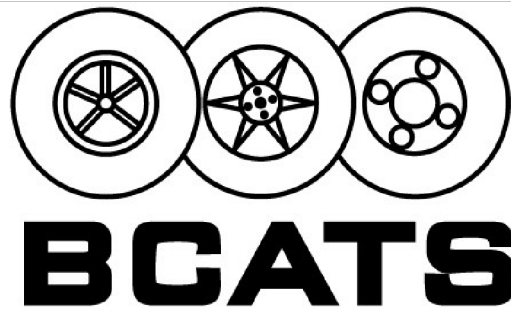


# System Performance Report 2024 Update

Battle Creek Area Transportation  
Study  
February, 2024

601 Avenue A  
Springfield, MI 49037  
Phone: (269) 963-1158  
e-mail: [bcats@bcatsmpo.org](mailto:bcats@bcatsmpo.org)  
website: <https://www.bcatsmpo.org>



## **Battle Creek Area Transportation Study (BCATS) System Performance Report - February 2024**

The Fixing America's Surface Transportation Act of 2016, followed by the Bipartisan Infrastructure Law of 2021, changed the way transportation planning is to be conducted in the states and metropolitan planning areas. According to these Act(s), a long-range transportation plan needs to include a system performance report (SPR) and subsequent annual SPR updates evaluating the condition and performance of the transportation system with respect to periodic performance targets. The information should include progress achieved by the Metropolitan Planning Organization (MPO) in meeting the established performance targets in comparison with system performance recorded in previous reports, including baseline data. Upon adoption of the separate MPO long-range plan, the performance target information most recently adopted by the Michigan Department of Transportation (MDOT) for roads, highways and transit, is included. That performance information is then updated within this annual SPR, and reflected on the BCATS website. The current BCATS long range plan is the 2045 Metropolitan Transportation Plan, adopted in February 2022. BCATS renews its long-range plan on a five-year cycle, with the next Plan due in February 2027. The annual SPRs between 2022 and 2027 would detail the changes in periodic performance targets over time.

### **Roads and Highways Reporting Requirements**

MDOT is required to report to Federal Highway Administration (FHWA) on the establishment of state performance targets and the progress made in attaining the state targets on biennial basis (October 1 of each even numbered year). One exception to the reporting requirements is for the safety performance measures, which are currently required to be reported by MDOT to FHWA through the Highway Safety Improvement Program Annual Report by August 31 of each year.

MPOs are not required to provide annual reports other than MPO decisions on targets (and other than this System Performance Report). MPOs are required to report any MPO-specific performance targets, or the MPO may report local support of the state targets, to MDOT in accordance with the documented procedures.

### **2024 Safety Targets – Road and Highways**

Federal regulations currently require the use of five-year rolling averages for each of the performance measures which include Fatalities, Fatality Rate per 100 million VMT, Serious Injuries, Serious Injury rate per 100 million VMT, Non-Motorized Fatalities and Serious Injuries. The charts for 2023 and for the 2024 estimates were provided by MDOT.

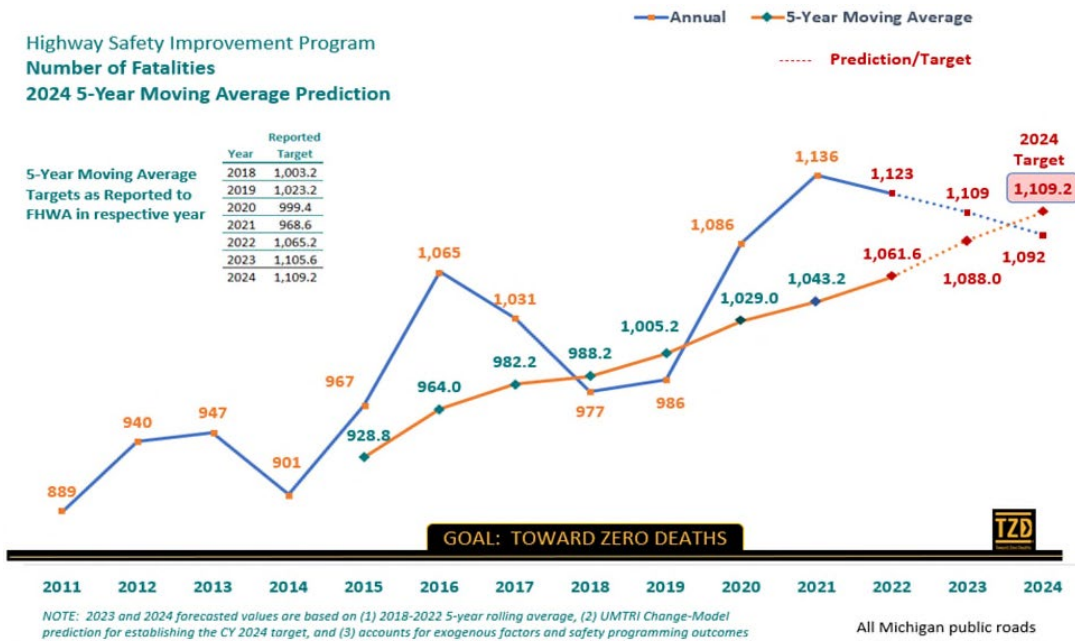
### **Total Fatalities & Fatalities Rate**

