# Appendix E: Transportation Performance Measures

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## Federal Transportation Performance Measures

The "Moving Ahead for Progress in the 21st Century Act" (MAP-21) established the requirement for state DOTs to measure and set targets for transportation safety, preservation, freight and travel time reliability, and transit state-of-good-repair. Metropolitan Planning Organizations are required to either adopt the state performance targets, or, to set regional targets in coordination with state DOT(s). To better understand impacts and to support project prioritization, MAPA has established targets for highway safety and truck and travel time reliability, and supported DOT pavement and bridge condition targets and regional transit authority state-of-good-repair.

### Highway Safety (PM1) - MAPA Target

Embracing the principle that traffic safety deaths and serious injuries are unacceptable, MAPA has developed a Comprehensive Safety Action Plan identifying prioritized projects and plan recommendations with a goal of zero fatalities and serious injuries by 2040. Since 2018, MAPA has partnered with both the Iowa and Nebraska DOTs and member jurisdictions to measure and report on the impacts of traffic crashes in the region, and established annual safety targets for the five federal safety performance measures (also known as PM1). These five measures, calculated and reported as five-year rolling averages, include:

1. Number of fatalities

2. Fatality rate per 100 million vehicle miles traveled (VMT)
3. Number of serious injuries
4. Serious injury rate per 100 million VMT
5. Number of nonmotorist fatal and serious injuries

Following the state adoption of their highway safety targets, the MPO is provided 180 days to set their own targets, or adopt the targets set by the state. The reporting metrics include:

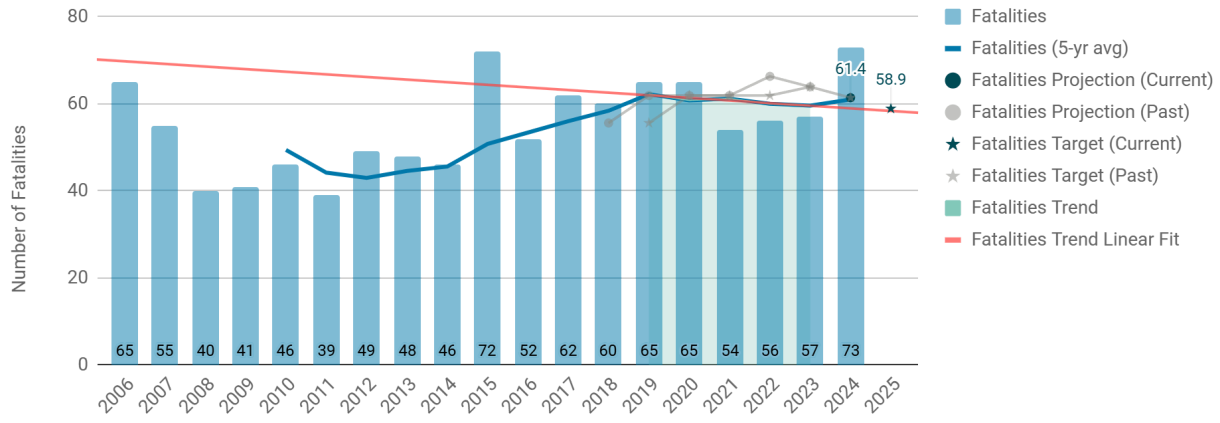
- baseline value (five-year rolling average of the measure in the year prior to setting targets)
- projected value for the reporting year
- target for the following year

From 2018 to 2022, the MAPA targets were established using a modified trendline approach, taking into account past performance and making slight adjustments as necessary to reduce targets to acknowledge a regional goal of reducing fatal and serious injuries. Since 2023, targets have been set based on a projection to zero fatal and serious injuries by 2040.

**Number of Fatalities**

From 2006 to 2024, over 1,000 people have lost their lives in traffic crashes within the MAPA region. Figure 1 on the following page illustrates the number of fatalities per year in the blue columns, and the corresponding number of fatalities measured as a five-year rolling average in teal. The coral line shows the trendline for the baseline five-year period (here 2019-2024), with the teal circle showing the projected value, and the teal star reflecting the measurement period target for number of fatalities. This symbology will be used for the remaining four highway safety targets. Historical values for past projections and targets have been greyed out.

***Figure 1**: Number of Fatalities Performance and Associated Target*




## Fatality Rate

Normalizing the number of fatalities to the total volume of vehicles traveling on the region's roadways is a standard practice in highway safety evaluations, and provides a comparison of safety impacts between regions. MAPA produces a biennial report on regional traffic patterns, which includes an estimate of regional vehicle miles traveled. Incorporating traffic volume measurements from DOT automatic traffic recorder data, MAPA also establishes estimates for future traffic growth, which are then used to set regional fatality and serious injury rate targets. Figure 2 illustrates regional traffic growth in million vehicle miles traveled.

***Figure 2**: MAPA Regional Vehicle Miles Traveled*

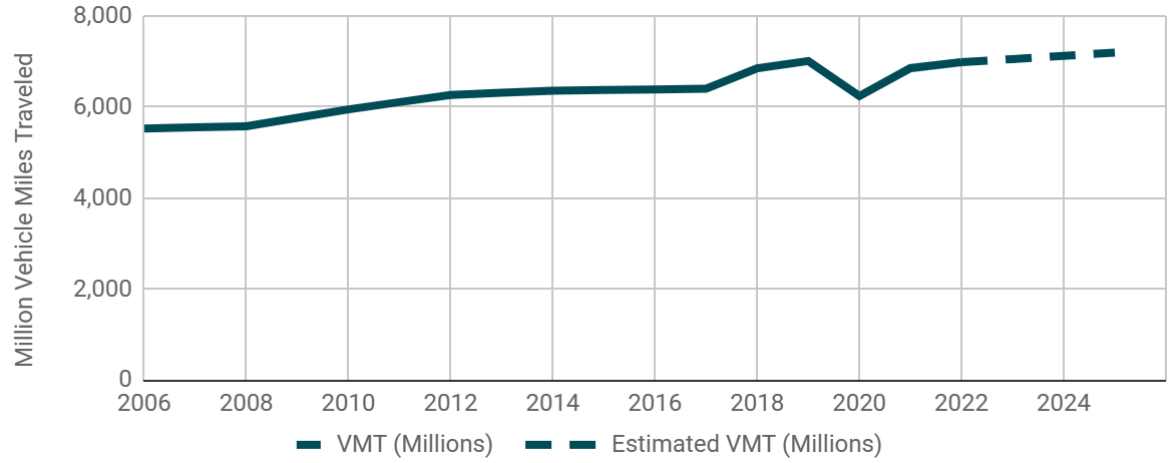
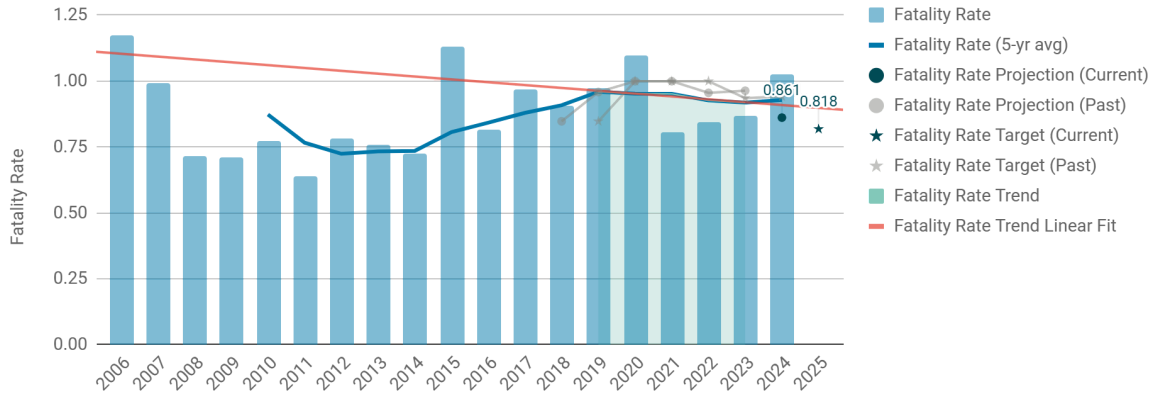



Figure 3 presents the measured fatality rate for the region, along with the projections and targets established in 2025. The fatality rate is helpful for identifying years in which the region experienced abnormally high rates, such as 2015 and 2020. The reduced traffic volumes caused

by COVID-19 pandemic closures and corresponding increase in risky driving behaviors are factors in the 2020 increase in fatality rate.

