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09-Jul-2008

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Workshop on Motorcycling Safety

WORKSHOP ON MOTORCYCLING SAFETY
held in Lillehammer (Norway) on 10-11 June 2008

ANNEXES TO THE FINAL REPORT

English - Or. English

JT03248828

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ANNEX 1
TRENDS IN THE MOTORCYCLE FLEET WORLDWIDE
PRESENTATION BY NICK ROGERS

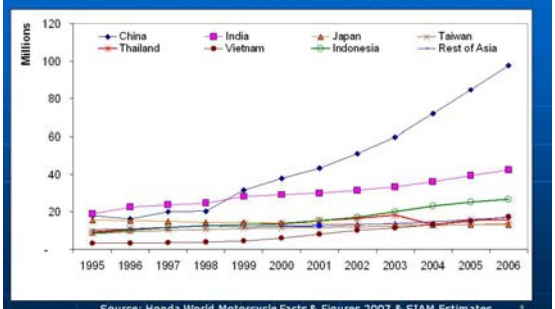
'WORKSHOP ON MOTORCYCLING SAFETY'

Trends in Motorcycles Fleet Worldwide

Lillehammer June 10, 2008

'WORKSHOP ON MOTORCYCLING SAFETY'

Fleet: motorcycle fleet in Asia



Source: Honda World Motorcycle Facts & Figures 2007 & SIAM Estimates

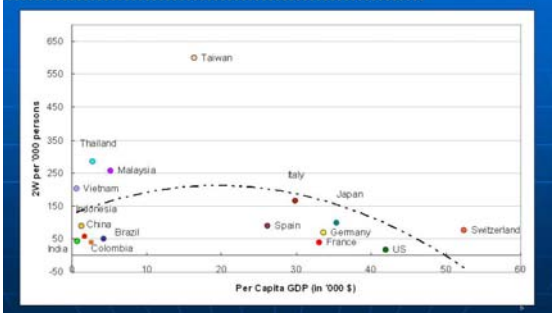
'WORKSHOP ON MOTORCYCLING SAFETY'

Content

- The Global Two Wheeler Industry
  - Fleet
  - Production
  - Sales
  - Trends in Some Regions
- The Reasons for Growth

'WORKSHOP ON MOTORCYCLING SAFETY'

Fleet: motorcycles & per capita GDP 2006



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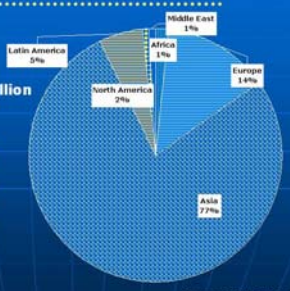
Fleet: current motorcycle fleet

Current Parc = 313 million

Asia	=	77%
Europe	=	14%
Latin America	=	5%
North America	=	2%
Africa	=	1%
Middle East	=	1%



Source: SIAM Estimates

'WORKSHOP ON MOTORCYCLING SAFETY'

Production: top 10 countries

All figures in millions for 2006

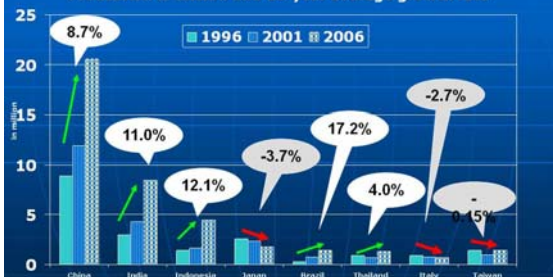
Key Players	Production (in millions)
China	20.54
India	8.38
Indonesia	4.46
Japan	1.77
Taiwan	1.41
Brazil	1.41
Thailand	1.33
Vietnam	0.79
Italy	0.70
Malaysia	0.43

41.22

'WORKSHOP ON MOTORCYCLING SAFETY'

Production: comparison of top players

Production in million and 10-year average growth rate



Source: Honda's 2007 World Motorcycle Facts & Figures

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Sales: trends in US market

Source: Motorcycle Industry Council (MIC)

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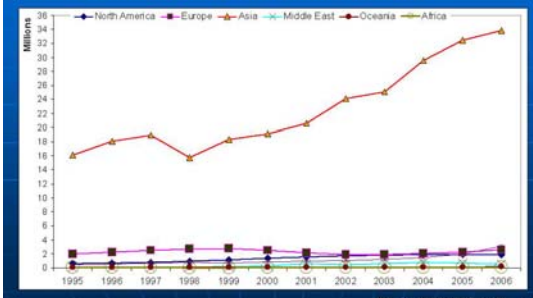
Sales: regional motorcycle trends



Source: SIAM Estimates

'WORKSHOP ON MOTORCYCLING SAFETY'

Factors influencing US market

- Motorcycles are a "discretional income good" in the USA.
- Economic growth boosts sales.
- Baby Boomers are the largest population group (40-60). Have income and time to ride motorcycles, the "born-again bikers".
- Motorcycling is now more accepted as a mode of transport.
- Increase in the number of female riders from 2% in 1990 to 10% in 2005.

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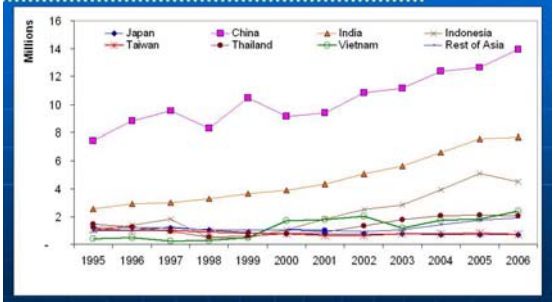
Sales: the main market segments

- Types and use vary with markets:
  - Developed Countries:
    - leisure vehicle
    - higher cc motorcycles
  - Emerging & Developing Countries:
    - means of mobility
    - low & medium cc motorcycles & scooters

'WORKSHOP ON MOTORCYCLING SAFETY'

Sales: trends in the Asian market



Source: Honda World Motorcycle Facts & Figures 2007 & SIAM Estimates

'WORKSHOP ON MOTORCYCLING SAFETY'

Sales: trends in Japan

1978
- 6 million units produced
  - Less than 50 cc 38%
  - 51 - 125 cc 42%
  - Over 250 cc 13%

1994
- 2.72 million units produced
  - Less than 50 cc 32%
  - 51 - 125 cc 38%
  - Over 250 cc 20%

2006
- 1.7 million units produced
  - Less than 50 cc 17%
  - 51 - 125 cc 8%
  - Over 250 cc 59%

Increasing share of over 250 cc segment

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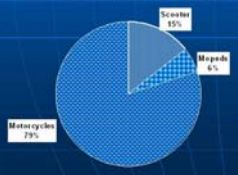
Sales: trends in India

- Second largest market in the world
- 5 times the size of Indian passenger car market
- Mainly motorcycles.

1990	1996	2006
1.4 million units	2.9 million units	8.4 million units



5-year CAGR
- Scooters 5%
- Motorcycles 11%
- Mopeds 4%

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'WORKSHOP ON MOTORCYCLING SAFETY'

Factors influencing Japanese market

- Mature motorcycle market.
- Motorcycle sales have been falling since 1982.
- Young population is shrinking (smaller potential market).
- Alternative lifestyles emerging, reduced interest in MCs.
- However, growth in enthusiast market (> 250 cc).
- Like Europe, shift from utility (mopeds) to leisure (motorcycles)
- Unlike Europe, congestion has not boosted sales

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'WORKSHOP ON MOTORCYCLING SAFETY'

Factors influencing Indian market

- Infrastructure development, especially in rural areas
- Increase in disposable income
- Innovation- development and introduction of new products, new technology, etc.
- Product characteristics like greater utility (in terms of road space, parking space, low cost of acquisition, etc.)
- Current low penetration rate (MC/1'000 pop)

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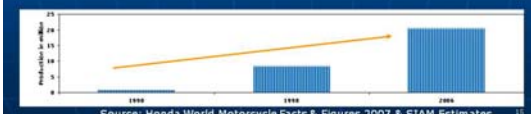
'WORKSHOP ON MOTORCYCLING SAFETY'

Sales : trends in China

- Until 1990 (0.89 million)
  - 'Less than 125 cc' was the main segment (85%)
    - 45% 'less than 50 cc'
- 2006 (20.5 million)
  - 50% of market '125 cc'
  - emergence of above 250 cc (1%)

- Growing Income levels.
- Increased use of two wheelers.



Source: Honda World Motorcycle Facts & Figures 2007 & SIAM Estimates

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'WORKSHOP ON MOTORCYCLING SAFETY'

Reasons for Growth

1. Ease
2. Efficiency / Economy
3. Employment / Entrepreneurship
4. Enjoyment

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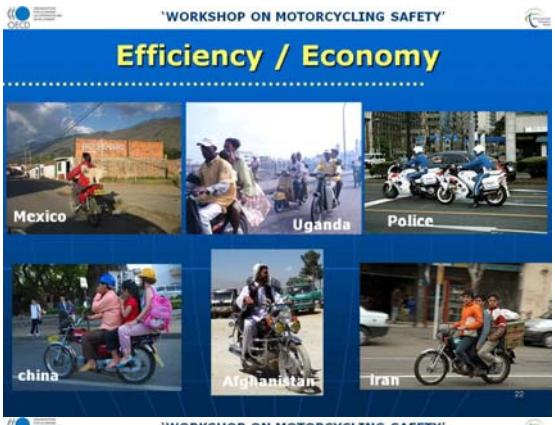
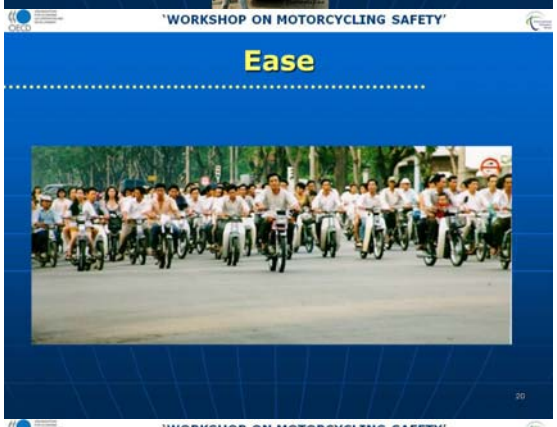
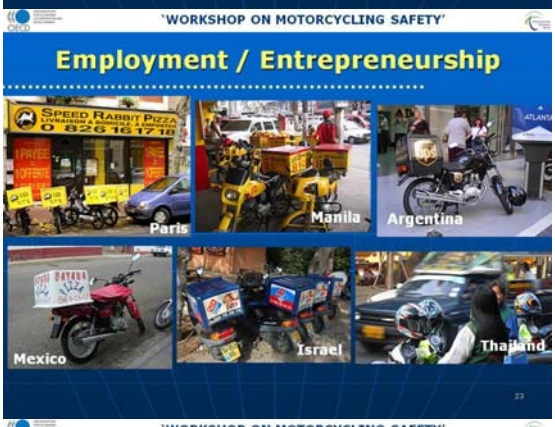
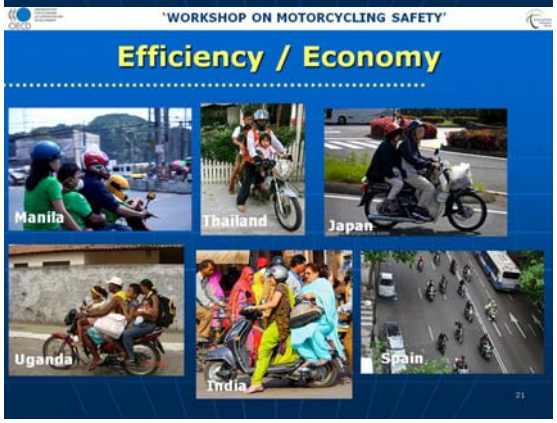
'WORKSHOP ON MOTORCYCLING SAFETY'
Ease
Argentina
China
Cambodia
Africa
Mexico
India

