

Comparison of cycling hospitalization rates in Canadian provinces with different helmet laws & bike commuting

Kay Teschke, Mieke Koehoorn, Hui Shen, Jessica Dennis



School of Population & Public Health
& Department of Medical Genetics
University of British Columbia

North America

3-6 deaths/100 million km

- helmets & laws common
- bike traffic separation rare
- mode share low



Holland, Denmark

1-2 deaths/100 million km

- bike traffic separation common
- mode share high
- helmets rare



Comparisons within Canada
transport systems & laws consistent

Hospitalizations

Canadian Institute for Health Information

Cycling trips

Canadian Community Health Survey

=

Hospitalization Rates

2006 to 2011

3690 hospitalizations/year

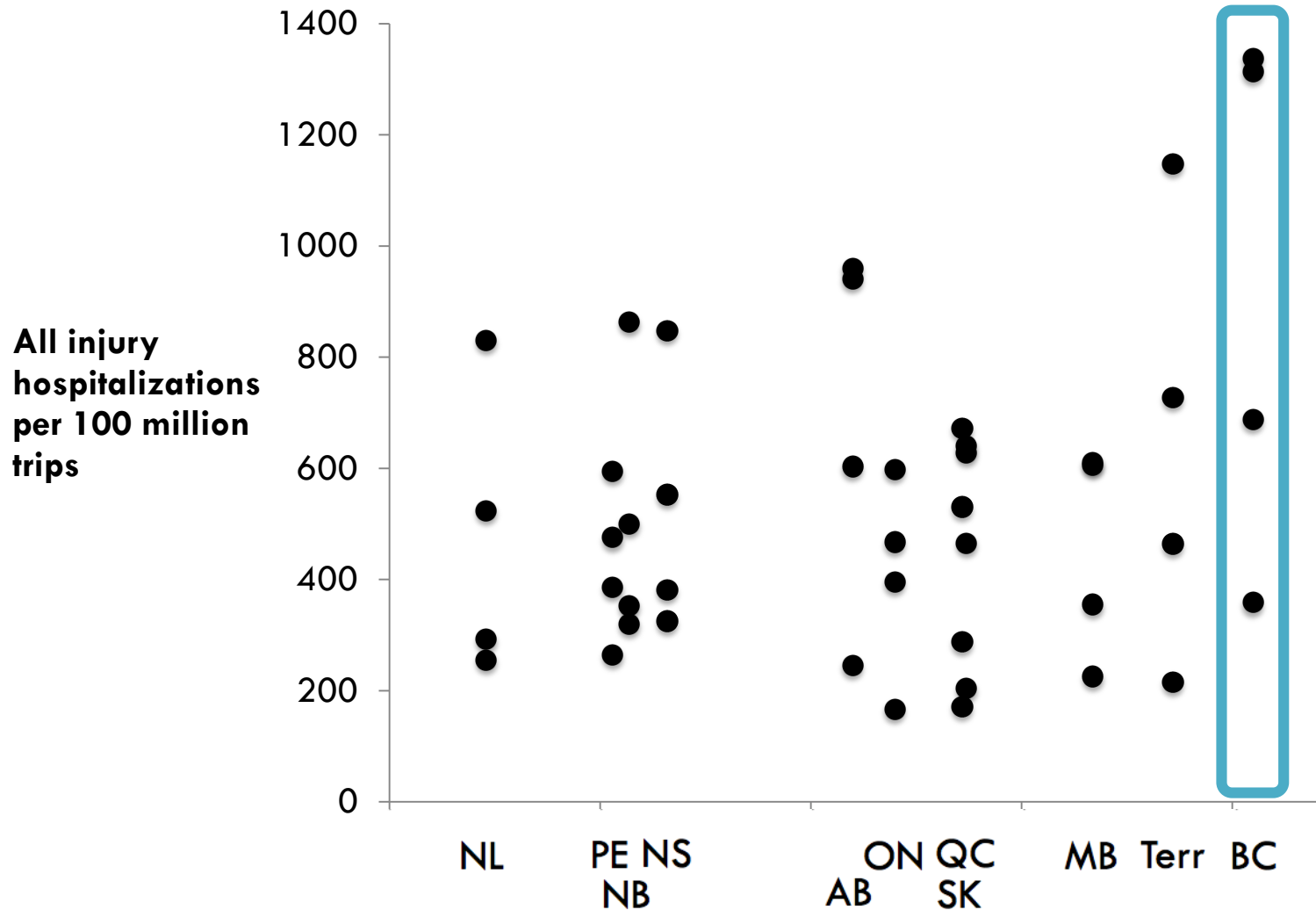
593 million trips/year

633 hospitalizations/100 million trips



Each province ... 4 hospitalization rates

adult male, adult female, youth male, youth female

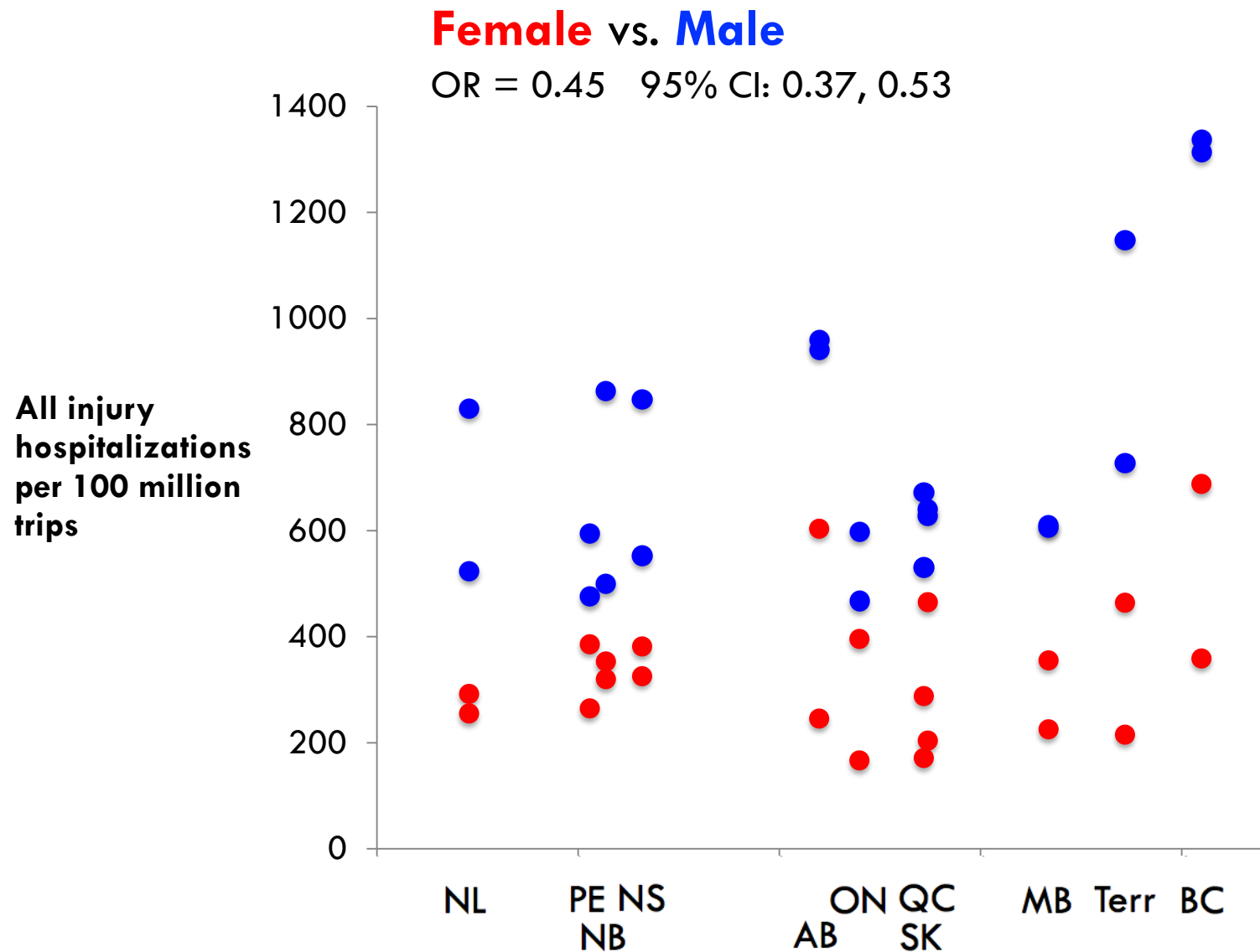


Hospitalization rates vary.

A lot.

Why?

Does sex make a difference?



