



THE GEORGE INSTITUTE
for Global Health



Cost of road injury and related disability in Vietnam

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Back ground

■ Vietnam

- Population (2009 census): 86 million
- GDP per capita (2009): US\$ 1,032
- Motorisation: 1.5 m. vehicles in 1990 to 22.2 m. in 2009 (~ 27 m., now)

■ Road traffic injuries

- National Traffic Safety Committee: 1990 – 2007
 - Crashes: 5,565 to 13,985
 - Fatalities: 2,087 to 12,800
 - Injuries: 4,468 to 10,266



Back ground

- **Few studies on cost of RTI in Vietnam**

- In 2003: RTIs costs accounted for 0.54% of GDP

- In 2008: direct cost per traumatic brain injury due to motorcycle accident was

- US\$ 2,365 for severe, US\$ 1,390 for moderate and US\$ 849 for minor TBIs.
- 0.46 years of life lost due to disability for severe, 0.25 for moderate and 0.15 for minor TBIs.

- → constrains the ability to identify priorities among different RTI categories and potential interventions for RTIs

Objectives

- **To measure economic costs and impacts after injuries, specifically at 1, 2, 4 and 12 months.**
- **To measure disability (in terms of quality of life score) after injuries, specifically at 1, 2, 4 and 12 months.**

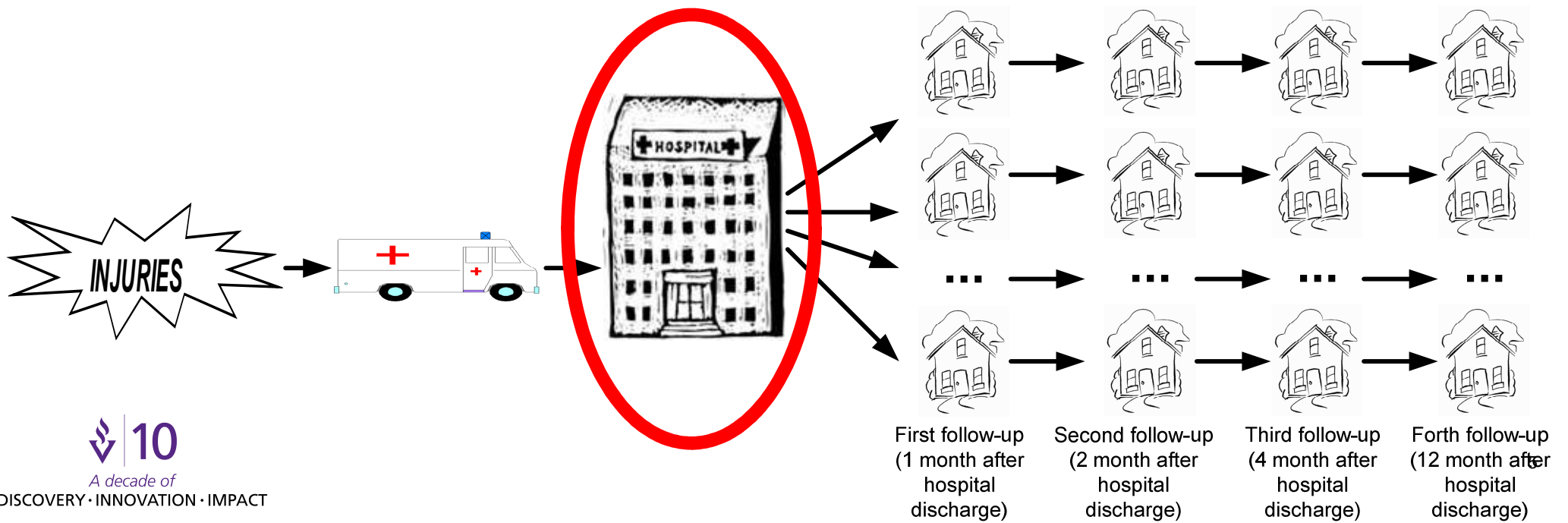
Method

- **Design**

- a prospective longitudinal quantitative design

- **Subjects**

- Patients: due to a RTI, at least 1 day, aged ≥ 18 yrs
- Consecutive recruitment from 1/1/2010 – 21/8/2010

