Road Safety in Viet Nam
Issues, Successes & Challenges

Jonathon Passmore

Technical Officer, Road Safety and Injury Prevention,
WHO Viet Nam

BJD Decade World Network Conference

HCMC, 1 December 2012

World Health Organization
COUNTRY OFFICE FOR Viet Nam

This presentation

- Overview – road traffic injuries in Viet Nam
- Motorisation and risk factors in Viet Nam
- Post crash care
- Further information

RTI as leading cause of death

Table 2: Top ten causes of death by sex

	Male			Female		
Rank	**Disease category**	**Deaths**	**%**	**Disease category**	**Deaths**	**%**
1	Stroke	53,217	18%	Stroke	56,771	23%
2	Liver cancer	19,915	7%	COPD	14,941	6%
3	Road traffic accidents	17,330	6%	Pneumonia	11,175	4%
4	Lung cancer	15,720	5%	Ischemic heart disease	11,015	4%
5	COPD	14,355	5%	Diabetes	9,858	4%
6	Ischemic heart disease	13,504	5%	Liver cancer	8,587	3%
7	Tuberculosis	11,450	4%	Lung cancers	7,869	3%
8	Pneumonia	9,470	3%	Tuberculosis	6,798	3%
9	HIV/AIDS	9,417	3%	Road traffic accidents	5,750	2%
10	Stomach cancer	8,469	3%	Stomach cancer	5,470	2%
	Total	**290,624**		**Total**	**250,605**	

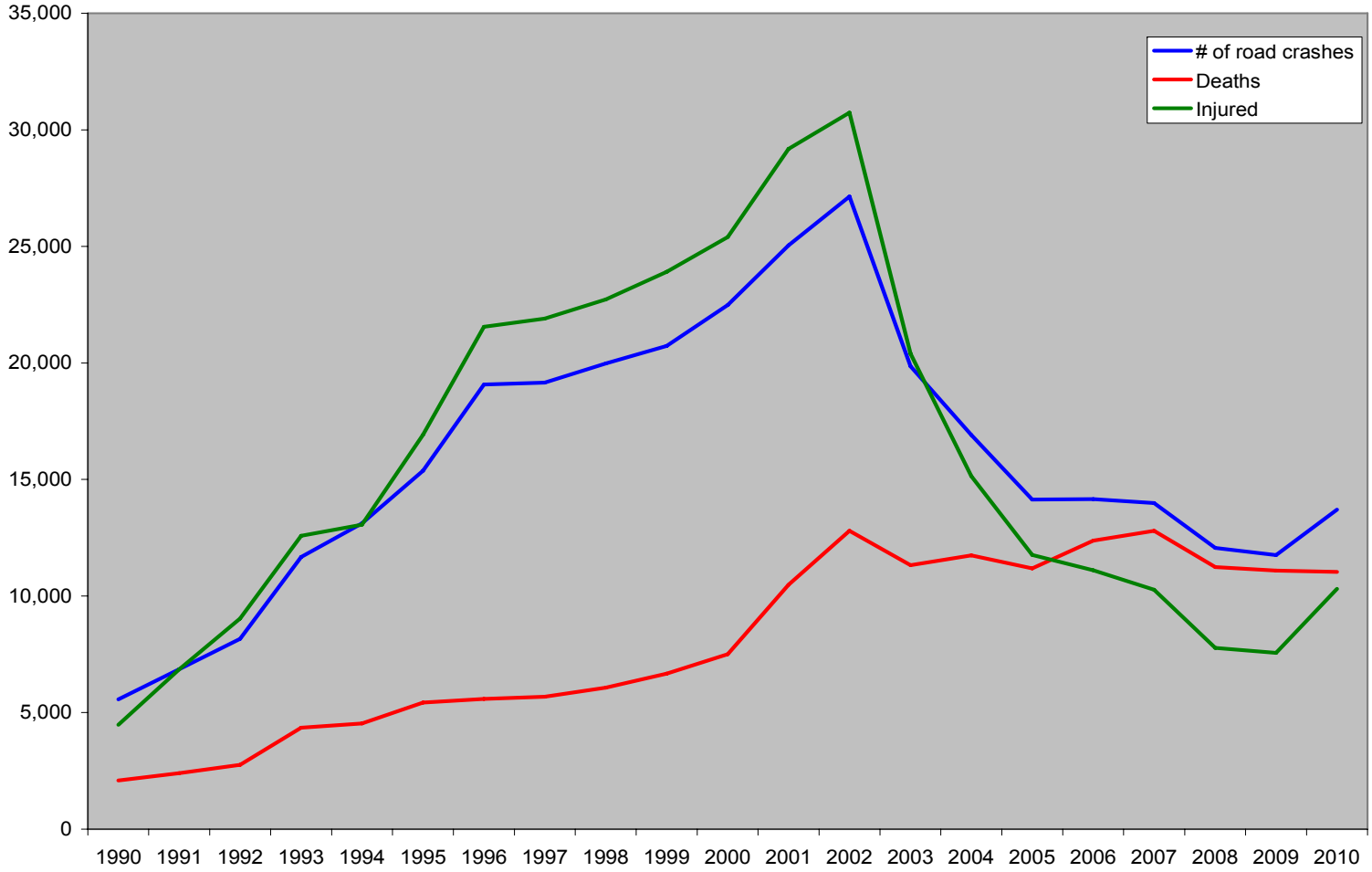
Source : VINE Project 2008

	0-4	5—14	15-29	30-44	45-69	70+
1	Low birth weight	Lower respiratory infections	HIV/AIDS	HIV/AIDS	Ischaemic heart disease	Cerebro-vascular disease
2	Diarrhoeal diseases	Drowning	**Road traffic injuries**	Tuberculosis	Cerebro-vascular disease	Ischaemic heart disease
3	Birth asphyxia and birth trauma	**Road traffic injuries**	Tuberculosis	Other infectious diseases	Chronic obstructive pulmonary disease	Chronic obstructive pulmonary disease
4	Other perinatal conditions	Other unintentional injuries	Self-inflicted injuries	**Road traffic injuries**	Tuberculosis	Lower respiratory infections
5	Lower respiratory infections	Other infectious diseases	Other infectious diseases	Ischaemic heart disease	Trachea, bronchus, lung cancers	Other cardiovascular diseases
6	Meningitis*	Tuberculosis	Other unintentional injuries	Self-inflicted injuries	Other cardiovascular diseases	Other infectious diseases
7	Congenital heart anomalies	Dengue	Fires	Other unintentional injuries	Liver cancer	Stomach cancer
8	Other unintentional injuries	Other digestive diseases	Violence	Other cardiovascular diseases	Stomach cancer	Trachea, bronchus, lung cancers
9	Other Congenital anomalies	Leukaemia	Drowning	Cerebro-vascular disease	Lower respiratory infections	Hypertensive heart disease
10	HIV/AIDS	Fires	Lower respiratory infections	Violence	Other infectious diseases	Other respiratory diseases
11	Other infectious diseases	Other cardiovascular diseases	Ischaemic heart disease	Cirrhosis of the liver	Cirrhosis of the liver	Nephritis and nephrosis
12	Drowning	Self-inflicted injuries	Other cardiovascular diseases	Fires	**Road traffic injuries**	Alzheimer and other dementias*
13	Other digestive diseases	Falls	Other digestive diseases	Stomach cancer	Nephritis and nephrosis	Other digestive diseases
14	Childhood-cluster diseases	Poisonings	Leukaemia	Liver cancer	Mouth and oropharynx cancers	Other neuropsychiatric disorders
15	**Road traffic injuries**	Lymphomas, multiple myeloma	Other maternal conditions	Hepatitis B	Self-inflicted injuries	Liver cancer

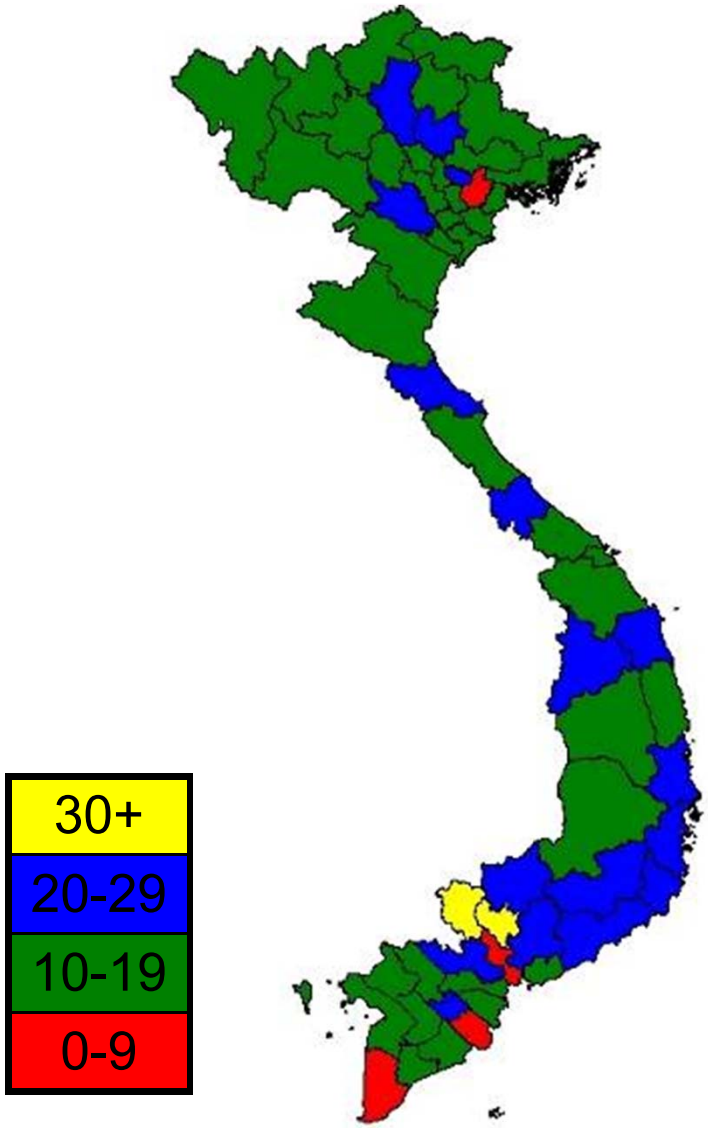
Source : WHO GBD 2004

Road trauma in Viet Nam in 2011

	NTSC/MPS	MOH
Road traffic deaths (2011)	10,950	17,150
Road traffic injuries (2011)	48,356	463,212
Mortality rate	12.5/100K	19.5/100K