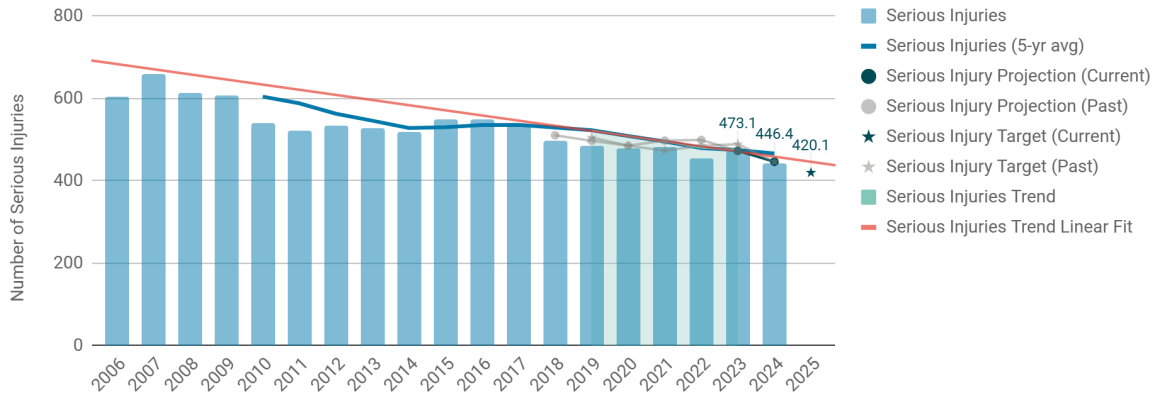
*Figure 3*: *Fatality Rate Performance and Associated Regional Target*




## Number of Serious Injuries

Vehicle occupants, pedestrians, bicyclists, and other nonmotorized travelers whose injuries require hospitalization or have long-term health consequences are reported as serious injuries. Oftentimes the difference between a fatality and serious injury is chance. From 2006 to 2024, just over 10,000 travelers on MAPA roads have been seriously injured in traffic crashes. Figure 4 presents the regional serious injury performance and associated targets.

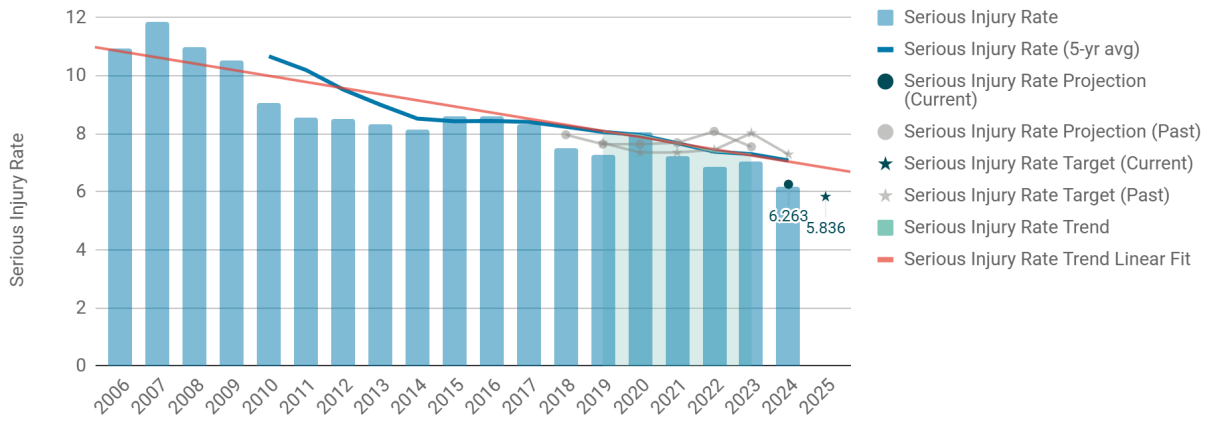
*Figure 4: Number of Serious Injuries Performance and Associated Targets*



## Serious Injury Rate

The current downward trend in serious injuries within the MAPA region through 2024 is reassuring, and anecdotally linked to improvements in vehicle safety and post-crash care. Figure 5 presents the associated measured and targeted serious injury rates for the region. While the serious injury rate hasn't seen the spikes associated with fatality rate, more effort to reduce rates of serious injury crashes will be required to make progress towards zero by 2040.

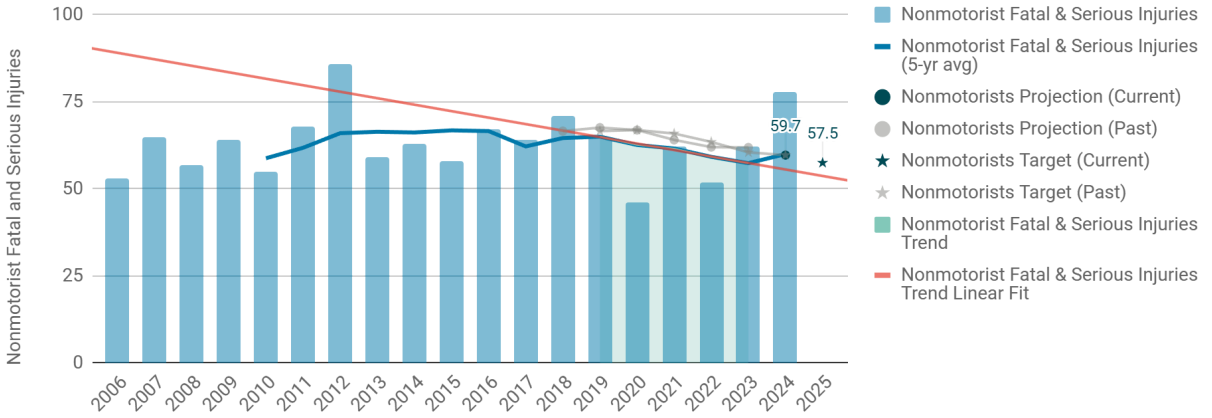
*Figure 5: Serious Injury Rate and Associated Regional Performance Target*




## Number of Nonmotorist Fatal and Serious Injuries

Pedestrians, bicyclists, and other motorized, nonvehicular users of the transportation system are defined as "nonmotorists" and "vulnerable road users." Not having the benefit of safety systems provided by automobiles, these users are much more likely to experience more severe outcomes in traffic crashes. Figure 6 illustrates the regional nonmotorist performance.