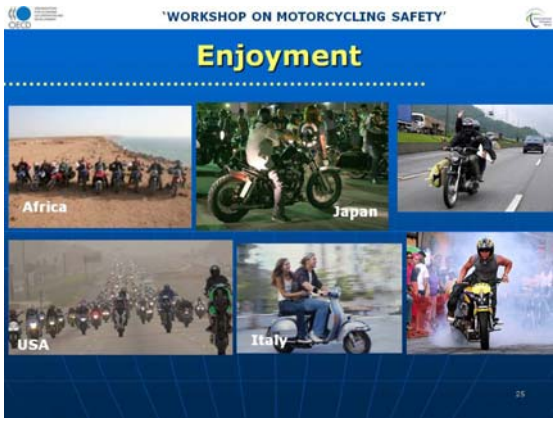

'WORKSHOP ON MOTORCYCLING SAFETY'
Efficiency / Economy
Mexico
Uganda
Police
china
Afghanistan
Iran


'WORKSHOP ON MOTORCYCLING SAFETY'
Ease


'WORKSHOP ON MOTORCYCLING SAFETY'
Employment / Entrepreneurship
Paris
Manila
Argentina
Mexico
Israel
Thailand


'WORKSHOP ON MOTORCYCLING SAFETY'
Efficiency / Economy
Manila
Thailand
Japan
Uganda
India
Spain


'WORKSHOP ON MOTORCYCLING SAFETY'
Employment / Entrepreneurship
Cambodia
Indonesia
Ghana
China
Iran


'WORKSHOP ON MOTORCYCLING SAFETY'
Enjoyment
Africa
Japan
USA
Italy

ANNEX 2
THE RIDERS AROUND THE WORLD
PRESENTATION BY HANS PETER STRIFELDT

International Transport Forum Joint Transport Research Centre OECD

The Riders around the World

Hans Petter Strifeldt
FEMA President

International Transport Forum Joint Transport Research Centre OECD

Sonja Sporstol

- Head of Road User Unit, NPRA
- Riding for about 12 years
- Bike: Honda 600 Hornet
- Touring and occasional rides

Lasse Lager

- Assistant Director General, Norwegian Ministry of Transport and Communications
- Riding since he was 16
- Bike: Triumph Daytona T595
- Almost all transport purposes: commuting, riding 60 km, five days a week, seven months a year - and the occasional leisure ride

Markku Tervo

- Procurement Manager, Finn RA
- Riding for 2-3 years. Riding "small bikes" when younger. 10 000 - 15 000 km per year
- Bike: Yamaha FJR 1300
- Mostly touring

Morten Hansen

- Organisation Secretary, Norwegian Motorcycle Union
- Riding for 30 years
- Bike: BMW R 1200 S
- Mostly touring and early Sunday morning rides with good friends from his local motorcycle club

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1. Different types of Riders

Deconstructing the Stereotypes

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Riding as an affordable means of transport (Asia)

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The Commuter (London and Paris)

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The Touring Rider (USA, Route 66 and Canada)

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The Lifestyle Bikers
(USA - Sturgis)

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The « Weekend Warrior »
(Trackday in the UK)

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The « ordinary » Rider
(Belgium)

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The Professional Rider
(Kansas Police)

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2. The Road Rider Community

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Some riders are not organised…

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On the other hand…

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Roadside Cafe
(ACE Cafe in London)

International Transport Forum Joint Transport Research Centre OECD

Clubhouse
(Belgium)

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Meetings
(FIM Rally in Sweden)

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Roadside Cafe
(Stammtisch in Germany)

International Transport Forum Joint Transport Research Centre OECD

National riders' Rights Organisations
(IG Mottorrad – Zurich show)

International Transport Forum Joint Transport Research Centre OECD

Continental Organisation - Europe
(FEMA at MEP Motorcycle Ride)

International Transport Forum Joint Transport Research Centre OECD

Continental Organisation – USA
(AMA lobby in Washington – Secretary of Interior)

International Transport Forum Joint Transport Research Centre OECD

The Worldwide social and political « motorcycling Network »
(Web Forum)

International Transport Forum Joint Transport Research Centre OECD

3. Safety Consciousness within the Motorcycling Community

International Transport Forum Joint Transport Research Centre OECD

Most Riders have little safety consciousness…

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The philosophically founded anti-safety-armour attitude

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The extreme «Risk taker »

International Transport Forum Joint Transport Research Centre OECD

The Safety Conscious Riders

International Transport Forum Joint Transport Research Centre OECD

The Safety Dialogue
(Screening by MAG Belgium)

International Transport Forum Joint Transport Research Centre OECD

But motorcycling can never be risk free…

4. Why some people « choose » to be vulnerable road users?

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Most people do not have the choice between a motorcycle and a car
(Taiwan)

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Three reasons for choosing to become a rider:

1. Commuting
2. Freedom
3. Mastering skills

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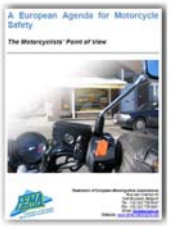
How to improve motorcycle safety?



The motorcycle community gathers the real experts and can greatly contribute in improving motorcycle safety…

International Transport Forum Joint Transport Research Centre OECD

Thank you for your attention!

FEMA

ANNEX 3 RESULTS OF THE MAIDS PROJECT
PRESENTATION BY JACQUES COMPAGNE

Motorcycle Accidents In-Depth Study

Jacques Compagne
Secretary General of ACEM

Content

Presentation of the study
- Introduction
- Main features
- Main figures

MAIDS highlights

Discussion / What does MAIDS tell us?

Time to Decide

- Improvements in MC safety are essential:
  - Riders
  - Future of motorcycling
  - Positive contribution that motorcycling brings to society
- But, not enough information was available to develop an integrated safety policy and action plan
- Need of in-depth accident study

Decision

- To provide the scientific basis for the discussion of MC accidents in Europe:
  - ACEM organised the Motorcycle Accident In-Depth Study (MAIDS);
  - Created a Consortium of partners, namely:
    - DG TREN of the European Commission, who co-financed the project.
    - Other partners: BMF, CEA, CIECA, FEMA, FIM.

Who and Where?

- For data collection
  - France: CEESAR — Centre Européen d'Etudes de Sécurité et d'Analyse des Risques
  - Germany: MUH — Medical University of Hanover
  - Italy: Uni Pavia — University of Pavia
  - Netherlands: TNO — Nederland's Organization for applied scientific research
  - Spain: REGES — Investigación y reconstrucción de accidentes de tráfico
- For statistical analysis
  - Uni Pavia (Italy)

Main Features

- OECD methodology
- Basic parameters of accidents
- In-depth data on human, vehicle and roadside factors (about 2000 variables per case)
- Data on collision dynamics
- Data on injury types and severity
- Data on accident causation

MAIDS Main Features

All 921 accident cases reconstructed

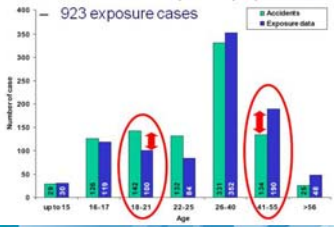
- Allowing MAIDS teams to identify

  Accident contributing Factors

- For each case
  - One single **primary** accident contributing factor
  - Four **additional** accident contributing factors
  - Attributed to
    - Human
    - Vehicle
    - Environment

MAIDS Main Features

- Exposure data
  - Essential for comparison purpose and risk evaluation
  - 923 exposure cases



MAIDS Main Figures

- Distribution of cases and controls according to category

  - L1 mofas = 28
  - L1 mopeds = 370
  - L1 total = 398 L3 motorcycles = 523

MAIDS Main Figures

- Distribution of cases and controls according to category

Table 3.3: PTW legal category

	Accident data		Exposure data	
	Frequency	Percent	Frequency	Percent
L1 vehicle - mofa	28	3.0	49	5.3
L1 vehicle - other	370	40.2	324	35.1
L3 vehicle	523	56.8	550	59.6
Total	921	100.0	923	100.0

  - L1 = 40 %, over-represented (moped only)
  - L3 = 57 %, no over-representation

MAIDS Main Figures

- Distribution of fatal and non-fatal cases

Table 3.2: Number of fatal cases

	Fatal	Not fatal	Total
University of Pavia (Italy)	11	189	200
TNO (Netherlands)	15	185	200
REGES (Spain)	12	109	121
ARU-MUH (Germany)	49	201	250
CEESAR (France)	16	134	150
Total	103	818	921

  - Fatal 11 %
    - L1 = 24 %, under-represented
    - L3 = 76 %, over-represented
  - Non-fatal 89 %

MAIDS Main Figures

- Distribution of single and multi-vehicles accidents

Table 3.5: Number of OVs involved in the accident

	Frequency	Percent
None (single vehicle accident)	143	15.5
One	738	80.2
Two	36	3.9
Three	4	0.4
Total	921	100.0

