



MICHIGAN'S 2022 Roads & Bridges ANNUAL REPORT





Agenda

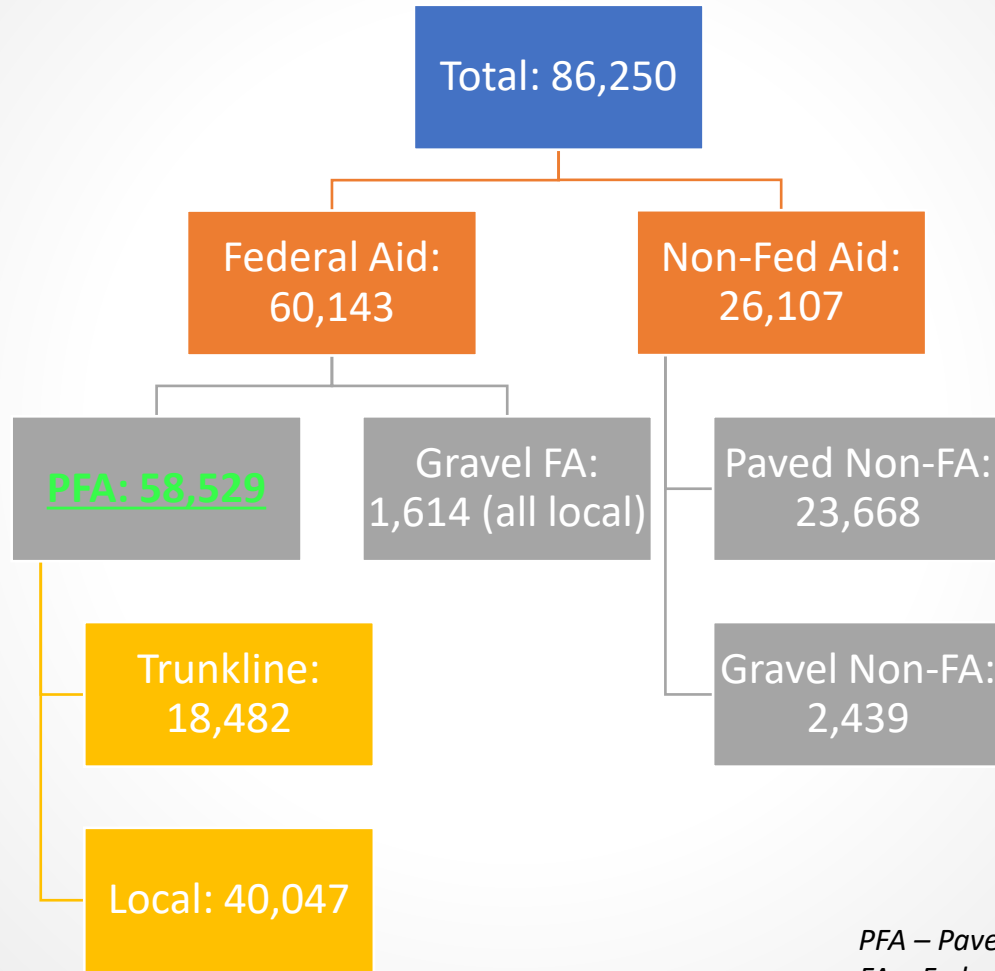
-
- 2022 PASER Collection
 - PFA Lane Miles Collected
 - PFA System Condition
 - Quality Ratings
 - Other roads
 - 2021/2022 Merged PASER File
 - PFA Lane Miles Collected
 - PFA System Condition
 - Non-Fed Aid Collection
 - Gravel Roads Collection
 - Condition Forecasting (PCFS)
 - Forecast
 - Project Costs
 - Investment Strategy

2022 PASER Collection



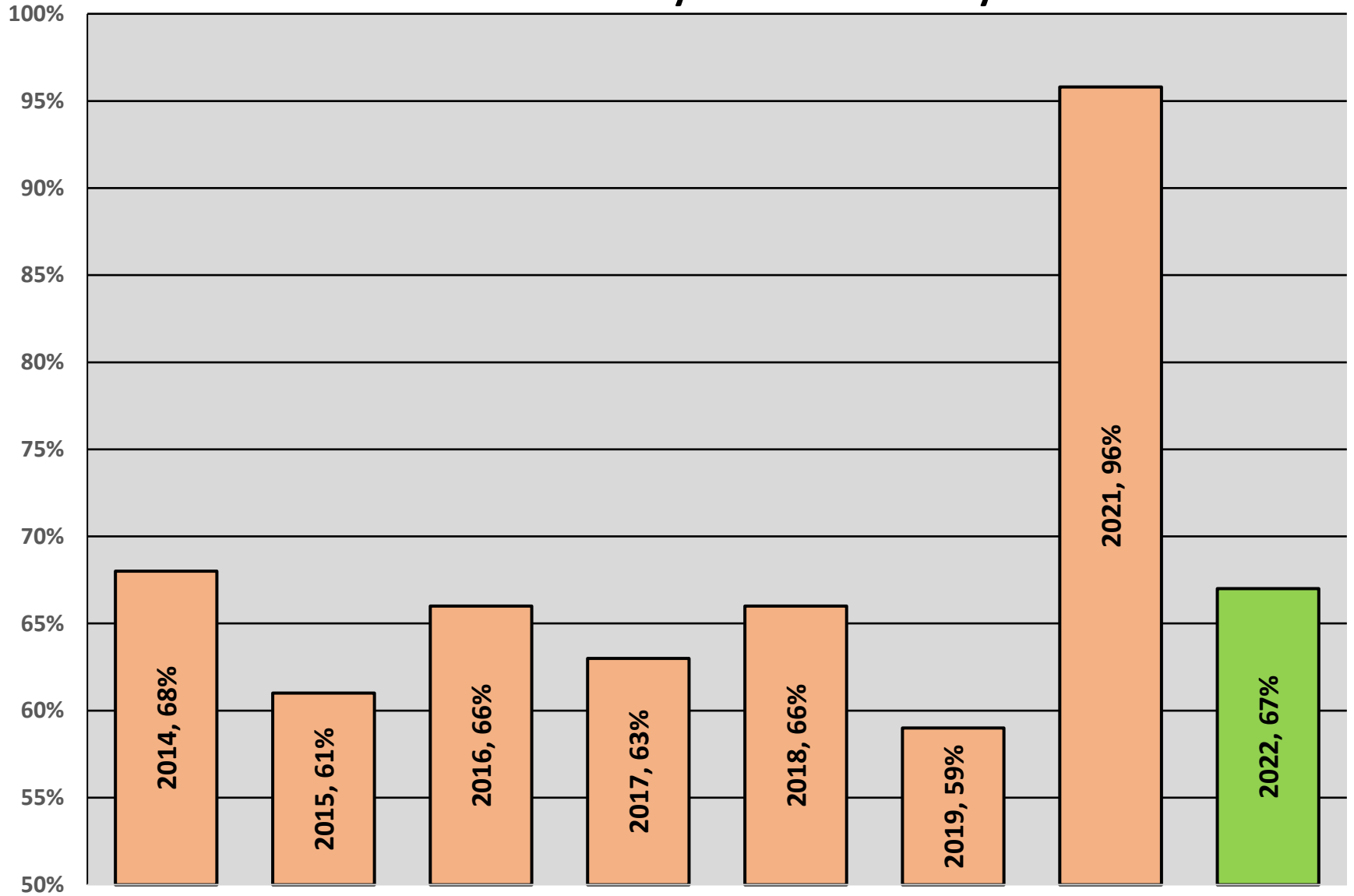
2022 PASER Collection

(in lane miles LM)



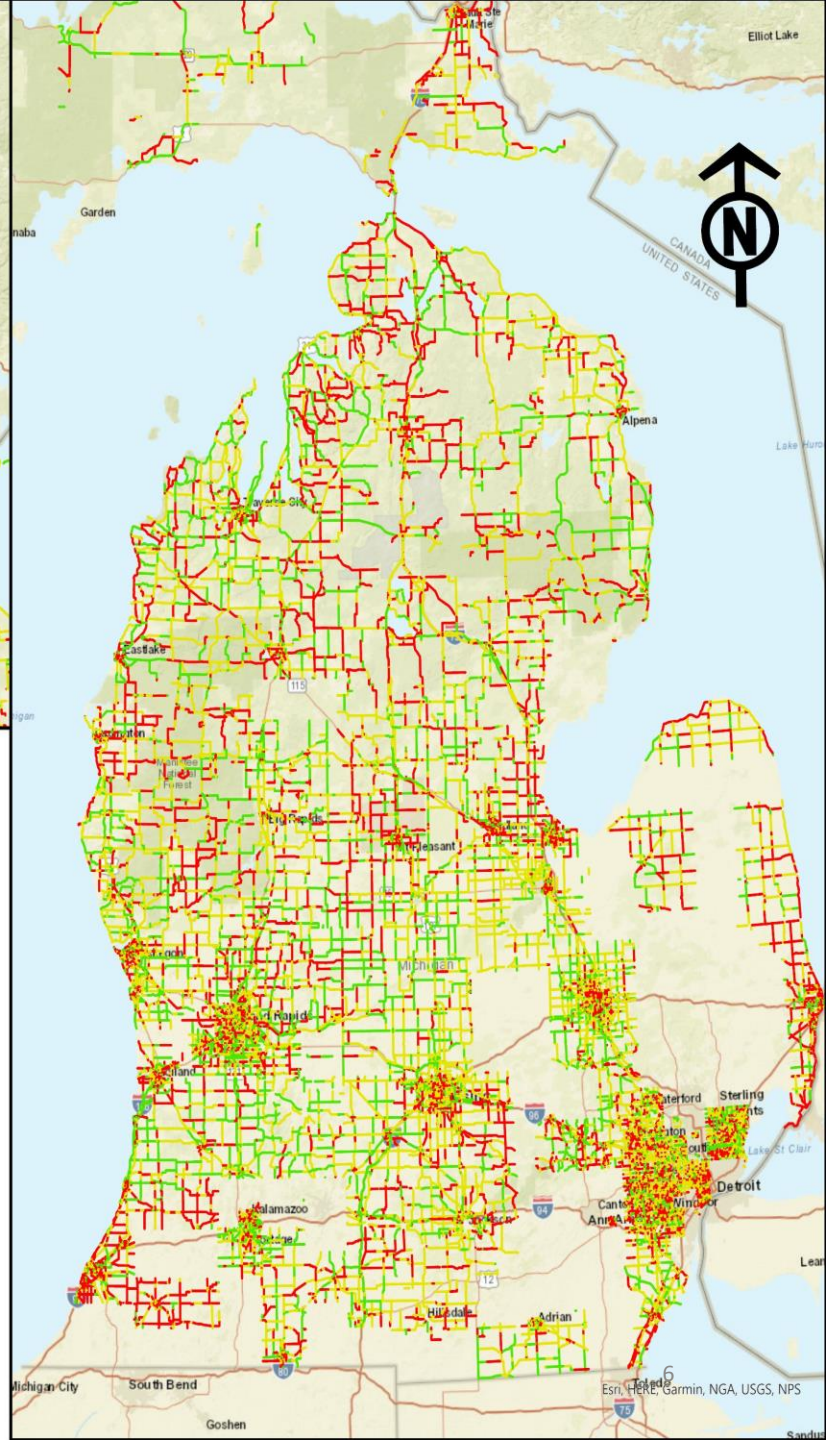
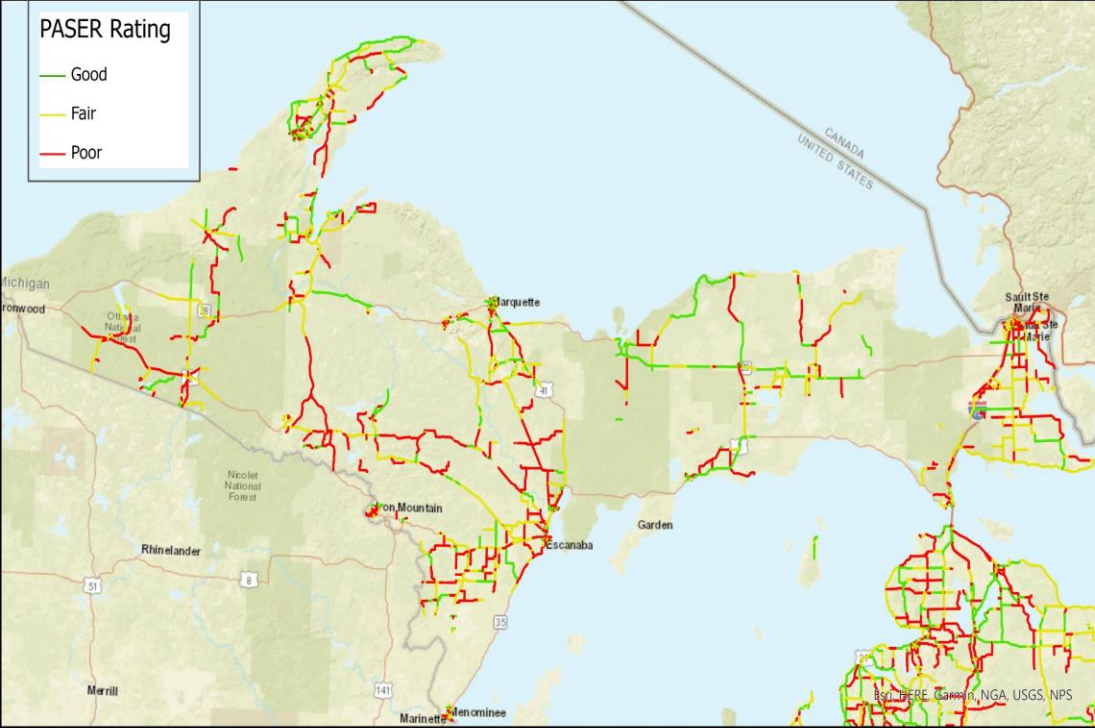
*PFA – Paved Federal Aid
FA – Federal Aid (Roads eligible for federal funding)*