#### **How State Targets Were Set**

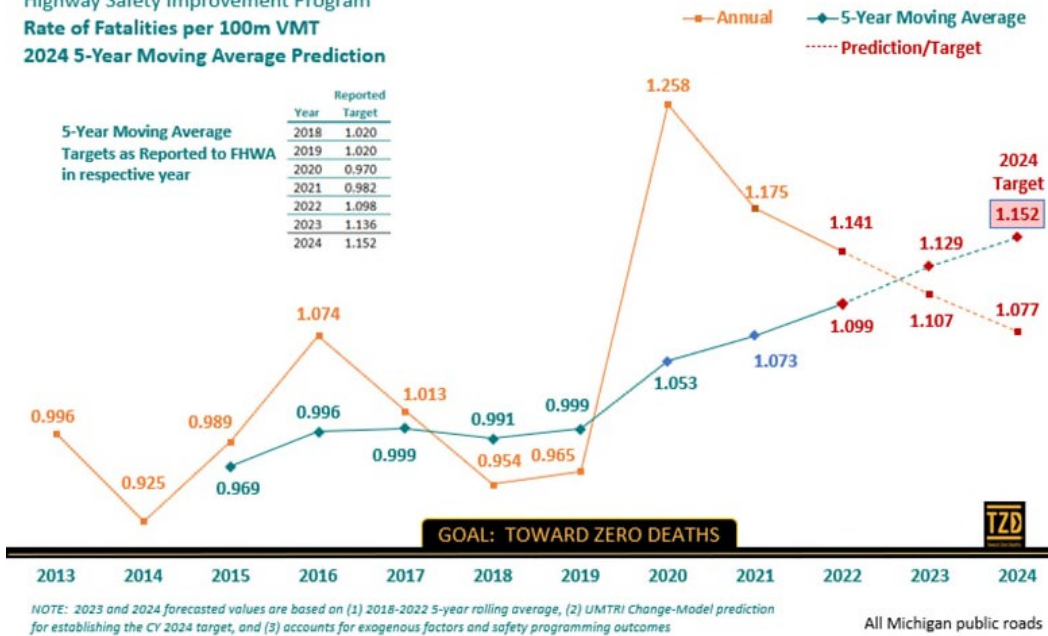
MDOT and Office of Highway Safety Planning used two different models to forecast the total fatalities and serious injuries for target setting at the state level. The fatality models developed by MDOT relied on the relationship between oil prices, the Dow Jones Industrial (DJI) futures and fatalities. The price of oil and the level and changes in the DJI futures are closely correlated to the travel demand and traffic crashes. The second model was developed and maintained by

the University of Michigan Transportation Research Institute (UMTRI). The UMTRI model relies on results of a recently completed research report titled Identification of Factors Contributing to the Decline of Traffic Fatalities in the United States. The model relies on the correlation between traffic crashes and vehicle miles traveled (VMT), Gross Domestic Product (GDP) per capita, median annual income, and the unemployment rate among 16–24-year-olds.