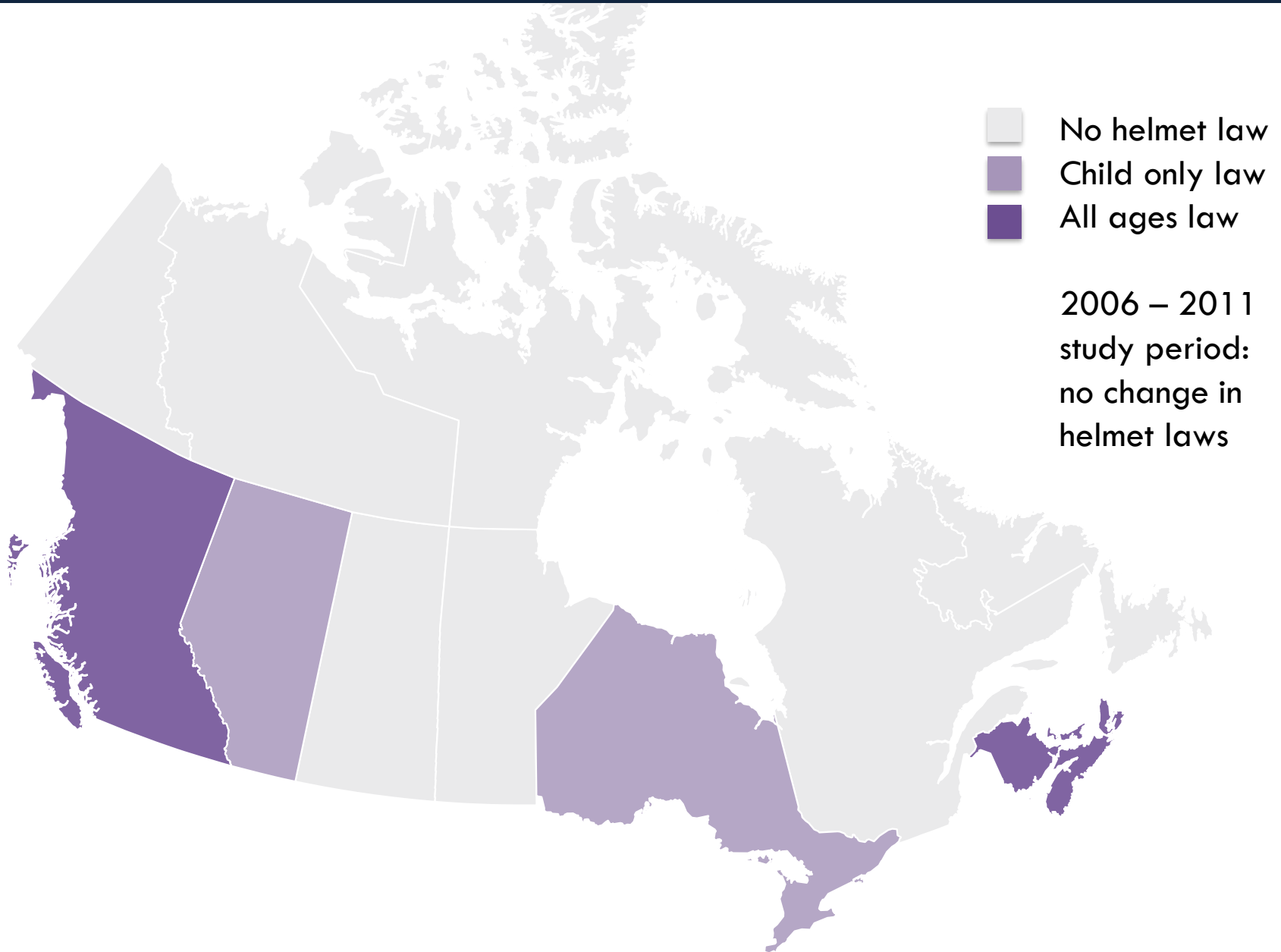


Females much
lower injury rate
than **males**

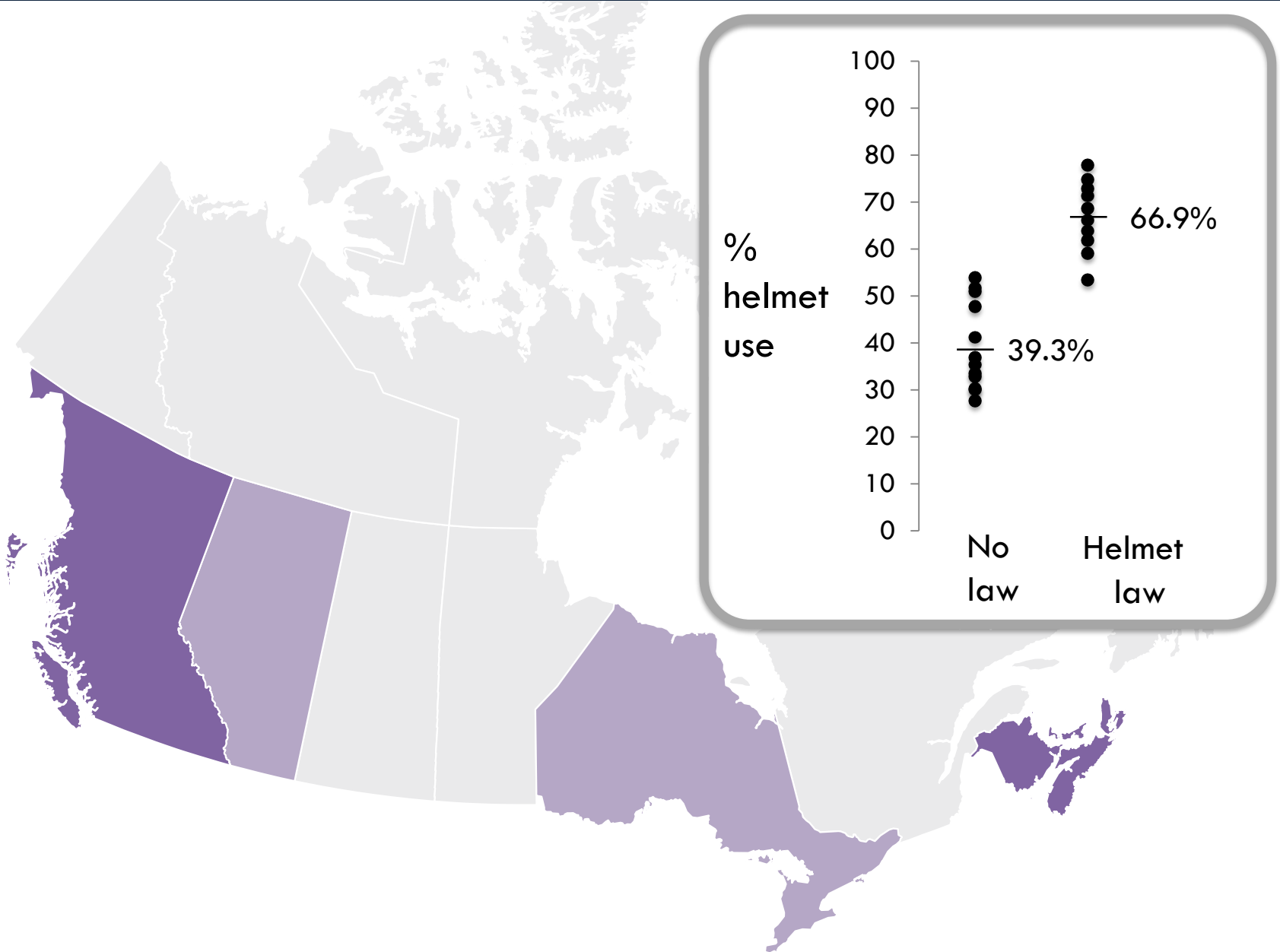
Less risk-taking

