

# WINTER MAINTENANCE AT A GLANCE

## 2024 - 2025



### Introduction

Snow and ice control is a critical element of operations on our state highway system. To meet level of service goals in this area, Wisconsin DOT contracts with the state's 72 county highway departments for winter maintenance on these highways, which is a unique and mutually beneficial partnership. WisDOT receives the services of a skilled, experienced workforce, and supports the counties through training, research initiatives, and testing of products, equipment and methods.

This summary document highlights key aspects of the 2024-2025 winter, including weather, materials and equipment use, performance, and costs. The complete Annual Winter Maintenance Report, which provides further data on these areas and others, is available at: <http://wisconsindot.gov/Pages/doing-bus/local-gov/hwy-mnt/winter-maintenance/default.aspx>.

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# Statewide Winter Summary

## Winter by the Numbers

In 2024-2025, Wisconsin experienced an extremely mild winter. Compared to last year's winter costs of \$72,256,176, this winter's costs totaled \$89,046,744, an increase of 24 percent. The state experienced an average of 26 winter storms this winter, resulting in an average of 49.3 total inches of snowfall. This average represents a 7 percent increase from last year's statewide average of 46.0 inches of snow. In terms of Tons/Lane mile, salt use increased from 7.3 tons to 9.6 tons.

Table 1 below summarizes key facts and statistics from this winter in several core areas. The 2024-2025 Annual Winter Maintenance Report provides more data on all topics in this table.

**Table 1. Statewide Summary: This Winter by the Numbers**

|                                  |                                                                       | 2023-2024 Winter                       | 2024-2025 Winter                       |
|----------------------------------|-----------------------------------------------------------------------|----------------------------------------|----------------------------------------|
| Infrastructure                   | Lane miles                                                            | 34,736                                 | 34,697                                 |
|                                  | Patrol sections <sup>4</sup>                                          | 754                                    | 754                                    |
|                                  | Average patrol section length <sup>4</sup>                            | 46.1                                   | 46.0                                   |
| Weather                          | Average statewide Winter Severity Index (100=normal)                  | 58.7                                   | 54.4                                   |
|                                  | Number of storms, statewide average and range across counties         | Average: 21<br>Range: 7 - 46           | Average: 26<br>Range: 12 - 48          |
|                                  | Snowfall (in), statewide average and range across counties            | Average: 46.0<br>Range: 19.4 – 93.1    | Average: 49.3<br>Range: 16.2 – 141.0   |
| Materials <sup>1</sup>           | Salt used                                                             | 255,155 tons<br>7.3 tons per lane mile | 332,458 tons<br>9.6 tons per lane mile |
|                                  | Average cost of salt                                                  | \$91.21 per ton                        | \$94.27 per ton                        |
|                                  | Total liquids used (prewet, anti-icing, direct liquid application)    | 14,788,855 gal.                        | 17,657,518 gal.                        |
|                                  | Sand used                                                             | 5,225 cubic yd.                        | 4,511 cubic yd.                        |
| Costs, Equipment and Performance | Total winter costs <sup>2</sup>                                       | \$72,256,176                           | \$89,046,744                           |
|                                  | Total winter costs per lane mile                                      | \$2,080                                | \$2,566                                |
|                                  | Average crew reaction time from start of storm                        | 2.65 hours                             | 2.79 hours                             |
|                                  | Percentage of roads to bare/wet pavement (Within WisDOT target times) | 75%                                    | 70%                                    |
|                                  | Road Weather Information System (RWIS) stations                       | 75                                     | 75                                     |
|                                  | Counties that used anti-icing agents during the winter season         | 69 out of 72 (96%)                     | 64 out of 72 (89%)                     |
| Labor and Services               | Regular county winter labor hours <sup>3</sup>                        | 92,491 hrs.                            | 111,594 hrs.                           |
|                                  | Overtime county winter labor hours                                    | 84,607 hrs.                            | 98,000 hrs.                            |

1. All material usage quantities are from the county storm reports except for salt. Salt quantities are from WisDOT's Salt Inventory Reporting System.

2. Costs refer to final costs billed to WisDOT for all winter activities, including activities such as installing snow fences and thawing culverts.

3. Labor hours come from county storm reports, and reflect salting, sanding, plowing and anti-icing efforts.

4. Patrol sections and average length include hybrid sections in some counties which may include a portion of county highway.

