Safer Cycling:

How the City of Vancouver is Proactively Improving Cycling Safety

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Urban Systems

2015 Canadian Association of Road Safety Professionals (CARSP) Conference
Session 5C: Cycling and Motorcycle Safety II
May 29, 2015
Ottawa, ON

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Study Context

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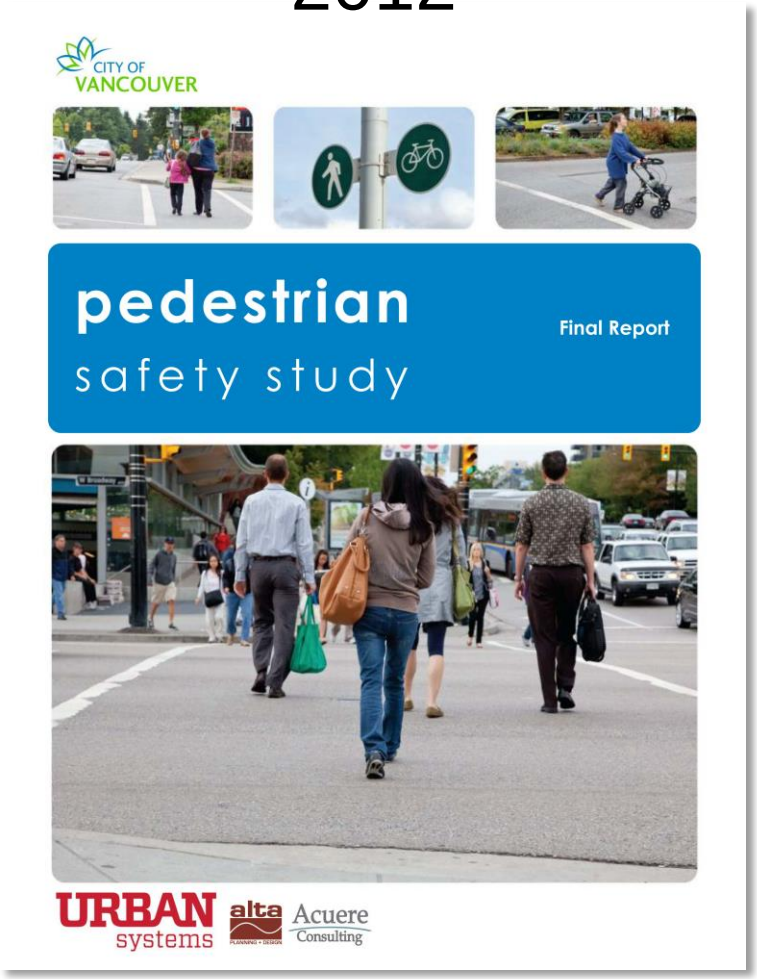
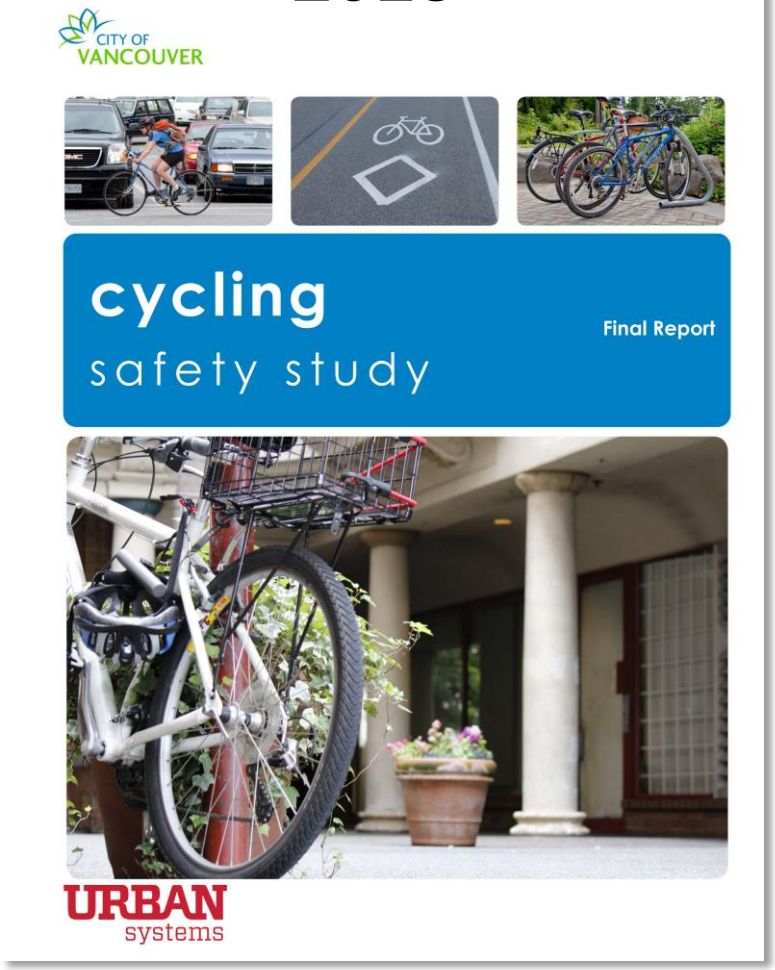
Study Context

2012



2015



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Study Purpose

- Compare cycling safety in Vancouver to other cities
- Analyze cycling collision data and cycling injury data
- Research and review safety measures
- Identify key issues
- Identify areas of focus to improve cycling safety

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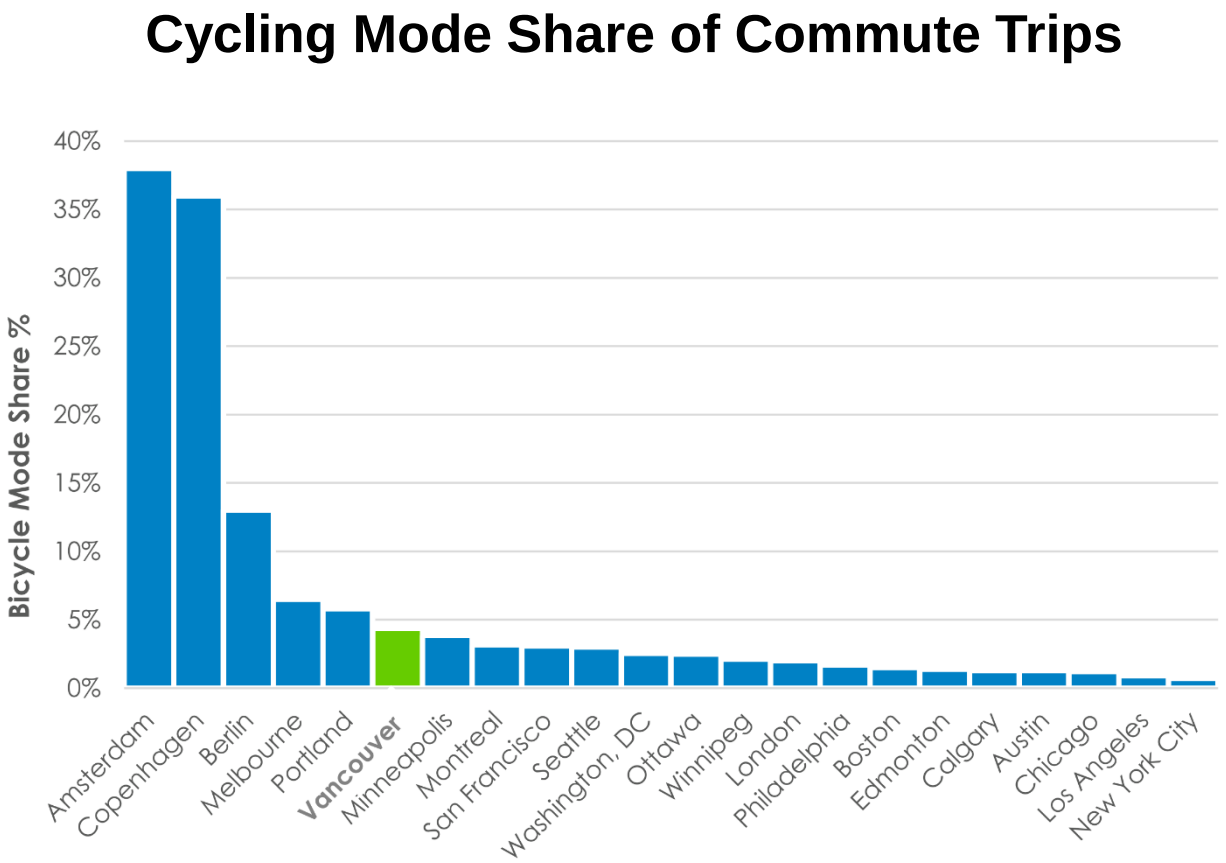
Cycling Mode Share