Percent of Paved Federal-Aid System Collected by Year

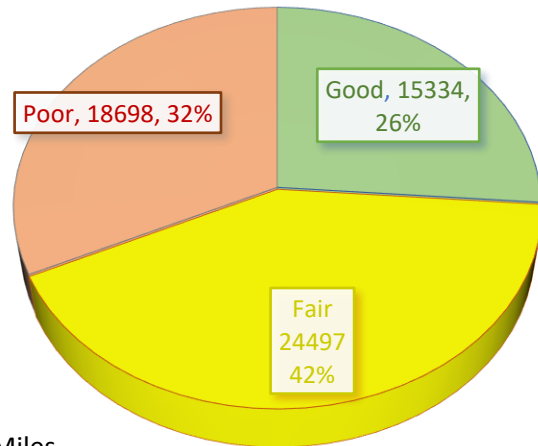


PASER Rating

- Good
- Fair
- Poor



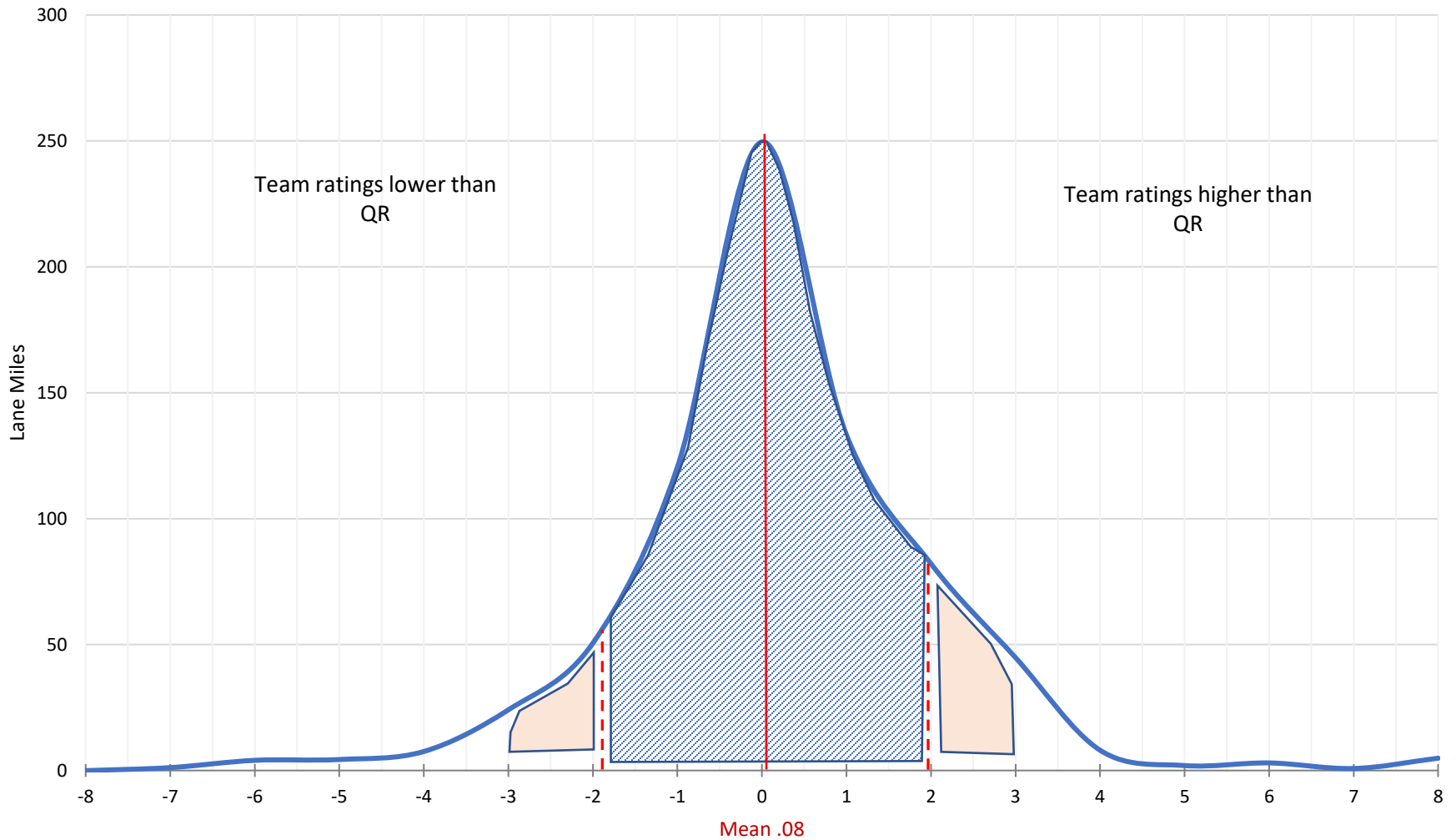
PAVED FEDERAL AID CONDITION (IN LANE MILES) COLLECTED IN 2022



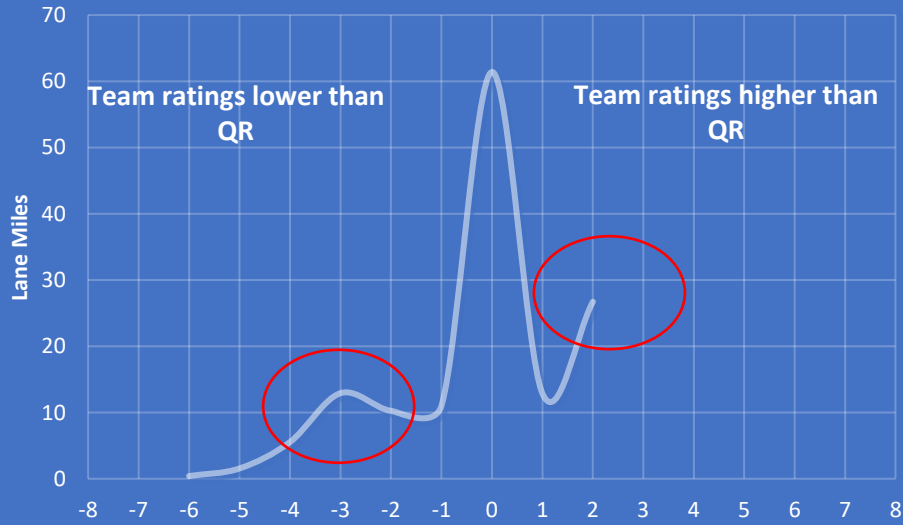
58,529 Total Lane Miles

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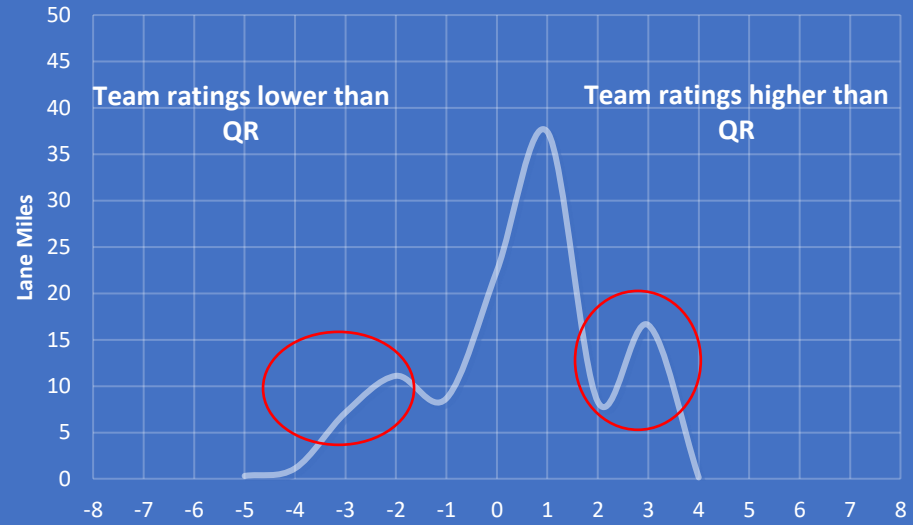
2022 Team Ratings Minus Quality Ratings Weighted by Lane Miles



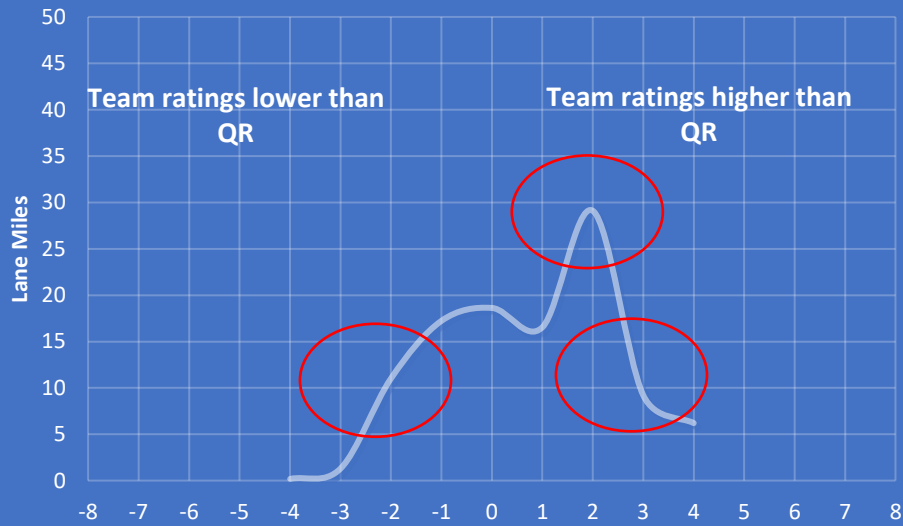
PASER 4



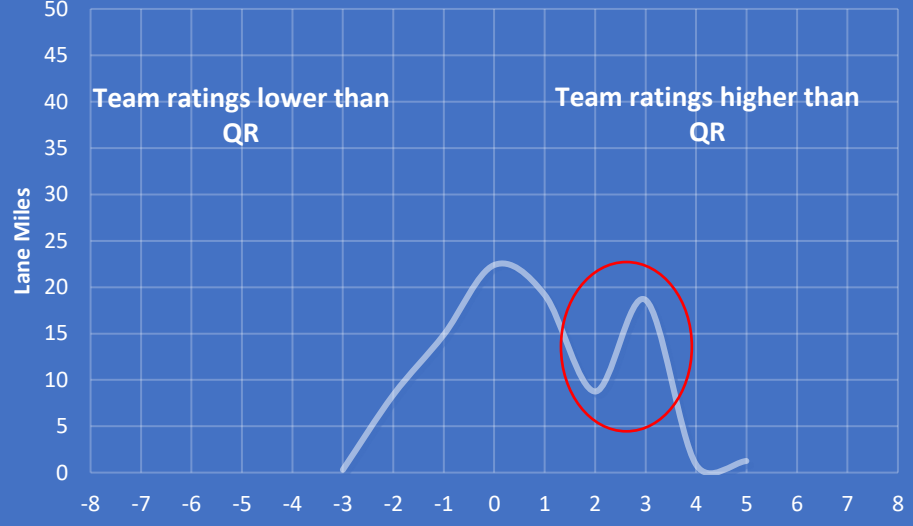
PASER 5



PASER 6



PASER 7



QR Analysis Cont.

Observations

- 180 lane miles (24% of compared segments by LM) had a PASER difference of 2 (63%) or 3 (37%)
- Team ratings tend to be higher than QR values (65% of 180LM noted above were rated higher than the QR rating)
- PASER 5 values had the greatest rating variance (byLM) beyond 1 stdev.
- Over 55% of the 180 lane miles located on the county primary system
- 44% of the 180 lane miles are on the major collector (NFC5) system
- Geographically distributed throughout the state
- Located in both urban and rural areas
- 65% of the lane miles are asphalt

QR Analysis Cont.

Select Segments Analysis

- Sheldon Rd: Most team ratings had segments rated as a six, QR had them at 4. Street imagery shows them being closer to a six, however, that imagery was taken in 2019. Team data was collected in June.
- N. Straits Hwy: The team ratings and QR ratings had flip flopped ratings where one rating group would have a segment at a seven, the other had it at a four and visa versa (QR had only two records at a 4). From the imagery, this entire stretch should be a seven except for a few sections which look like they could be rated lower. Could be an issue with how the data segments are split (or not split).
- Williams Lake Rd: QR segments were two points higher (8 or 9) from the team ratings. Street imagery from October 2021 supports the quality rating. Team ratings were collected in August of 22 (QR collected after).

