University of Leeds, ITS Seminar

IS CYCLING A SAFE MODE? COMPARING APPLES WITH APPLES

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Presentation Outline

- Background / New Zealand Context
- Comparison of Travel Modes
  - Safety Metric Used
  - Age Distributions
  - Road Environments
  - Safety in Numbers

Koorey G.F., Wong W.K. (2013), "Is Cycling a Safe Mode? Comparing Apples with Apples", 16th International "Road Safety on Four Continents" Conference, Beijing, China, 15-17 May 2013.

Ben Wong

So you're from Australia, right?

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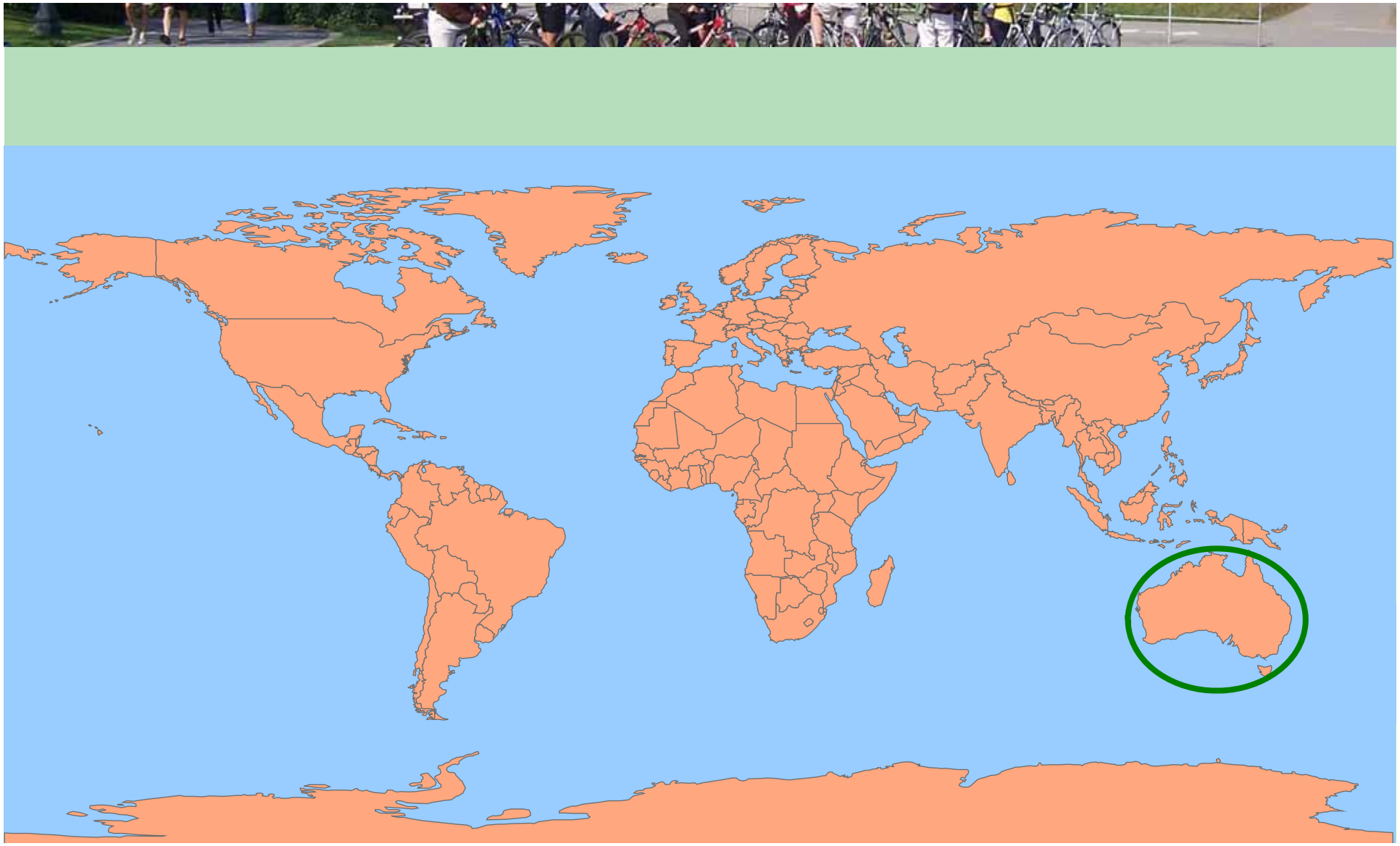

The great New Zealand Image…

The great New Zealand Reality...

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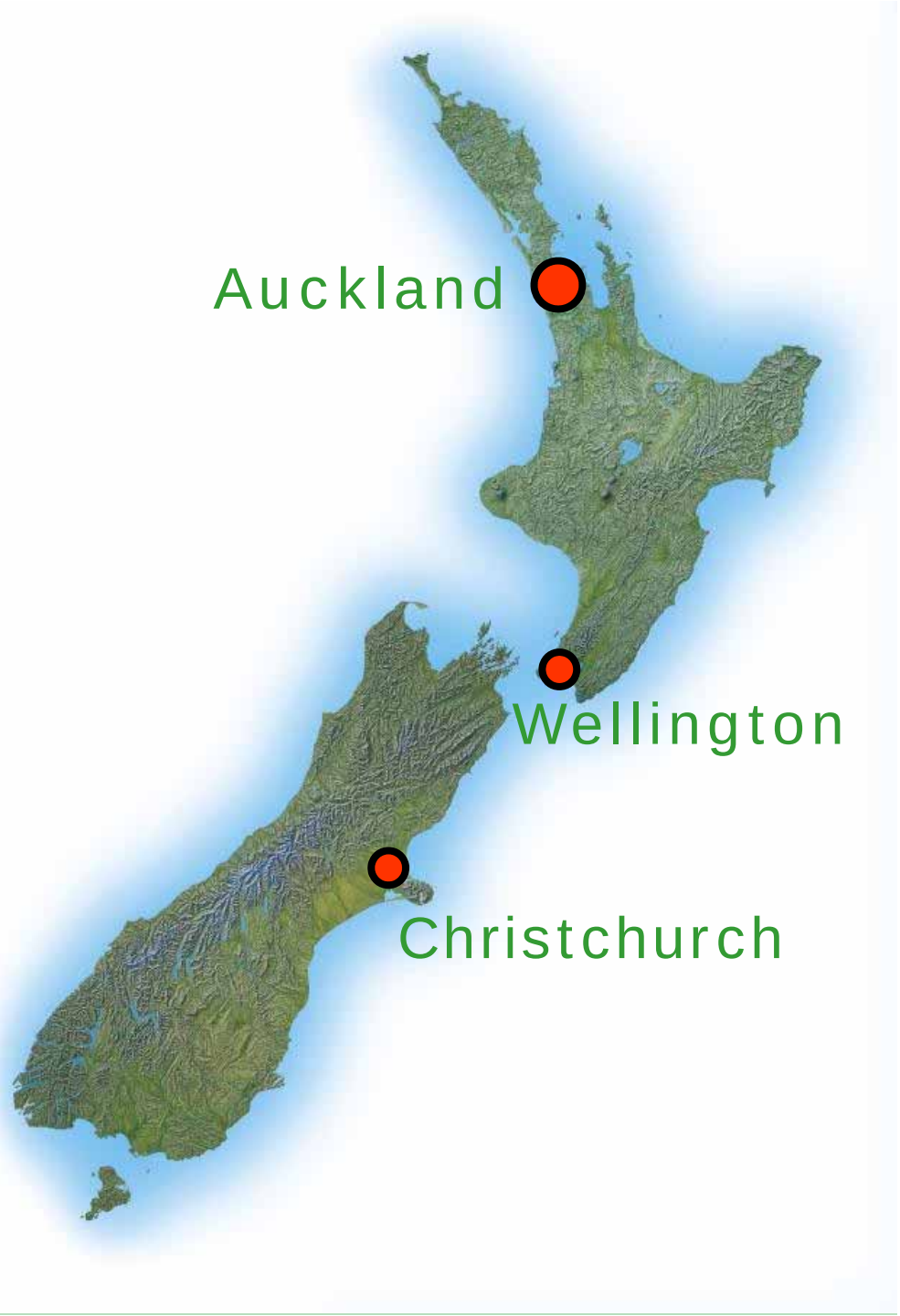
New Zealand