To determine the forecasted five-year rolling average for Fatalities, Fatality Rate per 100 million VMT, Serious Injuries, and Serious Injury Rate per 100 million VMT, the forecast was obtained from the models for 2022 and 2023. The final forecasted value for fatalities statewide is the average of MDOT and UMTRI forecasted values which predicts a final number of 1,123 in 2022 and 1,109 in 2023. The state targets for calendar year 2024 are 1,109.2 for fatalities and 1.152 for fatality rate, which are shown in the following charts:



Highway Safety Improvement Program  
 Rate of Fatalities per 100m VMT  
 2024 5-Year Moving Average Prediction



### Reporting Requirements

MDOT is required to report to FHWA on the establishment of state performance targets and the progress made in attaining the state targets for safety each year through the Highway Safety Improvement Program Annual Report due by August 31<sup>st</sup> of each year.

### State Actions

- To meet the safety goal of reducing fatalities and serious injuries on the state trunkline system, the strategy of the Safety Program is to select cost-effective safety improvements, as identified in Michigan’s Strategic Highway Safety Plan (SHSP), to address trunkline locations with correctable fatality and serious injury crashes.
- All proposed safety funded improvements must be supported by the MDOT Region’s Toward Zero Deaths Implementation Plan to mitigate crashes within the area. Priority is given to those projects with SHSP focus area improvements that have the most advantageous cost/benefit analysis or are a proven low-cost safety improvement to address the correctable crash pattern.
- On the local road system, MDOT administers federal safety funds for safety improvements supported by a Local Road Safety Plan or addressed by means of a low-cost safety project. High Risk Rural Road is one program used to address rural roadways where fatalities and serious injuries exceed the statewide average for that class of roadway.

### MPO Actions

- As shown in the table below, the Battle Creek MPO supported the adoption of

MDOT’s State Targets for Safety Performance Measures for Calendar Year 2024 in December 2023. This established targets for performance measures based on five-year rolling averages, including:

**Total Number of Fatalities and Rate of Fatalities**

- o Number of Fatalities,
- o Rate of Fatalities per 100 million Vehicle Miles Traveled (VMT).

Michigan’s State Safety Targets for Calendar Year 2024		
Safety Performance Measure	5-Year Baseline Average	2024 Targets
Fatalities	1,061.6	1,109.2
Fatality Rate	1.099	1.152

MPO support actions:

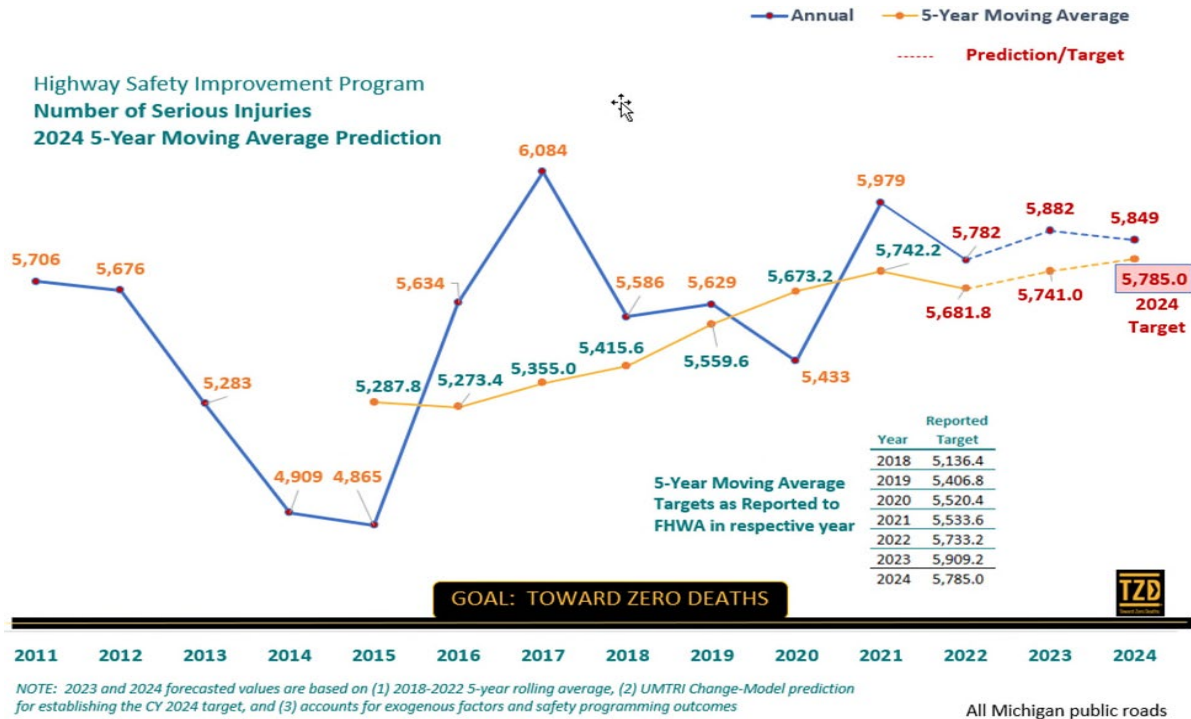
- Give priority in the Transportation Improvement Program (TIP) to projects that address safety.
- Encourage Act 51 Agencies to apply for local safety funds for all available categories of projects which address safety concerns within the BCATS area.
- Promote safe travel habits for all users of the transportation system through education opportunities.