  - Single 16 %
  - Multi-vehicle 84 %

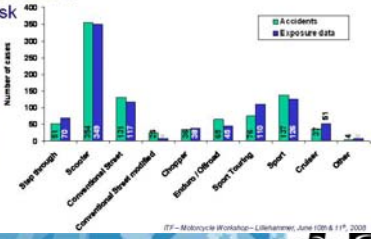
Content

Presentation of the study

MAIDS highlights
- Vehicles factors
  - Accident causation
  - Vehicle population

PTW Style

- Frequency
  - Scooters: 38 %
  - Conventional street: 14 %
- No associated risk



Primary Accident Contributing Factors

- Vehicle factors: 0,3% of all cases

	Frequency	Percent
Vehicle	3	0.3
Total	921	100.0

PTW Gross Mass

- Frequency
  - < 100 kg: 43 %
  - 151 – 200 kg: 21 %
- No associated risk
- Except for PTWs over 250 kg under-represented

PTW gross mass

	Accident data		Exposure data	
	Frequency	Percent	Frequency	Percent
under 100	393	42.7	355	38.5
101 – 150	97	10.5	85	9.2
151 – 200	193	20.9	183	19.8
201 – 250	153	16.6	195	21.1
over 250	43	4.7	105	11.4
Unknown	42	4.6	0	0.0
Total	921	100.0	923	100.0

Additional Accident Contributing Factors

- Vehicle factors:
  - PTWs: 1,6 % of all cases
  - OVs: 0,5 %

	Frequency	Percent
PTW technical failure	32	1.6
OV technical failure	10	0.5
Total	2059	100.0

PTW Engine Displacement

- Frequency
  - 50 cc: 43 %
  - 501 - 750 cc: 22 % of all cases
- No associated risk
- Except for the over 1001 cc category under-represented

Engine displacement

	Accident data		Exposure data	
	Frequency	Percent	Frequency	Percent
up to 50 cc	394	42.7	367	39.8
51 to 125 cc	89	9.7	86	9.3
126 to 250 cc	37	4.0	32	3.5
251 to 500 cc	56	6.1	50	5.4
501 to 750 cc	206	22.4	193	20.9
751 to 1000 cc	80	8.7	107	11.6
1001 or more	58	6.3	88	9.5
Unknown	1	0.1	0.0	0.0
Total	921	100.0	923	100.0

Content

Presentation of the study

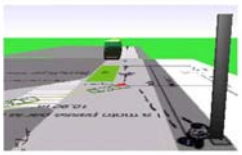
MAIDS highlights
- Vehicle factors
- **Environmental factors**
  - **Accident causation**
  - **Worsening factor**

Worsening Factors

- Roadway and fixed objects: second collision partner with 17 % of MAIDS cases
  - L1 = 9 %
  - L3 = 23 %

Fixed object	74	8.0
Roadway	83	9.0

- (Directive on Road Safety Infrastructure Management)



Primary accident causation factor

- Environmental factors: 8 %

	Frequency	Percent
Environmental	71	7.7
Total	921	100.0

- Weather 2 %
- Road maintenance defect 2 %
- Road design defect 1 %
- Traffic hazard 1 %

Content

Presentation of the study

MAIDS highlights
- Vehicle factors
- Environmental factors
- **Human factors**
  - **Accident causation**
  - **Accident population**
  - **Collision dynamics**
  - **Injuries**

Additional Accident Contributing Factors

- From the road environment: 15%

	Frequency	Percent
Environmental cause	300	14.6
Total	2059	100.0

- Weather 5 %
- Road Maintenance defect 1 %
- Road design defect 2 %
- Traffic hazard 2 %

Primary Accident Contributing Factors

- Human factors: 88 % of all cases

	Frequency	%
Human-PTW rider failure	344	37.4
Human-OV driver failure	465	50.5
Total	809	87.9

- OV drivers: largely responsible for PTW crashes
  - 50 % of all MAIDS cases (L1 = L3)
  - 61 % of the multi-vehicle accidents
- PTW riders: responsible of 37 % of PTW crashes
  - L1 = 39 %
  - L3 = 36 %

Primary Accident Contributing Factors
Fatal Cases

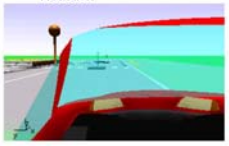
- Human factors: 86 % of all cases

	Frequency	%
Human-PTW rider failure	54	52,4
Human-OV driver failure	34	33,3
Total	88	85,7

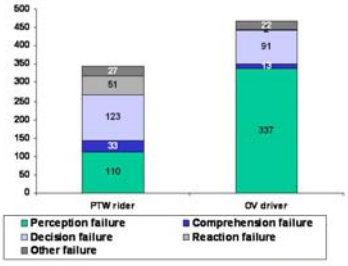
- PTW riders: largely responsible for PTW fatal accidents
  - 52 % of MAIDS fatal cases
- OV drivers: responsible of
  - 33 % of all MAIDS fatal cases
  - 44 % of the multi-vehicle fatal accidents

Primary Accident Contributing Factors

- 921 cases reconstructed
- Primary contributing factors classified
  - Perception
  - Comprehension
  - Decision
  - Reaction

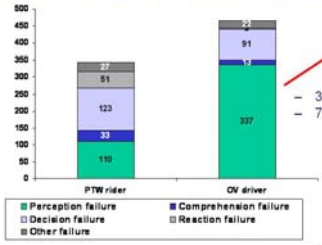


Primary Accident Contributing Factors



Primary Accident Contributing Factors

- The most frequent : perception failure by the OV drivers



Perception

- 37% of all MAIDS cases
- 72 % of the drivers' failures
  - L1 = 77%
  - L3 = 69%

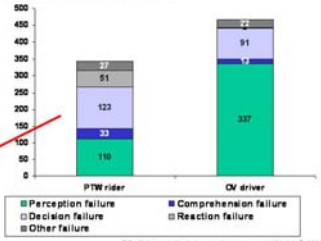
Primary Accident Contributing Factors

- The second most frequent attributable to PTW riders
  - Decision failure

13% of all MAIDS cases
35 % of riders' failures

- L1 = L3

Decision



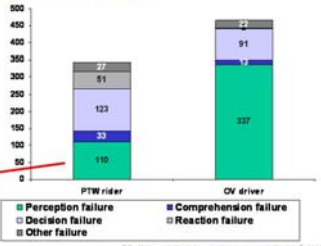
Primary Accident Contributing Factors

- The third most frequent attributable to PTW riders
  - Perception failure

12% of all MAIDS cases
32 % of riders' failures

- L1 = 17 %
- L3 = 8 %

Perception



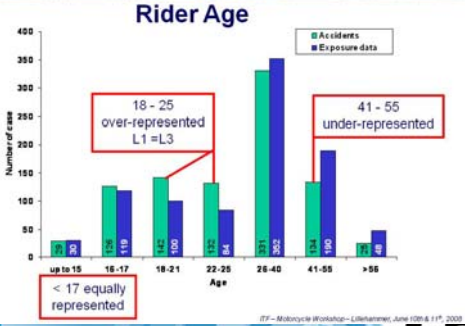
Additional Accident Contributing Factors

- Human factors: 72% of all cases

	Frequency	Percent
PTW rider	900	43.7
OV driver	589	28.6
Total	2059	100.0

- PTW riders: major contributors to crashes
  - 44% of all additional contributing factors
    - L1 = 47 %
    - L3 = 31 %

Rider Age



Content

Presentation of the study

MAIDS highlights
- Vehicle factors
- Environmental factors
- Human factors
  - Accident causation
  - Accident population
  - Collision dynamics
  - Injuries

PTW Rider Licence

- 5 % without licence (required)!
- 13% with a licence, but for vehicles other than a PTW (equivalence)
- 11 % licence was not required to operate the vehicle (mopeds)

Riders without licence are over-represented

PTW licence qualification

	Accident data		Exposure data	
	Frequency	Percent	Frequency	Percent
None, but licence was required	47	5.1	13	1.4
Learner's permit only	4	0.4	1	0.1
PTW licence	608	66.0	697	75.6
Only licence for OVs other than PTW	125	13.6	125	13.5
Not required	104	11.3	86	9.3
Unknown	33	3.6	1	0.1
Total	921	100.0	923	100.0

Alcohol and Drug

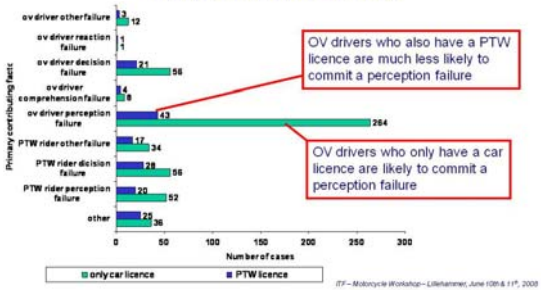
- Alcohol use by the PTW rider: 4% of all cases
  - L1 = 7 %
  - L3 = 3 %

Table 7.9: Alcohol/ drug use by PTW rider

	Accident data		Exposure data	
	Frequency	Percent	Frequency	Percent
None	853	92.6	902	97.8
Alcohol	36	3.9	14	1.5
Drug	5	0.5	2	0.2
Alcohol+drug	2	0.2	2	0.2
Unknown	25	2.7	3	0.3
Total	921	100.0	923	100.0

Note: drug use is defined as the use of illegal, non-prescription drugs (e.g., cocaine).