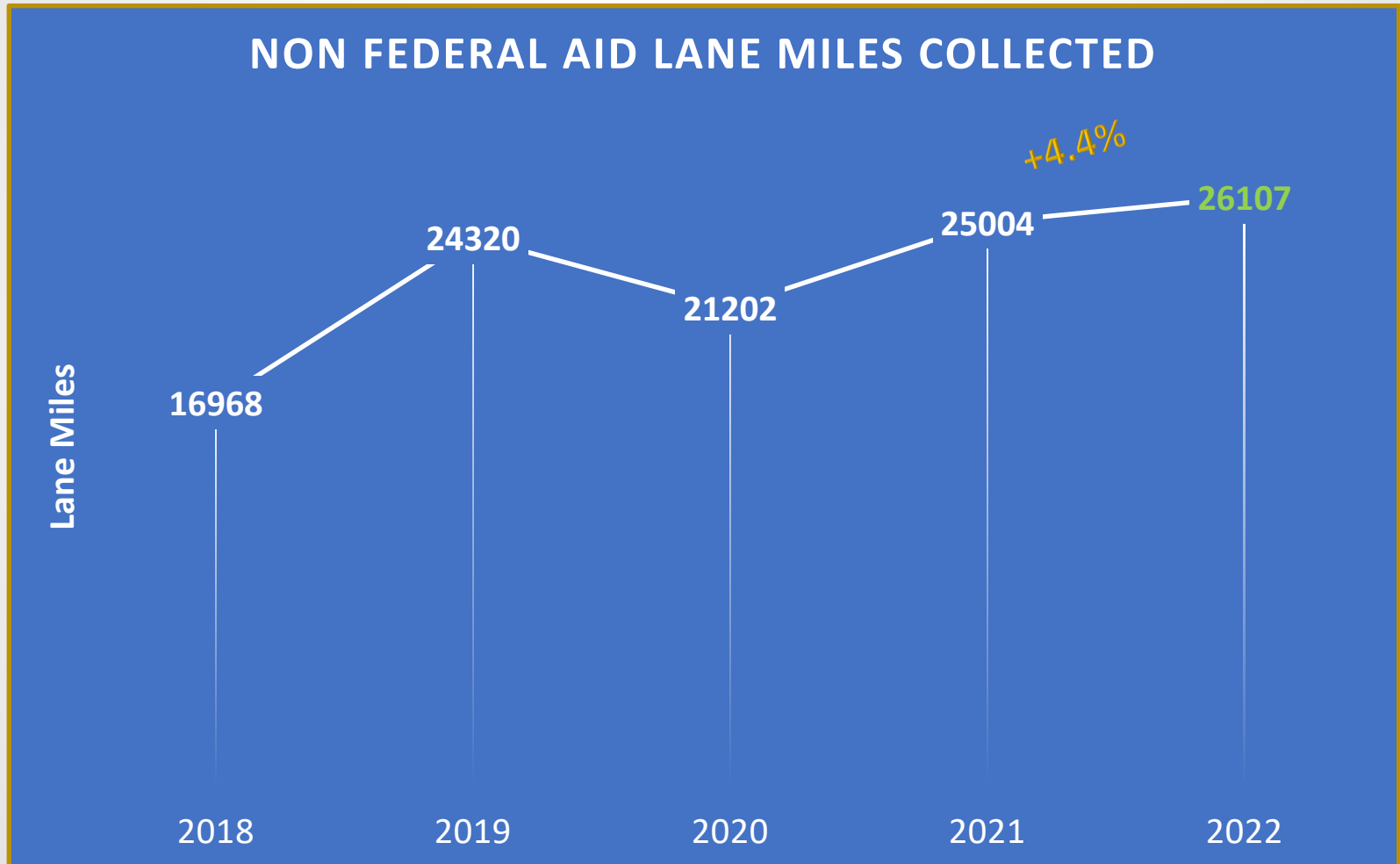
QR Analysis Cont.

Select Segments Takeaways

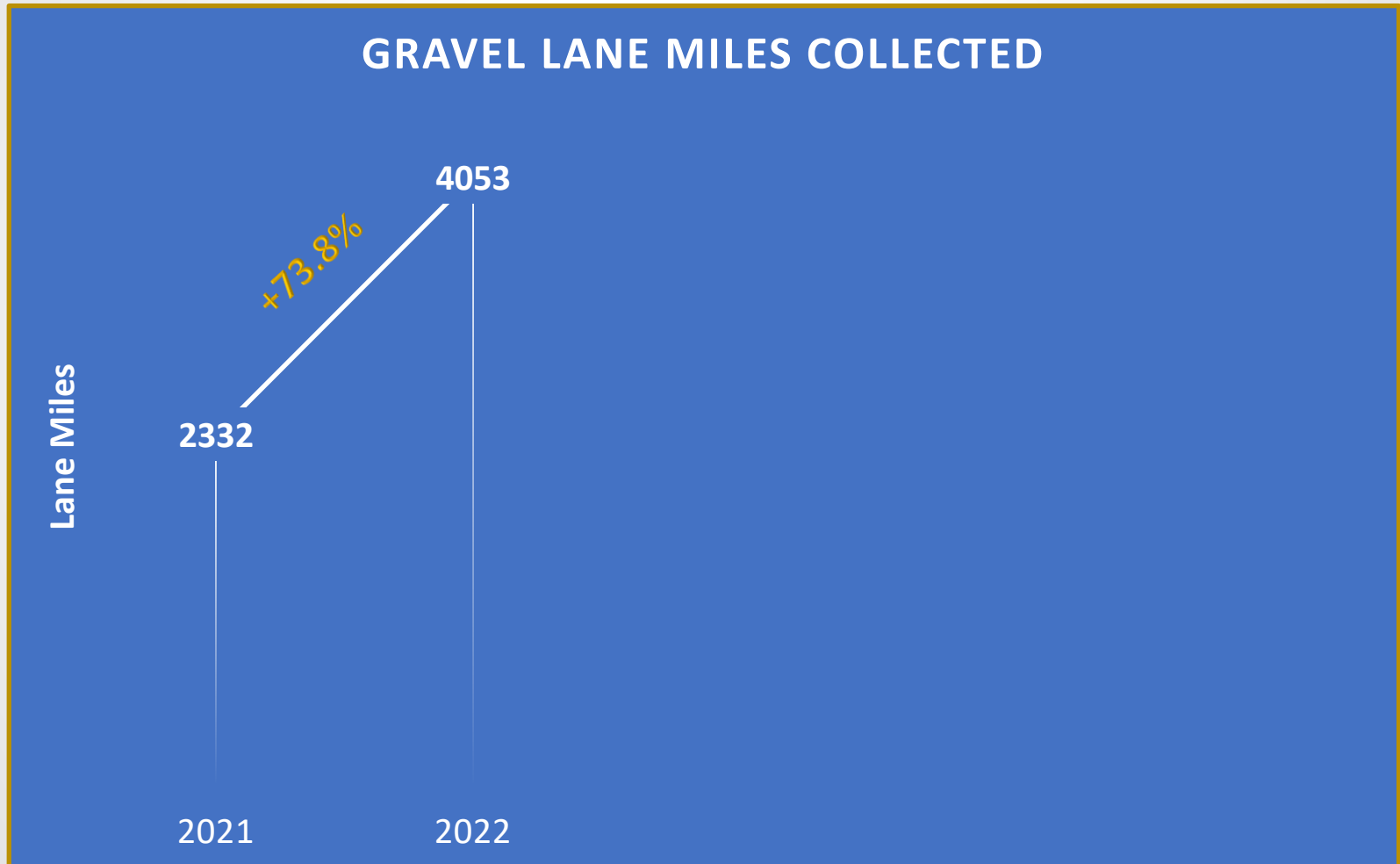
- Team ratings that had a difference of two from the QR were either **mis-rated**, or the value most likely fell somewhere in between the QR and team rating.
- In situations where the team ratings had a **difference of three from the QR rating it appeared there were differences in how segments were split to account for changes in pavement condition.**
- **PASER 5 values** had the most variability. Differentiating the 'fair' PASER values should be emphasized.

In summary, the 22 team ratings were accurate outside a few instances of mis-ratings and differences in splitting segments.

