



Cost of Traffic injuries in Latin America

**Congreso Iberoamericano de
Seguridad Vial CISEV
Bogotá, Colombia 2012**

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Estrategia de Seguridad Vial - BID

- **EL Plan de Acción 2010 – 2015 intenta**

Diálogo nacional y regional

- **prioridad en la agenda política**
 - Ministerios de **transporte**, obras, educación y salud
 - Ministerios de **finanzas**
- Evidencia **para los ministros de finanzas** y tomadores de decisiones de medidas de Seguridad Vial
- Información para identificar los **impactos económicos**
- Herramienta para un **costo – beneficio** de programas



ISV BID - Porque hacer un estudio de costos? (2)

Marco de fortalecimiento institucional en los países de la región:

- **El BID – metodología como herramienta a los países**
- **El BID – comisiona a la Universidad de Harvard**
 - Investigación previa en el estudio “Global Burden Injuries”
 - Los resultados se esperan en 2012



Project Collaborators

- **Inter-American Development Bank**
 - Esteban Díez Roux
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 - Dra Maria Isabel Gutierrez
 - Andres Fandiño
- **PROESA, Universidad Icesi**
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Overview

- **Characterizing the economic burden**
 - Who is the audience?
 - Components of the burden?
- **Methods**
 - Estimate incidence (deaths, non-fatal injuries)
 - Estimate costs
 - Human Capital – Labor; Medical; Funeral; Prop. damage
 - Willingness to Pay
 - Macro-economic modeling
- **Preliminary Results**
- **Conclusions and Implications**



Characterizing the economic burden

- **What are the costs?**
 - Property damage
 - Medical bills
 - Loss of income
 - Law enforcement
- **Who bears the cost?**
 - Individuals and families
 - Companies
 - Governments
 - Society



Characterizing the economic burden

- **Project goal: Construct estimates to influence public policy**
- **Target Audience**
 - Global policy makers (decade of action)
 - Purpose: prioritize global health & development agenda
 - Analytical implication: cross-country comparability
 - National policy makers
 - Purpose: Resource allocation, evaluation of programs
 - Analytical implication: Use local data sources, disaggregated estimates; also ask what society is willing to spend?

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Estimate Incidence: Data Sources

