



Oregon Bus on Shoulder





Agenda

- 01 Bus on Shoulder Background & Secrets to Success
- 02 Performance Measures & Data
- 03 Key Findings & What's Next



Bus on Shoulder Background & Secrets to Success

What is Bus on Shoulder?

- Authorized transit providers may drive in the roadway shoulder to bypass congestion
- Innovative congestion management tool that improves transit reliability, making transit a more attractive transportation option
- Low(er) cost which maximizes existing facilities
- Used in over 25 other metropolitan areas, and some for more than 35 years



Where and When?

- I-205 (ODOT, WSDOT, C-TRAN):
September 2020
- I-5 (ODOT, SMART):
November 2021



How did ODOT get here?

- ODOT Planners in the Portland area went looking for creative solutions to constrained and congested roadways
- Convened workshops with ODOT staff and local transit partners to identify potential corridors for pilot implementation
- Went on test drives
- Developed a Concept of Operations, including operational parameters, safety guardrails, and evaluation criteria that was agreed upon by ODOT and the partnering transit agency
- Launched pilots and evaluated quarterly for the first year of operations
- Wrote a new Oregon Authoritative Rule (OAR) to legalize Bus on Shoulder in the state
- Included in ODOT's Strategic Action Plan



Secrets to Success

- Great partnership between the roadway agency and transit provider
- Leverage upcoming infrastructure projects to reduce total cost to implementation
- Pick the right corridors – recurring congestion, existing or planned transit service, and amenable infrastructure



Performance Measures & Data

Before & After Studies Overview



Evaluation Criteria

Primary topic areas: *Transit performance, infrastructure, safety*

Criteria with readily-available data:

- Travel time of general-purpose lanes (all traffic)
- Transit travel time
- Transit on-time performance
- Frequency of shoulder use
- Transit ridership
- Pavement and bridge conditions
- Conditions of manholes and drainage inlets
- Incidents
- Type/frequency/duration of shoulder obstructions (e.g., disabled vehicles, large debris, law enforcement activities, maintenance activities)
- Crashes

Criteria with less available data; leveraged anecdotal feedback:

- Transit operating cost savings
- Bus operator understanding, comfort, satisfaction
- Bus operator evasive actions, close calls, multimodal activity (e.g., bus interactions with bicyclists or pedestrians)
- Bus rider understanding, comfort, satisfaction
- General public understanding and compliance

Transit Performance

On-Time Performance

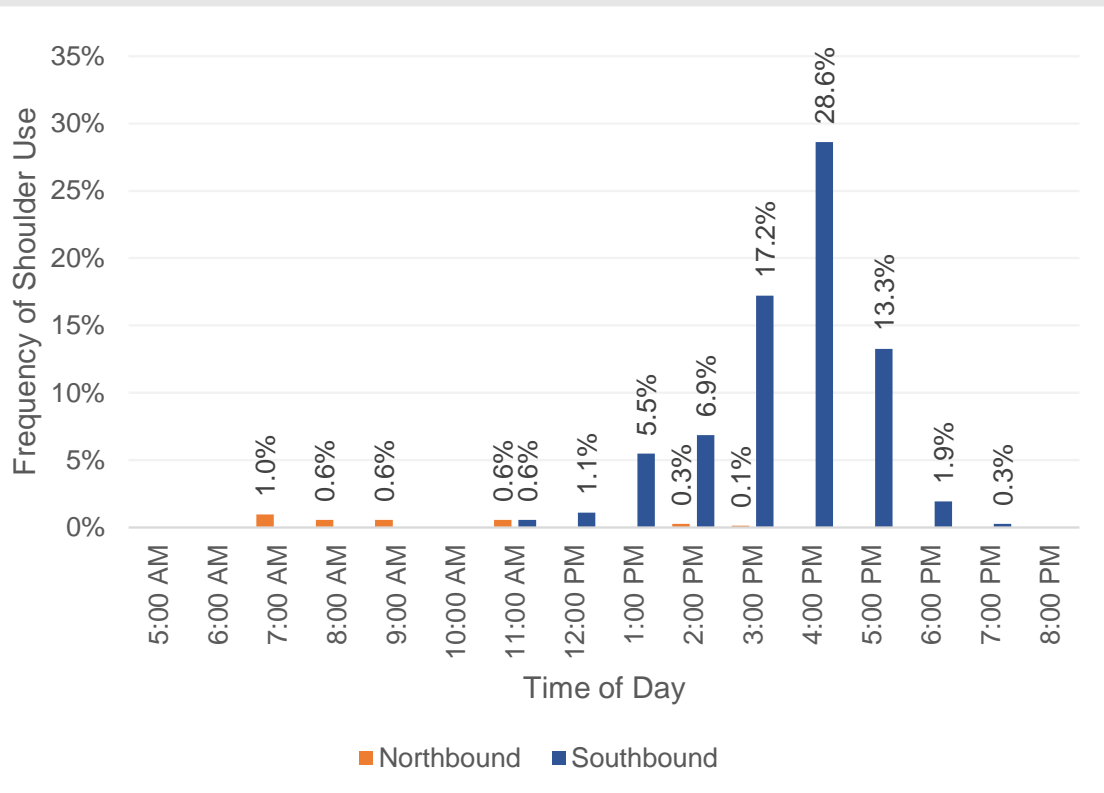
- I-5 Pilot (SMART)
 - Pre-pilot: ~52%
 - Post-pilot: ~83%
- I-205 Pilot (C-TRAN)
 - Pre-pilot: ~82% (NB); ~93% (SB)
 - Post-pilot: ~85% (NB); ~95% (SB)