Other Vehicle Licence

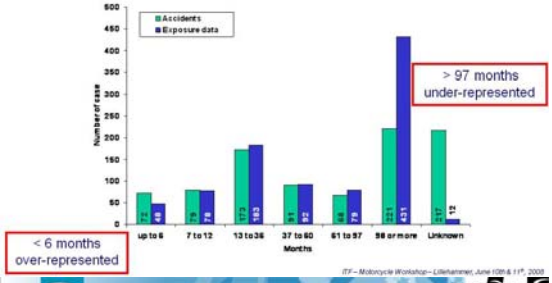


PTW Rider Training

- L1 = 75 % no training
- L3 = 77 % have some pre-license training
  13 % no training

	L1 vehicles		L3 vehicles		Total	
	Frequency	Percent of L1	Frequency	Percent of L3	Frequency	Percent
None	298	74.9	71	13.6	369	40.1
Pre-licence training	35	8.8	404	77.2	439	47.7
Additional training	8	2.0	8	1.5	16	1.7
Other	0.0	0.0	4	0.8	4	0.4
Unknown	57	14.3	36	6.9	93	10.1
Total	398	100.0	523	100.0	921	100.0

Rider Experience on any PTW



Traffic Control Violation

- PTW riders: 24 % of cases when traffic control present

Traffic control violated by PTW rider	Frequency	Percent
No	235	25.6
Yes	73	7.9
Unknown if traffic control was present or if traffic control was violated	17	1.8
Not applicable, no traffic control present	596	64.7
Total	921	100.0

- OV drivers: 41 % of cases when traffic control was present

Content

Presentation of the study

MAIDS highlights
- Vehicle factors
- Environmental factors
- **Human factors**
  - Accident causation
  - Accident population
  - **Collision dynamics**
  - Injuries

Collision Avoidance

- No manoeuvre: 27 %
- Braking and swerving 65 % (Directive 2000/56)
  - L1 = 52 %
  - L3 = 70 %

Collision avoidance performed by PTW rider	Frequency	Percent
No collision avoidance attempted	362	26.9
Braking	664	49.3
Swerve	218	16.2
Accelerating	17	1.3
Use of horn, flashing headlamp	18	1.3
Drag feet, jump from PTW	9	0.7
Other	32	2.4
Unknown	26	1.9
Total	1346	100.0

Loss of Control

- No loss of control: 68 % of all cases
- Loss of control: 31 %
  - L1 = 16 %
  - L3 = 44 %
- Loss of control mostly related to braking 13 % of all cases (41 % of all cases involving loss of control)
- Single accidents
  - The most frequent: running off the roadway : 23%

Reason for failed Collision Avoidance Action

- Inadequate time available
  - PTW: 32 %
  - OV: 21 %

Reason for failed collision avoidance	PTW rider		OV driver	
	Frequency	Percent	Frequency	Percent
Decision failure, wrong choice of evasive action	69	7.5	26	3.4
Reaction failure, poor execution of evasive action	41	4.5	9	1.2
Inadequate time available to complete avoidance action	297	32.2	164	21.1
Loss of control in attempting collision avoidance	129	14.0	3	0.4
Other	6	0.7	6	0.8
Not applicable, no OV or no evasive action taken	362	39.3	545	70.1
Unknown	17	1.8	25	3.2
Total	921	100.0	778	100.0

PTW Impact Speed

- 75% of PTW crashes occurred below 51 km/h
  - L1 = 95 % below 50 km/h
  - L3 = 62 % below 50 km/h
- 5% of impacts over 99 km/h
- Fatal cases
  - 32 % between 30 – 50 km/h
  - 50 % > 60 km/h

PTW impact speed (all accidents)

	Frequency	Percent
0 km/h	14	1.5
10 km/h	44	4.8
20 km/h	124	13.4
30 km/h	194	21.1
40 km/h	185	20.1
50 km/h	128	13.9
60 km/h	70	7.6
70 km/h	45	4.9
80 km/h	40	4.3
90 km/h	25	2.7
100 km/h or higher	50	5.4
Unknown	2	0.2
Total	921	100.0

Unusual Travelling Speed

- PTW 18 %
  - L1 = 14 %
  - L3 = 21 %
- OV 5 %

Speed compared to surrounding traffic (PTW)

	L1 vehicles		L3 vehicles		Total	
	Frequency	Percent of L1	Frequency	Percent of L3	Frequency	Percent
Speed unusual but no contribution	35	8.8	39	7.5	74	8.1
Speed difference contributed to accident	57	14.3	109	20.8	166	18.0
No unusual speed or no other traffic (not applicable)	305	76.6	375	71.7	680	73.8
Unknown	1	0.3	0	0.0	1	0.1
Total	398	100.0	523	100.0	921	100.0

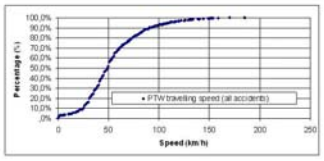
Content

Presentation of the study

MAIDS highlights
- Vehicle factors
- Environmental factors
- **Human factors**
  - Accident causation
  - Accident population
  - Collision dynamics
  - **Injuries**

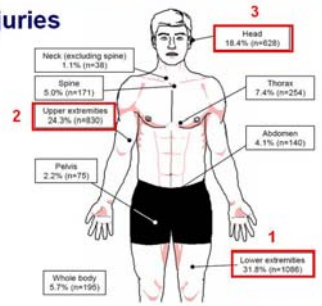
PTW Travelling Speed

- Median travelling speed: 49 km/h
- Fatal cases: 70 % with travelling speed >60 km/h
- Speed range: between 0 km/h and 185 km/h



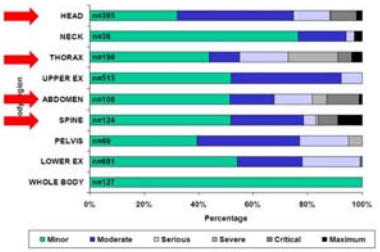
Injuries

- 921 accidents
- 3417 injuries



Relative Injury Severity per Body Region

- Body regions affected by the most severe injuries



Helmet Wearing

- L1 = 80 % (Evolving regulation in IT)
- L3 = 99 %

	L1 vehicles		L3 vehicles		Total	
	Frequency	Percent of L1	Frequency	Percent of L3	Frequency	Percent
No	69	17.3	4	0.8	73	7.9
Yes	317	79.7	516	98.6	833	90.5
Unknown	12	3.0	3	0.6	15	1.6
Total	398	100.0	523	100.0	921	100.0

Helmet Effect

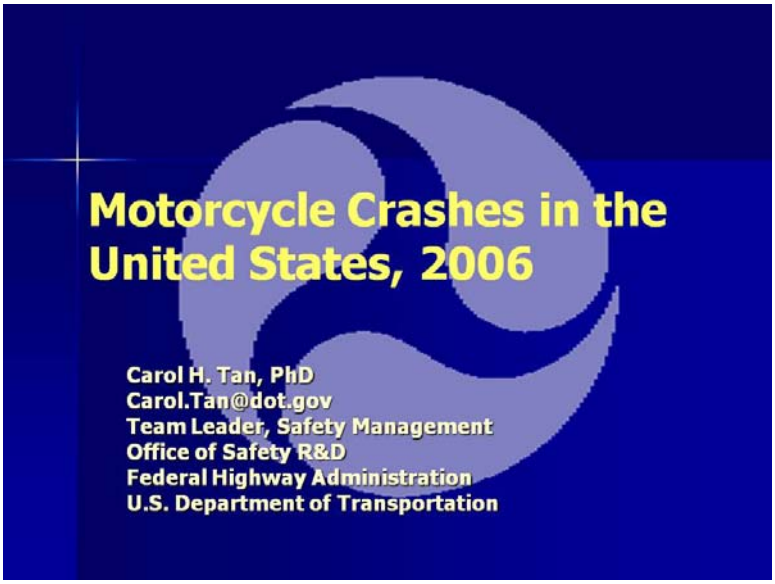
- Positive 69 % (95 % / helmet worn and contact in region)
- No effect 4 %

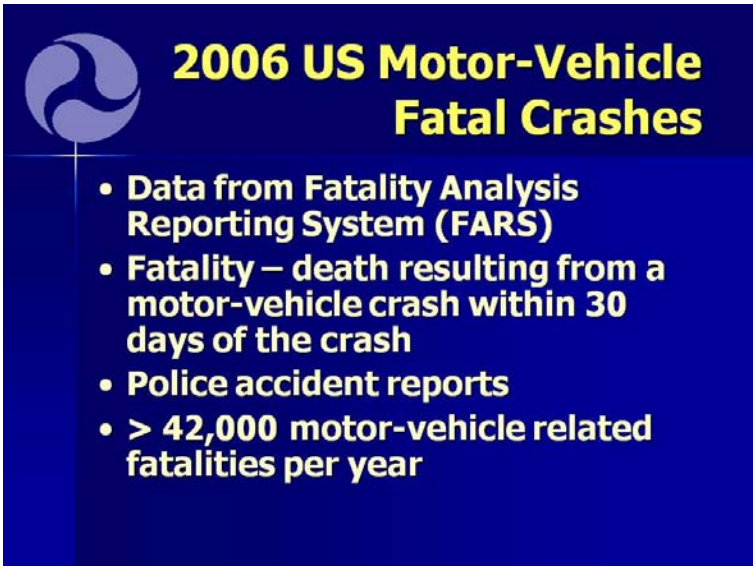
	Frequency	Percent
No helmet present, injury to head occurred	62	6.7
Helmet worn, but no effect on head injury	33	3.6
Yes, coverage present and reduced injury	306	33.2
Yes, coverage present and prevented injury	327	35.5
No injury producing contact in region	152	16.5
Other	4	0.4
Unknown	37	4.1
Total	921	100.0

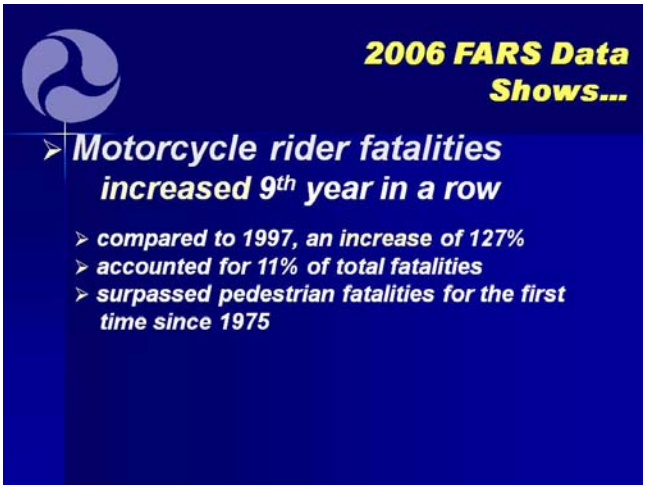
Discussion / What does MAIDS tell us?