**Total Serious Injuries & Serious Injuries Rate**

**How State Targets Were Set**

The UMTRI model was the sole model used in forecasting total serious injuries as it exhibited a strong linear relationship of the ratio of serious injuries and fatalities (A/K). The forecasted state total for serious injuries was 5,882 in 2023. The state targets for calendar year 2024 are 5,785.0 for serious injuries and 5.999 for serious injury rate.

See the chart on the next page for details.



### State Actions

- To meet the safety goal of reducing fatalities and serious injuries on the state trunkline system, the strategy of the Safety Program is to select cost-effective safety improvements as identified in Michigan’s SHSP to address trunkline locations with the correctable fatality and serious injury crashes.
- All proposed safety funded improvements must be supported by the MDOT Region’s Toward Zero Deaths Implementation Plan to mitigate crashes within the region. Priority is given to those projects within each Region, with SHSP focus area improvements that have the best cost/benefit analysis or are proven low-cost safety improvements to address the correctable crash pattern.
- On the local road system, MDOT administers federal safety funds for safety improvements supported by a Local Road Safety Plan or addressed by means of a low-cost safety project. High Risk Rural Road is one program used to address rural roadways where fatalities and serious injuries exceed the statewide average for that class of roadway.

### MPO Actions

- As shown in the following table, the Battle Creek MPO supported the adoption of MDOT’s State Targets for Safety Performance Measures for Calendar Year 2024 in December 2023. This established targets for performance measures based on a five-year rolling average, including:
  - o Number of Serious Injuries.

- o Rate of Serious Injuries per 100 million VMT.

Michigan's State Safety Targets for Calendar Year 2024		
Safety Performance Measure	5-Year Baseline Avg.	2024 Targets
Serious Injuries	5,681.8	5,785.0
Serious Injury Rate	5.863	5.999

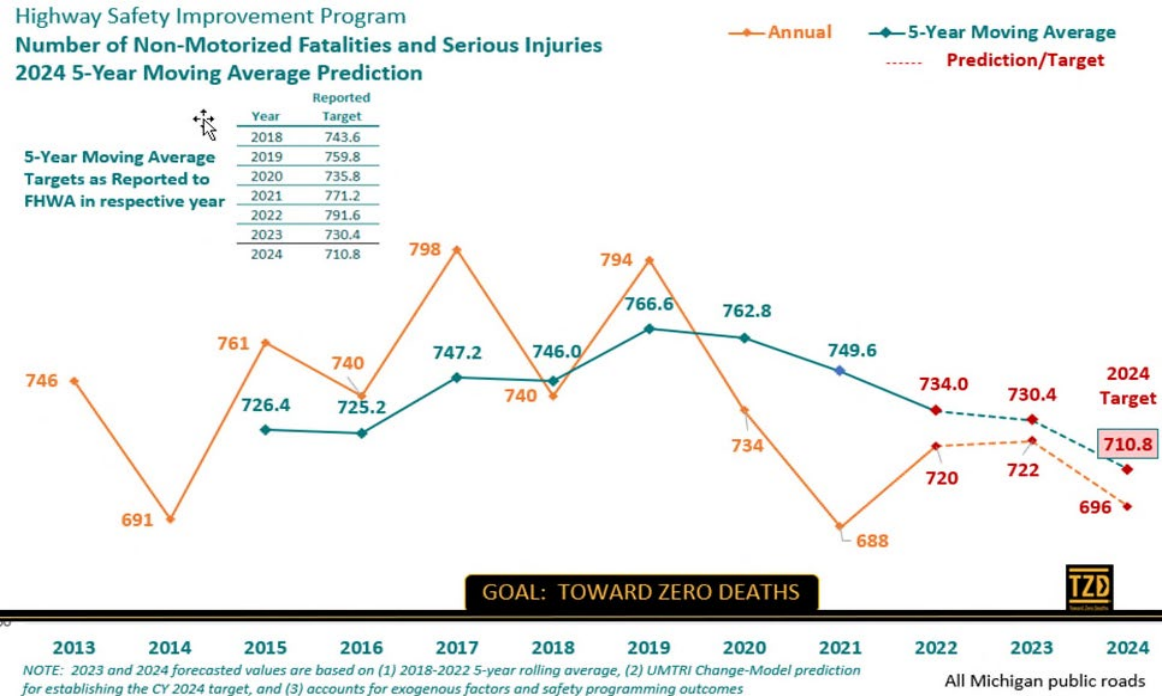
MPO support actions:

- Give priority in the TIP to projects that address safety.
- Encourage Act 51 Agencies to apply for local safety funds for all available categories of projects which address safety concerns within the BCATS area.
- Promote safe travel habits for all users of the transportation system through education opportunities

### Total Bicycle & Pedestrian Fatality and Serious Injuries

#### How State Targets Were Set

Results from the UMTRI model (the A/K relationship) were also used to generate forecasted 5-year moving average values for statewide bicycle and pedestrian fatalities and serious injuries for 2023 and 2024. The forecasting total for fatalities and serious injuries is 722 for 2023 and 696 in 2024. The state target for calendar year 2024 is 710.8 for non-motorized fatalities and serious injuries.



## State Actions

- MDOT continues to work with researchers to improve pedestrian and bicycle safety. Examples of current or past work include the development of gateway treatments for pedestrian and Michigan bicycle and pedestrian travel modes.
- MDOT supports Western Michigan University’s participation in the Roadway Safety Institute as part of the Region 5 University Transportation Center aimed at high-risk road users.
- MDOT also participates with UMTRI in the development of a risk model for nonmotorized users, and with Wayne State University in research to further sidepath safety.

## MPO Actions

- As shown in the table below, the Battle Creek MPO supported the adoption of MDOT’s State Targets for Safety Performance Measures for Calendar Year 2024 in December 2023. This established targets for performance measures based on five-year rolling averages, including the number of non-motorized fatalities and serious injuries.

<b>Michigan’s State Safety Targets for Calendar Year 2024</b>		
<b>Safety Performance Measure</b>	<b>5-Year Baseline Avg.</b>	<b>2023 Target</b>
Non-Motorized Fatalities & Serous Injuries	734.0	710.8

### MPO support actions:

- Address safety issues, concerns, and needs for bicyclists and pedestrians in the development of the Metropolitan Transportation Plan (MTP) and the Transportation Improvement Program.
- Utilization of MDOT road safety audits and engineering countermeasures and other initiatives, programs or designs that are promoted as part of the Toward Zero Deaths National Strategy.



**Battle Creek Area Transportation Study - Traffic Crash Statistics**  
**Calendar Years 2018-2022**

<u>Year</u>	<u>Total Crashes</u>	<u>Bicycle Involved</u>	<u>Pedestrian Involved</u>	<u>Fatality Crashes</u>	<u>Serious Injuries</u>
2022	2,598	11	21	13	56
2021	2,879	8	22	14	57
2020	2,172	11	16	13	55
2019	2,672	15	8	11	35
2018	2,883	15	25	7	38
Total	13,204	60	92	58	241

**Transit Reporting Requirements**

The Federal Transit Administration Transit Asset Management Rule requires a Transit Asset Management (TAM) plan to set one or more performance targets for each applicable performance measure. The goal is to establish a strategic and systematic process of operation, maintaining, and improving public capital assets effectively through their entire life cycle. The targets should be based on realistic expectations, the recent data available, and the financial resources from all sources that the area reasonably expected during the TAM plan horizon period. The three asset classes to be in the Transit Asset Management plan are Revenue Vehicles, Equipment/Service Vehicles, and Facilities.

