-V97	Air and space transport accidents
		V98-V99	Other and unspecified transport accidents

Conclusions 1

1. A complete insight of the consequences of road crashes is needed.
2. This requires the use of several databases to get this information on the most efficient way.
3. Cooperation between several departments (Infrastructure / Health/ Police) is necessary.
4. The databases should be linkable by common variables.
5. The quality should be validated and checked
6. The severity of injuries is important for traffic safety policy, so doctors should assess the severity
7. Knowledge of estimation procedures should be exchanged

Conclusions 2

8. Each country should describe his registration and estimation procedures

9. Definitions should be harmonised and better described.
10. Countries should describe how they fulfil the definitions.

11. Create one unique international forum and website with definitions /knowledge and assistance . An opportunity is the Irtad group but because of conclusion 3 cooperation with WHO and other departments are neccessary. The WHO can fill up this role

Thank you for your attention.

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