Vancouver has one of the highest cycling mode shares in North America

But, it is lower than many European cities



Source: various

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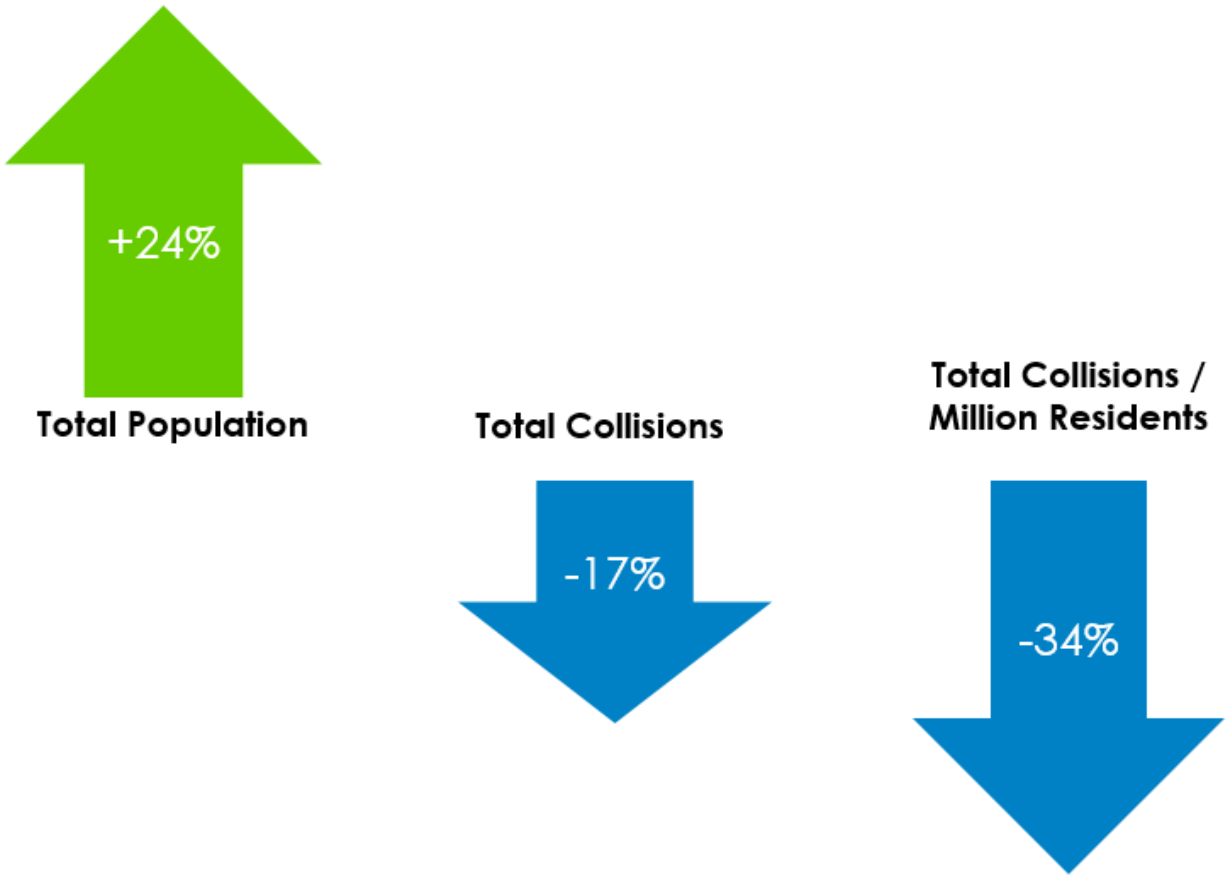
Collision Trends



Number of total collisions has decreased over the past 15 years, despite an increase in population and employment

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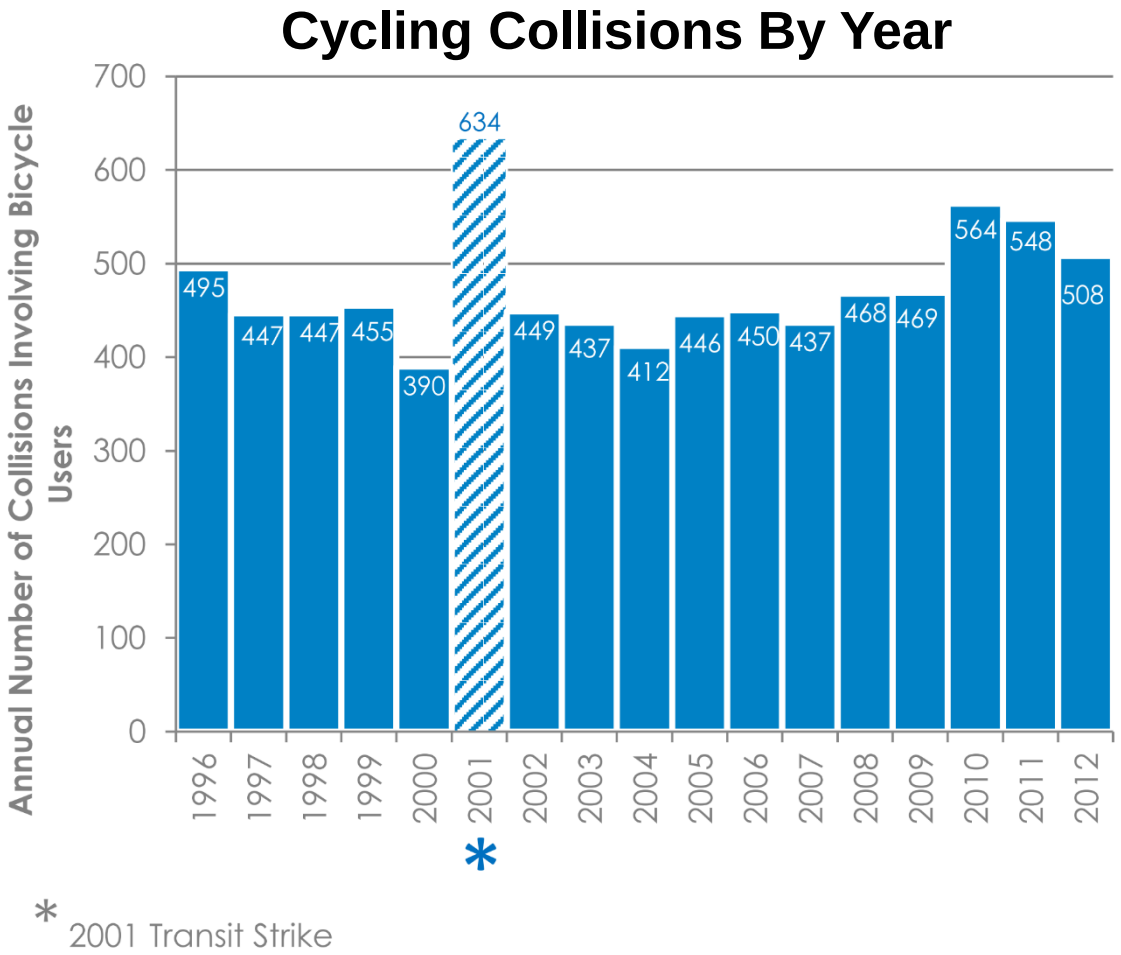
Collision Trends



Source: ICBC Collision Data (2007-2012)

Cycling collisions have remained relatively stable over this period

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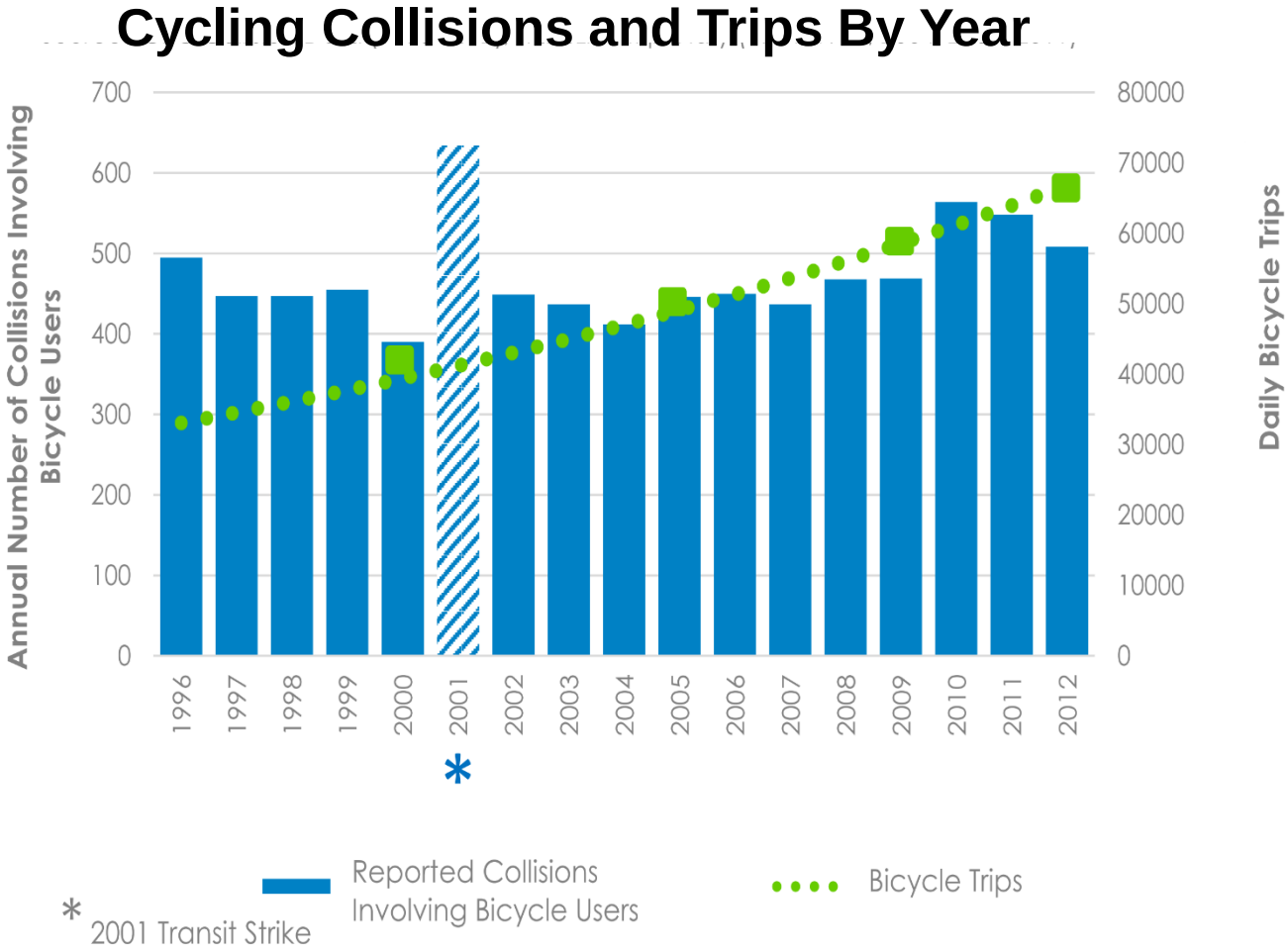
Collision Trends