The targets for 2024 are reflective of the current status of the Battle Creek Transit (BCT) fleet. Although BCT received a significant Section 5339 grant for vehicle replacement in FY 2021, those vehicles will be phased-in over time through FY 2028.

## How Transit Operator Targets were Set

Battle Creek Transit annually sets State of Good Repair targets for its assets based on recent and anticipated capital funding available to updates to rolling stock, equipment/service vehicles, and facilities. Transit agencies in an urban area are required to develop targets for State of Good Repair. The purpose of the State of Good Repair is to establish a strategic and systematic process of operation, maintaining and improving public capital assets effectively through their entire life cycle.

The BCATS Policy Committee voted to support the 2024 BCT State of Good Repair targets at its meeting on December 13, 2023.

### Battle Creek Transit’s “State of Good Repair” Targets for Year 2024

Asset Category - Performance Measure	Asset Class	2024 Target
<b>REVENUE VEHICLES</b>		
Age - Percent of revenue vehicles within a particular asset class that have met or exceeded their Useful Life Benchmark (ULB)	BU - Bus	77%
	MB - Mini-bus	100%
	MV - Minivan	29%
<b>EQUIPMENT</b>		
Age - Percent of vehicles that have met or exceeded their Useful Life Benchmark (ULB)	Non-Revenue/Service Vehicles	83%
	Trucks & other Rubber Tire Vehicles	0%
	Maintenance Equipment	0%
<b>FACILITIES</b>		
Condition - Percent of facilities with a condition rating below 3.0 on the FTA Transit Economic Requirements Model (TERM) Scale	Administration	100%
	Maintenance	100%
	Passenger Facilities	100%

An additional transit performance measure requirement from the FTA is the development of a Public Transportation Agency Safety Plan (PTASP) which sets Safety Performance Targets for the public transportation agency. The transit agency is to provide the PTASP, with targets, to the MPO when it is developed. BCT’s initial Plan and Targets were acknowledged by the BCATS Policy Committee in July 2020. BCATS plans and programs projects that contribute to the accomplishment of BCT’s safety targets. The current BCT safety targets, as reported to BCATS in March 2023, are shown in the table below.

### Battle Creek Transit's Safety Performance Targets\*

Mode of Transit Service	Fatalities (total)	Fatalities (per 10k VRM)	Injuries (total)	Injuries (per 10k VRM)	Safety Events (total)	Safety Events (per 10kVRM)	System Reliability (VRM/failures)
Fixed Route Bus	0	0	1	.024	2	.047	15,000
ADA/ Paratransit	0	0	0	0	1	.08	20,000

\* Targets above are based on the previous 5 years of BCT's safety performance data.

### National Highway System Bridge Condition Targets

The Transportation Performance Measure regulatory requirements outlined in 23 CFR 490.105 and 23 CFR 490.107 regarding bridge condition targets, are based on a state adjusted 4-year National Highway System targets. The Battle Creek Area Transportation Study recognizes the importance of a safe transportation system and supports the cooperatively developed bridge targets from the Michigan Department of Transportation. MDOT adopted a new set of 4-year bridge targets and transmitted those targets to the MPOs in December 2022. BCATS adopted a resolution to support the state's new 4-year bridge targets on January 25, 2023.

#### Michigan's State 2022-2025 4-Year NHS Bridge Targets

Bridge Performance Measure	Baseline Condition	2-Year Predicted Performance Target	4-Year Predicted Performance Target
% National Highway System Deck Area in Good Condition	22.1%	15.2%	12.8%
% National Highway System Deck Area in Poor Condition	7.0%	6.8%	8.0%

The current condition of NHS bridges in the BCATS area, as reported by MDOT in April 2022, is shown in the table below.

<b>BCATS MPO April 2022 NHS Bridge Conditions</b>		
<b>Deck Area in Good Condition</b>	<b>Deck Area in Fair Condition</b>	<b>Deck Area in Poor Condition</b>
1% 3,429 square feet	92% 420,443 square feet	7% 31,720 square feet

The total NHS bridge deck area in the BCATS area is 455,593 square feet.