## Statewide Winter Summary

### A Mild Winter Season

2024-2025 was another fairly mild winter especially coming off an extremely mild winter of 2023-2024. We saw the state get hit how one would expect a Wisconsin winter to go, a little more severe in the North and less severe in the South. FIGURE 1 shows the winter severity index for each county throughout the state, the winter severity index is calculated from a formula entered in the Maintenance Decision Support System (MDSS) to be able to compare varying winter conditions.

During the 2024-2025 winter season, county highway departments responded to:

- A statewide average of 26 winter snow events per county, 5 more than the previous winter. The high was 48 events in Vilas County and the low was 12 events in Richland County.
- A statewide average of 2 frost events.
- A statewide average of 7 freezing rain/sleet events.

FIGURE 2 shows the total snowfall received in Wisconsin this winter based on storm report data. Snowfall varied significantly across the state; the highest snowfall recorded was in Iron County, at 141 inches; the lowest was in Kenosha County, at 16 inches. This winter's statewide average total snowfall was 49 inches, 3 more inches than last year.

Figure 1. 2024-2025 Winter Severity Index

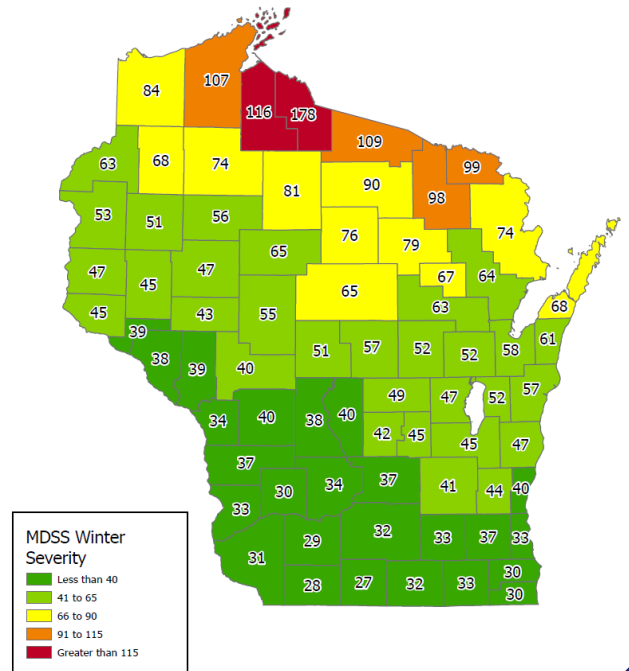
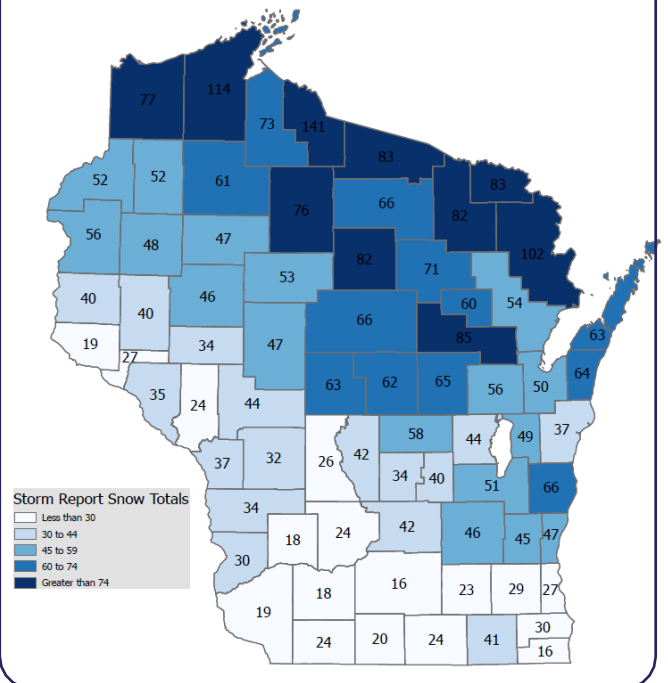