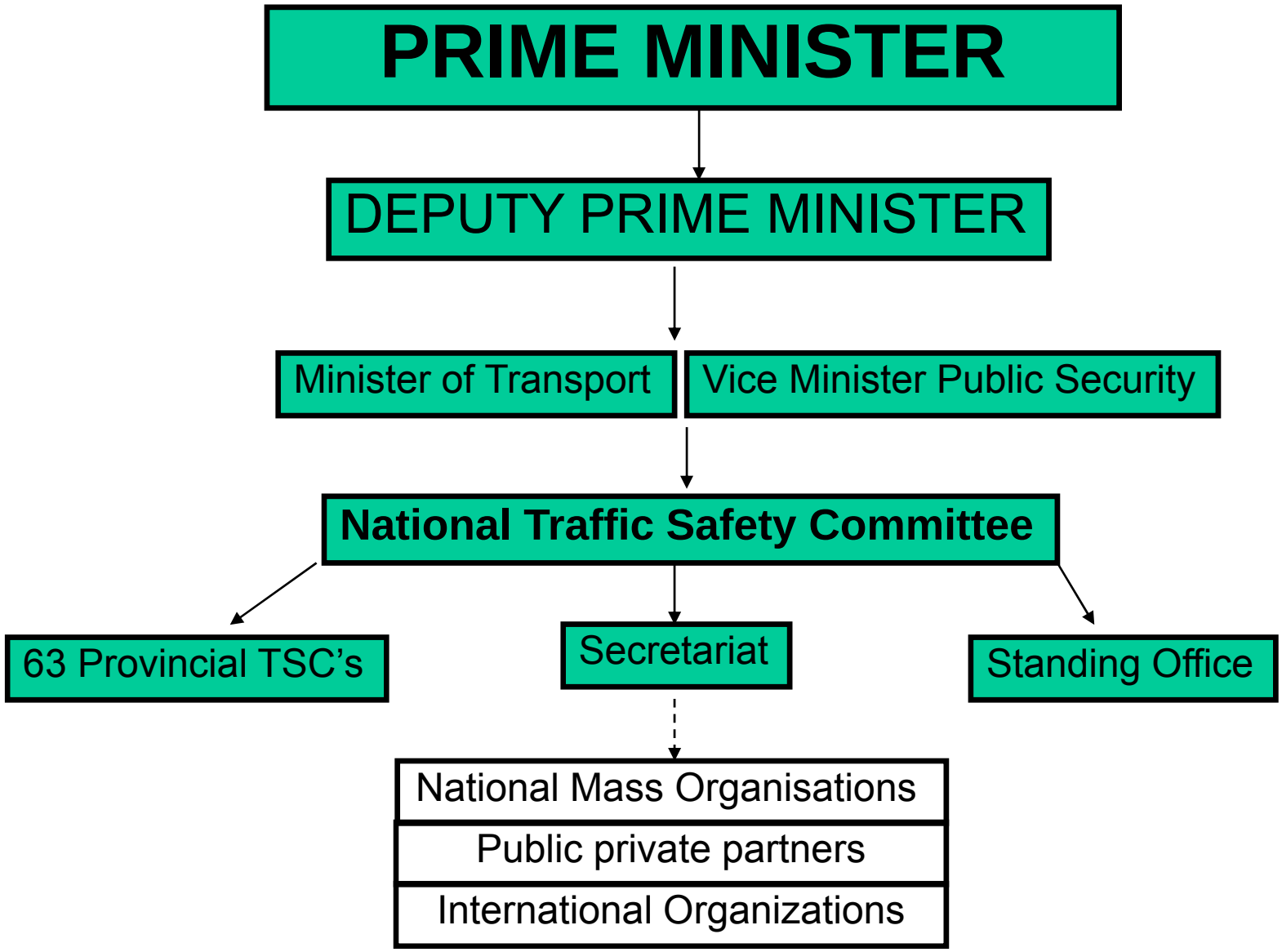


Road traffic injury mortality by province, 2008



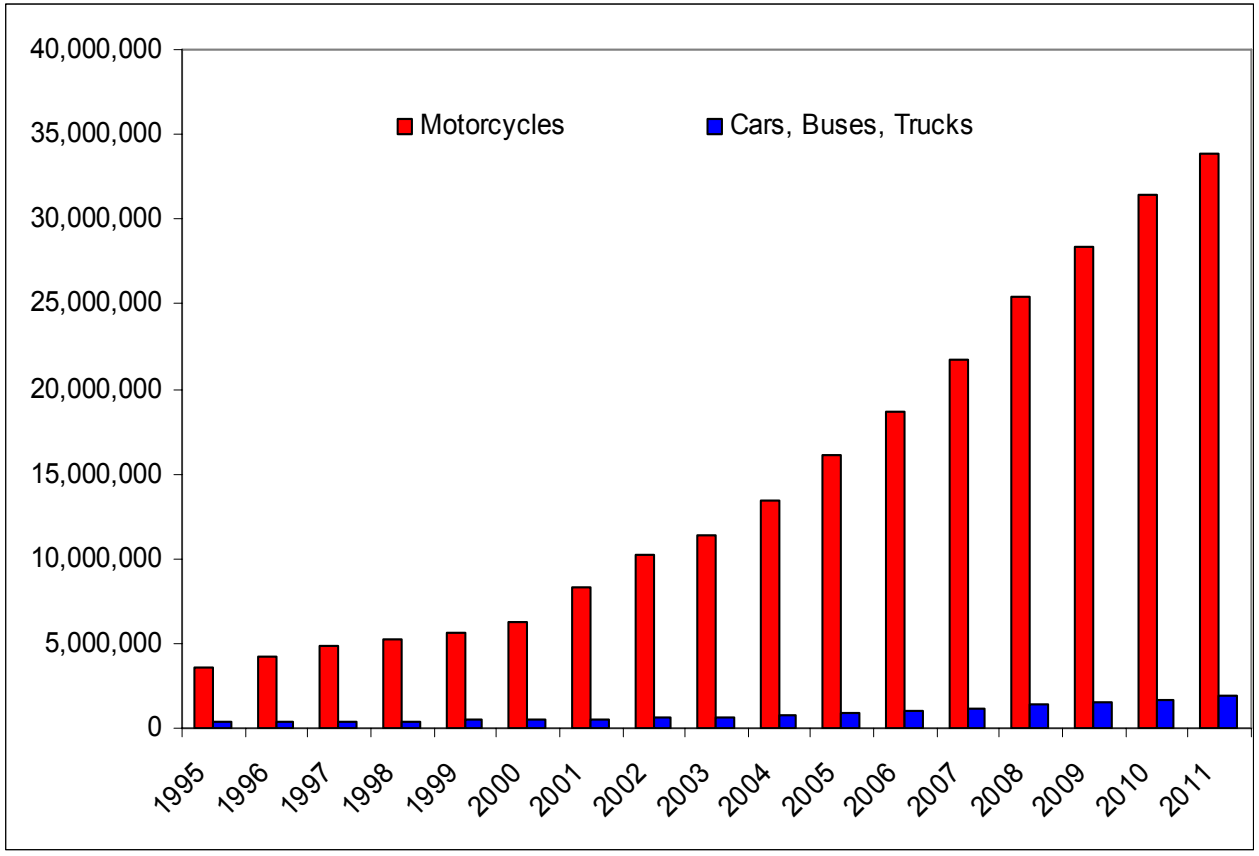
- Large variation in mortality rates
- Anecdotally associated with major transport hubs (national/international roads)

Road safety management



Motorization in Viet Nam

- 87.8 million people (2011)
- 35.8 million registered vehicles (2011)
  - 95% motorcycles
  - > 7,500 new motorcycles per day
  - > 500 new cars per day



Motorcycle Helmets

- Motorcycle helmets are one of the most effective of road safety interventions

- Cochrane meta-analysis
  - 69% reduction in the risk of serious head injury
  - 42% reduction in risk of fatal head injury

- Considering volume of road users, use of not of motorcycle helmets will for the foreseeable future be a major risk factor for road safety in Viet Nam

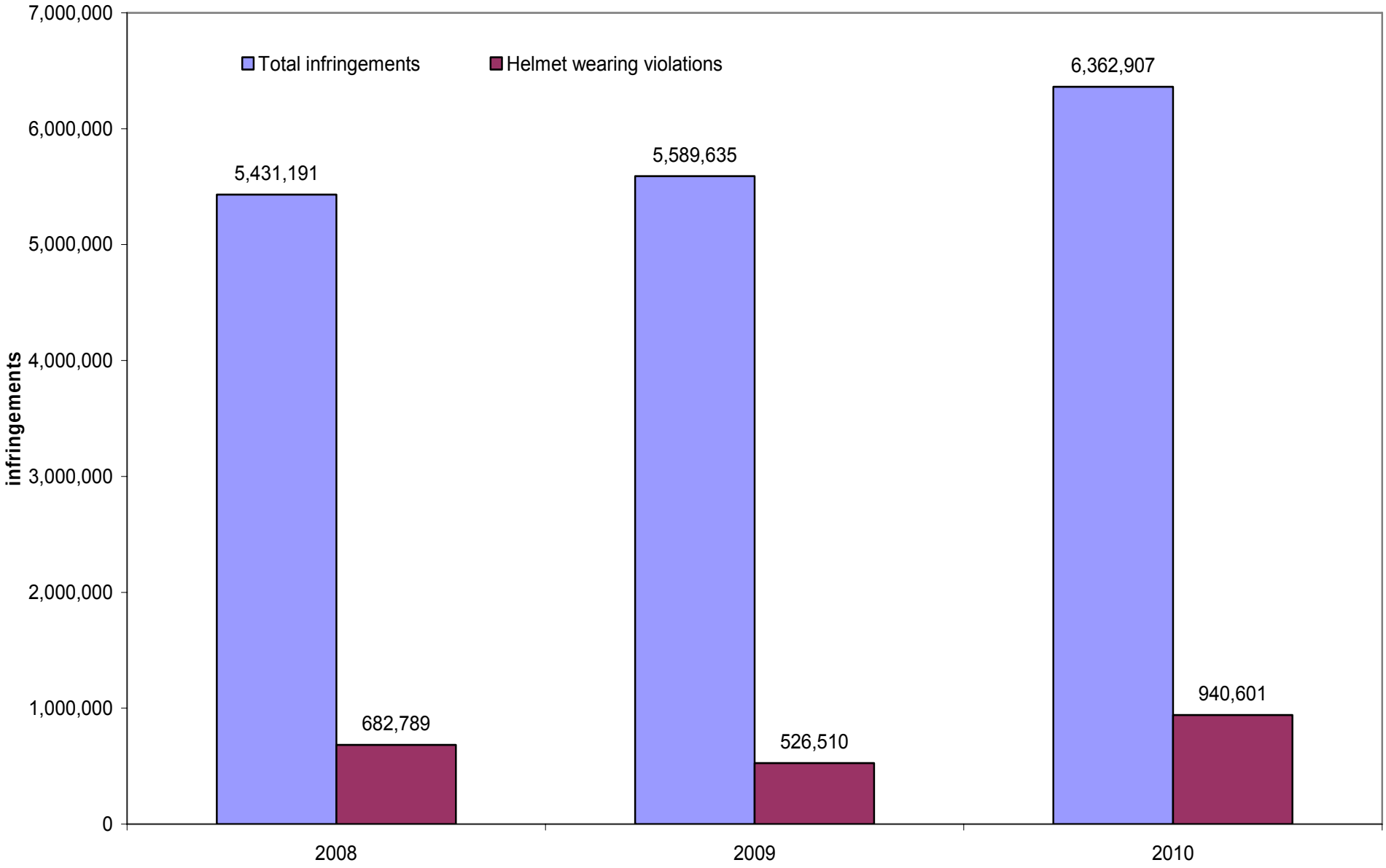
- Mandatory motorcycle helmet law established in December 2007
  - Education/Enforcement model

15 December 2007:
Helmet Law + Enforcement + Education

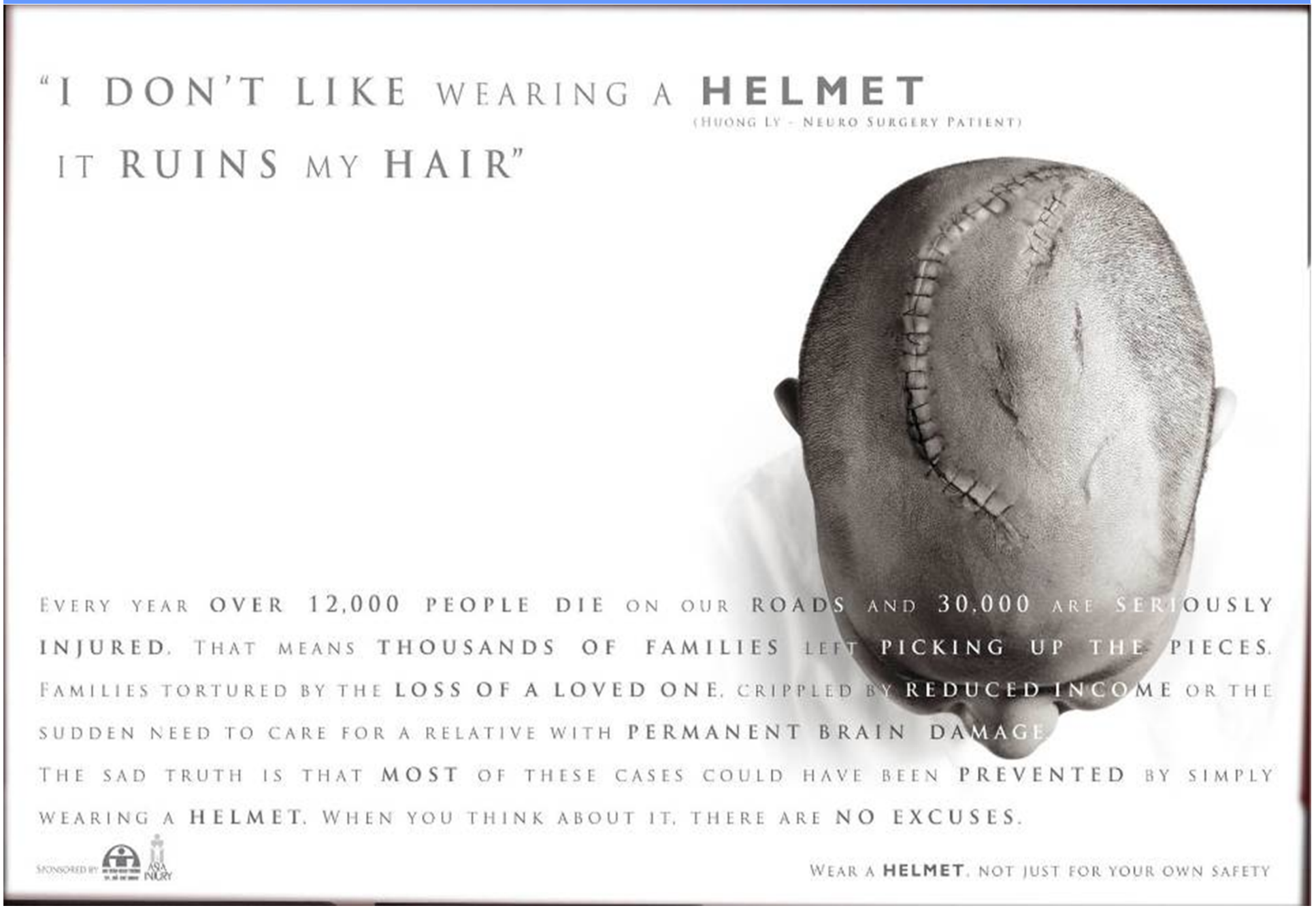
Enforcement for helmet legislation

- 10 fold increase in penalties for not wearing helmet
  - from 20-40K VND (≈USD 1-2) (2005) to 100-200K VND (≈USD 6-12) per offence
- Total traffic infringements 5,431,191
  - 682,789 (13%) for not wearing helmets
  - No reliable data available for 2007
- Ongoing challenge
  - Human resources
  - Maintaining the high levels of enforcement necessary