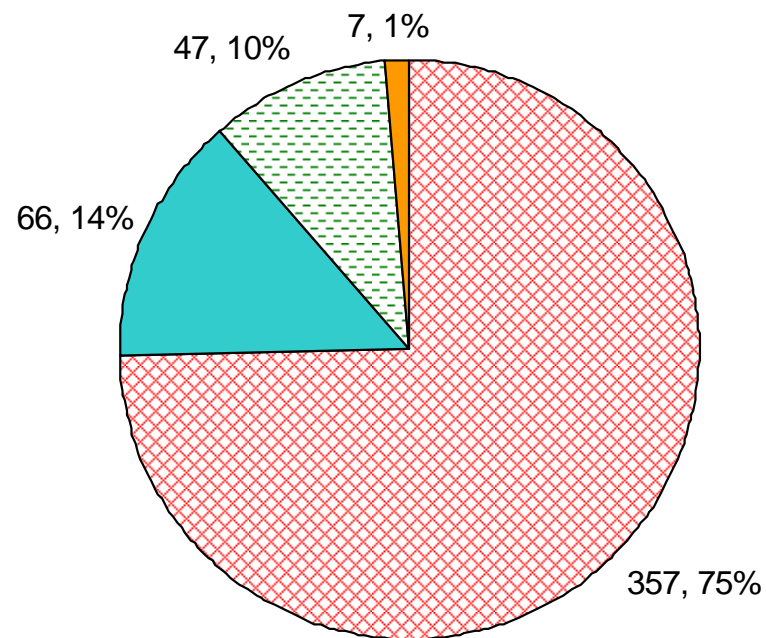


Method

- **Measurement of economic costs and impacts:**
 - Individual and household perspective
 - Bottom-up method
 - Cost components: direct (medical and non-medical) and indirect costs (human capital approach)
 - Catastrophic expenditure (> 40% income after subsistence need) and Impoverishment (remaining household income below poverty line)
- **Measurement of disability:**
 - WHODAS2 – 12 items, self & proxy-administered
 - “Item-response-theory” (IRT) based scoring, differentially weighting the items and the levels of severity (0 – no disability, 100 – full disability)