- 4.5 million people
  - Low population density
  - Very urbanised
- Typical Western Development
  - Automobiles
- ~1.4% of Trips by Bike
  - ~3% commuting



Cycling Safety in New Zealand

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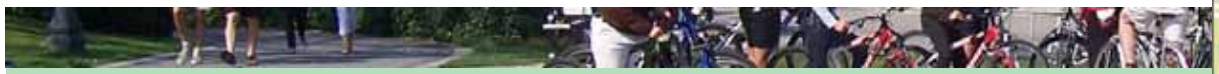


- ~10 Cycling Fatalities/yr
  - ~1000 Reported Injuries/yr
- Widespread perception about "danger" of cycling

Sporadic cycling facilities

Isn't Cycling Unsafe?

"Peak hour urban traffic is dangerous for cyclists… The best protection for cyclists is prohibition from peak hour urban roads"

"Really, you must have a screw loose to want to ride a bike on today's roads, you just don't know what nutter is behind the wheel."

Onlooker saves cyclist dragged under truck

CAROLINE KING

Last updated 08:55 30/07/2013 48 Like 312 Tweet 15 +1 Share

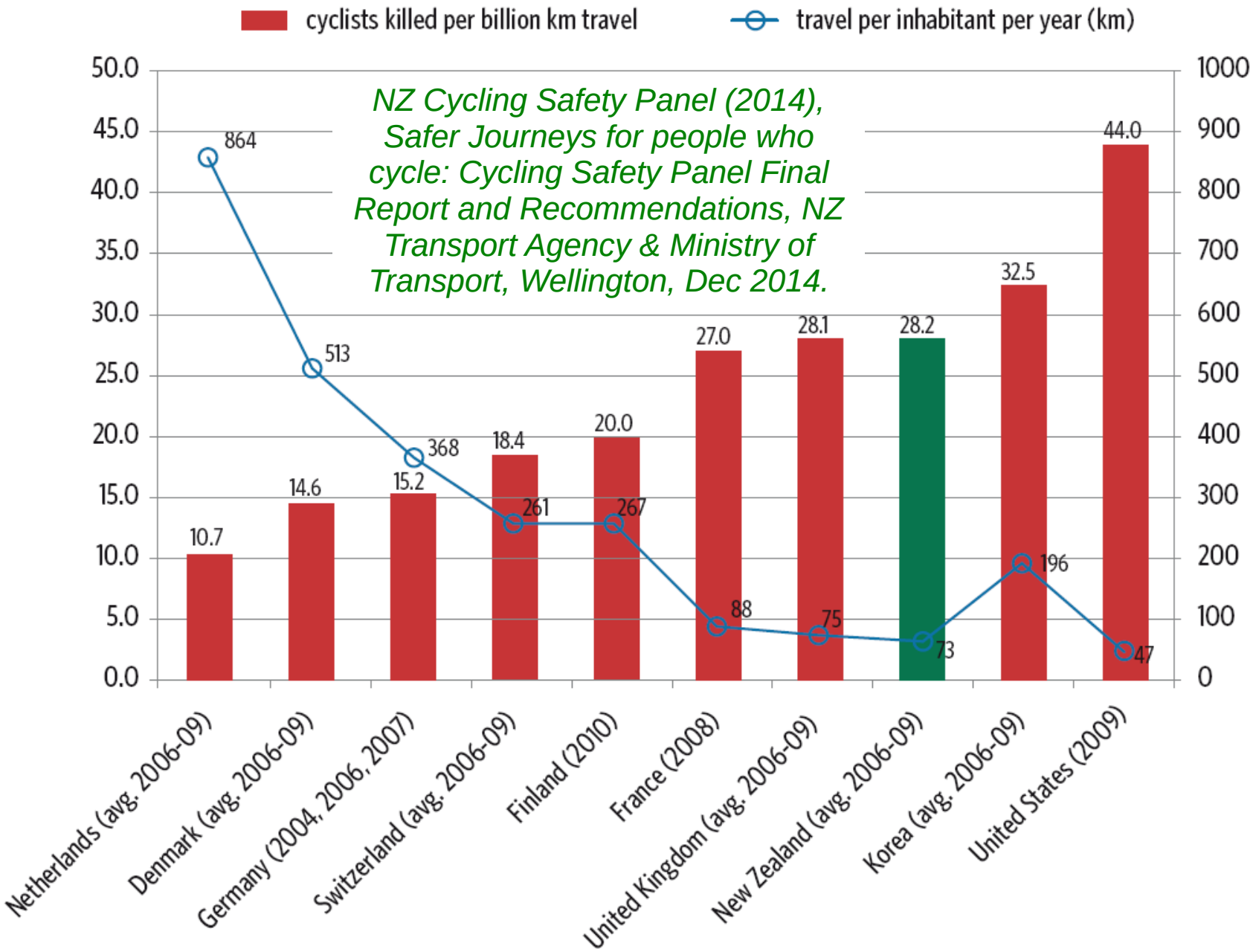
DEAN KOZANIC/Fairfax NZ

CRASH: Christchurch roofer Richard Mitchell says the truck dragged the cyclist up to 30 metres. The cyclist, in his 30s, is in an induced coma in Christchurch Hospital.

Risk of Cycle Crashes

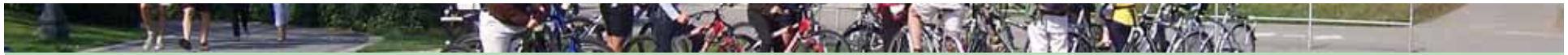
- **Perceived** Risk influenced by:
  - Regular Negative Media
  - Lack of Familiarity with Cycling by many
  - Can't Control Behaviour of Other Road Users
  - Immediacy of Injury/Death
- **Actual** Calculated Risks in NZ:
  - 1 Cycling Death per **2.5 million hrs** cycled
  - 1 Serious Injury for every **20,000 hrs** cycled
  - Health benefits of cycling outweigh risks **20:1**

Bicycle travel per inhabitant per year (km) and Number of cyclists killed per billion km of bicycle travel



NZ Cycling Safety Panel (2014), Safer Journeys for people who cycle: Cycling Safety Panel Final Report and Recommendations, NZ Transport Agency & Ministry of Transport, Wellington, Dec 2014.