*Figure 6: Nonmotorist Fatal and Serious Injuries Performance and Target*

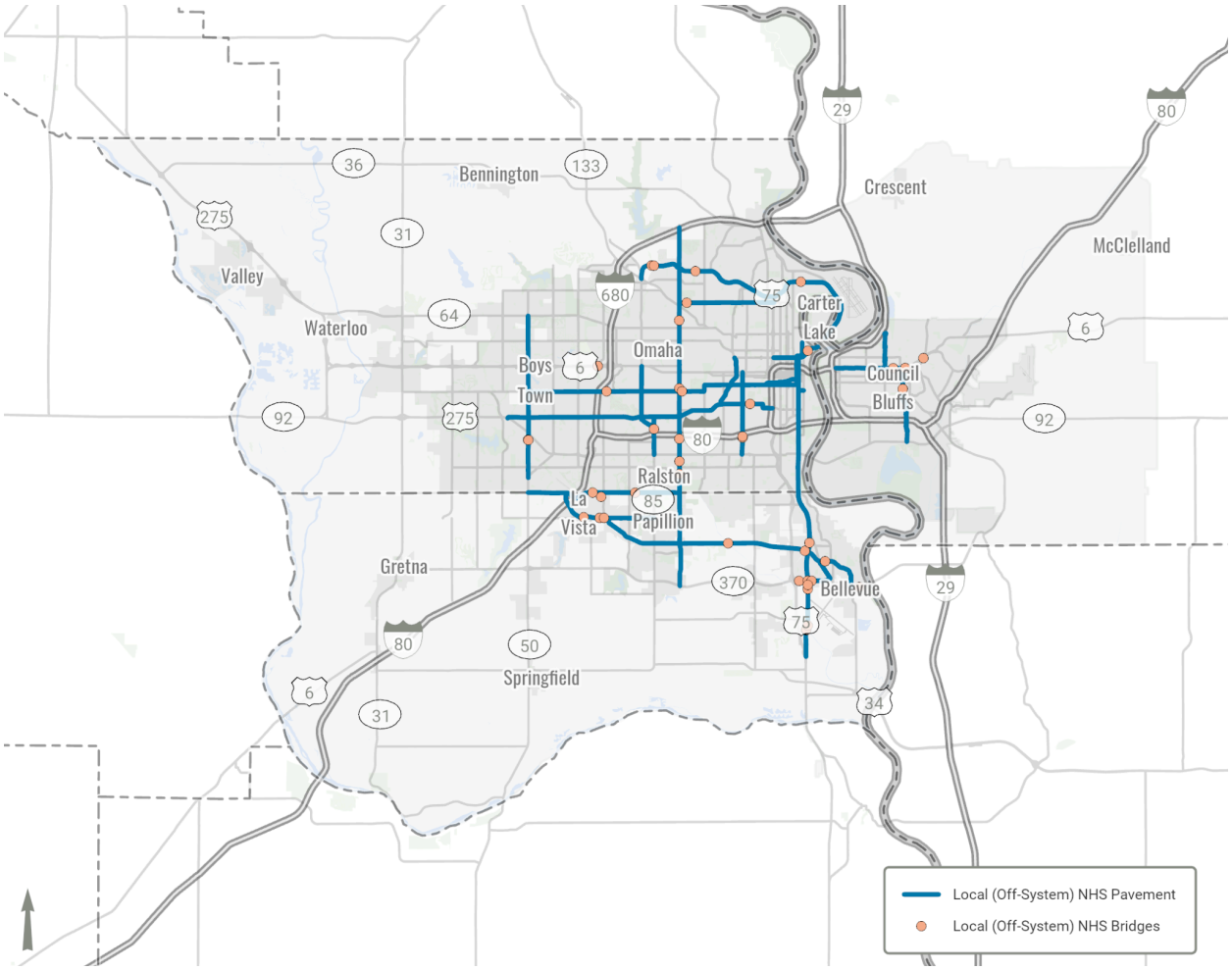



## National Highway System Pavement and Bridge Condition (PM2) - DOT Target

State DOTs are required to provide highway performance data, to include pavement condition metrics, through updates to the Highway Performance Monitoring System (HPMS). The Federal Highway Administration (FHWA) uses these pavement condition metrics to calculate pavement condition to assess progress towards DOT performance targets on the interstate system and the non-interstate National Highway System (NHS) roadways. State DOTs or local jurisdictions responsible for the operation and maintenance of bridges inspect them on a periodicity established by the existing bridge condition and roadway classification. These bridge conditions are collected within the National Bridge Inventory (NBI), and the FHWA uses this information to calculate the bridge conditions for these measures every two years.

The location of local NHS roadways and bridges are shown Figure 7.

*Figure 7. MAPA Region Local National Highway System Roads and Bridges*




## Pavement

Performance targets are established for four year periods, with the current period of performance covering 2022 - 2025. Pavement condition is reported as a percentage of pavements on the interstate and non-interstate systems in good or poor condition by total lane-miles. Approximately 13.9% of the Nebraska interstate lane-miles are within the MAPA region, while the Iowa proportion is much lower, at 4.6% of the total lane-miles. Figure 8 shows Interstate pavement condition performance on the NHS for Nebraska and Iowa.

*Figure 8: Interstate Pavement Condition Performance (% Lane-Miles in Good and Poor Condition)*

| | Interstate in Good Condition | | | | Interstate in Poor Condition | | | |
|---|---|---|---|---|---|---|---|---|
| | Nebraska | | Iowa | | Nebraska | | Iowa | |
| Year | Measured | Target | Measured | Target | Measured | Target | Measured | Target |
| 2017 | | | | | | | | |
| 2018 | 76.2 | | 67.5 | | 0.2 | | 0.4 | |
| 2019 | 80.3 | | 66.1 | | 0.1 | | 0.4 | |
| 2020 | 81.1 | | 59.3 | | 0.0 | | 0.5 | |
| 2021 | 77.5 | 50.0 | 58.8 | 49.4 | 0.1 | 5.0 | 0.5 | 2.7 |
| 2022 | 72.4 | | 60.1 | | 0.1 | | 0.3 | |
| 2023 | | 65.0 | | 55.0 | | 5.0 | | 3.0 |
| 2024 | | | | | | | | |
| 2025 | | 65.0 | | 55.0 | | 5.0 | | 3.0 |

Guidance provided by the Federal Highway Administration on the method of calculating and reporting conditions on the Non-Interstate NHS system changed between the two reporting periods, and Iowa DOT used two different methods for setting targets. Figure 9 below shows the results for FHWA pavement condition results using full distress + IRI (International Roughness Index).

*Figure 9: Non-Interstate NHS Pavement Condition Performance (% Lane-Miles in Good and Poor Condition)*

| | Non-Interstate NHS in Good Condition | | | | Non-Interstate NHS in Poor Condition | | | |
|---|---|---|---|---|---|---|---|---|
| | Nebraska | | Iowa | | Nebraska | | Iowa | |
| Year | Measured | Target | Measured | Target | Measured | Target | Measured | Target |
| 2017 | | | | | | | | |
| 2018 | | | 39.5 | | | | 3.5 | |
| 2019 | 58.1 | 40.0 | 39.2 | | 2.1 | 10.0 | 3.6 | |
| 2020 | 56.5 | | 38.0 | | 2.2 | | 3.9 | |
| 2021 | 56.0 | 40.0 | 37.9 | | 2.3 | 10.0 | 3.7 | |
| 2022 | 54.8 | | 37.8 | | 1.5 | | 3.8 | |
| 2023 | | 40.0 | | 35.0 | | 10.0 | | 6.0 |
| 2024 | | | | | | | | |
| 2025 | | 40.0 | | 35.0 | | 10.0 | | 6.0 |

The 2019 and 2021 targets are not reported for Iowa, as they did not reflect the full distress failure criteria in their calculations. Figure 9 shows pavement condition performance on the remaining NHS roadways that are not on the interstate system for Nebraska and Iowa. The Nebraska measured proportion within the TMA is just over 13%, while the Iowa portion is only 0.4% of the state total lane-miles.

**Bridges**

State and local agencies conduct bridge inspections at least every two years to monitor the changing conditions of these crucial pieces of infrastructure. This inspection report data is maintained within the National Bridge Inventory (NBI) and an overall condition of the bridge is reported as either Good, Fair, or Poor. As with pavement condition, state DOTs are required to set targets for bridge condition performance within a four-year period. The metric for reporting performance is Good and Poor condition as a percentage of total NHS bridge deck area and is shown for Nebraska and Iowa in Figure 10. The deck area of bridges within the Nebraska portion of the TMA account for over 41% of the state total, while the bridges within the Iowa side of the TMA are over 10%.

*Figure 10: NHS Bridge Condition Performance (% Deck Area in Good and Poor Condition)*