Figure 2. Statewide Snowfall, 2024-2025

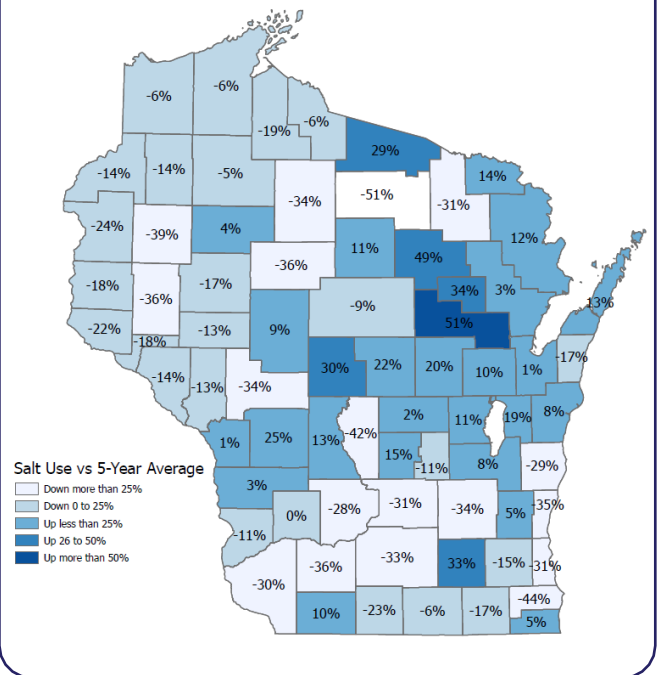


## Salt and Brine Work Together

Salt use was nearly 30 percent higher than the previous year, at 332,458 tons. Figure 3 shows county 2024-2025 salt usage per lane mile versus 5-year averages. This increase could be due to an increase in freezing rain events we experienced this winter. Figure 4 shows statewide historical salt usage per lane mile overlaid with average severity index. WisDOT encourages counties to use salt efficiently by making use of best practices such as anti-icing, prewetting, and direct liquid application. Use of anti-icing materials was down 63 percent over last year, with counties using 3,092,624 gallons of anti-icing liquids, 64 counties made at least one anti-icing application. Use of prewetting materials increased 58 percent from last year, with 71 counties using 7,426,125 gallons.

Direct liquid application (DLA) is a relatively new best practice in Wisconsin. During the winter of 2024-2025, 26 counties used 7,138,769 gallons with this technique. Liquids applied directly to the pavement for deicing replace rock salt as the primary storm management tool. This reduces the amount of salt applied and has been found to be more effective than just dry solid salt. WisDOT hopes to continue to expand use of DLA in the future.

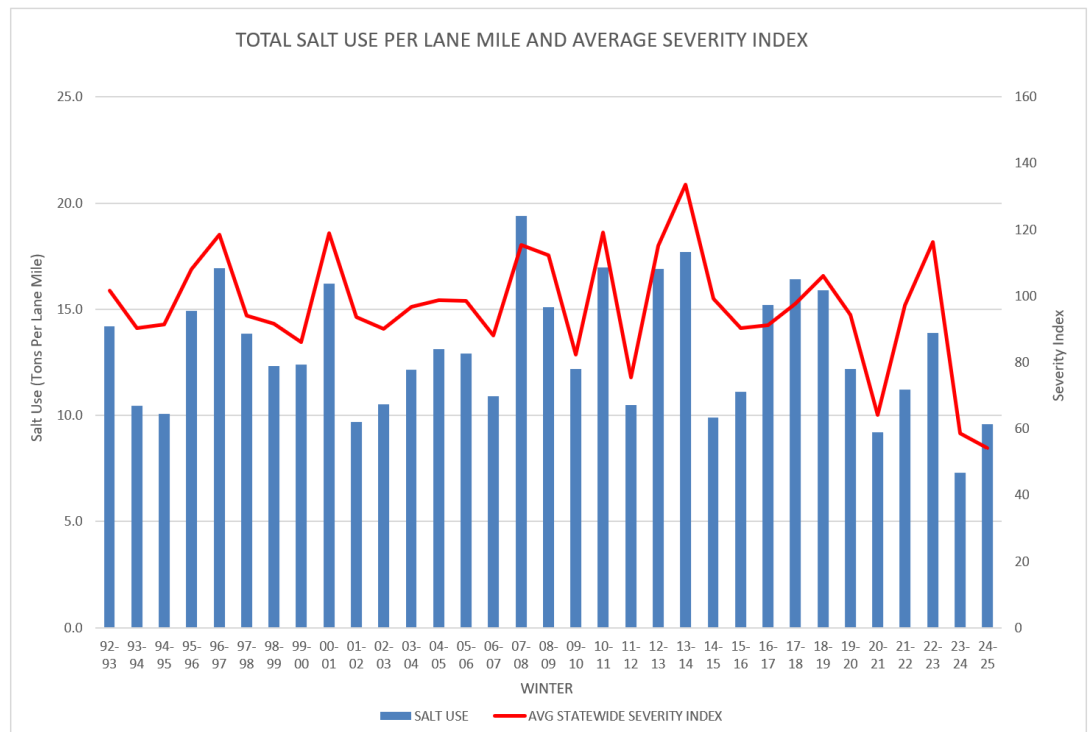
**Figure 3. 2024-2025 Salt Use per Lane Mile vs 5-Year Average**