- ride more slowly
- less likely to ride on major streets without bike infrastructure

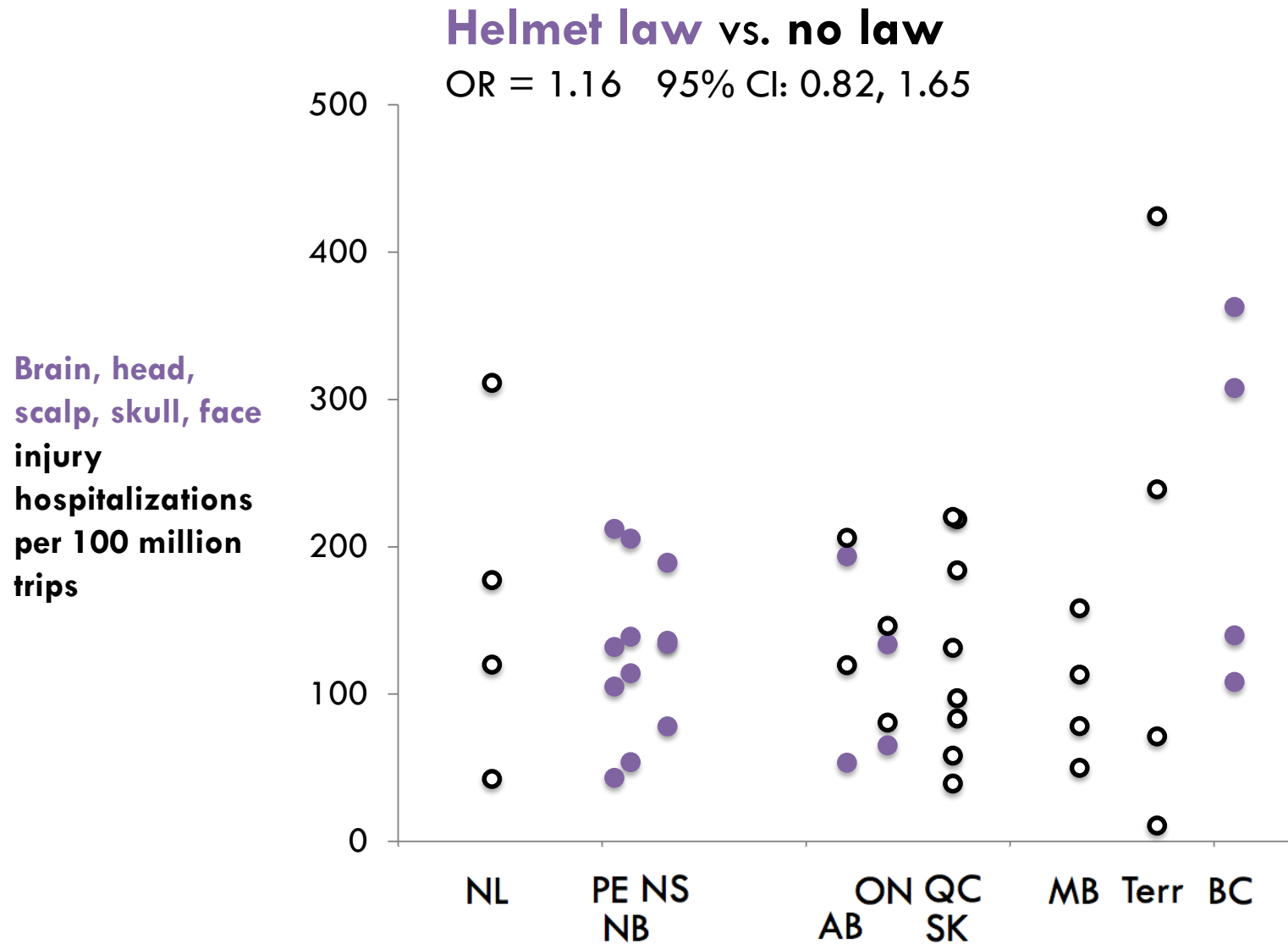
Do helmet laws make a difference?