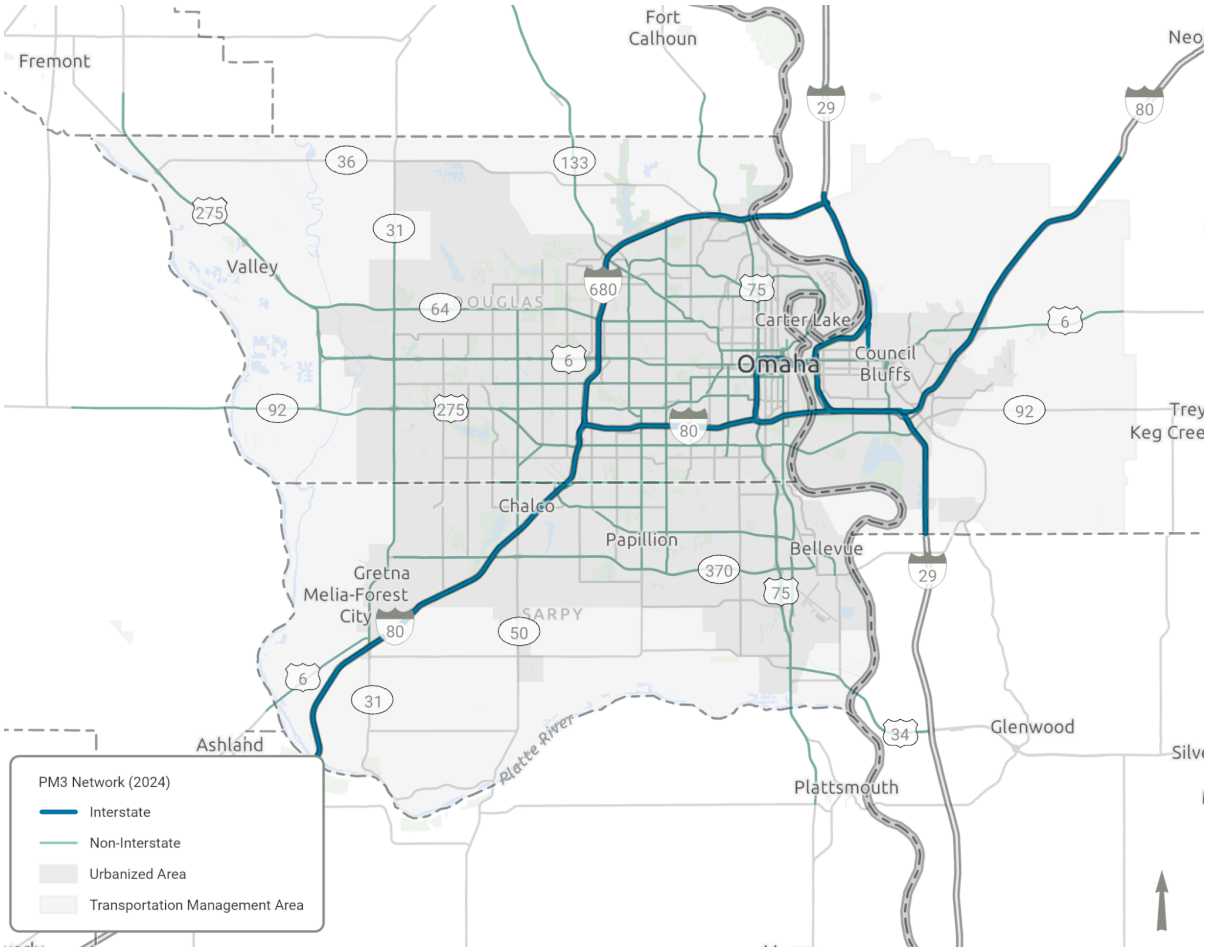
| | NHS Bridges in Good Condition | | | | NHS Bridges in Poor Condition | | | |
|---|---|---|---|---|---|---|---|---|
| | Nebraska | | Iowa | | Nebraska | | Iowa | |
| Year | Measured | Target | Measured | Target | Measured | Target | Measured | Target |
| 2017 | 61.0 | | 48.9 | | 1.9 | | 2.3 | |
| 2018 | 58.3 | | 48.9 | | 1.8 | | 2.3 | |
| 2019 | 56.5 | 55.0 | 48.7 | 45.7 | 1.9 | 10.0 | 2.2 | 3.7 |
| 2020 | 56.6 | | 50.2 | | 1.9 | | 2.4 | |
| 2021 | 57.7 | 55.0 | 49.4 | 44.6 | 2.0 | 10.0 | 2.4 | 3.2 |
| 2022 | 58.2 | | 47.9 | | 2.1 | | 2.1 | |
| 2023 | | 55.0 | | 52.5 | | 10.0 | | 5.0 |
| 2024 | | | | | | | | |
| 2025 | | 55.0 | | 56.0 | | 10.0 | | 6.6 |

## Truck and Travel Time Reliability (PM3) - MAPA Target

These measures evaluate the efficiency of the surface transportation system. Utilizing traffic speed data provided by the Federal Highway Administration for the Interstate and Non-Interstate National Highway System (NHS), a segment-level analysis is conducted to identify unreliable segments. Analysis tools provided through the National Performance Management Research Dataset (NPMRDS) data and the Probe Data Analytics Suite (PDASuite), State DOTs and MPOs can better understand how much of the congestion experienced by drivers is recurring (such as slowdowns during morning and evening rush hour), or non-recurring, such as weather, crashes, and other planned or un-planned incidents, such as major entertainment events or crashes and stalled vehicles. The three measures in evaluated within the PM3 measure are listed below, and the corresponding networks are presented in Figure 11:

1. Interstate highway % reliable person-miles traveled
2. Non-interstate highway % reliable person-miles traveled, and,
3. Interstate highway truck travel time reliability index

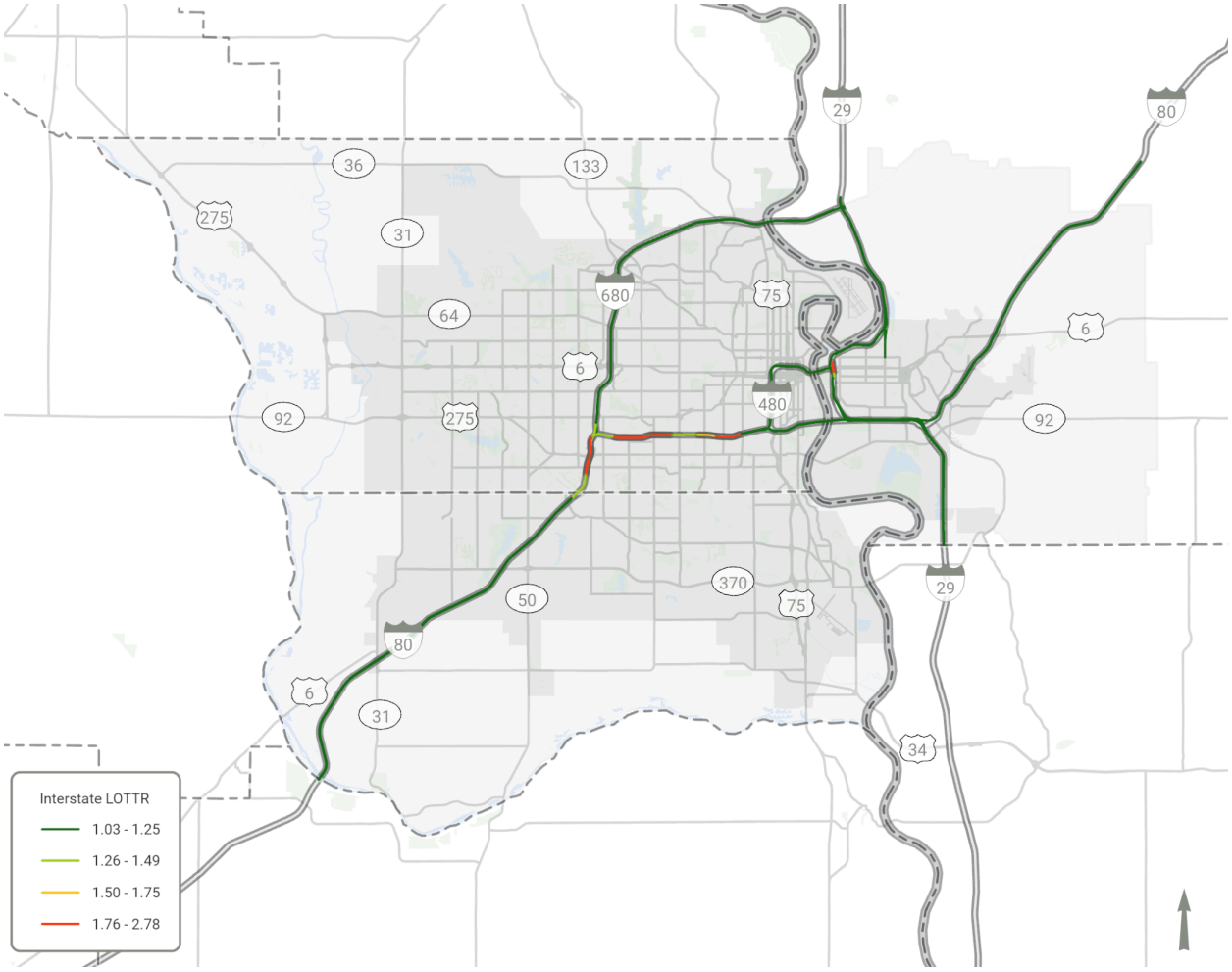
*Figure 11: Truck and Travel Time Reliability Network*