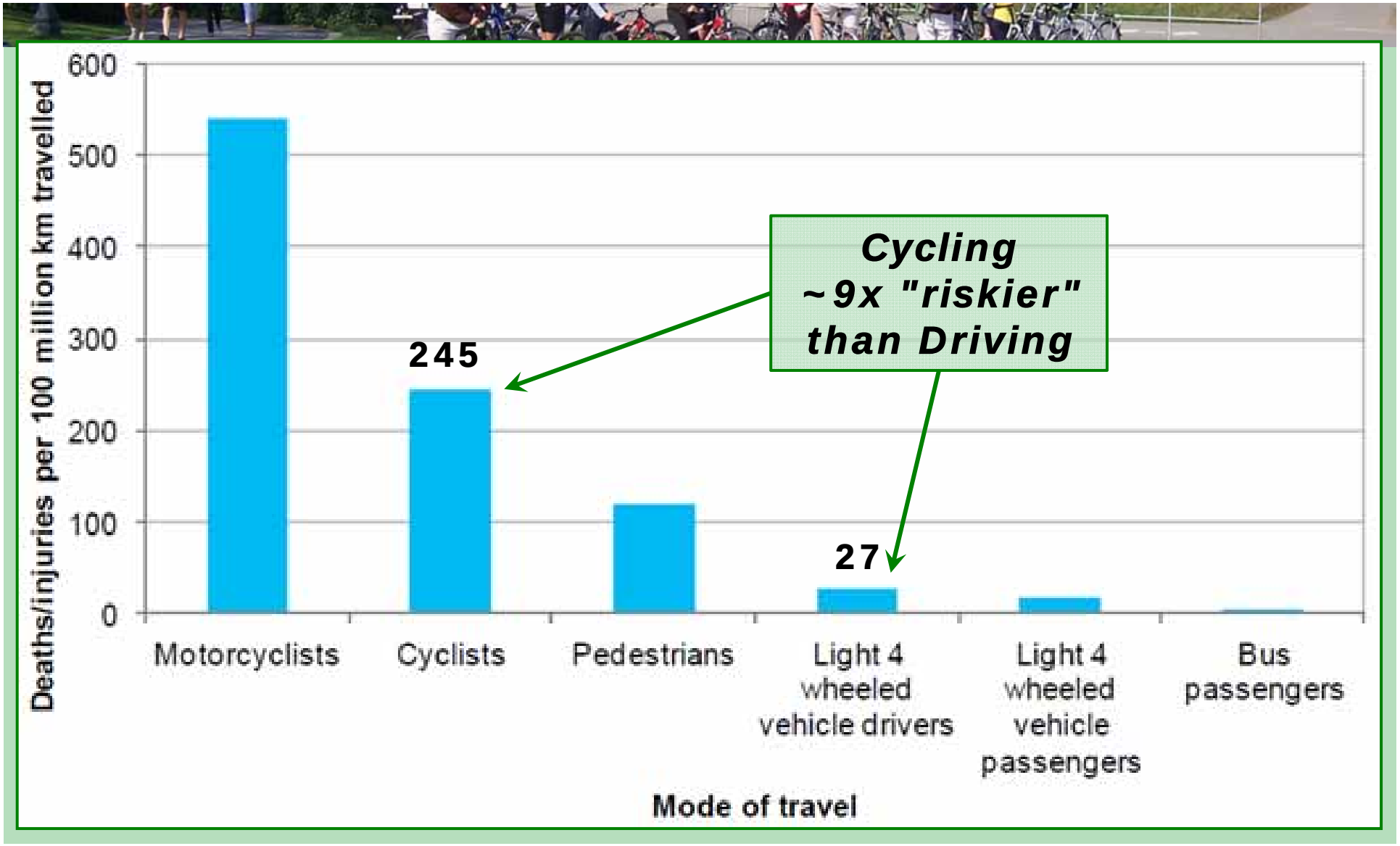
Comparisons with Other Modes



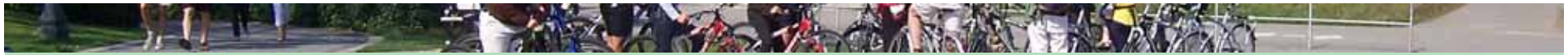
- In many countries, one of the barriers to acceptance and encouragement of cycling is the **perceived danger** of the mode
  - By politicians, policymakers, and the public
- Not helped by "official" comparisons of different travel modes
  - Typically show cycling as having a far greater crash rate than other modes (driving, walking)

