

The Road to Safe Cities

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Four back to basics – a new “B2B” – outline

1. *Urban planning for traffic management*: but urban splintering, new mobility, travel prevention
2. *Traffic management for urban planning*: often compromised in infrastructure projects but a boon for sustainable city development
3. Working together on risk management and infrastructure planning for *securing cities* from human and natural hazards, epidemics, disasters
4. Why contributing *traffic management for road safety* in the Asia-Pacific region also gets us back to basics



'B2B' (1) – Urban planning for traffic management

- Australia *a leader* in road safety and traffic management - recognised internationally; exporter of systems
- But in Australia, *what can urban planning do* for road safety? NB – safety and security are location factors
- “Perhaps *the least used* of all road safety intervention strategies are those that aim to reduce exposure to risk [through transport and land use policies]” WHO/WB
- It is only *a small subset* of many road safety policy instruments



Urban planning is small in road safety (WB+WHO)

INTERVENTIONS

1. Transport and land-use policies

a. Reducing motor vehicle traffic

- i. Efficient land use
- ii. Safety impact assessments
- iii. Providing shorter, safer routes
- iv. Trip reduction measures

b. Encouraging use of safer modes of travel

c. Minimizing exposure to high-risk scenarios

- i. Restricting higher occupancy vehicles
- ii. Restrictions on speed / engine performance
- iii. Increasing the legal age
- iv. Graduated driver licensing systems

2. Road network

a. Safety-awareness in planning road networks

- i. Classifying roads / speed limits by function

b. Safety features in road design

- i. Higher-speed roads
- ii. Single-lane carriageways
- iii. Residential access roads
- iv. Area-wide urban safety management

- v. Safer routes for pedestrians and cyclists.

- vi. Traffic-calming measures.

- vii. Safety audits

- viii. Crash-protective roadsides

- ix. Crash dust storms

c. Remedial action at high-risk crash sites

3. Vehicles

a. Improving the visibility of vehicles

- i. Daytime running lights for cars
- ii. High-mounted stop lamps in cars
- iii. Daytime lights motorized two wheelers
- iv. Improving visibility of non-motorized vehicles

b. Crash-protective vehicle design

- i. Safer car fronts for pedestrians and cyclists
- ii. Safer bus and truck fronts
- iii. Car occupant protection
- iv. Vehicle-to-vehicle compatibility
- v. Design of non-motorized vehicles

c. "Intelligent" vehicles

- i. "Smart", audible seat-belt reminders
- ii. Speed adaptation

- iii. Alcohol interlocks

- iv. On-board electronic stability programmes

4. Compliance

a. Speed limits

- i. Speed enforcement on rural roads
- ii. Speed cameras
- iii. Speed limiters in heavy vehicles

b. Alcohol impairment laws

- i. Blood alcohol concentration limits
- ii. Lower limits young or inexperienced drivers
- iii. Minimum drinking-age laws
- iv. Deterring excess alcohol offenders
- v. Random breath testing / sobriety checkpoints
- vi. Mass media campaigns
- vii. Penalties for excess alcohol offenders
- viii. Interventions for high-risk offenders