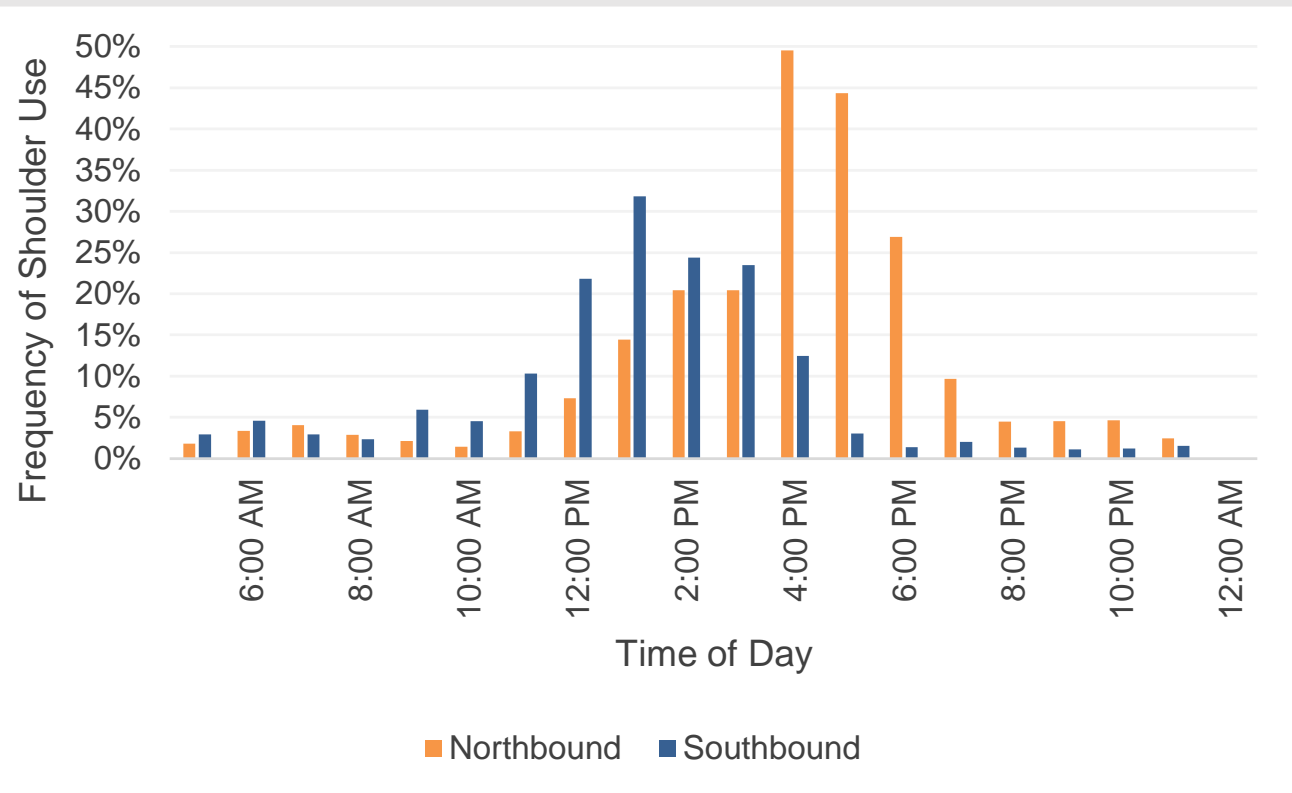
Transit Performance

Shoulder Usage Frequency, 2022

I-5 Pilot (SMART)



I-205 Pilot (C-TRAN)



Transit Performance

Side Note: Auxiliary Lane Effect on Shoulder Usage



Infrastructure

Pavement, Bridges, Drainage Inlets, Manholes



Safety

Both pilots:

- No reported crashes involving BOS
- No close calls or evasive actions



Safety

I-5 Shoulder Obstructions Encountered by SMART Buses, 2022

Shoulder Obstruction Type	# of Obstructions Encountered
Disabled Vehicle	49
Abandoned Vehicle	-
Debris	4
Inclement Weather	1
Emergency Vehicle	2
Pedestrian	-
Bicyclist	-
<i>Total</i>	56

Key Findings

- **Transit performance:** Better on-time performance, less travel time variability, more reliable trips, increased satisfaction among bus operators and riders
- **Safety:** No crashes or incidents involving BOS. No close calls or evasive actions.
- **Infrastructure:** No significant change in shoulder asset conditions



Key Findings

Bus Operator, Staff, Public Observations

- Riders perceive greater time savings
- Major improvement to bus operator and passenger experience
- Need for considering other environmental factors
- Importance of coordination across agencies
- Most motorists understood/complied with BOS rules; very few violations



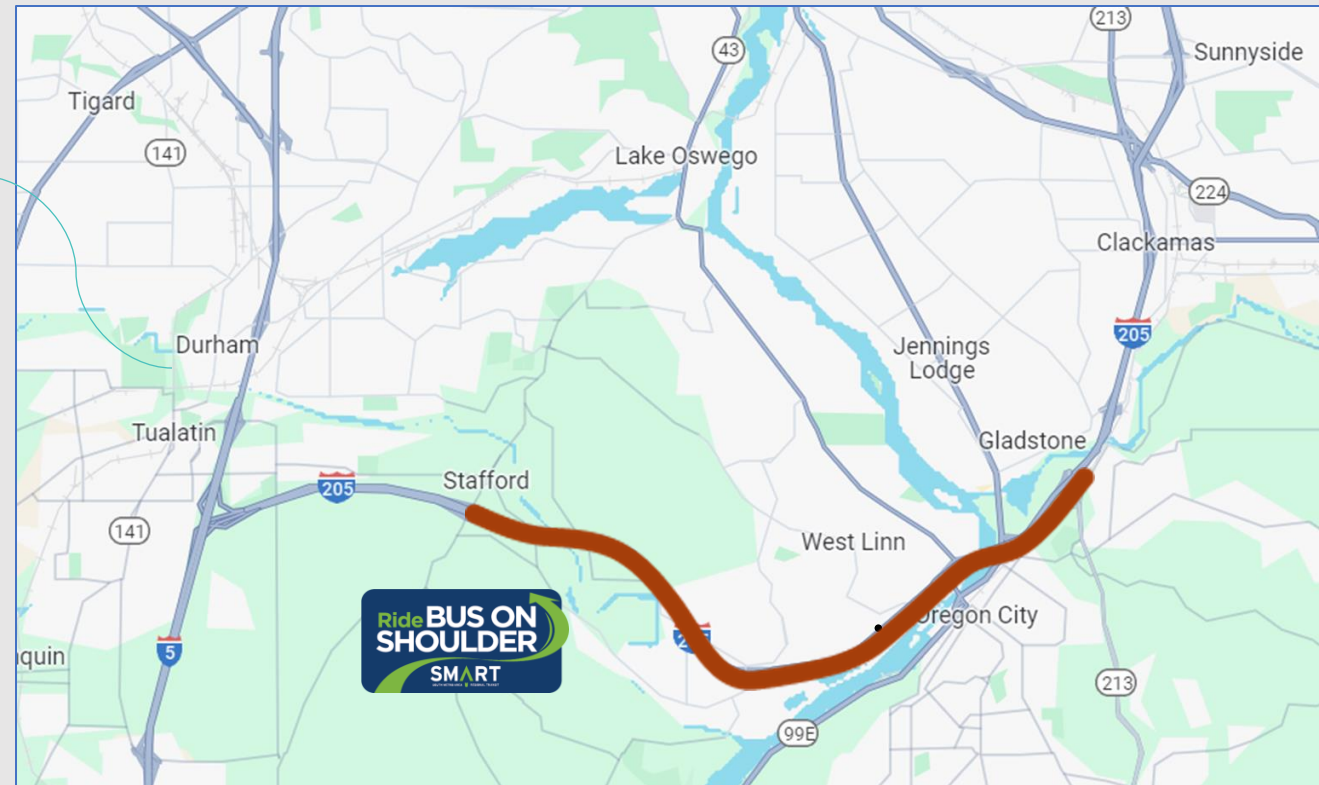
Considerations for a Future BOS

- Prioritize locations where existing or planned auxiliary lanes do not exist
- Consider “inside” shoulder use
- Consider BOS in areas congestion may emerge in the future



What's Next?

- Carbon Reduction Program grant funding to implement next BOS segment on I-205
- Key Elements
 - Longest BOS segment
 - No Auxiliary Lanes
 - Electric cutaway buses
- Timeline
 - Concept of Operations in development
 - Transit service expected Spring 2025



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Thank you!