Not really "comparing apples with apples"…

Safety of Travel Modes
from 2007-11 NZ Travel Survey



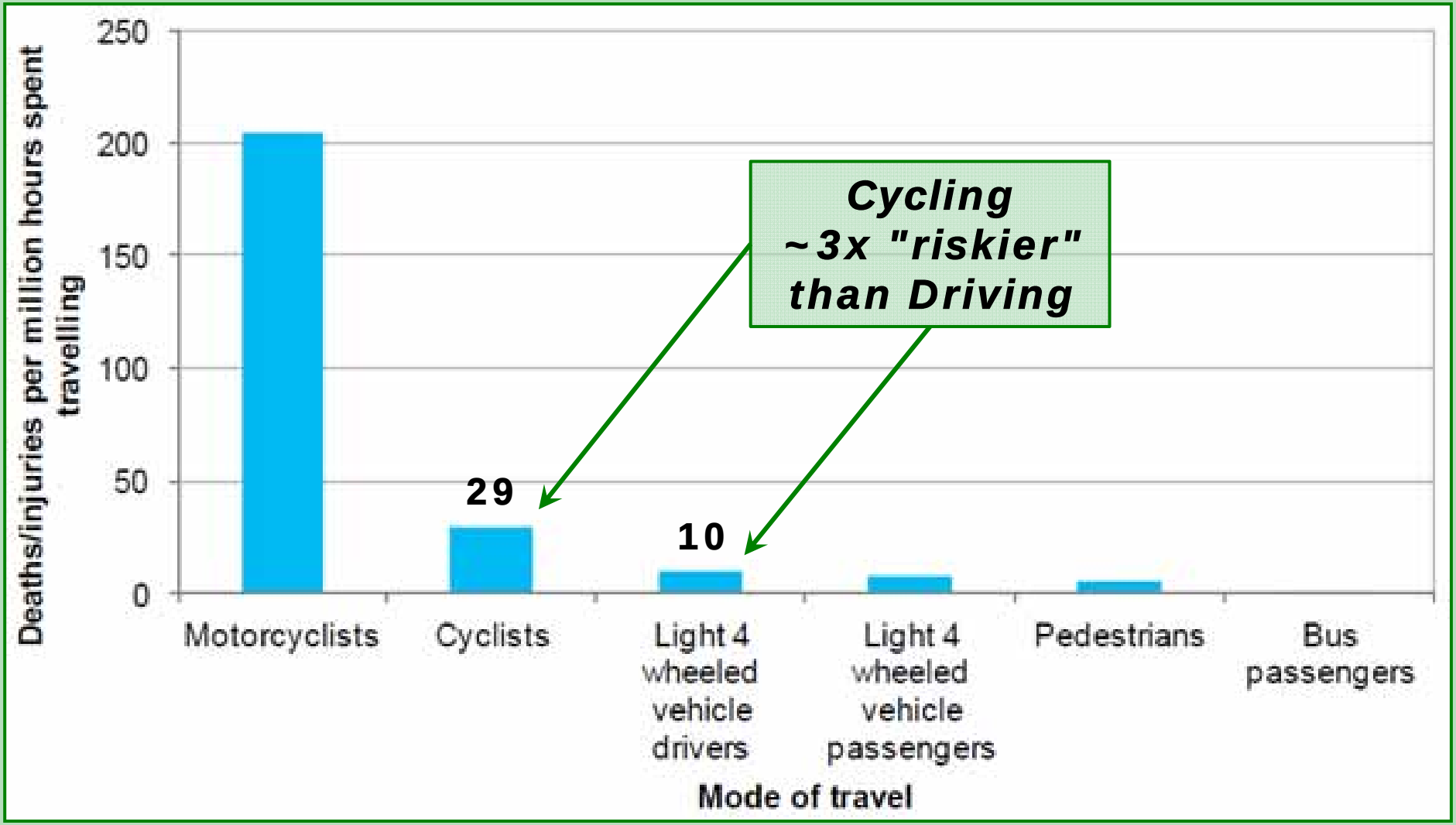
Research Context



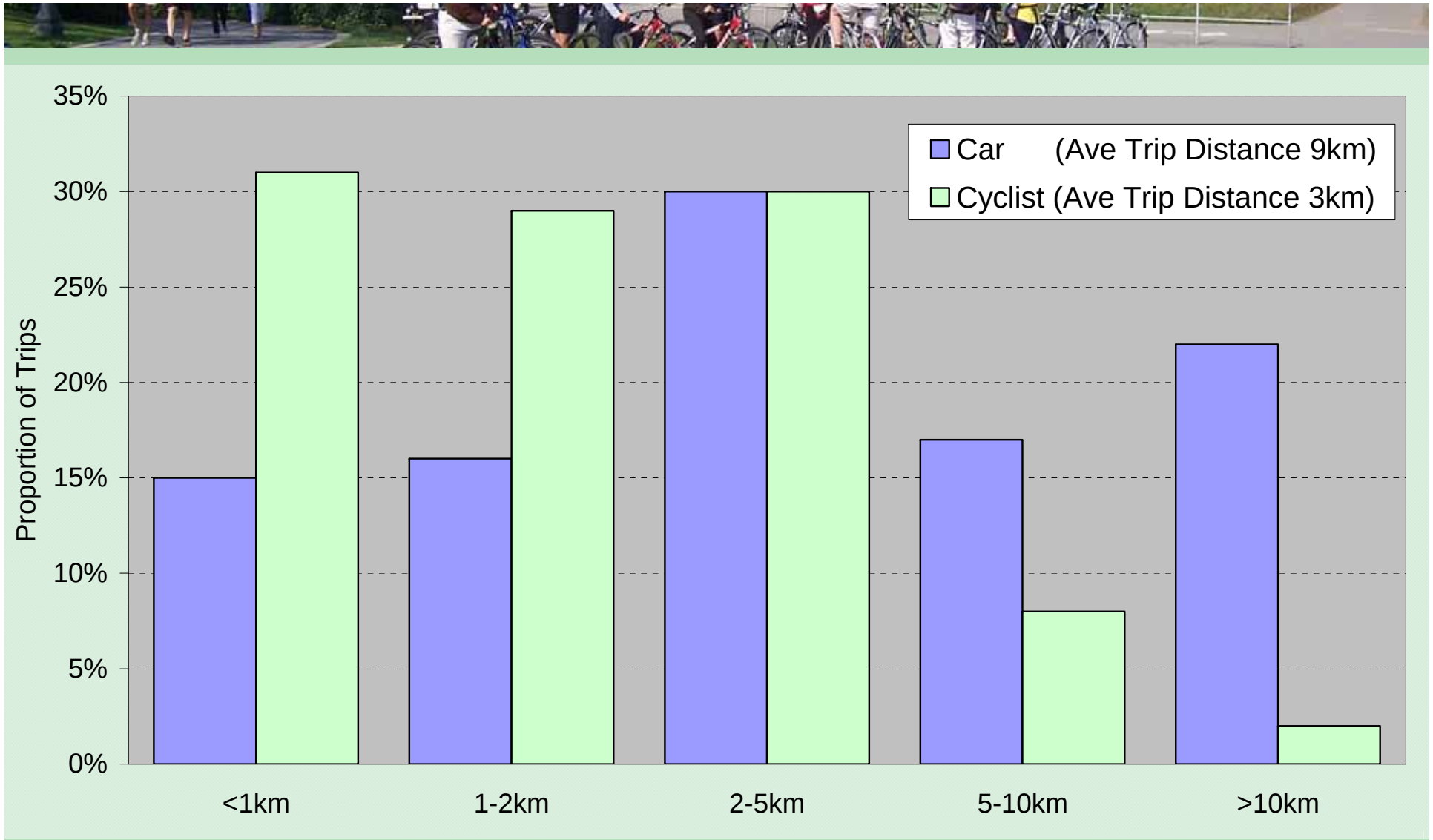
- Study how different factors affect the relative safety of different travel modes
  - Used 2003-09 data from NZ road crash database & Household Travel Survey
  - Compared relative crash rates for travel modes
- Aim to address the key question for a person considering their travel options:

*"What is the risk to **me** in making the **same** type of trip on the **same** types of facility by bike instead of driving?"*

