# Analysis of traffic injury severity in a mega city of a developing country

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# Introduction

- Research on the identification of factors affecting traffic injury severity:
  - much has been conducted in the developed world
  - Ittle is known about developing countries
- Developing countries:
  - two-thirds of global injuries (Fatmi et al., 2007)
  - 85% of the deaths from traffic injuries; and
  - 90% of annual disability adjusted life years lost by road traffic injury (World Health Organisation, 2004).

#### **Research objectives**

- Two objectives:
  - first, to identify factors that influence traffic injury severity in a developing country; and
  - second, to compare with factors identified in the literature from developed country.

# **Case study: developing country**

- Bangladesh was chosen
  - highest fatality rate (100 deaths/10,000 motor vehicles) (UNESCAP, 2007)
  - India (25.3), Sri Lanka (16), Malaysia (5.5), USA (2.1), and UK (1.4) (Ahsan, 2012)
  - fatalities increased 3.5 times to 3000 deaths/yr
  - vehicle 2-10/1000 person (India 12, Sri Lanka 25, UK 426, USA 765)





# **Case study: Bangladesh**

- Dhaka, the capital of Bangladesh:
  - 14 million people
  - Non-motorised modes dominate (e.g. walk 20%, rickshaw 40%, bus 30%,

**Car 5%)** (Ministry of Environment and Forest and Ministry of Communication, 2010).







Location of crashes
 Road Hetwork
 Dhaka City Corporation
 Dhaka Metropolitan Are





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## Data

- Source: Dhaka Metropolitan Police
- Accident
   reporting form
- 2714 collisions '07 - '11
- 12 variables



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## Method

- Outcome variable 'injury severity' was measured as ordered category with 4 levels
- Categorical explanatory variables
- An ordered Probit regression model was estimated

# **Results**

Explanatory factors	Coef.	Z	P>z
Number of vehicles: single (ref: multi)	1.48	27.30	0.00
Traffic control: only police (ref: uncontrolled)	-0.31	-5.20	0.00
Intersection type <mark>: 4 way (ref: not in an intersection)</mark>	-0.13	-1.61	0.10
Intersection type <mark>: roundabout (ref: not in an intersection)</mark>	-0.41	-1.76	0.08
Traffic flow direction: two way (ref: one way)	-0.16	-1.87	0.06
Presence of road divider: no (ref: yes)	0.41	4.13	0.00
Time of day/lig <mark>ht condition: night (ref: day)</mark>	0.20	3.36	0.00
Time of day/light condition: dawn/dusk (ref: day)	0.42	4.74	0.00
Road class: c <mark>ity and feeder road (ref: highway)</mark>	-0.40	-6.87	0.00
/cut1	0.89		
/cut2	1.13		
/cut3	1.81		
Log likelihood = -2032.71			

# **Discussion and conclusion**

Factors	Severity impact	A that we want	Citation	
	This research	<b>Developed countries</b>		
Vehicles involve <mark>d: one</mark>	Increased	Increased	Mile <mark>s</mark> -Doan (1996)	
Traffic control	Mixed	Mixed	Pitt et al. (1990);	
2.1.1	1 27 1.50		Lee and Abdel-Aty (2005)	
4-way intersection	Decreased	No effect	Quddus et al. (2002)	
Roundabouts	Decreased	Increased	Boufous et al. (2008)	
and the second sec	1-11	Decreased	Gray et al. (2008)	
One way	Increased	Decreased	Sze and Wong (2007)	
Highways	Increased	Increased	Miles-Doan (1996);	
	1		Sze and Wong (2007)	
Darker period of time	Increased	Increased	Kim et al. (2007);	
	Carlos al		Klop and Khattak (1999)	
Presence of road divider	Decreased	Decreased	Quddus et al. (2002)	

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## **Thank You**

#### **Question**?