## Interstate Travel Time Reliability

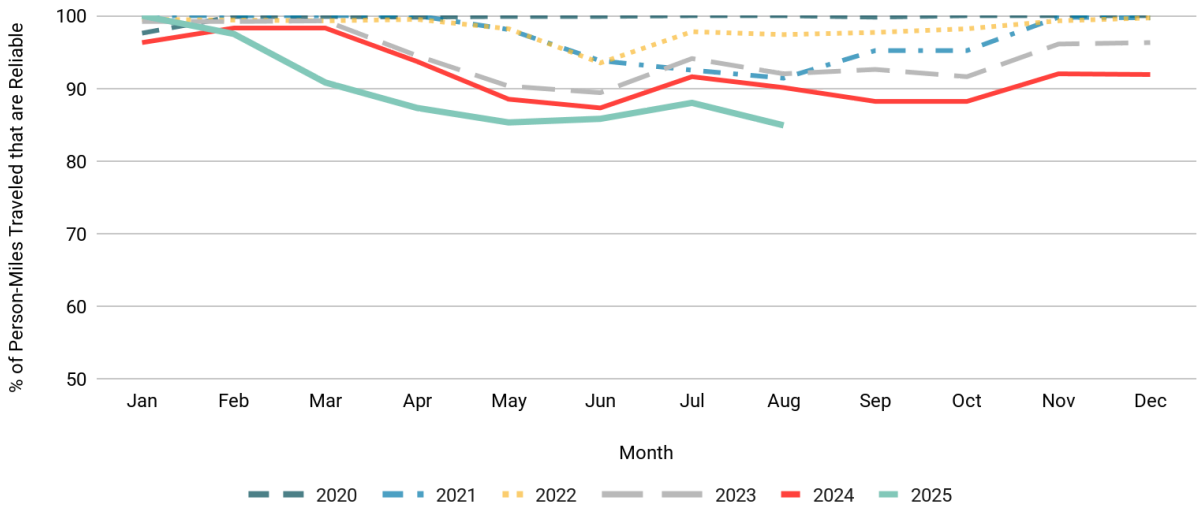
Travel time reliability measures predictability in vehicle travel times measured from day-to-day, and across different times of day, directionally along a roadway segment. For each evaluated period, a ratio of the free-flow travel time (50th percentile) to a slower, more congested travel time (80th percentile) is calculated, and for values ≧1.50, a segment is identified as unreliable. This metric is called the level of travel time reliability (LOTTR), and segments that met this criteria in 2024 on the interstate system are shown in Figure 12.

*Figure 12: MAPA 2024 Interstate Travel Time Reliability*




While slowdowns on individual segments are useful to measure, it is more helpful to understand the overall impact to users of the interstate system. Utilizing reported traffic volumes and assumed number of vehicle occupants, the overall regional measure is expressed as the percent of person-miles traveled that are unreliable. Figure 13 below shows that for the MAPA region, there is a temporal component to this congestion, showcasing the impact of weather and spring and summer road construction.

*Figure 13: Monthly Interstate Travel Time Reliability*




After six years of fairly strong regional interstate performance, the percent of person-miles traveled that are reliable dipped to 91.90% in 2024. Additional study is required to better understand the cause, and MAPA intends to work closely with Operations staff at NDOT and Iowa DOT to incorporate additional data, such as the frequency, location, and duration of incidents as reported by the Motorist Assistance and Highway Helper programs.

*Figure 14: MAPA Interstate Travel Time Reliability*

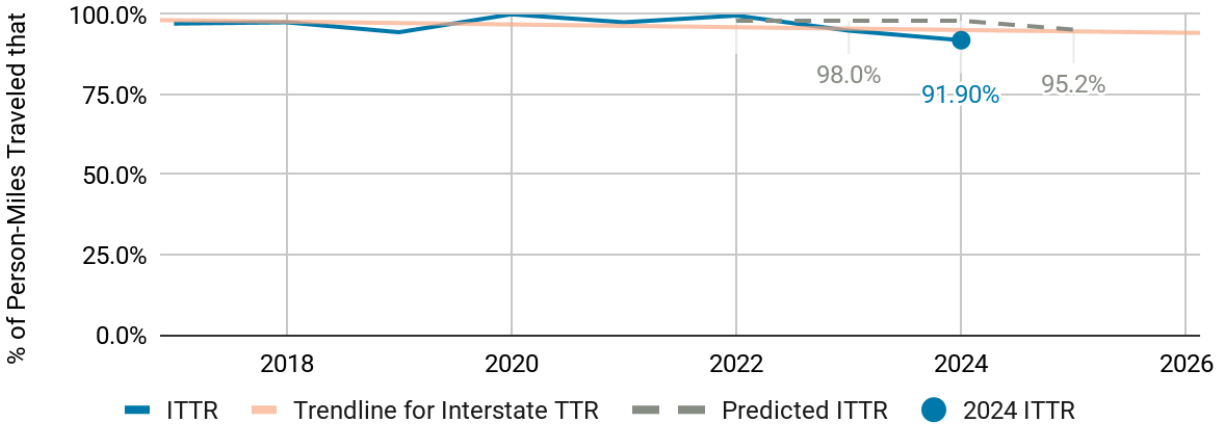
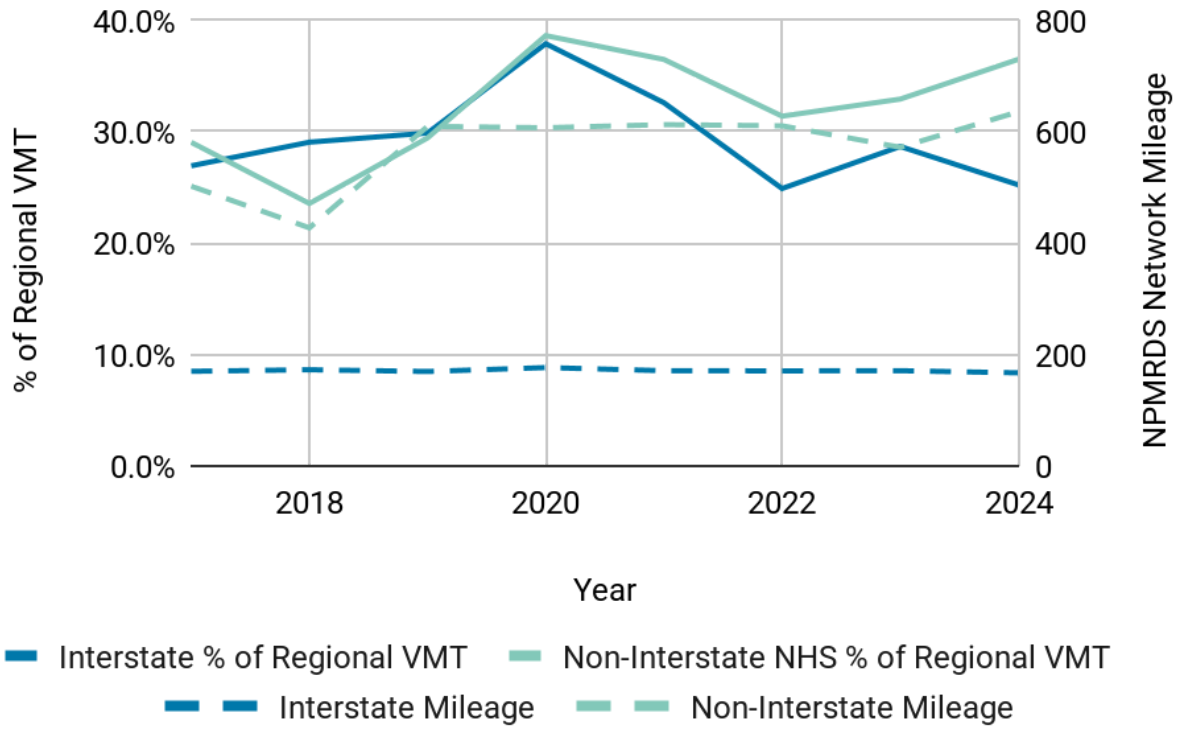



Figure 14 shows performance and the MAPA two-year and four-year targets. Unlike the state DOT, there is no penalty for MAPA to not meet the MPO-established targets, and this process is used instead as a planning tool for our members.