Infringements – All infringements vs helmets only

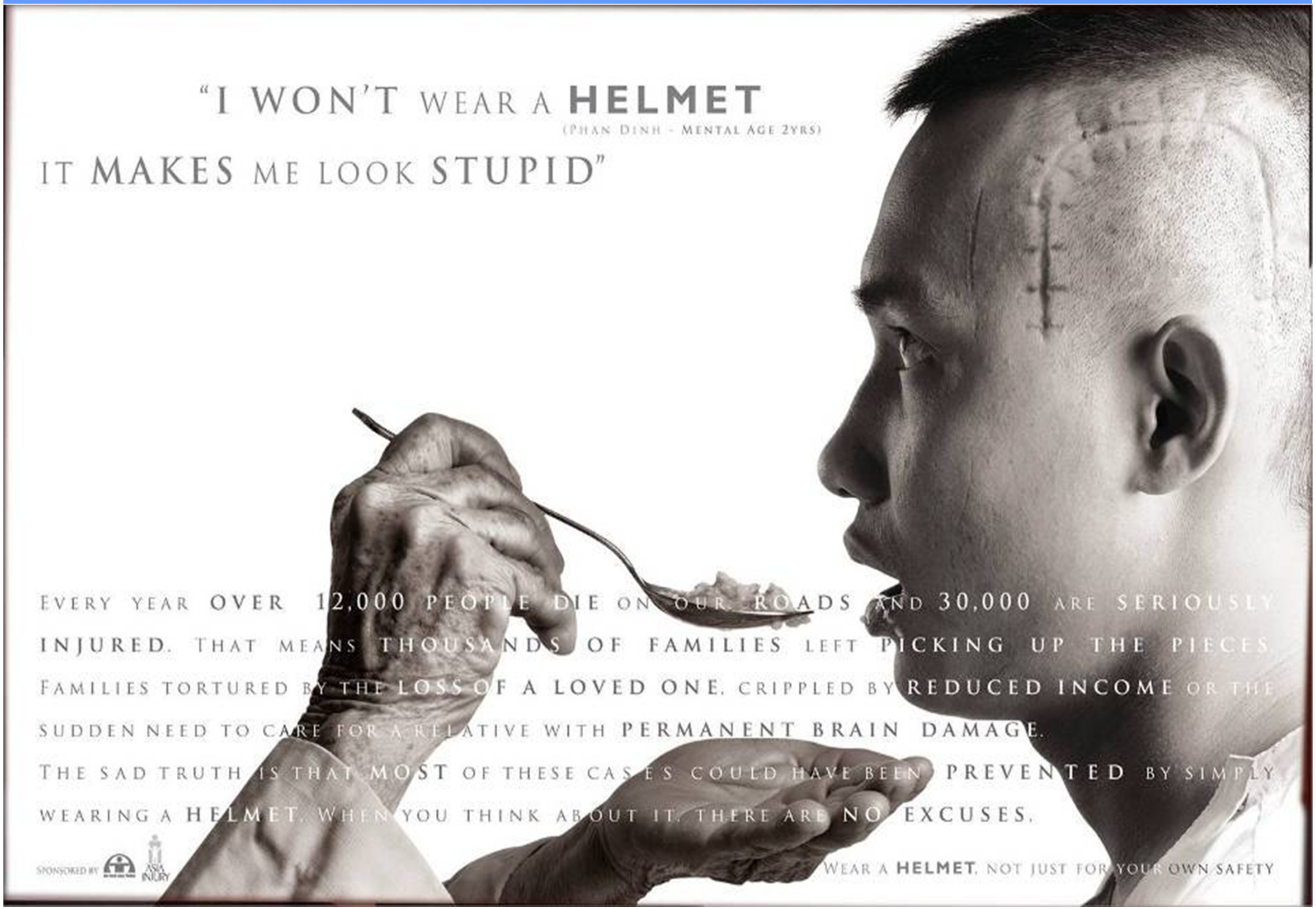


Social marketing

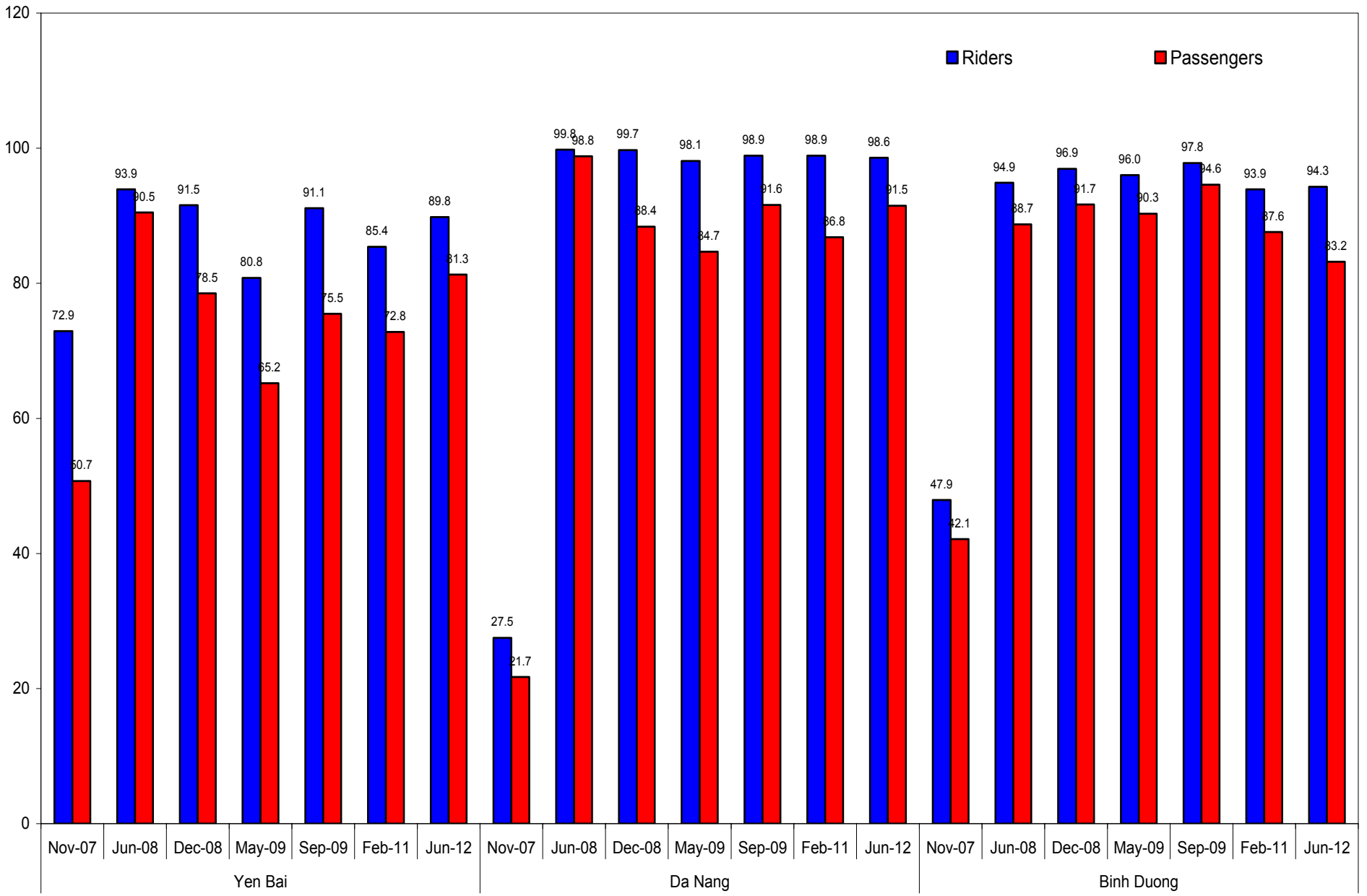


Social marketing

Social marketing



Motorcycle helmet wearing –long term trend



Pre/post law impact – Police data

- Very limited information on impact of helmet law
- Data on all road users, no breakdown for MC riders and passengers only
- 2008 vs 2007
  - 1,557 ↓ death
  - 2,495 ↓ serious injuries
- 2009 vs 2008
  - 149↓ death
  - 212 ↓ serious injury
- 2010 vs 2009
  - 65↓ death
  - 2747 ↑ serious injury

	Deaths	Serious injuries
2007	12,800	11,097
2008	11,243	7,771
2009	11,094	7,559
2010	11,029	10,306
2011	10,950	48,356*

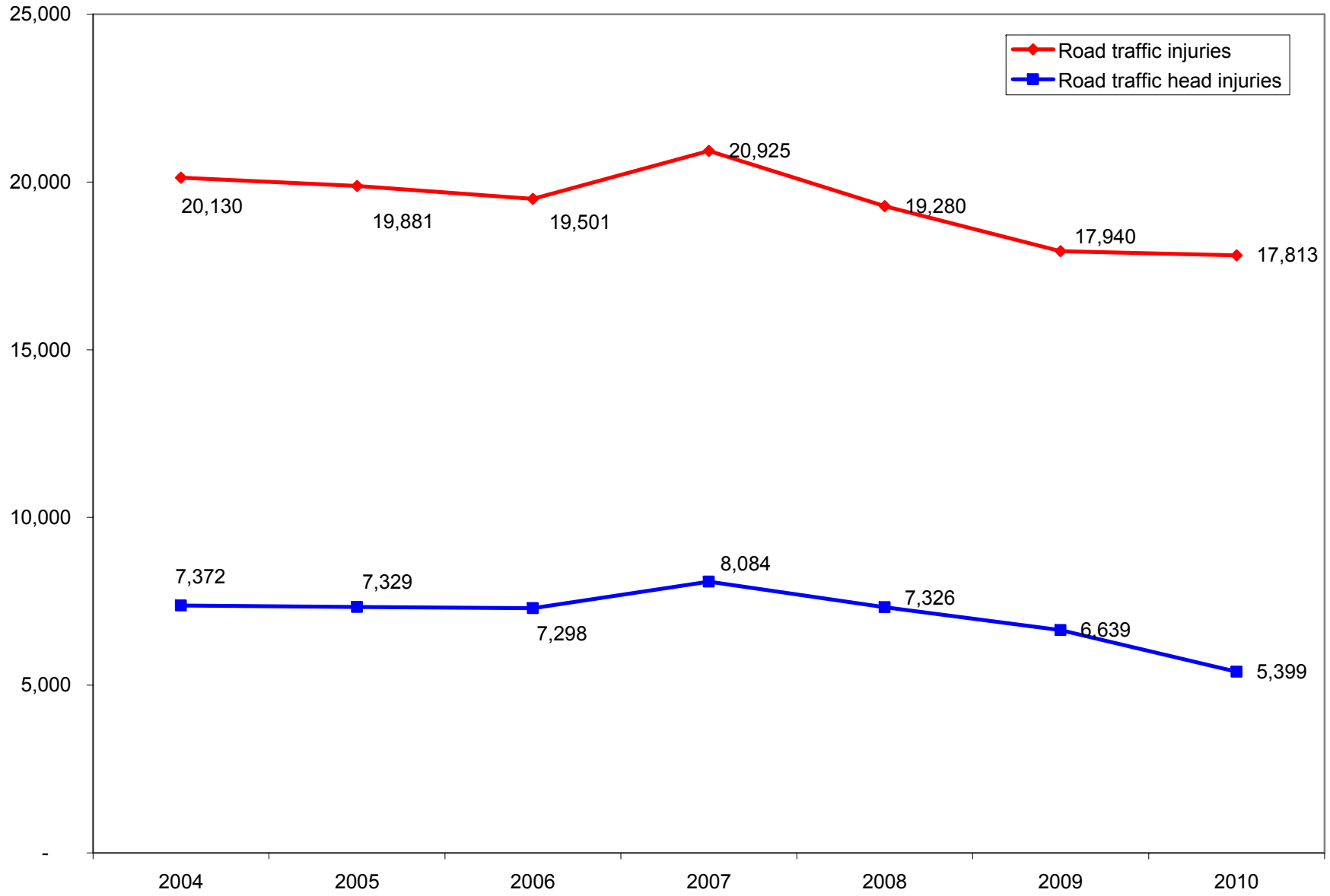
Pre/post law impact – Health data

- National injury surveillance system in operation
- Commenced 2008
  - No pre law data