c. Drugs

d. Drivers' hours of work

e. Cameras at traffic lights

f. Setting and enforcing seat-belt and child restraint use

- i. Seat-belts

- ii. Enforcement and publicity

- ii. Incentive programmes

- iv. Child restraints

- v. Mandatory child restraint laws

- vi. Child restraint loan programmes

g. Setting and enforcing mandatory crash helmet use

- i. Bicycle helmets

- ii. Motorcycle helmets

- ii. Mandatory laws on helmet wearing

h. The role of education, information and publicity

5. Delivering post-crash care

a. Chain of help for patients

b. Pre-hospital care

- i. Role of lay bystanders

- ii. Access to the emergency medical system

- ii. Emergency rescue services

c. The hospital setting

- i. Human resources

- ii. Physical resources

- ii. Organization of trauma care

d. Rehabilitation

e. Research

Urban planning interventions

All road safety interventions

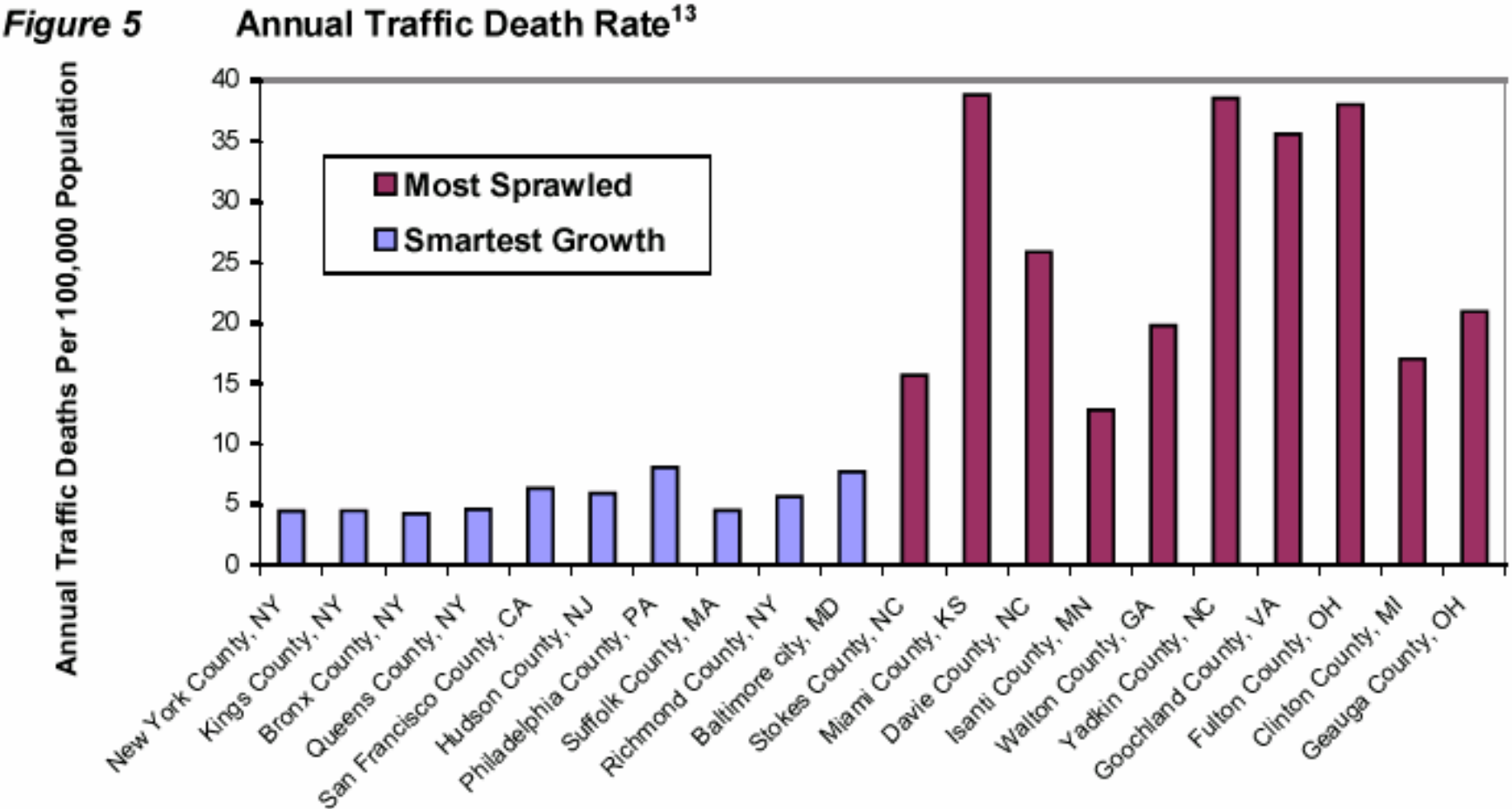
Urban planners help traffic planners and managers

- Most metropolitan strategies – certainly Sydney Melbourne and Brisbane – have measures that *happen* to make cities safer but safety and security are not stated as major drivers
- At least the same measures are picked up *explicitly* by TPM eg in Road Safety 2010 etc
 - Reduce motor vehicle traffic via better land use
 - Provide efficient transport networks
 - Encourage switch to safer modes
 - Restrict vehicle use
 - Raise population density
 - More compact urban form
 - Clustered, mixed land uses
 - Connectivity, teleworking
 - Restricted parking
 - Congestion / traffic pricing / integrated smartcards



Smart growth is better than sprawl

(Litman 2003)



