

On-Street Bicycling Safety Fact Sheet

*Bicycle safety is a complex subject and many findings contradict the “common sense” of motor vehicle drivers. Please note that the conclusions below are **not controversial**, are **well known and accepted by highway safety engineers**, and are **encoded into national standards** such as AASHTO guidelines and the Uniform Vehicle Code. The conclusions are **often surprising to non-bicyclists** (including myself when I first looked into on-street bicycle safety facts), so please read with an open mind and feel free to double-check the sources:*

1. Bicycling is a Safe Activity

- Bicycling on-street (whether measured per hour, per mile, or per trip) is about as safe as driving.^{1,2,3,4}
- Bicycling on-street is safer than common activities such as swimming, water skiing, on-road motorcycling.⁵
- Bicycling on-street is at least 12 times safer than playing soccer, 22 times safer than basketball, 38 times safer than football.^{6,7}
- Experience and education make bicycling safer yet: experienced club cyclists are 5-10 times safer than the average bicyclist.¹³
- Health benefits of bicycling outweigh risks by 20 times.⁸ Bicycle commuters have a 40% lower overall mortality rate.⁹
- Compared with motor vehicles, bicycles are far less likely to kill or seriously injure others,³ and they don't pollute. So for the vehicle operator, driving and bicycling share the same low accident risk. But for bystanders, the bicycle is the far safer option.

2. Bicycling On-Street (even on 35 MPH+ streets) is Safer than Cycling on Off-Street Paths or Sidewalks

- Bicycling on the street is 2-3 times safer than riding on multi-use paths^{10,12} (for example, major roads with bicycle facilities are 3.4 times safer than multi-use paths¹⁰).
- Bicycling on the street is >20 times safer than riding on the sidewalk¹⁰ (for example, cycling major roads with bicycle facilities is 40 times safer than sidewalk cycling¹⁰).

3. Adding Bicycle Improvements (Bike Lanes, Wide Outside Lanes) Improves Safety Even Further

- Major roads with bicycle facilities are safer than the same roads without such facilities^{10,11,12} (bicycle accidents are reduced by 38% on roads with facilities¹⁰).
- Signed bike routes with wide outside lanes also reduce accidents (23% accident reduction).¹⁰
- Safety in numbers: statistics show that as more bicyclists get on the road, bicycle travel becomes safer.⁴

4. On-Street Bicycle Facilities are Safe, but Also the Only Practical Way to Make Bicycling a Realistic Transportation Alternative

- Roads already go most everywhere we need to; creating a parallel system of bicycle paths would be astonishingly expensive and impractical.
- On-street bicycling is a proven safe and practical mode of transportation.
- Millions of dollars of federal funds are at stake. Consideration of the safety and needs of on-street bicyclists is required under the terms of TEA-21 in order to receive federal transportation funds.

Bicycle Safety Fact Sheet Sources

1. Failure Analysis Associates Inc, "Comparative Risk of Different Activities," Design News, October 4, 1993. See <http://www.magma.ca/~ocbc/comparat.html>

2. Pedestrian and Bicycle Information Center, "Bicycling Crashes In Perspective," http://www.bicyclinginfo.org/bc/perspective_2000.htm

3. Ken Kifer, "Is Cycling Dangerous?" <http://www.kenkifer.com/bikepages/health/risks.htm>

4. Malcom Wardlaw, "Stepping Stones to a Better Cycling Future," a presentation to the British CTC/CCNconference in Chesterfield, England on 13th October 2001. See <http://www.bicyclinglife.COM/Library/SteppingStones.htm>.

Wardlaw argues, with some convincing facts and statistics to back him up, that the greater the number of bicycles on the road, the lower the rate of death from bicycle-vehicle accidents. If the number of bicyclists doubles, the number of accidents increases by only about 25%. The reasons are that (1) motorists who see bicycles frequently keep a lookout for bicycles and know how to drive safely in their presence and (2) motorists who have recently been on bicycle themselves drive more courteously and safely around bicyclists.

5. Failure Analysis Associates Inc, "Comparative Risk of Different Activities," Design News, October 4, 1993. See <http://www.magma.ca/~ocbc/comparat.html>

6. A. Drummond and F. Gee, "The Risks of Bicycle Accident Involvement," Monash University Accident Research Centre, 1988. See <http://sciweb.science.adelaide.edu.au/sundries/ph.nsf>.

7. V. Routley and J. Ozanne-Smith, "Sport Related Injuries—An Overview," Hazard, vol. 8 no. 1, October 1991. See <http://sciweb.science.adelaide.edu.au/sundries/ph.nsf>.

This is not to say that youth soccer, basketball, or football are highly dangerous activities. Rather, the point is that we usual consider these to be rather normal and harmless activities, and bicycling is many times safer yet.

8. British Medical Association, *Cycling towards Health & Safety*, 1992, Oxford U. Press.

9. "All-Cause Mortality Associated With Physical Activity During Leisure Time, Work, Sports, and Cycling to Work," *Archives of Internal Medicine*, 160:1621-1628

10. William E. Moritz, "Adult Bicyclists in the U.S.," Transportation Research Board , 1998. <http://www.bicyclinglife.com/Library/Moritz2.htm>.

Only about 5% of motor vehicle-bicycle collisions are "rear overtaking" accidents. By contrast, over 75% involve vehicles approaching from the front or sides at intersections.

The typical urban multi-use path has numerous awkward, low-visibility, poorly controlled intersections with streets. So these facilities decrease the least common type of accident (rear-overtaking) but vastly increase the more common type (intersections). That is one reason (of many) that this type of path is less safe than bicycling on-street.

For a bicycle riding on a sidewalk, every driveway becomes a dangerous intersection with poor sight-lines. Intersections with streets are awkward; a fast-moving cyclist can pop out into the street from a place no motorist expects a fast-moving vehicle to be. So it is no surprise that sidewalk riding is more dangerous than street riding.

Keep in mind that we are talking about relative safety and danger here. Neither off-street bicycle path riding nor sidewalk riding can be considered a highly dangerous activity—both are far safer than, say, motorcycle riding or flying general aviation, and about as safe as scuba diving. Bicycling is a generally safe activity and here we are splitting hairs about which type is a little safer than the other.

But supporting off-street bicycle paths because they are "safe" while rejecting on-street bicycle facilities because they are "unsafe" is not supported by the evidence. On-street bicycling is safer than sidewalk or bicycle path riding, and adding bicycle facilities to streets improves the safety yet again.

11. Moritz, William E., "Regular Adult Bicyclists in Washington State," ASCE Transportation Congress, San Diego, 1995.

12. Jerrold Kaplan, "Characteristics of the Regular Adult Bicycle User," FHWA, 1975. (NTIS Document PB 258-399)

13. John Forester, *Bicycle Transportation*, 2nd ed, 1994, p. 41.