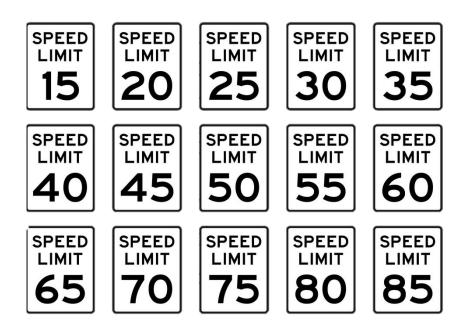
Speed Studies & Speed Limits





Zero Fatalities, Zero Serious Injuries

David Relph, Traffic & Safety Engineering, MDT 2023 Annual Transportation Safety Meeting Delta Colonial Hotel, Helena, MT October 4, 2023



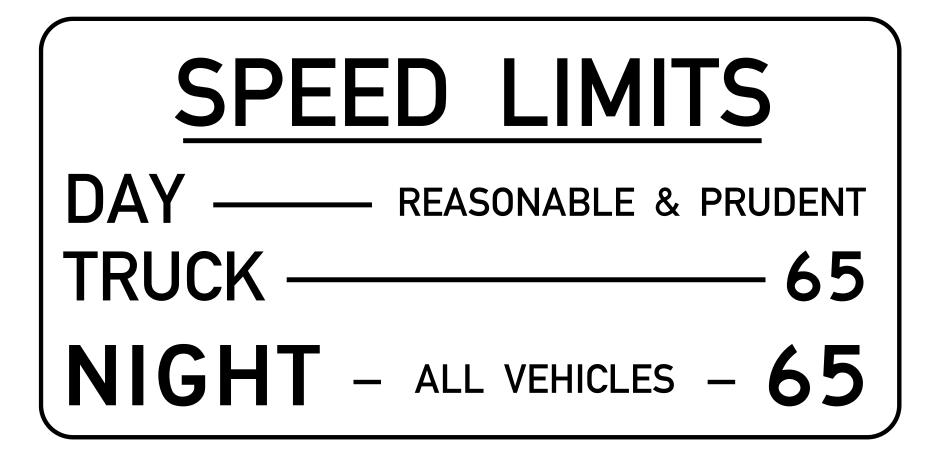
No Statewide Speed Limits Speed Studies and speed limits left primarily to the Montana Highway Patrol



National 55 in 1974 First Statewide Speed Limit



Montana's Can't Drive 55 Reasonable and Prudent end of 1995 = Speed Study Requests Skyrocket



Montana Supreme Court struck down reasonable and prudent end of 1998

SPEED

LIMIT



May 1999: First posted speed limit not mandated by Federal

Government

NIGHT

75-mph Interstates 70-mph All other State Highways 65-mph at Night

CURRENT SPEED LIMITS

• MCA 61-8-303

- Rural Interstate 80-mph
- Urban Interstate
 (population 50,000) 65-mph
- Public Highway