2022 Non-Fed Aid PASER Collection



2022 PASER Collection

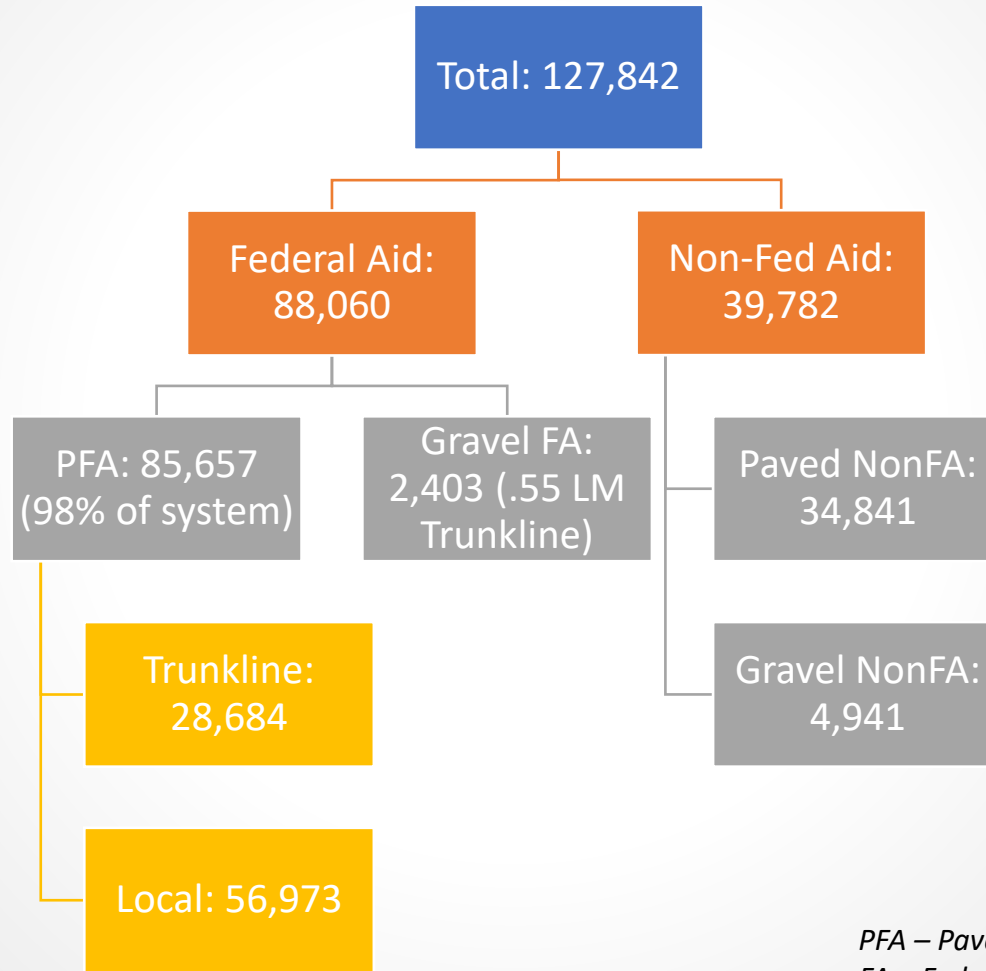




2022/21 Combined PAsER Dataset

2022/2021 Merged PASER Collection

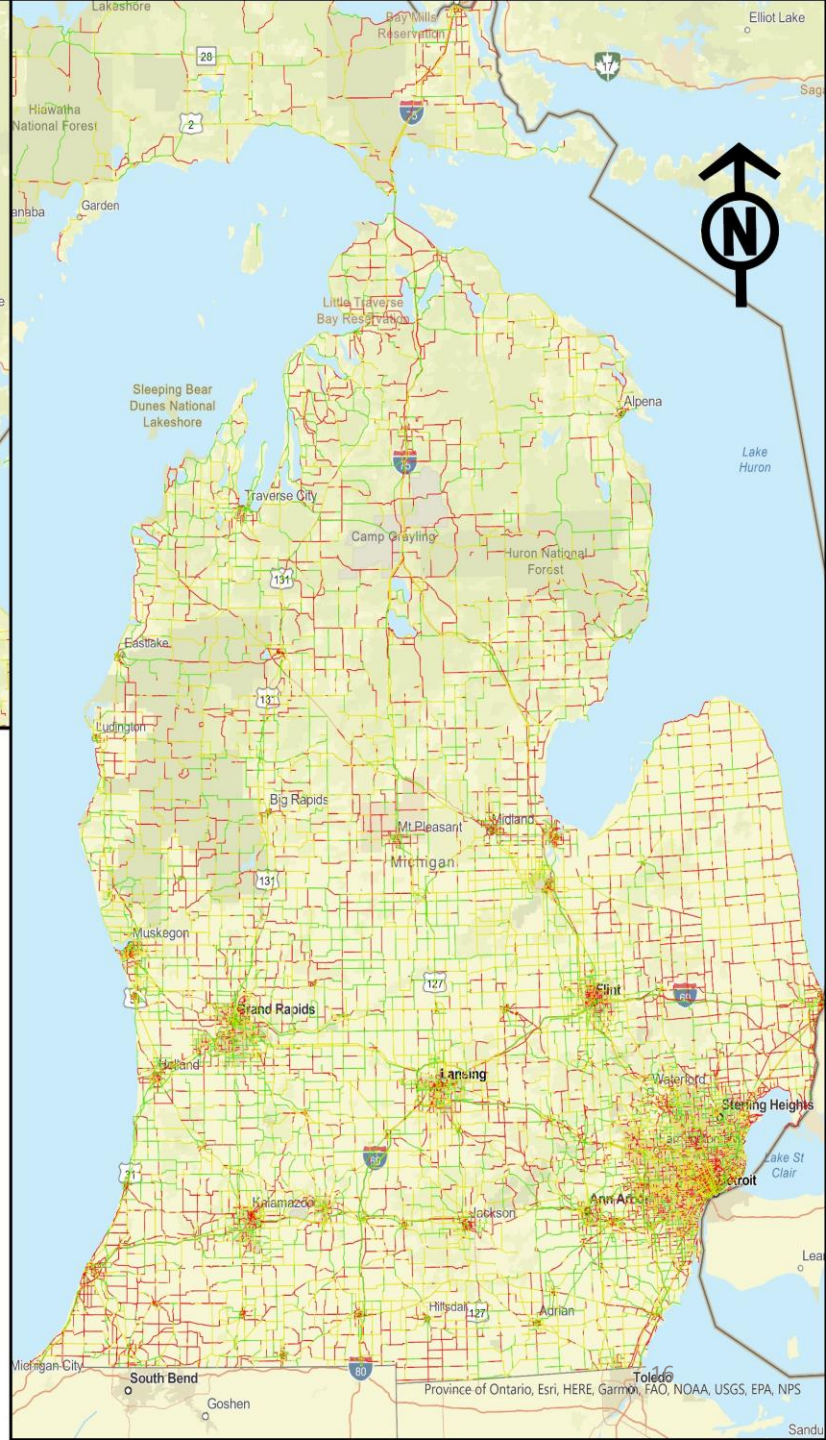
(newest available, in lane miles LM)



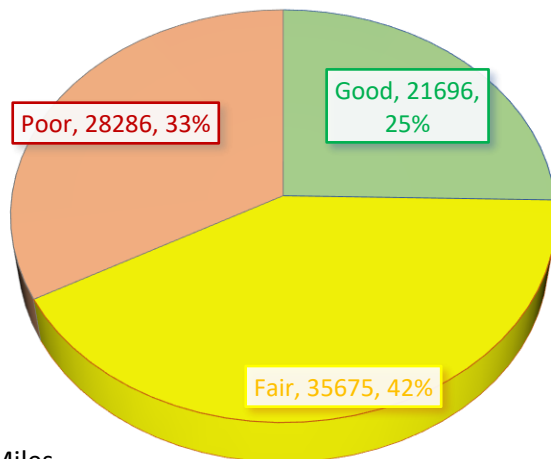
*PFA – Paved Federal Aid
FA – Federal Aid (Roads eligible for federal funding)*