- **Mortality:**

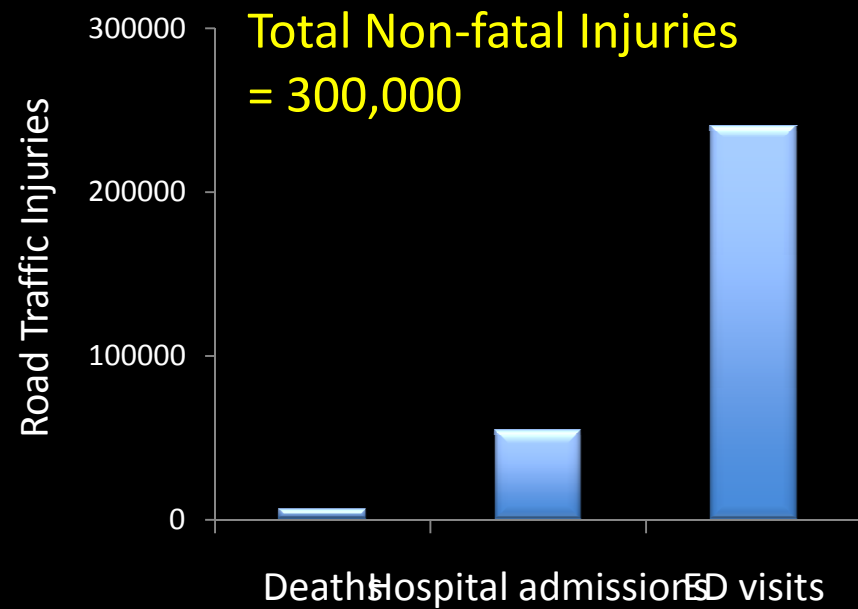
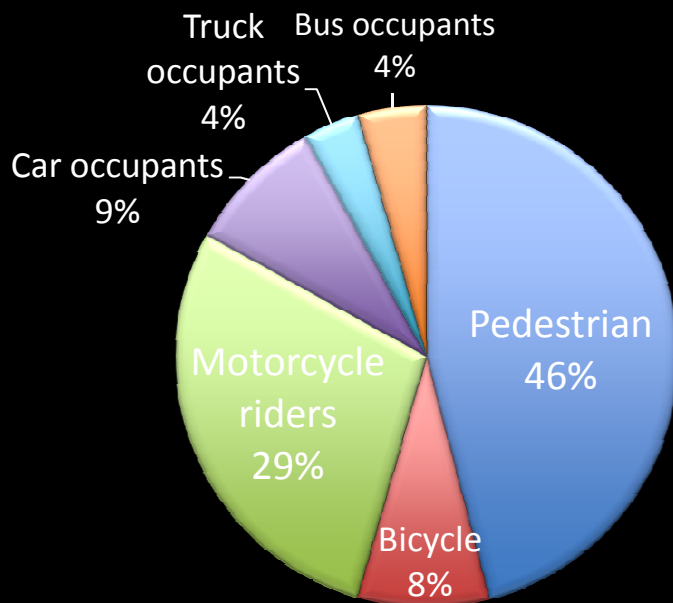
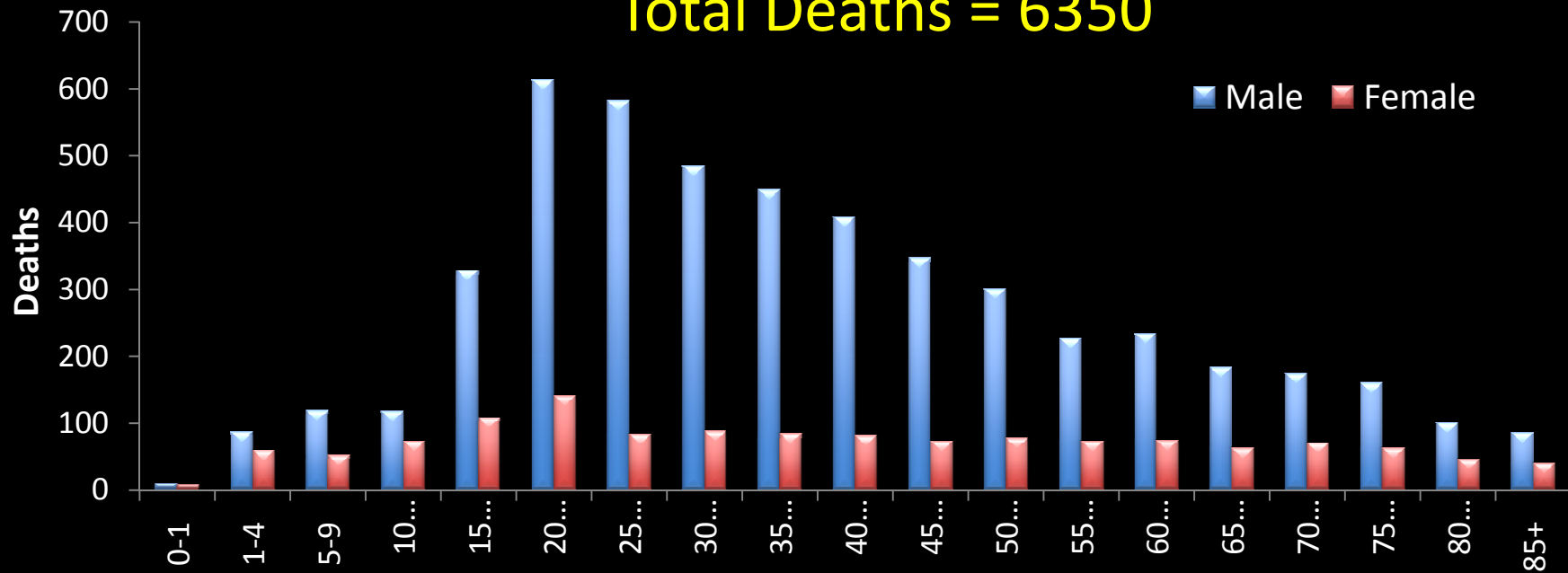
- Data Source: National Vital Registration Data
- Quality: near complete, high quality coding
- Method: reclassify deaths, reattribute deaths coded to partially specified causes

