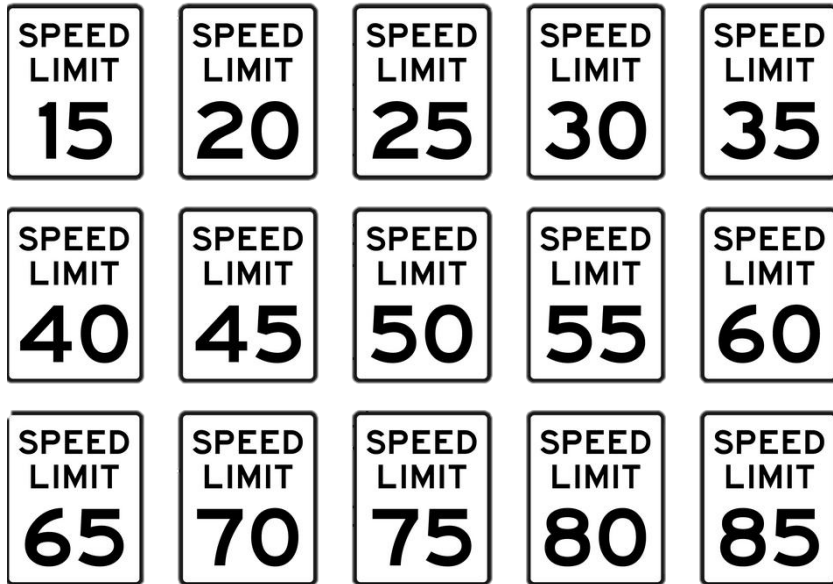


Speed Studies & Speed Limits



**Zero Fatalities, Zero
Serious Injuries**

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

SPEED LIMITS IN MONTANA



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

SPEED LIMITS IN MONTANA



**National 55 in 1974
First Statewide Speed Limit**

SPEED LIMITS IN MONTANA



Montana's Can't Drive 55

Reasonable and Prudent end of 1995 = Speed Study Requests Skyrocket

SPEED LIMITS IN MONTANA

SPEED LIMITS

DAY ——— REASONABLE & PRUDENT

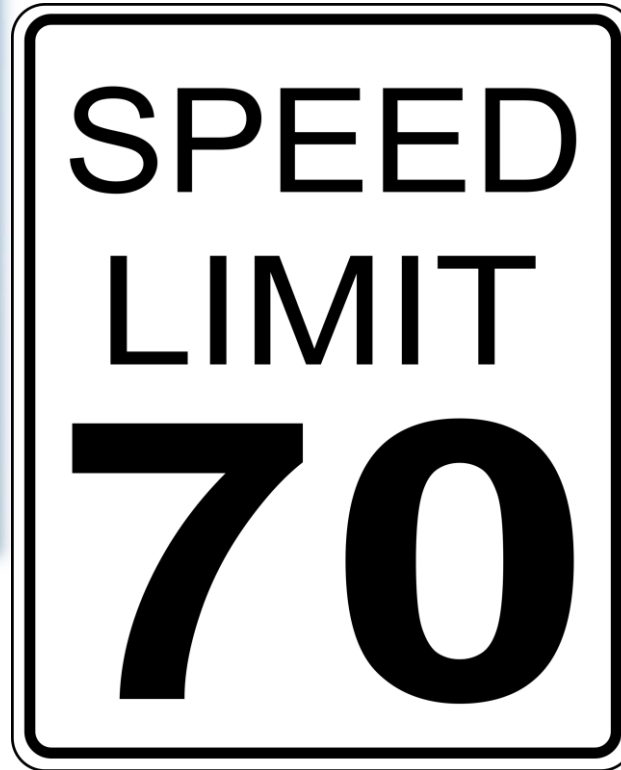
TRUCK ————— **65**

NIGHT — ALL VEHICLES — **65**