Source: ICBC Collision Data (2007-2012)

BUT, cycling volumes have significantly increased over this period

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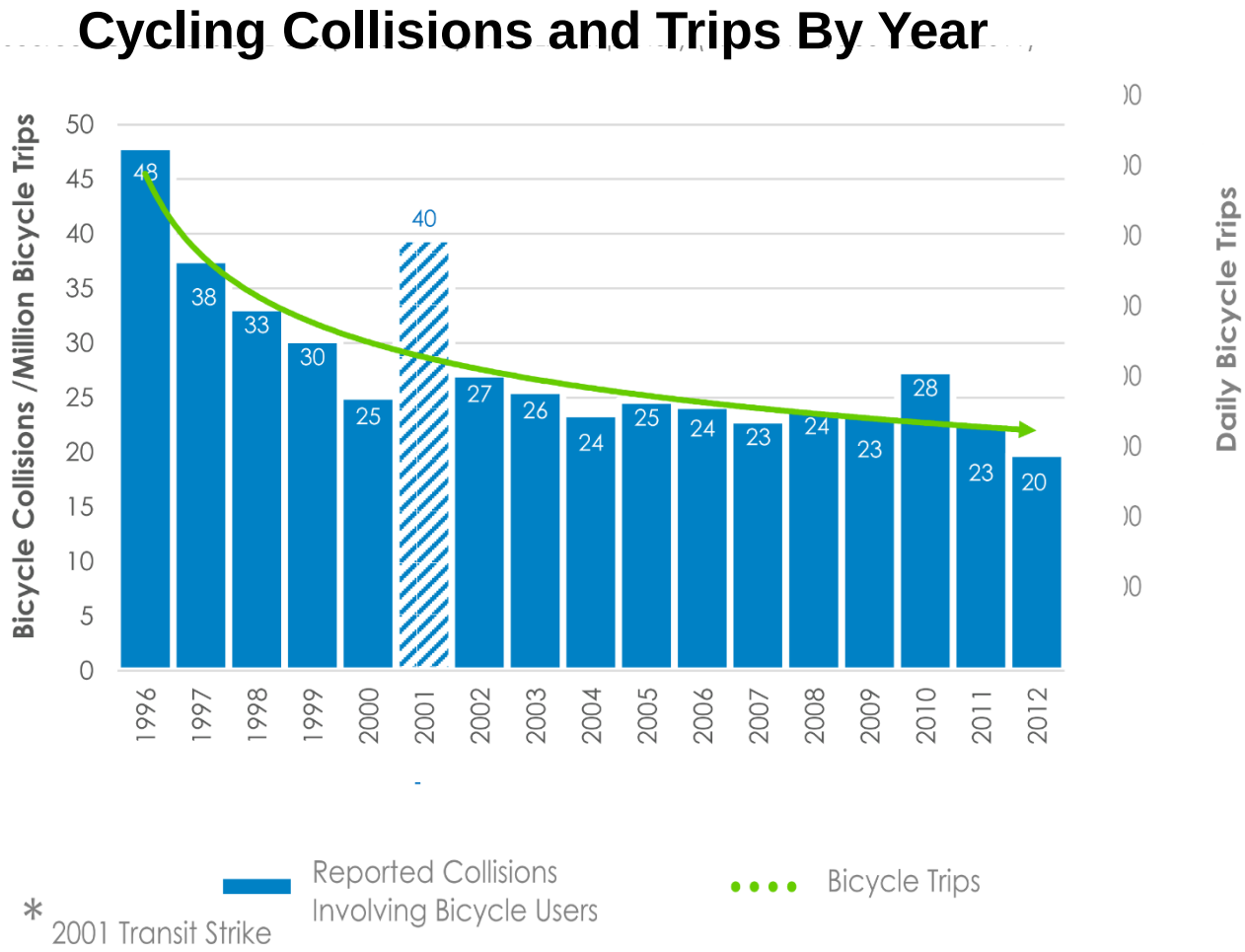
Collision Trends



Source: ICBC Collision Data (2007-2012)

Cycling collision rate has significantly decreased over the past 15 years

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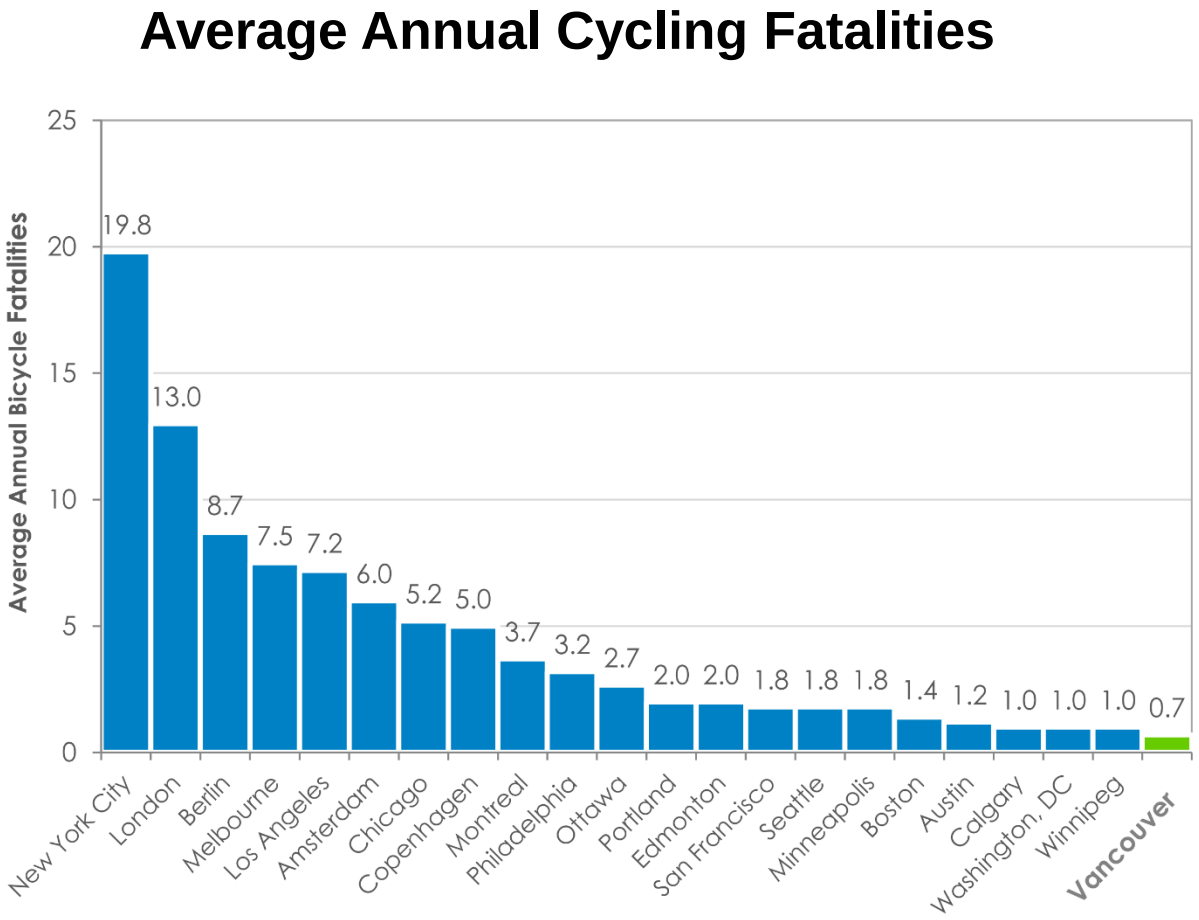
Cycling Collisions in Context

Vancouver has the fewest average annual cycling fatalities among peer cities reviewed