	2008	2009	2010	2011
Road traffic fatalities	3,102	2,156	1,847	2,102
Road traffic injuries	183,058	143,940	117,317	135,224
% of RTI with head injuries	27.1%	25.3%	17.8%	17.3%

- Declining reporting since
  - 2008 - 92/100 hospitals
  - 2009 – 84/100 hospitals
  - 2010 - 43/100 hospitals
  - 2011 – 49/100 hospitals

Viet Duc Hospital - Head injuries



Pre/post law impact – Viet Duc Hospital

		% change	RR	95% CI
All injuries	2007 vs 2008	-1.04%	0.98*	0.97-0.99
	2007 vs 2010	-5.82%	0.88*	0.87-0.89
Road traffic injuries	2007 vs 2008	-3.16%	0.95*	0.94-0.96
	2007 vs 2010	-1.68%	0.89*	0.87-0.91
RT patients with head injuries	2007 vs 2008	-0.64%	0.98	0.96-1.01
	2007 vs 2010	-7.69%	0.78*	0.76-0.81
RT fatalities	2007 vs 2008	-0.16%	0.76*	0.59-0.99
	2007 vs 2010	0.32%	1.25	0.99-1.56

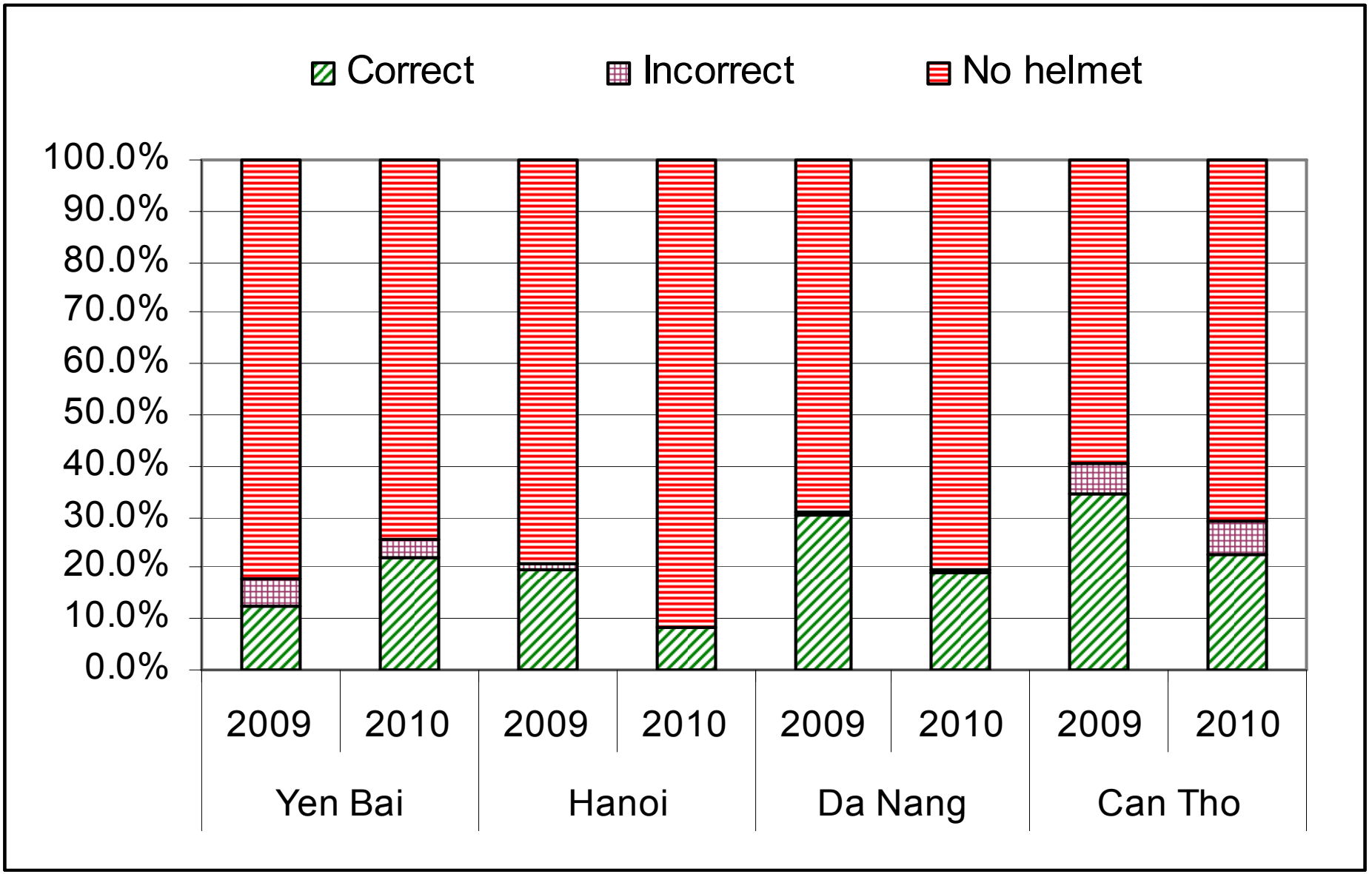
* $P<0.05$

- Limitations of aggregate data
  - No breakdown by age and sex
  - No breakdown by road user type
    - Cant identify MC riders and passengers as a proportion of RTI or head injuries

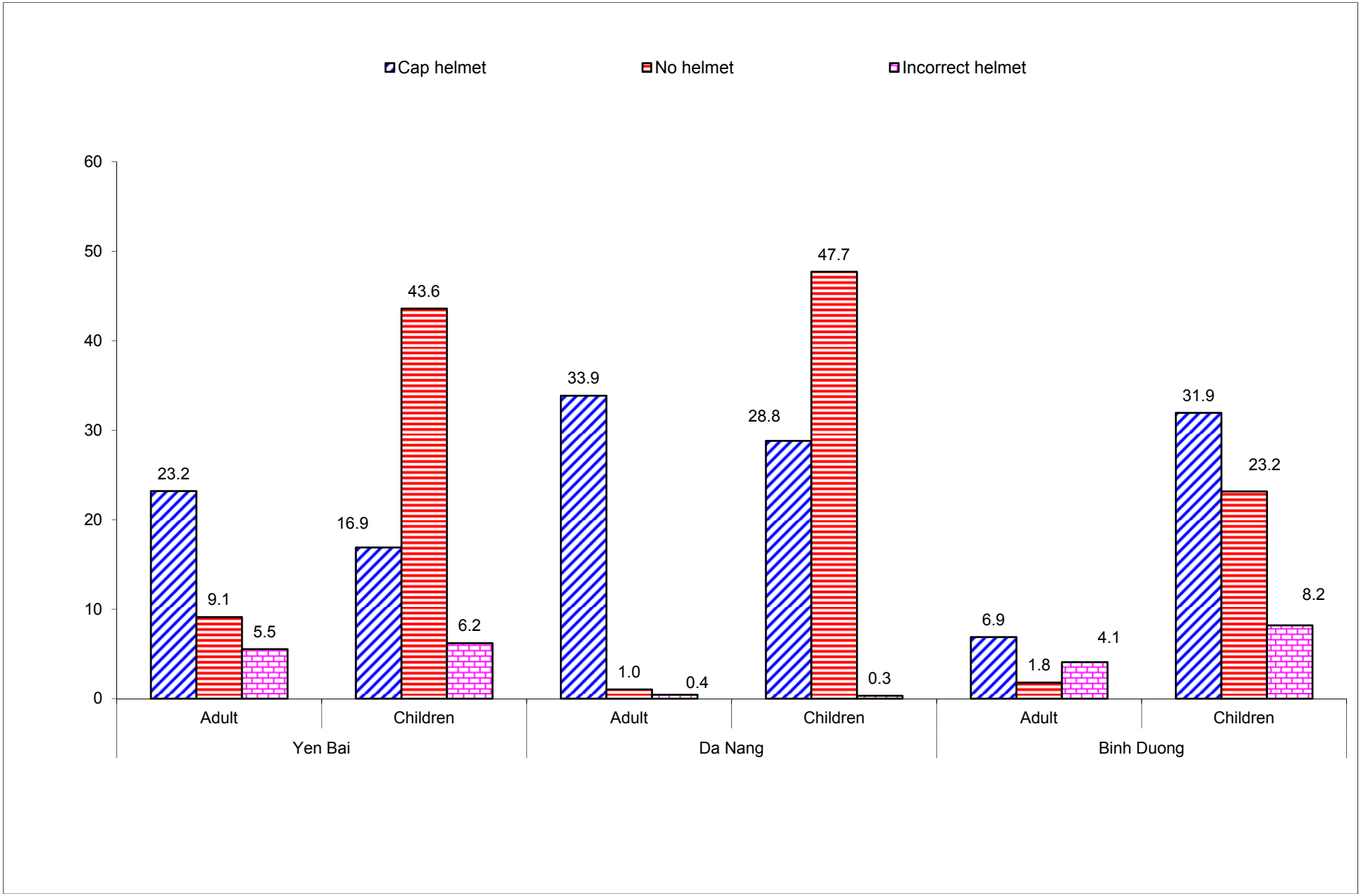
Helmet legislation loopholes

- **Low wearing rate among children <16 years**
  - 39%, 2008 (AIPF)
  - 21% December 2010 (HSPH & WHO)
  - Many parents believe helmets are dangerous for children
  - Adults can now be penalised however negligible enforcement
- **Incorrect helmet wearing**
  - Dec 15 law contained no ability to enforce unfastened helmets
  - Revised Nov 13 2008, police define un-fastened as un-worn
- **Low quality helmet**
  - Only 20% meeting standard (VINASTAS)
  - Surveys in major cities estimate 30% & 45% meeting standards
  - High use of banned “cap” style helmets
  - New standards Nov 15 2008

Helmet wearing in primary school aged children



Child helmet wearing February 2011




COMFORT SAVICO TAXI
SUZUKI


COMFORT SAVICO TAXI
SUZUKI

Quality of standard helmets

✓ ✗ ✗ ✗ ✓

Some helmets are better than others!