- **Morbidity (Hospital admissions & ED visits):**

- Data Sources: National health survey, CISALVA trauma surveillance
- Quality: Relatively high
- Method: GBD-2010 models



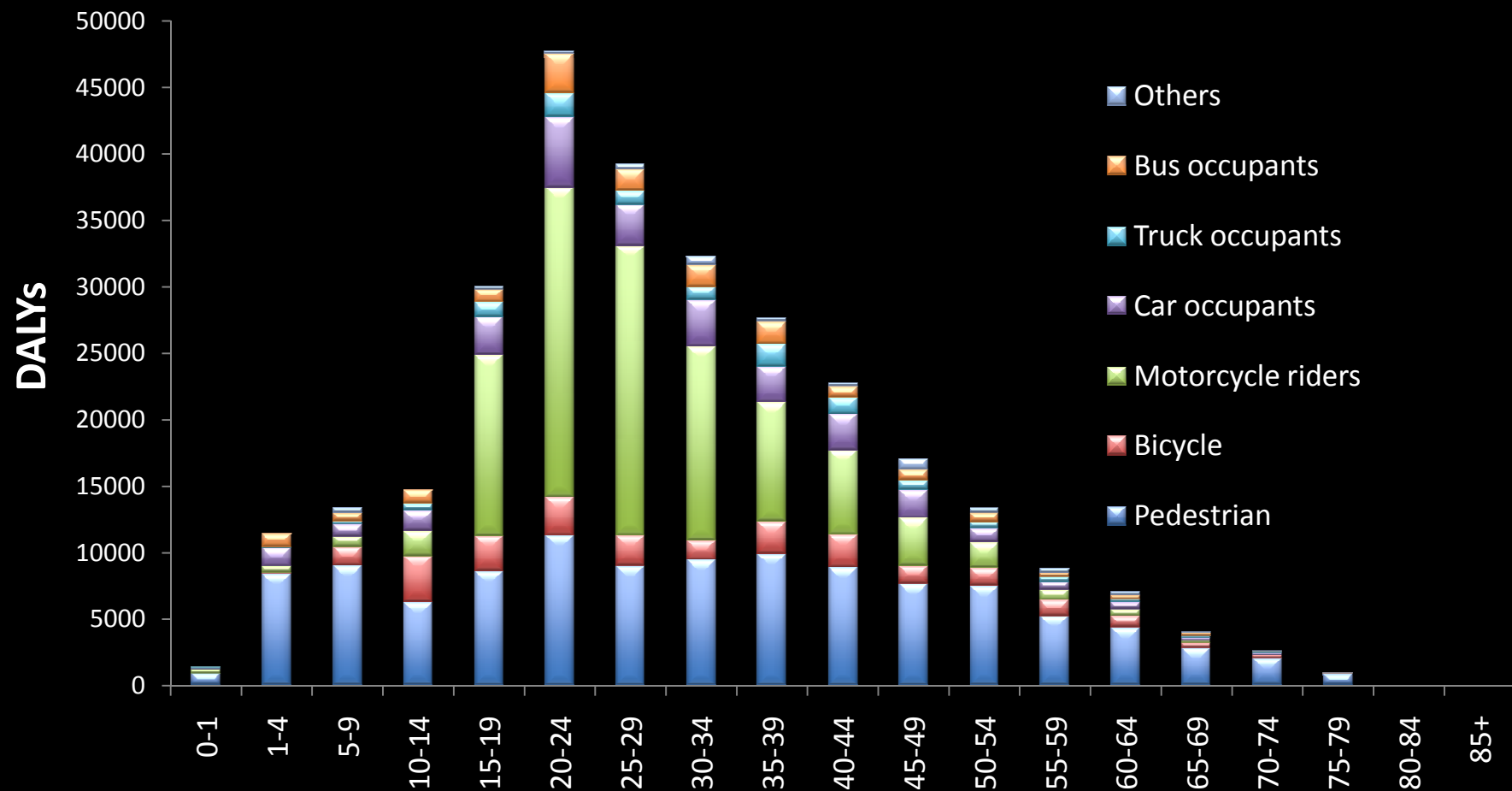
Total Deaths = 6350



Total Non-fatal Injuries = 300,000

Public Health Burden

Disability Adjusted Life Years Lost



Constructing Costs

■ Method 1: Value of Statistical Life Year

– Rule of Thumb - CMH1:

- Based on WHO Commission on Macroeconomics & Health
- 1 DALY = 1 year of lost GDP per capita

– Rule of Thumb - CMH3:

- Based on WHO Commission on Macroeconomics & Health
- 1 DALY = 3 year of lost GDP per capita

– Willingness to Pay: Miller 2000

- Based on analysis of 68 WTP studies from 13 countries (no LMICs)
- Value of a statistical life = $137.6 \times \text{GDP per capita}$
- Value of a life year = $3.62 \times \text{GDP per capita}$



Constructing Costs

- **Method 1: Value of Statistical Life Year (contd)**
 - Willingness to Pay: Cropper 2009 (World Bank)
 - Update of Miller 2000 using new data from LMICs
 - Value of a statistical life = $80 \times \text{GDP per capita}$
 - Value of a life year = $2.11 \times \text{GDP per capita}$
 - Willingness to Pay: IRAP 2008 (World Bank)