**Montana Supreme Court struck down
reasonable and prudent end of 1998**

SPEED LIMITS IN MONTANA

**May 1999: First posted speed limit
not mandated by Federal
Government**



75-mph Interstates

70-mph All other State Highways

65-mph at Night

CURRENT SPEED LIMITS

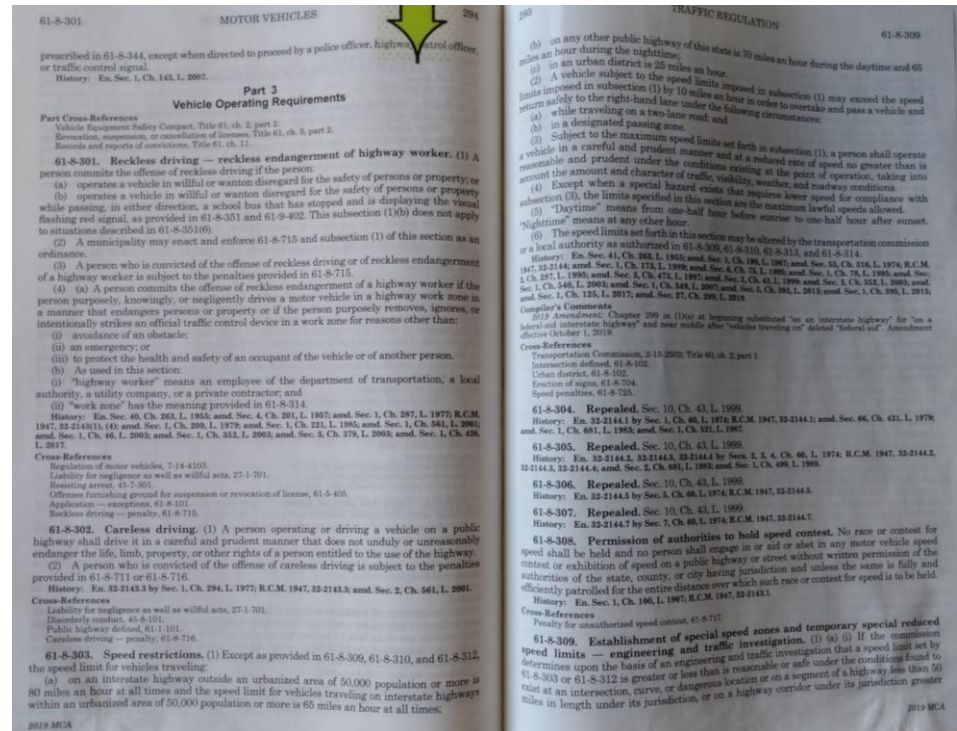
• MCA 61-8-303

- 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

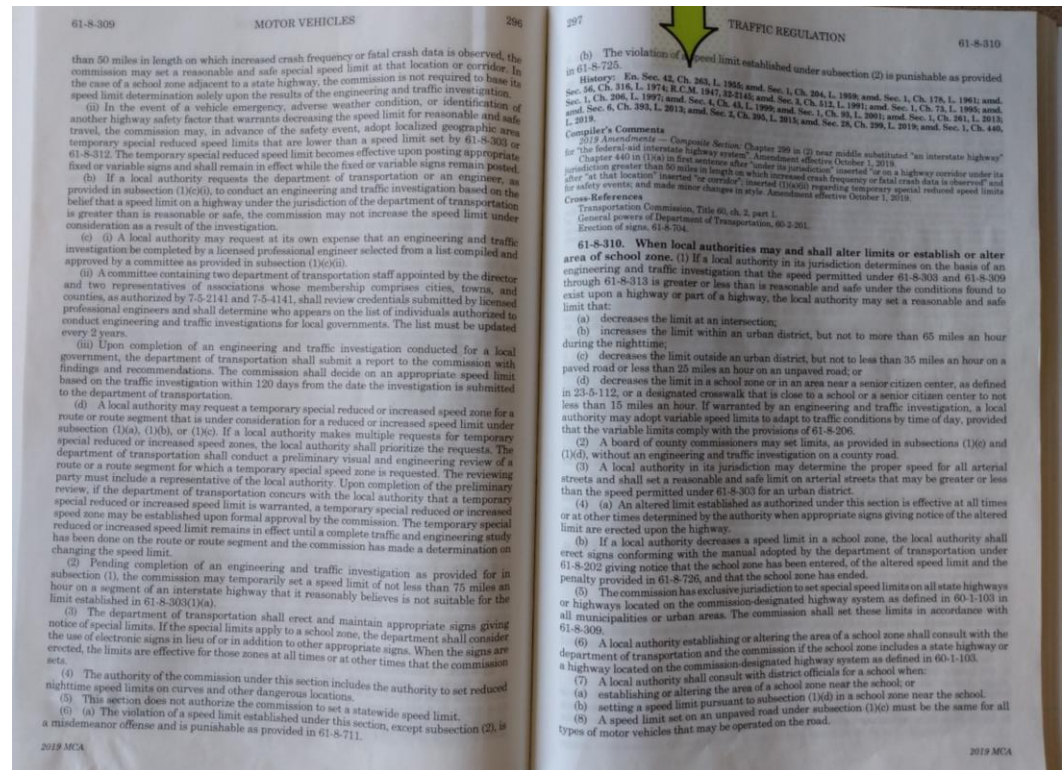
- Interstate 70-mph
- Public Highway 65-mph



CURRENT SPEED LIMITS

• MCA 61-8-309

- Speed Study Process
- Interim (Temporary) Speed Limits
- Local Concurrence to Raise Speed Limits