In contrast, WisDOT actively discourages counties from using sand on the state trunk highway system. Sand is not effective at high traffic speeds, negatively impacts the environment, and ultimately decreases the level of service provided. Counties used 4,511 cubic yards of sand on state highways this year, a 56 percent decrease from the average of the five previous winters (10,260 cubic yards).

Wisconsin counties applied a statewide average of 9.6 tons of salt per lane mile, a 31 percent increase compared with the 2023-2024 winter.

**Figure 4. Salt Use per Lane Mile and Average Severity Index From Salt Inventory Reporting System, 1992-2025**



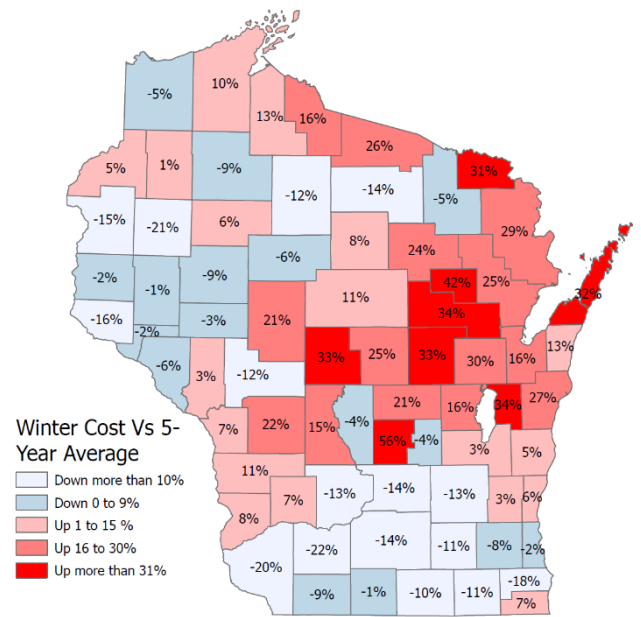
## Salt, Labor, and Equipment Costs

The total cost of statewide winter operations this winter was \$89.0 million, making it 24 percent more costly than 2023-2024. Figure 5 shows where winter costs increased or decreased from the average of the previous five years. This winter's statewide average cost per lane mile of \$2,566 was 24 percent more than last year's cost of \$2,080 per lane mile.

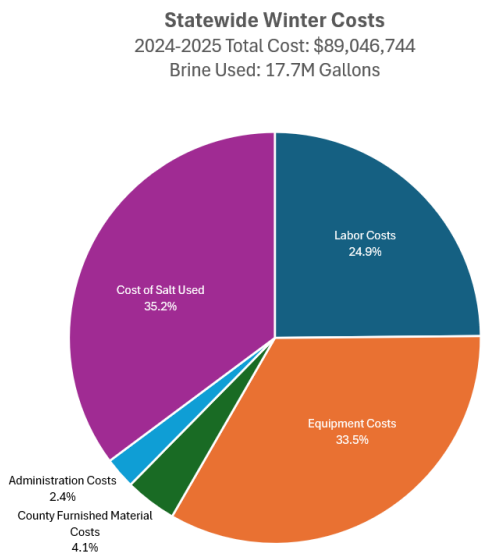
In 2024-2025 WisDOT spent \$31.3 million on salt, \$29.8 million on equipment-related expenses, \$22.1 million on labor, 3.6 million on county supplied materials, and \$2.2 million on administration costs.