PASER Rating

- Good
- Fair
- Poor

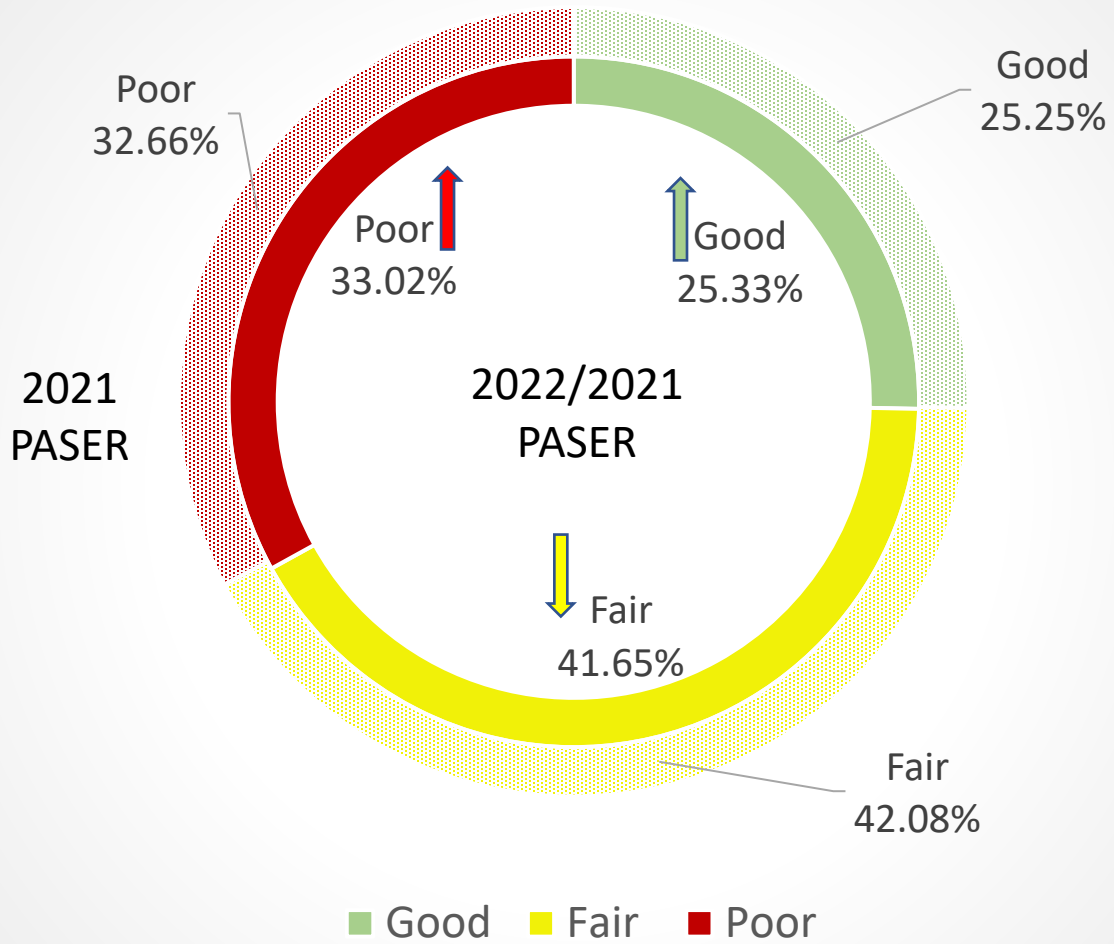


PAVED FEDERAL AID CONDITION (IN LANE MILES) IN 2021/2022

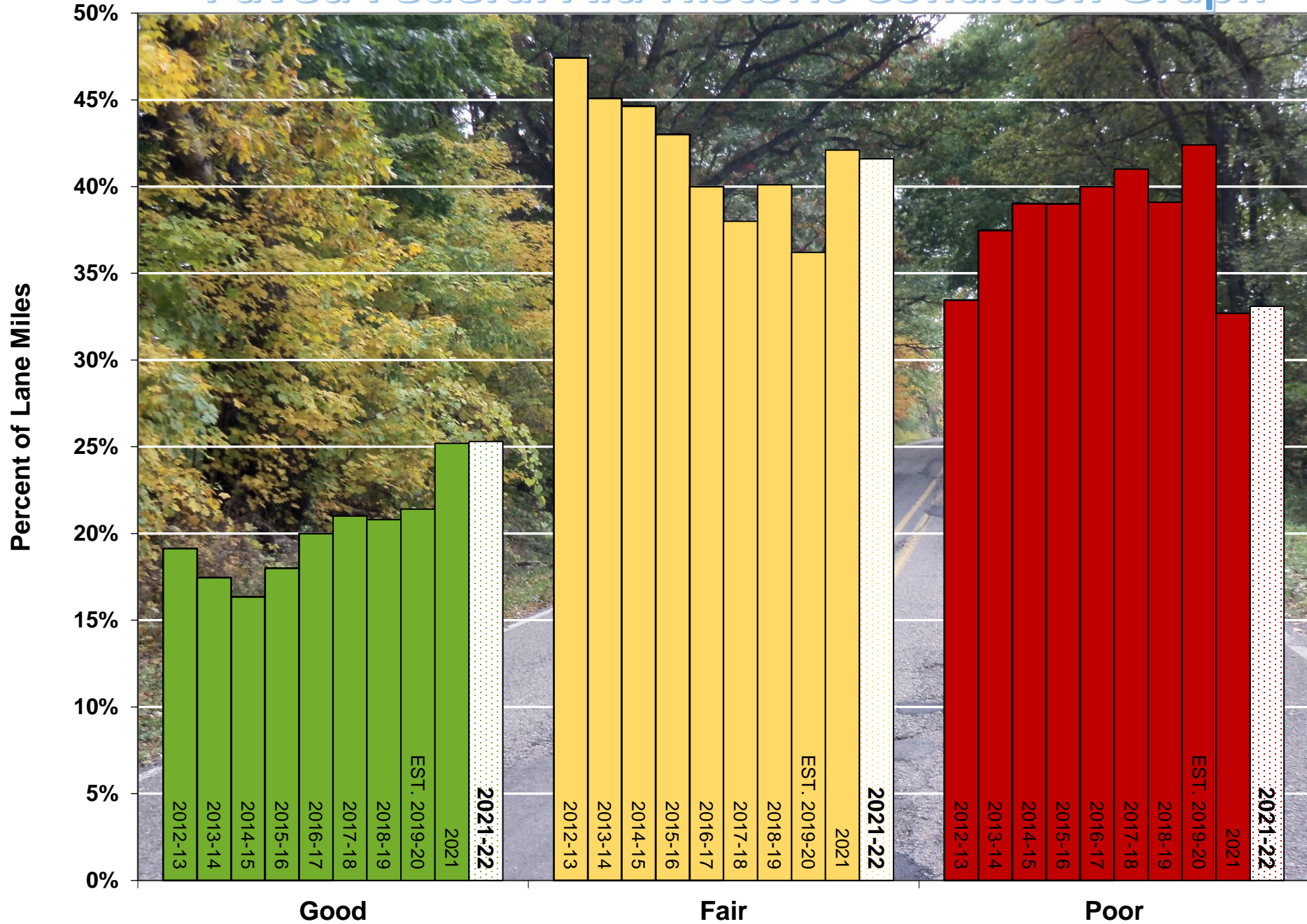


85,657 Total Lane Miles

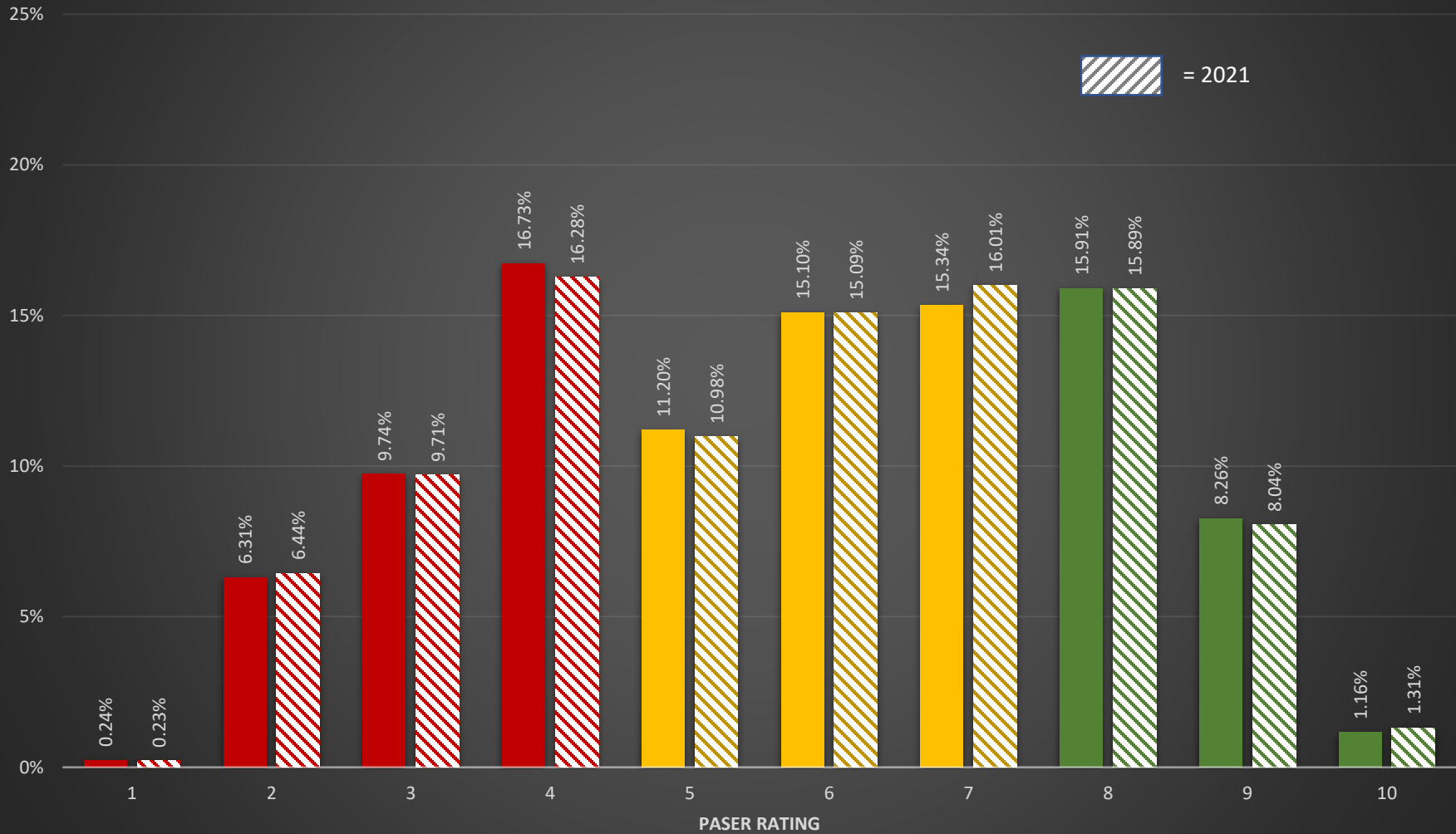
Costa - 02/20/2023



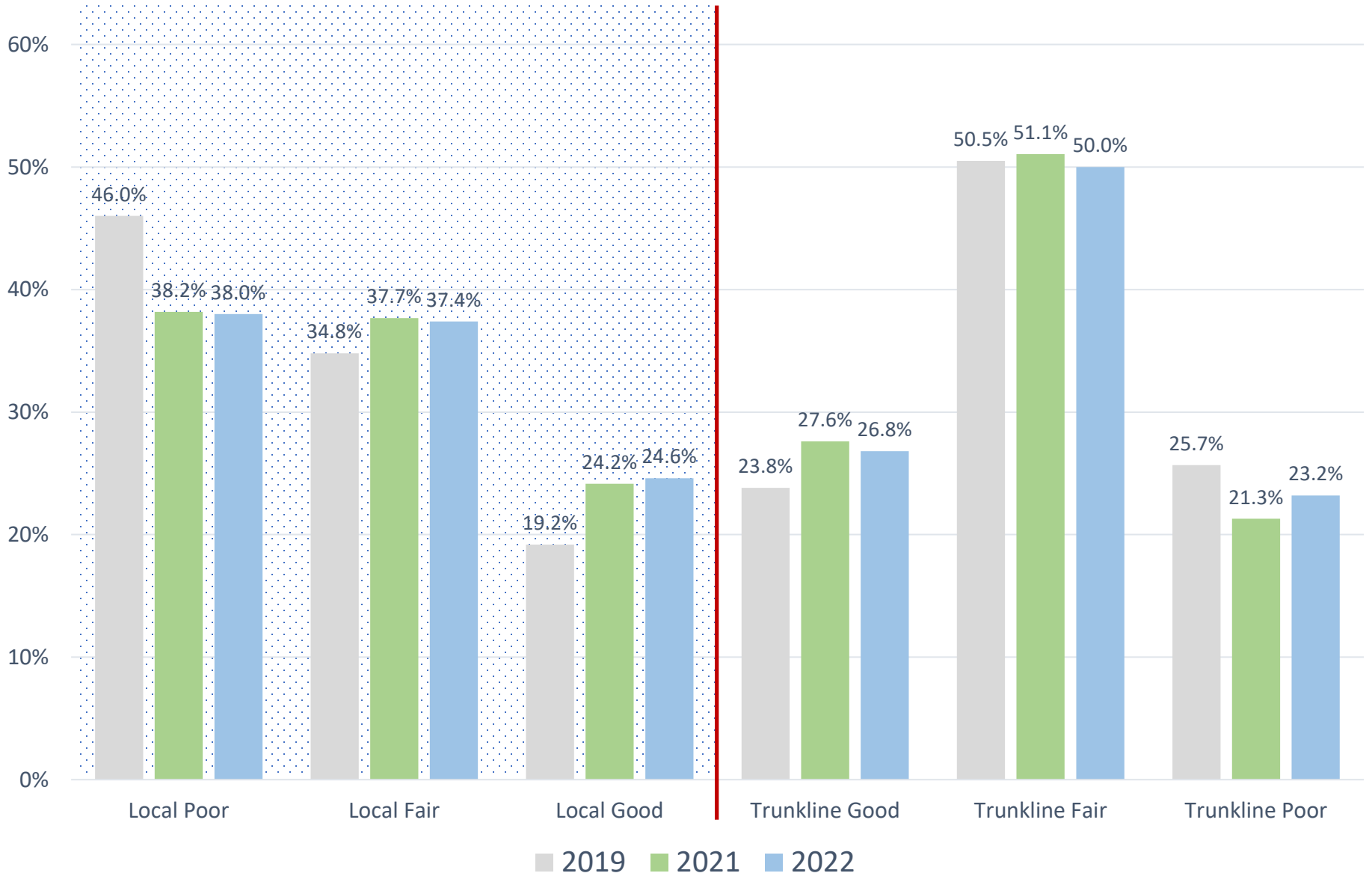
Paved Federal Aid Historic Condition Graph