Helmet quality

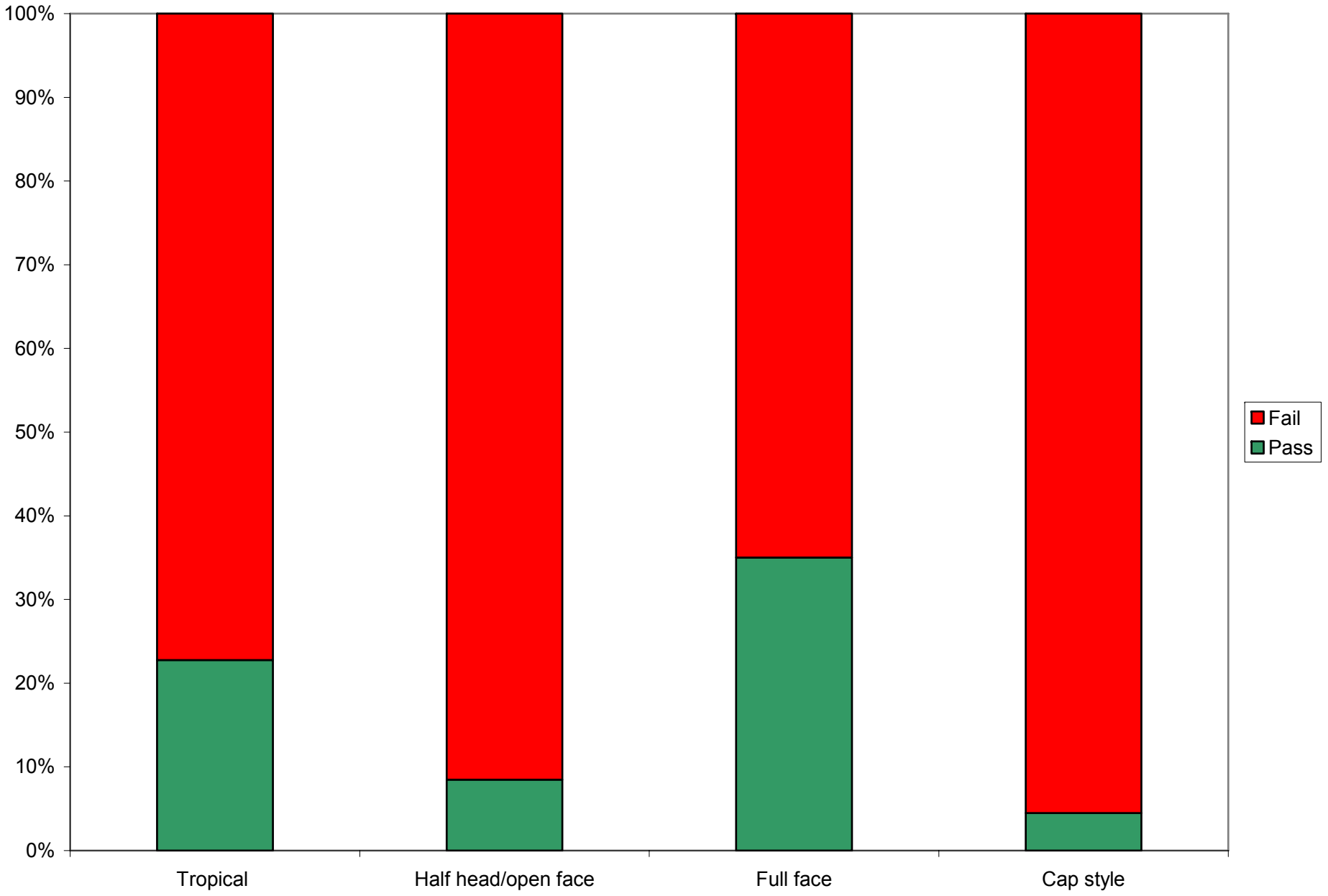
- Exchange survey
  - 581 helmets exchanged in Ha Nam, Ninh Binh and Bac Giang

Primary reason for helmet (%)	Safety	Police
Ha Nam	49.5	47.9
Ninh Binh	60.9	34.5
Bac Giang	52.3	47.7
All	54.3	43.3

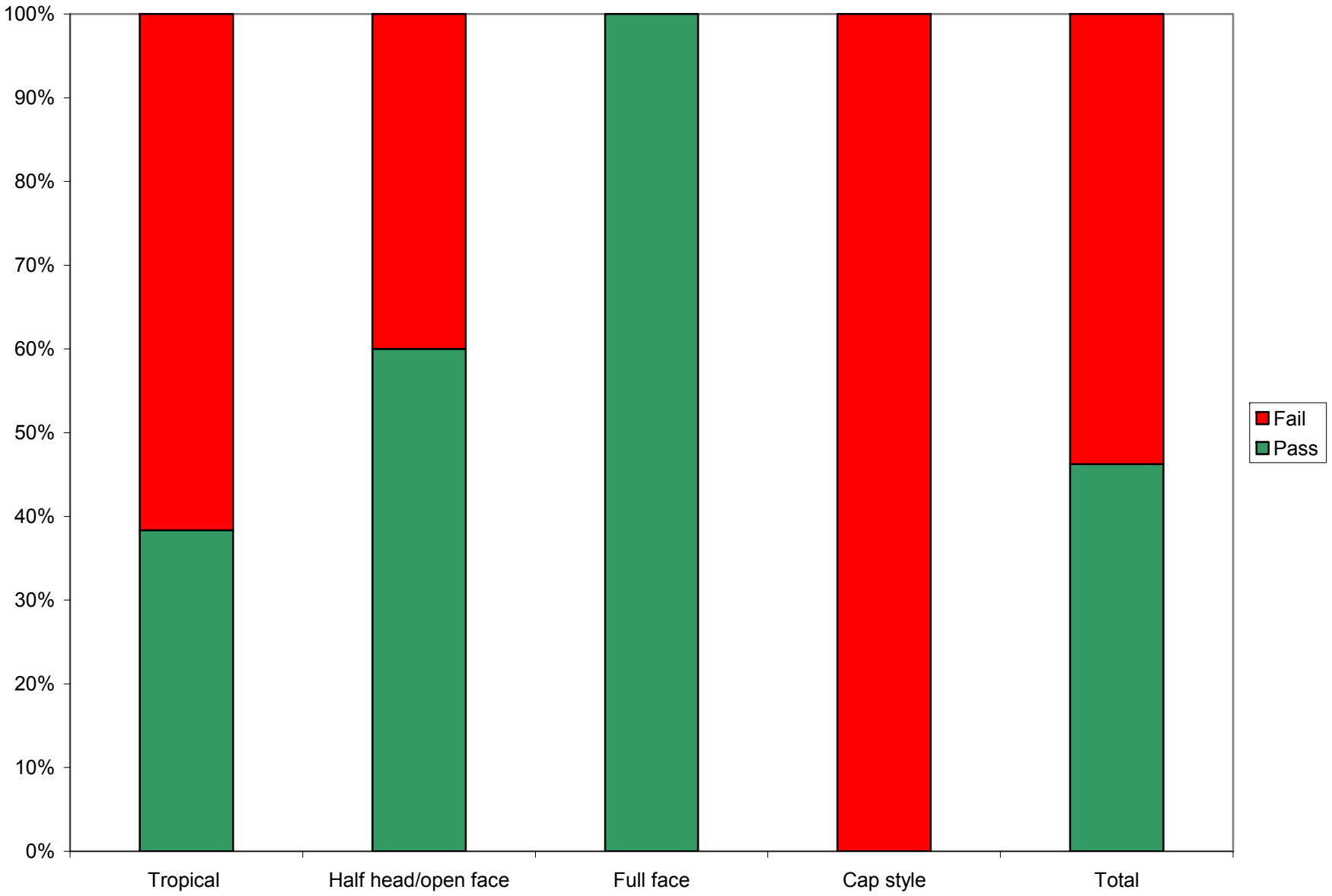
  - 15% of respondents wearing substandard helmets believed would protect them in the event of a crash

- Market survey
  - 80 helmets randomly selected from list of 444 helmets registered with MST

Quality of helmets – Exchange survey



Quality of helmets – Market survey



Motorcycle helmets - Quality?

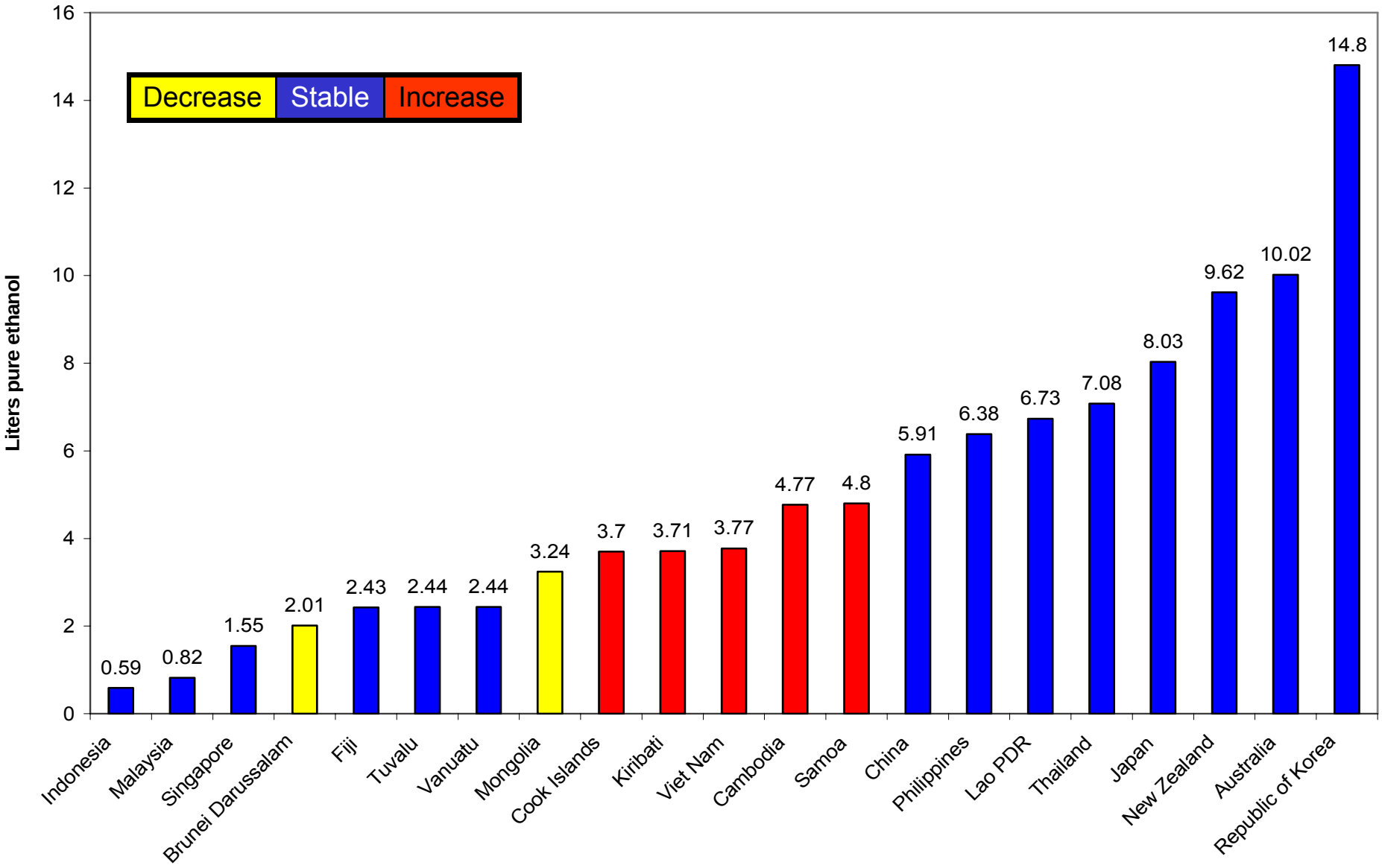
Motorcycle helmet wearing –long term trend

- Helmet wearing has increased substantial since the 2007 helmet law and high wearing rates have been maintained since

