Impacts and Issues Related to Proposed Changes in Oregon’s Interstate Speed Limits

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Background

• 2003 Oregon Legislature authorized the Department of Transportation to raise Interstate speed limits to 70 mph

• Required
  – ODOT to determine “safe and reasonable” speed
  – 65 mph maximum limit for trucks if cars raised to 70 mph
Background

• Initiated two public rulemaking efforts
  – 1) Process used to determine what safe and reasonable speed should be
  – 2) Setting actual speed limits
Early Portland Speed Limit

- No person or persons shall ride or drive any horse, mule or mules, or any beast of burthen [sic]...at a greater speed than six miles per hour (1868)
  - Source: Portland Monthly, Jan 05

Photo: Oregon Historical Society
Historical Context

- Most speed limits are set by local governments
  - Federal government has only set national speed limits twice
- In 1974, nationally imposed 55 mph maximum speed limit (NMSL)
  - Tied to federal highway funds
- In 1987, Congress allows states raise rural interstate speed limits to 65 mph
- In 1995, the federal government repealed NMSL
Source: Joe Heller, Green Bay Press-Gazette
Maximum speed limits – light vehicles

- Oregon is only Western state that has not raised speed limits.

Source: American Automobile Association, Insurance Institute for Highway Safety, American Trucking Association
Maximum speed limits – heavy vehicles

- Less uniformity in truck limits

Source: American Automobile Association, Insurance Institute for Highway Safety, American Trucking Association
Questions

• Will vehicle speeds increase?
• What changes to expect in safety and health?
• Are different car and truck speed limits safe?
• What are the economic benefits?
• What might be the environmental impacts?
Speed Definitions

- Average speed
- 85th percentile speed
- Dispersion
Will vehicle speeds increase?

- Current data show most drivers driving above existing limit, near proposed limit
  - Average, 67 mph
  - 85th percentile, 70 to 74 mph
- Factors influencing the driving speeds
  - Posted speed limit
  - Likelihood of enforcement
  - Driver comfort at higher speeds
Will vehicle speeds increase?

- All previous experience indicates vehicle speeds will increase when signs change.
Enforcement comparison

- California: 4.41
- Idaho: 0.33
- Nevada: 0.79
- Oregon: 0.57
- Washington: 1.37

Number of Troopers per Rural Interstate Mile
Speeds on other highways?

- Driver behavior research indicates that traveling at higher speeds affects perception of speed for limited duration (6 to 7 mins)
- On roadways similar to Interstates, drivers may expect higher speed limits
Conclusions

• An increase in average and 85th percentile speeds of 2 - 4 mph
• Lack of adequate enforcement resources
• Measurable speed increases on non-interstate highways not likely
What changes to expect on safety?

- Physical influence on crash mechanisms
- Data and studies of crash causation
- Observational studies of speed limit changes on crash frequency
Speed and stopping distances

Graph showing the relationship between speed (mph) and distance (feet) for braking and stopping.
Speed and crash severity

- Relationship between speed and crash severity is relatively clear, higher speeds mean more severe crashes.
Speed as casual factor in crashes

• NHTSA – 31% fatal Oregon crashes
• ODOT – 52% fatal Oregon crashes
• Post-crash investigations
  – Treat et al. Tri-Level Indiana study
    • 7 to 15% of all crashes
  – Hendricks et al. NASS data
    • 19% of crashes
  – Less work on truck crashes
    • 2 to 10%
Oregon fatal crash data, 2000

- Fixed/Other Object: 32%
- Head-on: 22%
- Sideswipe-Meeting: 3%
- Sideswipe-Overtaking: 1%
- Turning Movements: 9%
- Angle: 5%
- Pedestrian: 12%
- Rear-end: 4%
Speed and crash involvement

- Multiple studies found a minimum crash involvement rate for drivers near the mean speed.

Source: Synthesis of Safety Research Related to Speed and Speed Management
Observational studies of speed limit changes

- Garber and Graham, 1989 (41)
- McKnight et al., 1989 (42)
- NHTSA, 1989 (43)
- Wagansar et al., 1989 (30)
- Streff and Schultz, 1990 (31)
- Baum et al., 1991 (44)
- NHTSA, 1992 (45)
- Lave and Elias, 1994 (46)
- Ledolter and Chan, 1994 (47)
- McCarthy, 1994 (48)
- Rock, 1995 (49)
- NHTSA, 1998 (50)
- Farmer et al., 1999 (33)
- Patterson et al., 2002 (37)

- Fatal Crashes
- Fatalities
- Fatality Rate

Percent Change

Fatalities

Fatality Rate
Oregon rural interstates

![Graph showing Oregon rural interstates fatalities from 1959 to 2004 with different speed limits (70/75 mph, 55 mph, and 65 mph). The x-axis represents the years from 1959 to 2004, and the y-axis represents fatalities. The graph includes lines for fatalities, average speed, and 85% speed.]

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Rural interstate fatality rates

EMS services and air flight network

- Much of rural Oregon experiences long response times from EMS services.
Access to trauma hospitals

• Trauma systems reduce mortality
• Research shows those presenting to L3 hospitals initially have worse outcomes
Difference in Truck and Car Limits

- Many states have adopted lower speed limits for trucks.
Do lower truck limits improve safety?

• For –
  – Trucks are heavy, require more stopping distance, and have more energy when involved in collisions.
  – 76% of injuries and 78% of fatalities in collisions involving trucks and cars are sustained by occupants of the passenger vehicle

• Against –
  – Different speeds create conflicts and accidents, economic cost to freight shipping
And the research says…

- Effective at promoting slower truck speeds
- Safety, no definitive conclusion -
  - DSL states tend to have greater proportions of car-truck collisions (rear-end or sideswipe crashes)
  - Uniform speeds tend to have higher proportions of truck-car collisions
  - Trend analysis showed no difference in either USL/DSL states
Conclusions

• The magnitude of change in number of crashes is difficult to predict based on current research

• An estimated 5 to 15% increase in fatalities and injuries
  – An additional 2 to 11 persons fatally injured and 30 to 90 people with major injuries per year
What would be the economic impacts?

- Reduced travel time of 7.2% for passenger vehicles and 15.5% for commercial vehicles
- Some benefits to users not based in Oregon
- Economic development benefits are expected to be small
Change in fuel use

- Light vehicle fuel use will increase by 9%
- Heavy vehicle fuel use increases by 20-25%
Changes in emissions

- Tailpipe emissions from light vehicles will increase by 5%
- Heavy vehicles may emit up to 45% more nitrous oxides and 24% more carbon monoxides.
Change in noise

• Noise levels from vehicles' tires, engines, and exhaust systems increase with speed

• In rural areas, the impacted area will increase by 80 feet

• No expected change in urban areas
  – No change in truck speed
Potential impacts not addressed

- The effect of aging of Oregon's population
- Additional delay caused by crashes or incidents
- The effect on local law enforcement officers if state police are not available to handle additional incidents
- The effect on living and commuting patterns
Conclusions

• The relationships between speed and travel time, fuel use, and pollution are direct

• The relationship between speed and safety are less clear

• While travel time will be favorably affected by the speed increase, all other issues, such as pollution, safety, and strain on enforcement resources will be negatively impacted
Recommendations

• Invest in additional enforcement resources
• Enhance seat belt and DUI campaigns
• Invest in EMS services
• Monitor crash experiences
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Questions