 - Value of a statistical life = $70 \times \text{GDP per capita}$
 - Value of a serious injury = $17 \times \text{GDP per capita}$

Costs: Human Capital: Labor Losses

- **Total lost work from deaths and non-fatal injuries**
- **Discounted (3%) to present value**
- **Deaths:**
 - Time Lost = Years of remaining working life
- **Total permanent disabilities:**
 - Incidence = 10% of admissions
 - Time Lost = Years of remaining working life
- **Partial permanent disabilities:**
 - Incidence = 20% of admissions
 - Time Lost = Years of remaining working life
 - Capacity lost = 30%
- **Temporary disabilities**
 - Incidence = 70% of admissions; Time loss = 1 month
 - Incidence = 100% of outpatient; Time loss = 1 day



Costs: Direct Medical Costs

- Ambulance Trips
 - Trips: 30% of injury events
 - Cost per trip: US\$35.07 (CISALVA estimate)
- Intensive Care
 - Cases: assumed 30% of admissions
 - Duration: ~2 days
 - Cost per day: \$995 (CISALVA estimate)
- Admissions
 - Average duration 5.4 days (CISALVA estimate)
 - Cost per day of hospital bed: US\$ 85.96 (CISALVA estimate)
- Outpatient
 - Cost per visit: US\$ 15.9 (CISALVA estimate)



Costs: Funeral Costs

- Unit Costs: US\$ 732.33 (CISALVA estimate)