- Human factors are predominant in accident causations
  - Perception failures from OV drivers
  - Decision and perception failures from PTW riders
  - Additional accident contributing factors from PTW riders
- Environmental factors
  - Are more worsening than contributing factors (excluding weather cond.)
  - An entry to engage with national/local authorities in PTW integration
  - Can potentially help riders and drivers (better decision, better perception)
- Vehicles factors
  - Marginal accident causation linked to maintenance defect
  - Can potentially help drivers to better perceive
  - Can potentially help riders (avoidance)

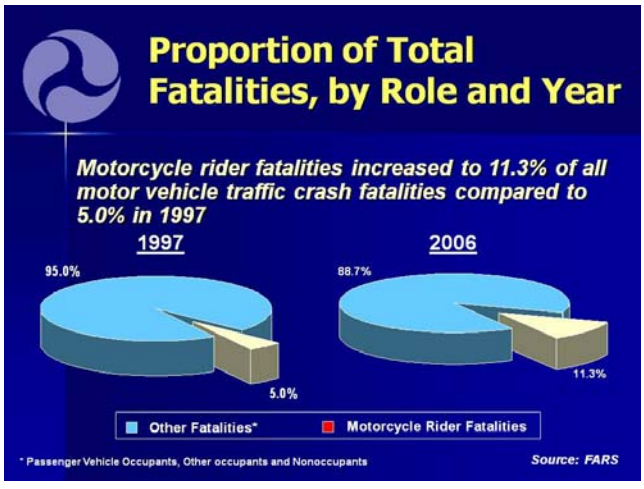
ANNEX 4 MOTORCYCLE CRASHES IN THE UNITED STATES






2006 FARS Data Shows...
Motorcycle rider fatalities increased 9th year in a row
compared to 1997, an increase of 127%
accounted for 11% of total fatalities
surpassed pedestrian fatalities for the first time since 1975


Motorcycle Riders Killed, by Year
6,000
5,000
4,000
3,000
2,000
1,000
0
75 77 79 81 83 85 87 89 91 93 95 97 99 01 03 06
Source: FARS


Proportion of Total Fatalities, by Role and Year
Motorcycle rider fatalities increased to 11.3% of all motor vehicle traffic crash fatalities compared to 5.0% in 1997
1997
2006
95.0%
5.0%
88.7%
11.3%
Other Fatalities*
Motorcycle Rider Fatalities
* Passenger Vehicle Occupants, Other occupants and Nonoccupants
Source: FARS

Roadway Geometry and Classification

M.A.I.D.S.	US FARS 2006 Data
70% straight roadway alignments 52% minor arterials 21% major arterials 4.2% motorway	46% Urban 50% Rural 60% Non-intersection 24% Intersection-related

Accident Types

M.A.I.D.S.	US FARS 2006 Data
No dominant configuration	40% OV turning left MC straight, passing, overtaking 26% both V straight
60% collision w/ PC	51% collision w/ other V in transport
Obstacles – roadside barriers infrequent	25% collided w/ fixed object: ~4% guardrail faces, 5% curbs, ~3% trees

Alcohol, Helmets, Age

M.A.I.D.S.	US FARS 2006 Data
5 % Alcohol	27% MC riders BAC ≥ 0.08 g/dL
9.6% No helmets	41% MC riders, 55% passengers no helmets
18-25 overrepresented 41-55 underrepresented	16-24, 16% 25-40, 27% 41-59, 27%

Traffic Violations, Licenses

M.A.I.D.S.	US FARS 2006 Data
8% PTW riders 18% OV drivers	37% MC speeding
Unlicensed PTW riders have increased risk of being involved in crash	25% operating w/ invalid licenses 1.4 times more likely than PC drivers to have previous license suspension/revocation

Contributing Factors

M.A.I.D.S.	US FARS 2006 Data
3.6% Roadway maintenance 3.8% Traffic hazard 7.4% Weather related	3.5% Wet pavement 2% Fallen cargo 1% Police pursuit

Countermeasures

Behavioral (NHTSA)	Roadway (FHWA)
Helmet usage Alcohol Driver training & awareness MC training & licensing	More accommodating infrastructure More forgiving roadside

ANNEX 5 MOTORCYCLE SAFETY IN SWEDEN
PRESENTATION BY ORJAN ELLSTROM

Motorcycle safety OECD 10-11 of June Lillehammer

Örjan Ellström
Senior advisor Road Safety

ROAD TRAFFIC INSPECTORATE

2008-06-23

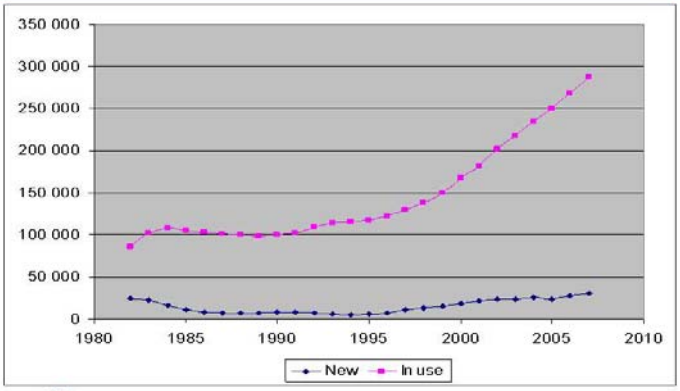
The Road Safety situation for motorcyclists in Sweden

- Development of the use of motorcycles
- New results from indepth-studies
- Future actions

ROAD TRAFFIC INSPECTORATE

2008-06-23

MC fleet development



ROAD TRAFFIC INSPECTORATE

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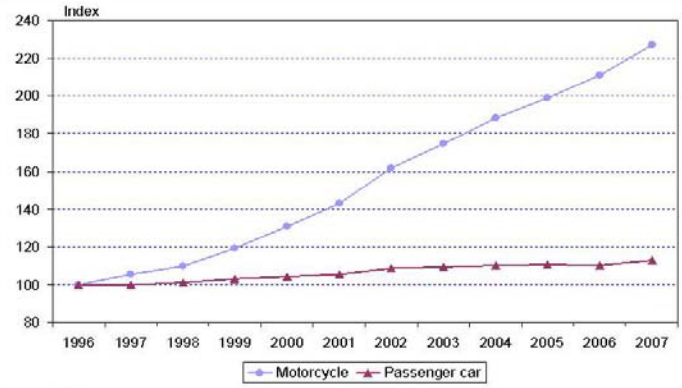
Development of fleet milage



ROAD TRAFFIC INSPECTORATE

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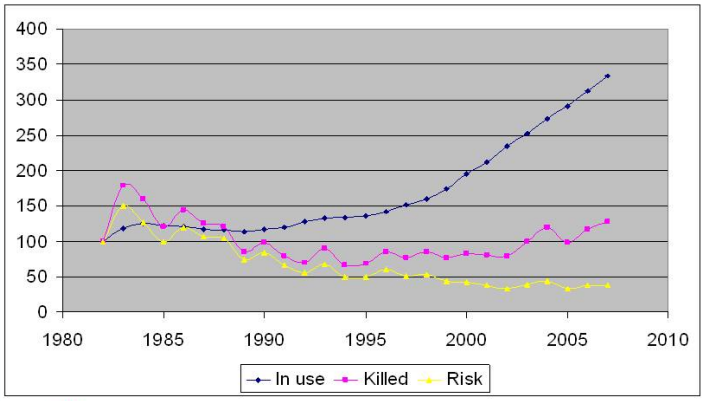
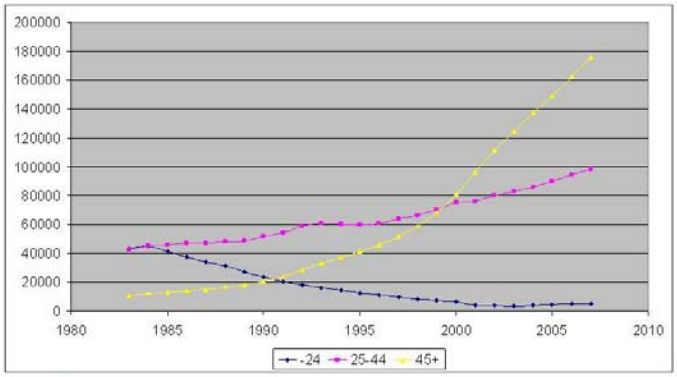
Development of risk



ROAD TRAFFIC INSPECTORATE

2008-06-23

Development of riders age



ROAD TRAFFIC INSPECTORATE

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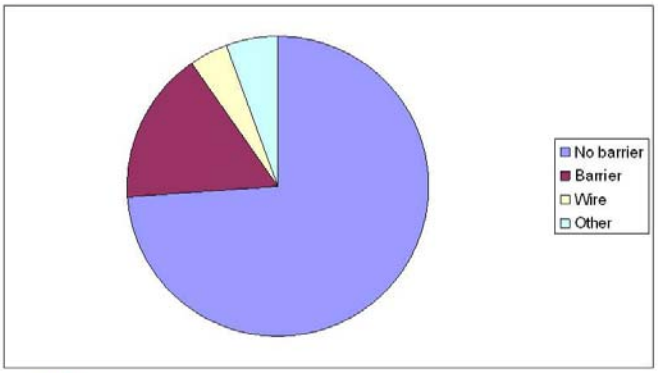
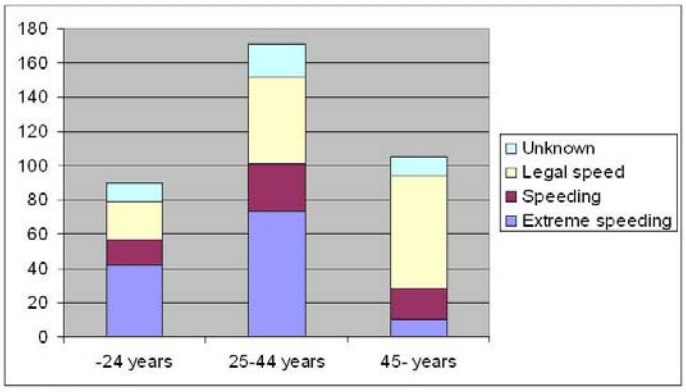
Killed barrier crashes – single accidents



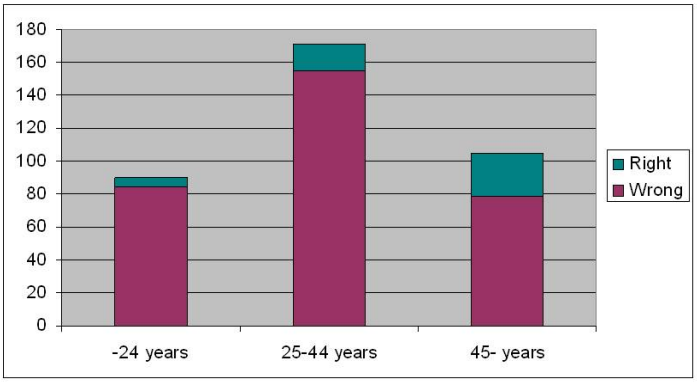
ROAD TRAFFIC INSPECTORATE 2008-06-23

Killed, age - speeding



ROAD TRAFFIC INSPECTORATE 2008-06-23

Number of killed with/without any illegal element



ROAD|TRAFFIC|INSPECTORATE

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The potential

- Only 13 % of the fatalities were without any illegal elements
- Roads and road equipment are in general designed for cars
- Problem groups of motorcyclists has to be better defined
- Description of problems and actions has to be more specific for each group of motorcyclists