Source: various

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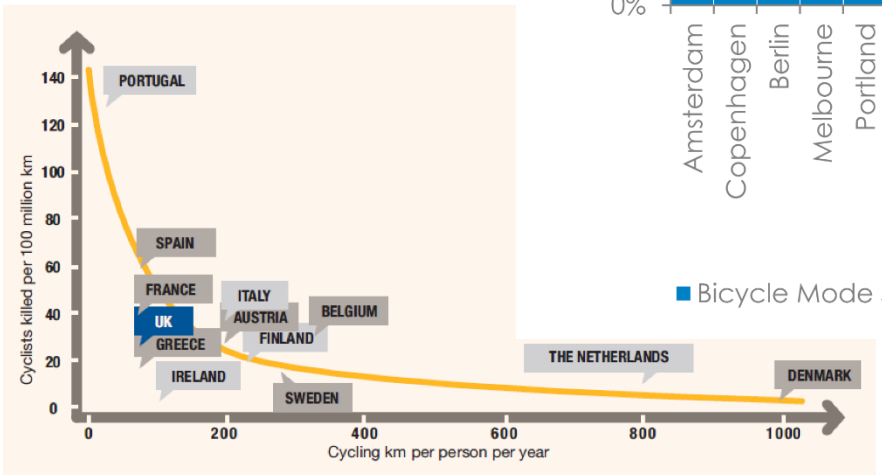
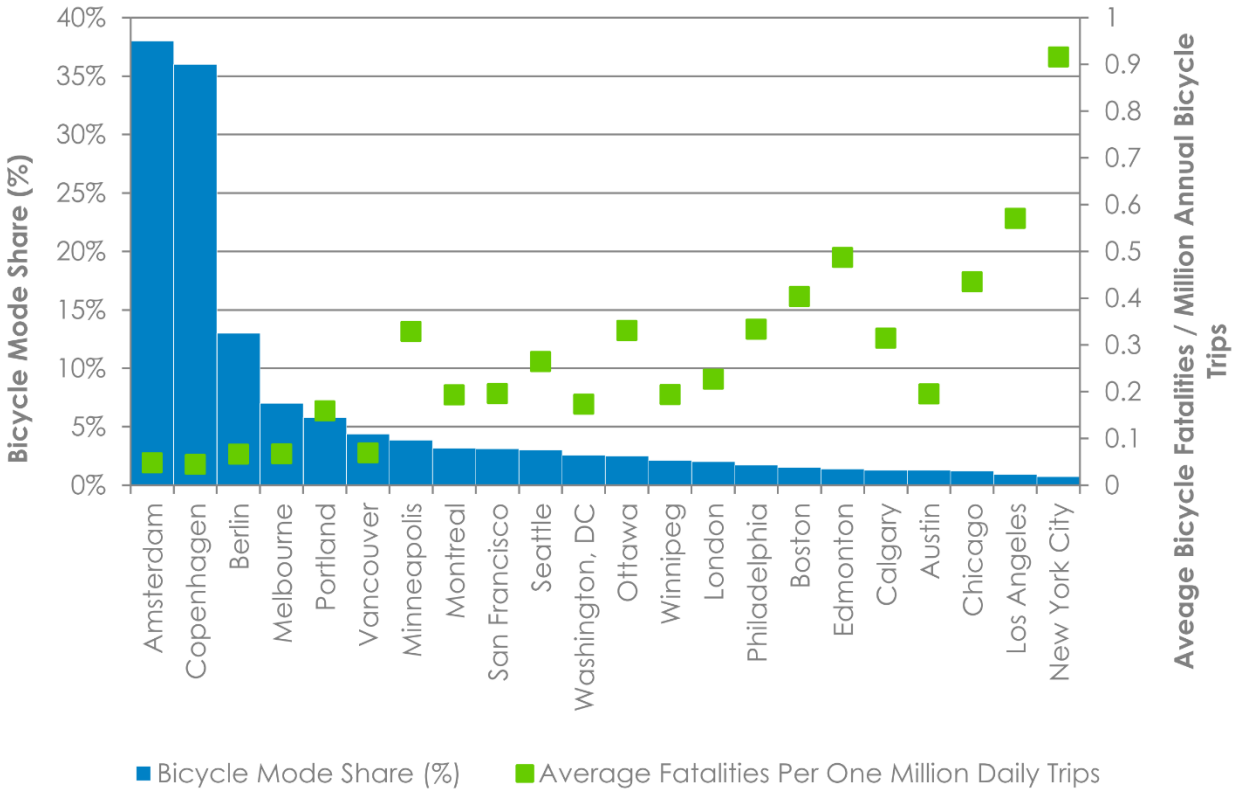
Safety In Numbers

Vancouver is a safe cycling city



Average Cycling Fatalities Per Million Cycling Trips



Source: various

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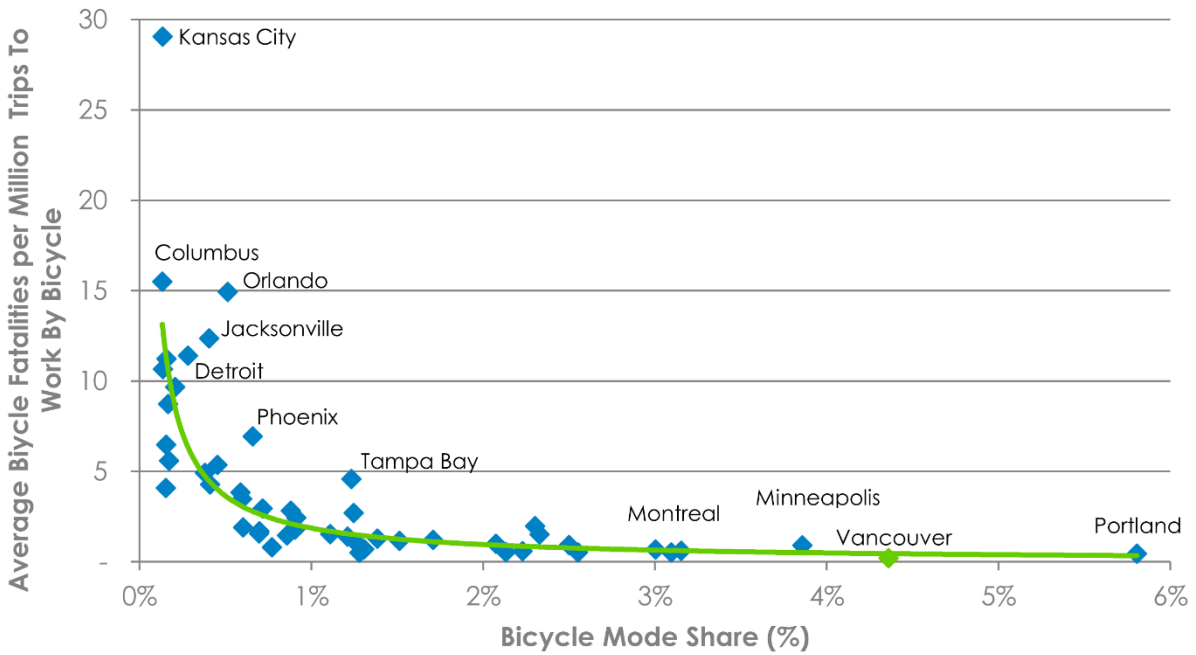
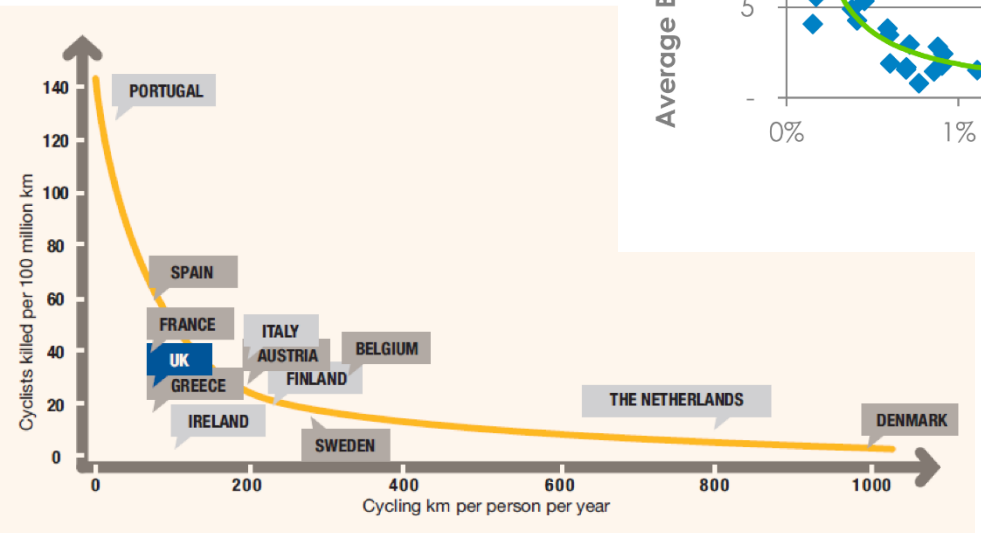
Safety In Numbers