2022/21 Paved Federal-Aid Condition Percent Lane Miles

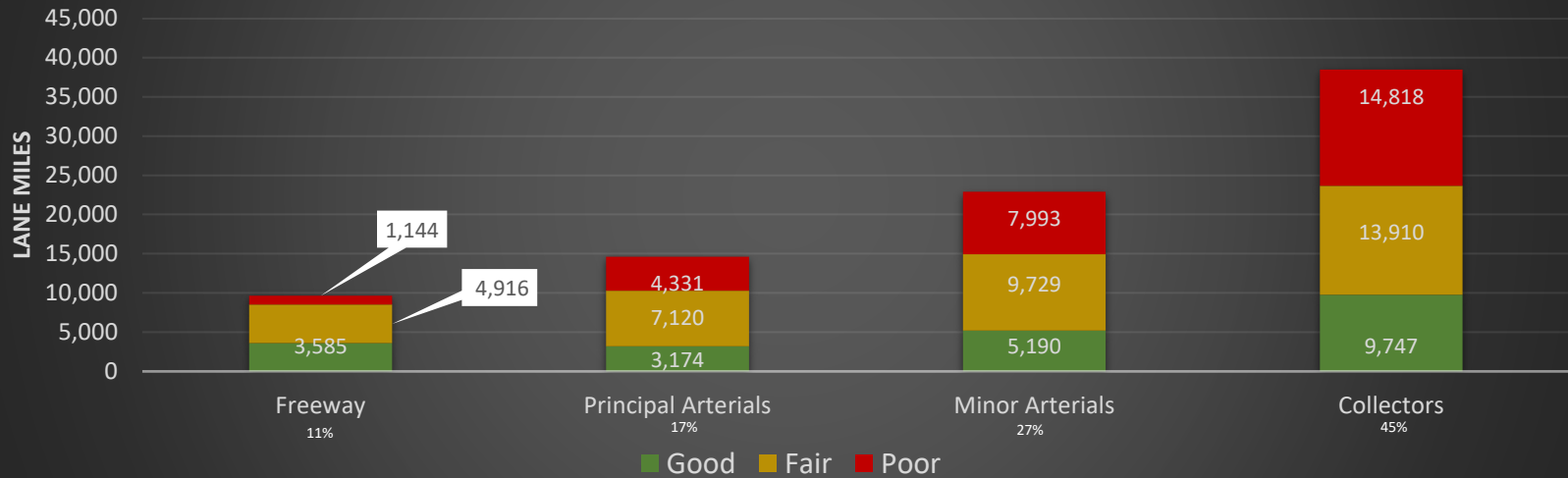


Trunkline and Local PFA Condition percent lane miles



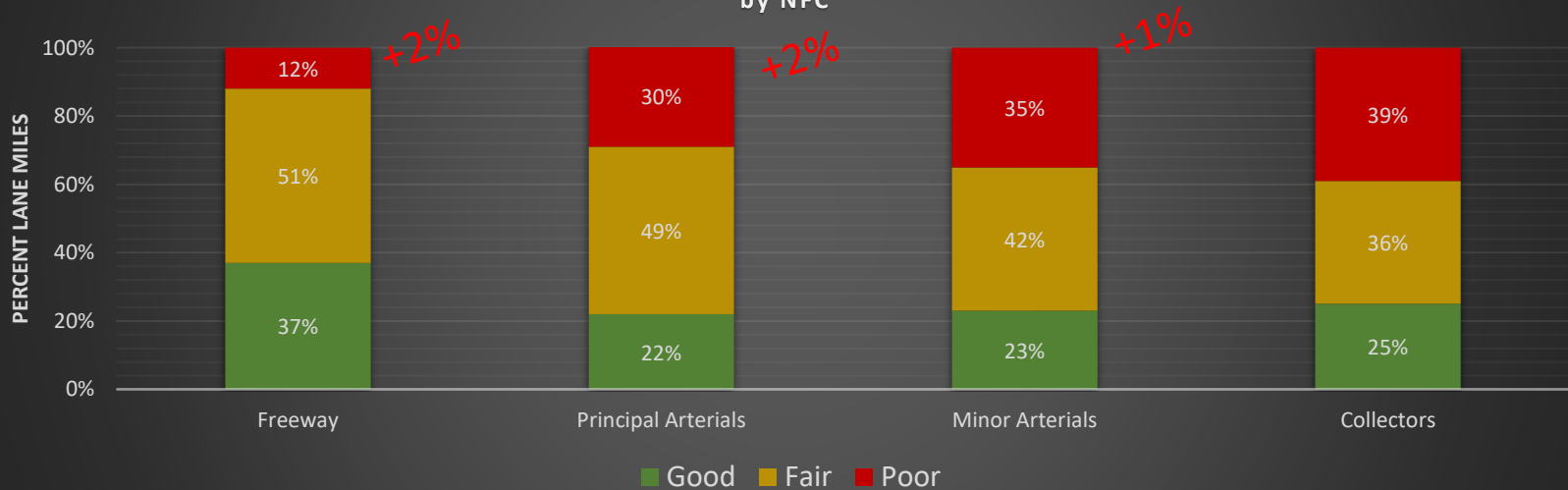
2022/21 Paved Federal-Aid Roads

by NFC



2022/21 Paved Federal-Aid Roads

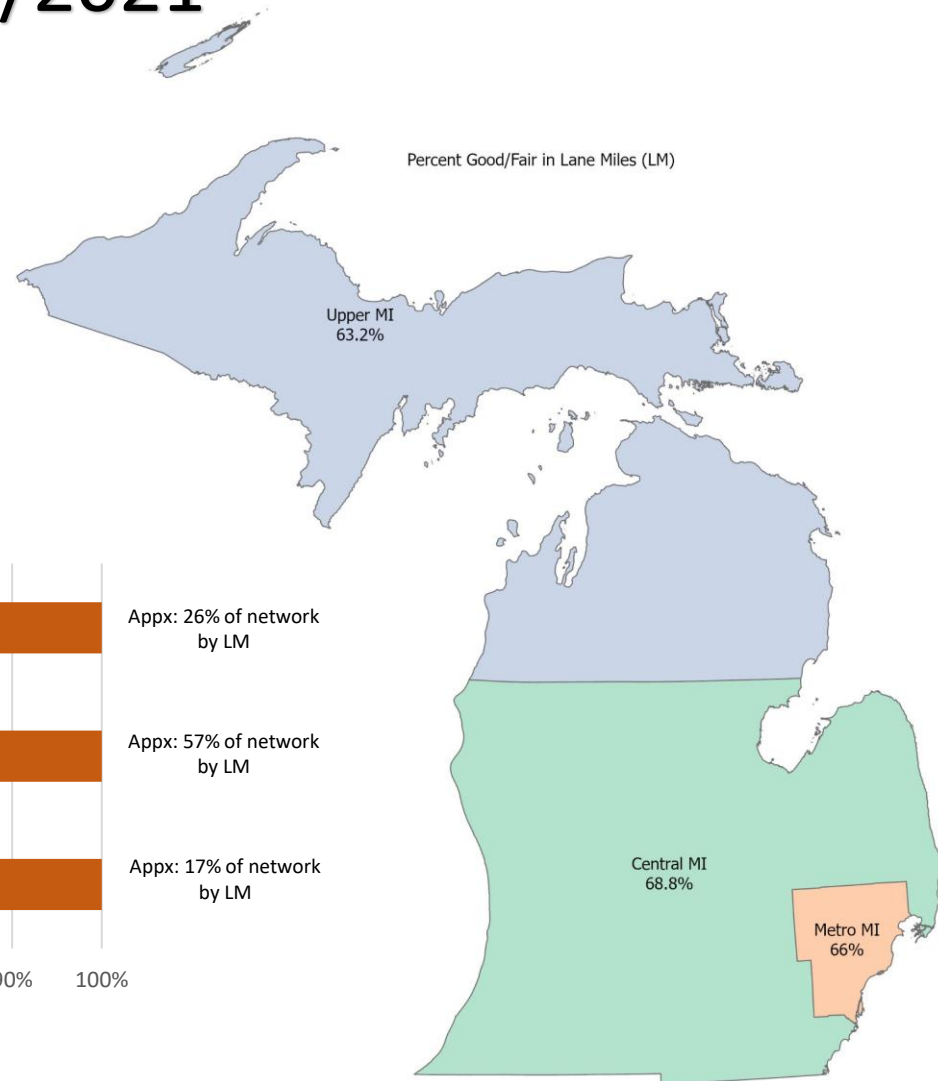
by NFC



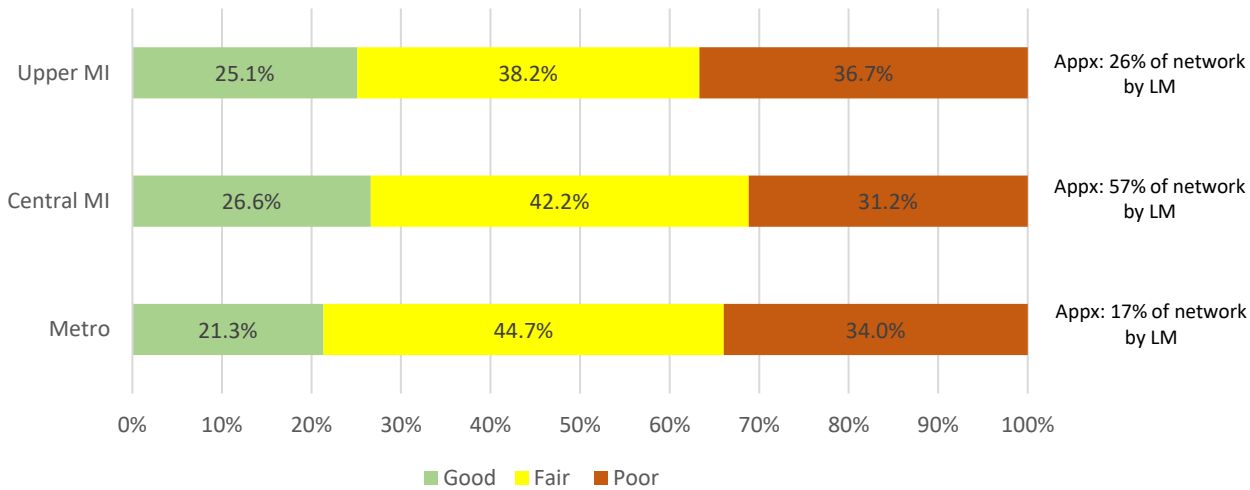
Paved Federal Aid PASER 2012 VS PASER 2022/21



Paved Federal Aid Condition by PCFS Region 2022/2021

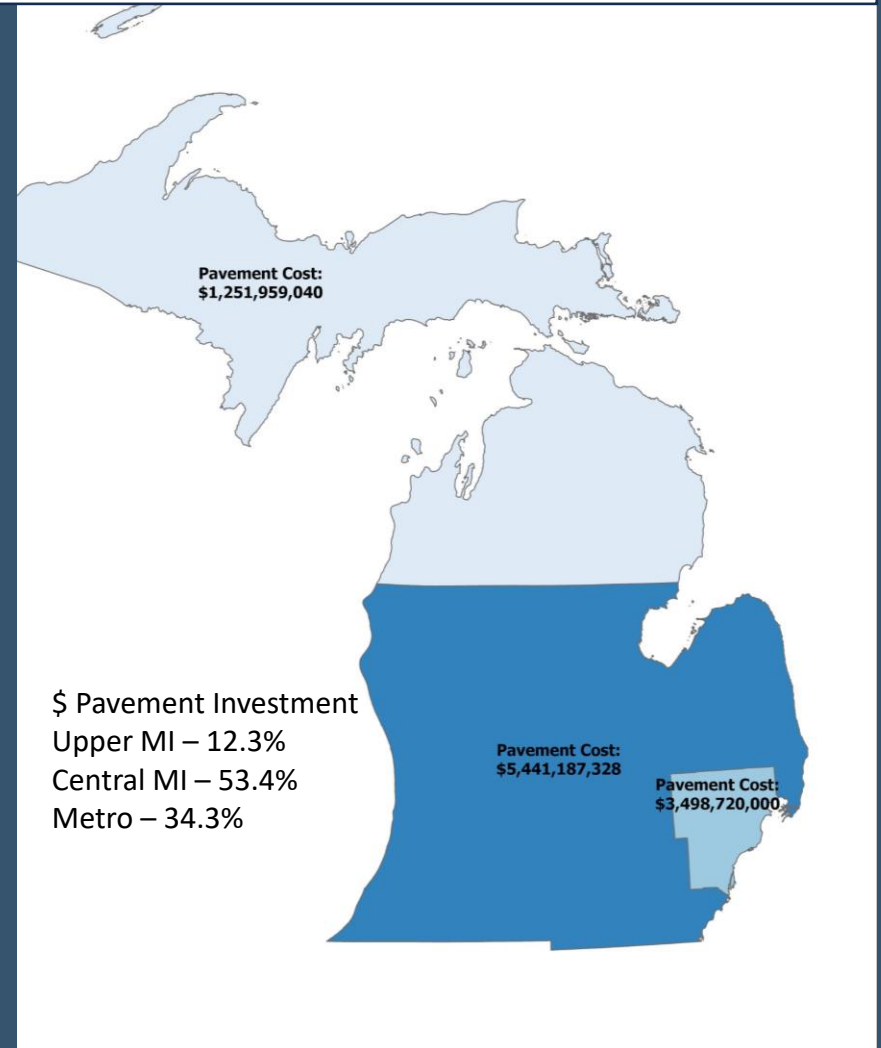
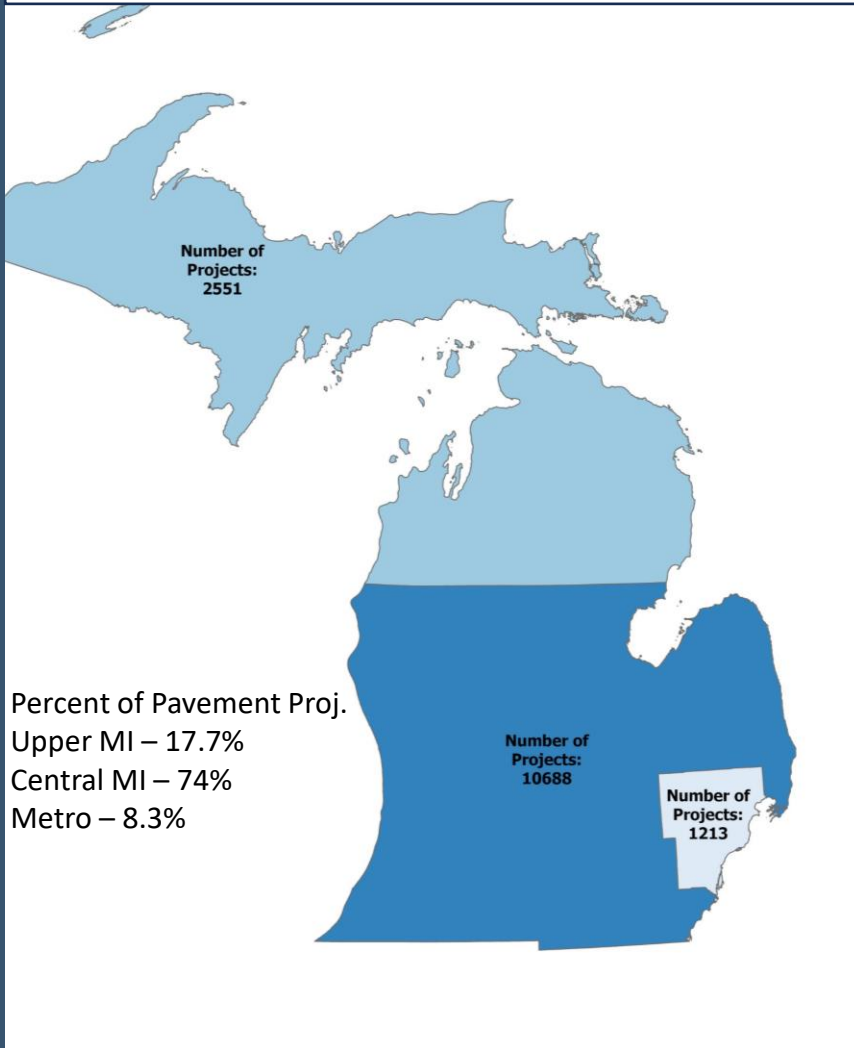


Region Paved Federal Aid G/F/P in LM



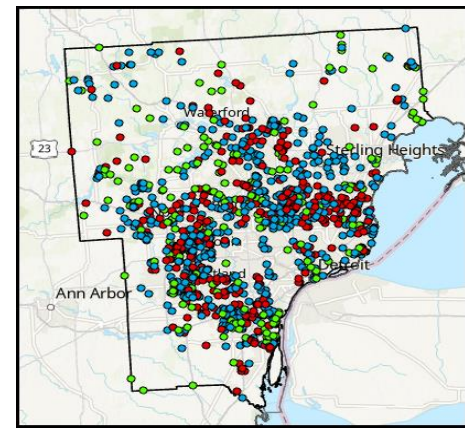
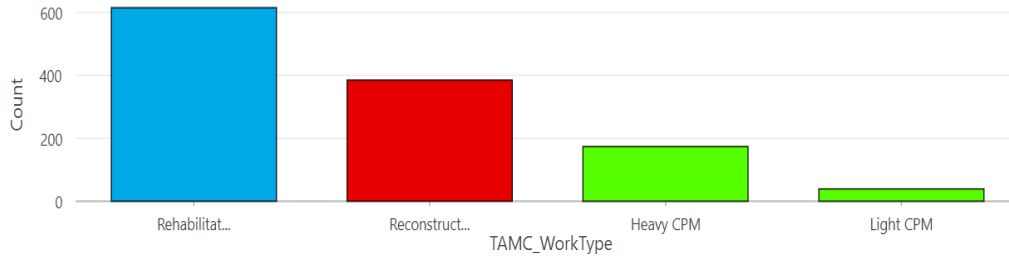
Paved Federal Aid Pavement Investment 2019-2023

(Some IRT projects may not be represented based on time of data snapshot)



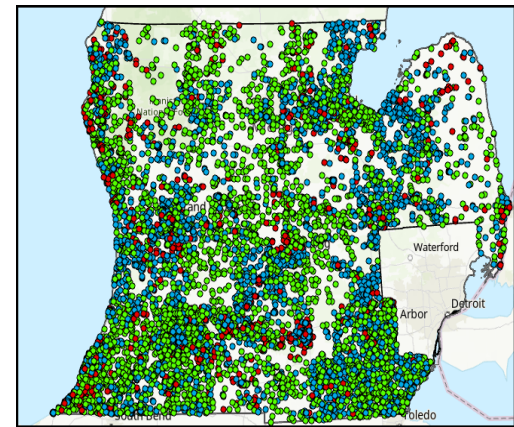
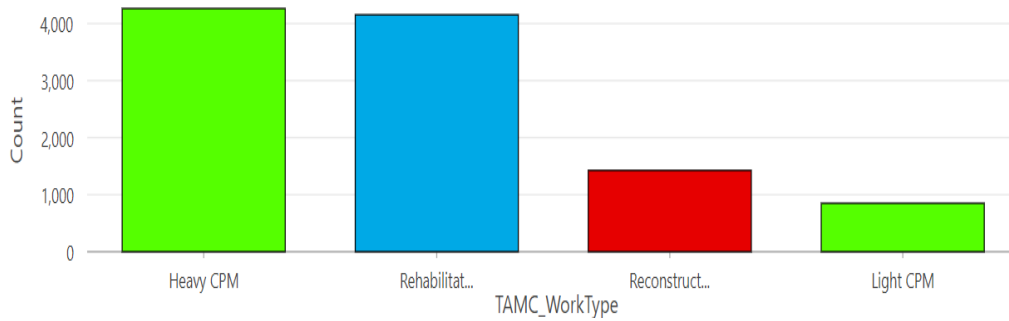
Metro