ROAD|TRAFFIC|INSPECTORATE

2008-06-23

The end

www.vagtrafikinspektionen.se

kontakt@vagtrafikinspektionen.se

Växel: 0243-780 00

Fax: 0243-783 30

ROAD TRAFFIC INSPECTORATE

2008-06-23

ANNEX 6 TRENDS IN MOTORCYCLE CRASHES IN EUROPE
PRESENTATION BY SASKIA DE CRAEN

SWOV INSTITUTE FOR ROAD SAFETY RESEARCH

Motorcycle safety in the EU

SafetyNet

European Road Safety Observatory www.erso.eu

Traffic Safety Basic Facts 2007: Motorcycles & Mopeds

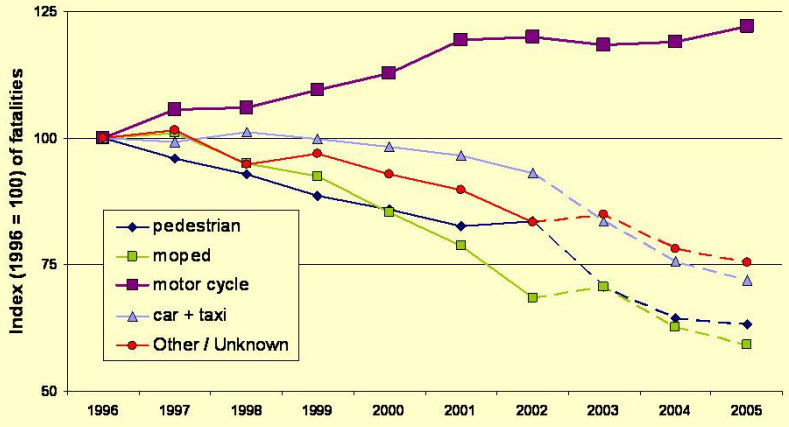
Literature study: Powered Two Wheelers

Saskia de Craen

Saskia de Craen
10 – 11 June 2008
www.swov.nl / www.erso.eu
Motorcycle safety in the EU

SWOV INSTITUTE FOR ROAD SAFETY RESEARCH

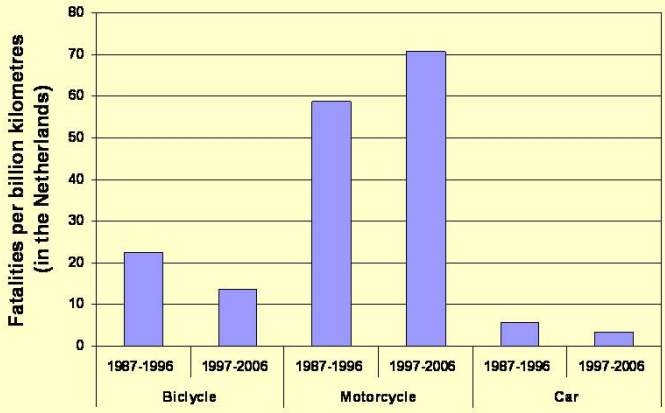
Motorcycle safety in the EU: a growing problem



Saskia de Craen
10 – 11 June 2008
www.swov.nl / www.erso.eu
Motorcycle safety in the EU

Comparison of modes: Relative high risk per kilometre

SWOV INSTITUTE FOR ROAD SAFETY RESEARCH



Saskia de Craen
10 – 11 June 2008
www.swov.nl / www.erso.eu
Motorcycle safety in the EU

Vehicle fleet in the EU: More motorcycles → more crashes

SWOV INSTITUTE FOR ROAD SAFETY RESEARCH

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Motorcycle safety in the EU

Shift in age

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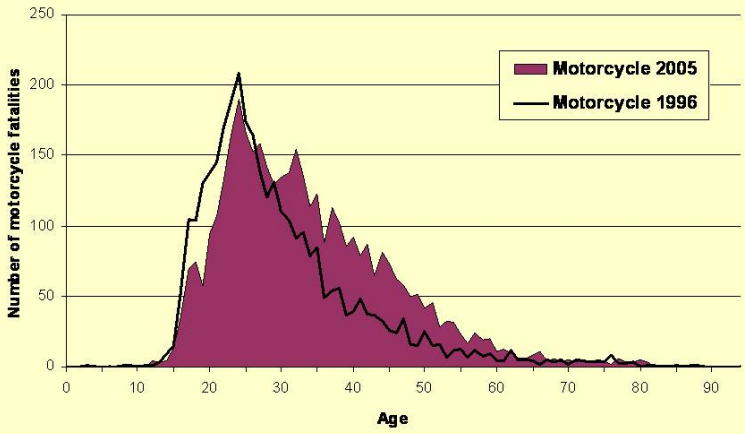

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Motorcycle safety in the EU

Literature study: Frequent crash scenarios

SWOV INSTITUTE FOR ROAD SAFETY RESEARCH

- About 50% of crashes in non-built up areas
- In about 70% of all crashes the motorcyclist was responsible (64% loss of control)
- About 30% single vehicle crashes
- About 50% collision with a car:
  - in 70% of these collisions the car driver had seen the motorcycle too late or not at all

Saskia de Craen
10 – 11 June 2008
www.swov.nl / www.erso.eu
Motorcycle safety in the EU

ANNEX 7 MOTORCYCLING SAFETY POLICIES: THE MOTORCYCLIST'S VIEWS PRESENTATION BY ALINE DELHAYE

International Transport Forum Joint Transport Research Centre OECD

Session 3: Motorcycling safety policies

The motorcyclists' views

Aline Delhaye
FEMA General Secretary
On behalf of motorcyclists worldwide

International Transport Forum Joint Transport Research Centre OECD

Overview

- Putting motorcycle safety into the right context
- Improving motorcycle safety: key safety aspects
- Motorcycle safety policies around the world
- Towards motorcycle safety strategies

International Transport Forum Joint Transport Research Centre OECD

Most riders are safety conscious

- Most riders are fully aware of the fact that they are vulnerable road users and that motorcycling requires specific skills and a focused, alert behaviour.

➲ it should not be constantly claimed that motorcyclists are a "careless" group of road users!

International Transport Forum Joint Transport Research Centre OECD

Putting motorcycle safety into the right context

For the debate to be balanced, it is a fundamental prerequisite to put the absolute figures within the appropriate context. It is also important to look into the causes of motorcycle accidents, in order to identify valid remedies

International Transport Forum Joint Transport Research Centre OECD

The extreme 'high-risk takers'

- motorcycling sometimes attracts "high risk takers" with extreme behaviour.

➲give motorcycling a bad public reputation!
➲ doubtful whether any road safety initiative will change the attitude and behaviour of these individuals
➲ regular motorcyclists should not have to pay the consequences of these few extremists

International Transport Forum Joint Transport Research Centre OECD

Motorcycling can not be made risk-free

- Motorcyclists are vulnerable and have a high risk of injury (this is also true for walking or cycling).

➲No road safety initiative – whether from Governments or riders themselves - can ever make motorcycling risk-free.

International Transport Forum — Joint Transport Research Centre — OECD

Motorcycle accident statistics: reliability and lack of useful data

- Road safety targets should reflect casualty rates, not only casualty numbers;
- Police accident reporting and discrepencies comparing data;
- Need to monitor the effects of various road safety initiatives;

➲ Statistical information is generally a problem when talking about motorcycle safety

International Transport Forum — Joint Transport Research Centre — OECD

Motorcycle accident research:

- Motorcycle casualties are often the focus of research, with many reports highlighting the perceived risk-taking of motorcyclists and the dangerousness of motorcycles.

- Lack of understanding of motorcycles and motorcyclists: the majority of researchers do not ride motorcycles and do not understand the social issues surrounding two wheeled transport

International Transport Forum — Joint Transport Research Centre — OECD

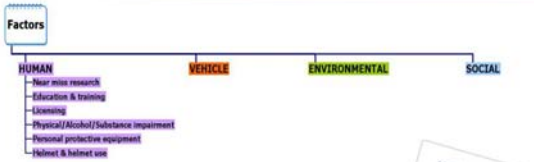
Accident prevention vs injury reduction?

- Vision Zero's concept = injury reduction
- Always some kind of injury in a mc accident
- Riders' Organisations (RO) are more focused on *accident prevention* than *injury reduction*:
  - ✓ good initial rider training
  - ✓ motorcycle awareness campaigns
  - ✓ predictable road infrastructure

DREPTE VARIG SKADDE

Statens vegvesen Vegdirektoratet

International Transport Forum — Joint Transport Research Centre — OECD



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Improving motorcycle safety: key safety aspects

Riders Associations around the world have been working at improving motorcycle safety for decades.

Their thorough knowledge of motorcycling and motorcyclists have provide them with a true expertise not to be overlooked.

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Human factors

Licensing/Education/Training/ instructor training

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Human factors

Licensing/Education/Training
Crash Avoidance Skills

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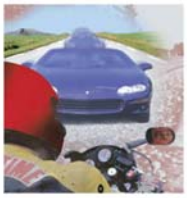
Human factors

Licensing/Education/Training
Crash Avoidance Skills
Braking
Hazard Awareness
Panic Management



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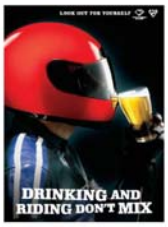
Human factors

Licensing/Education/Training
Crash Avoidance Skills
Braking

International Transport Forum Joint Transport Research Centre OECD

Human factors

Licensing/Education/Training
Crash Avoidance Skills
Braking
Hazard Awareness
Panic Management
Physical/Alcohol/Substance impairment



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Human factors

Licensing/Education/Training
Crash Avoidance Skills
Braking
Hazard Awareness

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Human factors

Licensing/Education/Training
Crash Avoidance Skills
Braking
Hazard Awareness
Panic Management
Physical/Alcohol/Substance impairment
Personal Protective Equipment

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Human factors

Licensing/Education/Training
Crash Avoidance Skills
Braking
Hazard Awareness
Panic Management
Physical/Alcohol/Substance impairment
Personal Protective Equipment
Crash reports
Crash research
Concurrent Exposure Data Collection

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Vehicle factors

Brakes
Intelligent Transport Systems

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Vehicle factors

Brakes
Intelligent Transport Systems
Motorcycle conspicuity

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Vehicle factors

Brakes

International Transport Forum Joint Transport Research Centre OECD

Vehicle factors

Brakes
Intelligent Transport Systems
Motorcycle conspicuity
Passenger/loads

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Vehicle factors

Brakes
Intelligent Transport Systems
Motorcycle conspicuity
Passenger/Loads
Vehicle design