BUT

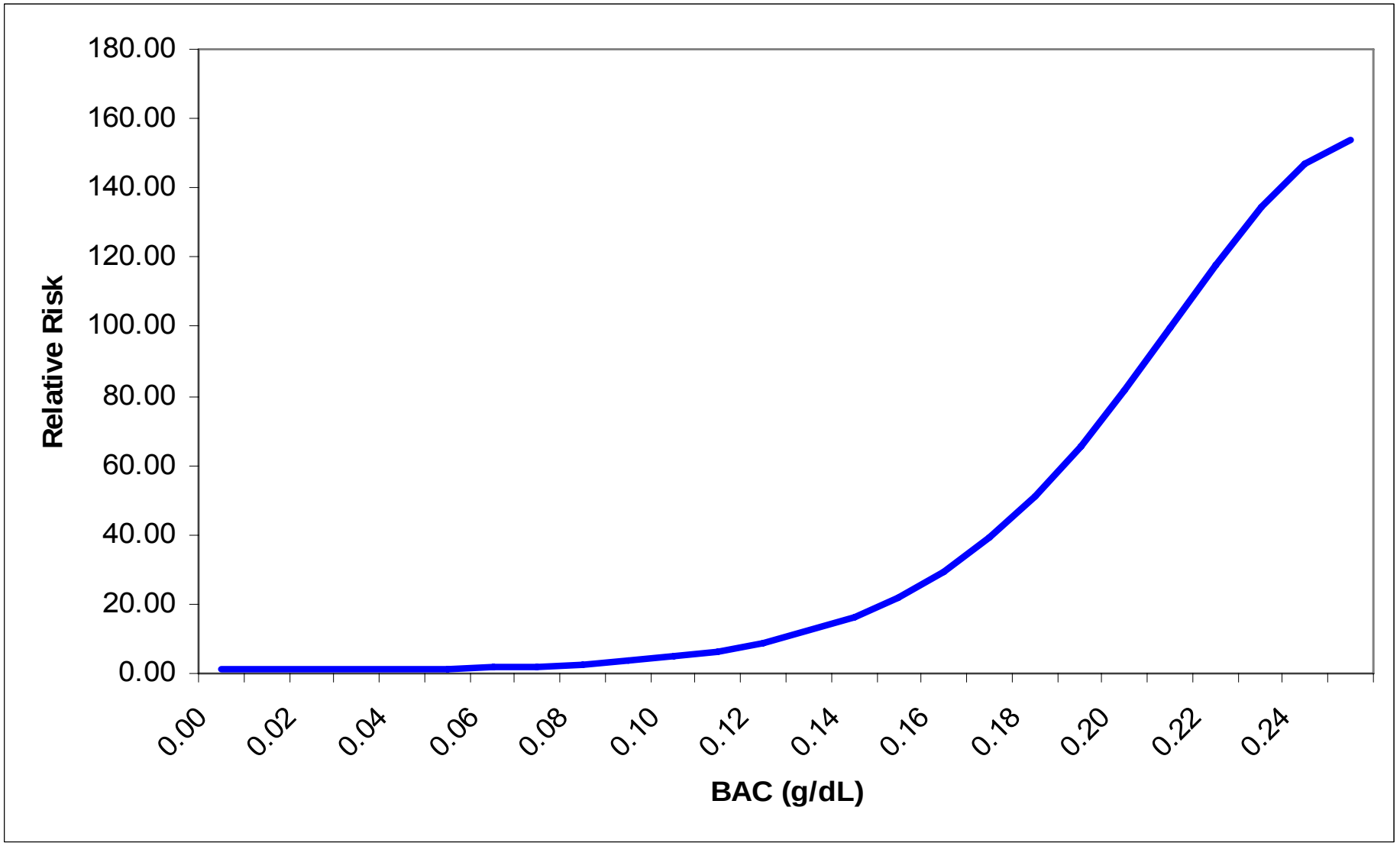
- Issues of low helmet quality and not wearing helmets correctly have the potential to seriously impact the injury prevention potential of this legislation and the fact that the majority of motorcycle riders and passengers are wearing helmets

Alcohol consumption, 2005 (change 2000-2005)



Source : Global Alcohol Status Report, 2011

Crash risk



Source: Compton et al 2002

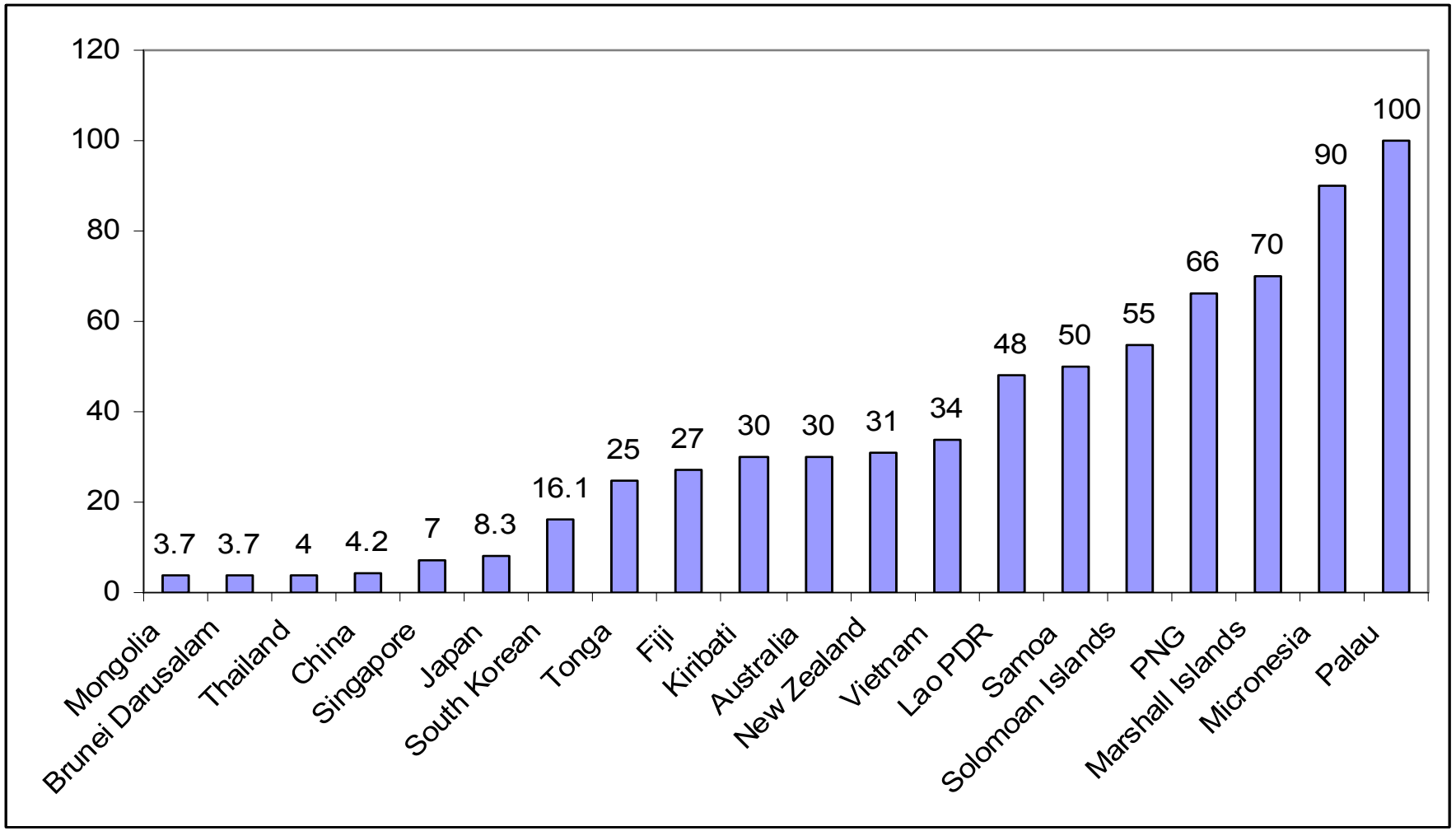
Crash risk motorcycles

BAC (g/dL)	Unadjusted OR	Adjusted OR	
		Age group	Licence status
>0.00	5.6 (2.4-13.1)	5.2 (2.2-12.5)	4.9 (2.0-11.8)
>0.05	44.3 (5.5-353.2)	38.3 (4.6-318.6)	39.4 (4.7-329.7)

Source: Haworth 1997

- Limited information available
- Indicative that crash risk substantially higher for MC than vehicle drivers

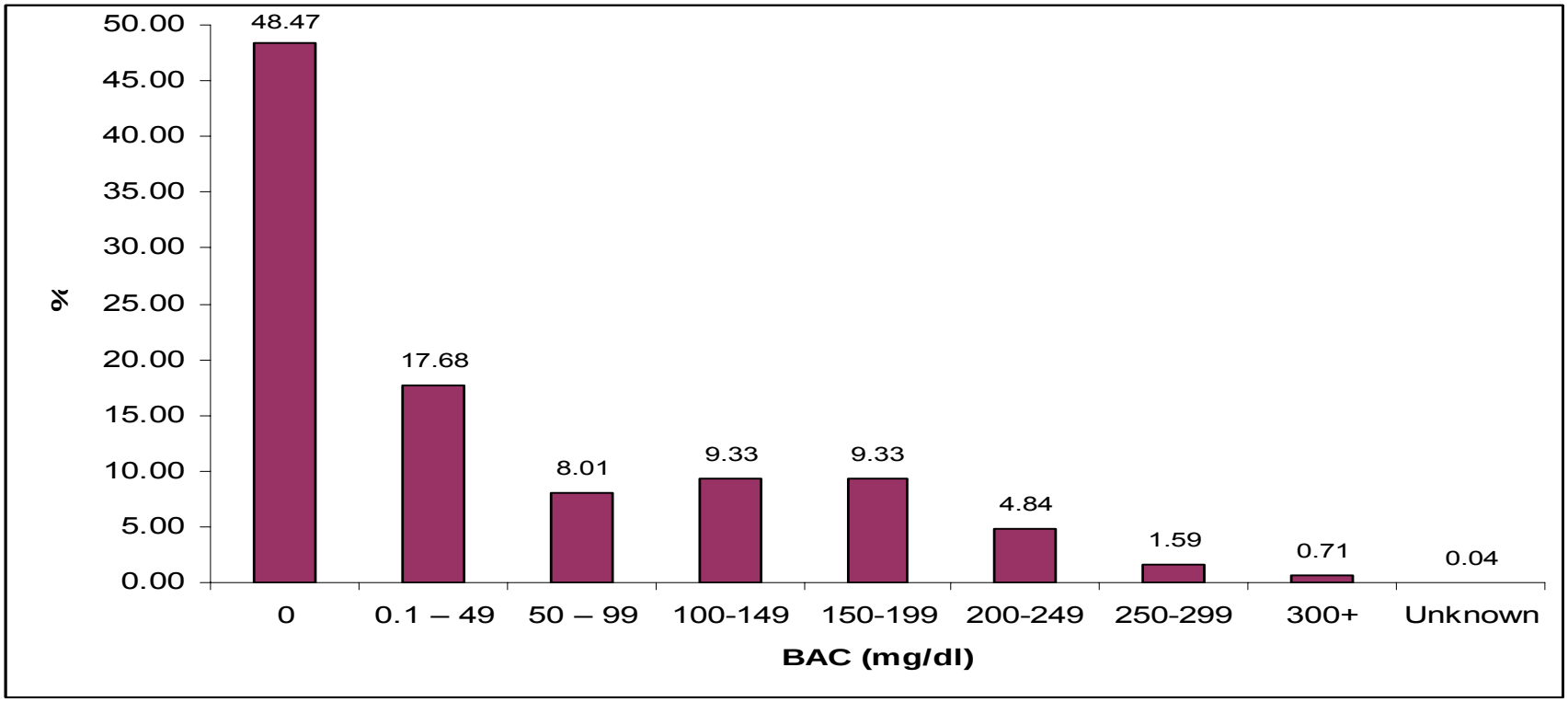
Burden of drink driving in regional countries



- No data reported from many regional countries

Source: WHO, 2009

Drink Driving



- BAC testing of hospital RTI patients not routinely conducted
- Survey, July 2009 to October 2010 in six Vietnamese hospitals
- Results from 18,412 consenting patients of the 48,808 RTI patients who presented
- BAC results ranged from zero to 589mg/dl blood
- 48% of patients had no detectable alcohol
- 36% of MC riders tested had a BAC above the legal limit (50mg/dl)
- 66.8% of car & other vehicle drivers tested had a BAC above zero mg/dl

Legislation for drink driving prevention in Viet Nam

- Road Safety Law 2008
  - Motorcycle riders
    - Reduced BAC threshold from 0.08mg/dl blood to 0.05mg or BrAC 0.25mg/L breat
  - All other vehicles
    - Reduced BAC threshold from 0.08mg/dl blood to ZERO
  - Corrected error in previously defined partition rate
    - BrAC 40mg/L breath in 2001 law corrected and reduced to 0.25mg
- Decree 34
  - Specifies the penalties applicable for breaches of road safety law