Average Cycling Fatalities Per Million Cycling Trips





Source: various

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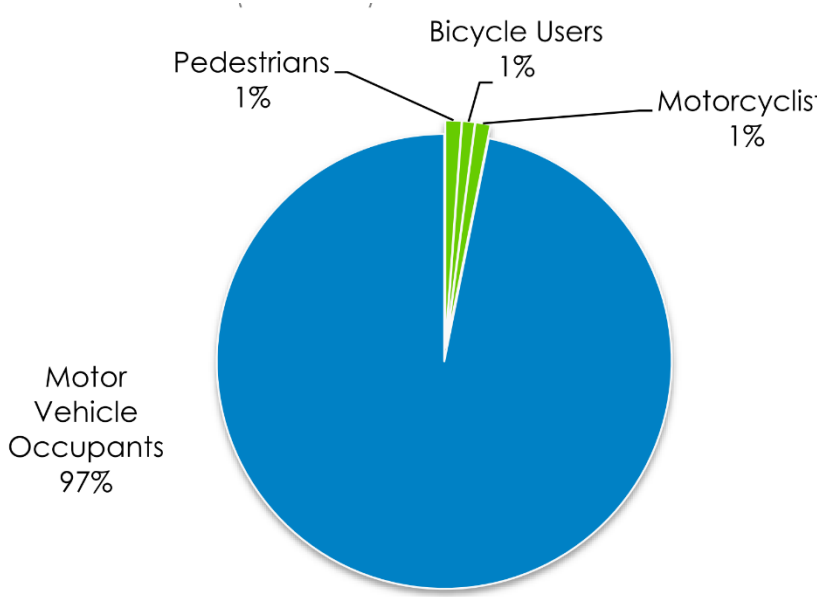
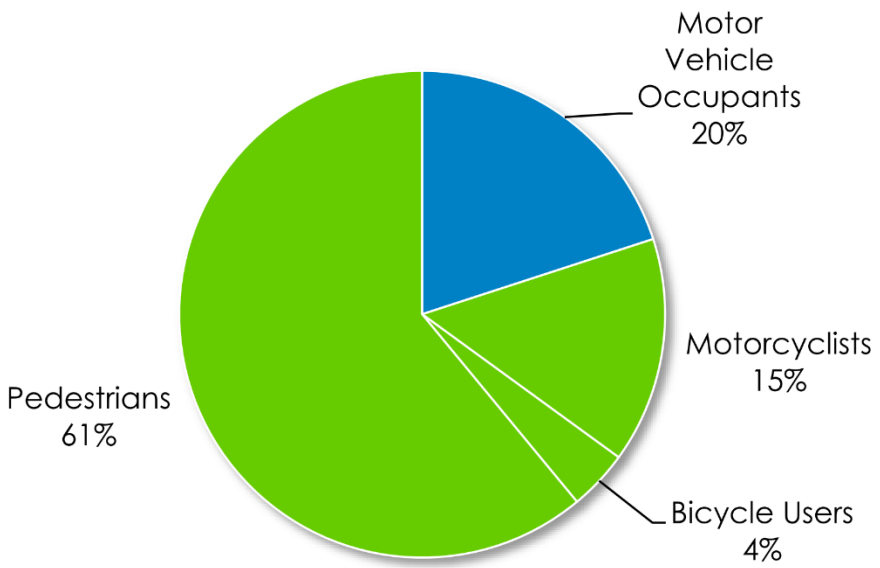
Cyclists are Vulnerable

Traffic Collisions & Fatalities by Mode





Collisions

Source: ICBC Collision Data (2007-2012)

Fatalities

Source: VPD Traffic Fatality Data (2007-2012)

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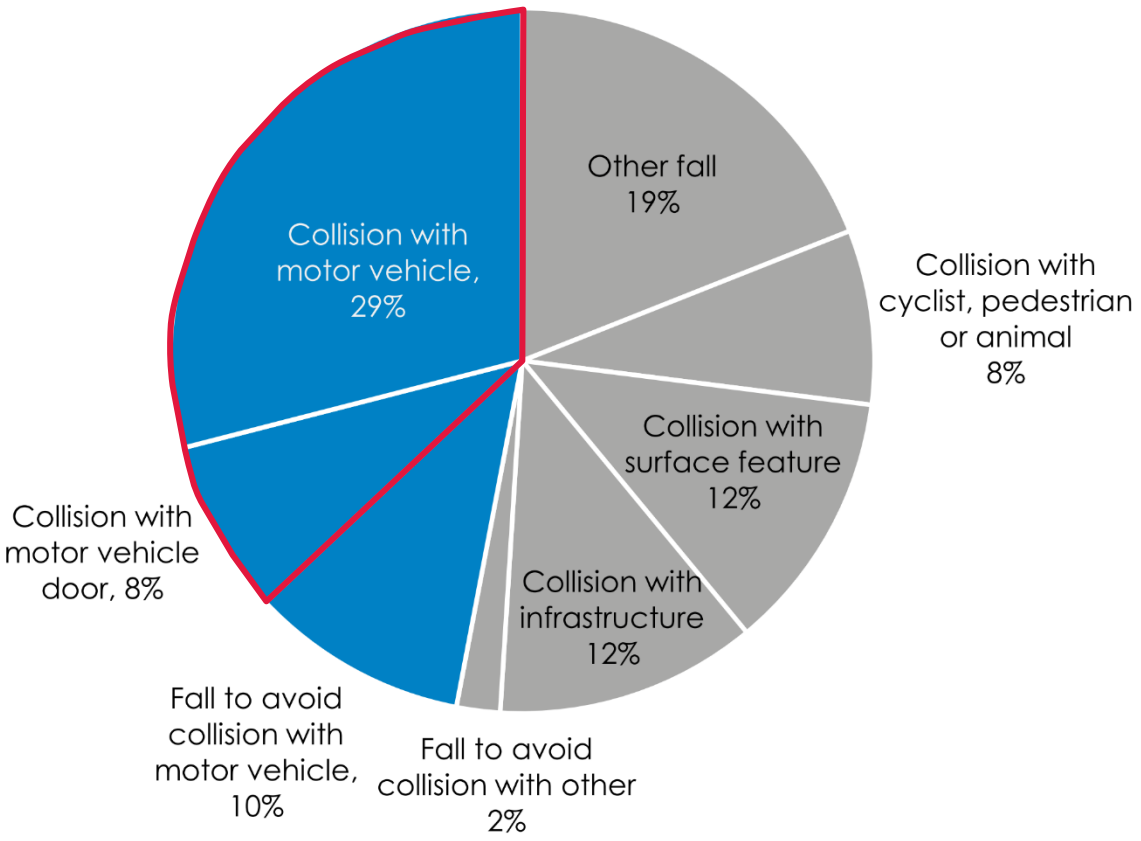
Cycling Injuries By Type

Only 38% of cycling injuries were a result of a collision with a motor vehicle

10% to avoid motor vehicle

52% other causes

Types of Cycling Injury Crashes



Source: BICE Data (2008-2009)

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Data Sources

Core Data

Ancillary Data

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Data Sources

- **Collisions:**
  - *Insurance Corporation of British Columbia (ICBC) & Vancouver Police Department (VPD)*
  - *2007 to 2012 (6 years)*
  - *2,994 bicycle-involved collisions*
- **Injuries:**
  - UBC *Bicyclists Injuries and the Cycling Environment – BICE*
  - *May 2008 to Nov 2009 (1.5 years)*
  - *400 injured Vancouver residents*

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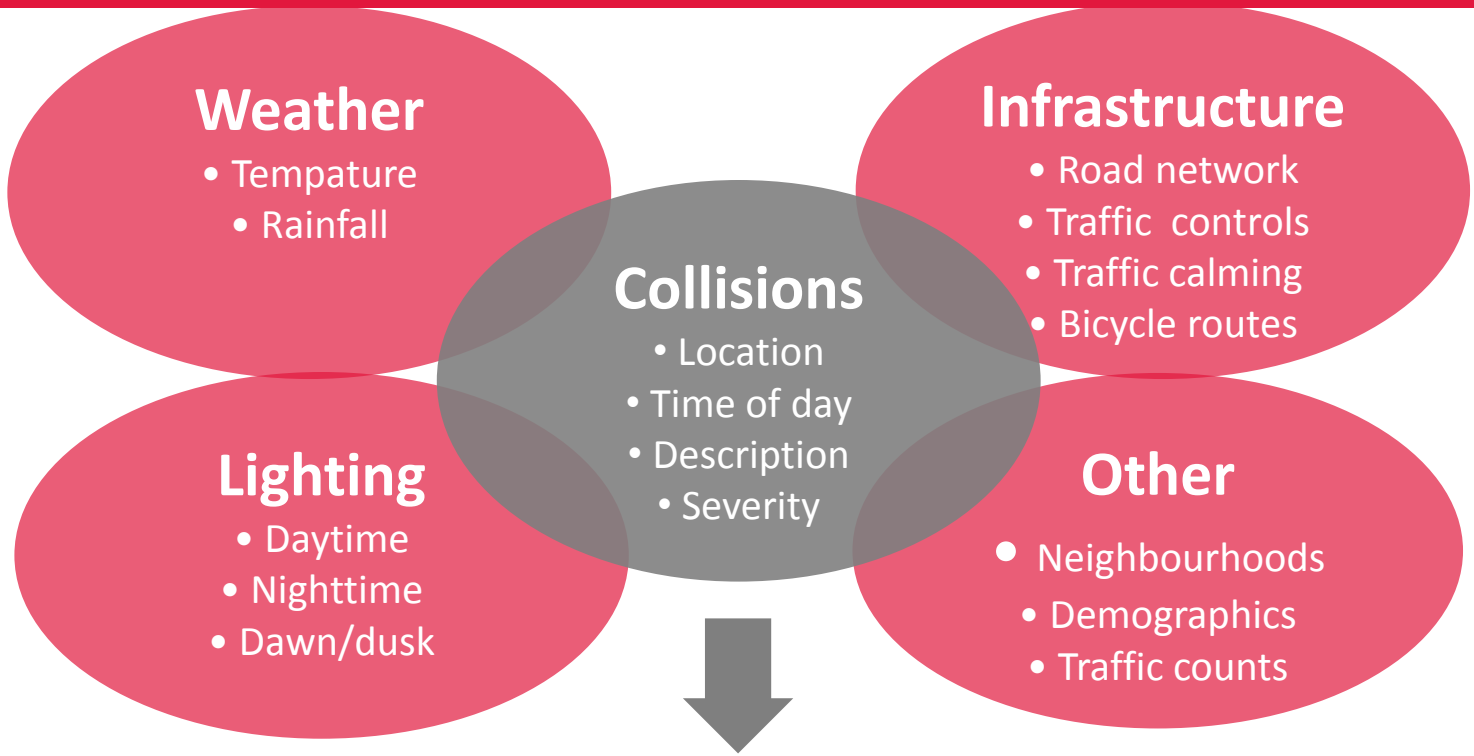
Methods