Day 70-mph Night 65-mph

- Urban District 25-mph
- 10-mph buffer when passing

• MCA 61-8-312

Truck Speed Limits

- Interstate 70-mph
- Public Highway 65-mph

MOTOR VEHICLE r traffic control signal. History: En. Sec. 1, Ch. 143, L. 20 Part Vehicle Operating Requirer 61-8-301. Reckless driving - reckless endange driving if the per uded in 61-8-351 and 61-9-402. This subsection (1)(b) do the health and safety of an occupant of the vehicle or of another p orker" means an employee of the depa 61-8-304. Repealed. Sec. 10, Ch. 43, L. 1 History: En. 32-2144.1 by Sec. 1, Ch. 60, L. 197 of Sec. 1, Ch. 681, L. 1983, and. Sec. 1, Ch. 511, L. 955; amd. Sec. 4, Ch. 201, L. 1957; amd. Sec. 1, Ch. 2 958; amd. Sec. 1, Ch. 221, L. 1985; amd. Sec. 1, Ch. 352, L. 2003; amd. Sec. 3, Ch. 379, L. 2003; an fistory: En. 32-2144.2, 32-2144.3, 32-2144.4 144.3, 32-2144.4; amd. Sec. 2, Ch. 681, L. 1985; stor vehicles, 7-14-4103. Igence as well as willful acts, 27-1-701 45-7-301. 61-8-306. Repealed. Sec. 10, Ch. 43, L. 1999. History: En. 32-2144,5 by Sec. 5, Ch. 60, L 1974, R.C.M. 1947 61-8-307. Repealed. Sec. 10, Ch. 43, L. 1999. History: En. 32-2144.7 by Sec. 7, Ch. 60, L. 1974; R.C.M. 1947 61.8.303. Careless driving. (1) A person operating or driving a 61-8-308. Permission of a En. 32-2143.3 by Sec. 1, Ch. 294, L. 197 En. Sec. 1, Ch. 100, L 19 61-8-309 Establish 61-8-303. Speed restrictions. (1) Except as provided in 61-8-309, 61-8-310, and 61-8-312 a) on an interstate highway outside an urbanized area of 50,000 population or movies an hour at all times and the speed limit for vehicles traveling on interstate highwiles

CURRENT SPEED LIMITS

MCA 61-8-309

- Speed Study Process
- Interim • (Temporary)Speed Limits
- Local Concurrence

to Raise Speed Limits

MOTOR VEHICLES

than 50 miles in length on which increased crash frequency or fatal crash data is observed, the commission may set a reasonable and safe special speed limit at that location or corrider. In the case of a school zone adjacent to a state highway, the commission is not required to have in the case of a school zone adjacent to a state highway.

one can of a school none adjacent to a state highway, the commenous new service 10 hauge peed hinti determination solely on the results of the engineering and traffic investigation (ii) In the event of a vehicle emergency, adverse weather condition, or identification another highway solely factor that warrants decreasing the speed limit for reasonable and a travel, the commission may, in advance of the adjety event, adopt localized geographic as travely the commission may, in advance of the adjety event, adopt localized geographic as surves, one commission may, in advance of the safety event, another sections geographic at temporary special reduced speed limits that are lower than a speed limit set by 61.8-302 01-8-302. The temporary special reduced speed limit become effective upon posting appropri-fixed or variable signs and shall remain in effect while the fixed or variable signs remain post (b). If a head are the section of the sect

(b) If a local authority requests the department of transportation or an engineer provided in subsection (Mc/O), to conduct an engineering and traffic investigation based on th belief that a speed limit on a highway under the jurisdiction of the department of transportation. is greater than is reasonable or safe, the commission may not increase the speed limit under onsideration as a result of the investigation.

(c) (i) A local authority may request at its own expense that an engineering and traffic investigation be completed by a licensed professional engineer selected from a list compiled and

(ii) A committee containing two department of transportation staff appointed by the director and two representatives of associations whose membership comprises cities, towns, and counties, as authorized by 7.5-2141 and 7.5-4141, shall review credentials submitted by licensed combines are automated by to a strain the who appears on the list of individuals authorized professional engineers and shall determine who appears on the list of individuals authorized conduct engineering and traffic investigations for local governments. The list must be updated

every a years. (iii) Upon completion of an engineering and traffic investigation conducted for a load government, the department of transportation shall submit a report to the commission with indings and recommendations. The commission shall decide on an appropriate speed limit based on the traffic investigation within 120 days from the date the investigation is submitted to the department of transportation.