Total salt expenditures increased by 37 percent compared to the prior year. Labor costs increased by 26 percent and equipment costs increased by 16 percent. Salt continues to be a large expenditure, accounting for 35 percent of all costs (see Figure 6). Figure 7 shows historical salt prices for Wisconsin and for 39 states nationwide.

**Figure 5. 2024-2025 Winter Costs vs 5-Year Average**

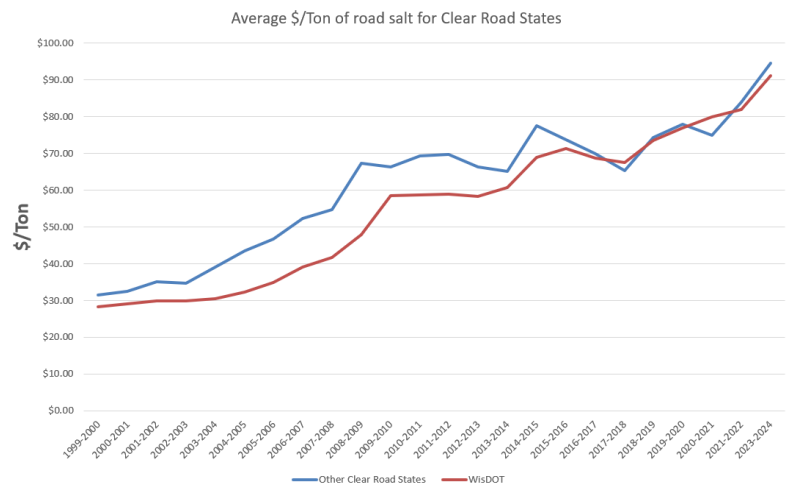


**Figure 6. Expenditures by Category, 2024-2025**



**Figure 7. Salt Prices Over Time (through 2024-2025)**

Historical data supplied by Clear Roads. From 1999 to present, the number of states reporting data has increased from 14 to 39 states.



## Coordinating Counties' Response

This winter WisDOT continued its emphasis on close communication between the counties and WisDOT regional staff. Before each event, regional staff worked with the counties to coordinate available materials, staffing and equipment, and regional staff assisted the counties in managing shifts for long events.

### Response Time

The counties continue to work on becoming more proactive in responding to winter storm events. Average response time this winter was 2 hours and 52 minutes, which was 3 percent slower than the 10-year average. See Table 2 for reaction time by Winter Service Group. Winter Service Groups reflect the difference in the level of service provided on roads in these counties.

“Time to bare/wet pavement” is measured from a storm’s reported end time until bare/wet is declared on the roadways. Heavily traveled urban highways tend to be returned to a bare/wet condition sooner than rural roads. WisDOT expects 24-hour roads to be clear within four hours of the end of the storm and 18-hour roads to be clear within six hours. The 2024-25 percentage of roadways cleared to bare/wet pavement remained similar from the previous year.

**Table 2. Maintenance Crew Reaction Time**

| Winter Service Group           | 10-Year Average reaction time (hours) |           |           |           |           |           |           |           |           |           | 10-year Average        | Average reaction time (hours) | Percent change             |
|--------------------------------|---------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------------------|-------------------------------|----------------------------|
|                                | 2014-2015                             | 2015-2016 | 2016-2017 | 2017-2018 | 2018-2019 | 2019-2020 | 2020-2021 | 2021-2022 | 2022-2023 | 2023-2024 | 2014-2015 to 2023-2024 | 2024-2025                     | 2024-2025 vs. 10-year avg. |
| A                              | 0.32                                  | 1.21      | 0.37      | 0.52      | 0.48      | 1.01      | 0.23      | 1.15      | 0.10      | 0.39      | 0.58                   | 1.60                          | 177%                       |
| B                              | 1.67                                  | 2.4       | 1.07      | 1.34      | 1.16      | 1.26      | 1.30      | 1.13      | 1.15      | 1.21      | 1.37                   | 1.57                          | 15%                        |
| C                              | 2.57                                  | 3.19      | 2.22      | 2.61      | 2.16      | 2.24      | 2.66      | 2.29      | 2.40      | 2.76      | 2.51                   | 2.65                          | 6%                         |
| D                              | 2.86                                  | 3.91      | 2.06      | 2.7       | 2.61      | 2.90      | 3.02      | 2.53      | 2.37      | 3.01      | 2.80                   | 2.50                          | -11%                       |
| E                              | 3.77                                  | 6.72      | 3.94      | 5.04      | 4.4       | 4.29      | 4.39      | 3.98      | 4.73      | 4.43      | 4.57                   | 4.30                          | -6%                        |
| F                              | 4.78                                  | 8.62      | 3.64      | 5.13      | 3.91      | 5.27      | 5.04      | 4.30      | 4.58      | 4.07      | 4.93                   | 4.58                          | -7%                        |
| Statewide average (unweighted) | 2.66                                  | 4.34      | 2.22      | 2.89      | 2.45      | 2.83      | 2.77      | 2.56      | 2.56      | 2.65      | 2.79                   | 2.87                          | 3%                         |