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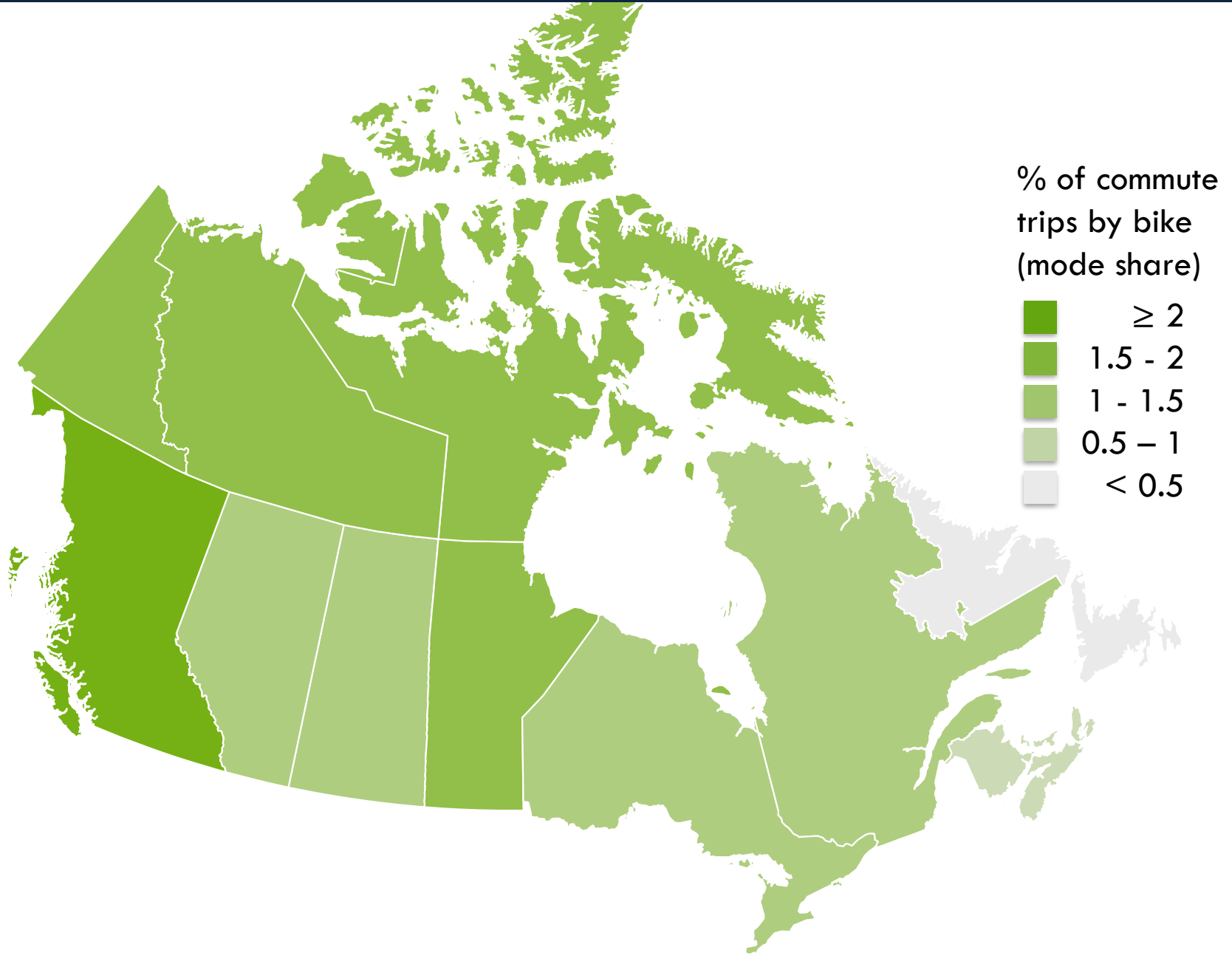


