



Safety Evidence for Bicycling

Cycling in Cities Research Program – 2014

Bicycling is fun, inexpensive, safe & healthy

Evidence from Canada, the US & UK shows that cycling safety is similar to walking. Research consistently shows that its health benefits far outweigh injury risks.

This leaflet summarizes research evidence so you can maximize your safety when cycling.

Driving near bicyclists

When driving, you have a responsibility to

- drive slowly enough to see cyclists given the driving conditions
- look for cyclists – key problems: turning left & right, opening car doors, driving behind cyclists
- provide wide space margins behind & beside cyclists (cyclists are allowed to ride in the middle of a travel lane)
- not drive or stop in bike lanes

Route selection is a great way to maximize safety

Safest route types

Safety evidence

Separated bike lanes alongside major streets

Also called “cycle tracks” or “protected bike lanes”

Possible reasons they are safer:

- They physically separate bicyclists from motor vehicles on busy streets – beneficial because interactions with motor vehicles involve higher crash risk & more serious injuries.
- They protect cyclists from being hit by opening doors of parked vehicles.

Quiet residential streets

Streets with low motor vehicle traffic & low traffic speeds have lower crash risk & less serious injuries if there is a crash.

Off-street bike-only paths

Bike paths are away from motor vehicles & separate cyclists from pedestrians.

Risks may increase with obstacles such as bollards, curbs, barriers & benches, or on curvy paths that reduce sight lines.

Bike lanes on major streets

especially on streets without parked cars

Bike lanes marked by paint provide designated space for cyclists. Wider bike lanes provide more passing distance from cars & that reduces crash risk.

Bike lanes on streets without parked cars protect cyclists from being hit by opening doors of parked vehicles.

Route selection is a great way to maximize safety

Less safe route types

Safety evidence

Highways

Possible reasons they are less safe:

- Interactions with high motor vehicle traffic, high traffic speeds, and trucks & buses involve higher crash risk & more serious injuries.
- Passing distances are lower where there is lots of traffic, where speeds are high, & when trucks & buses pass.

Major streets

without designated space for cyclists, especially with parked cars

Possible reasons they are less safe:

- Interactions with high motor vehicle traffic, high traffic speeds, and trucks & buses involve higher crash risk & more serious injuries.
- Passing distances are lower where there is lots of traffic, where speeds are high, & when trucks & buses pass.
- Cyclists may be hit by opening doors of parked vehicles.

Sidewalks

They are designed for pedestrians & include features such as street furniture, posts & uneven paving – all are obstacles that can be hit by cyclists.

Multi-use paths

Multi-use paths mix cyclists & pedestrians (& pets).

Risks may increase with obstacles such as bollards, curbs, barriers, benches & plants, on curvy paths that reduce sight lines, or unpaved & uneven surfaces.

Certain bicycling conditions deserve caution

Condition	Safety evidence
Major street intersections	These increase risk of collisions. Possible reasons: <ul style="list-style-type: none">• High motor vehicle traffic volumes & speeds increase collision risk & injury severity.• Motorists may “look but fail to see” cyclists.• Trucks & buses increase crash risk & injury severity.
Roundabouts & traffic circles	These increase crash risk. Some roundabouts have a separated lane for cyclists around the outside – these lanes are safer.
Cycling in the direction opposite to motor vehicle traffic	Riding in the direction opposite to motor vehicle traffic increases crash risk & injury severity – both at intersections & between intersections.
Downhill grades	Downhill grades increase crash risk & injury severity.
Train or streetcar tracks	Crossing & riding beside train or streetcar tracks increase crash risk – via getting a tire caught in the track or slipping on the rails.

Other safety evidence

Safety in numbers

Where there is more cycling, cycling is safer.

Alcohol

Alcohol intoxication increases crash risk & injury severity in a crash.

Safety equipment

Lights reduce collision risk. Cyclist visibility is increased with lights, reflectors and, in daylight, bright clothing (yellow, orange, red, white).

Helmets can reduce the severity of head injuries in a crash.

For more information see our report

“Evidence from Safety Research to Update Cycling Training Materials in Canada”

Cycling in Cities Research Program

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Faculty of Health Sciences

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Separated bike lanes



Quiet residential streets



Off-street bike paths



Bike lanes, no car parking



The safest route types

Photos: Paul Krueger (Flickr), Cycling in Cities