### Tracking the Winter

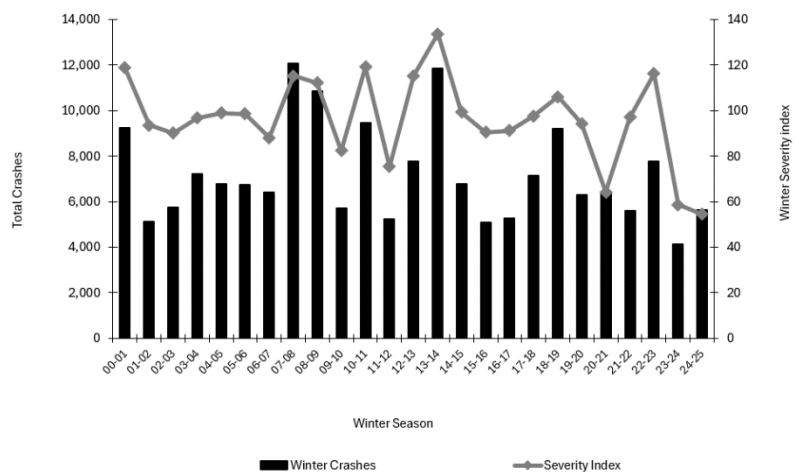
Each week during winter, representatives from the 72 county highway departments complete winter storm reports. These reports give WisDOT the tools to manage statewide materials use and maintenance expenses as the winter progresses. Winter storm reports are also used to compile data used in the annual report and other statewide performance measures.

## Analyzing Travel and Crashes

By keeping roads as clear as possible within their expected level of service (18- or 24-hour coverage), maintenance crews have an opportunity to help prevent crashes. This year, there were 5,635 winter weather crashes (those that occurred on pavements covered with snow, slush or ice from November 1<sup>st</sup>, 2024, to April 30<sup>th</sup>, 2025).

The statewide average crash rate (number of crashes per 100 million vehicle miles traveled) increased from 13 during the 23/24 winter to 18 in the 24/25 winter, a 38 percent increase over the previous winter. Last year, the 23/24 winter, 4,124 winter crashes were reported. Figure 8 shows the trends in total crashes statewide over the last 20 years overlaid with the Winter Severity Index.

**Figure 8. Crashes and Winter Severity Index**



## Measuring and Advancing Performance

### Using Performance Measures

Performance measures for winter operations were established in 2003 and continue to this day. Please visit the WisDOT Mobility, Accountability, Preservation, Safety, and Service (MAPSS) performance improvement program website to see more details on the [Mobility- winter response measure](#).

Table 3. Statewide Winter Performance Measures for Winter

|                                                                              | 2020-2021              | 2021-2022              | 2022-2023              | 2023-2024              | 2024-2025              |
|------------------------------------------------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| <i>Percentage of Roads to bare/wet pavement (Within WisDOT target times)</i> | 68%                    | 72%                    | 73%                    | 75%                    | 70%                    |
| <i>Cost per lane mile</i>                                                    | \$2,107                | \$2,457                | \$3,420                | \$2,080                | \$2,566                |
| <i>Winter Severity Index</i>                                                 | 64.1                   | 97.1                   | 116.2                  | 58.7                   | 54.4                   |
| <i>Cost per lane mile per Winter Severity Index point</i>                    | \$31.09                | \$25.30                | \$29.43                | \$35.44                | \$47.17                |
| <i>Winter weather crashes</i>                                                | 23 per 100 million VMT | 19 per 100 million VMT | 25 per 100 million VMT | 13 per 100 million VMT | 18 per 100 million VMT |

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