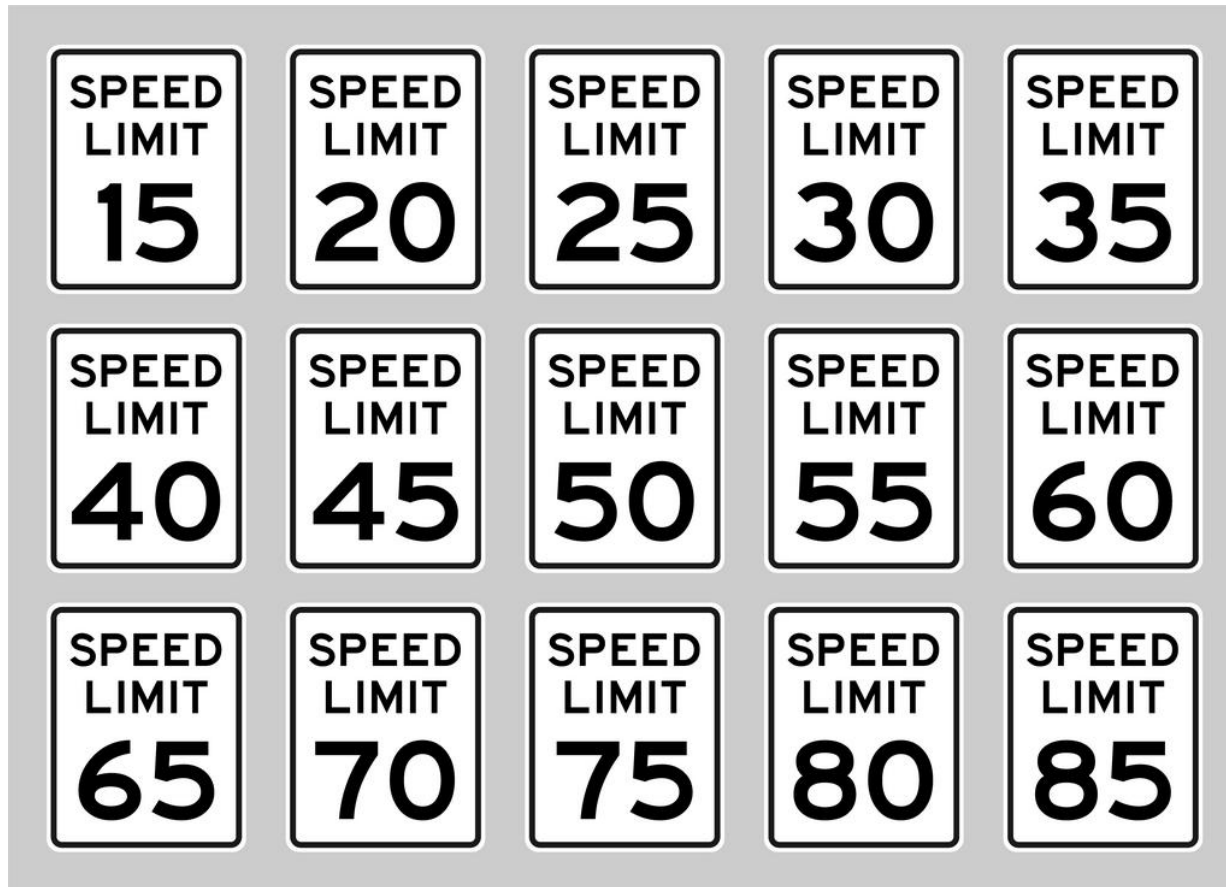


CURRENT SPEED LIMITS

- [MCA 61-8-309](#)
 - Speed Study Process
 - Interim Speed Limits
 - Local Concurrence to Raise Speed Limits
- [MCA 61-8-310](#)
 - School Zones
 - Local Speed Limits



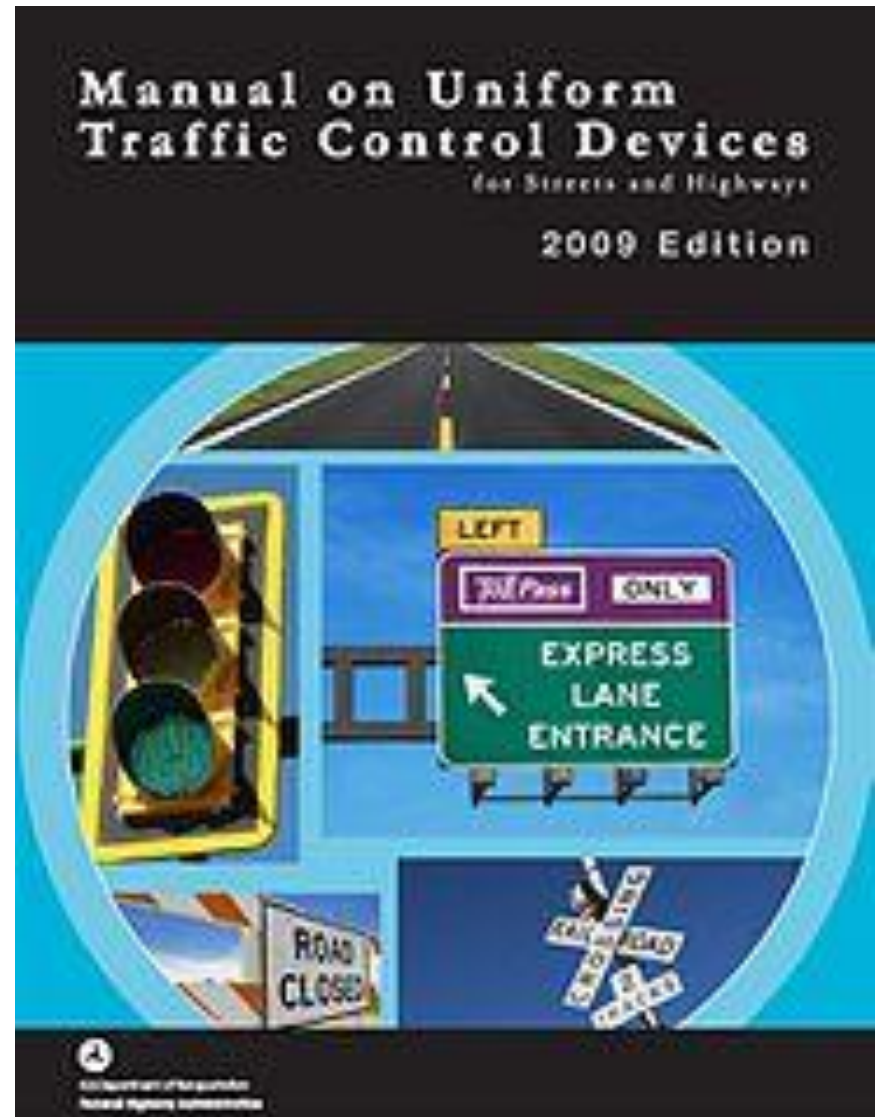
WHY DO WE SET SPEED LIMITS?