Helmet laws not associated with hospitalization rates

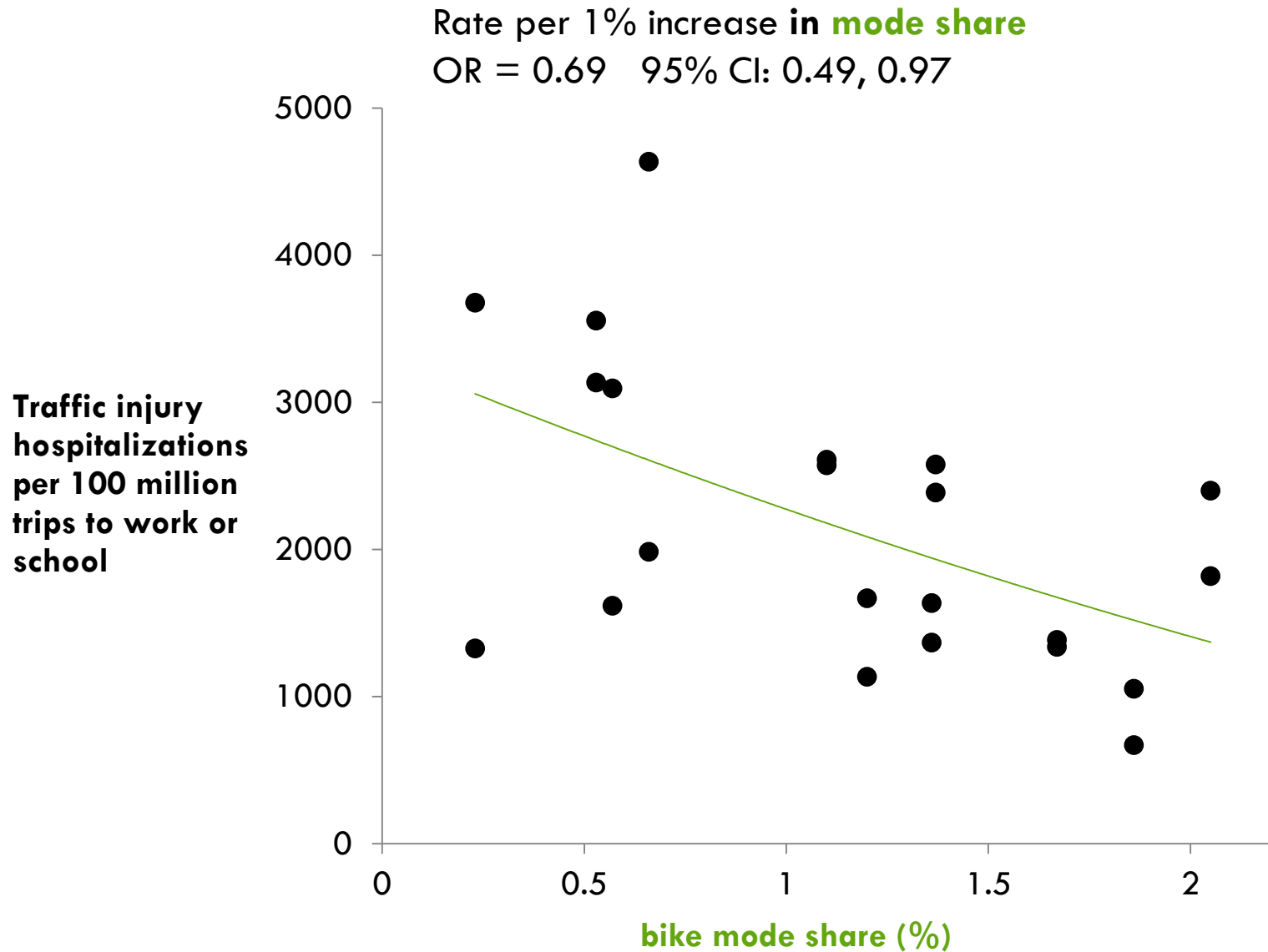
Potential explanations

- other factors more important
- helmet wearers ride faster
- drivers pass closer to helmet wearers
- helmets give permission for more dangerous types of riding (e.g., mountain biking)

Does "mode share" make a difference?