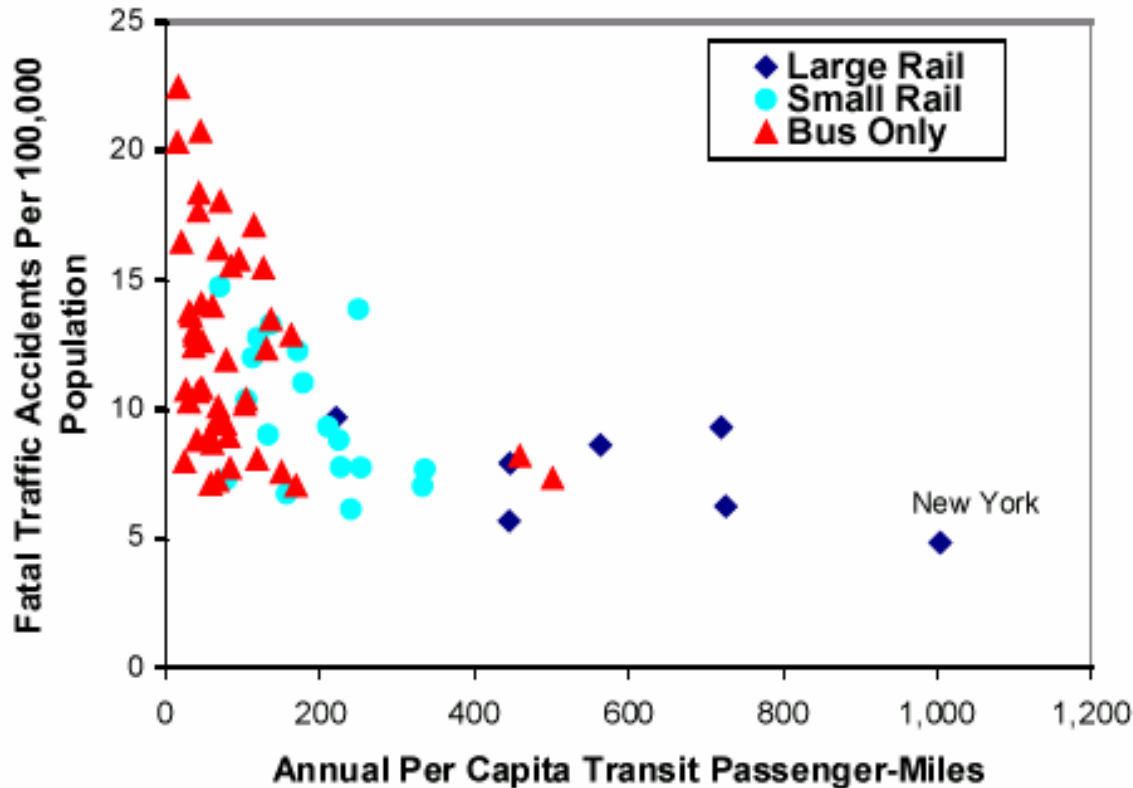
The ten most sprawled U.S. communities have about five times the per capita traffic fatality rate as the ten Smartest Growth communities.



High transit is safer than low transit

(Litman 2003)

Figure 7 Fatal Traffic Accidents¹⁵



Per capita traffic fatalities tends to decline with increased per capita transit ridership. Since cities with large rail systems tend to have higher transit ridership, they tend to have fewer traffic fatalities. These values include all deaths, including those in transit vehicles, deaths to automobile passengers hit by transit vehicles, and deaths to pedestrians.



Safe cities are healthy cities

Litman 2003

Table 5 Mobility Management Safety and Health Impact Summary

Travel Change	Strategies	Safety	Pollution	Fitness
Vehicle Mileage Reductions	Pricing, marketing, mode shifting and other incentives.	Each 1% mileage reduction reduces crashes 1.2-1.8%.	Proportional reduction in emissions.	May increase walking and cycling
Distance-Based Insurance	PAYD Insurance, Distance-based pricing.	Large potential safety benefits since higher risk drivers have the greatest incentive to reduce mileage.	10% mileage and emission reduction per participating vehicle.	May increase walking and cycling
Shifts to Transit	Transit Improvements, HOV Priority, Park & Ride	Increases safety due to greater safety for transit passengers and reduced vehicle traffic.	Reduces emissions, particularly if it leverages overall reductions in per capita mileage.	Generally increases walking and cycling.
Shifts to Ridesharing	Ridesharing, HOV Priority	Modest safety benefits.	Emission reductions proportional to mileage reductions.	May encourage some additional walking.
Shifts to Nonmotorized Modes	Walking and Cycling Improvements, Traffic Calming	Increases risk to participants, but reduces risk to other road users.	Reduces emissions.	Large potential benefits.



Safe cities are healthy cities

(Litman 2003)

Mobility Substitutes	Telework, Delivery Services	Increases safety by reducing vehicle mileage, but rebound effects often offset some benefits.	Reduces emissions, but rebound effects often offset a portion of benefits.	No direct benefits.
Time & Route Shifts	Flextime, Congestion Pricing	Mixed. Reducing congestion tends to reduce crashes but increases the severity of crashes that do occur.	Mixed. Reducing congestion tends to reduce some emissions but increases others.	No direct benefits.
Traffic Speed Reductions	Traffic Calming, Speed Enforcement	Significantly increases safety by reducing crash frequency and severity.	Mixed. Reducing speed reduces some emissions but increases others.	Can significantly increase walking and cycling.
Land Use & Transport System Changes	Various land use management and planning reforms	Increases safety by reducing per capita vehicle mileage and traffic speeds.	Increased density increases some emissions and exposure, but tends to reduce total emissions.	Can significantly increase walking and cycling.