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Environmental factors

Road infrastructure planning
Road Hazards

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Vehicle factors

Brakes
Intelligent Transport Systems
Motorcycle conspicuity
Passenger/Loads
Vehicle design
Vehicle Equipment
Vehicle Modifications
Motorcycle Performance
Vehicle Safety Equipment

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Environmental factors

Road infrastructure planning
Road Hazards
Road maintenance

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Environmental factors

Road infrastructure planning
Road Hazards
Road maintenance
Other vehicle design

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Environmental factors

Road infrastructure planning
Road Hazards
Road maintenance
Other vehicle design
Traffic Management

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Social factors

Motorist awareness

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Environmental factors

Road infrastructure planning
Road Hazards
Road maintenance
Other vehicle design
Traffic Management
Drivers distractions

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Social factors

Motorist awareness
Insurance/VAT incentives

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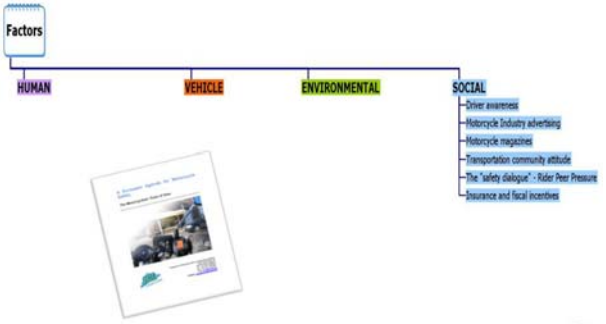

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Social factors

Motorist awareness
Insurance/VAT incentives
Advertising

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Social factors

Motorist awareness
Insurance/VAT incentives
Advertising
Motorcycle Magazines Attitude

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Social factors

Motorist awareness
Insurance/VAT incentives
Advertising
Motorcycle Magazines
Rider Peer Pressure
Statistics
Transport policies

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Social factors

Motorist awareness
Insurance/VAT incentives
Advertising
Motorcycle Magazines Attitude
Rider Peer Pressure

International Transport Forum Joint Transport Research Centre OECD

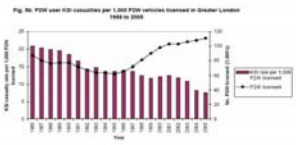
Social factors

Motorist awareness
Insurance/VAT incentives
Advertising
Motorcycle Magazines
Rider Peer Pressure
Statistics
Transport policies
Transportation community attitude

International Transport Forum Joint Transport Research Centre OECD

Social factors

Motorist awareness
Insurance/VAT incentives
Advertising
Motorcycle Magazines
Rider Peer Pressure
Statistics



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Motorcycle safety policies around the world

Policies based on « bikeism » and ignorance only creates resistance and counter pressure from the motorcycling community

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Some positive examples

- **Europe**: Initial Rider Training

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Some positive examples

- **France**: Powered two wheelers charters
  - FFMC/Nantes
  - FFMC/Paris
  - Provides guidelines for a proper road sharing

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Some positive examples

- **Norway**: In-control project
  - 'In-control' booklet 2002 (riding techniques, machine control)
  - 'Good thinking' booklet (effective traffic strategies)

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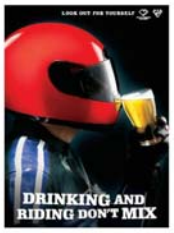
Some positive examples

- **Australia**: « Positioned for Safety »
  - Developed by rider organisations, with input from a professional independent researcher
  - Funded by the New South Wales Motor Accidents Authority



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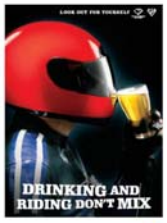
Some positive examples

- **United Kingdom**:
  The SHARP project
  - New helmet safety scheme for motorcyclists
  - Rating reflects the performance of each helmet model following a series of advanced tests
  - Information made available to the public as a simple five star rating

Some positive examples

- **Australia**: « Positioned for Safety »



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Some positive examples

- **United States**: the SAFETEA-LU Bill
  - Specific funding provided to states to be used by NGOs on rider education and awareness campaigns only
  - $6 million per year for 3 years, then $7 million for the forth year. Total: $25 million
  - Creation of the Federal Highway Administration Motorcycle Advisory Council (FHWA-MAC)

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Some positive examples

- **Canada**: Insurance discounts for novice & advanced training
  - reduced insurance premiums if the rider has taken basic training
  - financial benefit to take training
  - powerful incentive to the rider to engage in training.

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Some negative examples

- **Europe**: Driving Licence Directives
  - Limiting access without safety reasons
  - No monitoring of the effects of the previous directives
  - Decision taken without taking the motorcycle community's advices into account

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Some negative examples

- **Switzerland**: Via Secura Plan
  - Pack of respressive measures including additional restrictions, bans and controls;

  - ignores motorcyclists' real safety needs;
  - no consultation of the motorcycle sector;
  - use of inaccurate data;

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Some negative examples

- **France**: Negative awareness campaigns
  - Communication on motorcycle users depicting road delinquan
  - ➲ Counter productive
  - ➲ Does not help mutual understanding

« the best protection for a motorcylist is to respect the driving rules ! »

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Some negative examples

- **Australia**: « Eyes on the Road Ahead"
  - in 2004, Australian Motorcycle Safety Strategy
  - Single measure: re-introduction of the front number plate
  - ➲ MC Safety Strategy = front number plate!

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Some negative examples

- **Canada**: Subprimes for sport motorcycles
  - over representation of sport motorcycles accidents in Quebec's statistics
  - new subprime adopted for this type of bikes
  - Hurt/MAIDS reports highlighted problems with modified bikes, not sport bikes
  - ➲ To avoid subprime, tampering of more and more non-sport bikes, the most dangerous ones

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Motorcycle Safety policies: Conclusions

- Based on facts or prejudices?
- Accident prevention or Injury reduction?
- Positively driven or « bikeism »?
- Taking into account motorcycling characteristics (in consultation with motorcyclists) or derived from car safety policies?

➲ Hidden ban or real consideration?

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Towards Motorcycle Safety Strategies

Riders strongly believe that road safety is a basic right of all road users, and that it should be improved through shared responsibility and concerted actions, while taking the needs of motorcyclists into account.

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Motorcycle Safety Policies

- ✓ Based on reliable statistics and sound research conclusions
- ✓ Including monitoring of policy effects
- ✓ Involving all stakeholders
- ✓ Focus on an integral solution of the problem
- ✓ Respecting of motorcycling characteristics
- ✓ Fair compared to other means of transport

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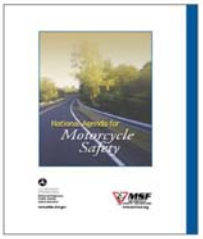
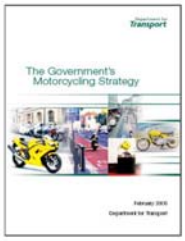
Motorcycle safety strategies





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Thank you for your attention

FEMA
Federation of European Motorcyclists' Associations

ANNEX 8 THE UK MOTORCYCLING STRATEGY
PRESENTATION BY ANDREW COLSKI

Department for Transport

The Government's Motorcycling Strategy

Andrew Colski, Road User Safety Division, DfT

THINK! Road Safety

Advisory Group on Motorcycling

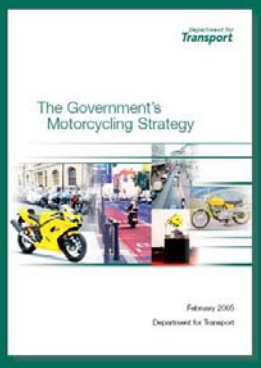
Department for Transport

- Established 1999
- Brought together key stakeholders Users, industry, police, central and local government
- Considered full range of issues affecting motorcycling, not just safety
- Reported 2004

The Government's Motorcycling Strategy

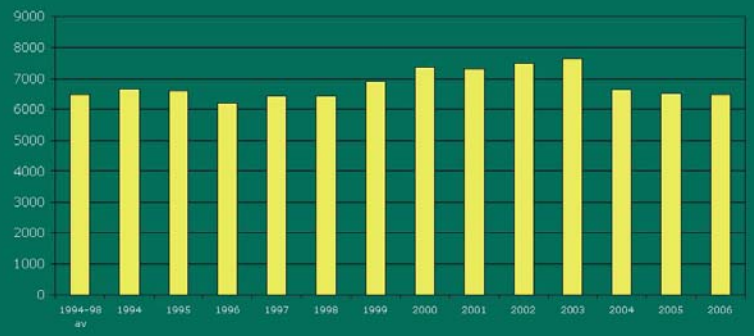
Department for Transport

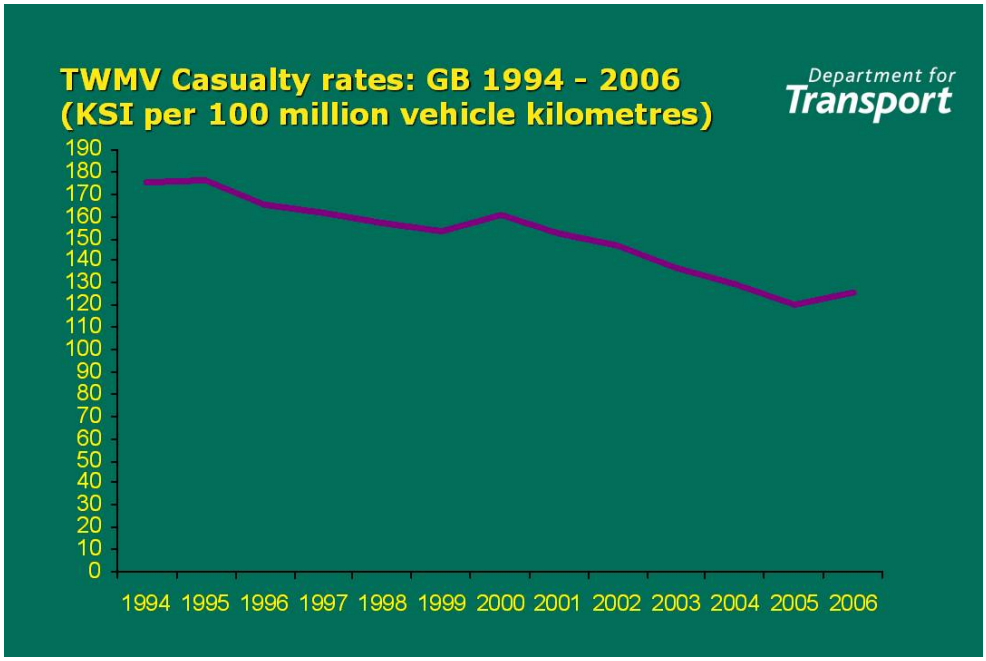
- Published 22nd February 2005
- Government's response to AGM report
- Mainstreaming motorcycling
- Continuing to work together on implementation, through National Motorcycle Council