to the department of transportation. (d) A local authority may request a temporary special reduced or increased speed innit under wates or note segmentian authority may real authority makes multiple requests for temporary authority of the segmentian static consideration of a reduced or increased speed limit under subsection (10%), or (10%). If a local authority makes multiple requests for temporary appeal reduced or info, or (10%). If a local authority makes multiple requests for temporary provide or a route segment for the temporary special apped cone is requested. The review of the department of stative of the local authority that is requested. The review of pecial reduced or information of the preliminary visual and engineering review of pecial reduced or increased pecial final to available the suborary special reduced or increased pecial drawn or increased pecial final to match a temporary special reduced or increased pecial drawn or increased pecial interview of by the commission. The temporary special reduced or increased pecial interview of by the commission. The temporary special these been done on the source results expending the tecommission has made a determination of the source of the source of the source of the source of the tecommission has made a distorting special the source of the source of the source of the source of the tecommission has made a distorting special the source of the source of the source of the source of the tecommission has made a distorting special the source of the source of the source of the source of the tecommission has made a distorting special device on the source of the source of the source of the tecommission has made a distorting that a tecomes of the tecommission has been done on the source of the source of the tecomession has been done on the source of the source of the tecomession has been done on the source of the tecomession has been done on the source of the tecomession has been done on the source of the tecomession has been done on the source o has been done on the route or route segment and the commission has made a determination of

has been done on the route or route segment and the commission has made a determination in changing the speed limit. (3) Fending completion of an engineering and traffic investigation as provided for in subsection (1), the commission may temporarily set a speed limit of not less than 75 miles an bour on a segment of an interstate highway that it reasonably believes is not suitable for the (3) The department of transportation shall erect and maintain appropriate signs giving notice of special limits. If the special limit apply to a school zone, the department shall conside the use of electronic sagas in lise of or in addition to other appropriate signs. When the signs are reveted, the limits arceffective for these zones at all times or at other times that the commission

the use or exciting agent of the second seco

(4) The authority of the commission under this section includes the authority to set reduced

 The authority of the commencement name time section members has authority to sect restantiations on curves and other damperous locations.
 This section does not authorize the analysis of the set a statewide speed limit.
 (6) (a) The violation of a speed limit established under this section, except subsection (2). 2019 MCA

TRAFFIC REGULATION

61-8-310

Transportation Commission, Title 60, ch. 2, part 1. General powers of Department of Transportation, 60-2-201 Erection of signs, 61-8-704.

61-8-310. When local authorities may and shall alter limits or establish or alter area of school zone. (1) If a local authority in its jurisdiction determines on the basis of an chrough 61-8-313 is greater or less than is reasonable and as funder the conditions fund to estimate the order the conditions fund as a school when the school authority may set a reasonable and as funder the conditions.

and upon a highway or part of a highway. The binal authority may use a reasonable and a distributions of the second sec

01-8-309. (b) A local authority establishing or altering the area of a school zone shall consult with the diparitment of transportation and the commission of the school zone includes a state highway or a highway located on the consult with district officials for a school when: (c) A local authorit altering the area of a school some near the school, or estation is peed limits pursuant to subsection (1)(d) in a school zone near the school, en-our estate is a school school zone of the school zone on the school, encourt (c) A local limits pursuant to subsection (1)(d) in a school zone near the school (c) A school limits encourt and subsection (1)(d) in a school zone near the school (c) A speed limits encourt and school zone is a school zone of the same for all bypes of motor vehicles that may be operated on the read.