New ways of using cities give rise to new urban forms

The ways we use cities are changing but our metropolitan strategies haven't changed with them:

- Splintering, as
 - Previously public infrastructure corporatises, privatises, splits purchaser/provider, PPPs – infrastructure coordination is hard
 - Technologies enable “unbundled” delivery of communications, waste water, energy services – localised transport systems too
 - Establishments and households become more footloose – and more would if they could – casualisation of employment
- Thus much more complex patterns of mobility by mode, purpose, frequency, time of travel, diurnal consistency



Cautions on the demand and supply side

Limits to “travel prevention”

- On the demand side, don't suppress demand for travel so much as to worsen mobility deprivation. The repopulation of premium inner-urban areas well-served with transport and communication could widen mobility gaps – ensure mobility improvement on the urban fringe

Interfaces between modes

- On the supply side, engineering and design have contributed greatly to safe infrastructure, but safety and security risks grow through the cracks: eg modal interchanges, level crossings, grade separation, boarding and alighting from trams, cargo transshipments



Urban planning too connected to capital solutions

- Internationally, *too much reliance on capital* solutions to road safety because road safety money comes mainly from road construction projects
- Other interventions are not seen to warrant loan financing (though Vietnam eg has now a stand-alone road safety loan project) or are seen to intrude too much on *host government failure or loss of face* (eg weak compliance and enforcement, corrupt driver licensing)
- And here, too: eg Planning Institute of Australia is *suspicious of strategy for bus services* to Melbourne's growth areas because they aren't "fixed assets go into the ground" (True)



'B2B' (2) Traffic management for urban planning

Traffic management and urban planning are too separated

- If we thought of cities as we think of *sustainable long-life, loose-fit buildings* we would factor in TPM in metropolitan planning and infrastructure – perhaps pay more upfront but for much better mobility management later
- But we don't, except in one way: we have concurred with perverse long-term traffic management policies in *major PPP infrastructure projects* – eg cross-town tunnel, Sydney Harbour Tunnel, CityLink, Crown Entertainment
- Staged busways along future rail lines a *positive example: planners both urban and transport need to think together*



'B2B' (3) TPM and urban planning for security

- Risk management and infrastructure planning for secure cities: *terrorism, hazards, natural disasters, epidemics* eg Queensland Infrastructure Resilience and Protection Framework (<http://www.premiers.qld.gov.au/library/pdf/QIPRF.pdf>)
- Major event handling, business continuity planning etc *put traffic planners and managers in front of these issues*
- But business as usual – eg normal traffic calming humps & chicanes - don't work for emergencies
- *Perceptions of risk* and of rundown standards *deter transit use*
- Urban planning can help with urban form, infrastructure design – but difficult issues with us now eg “gated communities”
- Let's look at one global epidemic potentially out of control, our fourth “back to basics” theme:



'B2B' (3) TPM and urban planning for security

- We are all developing a *different order of thinking* in TPM for
 - disaster prevention,
 - risk management,
 - disaster impact & effects
 - disaster response and mechanisms,
 - business continuity and system resilience:
 - eg transport systems are *the target* (London blasts), *the bottleneck* (New Orleans hurricanes), the *repeat offender* (Dhaka, Manila floods):
See *Building Safer Cities: the Future of Disaster Risk* WB 2003
- Urban planning can help with urban form, infrastructure design – but difficult issues with us now eg *gated communities*
- Let's look at one global epidemic, mainly urban, potentially out of control, our fourth "back to basics" theme:

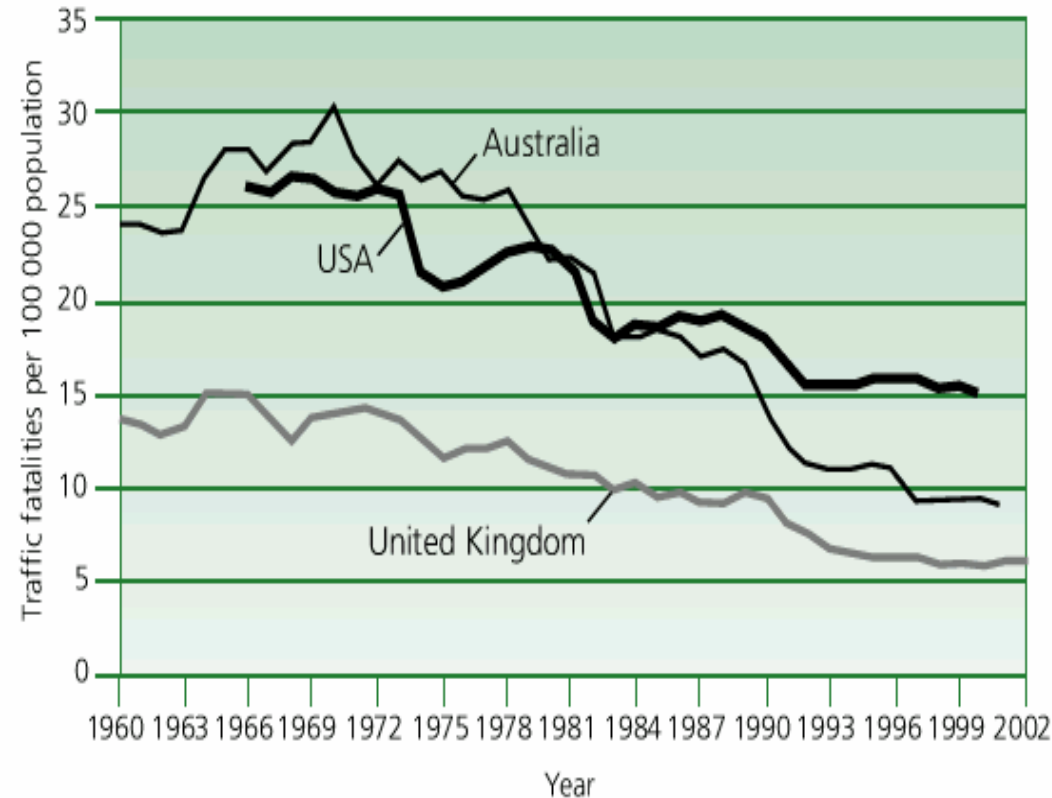


Australia a leader in traffic safety improvement

- As we cannot afford to “engineer” our systems to be more forgiving we have had to adopt *a more “behavioural” approach* – very relevant to Asian countries
- We do some good work *offshore* including export of systems; we could do so much more

FIGURE 2.4

Road traffic fatality trends in three high-income countries (Australia, United Kingdom, United States of America)



Sources: Transport Safety Bureau, Australia; Department of Transport; United Kingdom; Fatality Analysis Reporting System, United States of America.

'B2B' (4) – It's still life and death out there

- Global epidemic of road trauma: it's *big*, it's *worsening*
- It's highly *variable* in its incidence
- It affects *our region* the most
- Australia an international *benchmark* esp NSW, Victoria
- Your profession talks in *DALYs* (Disability-adjusted life years) as a measure of traffic safety outcomes
- But please also think of relative *DADMs* (Differences a day makes) and you will want to engage more outside Australia: the same input in a high-trauma country will make a bigger impact than here



A leading cause of death now among young

TABLE 1.1

Leading causes of deaths by age group, world, 2002

Rank	0–4 years	5–14 years	15–29 years	30–44 years	45–59 years	≥60 years	All ages
1	Lower respiratory infections 1 890 008	Childhood cluster diseases 219 434	HIV/AIDS 707 277	HIV/AIDS 1 178 856	Ischaemic heart disease 1 043 978	Ischaemic heart disease 5 812 863	Ischaemic heart disease 7 153 056
2	Diarrhoeal diseases 1 577 891	Road traffic injuries 130 835	Road traffic injuries 302 208	Tuberculosis 390 004	Cerebrovascular disease 623 099	Cerebrovascular disease 4 685 722	Cerebrovascular disease 5 489 591
3	Low birth weight 1 149 168	Lower respiratory infections 127 782	Self-inflicted injuries 251 806	Road traffic injuries 285 457	Tuberculosis 400 704	Chronic obstructive pulmonary diseases 2 396 739	Lower respiratory infections 3 764 415
4	Malaria 1 098 446	HIV/AIDS 108 090	Tuberculosis 245 818	Ischaemic heart disease 231 340	HIV/AIDS 390 267	Lower respiratory infections 1 395 611	HIV/AIDS 2 818 762
5	Childhood cluster diseases 1 046 177	Drowning 86 327	Interpersonal violence 216 169	Self-inflicted injuries 230 490	Chronic obstructive pulmonary diseases 309 726	Trachea, bronchus, lung cancers 927 889	Chronic obstructive pulmonary diseases 2 743 509
6	Birth asphyxia and birth trauma 729 066	Malaria 76 257	Lower respiratory infections 92 522	Interpersonal violence 165 796	Trachea, bronchus, lung cancers 261 860	Diabetes mellitus 749 977	Diarrhoeal diseases 1 766 447
7	HIV/AIDS 370 706	Tropical cluster diseases 35 454	Fires 90 845	Cerebrovascular disease 124 417	Cirrhosis of the liver 250 208	Hypertensive heart disease 732 262	Childhood-cluster diseases 1 359 548
8	Congenital heart anomalies 223 569	Fires 33 046	Drowning 87 499	Cirrhosis of the liver 100 101	Road traffic injuries 221 776	Stomach cancer 605 395	Tuberculosis 1 605 063
9	Protein–energy malnutrition 138 197	Tuberculosis 32 762	War 71 680	Lower respiratory infections 98 232	Self-inflicted injuries 189 215	Tuberculosis 495 199	Trachea, bronchus, lung cancers 1 238 417
10	STDs excluding HIV 67 871	Protein–energy malnutrition 30 763	Hypertensive disorders 61 711	Poisonings 81 930	Stomach cancer 185 188	Colon and rectum cancers 476 902	Malaria 1 221 432
11	Meningitis 64 255	Meningitis 30 694	Maternal haemorrhage 56 233	Fires 67 511	Liver cancer 180 117	Nephritis and nephrosis 440 708	Road traffic injuries 1 183 492
12	Drowning 57 287	Leukaemia 21 097	Ischaemic heart disease 53 870	Maternal haemorrhage 63 191	Diabetes mellitus 175 423	Alzheimer and other dementias 382 339	Low birth weight 1 149 172
13	Road traffic injuries 49 736	Falls 20 084	Poisoning 52 956	War 61 018	Lower respiratory infections 160 259	Liver cancer 367 503	Diabetes mellitus 982 175
14	Endocrine disorders 42 619	Violence 18 551	Childhood cluster diseases 48 101	Drowning 56 744	Breast cancer 147 489	Cirrhosis of the liver 366 417	Hypertensive heart disease 903 612
15	Tuberculosis 40 574	Poisonings 18 529	Abortion 43 782	Liver cancer 55 486	Hypertensive heart disease 129 634	Oesophagus cancer 318 112	Self-inflicted injuries 874 955