Key Issues

- Who
- When
- Where
- How

Action Plan

- Engineering
- Education
- Enforcement

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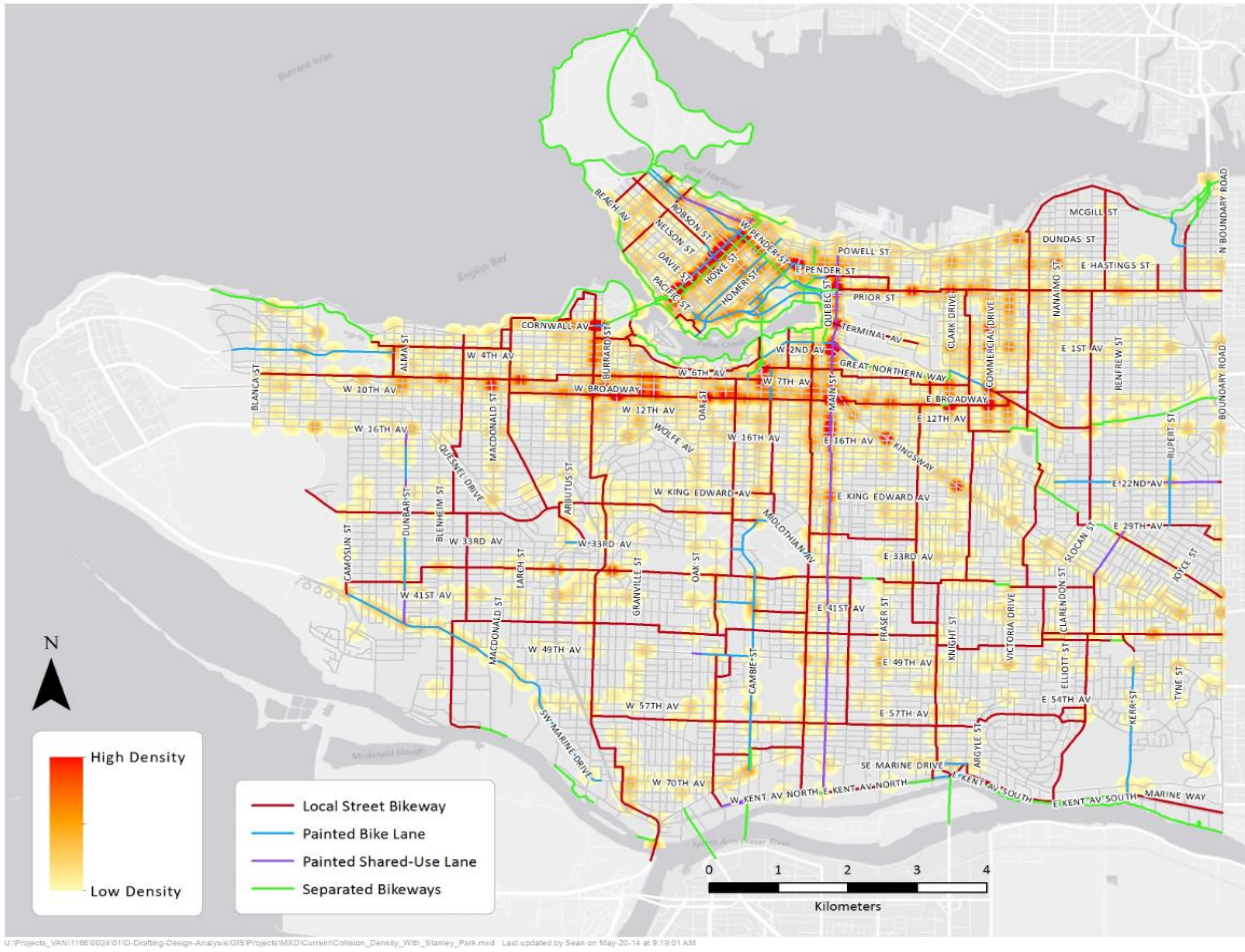
WHERE: Collision Hotspots

Collisions most likely downtown and several arterial streets

Over half of collisions occurred on streets with no bicycle facilities

Cycling Collisions by Location



Source: ICBC Collision Data (2007-2012)

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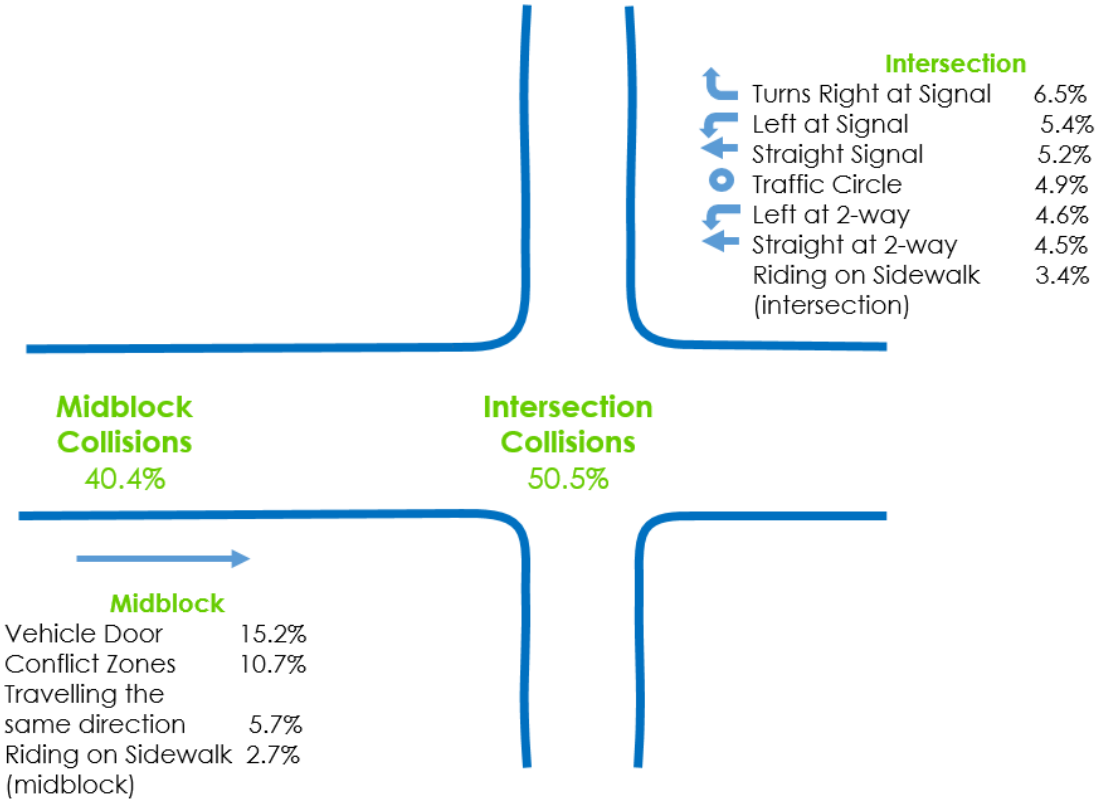
HOW: Types of Cycling Collisions

50% at intersections

40% mid-block

10% elsewhere (parking lots, pathways, etc).



Source: ICBC Collision Data (2007-2012)

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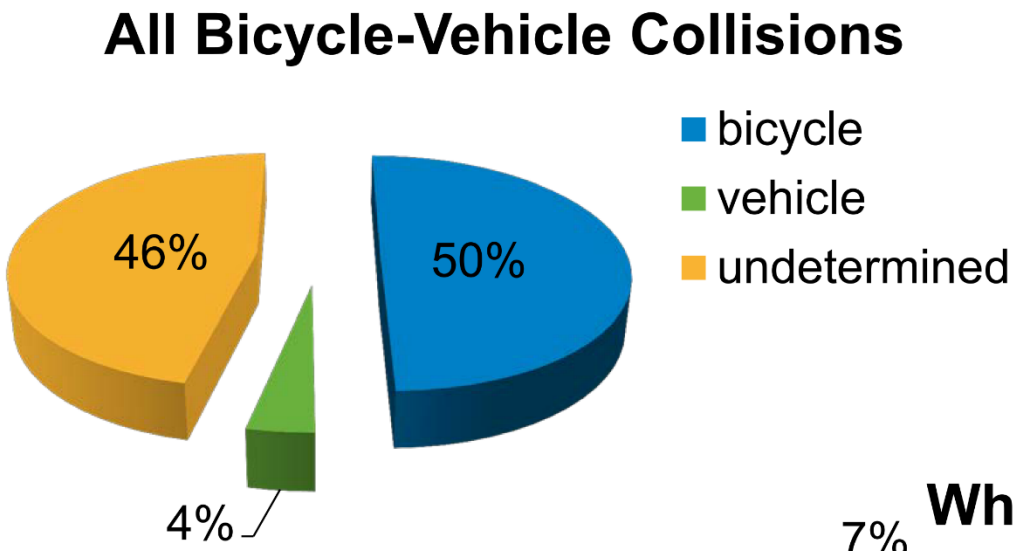
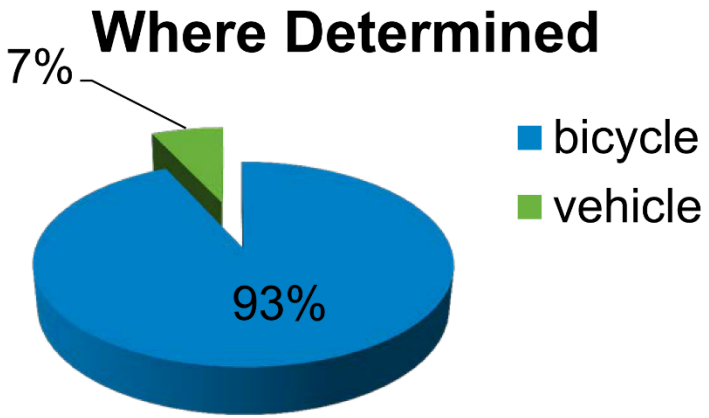
HOW: Types of Cycling Collisions