- 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

SPEED STUDIES

- 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 STUDIES

MDT accepts
Request

- Local Government
- School District
- Internal

Preliminary
Investigation

- Review Limits
- Preliminary Plans
- Plan Data Collection

Data
Collection

- Set Collection Units
- Inventory Road Features
- Observe Conditions

SPEED STUDIES

Data Analysis

- **85th Percentile**
- **50th Percentile**
- **Pace**

Crash Analysis

- **Crash Types**
- **Crash Severity**
- **Crash Rates & Patterns**

Citation Analysis

- **Citation Types**
- **Citation Patterns**
- **Speeding Citations**

SPEED STUDIES

Report

- Introduction & Site Characteristics
- History (Speed Limits, Crashes, Citations)
- Travel Speeds & Contextual Characteristics
- Recommendation

District Review

- District Staff Review the Report
- Address Context Sensitive Items

Public Comment

- Local Government Meeting
- 60-day Time Period
- 120-day Assumed Concurrence

SPEED STUDIES

MDT Reviews Comments

- Read & Summarize Comment
- Review Recommendation
- Address Public Concerns
- Final Recommendation

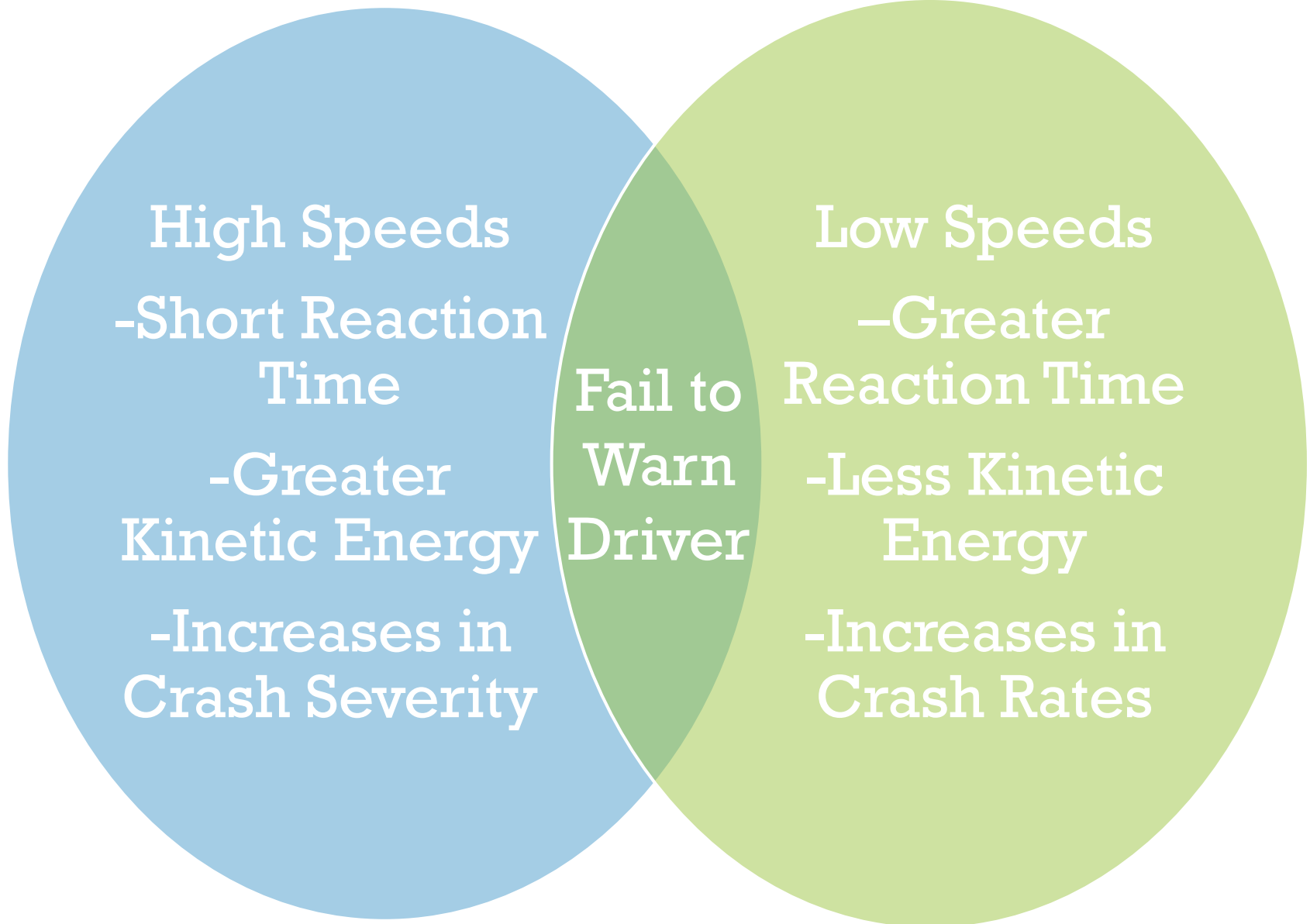
Transportation Commission

- Bimonthly Public Meeting
- Report, Public Comment, & Summary
- Public Comment Period
- Final Decision