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

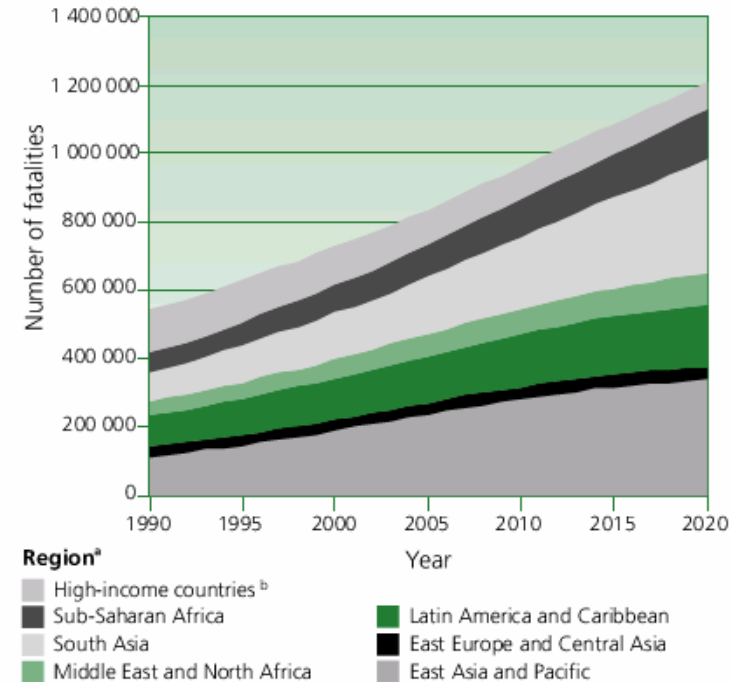


Getting worse in poorer countries

- 2.3 m deaths worldwide pa
- 90% in poor and middle income countries
- Because a leading cause of death among the young road trauma:
 - Retards economic development
 - Ruins family and micro business wellbeing
 - Compounds with other health and safety risks

FIGURE 2.6

Road traffic fatalities, adjusted for underreporting, 1990–2020



^a Data are displayed according to the regional classifications of the World Bank.

^b 28 countries with a Human Development Index of 0.8 or more.
Source: reproduced from reference 1, with the permission of the authors.



