| When a vehicle is traveling at... | 20 MPH | 30 MPH | 40 MPH |
|---|---|---|---|
| this is the driver's field of vision.[1,2] |  |  |  |
| It takes[3,4]... | 115' TO STOP | 200' TO STOP | 305' TO STOP |
| and pedestrians hit at this speed have a[5]... | 13% Likelihood of fatality or severe injury | 40% Likelihood of fatality or severe injury | 73% Likelihood of fatality or severe injury |

**Each 1 mph decrease in speed reduces the risk of severe injury or death by 3 percentage points[5]**

# Vehicle Speeds

## Lowering speeds leads to safer roads

Speed is one of the most important factors in roadway safety. High speeds increase both the risk of crashes and their severity. The faster a person drives:

- The less they can see out of their windshield.
- The more time and distance it takes to stop.
- The more severe a crash will be.

Injuries and fatalities are a result of the transfer of energy between a motor vehicle and the person or object it hits. The faster a vehicle is going, the more energy there is to transfer. The difference in mass between a motor vehicle and a human body means that just a small increase in speed can result in a significant increase in crash severity for pedestrians, bicyclists, or other vulnerable users.

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1 Bartmann, A., Spijkers, W., and Hess, M. 1991. Street Environment, Driving Speed and Field of Vision. Vision in Vehicles III.

2 W. A. Leaf, W.A. and Preusser, D.F. Literature Review on Vehicle Travel Speeds and Pedestrian Injuries Among Selected Racial/Ethnic Groups. DTNH22-97-D-05018 Task Order 97-03. U.S. Department of Transportation, 1999.

3 Braking distances include 2.5 seconds of reaction time.

4 AASHTO Green Book—A Policy on Geometric Design of Highways and Streets, 7th Edition. American Association of State and Highway Transportation Officials, 2018.

5 Teff, B. 2013. Impact Speed and a Pedestrian's Risk of Severe Injury or Death. *Accident Analysis & Prevention*, 50(87): 1-8. DOI: 10.1016/j.aap.2012.07.022



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## What Contributes to Higher Speeds?

- Wide and straight roadways
- Roadways with multiple traffic lanes
- Streets that feel open due to a lack of trees or street-side development

Speeds also tend to be higher at mid-block locations than at intersections.

## How Can We Slow Drivers Down?

Changing the posted speed limit is often not enough to slow motorists to safe speeds. Safer speeds can be encouraged through roadway design solutions, such as:

- Narrowing travel lanes.
- Reducing the number of travel lanes. For example, converting a four-lane road to a three-lane road may slow traffic.
- Adding vertical road elements such as raised crosswalks or raised intersections.
- Using roundabouts to slow cars at intersections.
- Visually narrowing the roadway by:
    - Orienting buildings toward the street and reducing setbacks (or street fronting).[6]
    - Using a mix of alternate paving materials.
    - Installing medians.
    - Installing curb extensions (at mid-block locations and intersections).
    - Planting street trees.[7]
    - Landscaping.
    - Installing pedestrian-scale lighting.

**To make streets safer, slow motorists down. Even slowing a roadway by 2 to 3 miles per hour will improve safety for all road users.**

Streets that have been visually narrowed using trees and narrow travel lanes (top) and curb extensions (bottom).

6 Ivan, J.N., Garrick N.W., and Hanson, G. Designing Roads that Guide Drivers to Choose Safer Speeds. JHR 09-321. Connecticut Department of Transportation, 2009.

7 van der Horst, R. and de Ridder, S. 2007. Influence of Roadside Infrastructure on Driving Behavior: Driving Simulator Study. *Transportation Research Record*, 2018: 36-44. DOI: 10.3141/2018-06

### DESIGN RESOURCES

*FHWA-HEP-16-005: Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts*

*MnDOT Report 2013-22: Minnesota's Best Practices for Pedestrian/Bicycle Safety*

*ITE Publication IR-145E: Implementing Context Sensitive Design on Multimodal Corridors: A Practitioner's Handbook*

### RELATED INFOSHEETS

*Roadway Reallocation*

*Curb Extensions*

*Medians*

*Mini Roundabouts*

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