Comparison of data counts by TAMC_WorkType



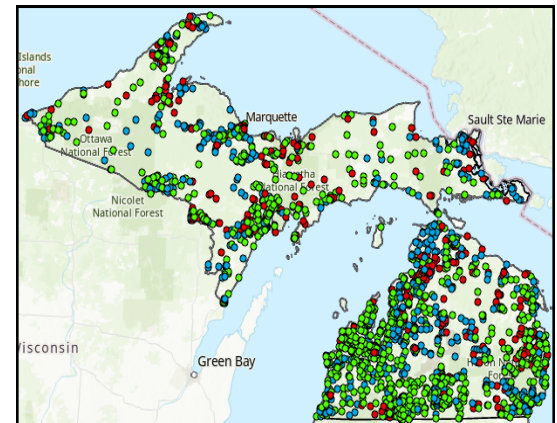
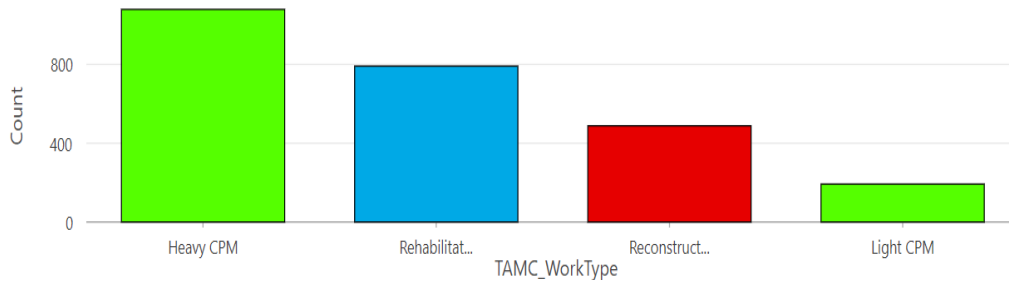
Central MI

Comparison of data counts by TAMC_WorkType

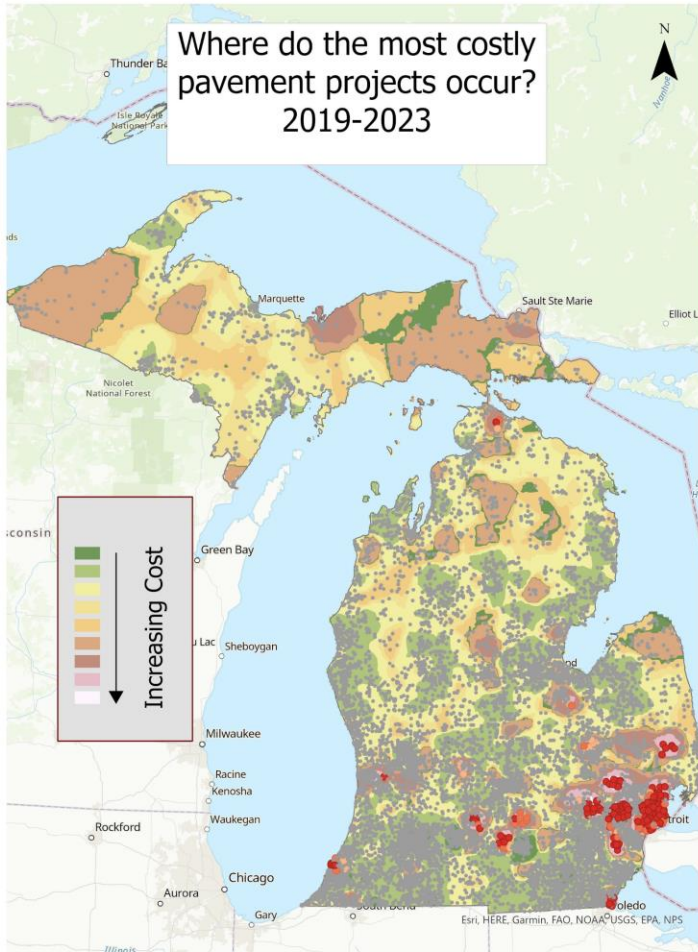


Upper MI MI

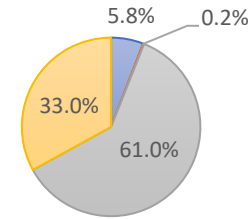
Comparison of data counts by TAMC_WorkType



Where do the most costly pavement projects occur?
2019-2023

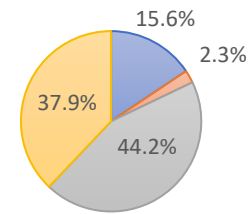


Metro - Percent of Work by Cost



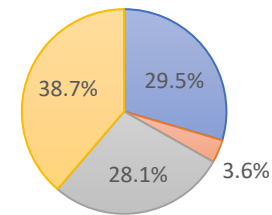
■ Heavy CPM ■ Light CPM ■ Reconstruction ■ Rehabilitation

Central MI - Percent of Work by Cost



■ Heavy CPM ■ Light CPM ■ Reconstruction ■ Rehabilitation

Upper MI - Percent of Work by Cost

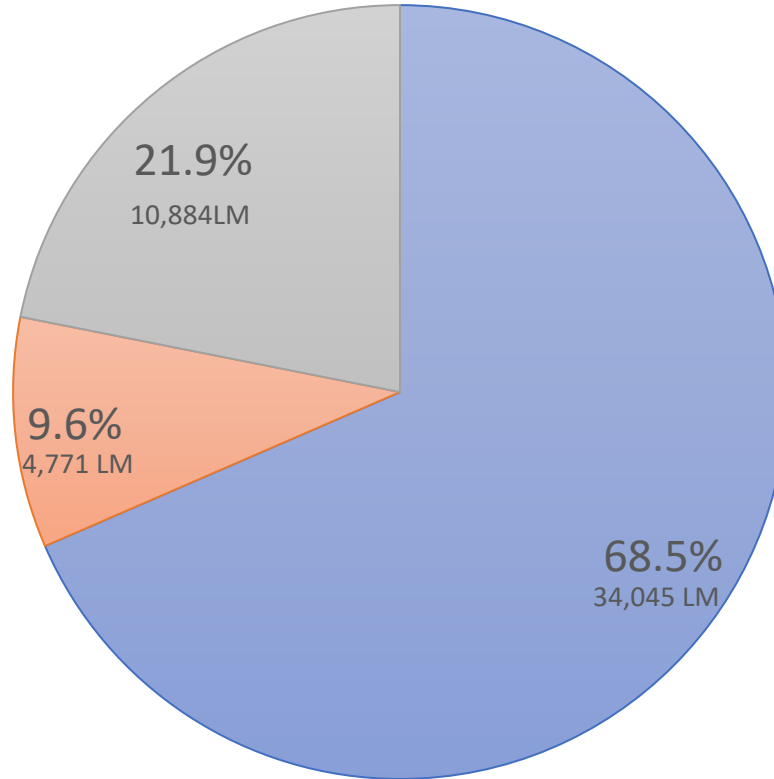


■ Heavy CPM ■ Light CPM ■ Reconstruction ■ Rehabilitation

Percentage of Lane Miles Completed on PFA from 2019-2023
(Approximately 49,700 lane miles completed)

Average Cost/Project

Upper MI – \$491k
Central MI – \$509k
Metro MI - \$2.9M



Average Cost/LM

Upper MI – \$115k
Central MI – \$160k
Metro MI - \$733k

■ Central MI ■ Metro ■ Upper MI

Summary of Paved Federal Aid System

Average Statewide PASER Rating: 5.8 (weighted by LM)

The combined PFA PASER dataset (2021 and 2022) covers 98% of the PFA network

QR analysis shows that collection was accurate with an average difference rating of .08 with 68% of the collection being within +/- 2 PASER ratings

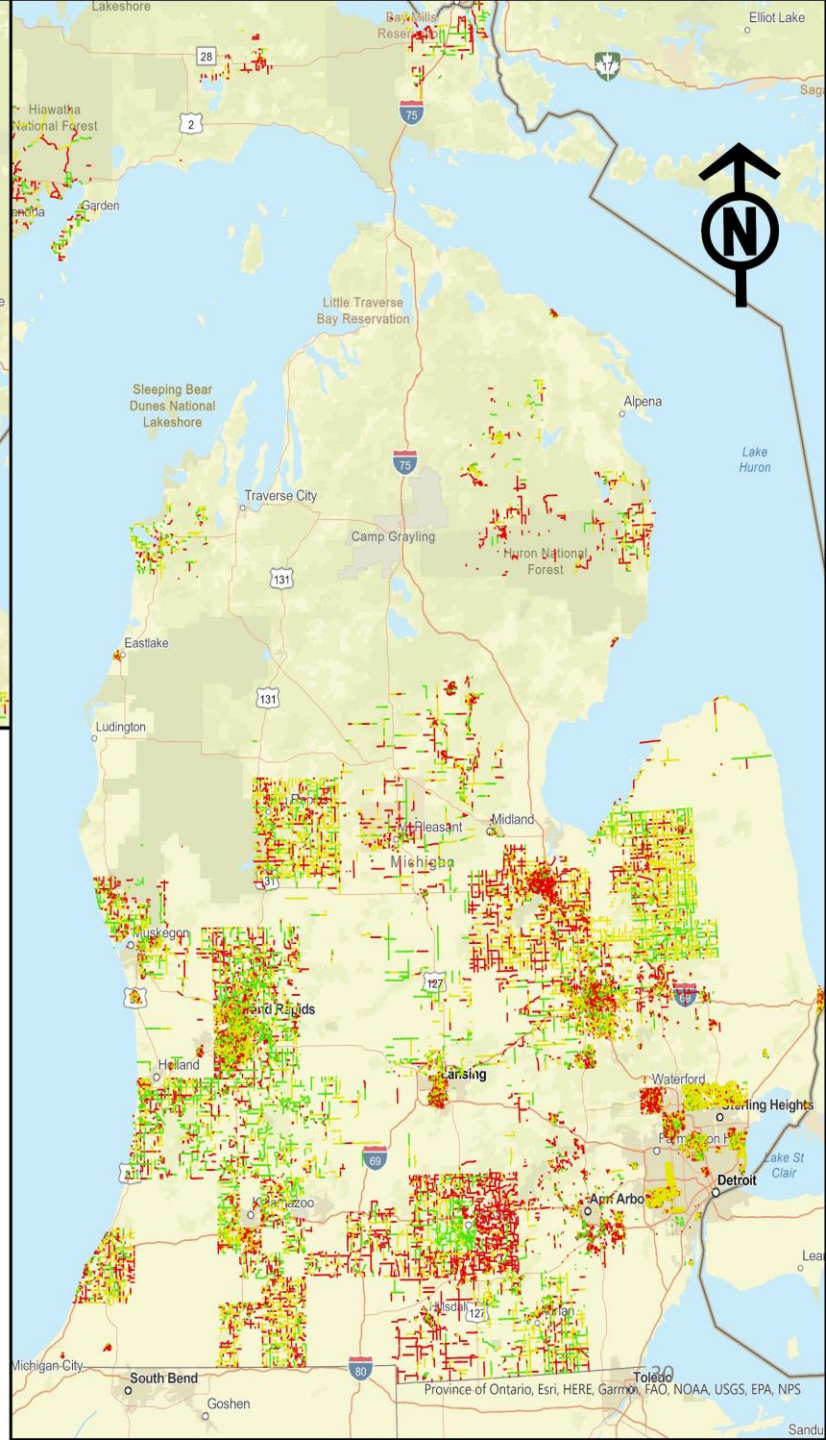
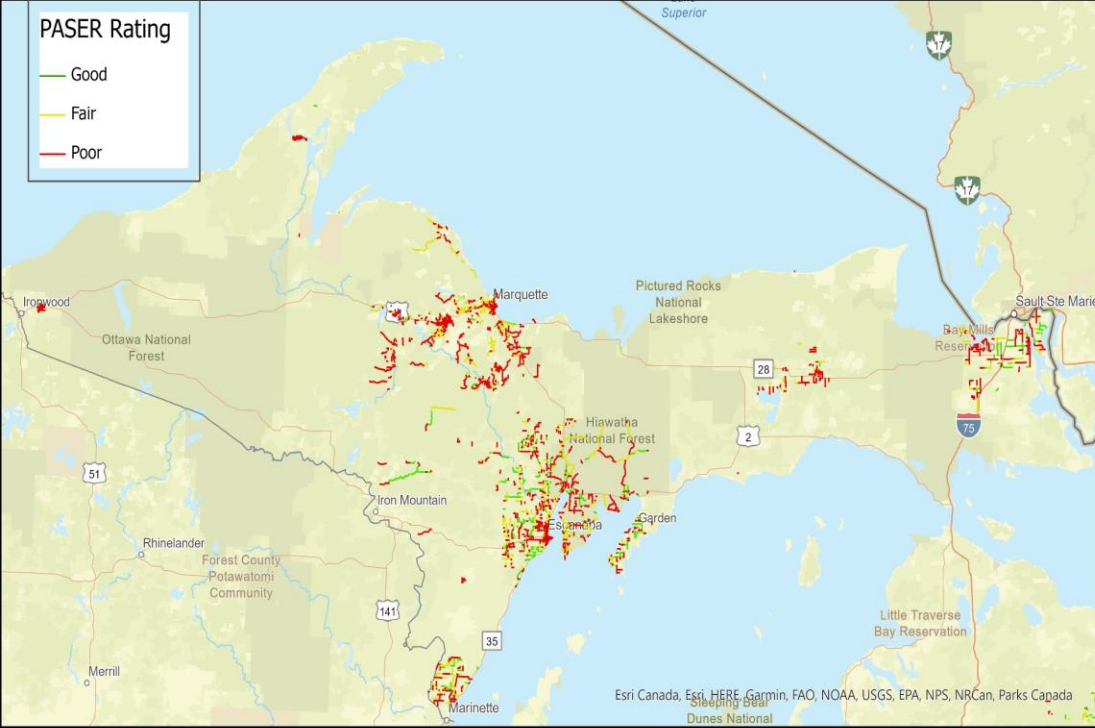
Approximately .4% (375LM) increase in poor pavement from the 2021 collection

The increase in poor pavement from 2021 to 2022 is concentrated on the trunkline system and on the freeway and arterial NFCs.