Results

- **Distribution of sample by road users**
 - Most common group: motorcyclists



▣ Motorcyclists ▣ Bicyclists ▣ Pedestrians ▣ Car/bus occupants

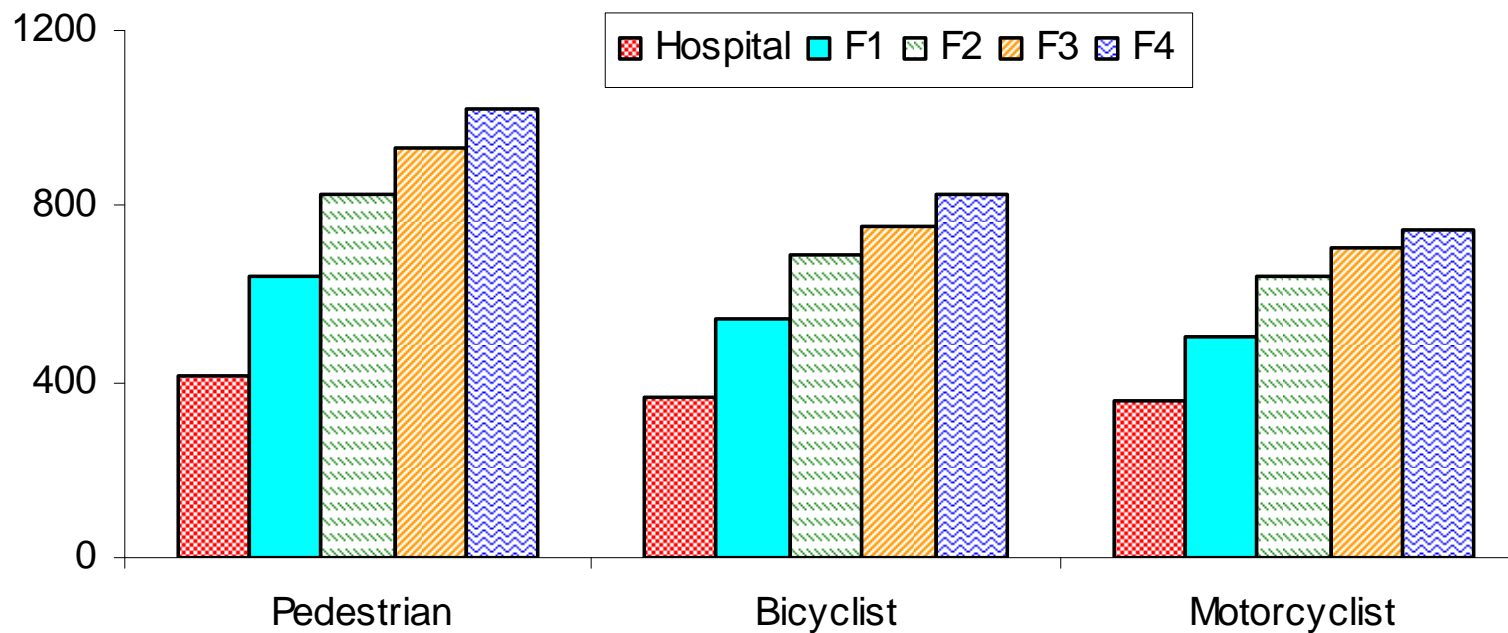


A decade of

DISCOVERY · INNOVATION · IMPACT

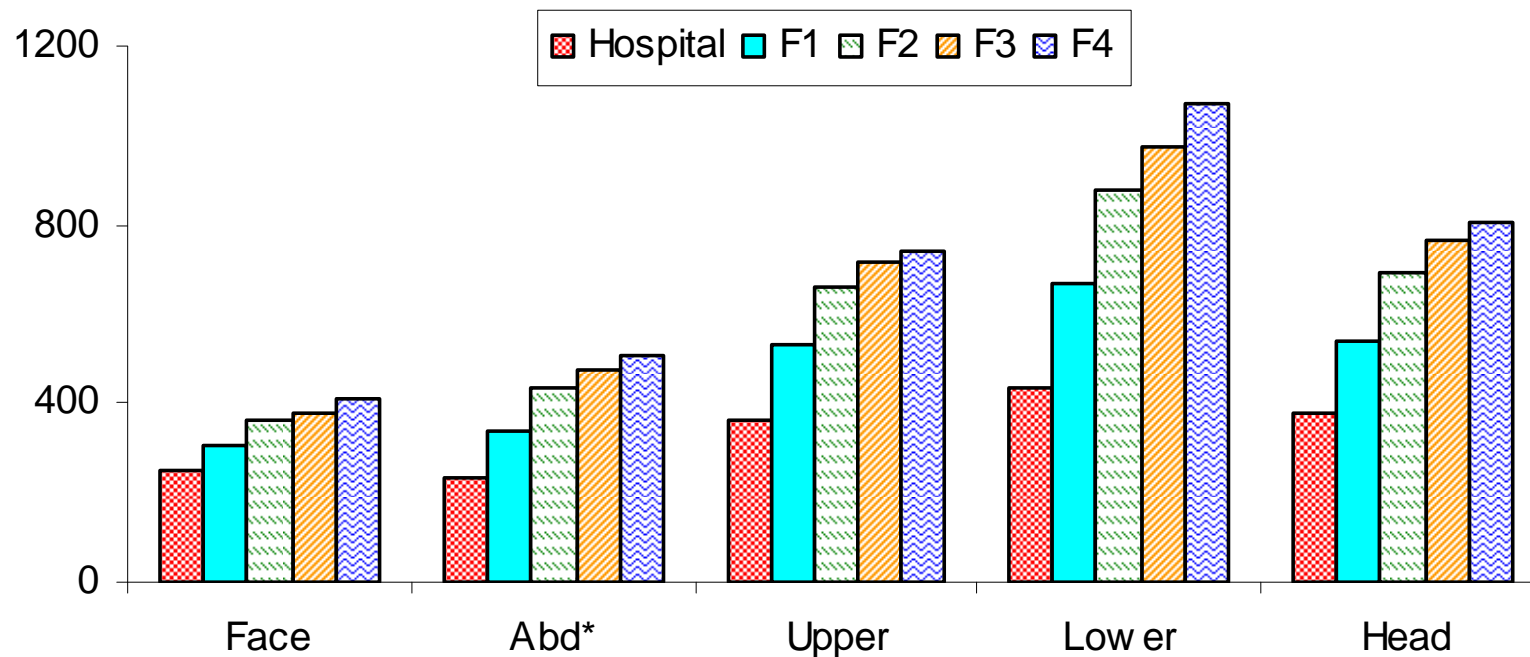
Costs (US\$)

- Mean cost per case by 12 months after discharge: Pedestrian (\$US 1,022), Bicyclists (\$US 828), and Motorcyclists (\$US 749)



Costs (US\$)

- Mean cost per case by 12 months after discharge were highest among those having injured to the lower extremities (US\$ 1070) and the head (US\$ 805)



Impacts

- **By 12 months after discharge**
 - Catastrophic expenditure:
 - By road users: pedestrians – 82%, bicyclists – 63% & motorcyclists – 60%
 - By principal injured regions: lower extremities – 75%, head – 67%, upper extremities – 65%
 - Impoverishment
 - By road users: pedestrians – 47%, bicyclists – 41% & motorcyclists – 27%
 - By principal injured regions: lower extremities – 44%, head – 33%, upper extremities – 30%

WHODAS 2 summary score (median)

- All higher than population norm (median=0)
- Large improvement in the first 4 months

	1m	2m	4m	12m
Road users				
Pedestrians	43.1	30.6	23.6	19.4
Bicyclists	38.9	29.2	18.1	19.4
Motorcyclists	30.6	22.2	13.9	8.3
Principal injured region				
Face	23.6	12.5	8.3	2.8
Abdomen/ Spine/ Thorax	38.9	30.6	18.1	11.1
Upper extremity	30.6	22.2	16.7	11.1
Lower extremity	36.1	27.8	19.4	16.7
Head	36.1	22.2	16.7	13.9

Discussion

- **High risk of catastrophic expenditure, impoverishment**
 - Costs were high, higher than individual average income
 - Costs were paid mainly from out-of-pocket
 - Pedestrians, bicyclists were more severely injured (higher costs)
 - Injuries to lower extremities and head were also more severe.

- **Low quality of life**
 - RTIs largely affect mobility, self-care and life activities
 - Those suffered more severe injured also had higher score

Conclusion

- **Increase prevention of RTI to prevent economic loss and reduced quality of life.**
- **Increase protection of body region associated with more severe injuries such as head, lower extremity (esp. motorcyclists)**
- **Expand insurance coverage to reduce out-of-pocket spending**
- **Limitation: only hospitalised cases, hospitalisation period only, not including property damage, pain and stress,**

THANK YOU FOR YOUR ATTENTION!