Where it could be determined, cyclists had the right-of-way 93% of the time

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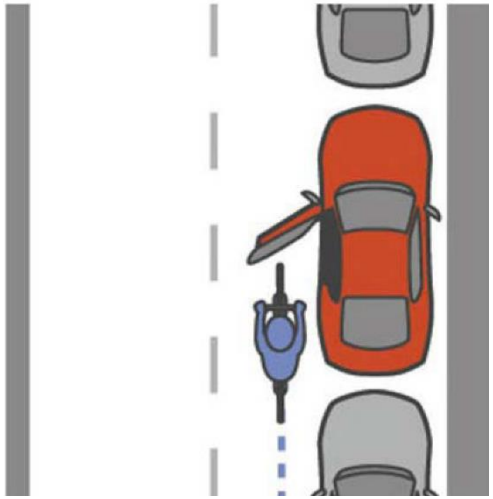
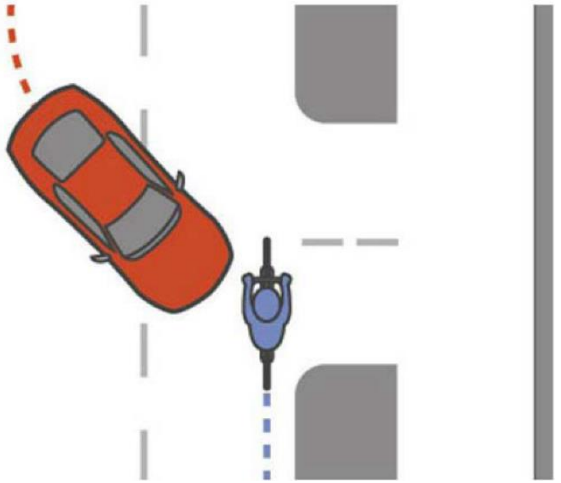
HOW: Types of Cycling Collisions

Doorings (15%)



Left Turning Vehicles(13%)



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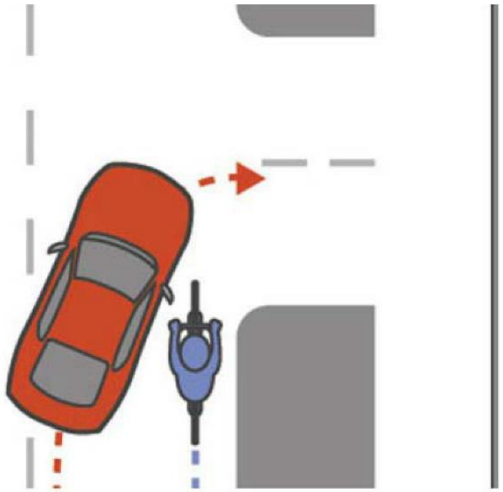
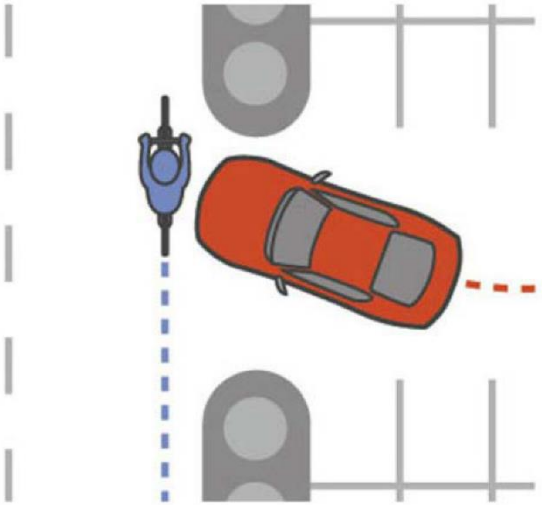


Conflict Zones (11%)



Graphic: bicycling.com

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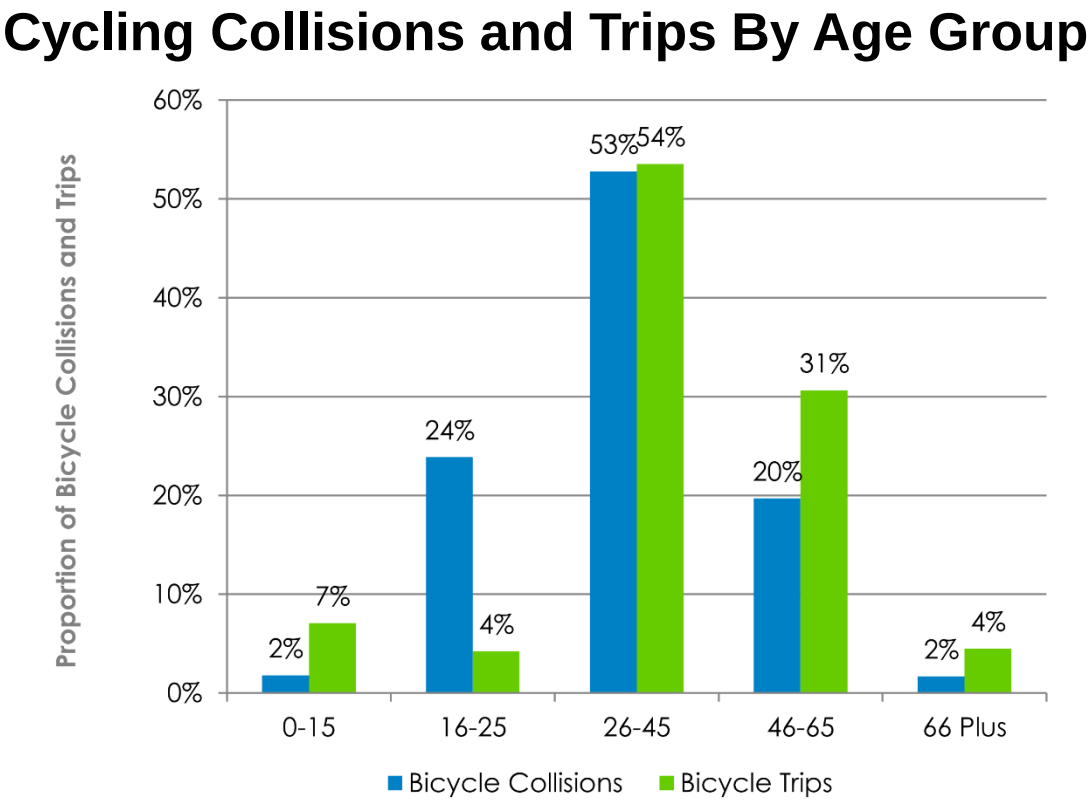
WHO: Collisions by Age

Highest cycling collisions are among adults aged 26-45

Highest likelihood among young adults aged 16-25



Source: ICBC Collision Data (2007-2012)

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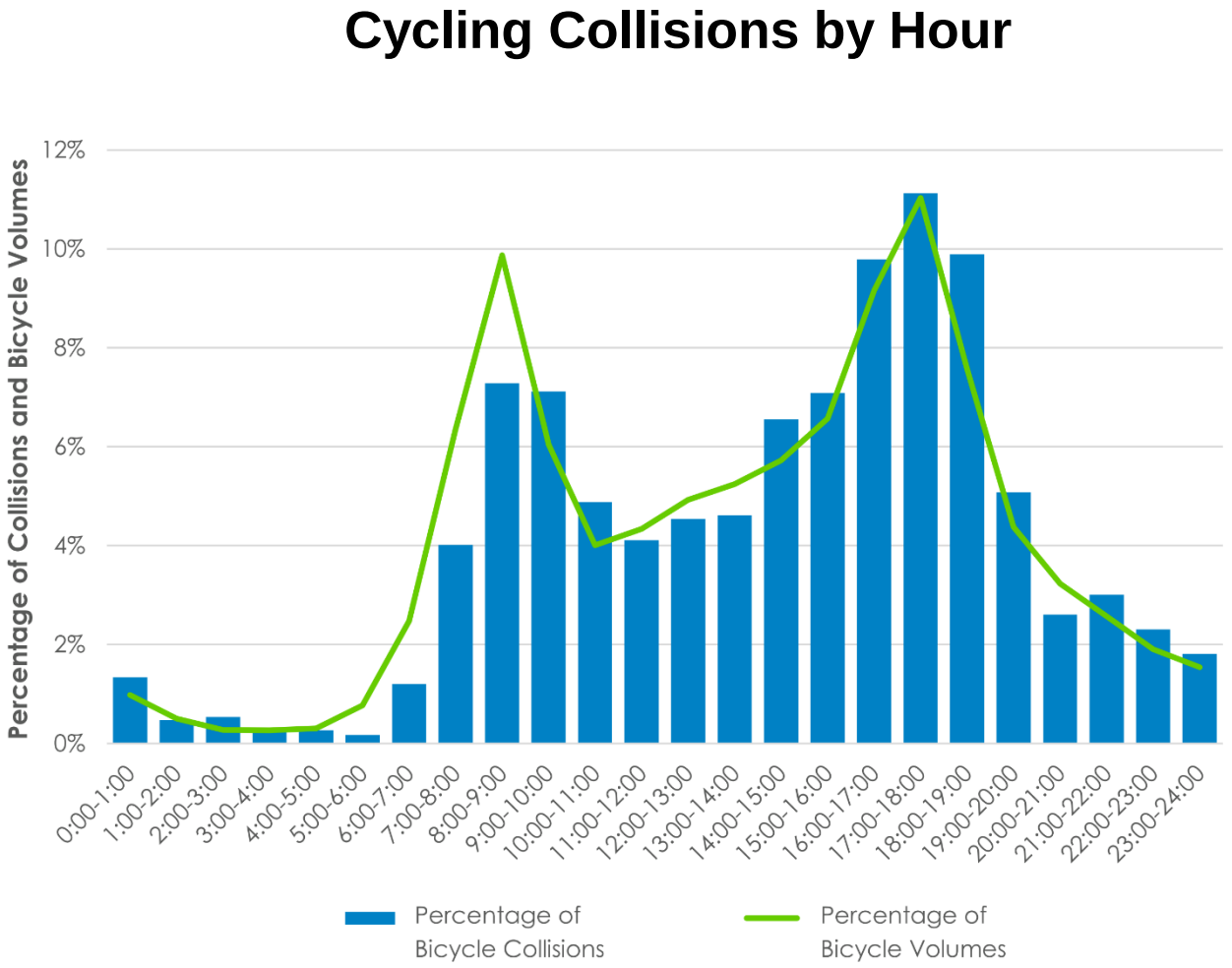
WHEN: Collisions by Time of Day