2019 MCA

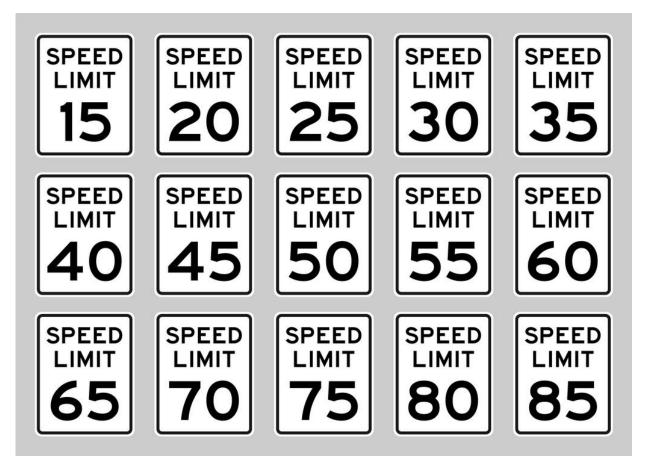
CURRENT SPEED LIMITS

• <u>MCA 61-8-309</u>

- Speed Study Process
- Interim Speed Limits
- Local Concurrence to Raise Speed Limits
- <u>MCA 61-8-310</u>
 - School Zones
 - Local Speed Limits

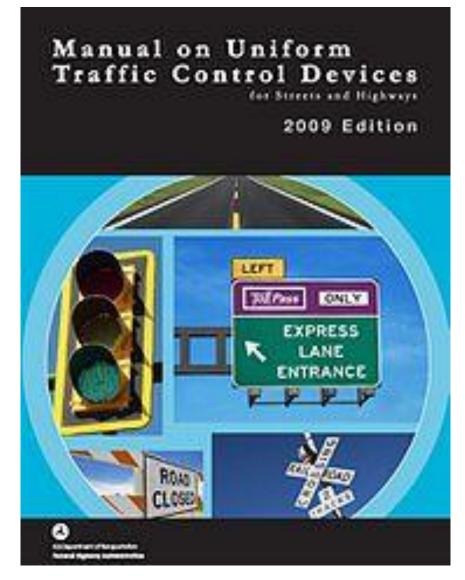


WHY DO WE SET SPEED LIMITS?

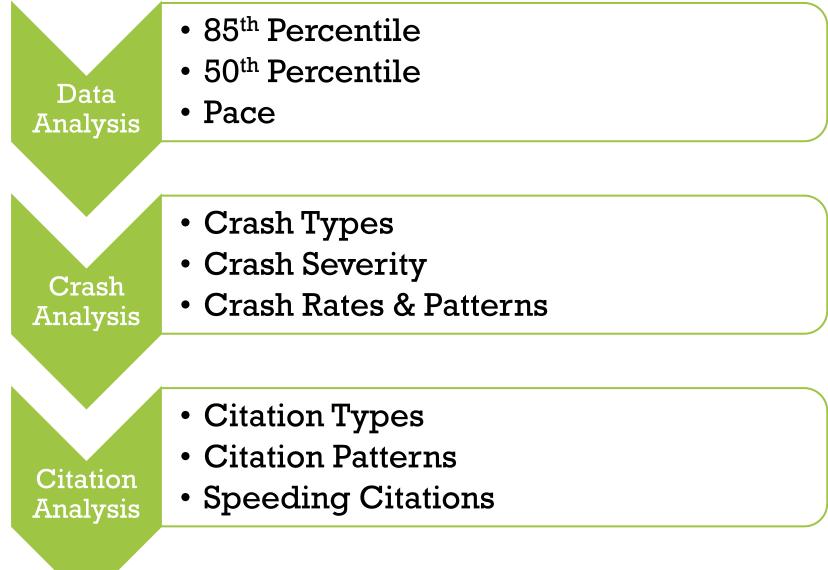


- Inform Drivers of reasonable and prudent speeds under good road conditions
- Minimize conflicts between drivers and other users
- Speed Limits should be self-enforcing.
- Driver's desired speed = Speed Limit and Roadway Conditions

- How? (Engineering Study)
 - Free Flow Vehicles
 - Based on the 85th Percentile
 - Other Considerations
 - Roadway Characteristic
 - Roadside Environment
 - Parking & Pedestrians
 - Crash Experience
 - Pace
- When?
 - Upon Request
 - Significant Change