Two new enforcement billboards

Two new enforcement billboards

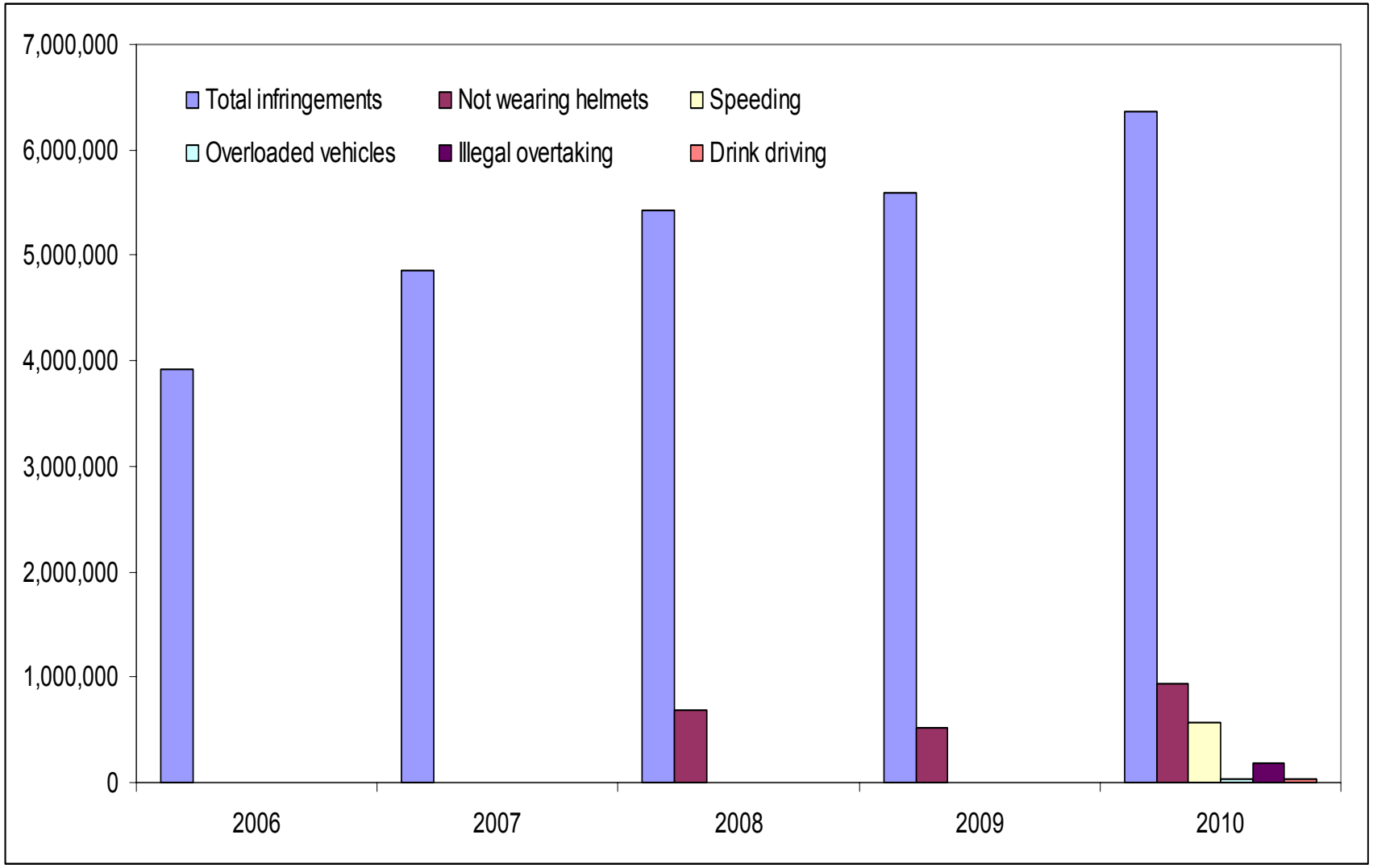
Social marketing

Drink drive – Glasses

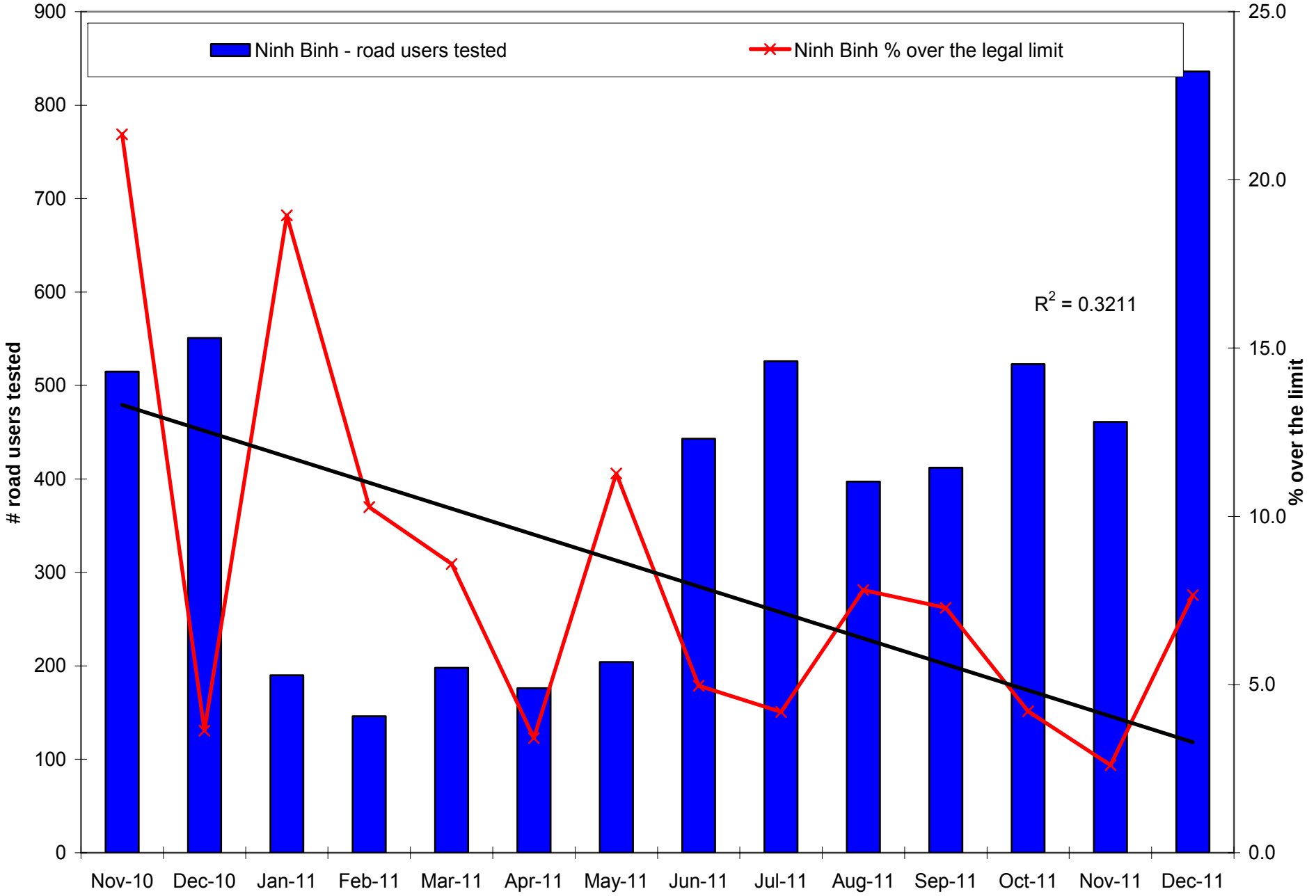
Drink drive – Consequences

Roadside enforcement operations

Infringements



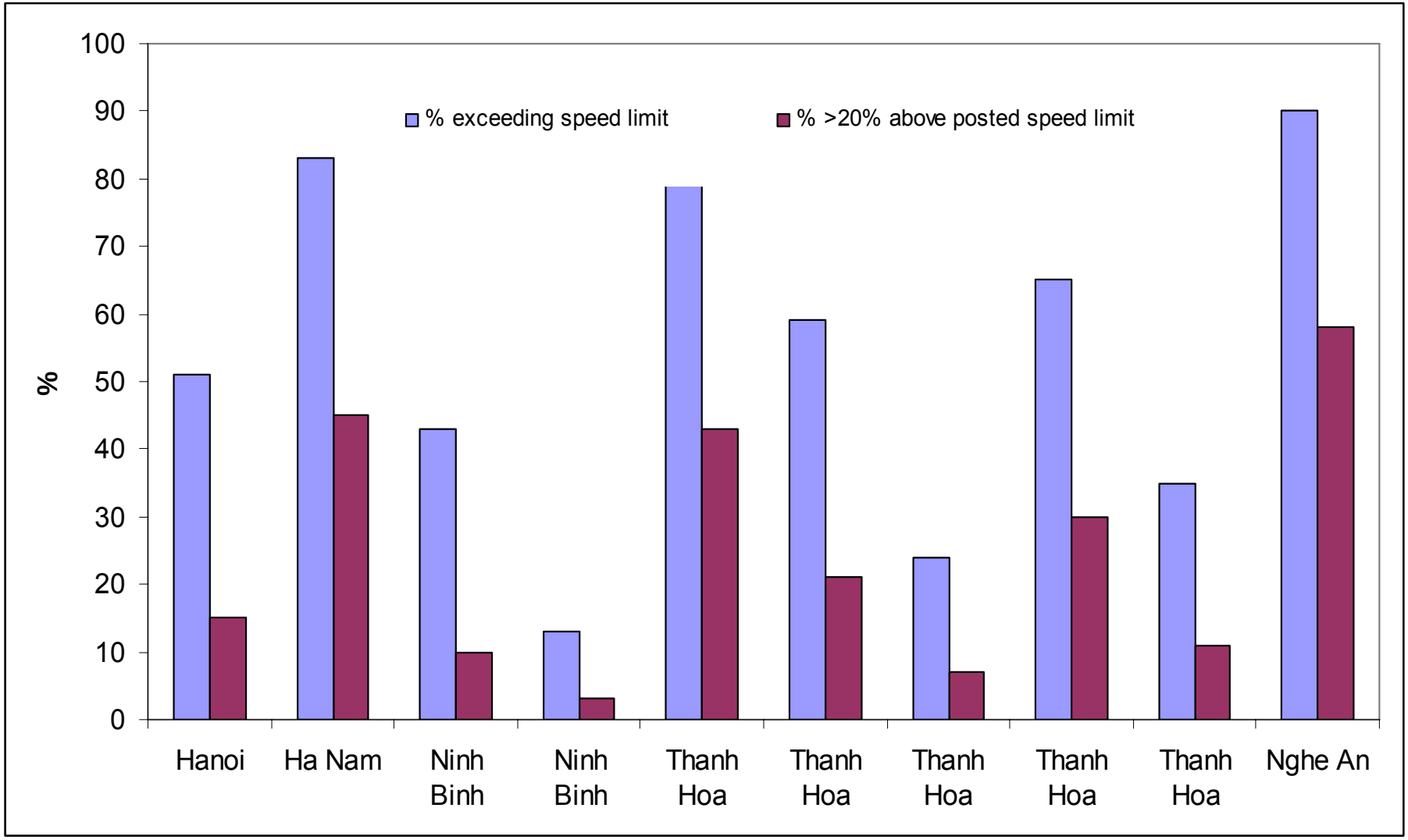
Roadside enforcement operations – Ninh Binh