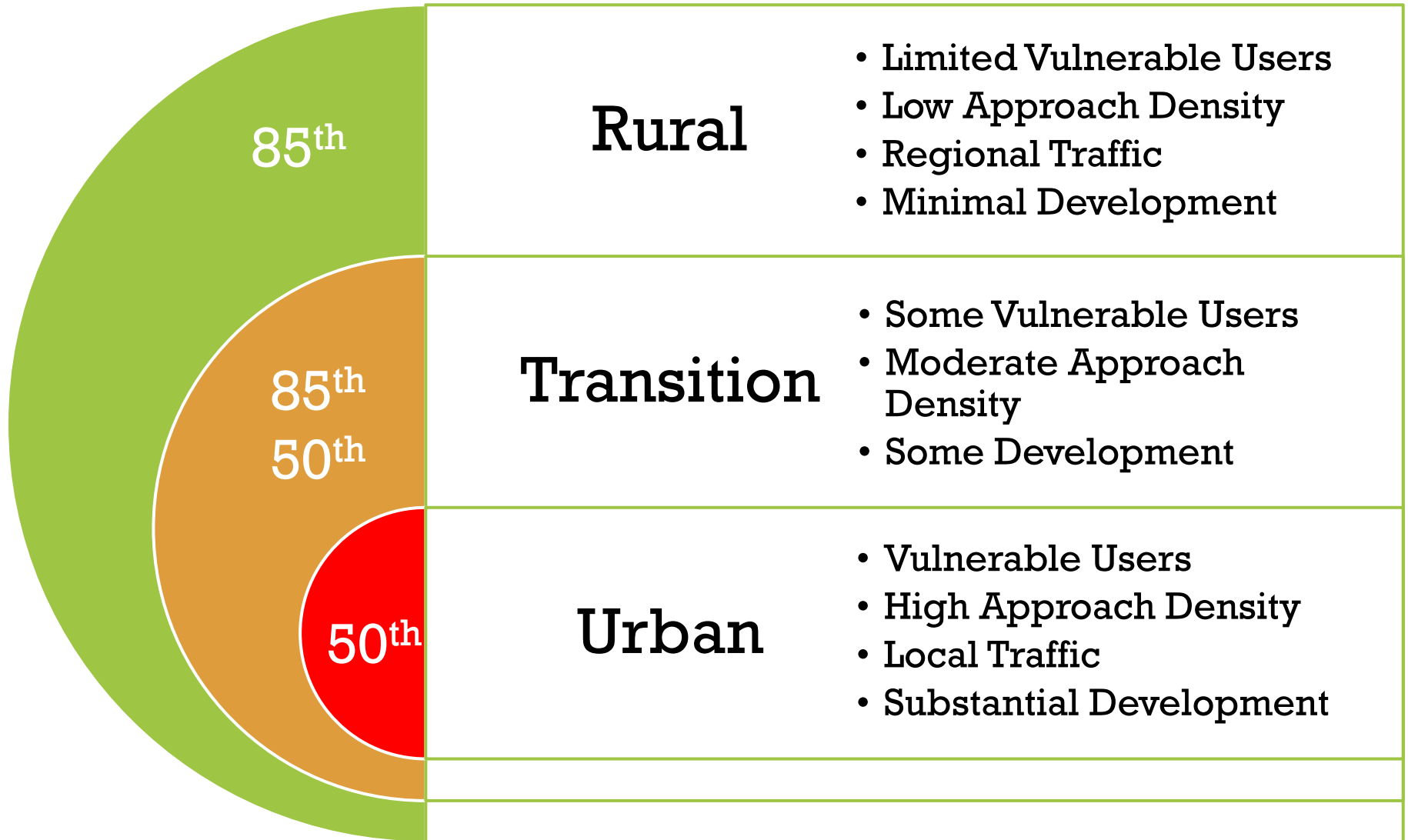
Completion

- Review Commission Decision
- Alert District Staff
- Maintenance Forces Install New Signs

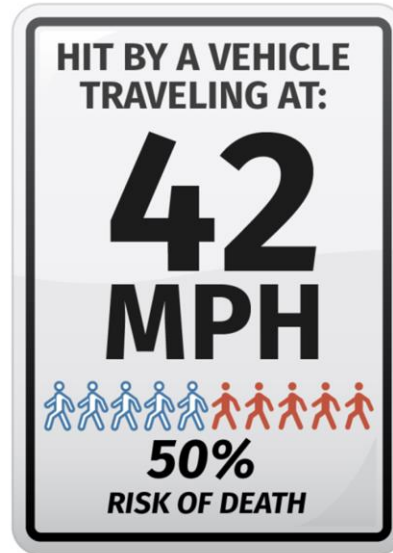
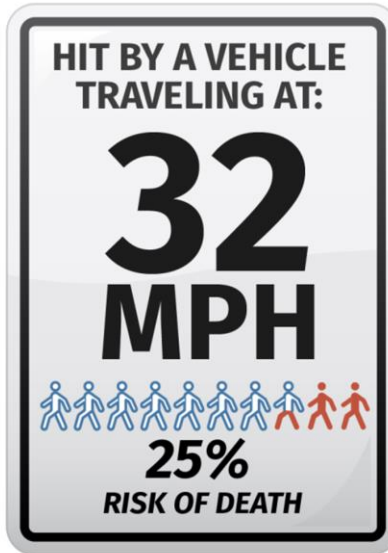
SPEED & SAFETY



URBAN VS RURAL



KINETIC ENERGY

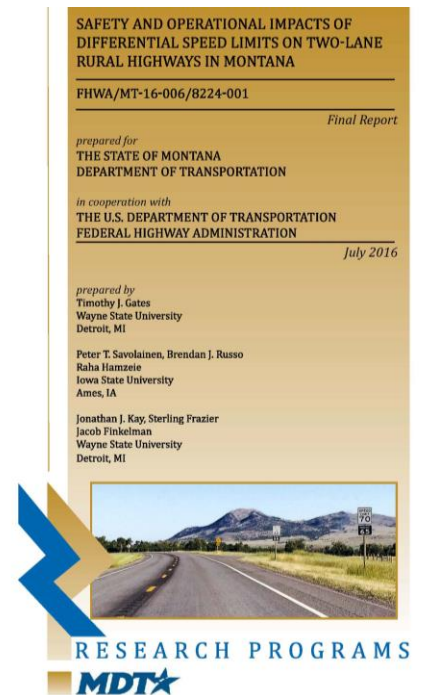
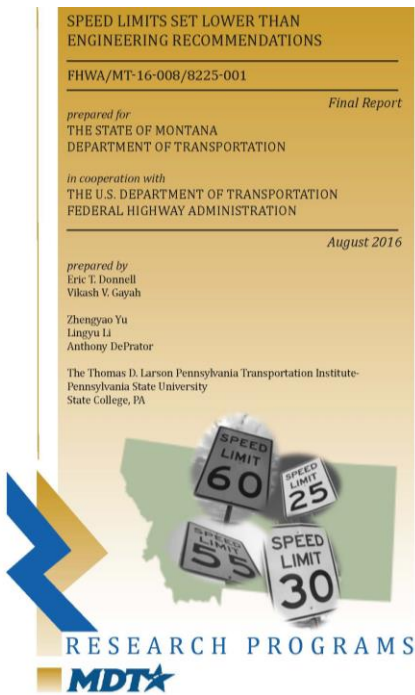