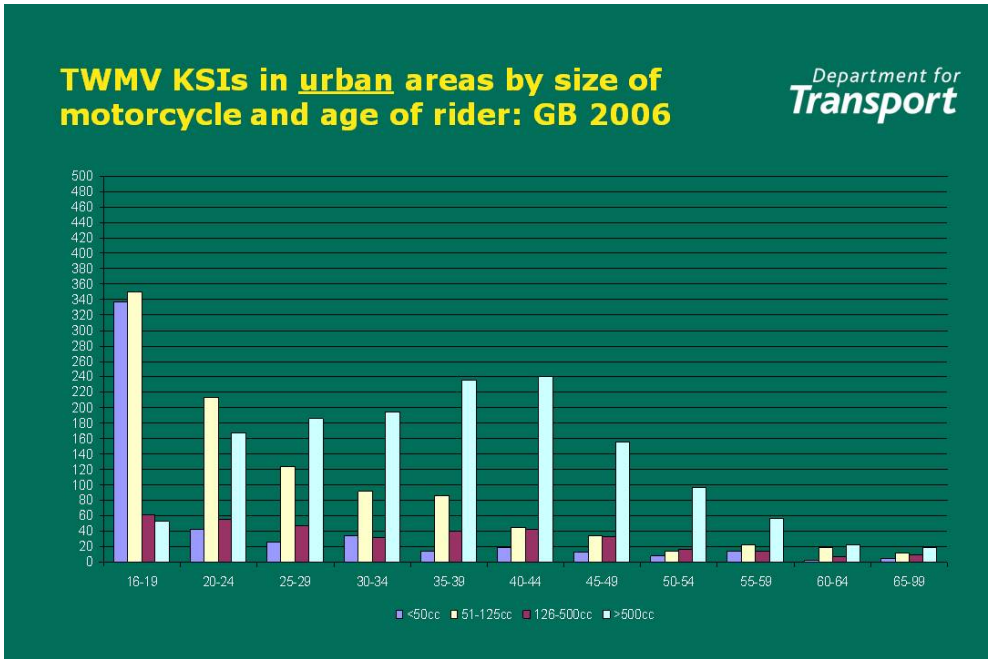


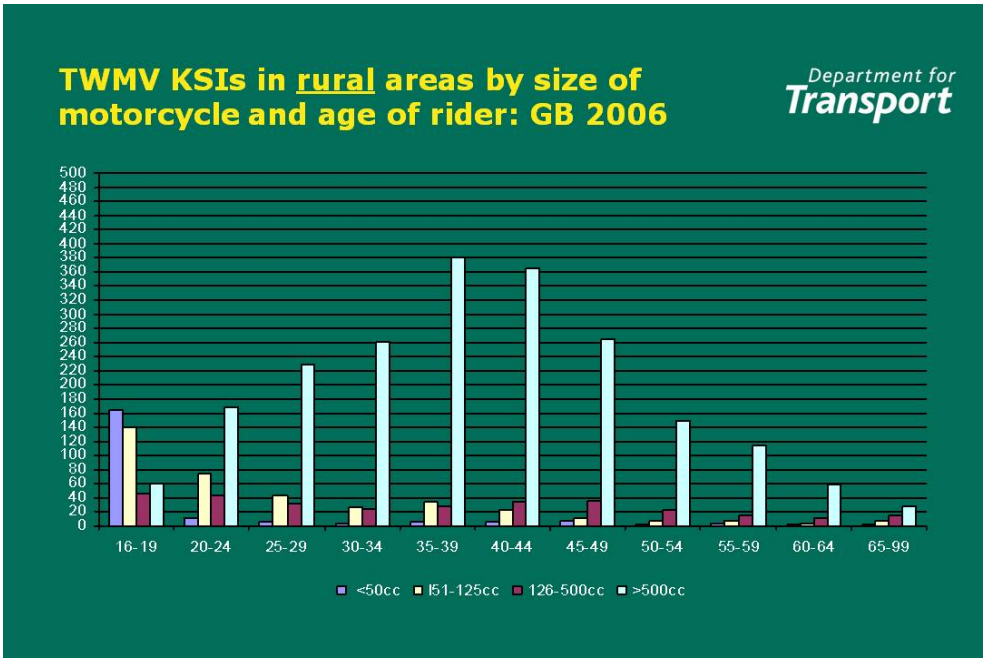
Two Wheeled Motor Vehicle users Killed or Seriously Injured GB 1994-2006

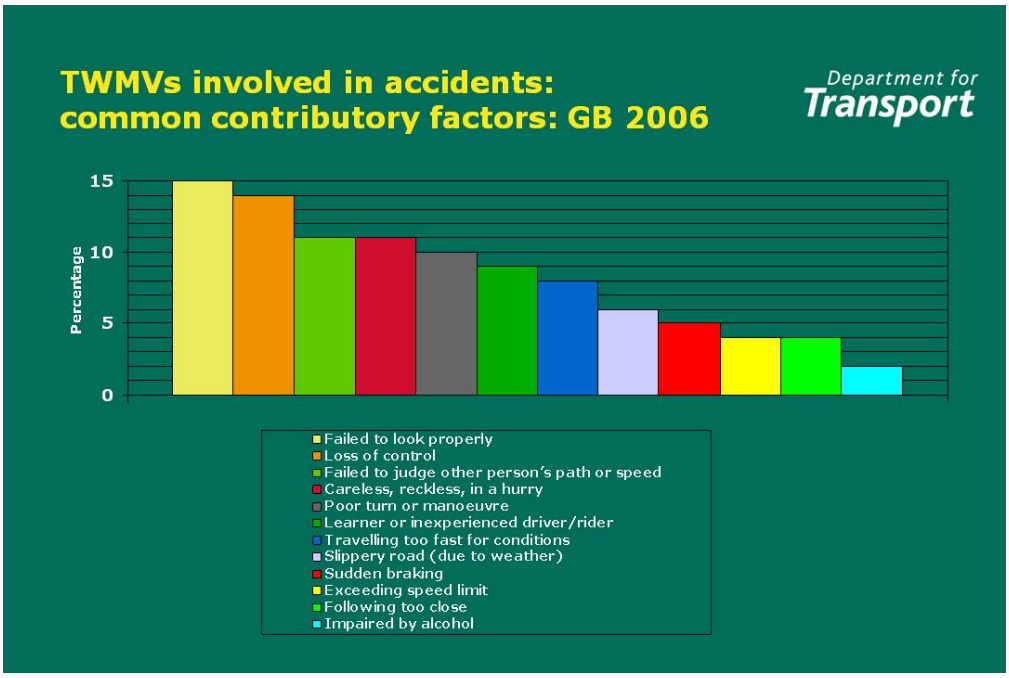
Department for Transport




TWMV Casualty rates: GB 1994 - 2006
(KSI per 100 million vehicle kilometres)
Department for Transport
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006


TWMV KSIs in urban areas by size of motorcycle and age of rider: GB 2006
Department for Transport
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
16-19
20-24
25-29
30-34
35-39
40-44
45-49
50-54
55-59
60-64
65-99
<50cc
51-125cc
126-500cc
>500cc


TWMV KSIs in rural areas by size of motorcycle and age of rider: GB 2006
Department for Transport
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
16-19
20-24
25-29
30-34
35-39
40-44
45-49
50-54
55-59
60-64
65-99
<50cc
151-125cc
126-500cc
>500cc


TWMVs involved in accidents: common contributory factors: GB 2006
Department for Transport
Percentage
15
10
5
0
Failed to look properly
Loss of control
Failed to judge other person's path or speed
Careless, reckless, in a hurry
Poor turn or manoeuvre
Learner or inexperienced driver/rider
Travelling too fast for conditions
Slippery road (due to weather)
Sudden braking
Exceeding speed limit
Following too close
Impaired by alcohol

Other vehicles in TWMV accidents: common contributory factors: GB 2006

Department for Transport

Traffic Management and Infrastructure

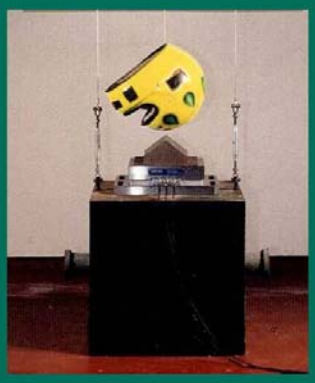
Department for Transport

- The Institute of Highway Incorporated Engineers (IHIE) guidelines on the provision for motorcyclists on the highway
- Highways Agency including motorcycles in its Safety Action Plan for trunk roads & motorways
- HA implementing motorcycle friendly crash barriers
- New DfT guidance on allowing motorcycles in bus lanes

Technical and Engineering

Department for Transport

- SHARP - New scheme for improved consumer information on motorcycle helmets
- Diesel spills – information for diesel vehicle users and petrol retailers as well as motorcyclists
- User survey on brakes, tyres, mirrors, to inform policy development



Training and Testing

Department for Transport

- Driving Standards Agency's Post-Test Trainer Registration Scheme – voluntary from Feb 07
- Insurance discounts linked to post-test training – Enhanced Rider Scheme
- 3rd EU Driving Licence Directive – consulting with industry and users on implementation by 2013

Road Safety and Publicity

Department for Transport

- DfT's 'Think!' road safety campaign sponsors British Super Bikes championships since 2004 – The Think Motorcycle Academy
- TV advert aimed at car drivers warns them to 'take longer to look for bikes'
- Research programme to increase understanding of motorcycle accidents and how to address them, including fatigue, training and drivers' attitudes to motorcyclists.

New Action Plan and Strategy

Department for Transport

- The NMC has agreed a new action plan to update what was published three years ago.
- Refreshes actions so they are better focussed on current priorities
- Next step will be to update the strategy itself by 2010

Further details

Department for Transport

- http://www.dft.gov.uk/pgr/roads/vehicles/motorcycling/thegovernmentsmotorcyclingst4550

- http://www.thinkroadsafety.gov.uk/campaigns/motorcycles/motorcycles.htm