Most cycling collisions are in the PM Peak



Source: ICBC Collision Data (2007-2012)

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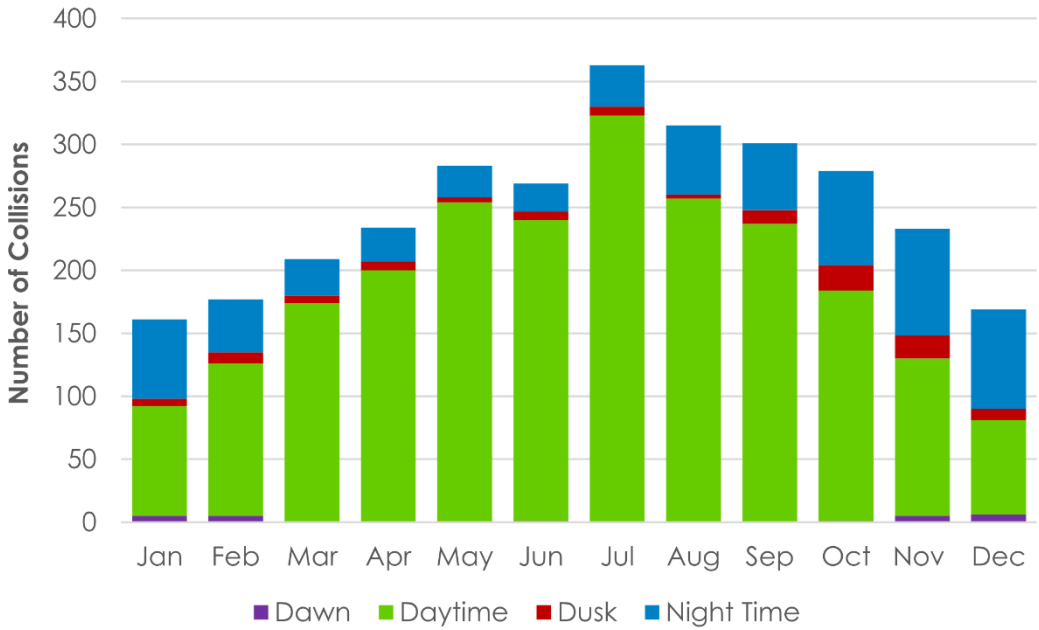
WHEN: Collisions by Month

Almost a third of cycling collisions are in summer, but highest collision likelihood in winter

Collisions particularly likely in the winter when it was also dark and rainy

Cycling Collisions by Month and Light Condition



Source: ICBC Collision Data (2007-2012)

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Summary of Key Issues

Key Issue 1	Doorings
Key Issue 2	Conflict Zones
Key Issue 3	Right Hooks
Key Issue 4	Left Crosses
Key Issue 5	Sidewalk Cycling
Key Issue 6	Two-way Stop Signs
Key Issue 7	Non Motor Vehicle Collisions
Key Issue 8	Collision Hotspots
Key Issue 9	High Collision Locations
Key Issue 10	Designated Bikeways
Key Issue 11	PM Peak
Key Issue 12	Adverse Weather and Low Light

Key Actions: Engineering

City Engineering staff recommendations

Continue to use:

- **Protected Bike Lanes**, particularly on busy commercial high streets
- **Bicycle signals** with vehicle turn lane
- **Pavement markings & green paint** at lanes, driveways and intersections

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Key Actions: Engineering

- Improve **visibility** at intersections, lanes, and driveways
- Continue **Spot Improvement** Program

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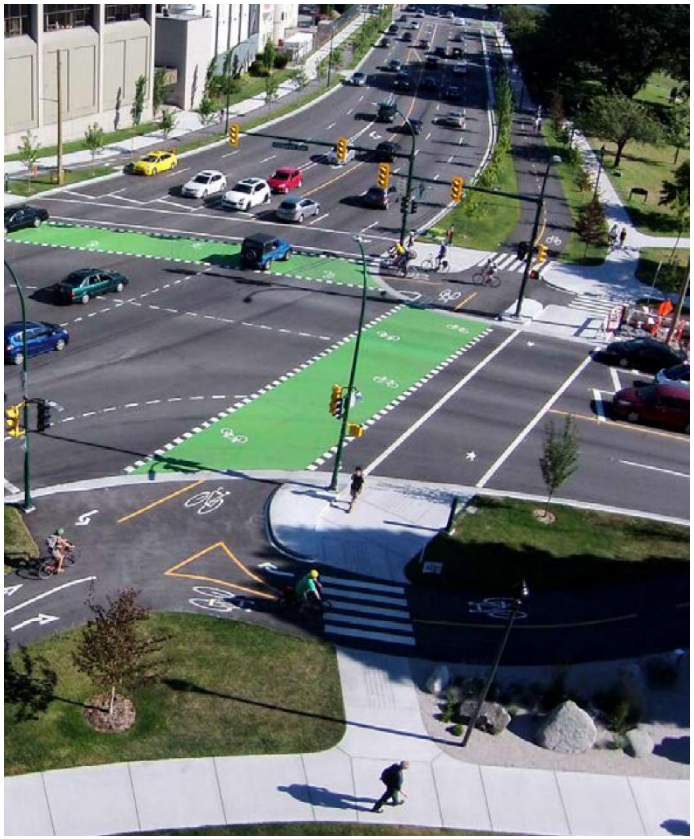
Key Actions: Engineering

- Explore more **Protected Intersections** (e.g. Burrard & Cornwall)
- Provide sufficient & consistent **width** on busy local street bikeways
- Provide on-street bike facilities where **sidewalk cycling** is prevalent



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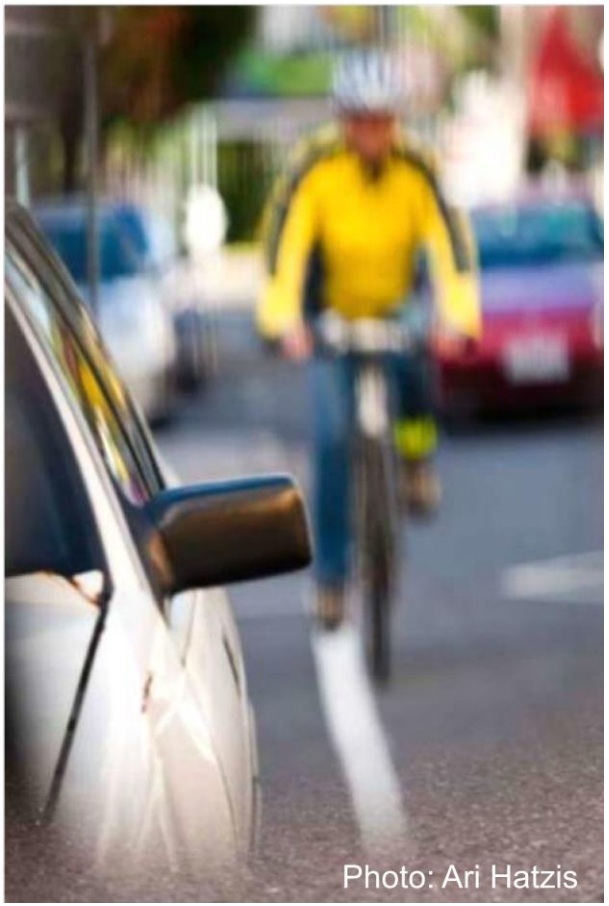
Key Actions: Education

For people **driving**, added focus on:

- Risk of opening doors
- Risks at driveways and lanes
- Risks from right and left turns
- Risks at 2-way stops



Key Actions: Education

For people on **bicycles**, added focus on:

- Risk from vehicle doors
- Risk from turning vehicles at intersections, driveways and lanes
- Risks to self and pedestrians from sidewalk riding

Key Actions: Enforcement

Enforcement efforts aimed at improving safety for people on bicycles should focus on:

- Unsafe **driver** behaviour:
  - Failure to yield when turning and exiting lanes and driveways
  - Proceeding from stop signs when unsafe
  - Opening doors into traffic

Unsafe **cyclist** behaviour:

- Sidewalk riding

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Next Steps

- Ongoing annual review of ICBC & VPD data to assess effectiveness of engineering actions
- Work with ICBC & VPD on future education, enforcement and engineering actions
- Continue to monitor recent implementations
- Design & consultation at Burrard & Pacific
- Initiate corridor and intersection reviews & studies

Lessons Learned

- Need for more robust data
- Comprehensive analysis leads to better understanding of issues
- Target actions to address identified issues
- Toolbox of solutions includes engineering, education and enforcement
- Partnerships for implementation

Thank you!

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