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Safety in numbers

Consistent pattern

Causal pathway?

- drivers more alert to cyclists
- more drivers are cyclists
- safer infrastructure attracts more cycling



Policy implications

To reduce cycling injury rates, **focus** on factors related to **increased cycling & female cycling choices**.

Cycling routes physically **separated from traffic** or along **quiet streets** fit both these criteria & are associated with **lower injury risk**.



BMJ Open 2015

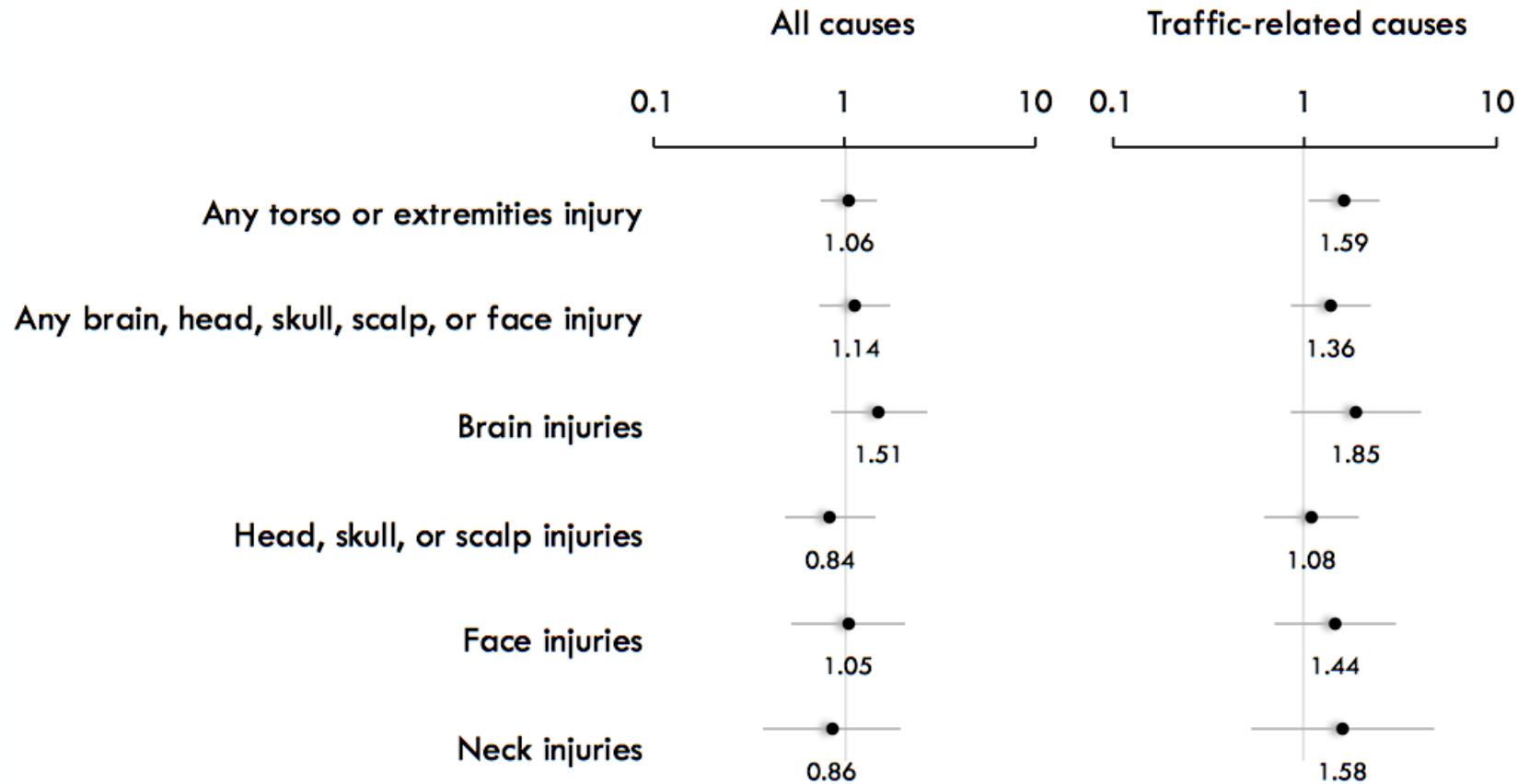
Cycling in Cities, UBC
@kteschke



Research on Canadian
hospitalization patterns
& infrastructure safety
support Dutch, Danish
policy choices