SPEED DIFFERENTIALS

- 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

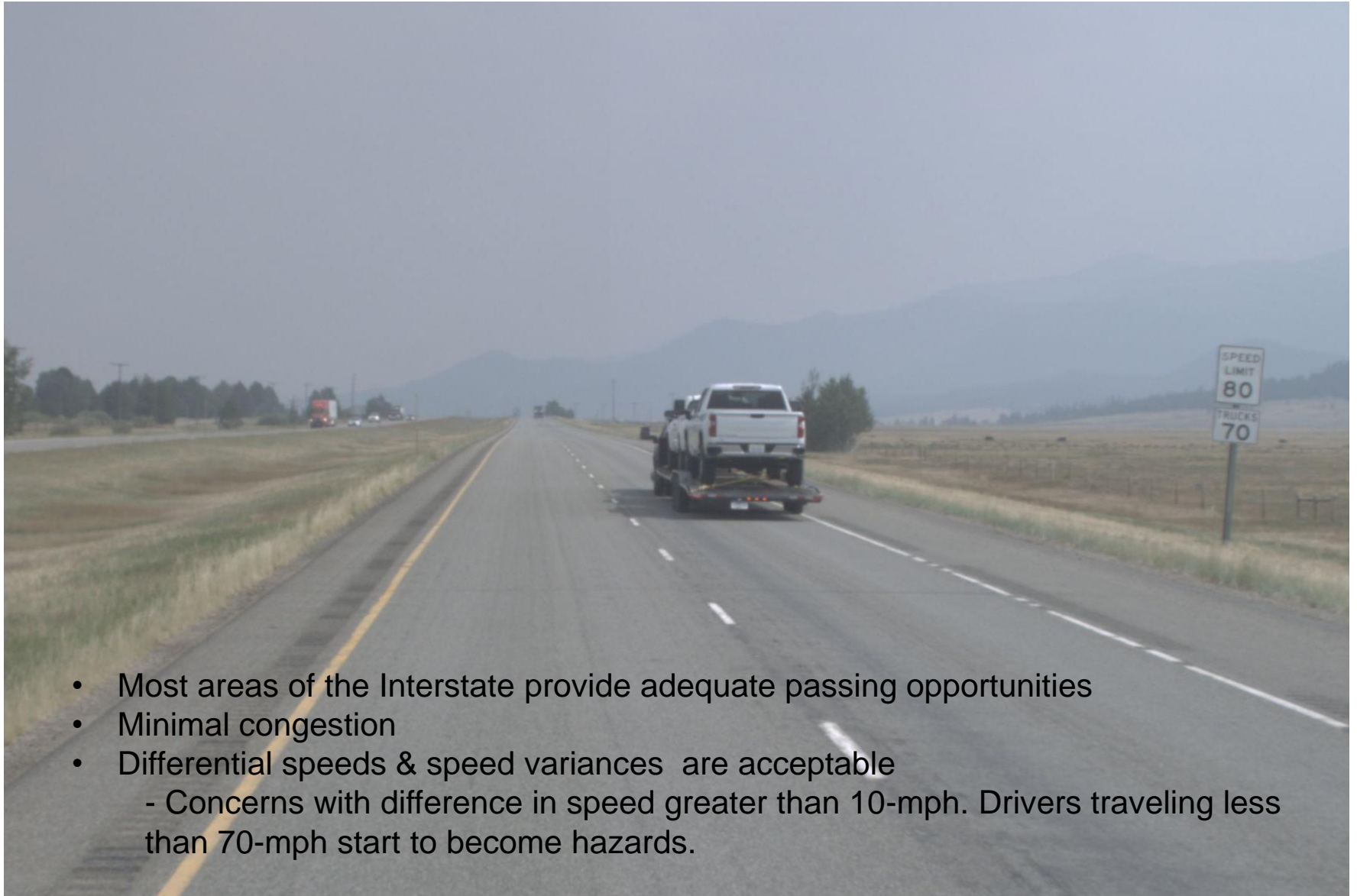
10-mph below
recommendation

-  Total Crashes
-  Fatal & Injury Crashes

+15-mph below
recommendation

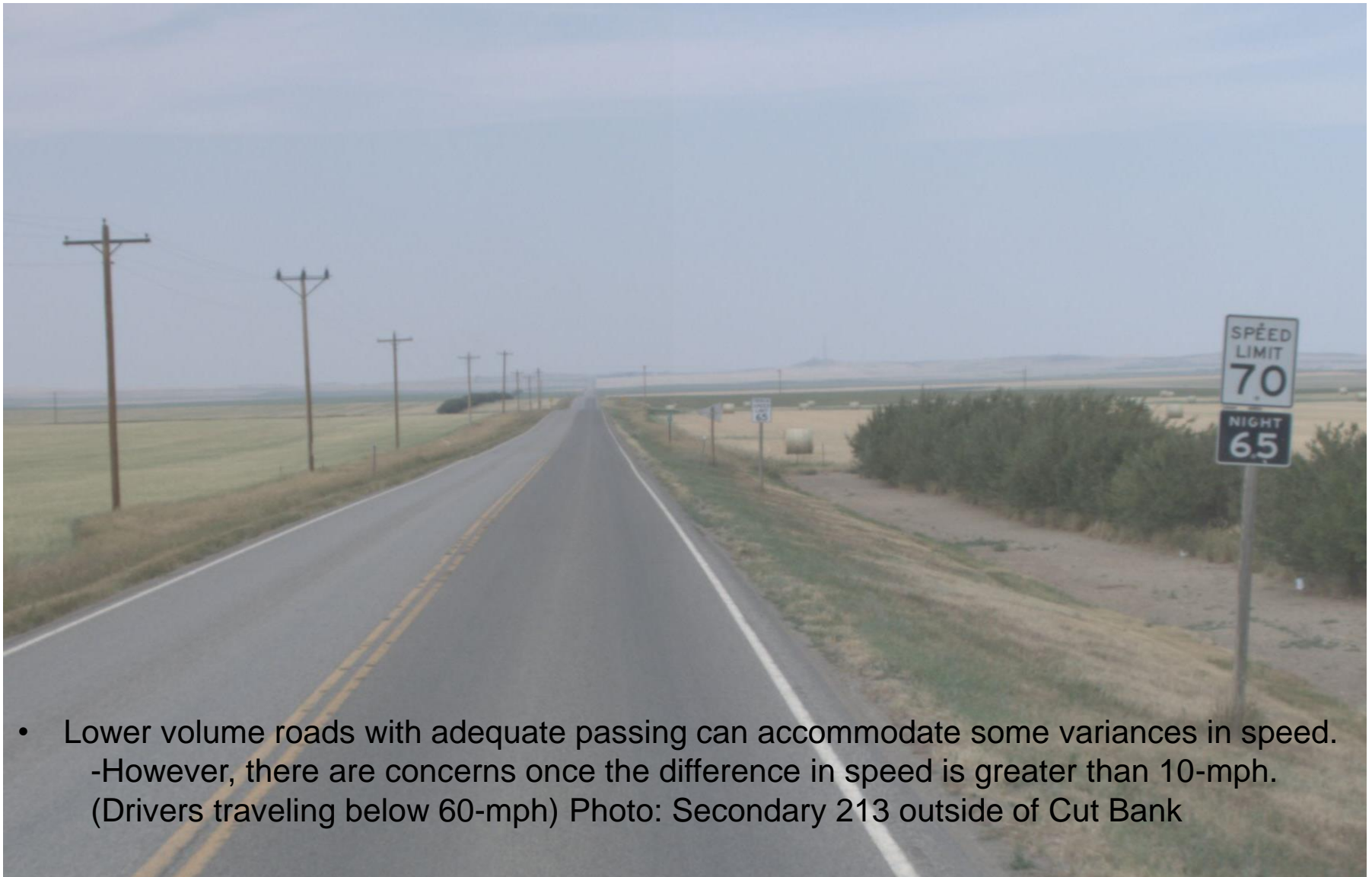
-  All Crashes

WHEN DOES IT MATTER



- 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 DOES IT MATTER



- Lower volume roads with adequate passing can accommodate some variances in speed.
 - However, there are concerns once the difference in speed is greater than 10-mph.
(Drivers traveling below 60-mph) Photo: Secondary 213 outside of Cut Bank

WHEN DOES IT MATTER



Urban environments Multiple drivers making different maneuvers (on/off/lane change)

- A consistent speed between all vehicles is desirable because of the existing driver interactions.

-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

WHEN DOES IT MATTER



Rural Two-Lane Highways

- Differential speed limits start to create problems when:
- Minimal Passing opportunities. Photo: US-212