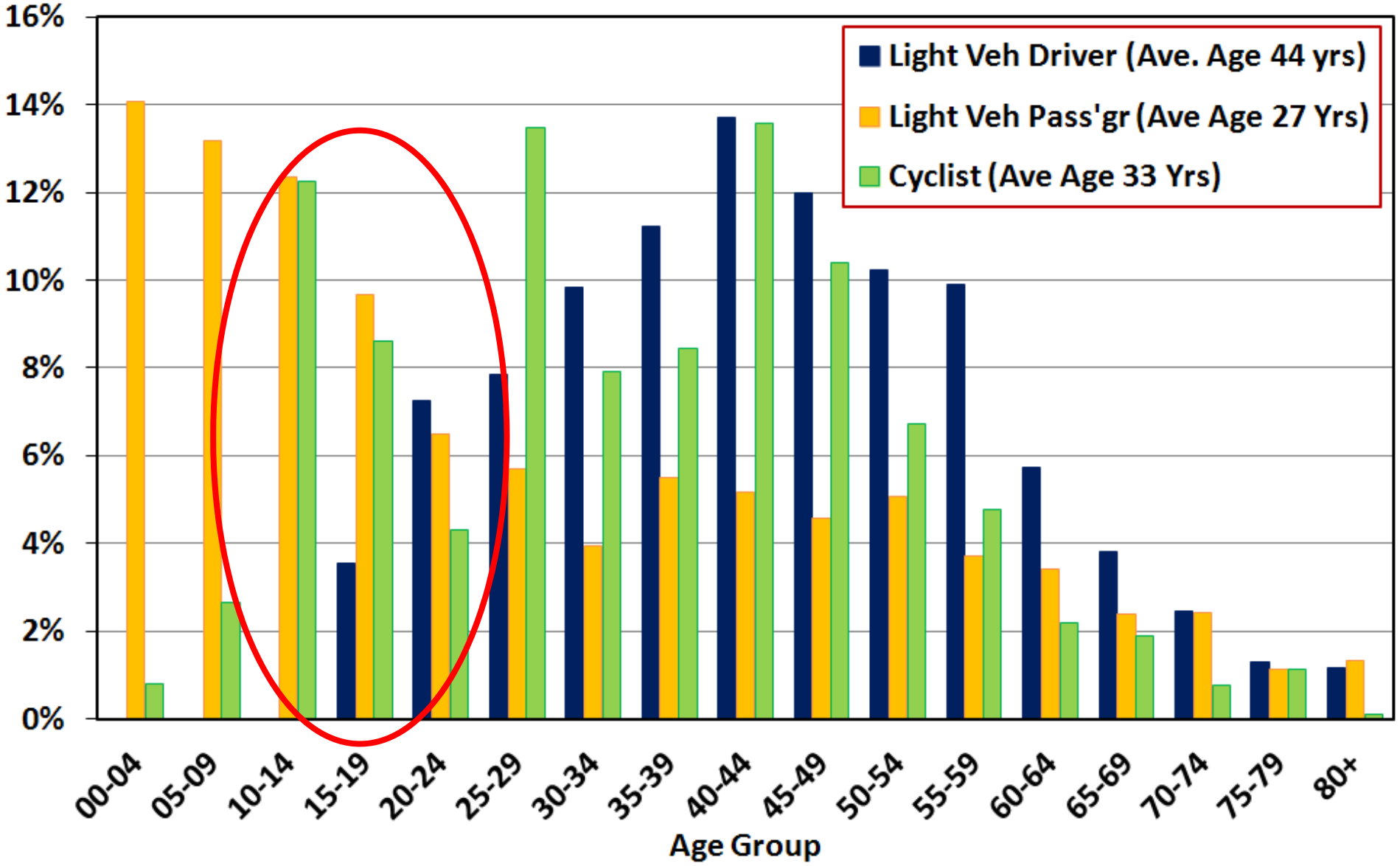
Safety per Hour Travelled



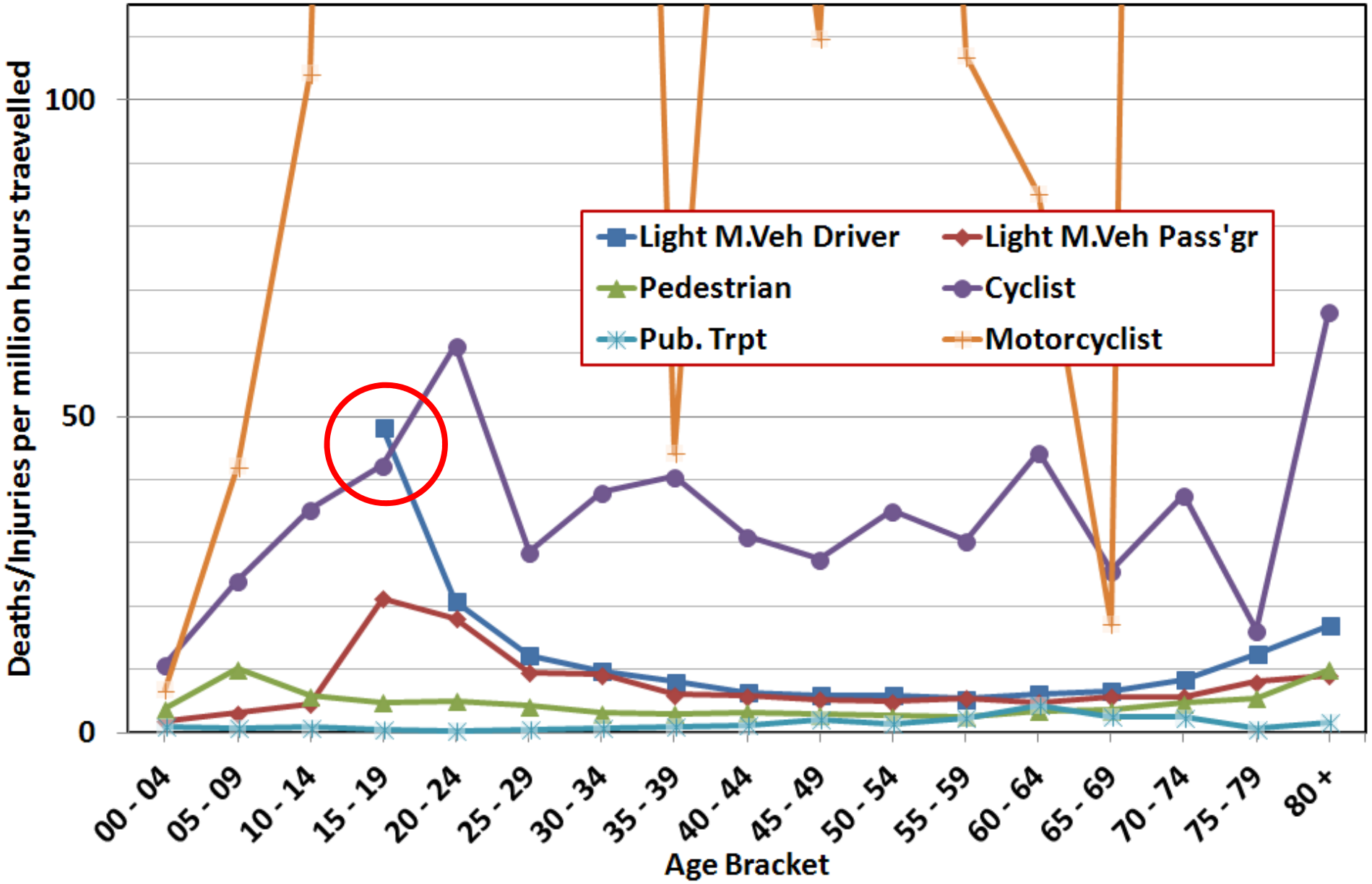
The Same Trip Made?



Age Distribution of Travellers



Travel Mode Risk by Age



Where are we Driving?

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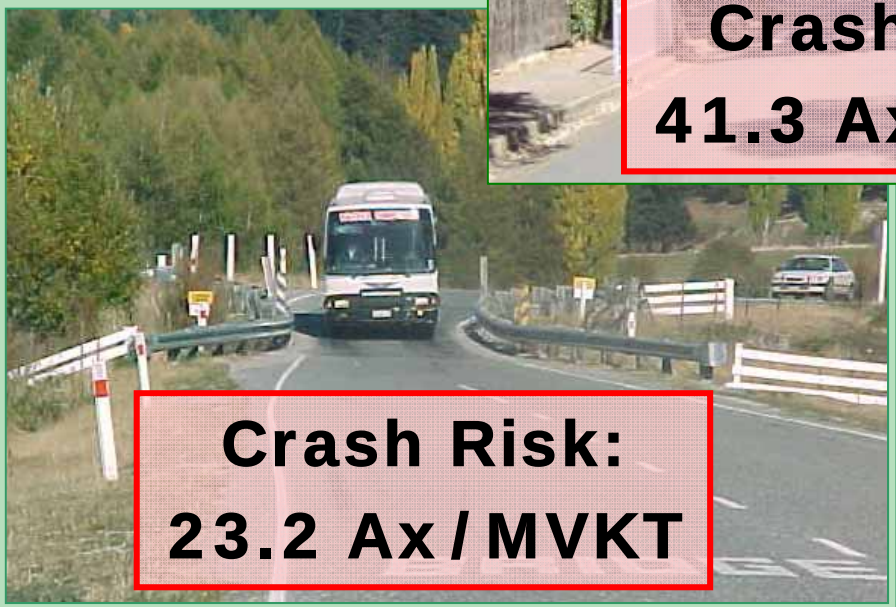

Where are we Biking?