### **National Highway System Pavement Condition Targets**

The federal regulations require the state to establish targets for pavement condition measures Percent Good and Percent Poor on the Interstate and non-Interstate National Highway System. Targets were to be set for two and four-year intervals for each measure, or eight targets total. However, for the Interstate measures, there were no two-year targets required for the first performance period of 2018 to 2021. Therefore, only six targets were set by the state in the first period. The regulations dictated the measuring tools to be used in defining the pavement condition. As with the other target categories, MPOs were to either support the state targets or establish their own independent targets for the required categories within 180 days of the state establishing targets.

MDOT officially adopted new state pavement targets for 2022-2025 and transmitted those targets to the MPOs in December 2022. BCATS acted to support those targets on January 25, 2023. The table below indicates the Michigan State Pavement Targets.

### **Michigan's State NHS Pavement Targets**

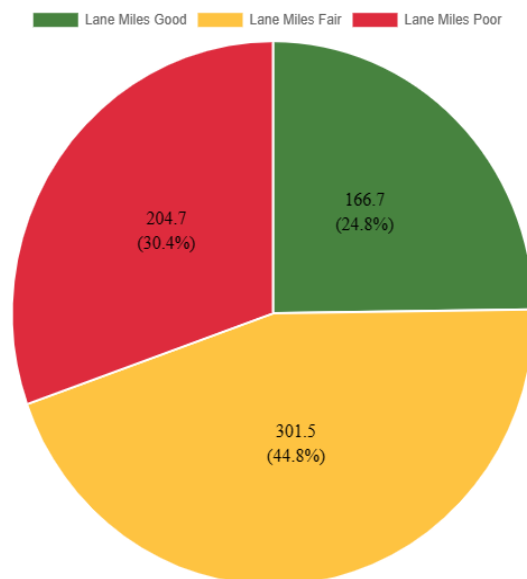
<b>Pavement Performance Measure</b>	<b>Baseline Condition Calendar Year 2021</b>	<b>2-Year Targets</b>	<b>4-Year Targets</b>
% Interstate Pavement in Good Condition	70.4%	59.2%	56.7%
% Interstate Pavement in Poor Condition	1.8%	5.0%	5.0%
% Non-Interstate NHS in Good Condition	41.6%	33.1%	33.1%
% Non-Interstate NHS in Poor Condition	8.9%	10.0%	10.0%