Costs: Property Damage

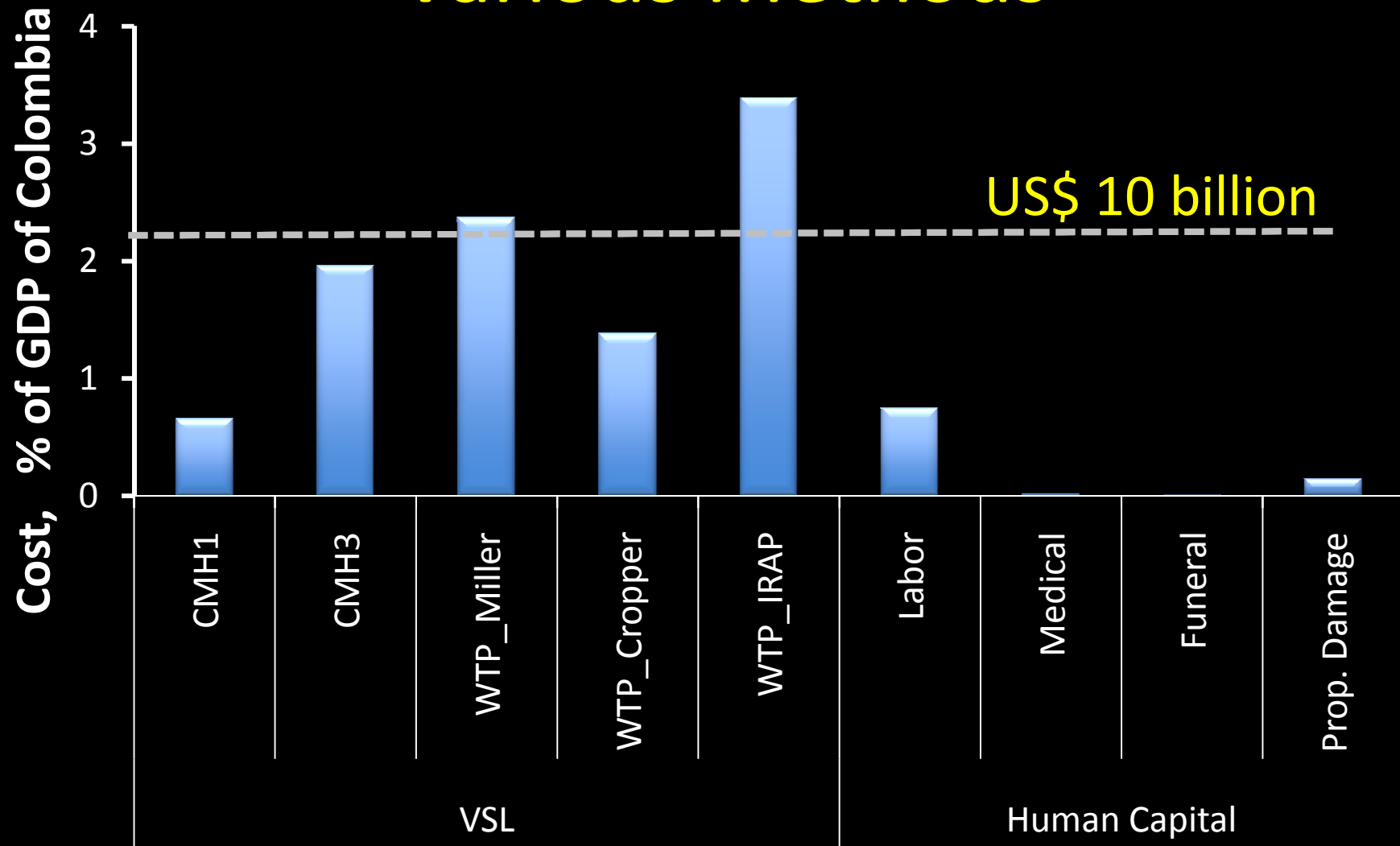
- Unit Costs, Vehicle damage:
 - Total loss of car: US\$ 6,000
 - Total loss of motorcycle: US\$ 1,500
 - Total loss of truck (incl. cargo): US\$ 60,000
- Public property damage: ~10% of veh. damage
- Incidence of veh. damage from incidence of inj.