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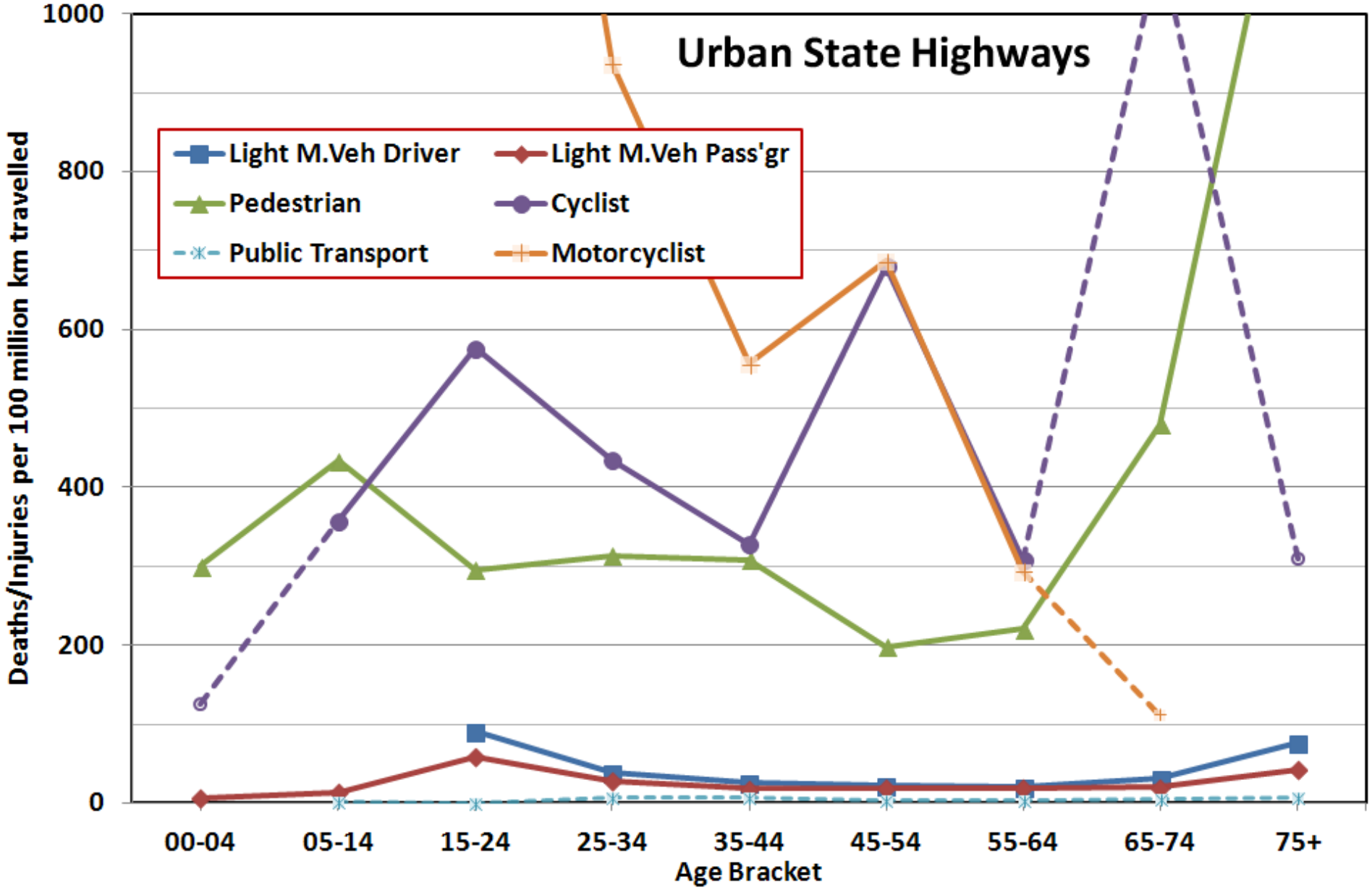
But where are the "cycle motorways"?

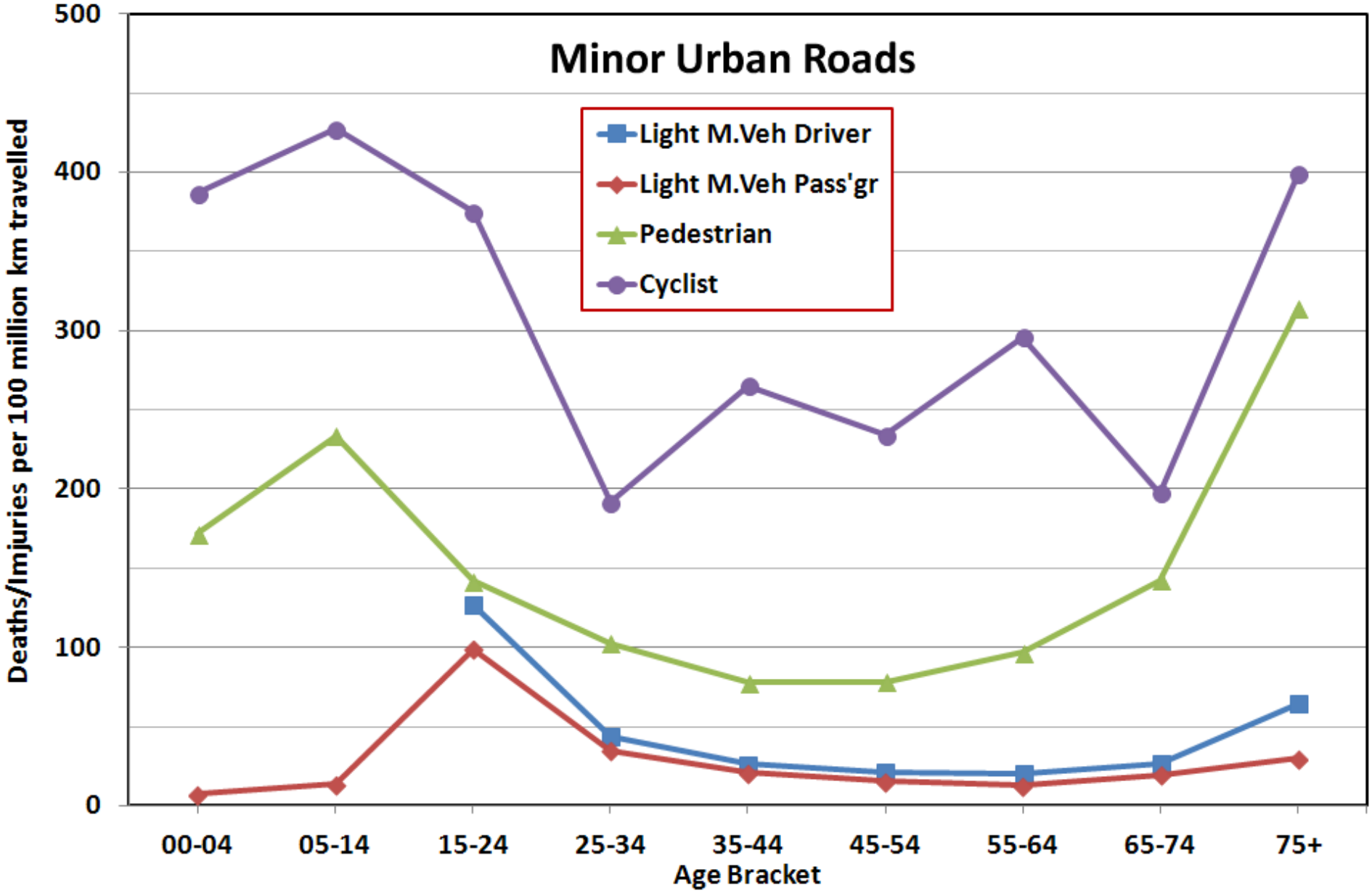
"Safe", Segregated Cycle Facilities...

But off-road trips and crashes aren't recorded!