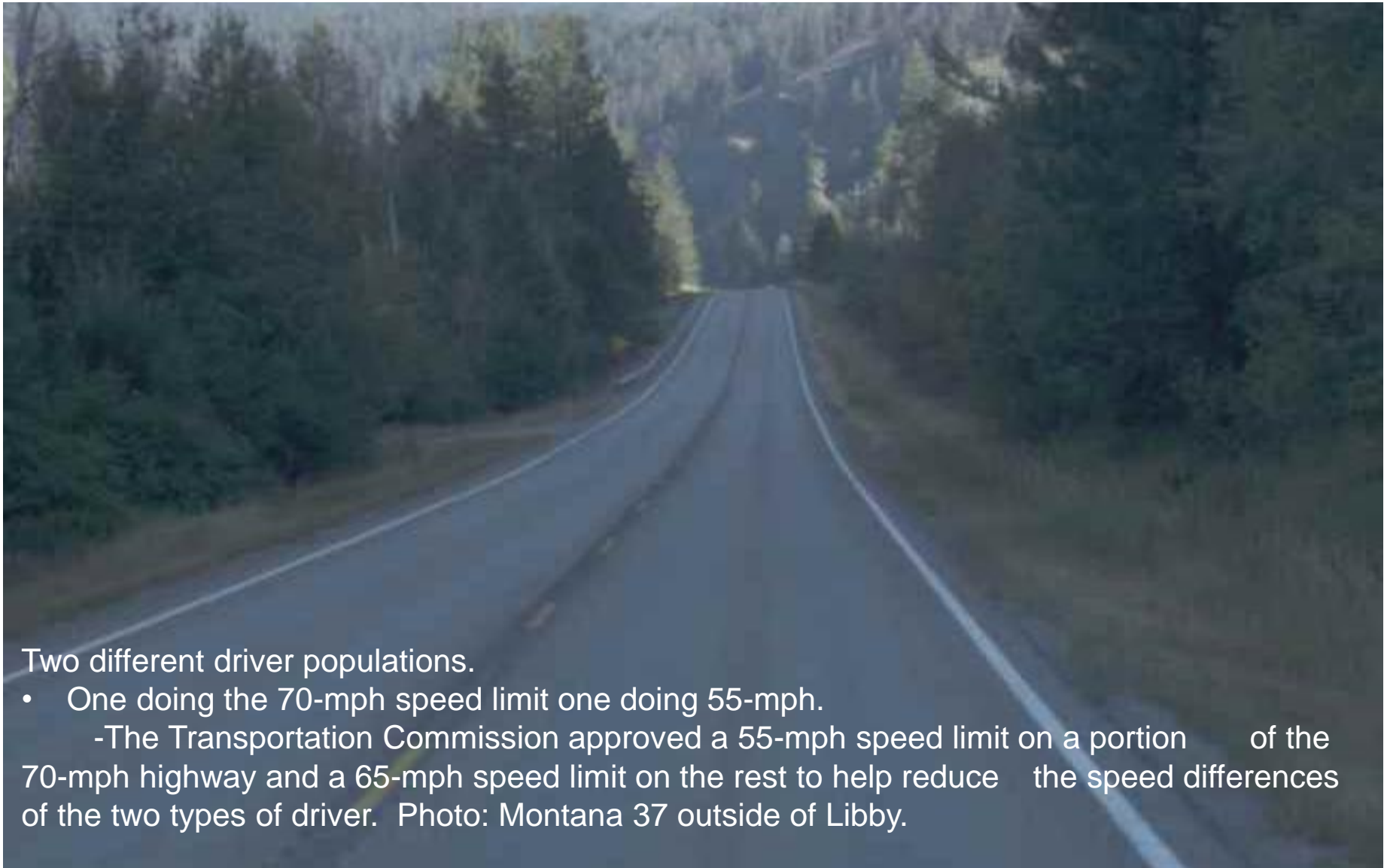
WHEN DOES IT MATTER



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

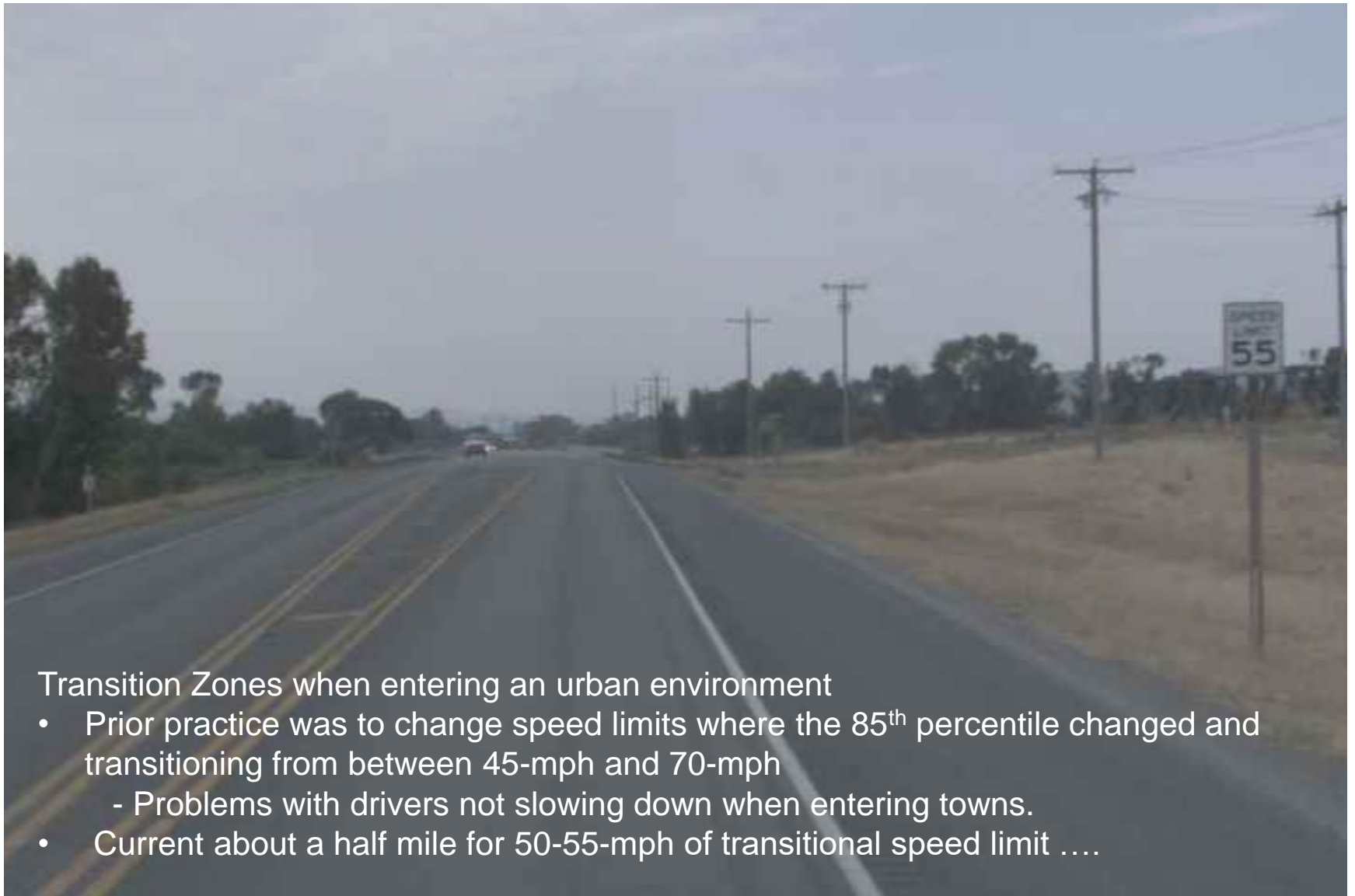
WHEN DOES IT MATTER



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.

WHEN DOES IT MATTER



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

WHEN DOES IT MATTER



Followed by 1600-feet for 40-45-mph transitional speed limit....

WHEN DOES IT MATTER



Followed by 1600-feet of 30-35-mph transitional speed limit...

WHEN DOES IT MATTER



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-