Becoming top-3 cause of death for all ages

DALYS Lost (Disability-adjusted life years): Global burden of disease

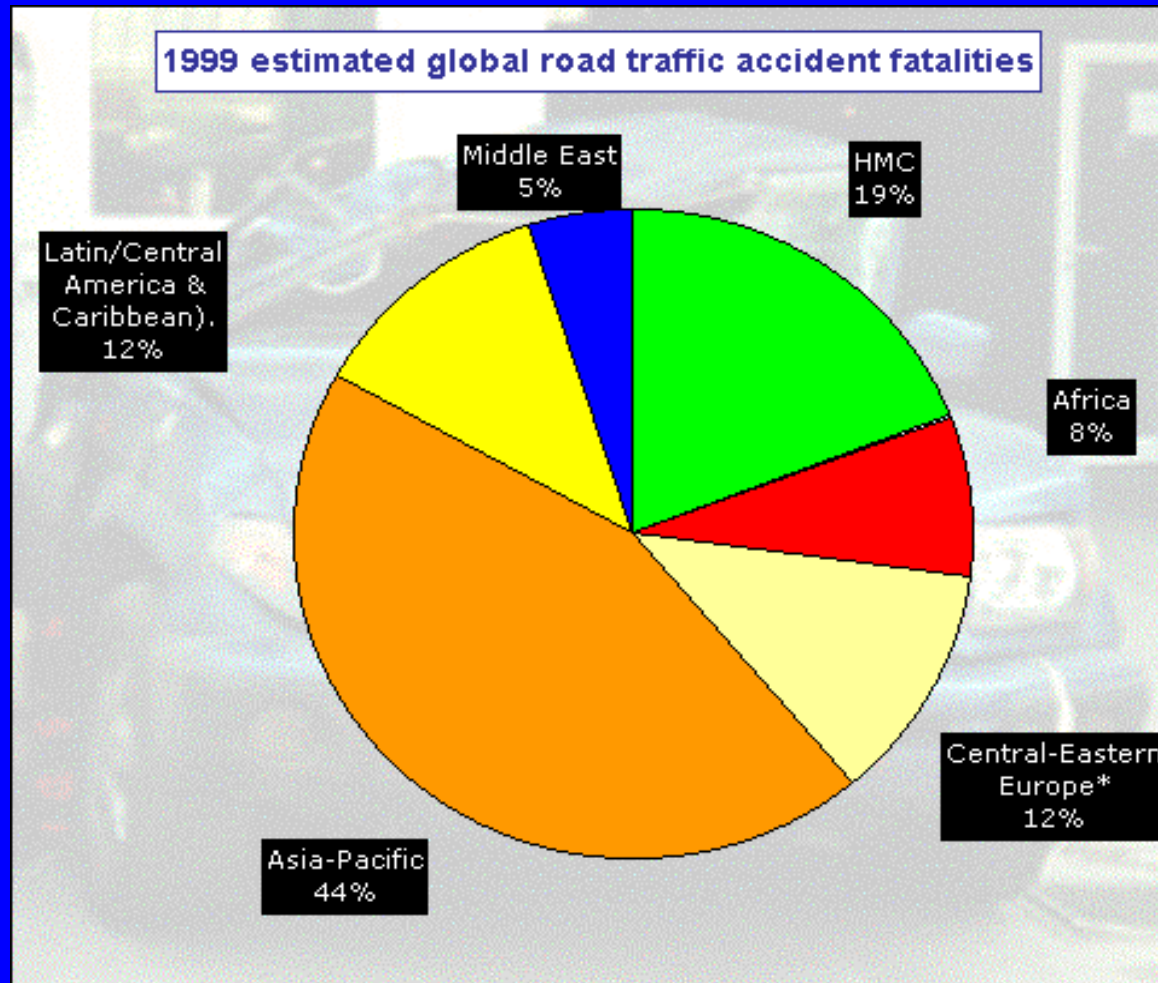
Rank	1998	2020
1	Lower respir. infections	Ischaemic heart disease
2	Perinatal Conditions	Unipolar major depression
3	Diarrhoeal Diseases	<u>Road traffic injuries</u>
4	HIV / AIDS	Cerebrovascular Disease
5	Unipolar depression	Chronic obstr've pulm'y dis
6	Ischaemic heart disease	Lower respir. infections
7	Cerebrovascular Disease	Tuberculosis
8	Malaria	War
9	<u>Road traffic injuries</u>	Diarrhoeal Diseases
10	Tuberculosis	HIV / AIDS



Source: WHO, Evidence, Information and Policy, 2000, Lori Mooren



Most fatalities are in Asia-Pacific Region



WB/WHO *World Report on Road Traffic Injury Prevention*)

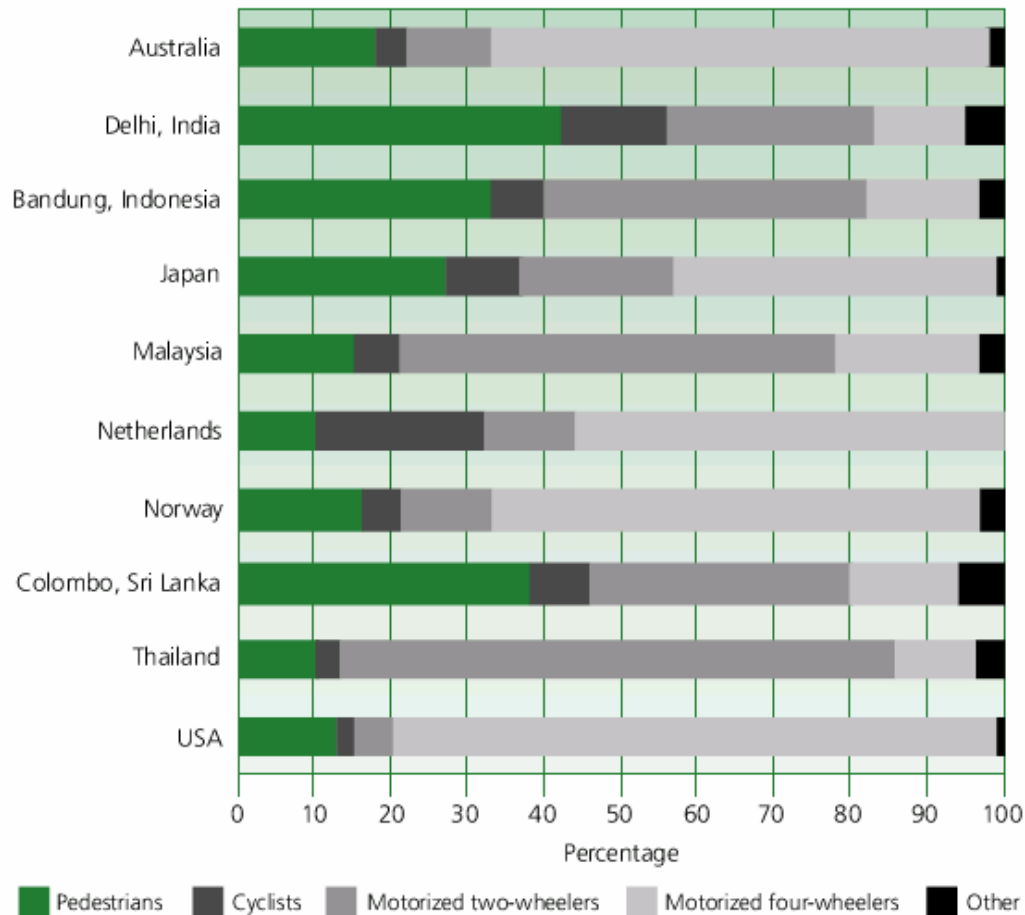
http://www.who.int/world-health-day/2004/infomaterials/world_report/en/