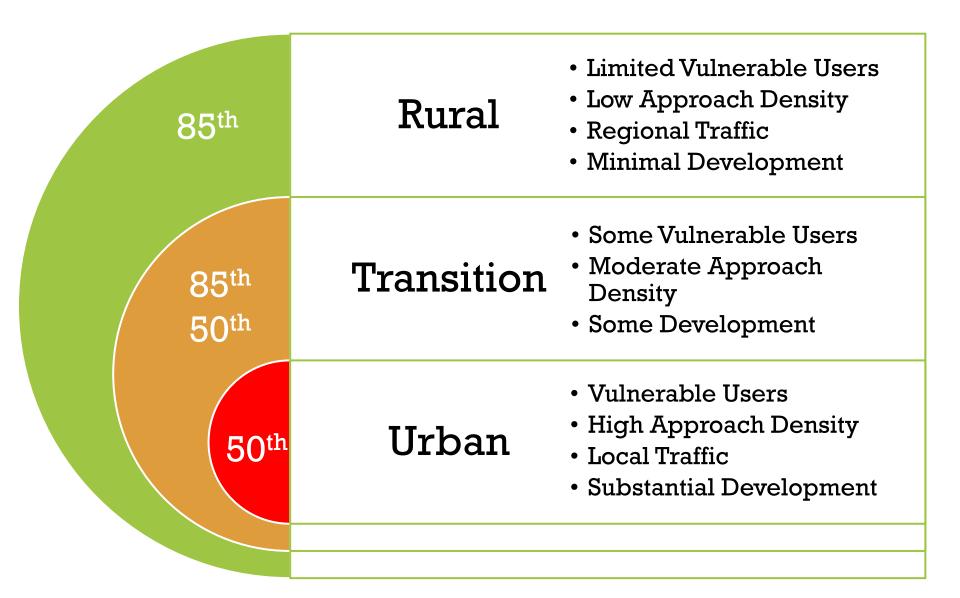


SPEED & SAFETY

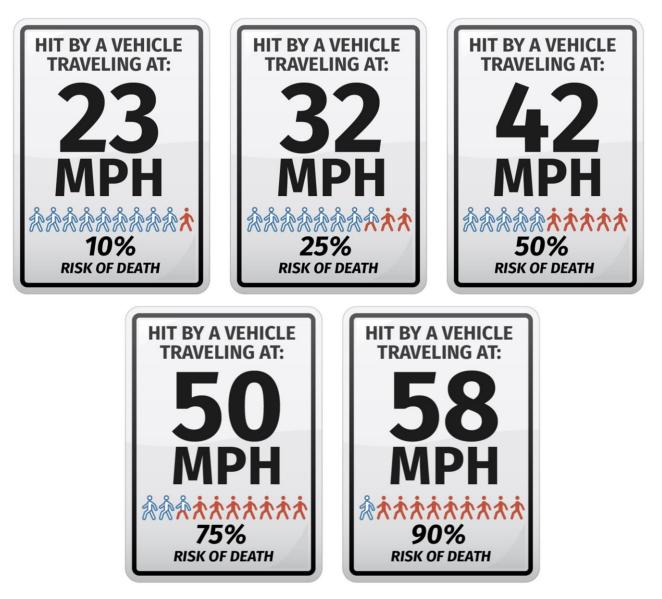
High Speeds -Short Reaction Time -Greater Kinetic Energy -Increases in Crash Severity

Low Speeds -Greater Reaction Time -Less Kinetic Energy -Increases in Crash Rates

URBAN VS RURAL



KINETIC ENERGY



SPEED DIFFERENTIALS

- Crash severity may increase because of variances in speed and not because of higher speeds. (Lave 1985)
- Average speeds were negatively related to crash frequency. (Taylor, Lynam, & Baruya 2008)
- There was a negative relationship between speed and crash occurrence. (Yu, Abdel-Aty, Ahmed, & Wang 2013)
- Relationships between speed and crashes was negative regardless of severity. (Imprialou, Quddus, Pitfield, & Lord 2016)
- Lower average speeds are associated with higher crash frequencies. (Dutta Fontaine 2019)
- Speed variance may play more of a role in crash rates than speed. (Hutton, Cook, Grotheer, & Conn 2020)