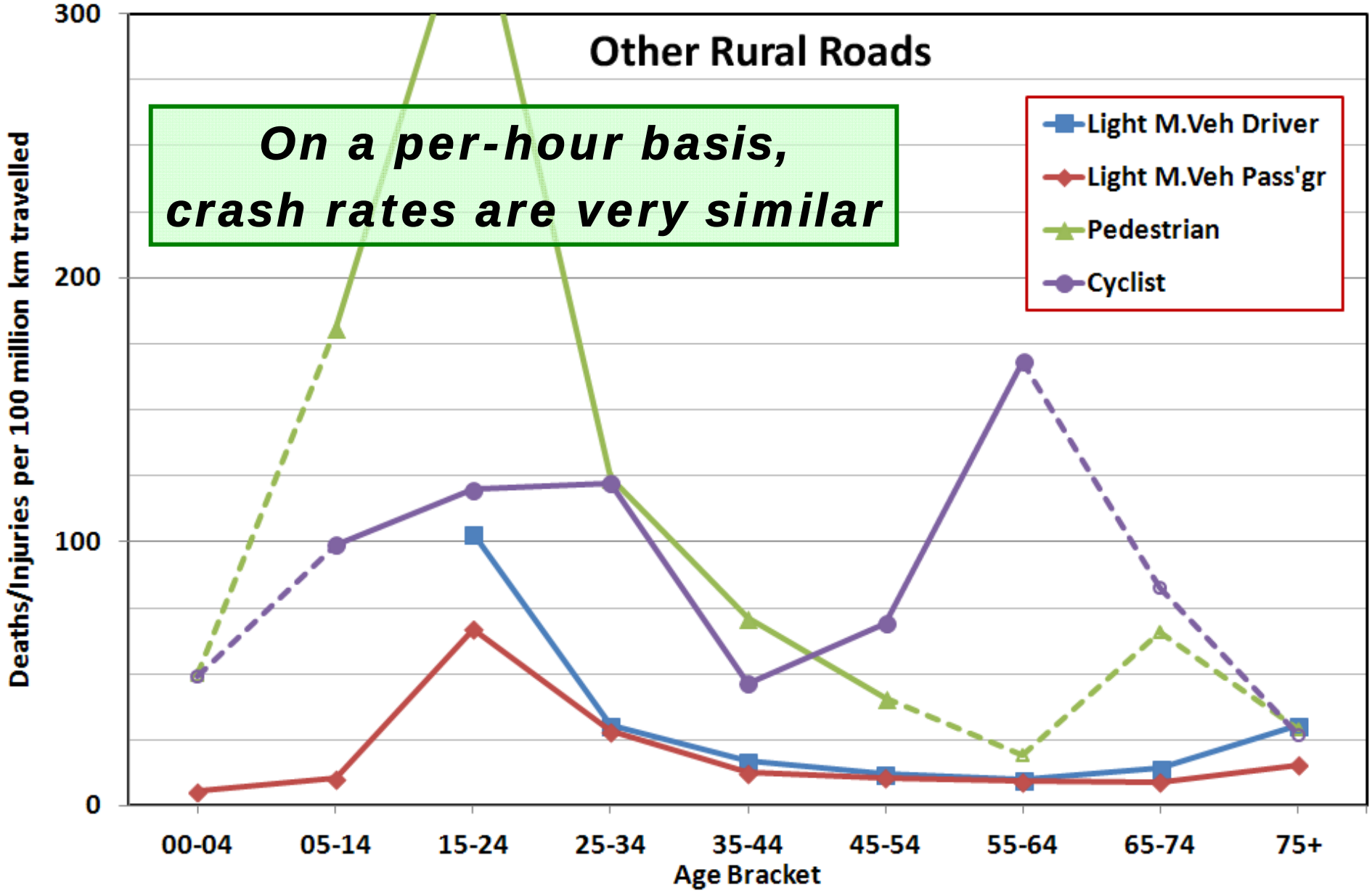
Urban State Highway Risk



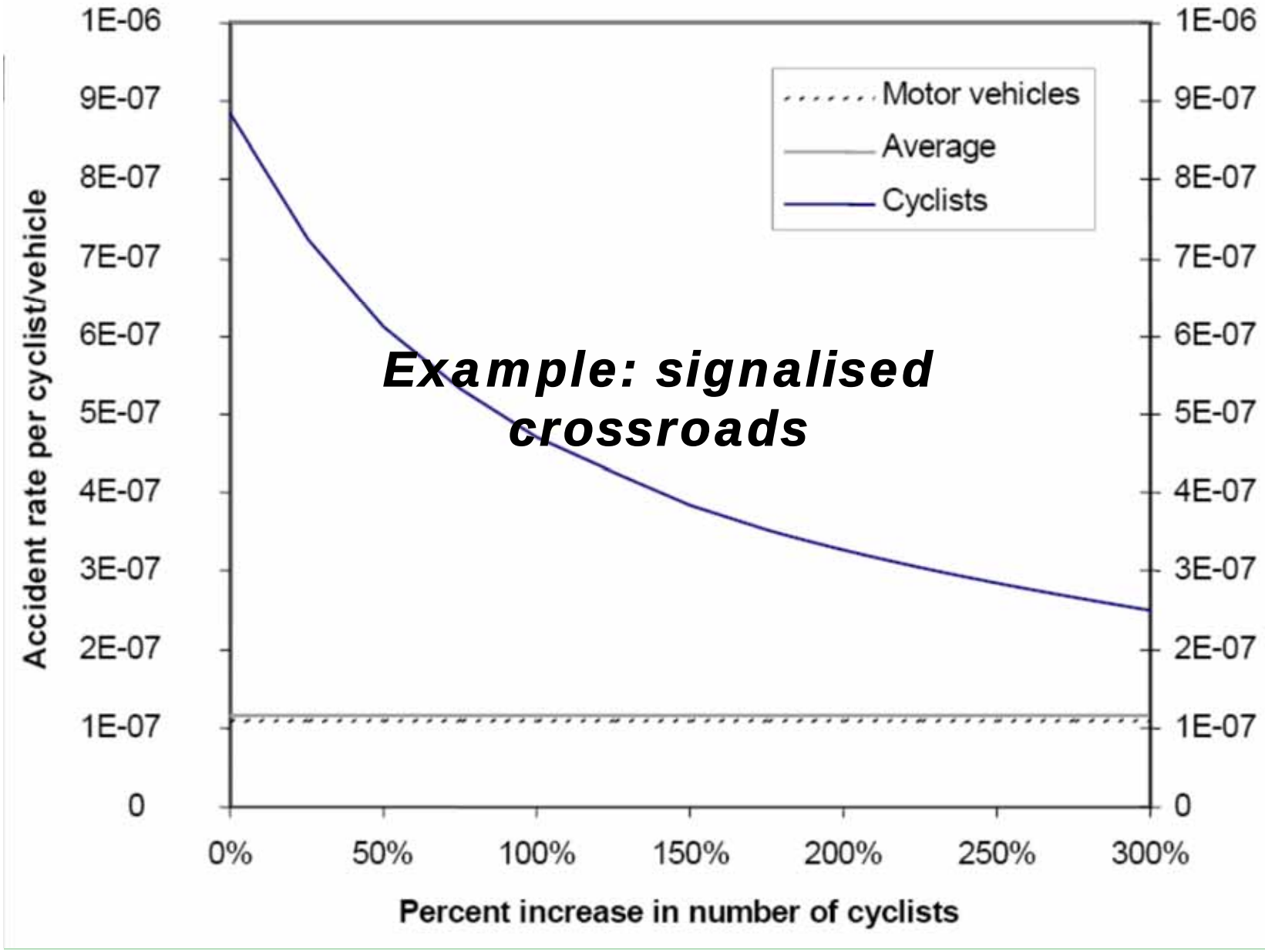
Minor Urban Road Risk

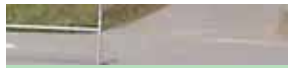


Other Rural Road Risk



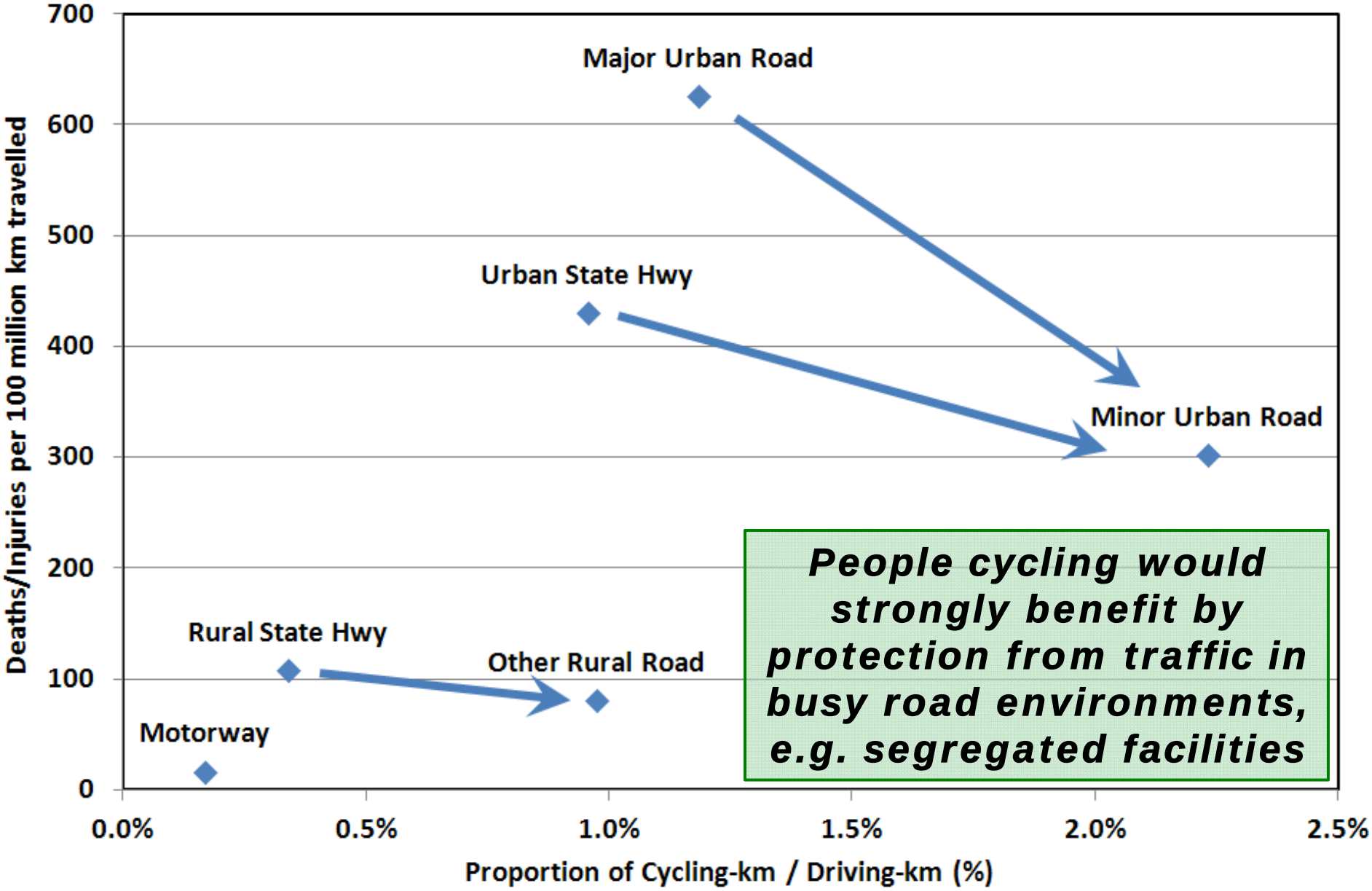
Safety in Numbers!





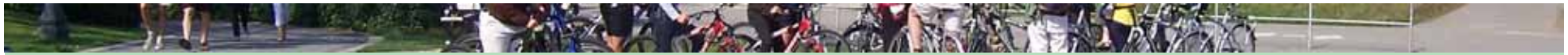
LTNZ Research Report #289, 2006

Safety in Numbers?



People cycling would strongly benefit by protection from traffic in busy road environments, e.g. segregated facilities

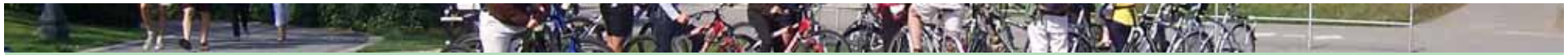
To Put Things in Perspective…



- ~**10** cyclist deaths on roads per year in NZ
- Average of ~**360** motor vehicle occupants killed / year in NZ
- ~**300-500** premature deaths / year in NZ due to motor vehicle emissions
- ~**2500** deaths / year due to physical inactivity in NZ