Fatalities vary widely by mode of transport

FIGURE 2.7

Road users killed in various modes of transport as a proportion of all road traffic deaths



Death and injury in Vietnam through road trauma



Asia Injury Prevention Foundation

- Asia Injury Prevention Foundation
<http://www.asiainjury.org/>
- US NGO to reduce the rising number of traffic fatalities in developing Asian countries, starting in Vietnam, and to raise awareness of their social, economic, and human impact
- Expanding to SE and S Asia but the world needs a global campaign like malaria and HIV/AIDS



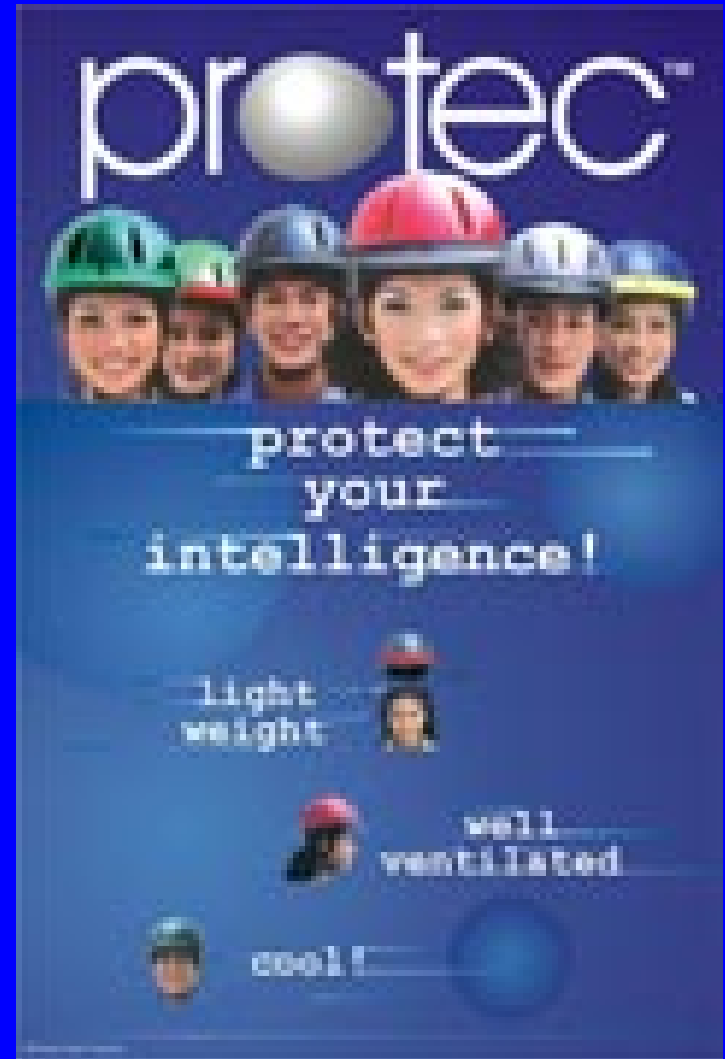
Helmets for Kids/ Adopt a School



Helmets for Kids: to distribute safety helmets, and expose children to the importance of traffic safety at an early age. More than 150,000 helmets have been donated and distributed to children at over 100 schools in 6 cities nationwide in Vietnam. 66 lives of children have been saved, who were involved in serious accidents while wearing their Protec helmets.

Protec helmets appropriate technology

- Subsidiary Vietnam Safety Products and Equipment Coy manufactures crash helmets and other safety products
- Tropical, fashionable, international standard
- Profits go into campaigns, standard-setting and research



So, back to basics ('B2B' 1-4)

- *Go for urban planning* in road safety but understand new ways cities work and change
- Teach urban planners and developers to *include traffic management* planning up front
- Capitalise on current city management mandates for *security, safety and health*
- *Contribute internationally* as a world leader to mitigate a global epidemic of road trauma