SPEED DIFFERENTIALS

- In most cases, speed differentials and variations resulted in higher crash frequencies. (FHWA 2023)
- Research by MDT
 - Differential Speed Limits on 2-Lane Roadways (2016)
 - Setting Speed Limits below Engineering Recommendations (2016)



DRIVER SPEED VS SPEED LIMITS

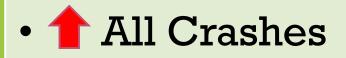
5-mph below recommendation

Slight - All Crashes

10-mph below recommendation

Total Crashes
Fatal & Injury Crashes

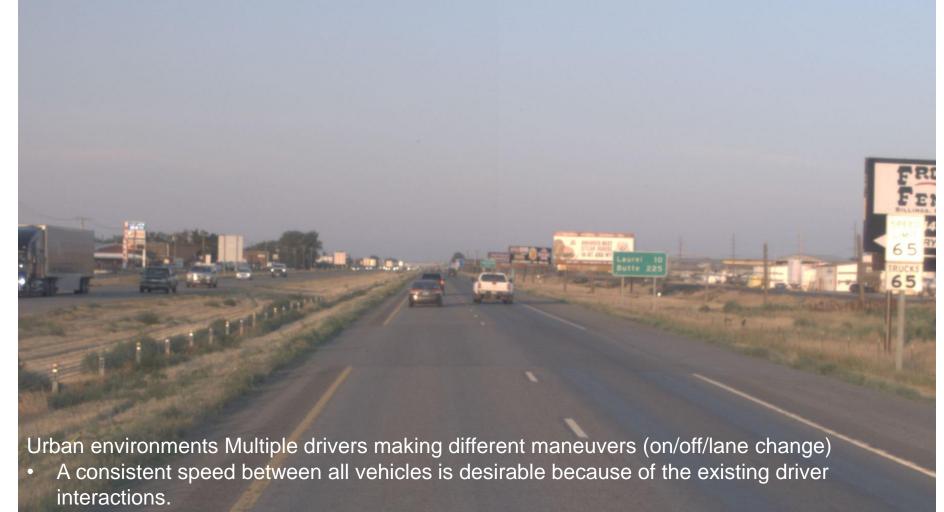
+15-mph below recommendation





- Most areas of the Interstate provide adequate passing opportunities
- Minimal congestion
- Differential speeds & speed variances are acceptable
 - Concerns with difference in speed greater than 10-mph. Drivers traveling less than 70-mph start to become hazards.





- -When these integrations are coupled with variances in speeds
- there is a compounded risk to being involved in a crash. Photo: I-90 through Billings



Other two-lane highways

- Mixed use (Commuters and recreationalists)
- Congested areas producing minimal passing opportunities
- Higher traffic volumes = greater exposure = need for consistent speed limit for all vehicles. Photo: US-93

Two different driver populations.

• One doing the 70-mph speed limit one doing 55-mph.

-The Transportation Commission approved a 55-mph speed limit on a portion of the 70-mph highway and a 65-mph speed limit on the rest to help reduce the speed differences of the two types of driver. Photo: Montana 37 outside of Libby.



Transition Zones when entering an urban environment

- Prior practice was to change speed limits where the 85th percentile changed and transitioning from between 45-mph and 70-mph
 - Problems with drivers not slowing down when entering towns.
- Current about a half mile for 50-55-mph of transitional speed limit







Before the 25-mph urban environment which has higher approach densities

VISION ZERO

Zero Deaths and Serious Injuries on Montana Highways -Reduced Speed Differentials--Reduced Speed Variances--Justified Reduced Speeds--Match Context & Speed--Consistent Speed Limits--Reduce Kinetic Energy-