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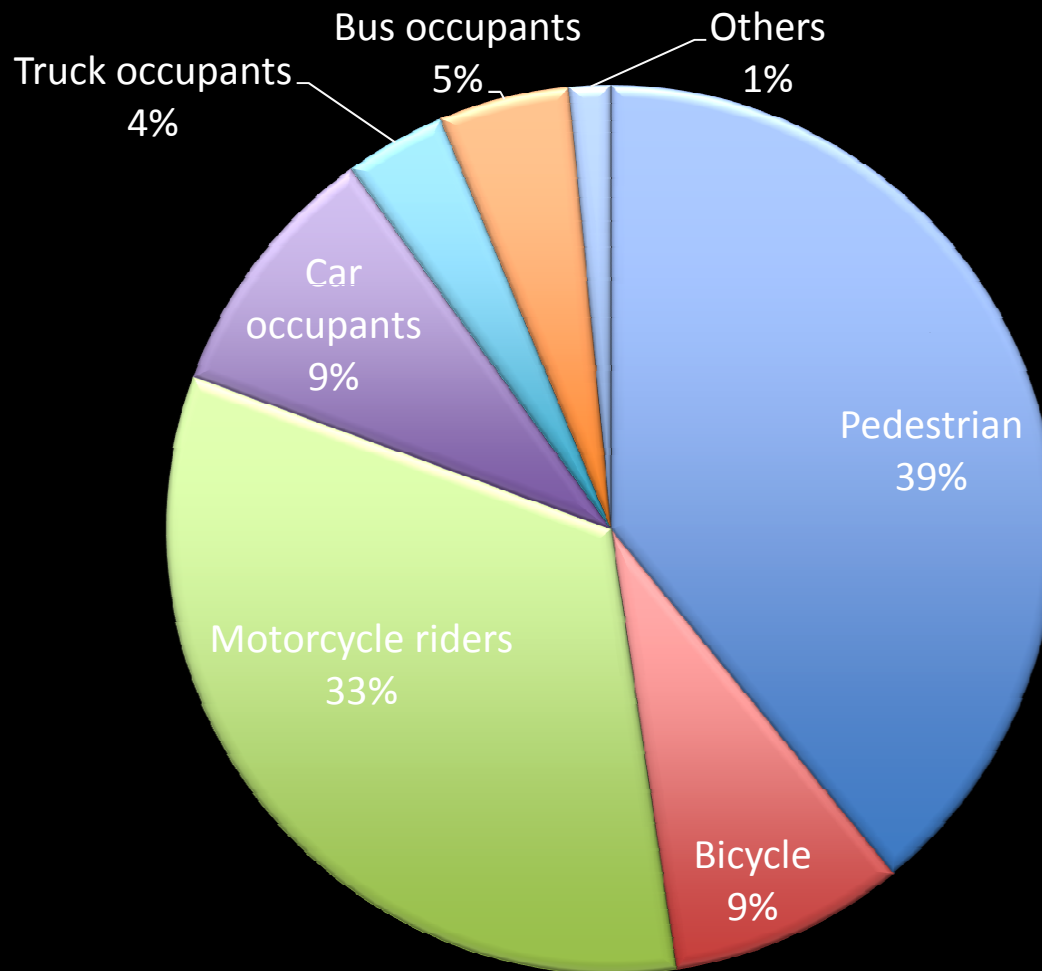
Estimates of Cost of RTI in Colombia: Various Methods



Costs by Road User Categories

Estimates of Labor Losses

Total Labor Losses = US\$ 3.3 Billion



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Conclusions & Implications

- **Theoretically, there is no “correct” method. For e.g. WHO recommendations:**
 - WHO 2008: Guide to identifying economic consequences of disease and injury
 - WHO 2009: Manual for estimating economic costs of injuries due to violence
 - ***We should produce results using many methods***
- **Estimates will have a wide range (uncertainty)**
 - Even lowest estimates => huge economic burden.
 - Focus should be on multitude of methods rather than refinement of estimates



Conclusions & Implications

- **Costing methods have very severe ethical problems**
 - E.g. In all methods poor people are valued less



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