**Non-Interstate Travel Time Reliability**

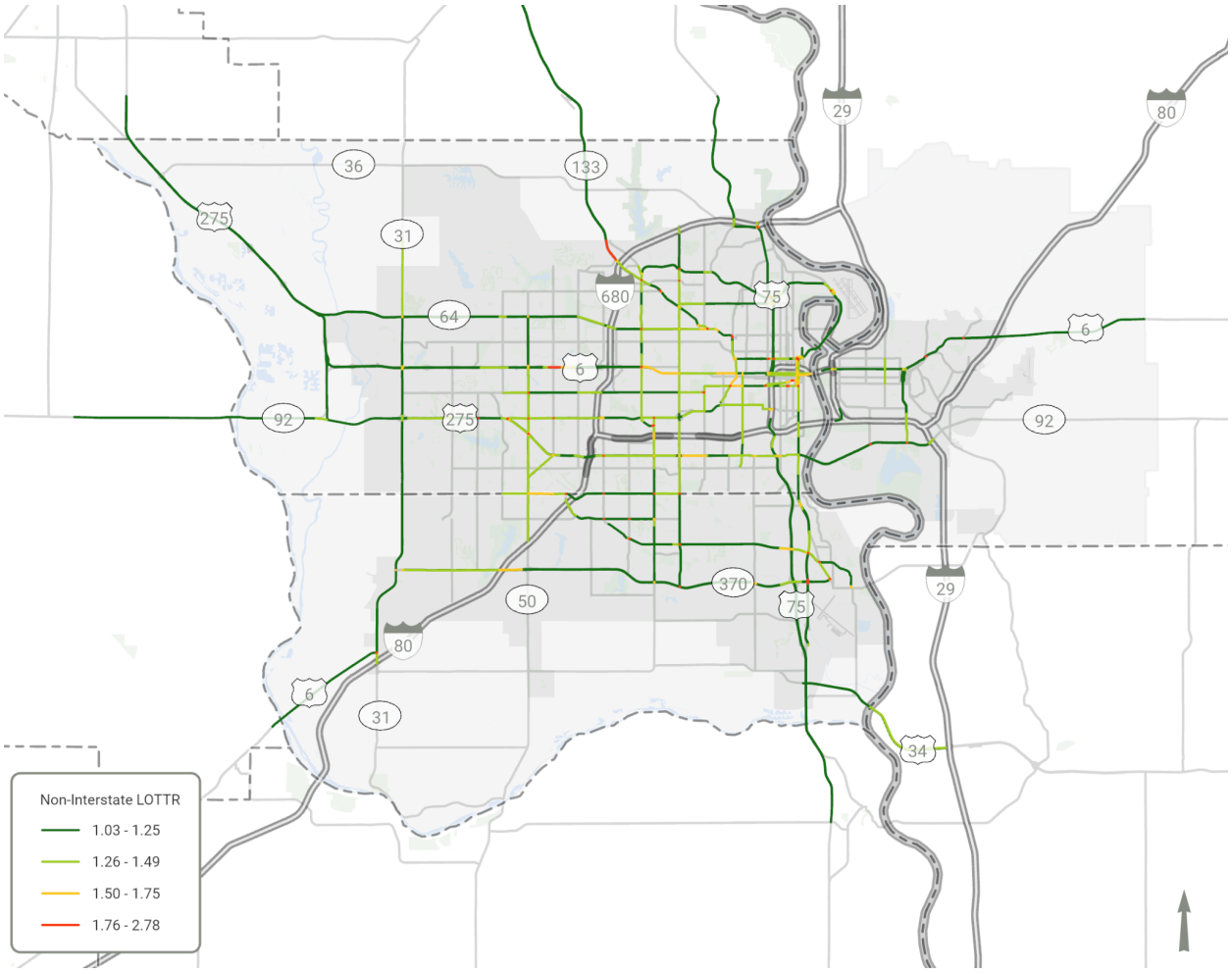
This measure evaluates just over 635 centerline miles of roadway within the MAPA region. These non-interstate corridors carry a significant portion of the region's automobile traffic—over 1/3rd of the regional Vehicle Miles Traveled (VMT) in 2024. Figure 15 shows the percentage of VMT for the Interstate and Non-Interstate measured roadways within the MAPA region.

*Figure 15: Proportion of Regional VMT on the Interstate and Non-Interstate NHS*



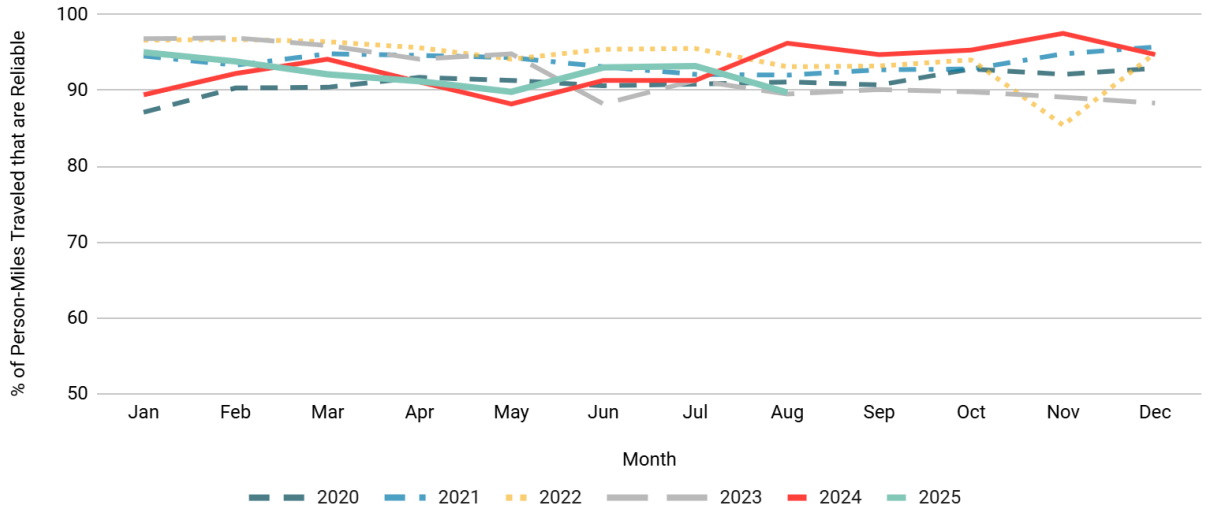

Travel time reliability (as measured by each segment's most severe Level of Travel Time Reliability (LOTTR)) is shown in Figure 16. Segments which are greater than or equal to 1.50 are designated as unreliable.

*Figure 16: Non-Interstate Travel Time Reliability*



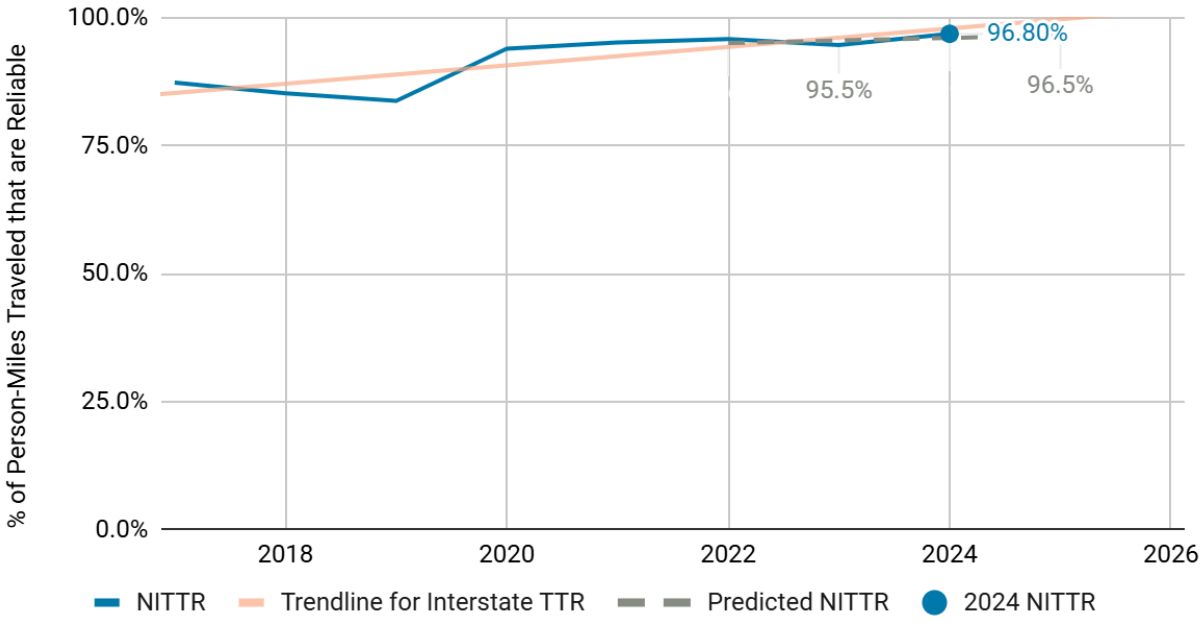

As with Interstate Travel Time Reliability, there is also a temporal component to the Non-Interstate NHS reliability measure. Year over year variability in the roadways considered within this measure makes it more difficult to glean any overall trends, other than summertime construction has less of an impact to the overall system (Figure 17).