20:1 benefit of life-years gained from cycling vs life-years lost (BMA, 1992)

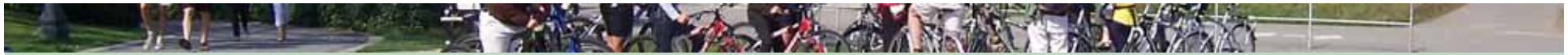
Conclusions



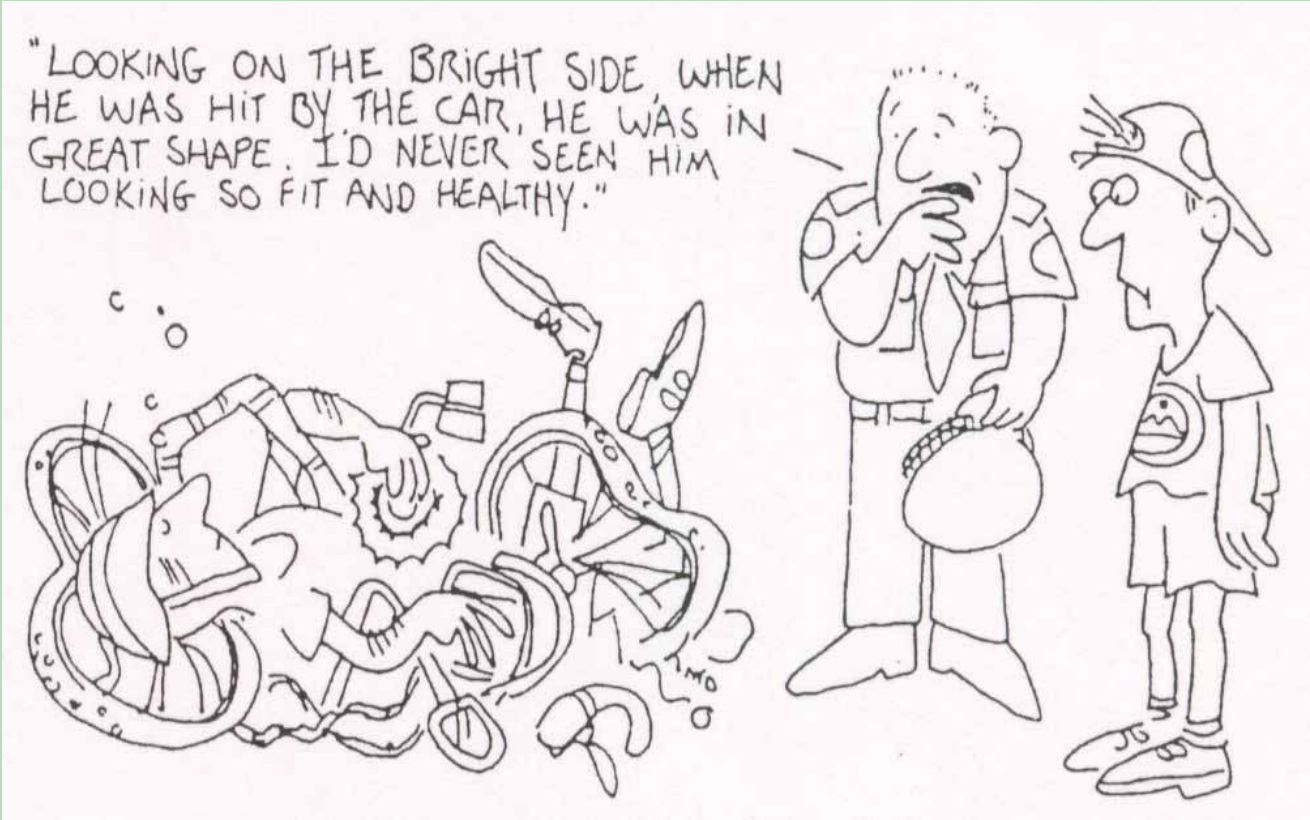
- Safety comparisons may not always be "comparing apples with apples"
  - Relative amount of **time** taken by each mode
  - Average **distance** travelled by different modes
  - **Age** distributions / "road experience" of travellers
  - Types of **road environments / facilities** travelled
  - Different crash **reporting** rates by mode
  - Cumulative **"safety in numbers"** effect
  - Relative **health** costs other than road crashes

Sometimes cycling not really more dangerous

Thank You!



Any Questions?



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