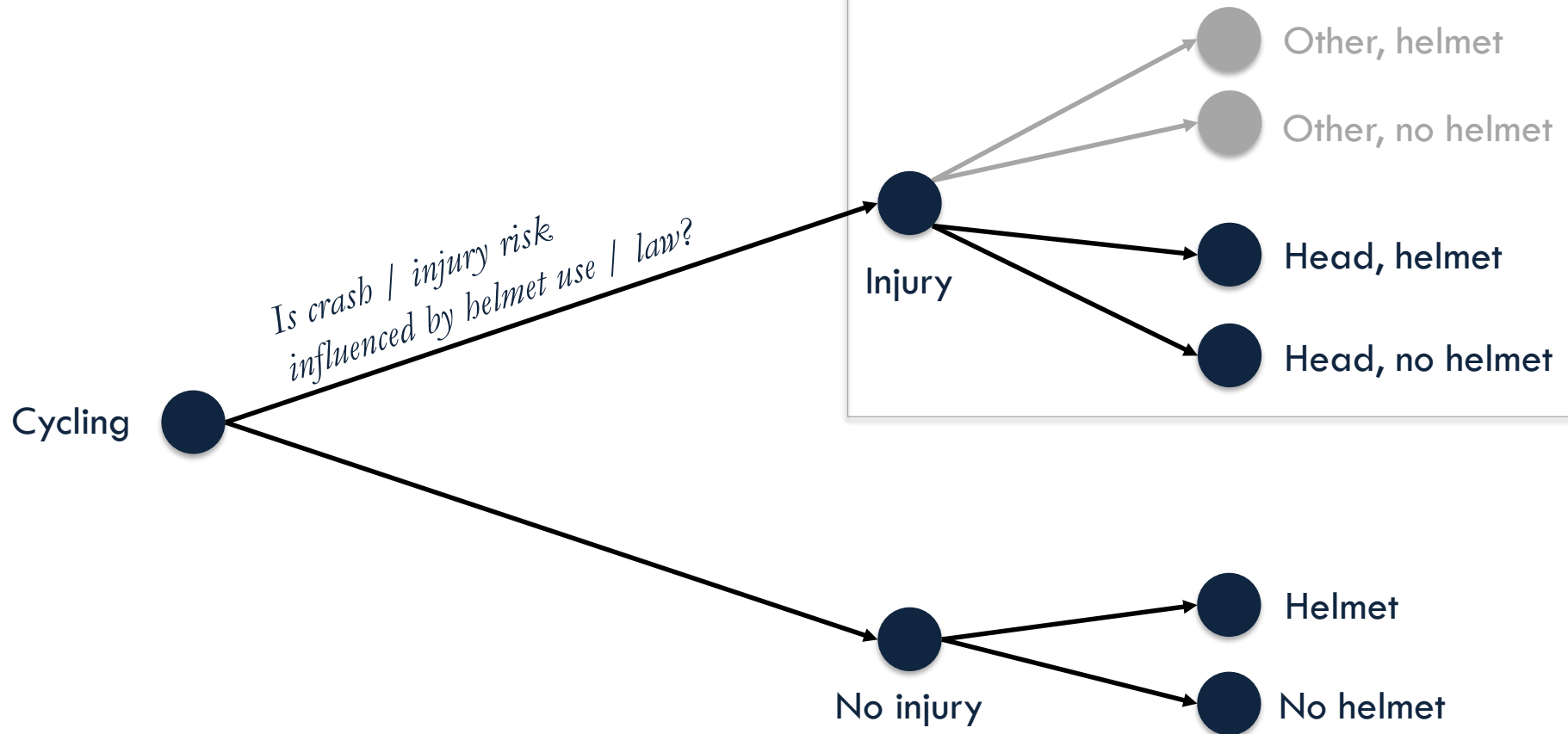
Do helmet laws make a difference?

Adjusted odds ratios, **helmet law** vs. no law



Most Studies: given injury, odds of head injury vs. other injury, with & without helmet use / law

Other injury is surrogate for cycling exposure



Rare Evidence: given cycling, incidence of head injury, with & without helmet use / law

What about injuries that aren't mitigated by helmets?

87% of
hospitalizations
involve body sites
other than head
.....

1 hospitalization
per 160,000 trips

1 head injury
hospitalization per
650,000 trips



Photo: Ken Ohrn



Deaths / 100 million km travelled



5.5

United States



1.5

Denmark



1.1

The Netherlands