*Figure 17: Monthly Non-Interstate Travel Time Reliability*




The regional Non-Interstate travel time reliability measure performance and 2 and 4 year targets are shown in Figure 18. There is insufficient data to explain the year-over-year improvement in this measure, and additional analysis is required to better describe the congestion experienced by drivers that is not captured with this measure.

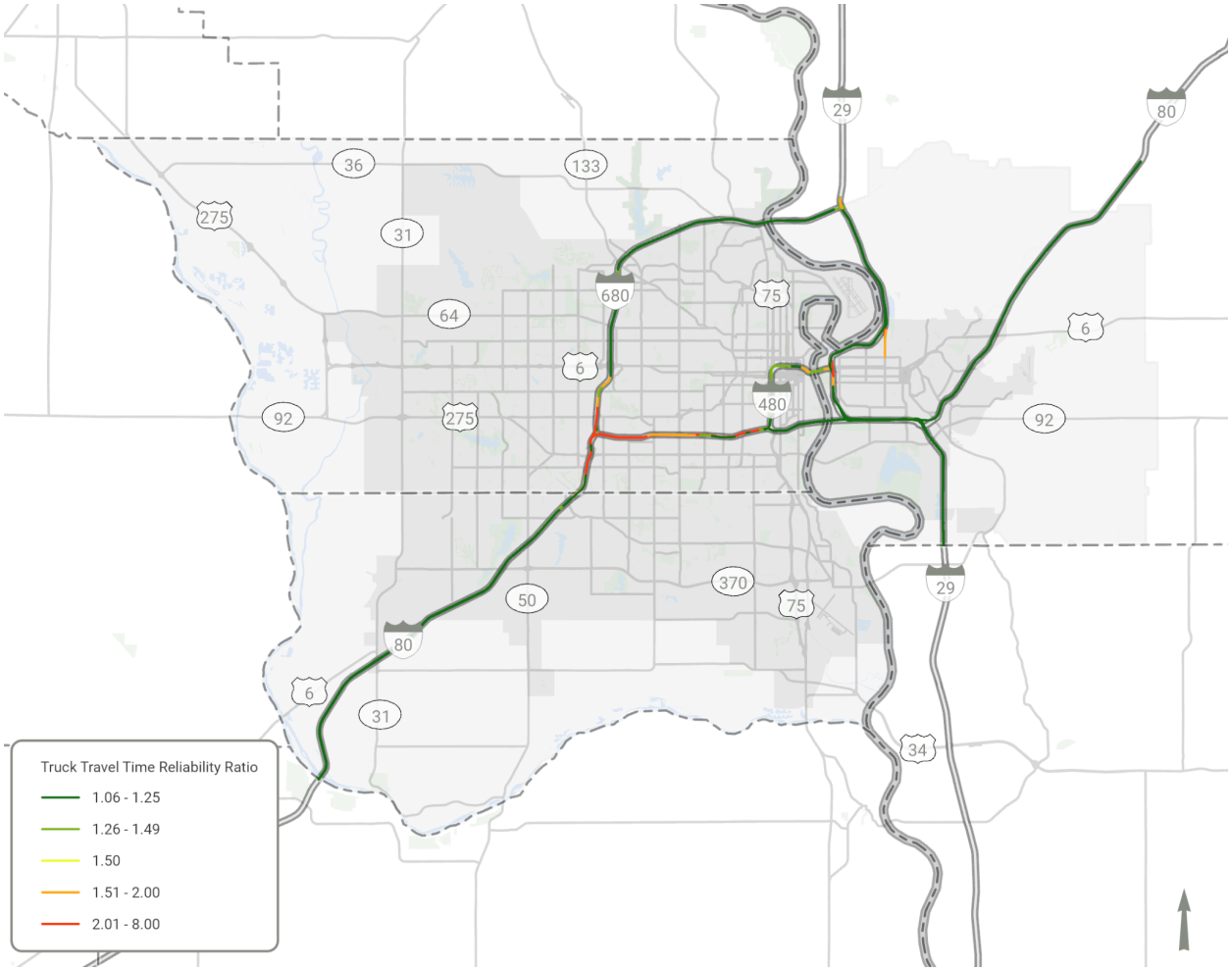
*Figure 18: MAPA Non-Interstate Travel Time Reliability*



## Truck Travel Time Reliability Ratio

Similar to the previous measures described above, Truck Travel time reliability measures predictability in vehicle travel times measured from day-to-day, and across different times of day, directionally along a roadway segment. For each evaluated period, a ratio of the free-flow travel time (50th percentile) to a slower, more congested travel time (in this case the 95th percentile) is calculated, and for values ≧1.50, a segment is identified as unreliable. This metric is called the level of truck travel time reliability ratio (TTTR), and segments that met this criteria in 2024 on the interstate system are shown in Figure 19.

*Figure 19: Non-Interstate Travel Time Reliability*




The TTTR measure is impacted by time-of-day and time-of-year, so the measure includes an additional 'overnight' analysis time period. Figure shows the monthly TTTR variation.

*Figure 20: Monthly Non-Interstate Travel Time Reliability*

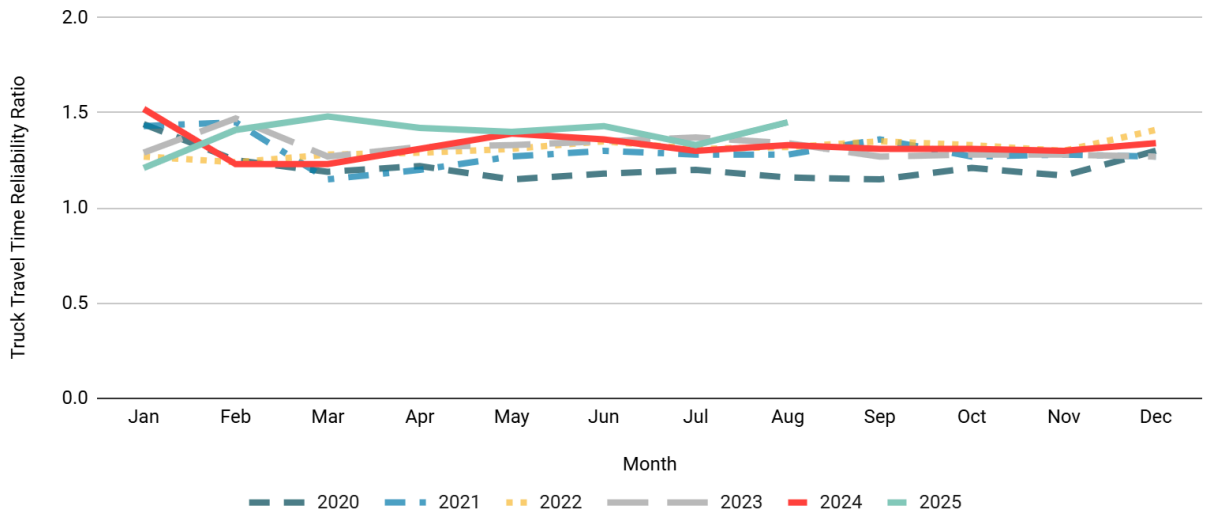
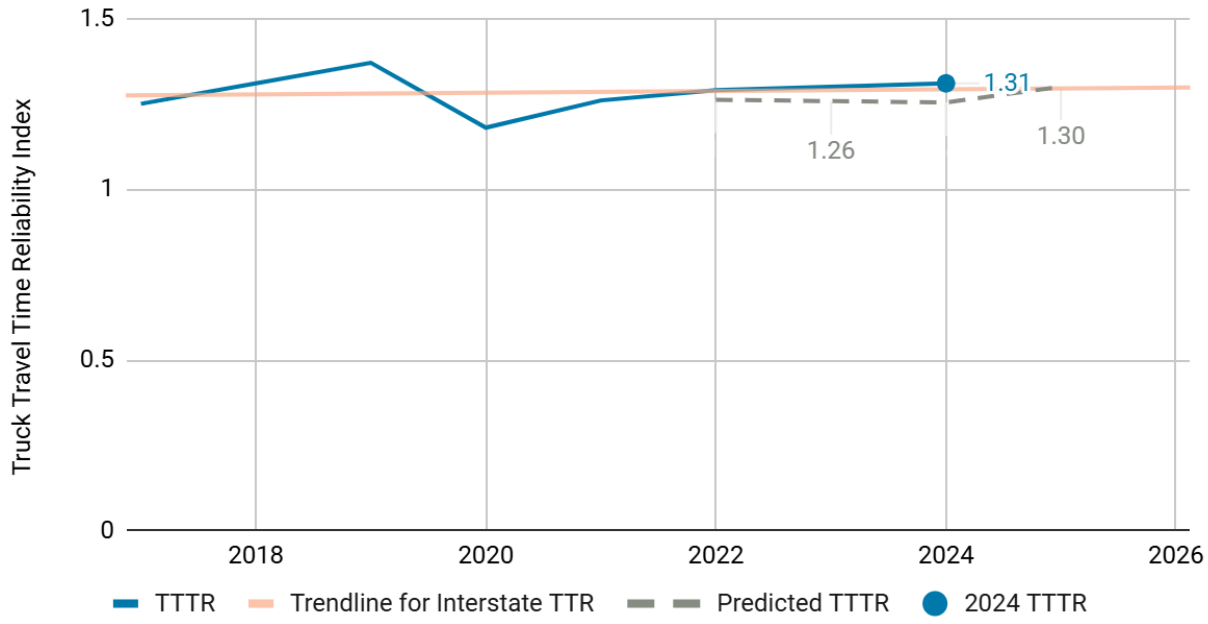