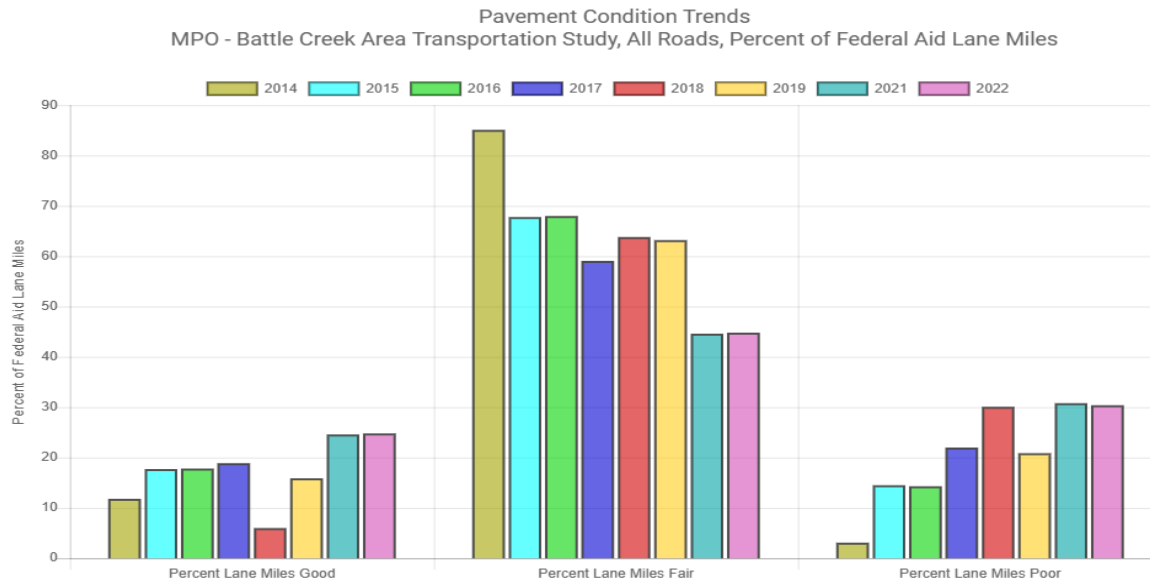
## MPO Status

MDOT reports that the 2021-2022 Interstate Pavement Conditions in the BCATS area are: 84.2% Good, 15.1% Fair, 0.7% Poor on 66.5 Interstate Thru Miles. The figures for the 2021-2022 Non-Interstate NHS Pavement Conditions in the BCATS area: 31.1% Good, 58.5% Fair, 10.4% Poor on a total of 101.7 Non-Interstate Thru Miles.

Pavement condition on all federal-aid eligible roadways in the BCATS area has been measured for approximately 20 years using the PASER data collection process implemented by the Michigan Transportation Asset Management Council (TAMC). State of Michigan Act 51 (P.A. 499 202, P.A. 199 2007) requires each local road agency to annually report the mileage and condition of the road and bridge system within their jurisdiction and provide this data to the TAMC. The uniform PASER process for collection of condition data on federal-aid eligible roadways (which includes all Interstate and non-Interstate NHS facilities) uses a visual inspection to evaluate pavement surface condition. It rates various types of pavement distress on a scale of 1-10, with 1 being the worst and 10 being the best. PASER helps to predict the remaining service life of a road and the type of maintenance needed to maximize pavement life. PASER data is to be collected in each Michigan county at 50% of the federal-aid eligible system each year. It so happens that the BCATS area includes approximately 50% of the federal-aid roadways in Calhoun County. Therefore, the PASER data collection process has been occurring every other year in the MPO area. The following charts show the results of recent PASER data collection for the BCATS area.

Federal Aid Rated Pavement Conditions  
MPO - Battle Creek Area Transportation Study, All Roads, 2021 - 2022





**System Performance – National Highway System (NHS) Travel Time Reliability**

Travel Time Reliability relates to the consistency or dependability in travel time. It is measured from day to day, or across differing times of the day. Unreliable travel times usually occur during the “peak” periods of the day. Most travelers are less tolerant of “unexpected” delays since they cannot plan for it. The Travel Time Index (TTI) is the ratio of the congested travel time to the time it takes to make the same trip at free-flow speeds (light traffic conditions). When congestion gets worse, the TTI increases. Performance on the National Highway System (NHS) uses Level of Travel Time Reliability (LOTTR) to measure interstate and non-interstate travel. The interstate travel time reliability measure is the percent of “person-miles” traveled that are reliable. Non-interstate travel time reliability is measured by percent of “person-miles” traveled that are reliable. These measures correspond to 80<sup>th</sup> and 50<sup>th</sup> percentile travel times. Freight movement on the NHS is measured for reliability using the Truck Travel Time Reliability Index (TTTR) and corresponds to 95<sup>th</sup> and 50<sup>th</sup> percentile travel times. Note that the lower the Freight number the better the travel time reliability is for trucks.

Travel time reliability in the BCATS area, as reported by MDOT for 2021 is shown on the table below.

**Battle Creek Area 2021\* Travel Time Reliability Data**

MPO/Study Area	Interstate Reliability	Non-Interstate Reliability	Freight Reliability
BCATS	100.0%	93.6%	1.15

\* most recently reported data

MDOT established new 2022-2025 Travel Time Reliability Targets for the state in December 2022 and provided those targets to the MPOs. MDOT has set conservative targets for this measure. The BCATS Policy Committee approved supporting the MDOT targets for this category on January 25, 2023.

**Michigan’s State NHS 2022-2025 Travel Time Reliability Targets**

NHS Travel Time Reliability Performance Measure	Baseline Condition	2-Year Performance Targets	4-Year Performance Targets
Interstate Travel Time Reliability	97.1%	80.0%	80.0%
Non-Interstate Travel Time Reliability	94.4%	75.0%	75.0%
Freight Reliability (truck travel time reliability)	1.31	1.60	1.60

**BCATS Overall System Performance Summary in Graphic Form**