Speed limits

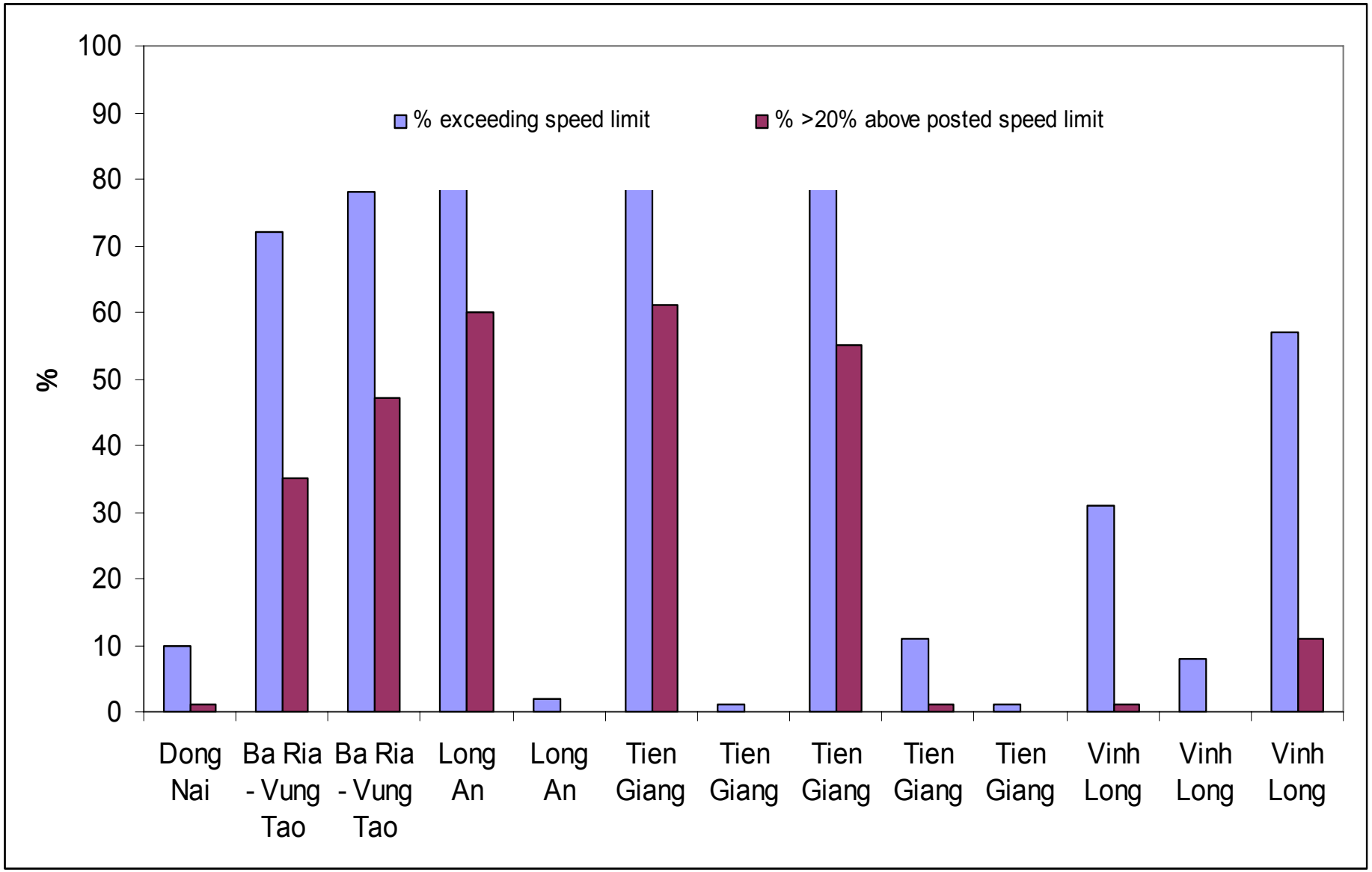
	Maximum speed on roads in residential areas	Maximum speed on roads in non-residential areas
Passenger vehicle ≤ 30 seats; truck with a load capacity of < 3,500 kg	50	80
Passenger vehicle > 30 seats; truck with a load capacity of ≥3,500kg; semi-trailer truck; trailer truck; towing vehicle; special-use automobile or truck; motorcycle; motorized bicycle	40	70
Bus; semi-trailer truck; special-use automobile or truck; motorcycle. Trailer truck; towing vehicle; motorized bicycle.	40	60

Speeding –Motorcycle riders



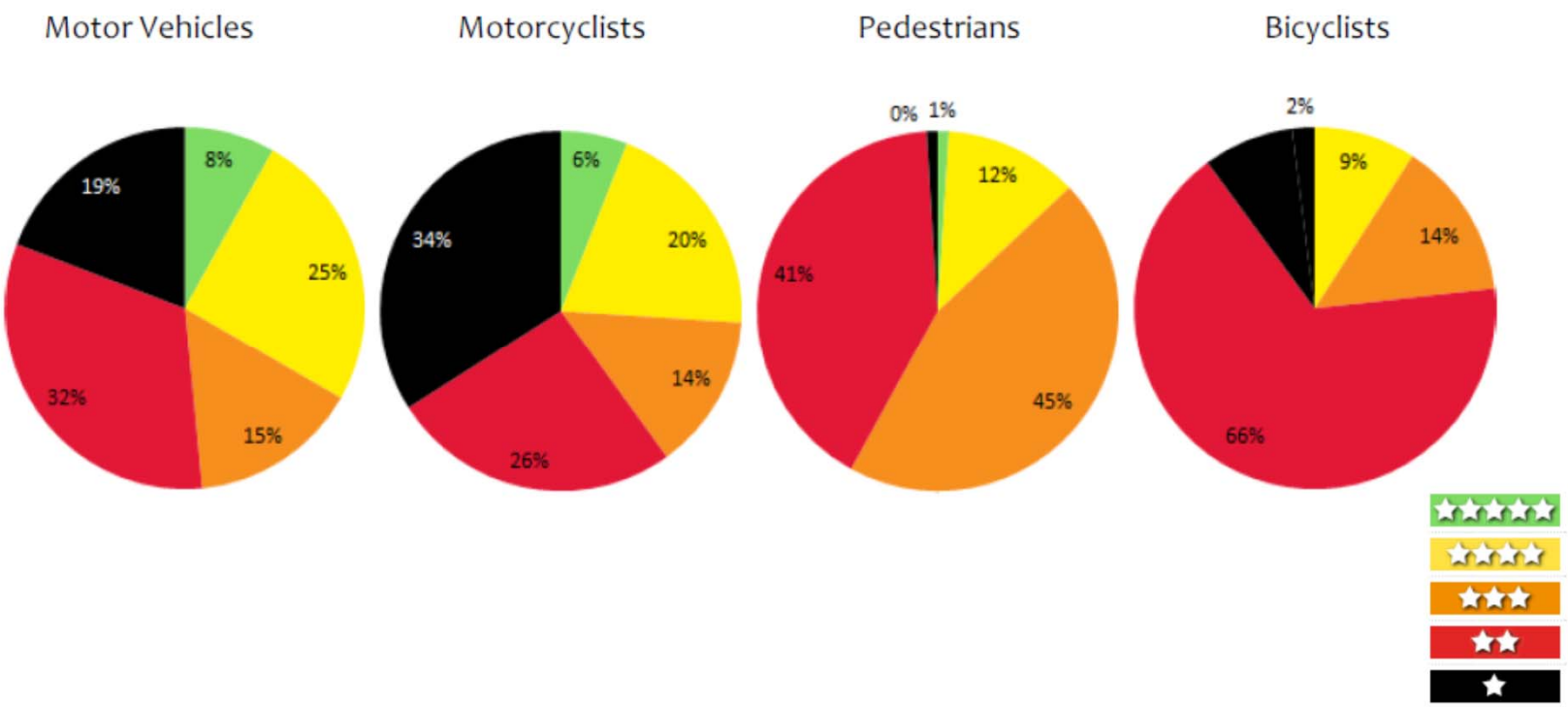
Source Vietnam Road Safety Project, 2010

Speeding –heavy vehicles



Source Vietnam Road Safety Project, 2010

Safety of road infrastructure



- 3513 km of national highway assessed
- 66% undivided
- 85% has no pedestrian facilities
- 97% has no motorcycle specific infrastructure (86% sealed shoulders)
- 65% roadside hazards

Mobile Phone use

- Anecdotally widespread
- Illegal BUT not enforced

Other major risk factors

- Seat belts
  - wearing required for driver/FS passenger
  - Not enforced
  - No data on impact
- Child restraints
  - No requirement for children to be transported in age appropriate restraint
  - No data on impact
- Overloading
- Running red lights/Counter-flow
  - Anecdotally very common practices
  - No data on prevalence or on impact

Mandatory use of child restraints can reduce child deaths by up to 35%.

Correctly used seat-belts reduce the risk of death in the event of a crash by up to 61%.

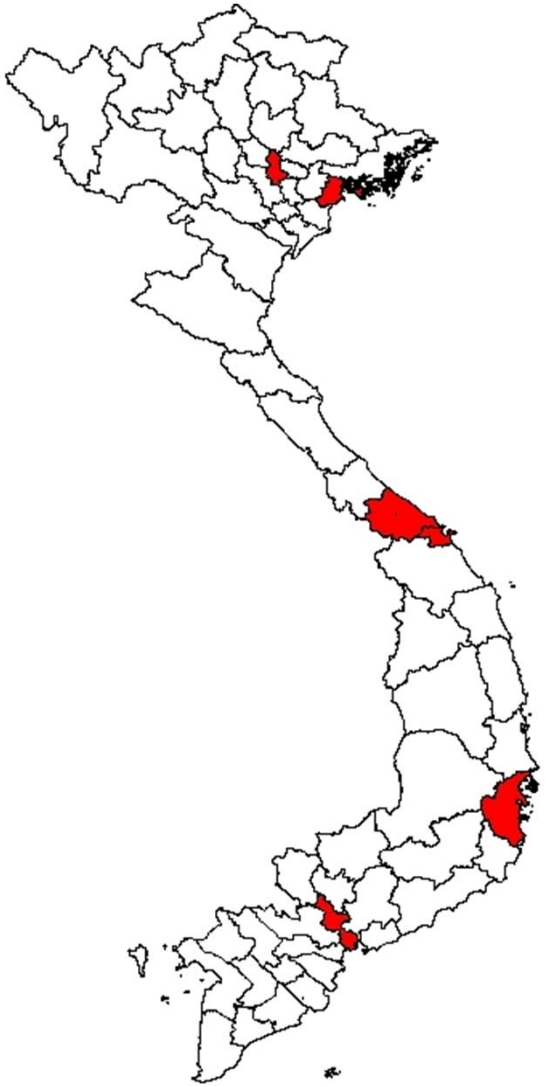
Pre hospital Services in Viet Nam

- 6 provinces have formal EMS services (115)
- Majority utilize ambulance services of the provincial hospital
- 115 related services are privately provided

- Grassroots networks
  - 4.5M Red cross volunteers
    - What mechanisms to secure involvement of volunteers?
  - Staff of 11,000+ Commune Health Stations
    - Part of formal job description and duties?

- Estimated that only 10% of road traffic injured patients receive some form of PHTC
  - 50% of those are receiving inappropriate care
  - Capacity building/refresher training to ensure quality of ca

- Many dedicated people and much being done well.
- Much interesting work underway
    - MOH, DOHs, CPI, WHO, Red Cross, VRSP
- 115 Centers and formal ambulances
- First aid training for first responders
    - Police, commercial drivers, village volunteers on major roads



How is WHO working on PHTC in Viet Nam

Working with MOH to develop and implement a model for sustainable model for pre-hospital care

Objectives:

- Strengthen first aid capacity in

for providing first and second tier care, by developing a standardized training program, training to the standard and equipping trained volunteers with 1st aid kits.

- Monitor the quality of care provided to

identify gaps for improvement & collate information for policy makers

- Reinforce the operation of the pre-hospital trauma care system

through development of an appropriate protocol for the Ministry of Health, emergency medical services and other groups.

Further information

www.who.int/violence_injury_prevention/publications/road_traffic/en/index.html

WHO Viet Nam Web Site

www.wpro.who.int/vietnam/topics/injuries

References

- Pervin A, Passmore J, Sidik M, McKinley T, Nguyen THT, Nguyen PN. Viet Nam's mandatory motorcycle helmet law and its impact on children. *Bull World Health Organ* 2009;87:369-73.

- Passmore J, Nguyen THT, Luong MA, Nguyen DC, Nguyen PN. Impact of mandatory motorcycle helmet wearing legislation on head injuries in Viet Nam: results of a preliminary analysis. *Traffic Inj Prev* 2010;11:206-2010

- Passmore J, Nguyen LH, Nguyen NP & Olivé J. The formulation and implementation of a national helmet law: a case study from Viet Nam. *Bull World Health Organ* 2010;88:783-787.

- TRAN, T.N., BACHANI, A.M., PHAM, V.C., LUNNEN, J.C., YOUNGJI, J., PASSMORE, J.W., NGUYEN, N.P. & HYDER, A.A. Drinking and driving in Viet Nam: Public Knowledge, Attitudes and Practices. Traffic Injury Prevention. 13: sup1, 37-43.

- <u>IN PRESS</u>
- NGUYEN, P.N., PASSMORE, J., LAN, T.T.N. & LUONG, M.A. Role of alcohol in hospitalized road trauma in Viet Nam. In press with Traffic Injury Prevention

- NGUYEN, T.H., PASSMORE, J., CUONG, P.V & NGUYEN, P.N. Compliance with Viet Nam's mandatory motorcycle helmet wearing legislation. In press with International Journal of Injury Control and Safety Promotion

Acknowledgements

- National Traffic Safety Committee (NTSC) and all Government agencies responsible for road safety in Viet Nam
- Bloomberg Philanthropies for supporting the RS10 program in Viet Nam
- Hanoi School of Public Health (data collection)
- Colleagues from the A1.1 component of the VRSP
- Dr Nguyen Duc Chinh for data from Viet Duc Hospital
- Dr Terry Smith (Helmets standards)
- Asia Injury Prevention Foundation (social marketing materials)

THANK YOU

passmorej@wpro.who.int