Figure 21 below highlights the current MAPA regional targets for TTTR. Major construction projects on the interstate system within Nebraska will continue to impact this measure. More detailed study of factors which impact truck reliability which will be a component of a future Regional Freight Study.

*Figure 21: MAPA Non-Interstate Travel Time Reliability*



## Transit Safety

Metro Transit sets safety related targets for its public transportation service in the MAPA region. A baseline was established in 2024 with targets set that will be in effect until 2029. For more details on these targets shown in Figure 22 and Figure 23, including their connection to Metro's overall safety goals, please see the Regional Metropolitan Transit Authority of Omaha Public Transportation Agency Safety Plan.

*Figure 22: Fixed Route Safety Performance Baseline and Targets 2024*

| Safety Performance Category | | 2019-2022 Baseline | Target/Goal | Goal(s) Supported |
|---|---|---|---|---|
| Fatalities | Total | 0 | 0 | 1 and 2 |
| | Rate per 100,000 VRM | 0 | 0 | 1 and 2 |
| Injuries (Minor/Major) | Total | 9.4 | Reduction from baseline by >5% | 1 and 2 |
| | Rate per 100,000 VRM | 0.0236 | Reduction from baseline by >5% | 1 and 2 |
| Safety Events (Minor/Major) | Total | 8.4 | Reduction from baseline by >5% | 1 and 2 |
| | Rate per 100,000 VRM | 0.211 | Reduction from baseline by >5% | 1 and 2 |
| System Reliability (Minor/Major) | VRM Between Failures (Total) | 1,406 | Increase from baseline by >5% | 1 and 2 |

*Figure 23: Paratransit (MOBY) Safety Performance Targets – 2024*

| Safety Performance Category | | 2019-2022 Baseline | Target | Goal(s) Supported |
|---|---|---|---|---|
| Fatalities | Total | 0 | 0 | 1 and 2 |
| | Rate per 100,000 VRM | 0 | 0 | 1 and 2 |
| Injuries (Minor/Major) | Total | 0.2 | 0 | 1 and 2 |
| | Rate per 100,000 VRM | 0.025 | 0 | 1 and 2 |
| Safety Events (Minor/Major) | Total | 0.2 | 0 | 1 and 2 |
| | Rate per 100,000 VRM | 0.025 | 0 | 1 and 2 |
| System Reliability (Minor/Major) | VRM Between Failures (Total) | 2,718 | Increase from baseline by >5% | 1 and 2 |

## Transit Asset Management

Metro Transit establishes targets for asset management in its Asset Management Plan. Most transit asset targets are based on the Useful Life Benchmark (ULB) of the asset category. ULB is defined in federal regulations as, "the expected life cycle or the acceptable period of use in service for a capital asset, as determined by a transit provider, or the default benchmark provided by FTA." In other words, ULB is the expected time an asset should be used for. Some may exceed it without issue, but it is assumed that most, if not all assets will be used for at least that long. Metro Transit's asset management targets are shown in Figure 24 below.

*Figure 24: Metro Transit Asset Management Targets*

| Category | Target |
|---|---|
| Articulated Bus | 0.00% exceeding ULB |
| Bus | 34.00% exceeding ULB |
| Cutaway | 0.00% exceeding ULB |
| Automobile | 100.00% exceeding ULB |
| Facilities | Maintain a condition rating above 2 on the TERM scale. |

# Additional Performance Measures

In working with regional partners and the public, MAPA has identified other measures of success beyond those required by USDOT. These measures will help MAPA assess whether the region is making progress towards the goals of this plan. Although MAPA has not yet begun reporting on these metrics, we will develop a performance dashboard for tracking these and other items during the life of this plan in order to showcase how the region is doing in making improvements in the areas measured in Figure 25 below. The MAPA CSAP and associated documents can be found at https://www.mapacog.org/projects/ss4a/.

*Figure 25: MAPA Regional Transportation Performance Measures*

| Metric | MTP Goal |
|---|---|
| Jobs within 30 min of home via Automobile | Access to Opportunity |

| Metric | MTP Goal |
|---|---|
| Jobs within 45 min of home via Transit | Access to Opportunity |
| % Homes/population within 60 min of colleges and universities via transit | Access to Opportunity |
| % Homes/population within 30 min of hospitals/clinics via transit | Access to Opportunity |
| % Homes/population within 30 min of a grocery store via transit | Access to Opportunity |
| Population within 1/4 mile of frequent transit service | Attract & Retain |
| Miles of sidewalk gaps within 1/4 or 1/2 mile of schools | Access to Opportunity |
| Linear miles of bike lanes, cycle tracks, and separated bike lanes | Attract & Retain |
| Taxable value of land along major corridors or in major districts | Economic Growth |
| Preservation spending per lane mile | Stewardship |
| Tax revenue per acre | Stewardship |

## MAPA Regional Comprehensive Safety Action Plan

Approved by the MAPA Board of Directors in April of 2025, the MAPA Regional Comprehensive Safety Action Plan (CSAP) developed Safety Metrics to measure progress towards: 1) Legislative, 2) Planning, 3) Infrastructure, and 4) Behavioral actions. The Planning and Infrastructure categories include quantifiable metrics, and these are shown in Figure 26.

*Figure 26: MAPA Regional CSAP Safety Metrics*

| Planning | | |
|---|---|---|
| **Safety Metric** | **Goal** | **Metric** |
| Complete Streets Design Standards | All jurisdictions with or covered by a Complete Streets Design Standard less than 10 years old. | 2 jurisdictions per year |
| Active Mobility Plans | All jurisdictions with or covered by an Active Mobility Plan that is less than 10 years old. | 2 jurisdictions per year |
| Traffic Calming Policy | All jurisdictions with or covered by a Traffic Calming Policy less than 10 years old. | 2 jurisdictions per year |
| Safe Routes to | All jurisdictions with or covered by a Safe Routes to School | 2 jurisdictions per |

| | | |
|---|---|---|
| School | Program less than 10 years old. | year |
| Traffic Impact Study Guidance | All jurisdictions with or covered by Traffic Impact Study Guidance that is less than 10 years old. | 2 jurisdictions per year |
| **Infrastructure** | | |
| 4-lane Undivided | Eliminate 4- and 5-lane undivided roadways by 2040, prioritizing High Priority Network locations. | 2.3 Miles per year |
| Signal Conversions | Convert 25% of signals on the High Priority Network to a roundabout or reducted conflict intersection byb 2040. | 8 Signals per year |
| Signal Modifications | Upgrade 35% of signals on the High Priority Network by 2040. | 12 Signals per year |
| Rural Shoulders | Install shoulders on 100% of curve delineation locations identified Prioritized Project locations by 2040. | 2 Locations per year |
| Traffic Calming | Install 1,000 neighborhood traffic calming countermeasures by 2040, utilizing the VZ Toolbox | 67 Locations per year |
| Active Mobility Facilities | Install 75 miles of active mobility facilitates by 2040, prioritizing locations on the High Priority Network and installation of separated facilities. | 5 Miles per year |