Studded Tire Update
Washington State Transportation Commission

KRIS RIETMANN ABRUDAN, COMMUNICATIONS DIRECTOR
JEFF UHLMeyer, STATE PAVEMENT ENGINEER

February 17, 2021
Public awareness campaign background

History
• At the request of the Legislature, the 2018 supplemental budget included a proviso to fund this work in Spokane County. $150,000
• Legislature extended this work in the 2019 transportation budget to add Whatcom County. $250,000
• Funding is from the revenues generated by the five dollar per studded tire fee under RCW 46.37.427.

Execution
• Employed a vendor. Scope included campaign strategy, asset creation, media buys and audience research.
• Consulted a stakeholder advisory group at key milestones.
• Used billboard, radio, online advertising, website and social media.
• Refined creative materials in year 2 based on what we learned from audience research.
What we learned

- Changing behaviors is challenging. Research was a key component to determine what messaging may resonate with our audiences.
- Surveyed at the beginning and end of each campaign year – Winter 2018/19 and 2019/20.
- The perception of safety is critical to people’s decision-making process.
- Radio is what people remember most.
- There are clear differences in tire usage levels, opinions and knowledge of winter tire options in the two counties.
- Winter tires are more top-of-mind for Spokane county residents.
- Whatcom county residents are less likely to know that studded tires cause road damage.
- There has been little change in self-reported tire usage. The usage of studded tires can be observed to be slowly decreasing.
Chronology of Studded Tire Legislation – 1969 to present

- 1969 – Legislation introduced and approved to make studded tires permissive year-round
- 1971 – WSDOT restricts studded tire use from November 1st to April 1st
- 1974 – US Department of Transportation issues a “Statement of Policy” to all states noting there is no net benefit from the use of studded tires
- 1977 – WSDOT prepares a report on the effects of studded tires on road surface integrity
- 1977 to 1982 – The 1977 report was updated to reflect the fact that 14 states have banned the use of studded tires
- 1984-1994 – Repeated legislation was introduced to ban studded tires – Bills did not pass
Chronology of Studded Tire Legislation – 1969 to present

- 1999 – Lightweight stud legislation passes
- 2000 to 2013 – Various legislation to decrease the months for stud use, require user fees, ban studs and require the use of retractable studs on vehicles did not pass
- 2015 – Second Engrossed Substitute SB 5987 was passed and provides for a one-time per tire fee at the time of purchase of new studded tires. The bill became law on July 1, 2016
Studded Tire Wear in Asphalt Pavement
Studded Tire Wear in Asphalt Pavement

SR 904 north of Cheney – 15 years of stud wear.
Studded Tire Wear in Asphalt Pavement

I-90 east of Spokane
Studded Tire Wear in Concrete Pavement

I-90 Spokane showing 14 years of studded tire wear on concrete pavement
Studded Tire Wear in Concrete Pavement
Studded Tire Wear in Concrete Pavement
Studded Tire Wear - Asphalt

I-90 Spokane showing 14 years of studded tire wear on concrete pavement

SR 904 north of Cheney – 15 years of stud wear.

I-90 east of Spokane
Studded Tire Wear - Concrete

I-90 Spokane showing 14 years of studded tire wear on concrete pavement
SR 904 north of Cheney – 15 years of stud wear.

I-90 east of Spokane
State Wide Studded Tire Damage

Concrete Roadways:
$15 to $23 Million per year

Asphalt Roadways:
$8 to $10 Million per year

Combined Damage Estimate:
$23 to $33 Million per year
Concrete Pavement Wear – without Studs

Interstate 45, Texas – 14 years of service
Concrete Pavement Wear – without Studs

I-90 Spokane showing 14 years of studded tire wear on concrete pavement

SR 904 north of Cheney – 15 years of stud wear.

I-90 east of Spokane

I-494, Minnesota- 14 years of service
Concrete Pavement Wear – with Studs

- I-90 Spokane showing 14 years of studded tire wear on concrete pavement
- SR 904 north of Cheney – 15 years of stud wear.

- Tines remains on pavement edge
- No tines in wheel path
Studded Tire Research

Studded and Studless Traction and Safety – Published 2002

Conclusions

• Studded tires produce their best traction on snow or ice near the freezing mark and lose proportionately more of their tractive ability at lower temperatures.

• The traction of studded tires is slightly superior to studless tires only under an ever-narrowing set of circumstances. Best case for studded tires is on clear ice near the freezing mark.
Studded Tire Research

Studded and Studless Traction and Safety – Published 2002

Conclusions (Cont.)

- On bare pavement, studded tires tend to have poorer traction performance than other types of tires.
  - Especially true on concrete roadway
  - Little stopping difference for asphalt roadways

- Tractive performance of studded tires is sensitive to stud wear and lose their tractive ability over time.

- Pavement rutting caused by studded tires can cause dangerous conditions of tramlining, hydroplaning on accumulated water in ruts, excessive roadway spray and premature damage to roadway and roadway markings.
Studded Tire Research

Studded and Studless Traction and Safety – Published 2002

Conclusions (Cont.)

• Other
  - Fuel consumption (greater with studs)
  - Suspended particulate matter
  - Perceived safety when using studs
Studless Tires Research

- Maintains flexibility in cooler temperatures
- Deeper tread depths for snow-on-snow traction
- Wider range of traction ability on snow and ice
- Provides “Grip” on roadway surfaces
Tire Grip

I-90 Spokane showing 14 years of studded tire wear on concrete pavement SR 904 north of Cheney – 15 years of stud wear. I-90 east of Spokane
Studless Tires - Tire Grip

I-90 Spokane showing 14 years of studed tire wear on concrete pavement.
SR 904 north of Cheney – 15 years of stud wear.
I-90 east of Spokane.
Maintaining Pavement Friction

Other WSDOT Practices

• Construction Specifications
  – Longitudinal tining (concrete)
  – Diamond grinding (concrete)
  – Drag finishes (concrete)
  – Quality aggregates

• Skid Collision Reduction Policy
  – Statewide friction testing
  – Corrective action when necessary

• High Friction Surfaces

• Chip Seal Applications
Questions?

For more information on the Studded Tire Awareness Campaign:  
Kris Rietmann Abruden, Communications Director  
(360) 705-7423 or RietmaK@wsdot.wa.gov.

For more information on Studded Tire Wear on Pavement:  
Jeff Uhlmeyer, PE, WSDOT State Pavement Engineer  
(360) 709-5485 or uhlmeyj@wsdot.wa.gov.