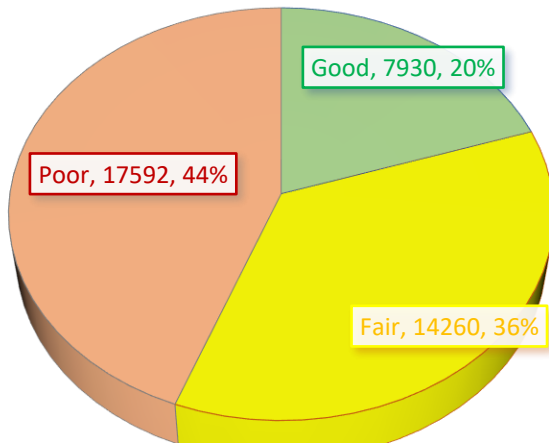
Metro region focusing on reconstruction and rehabilitation program. Upper and Central MI regions focusing on PM and rehabilitation programs.

PASER Rating

- Good
- Fair
- Poor



NON FEDERAL AID ROADS CONDITION (IN LANE MILES) IN 2021/2022

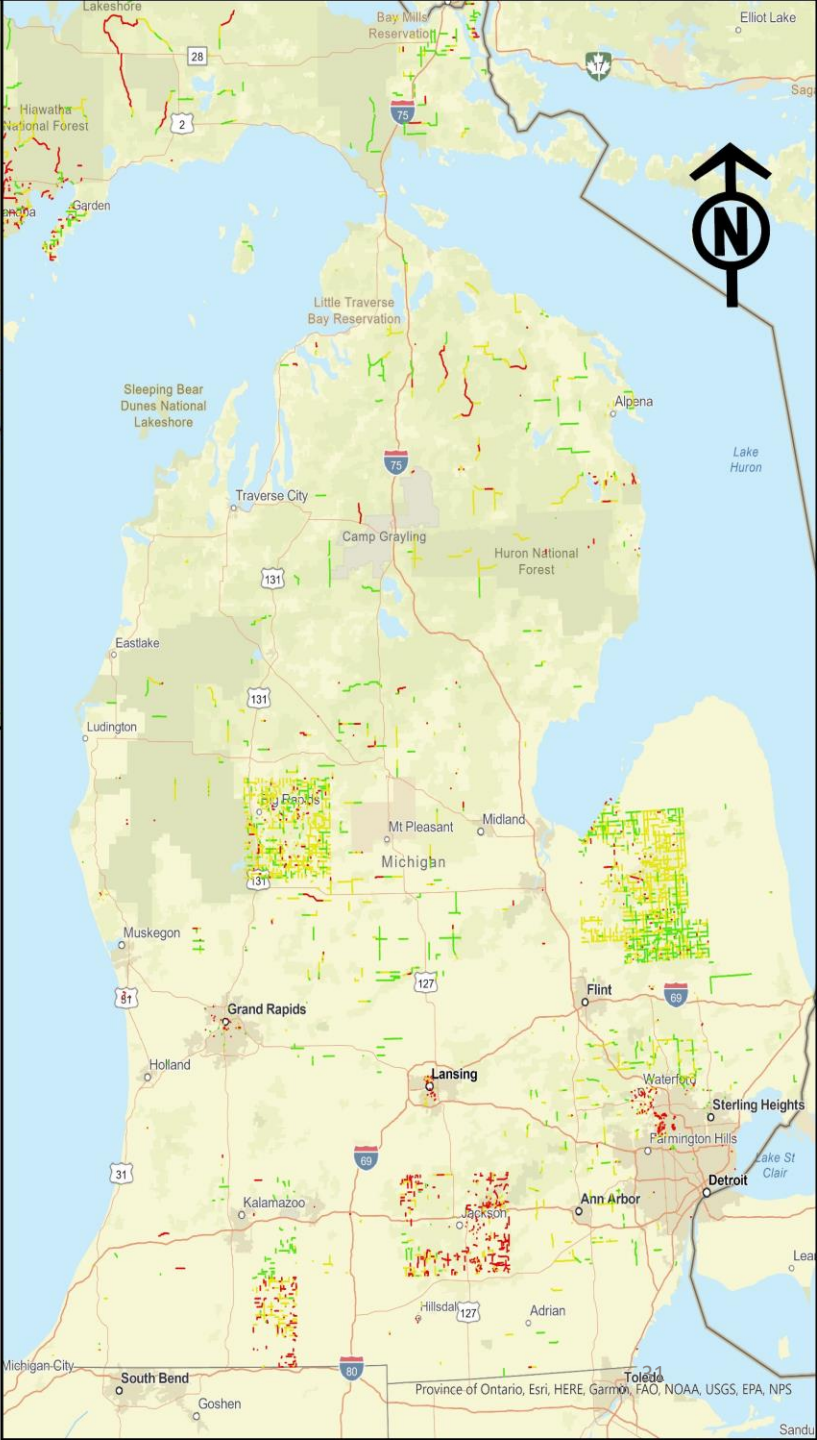
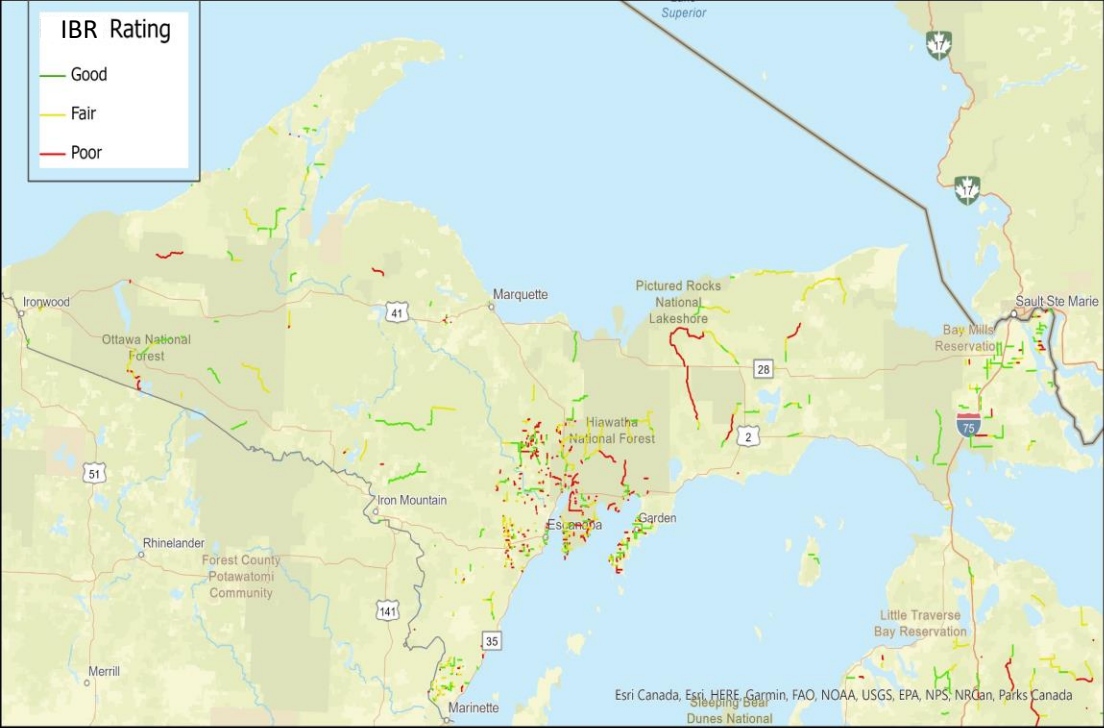


39,782 Total Lane Miles (19%) of Approx 207,600 LM

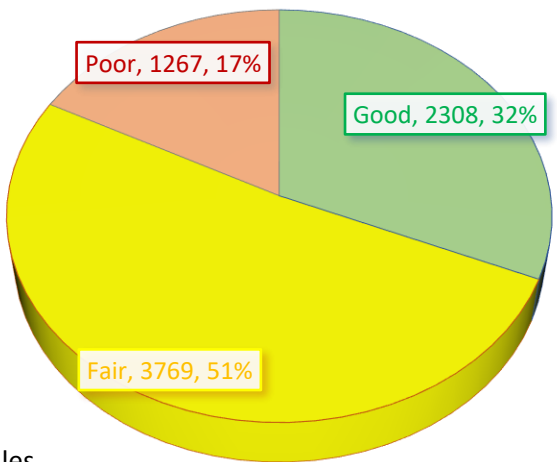
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IBR Rating

- Good
- Fair
- Poor



GRAVEL ROADS CONDITION (IN LANE MILES) IN 2021/2022



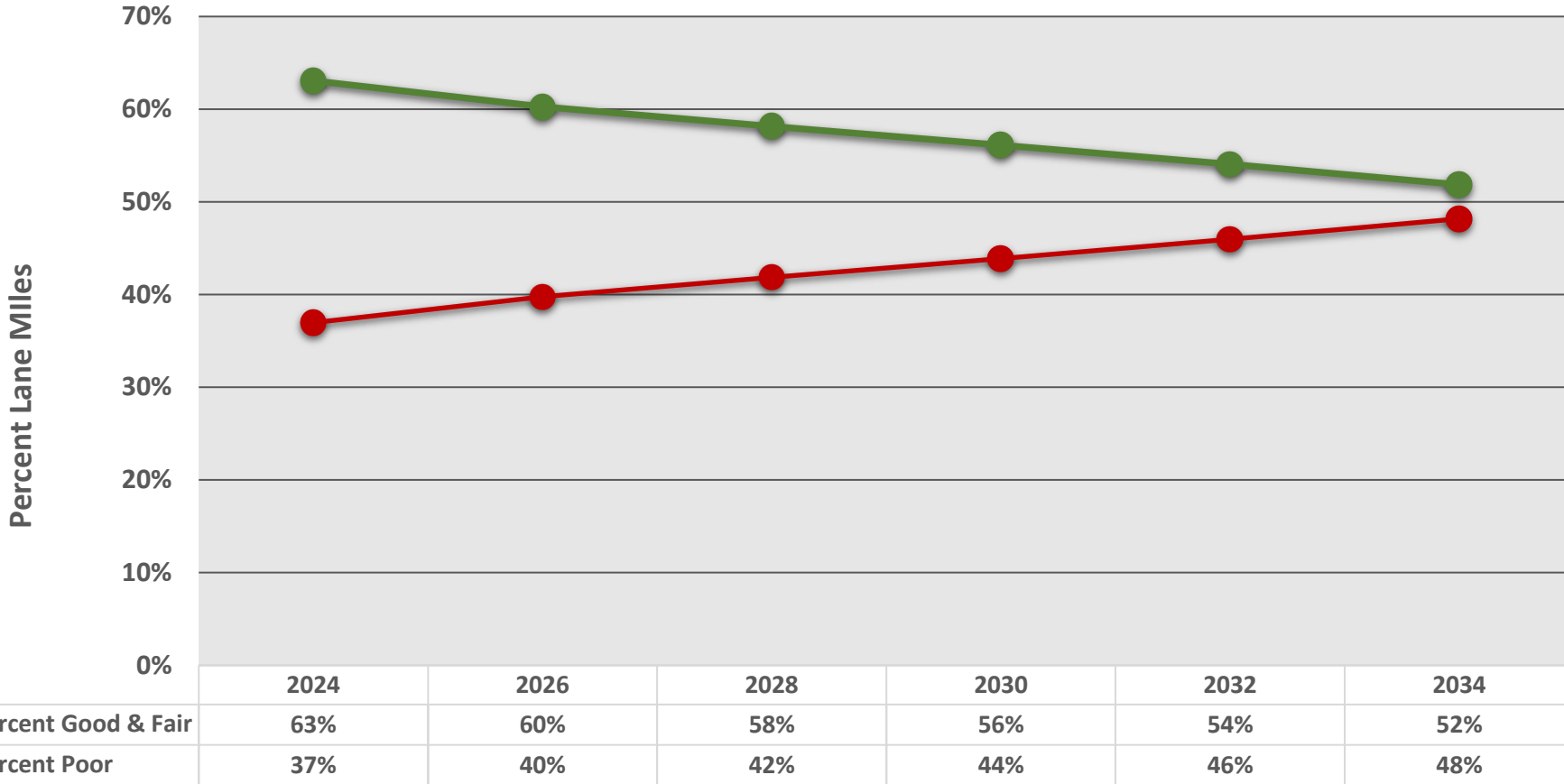
7,344 Total Lane Miles

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Pavement Forecast

2034 Condition Forecast: Paved Fed-Aid Roads



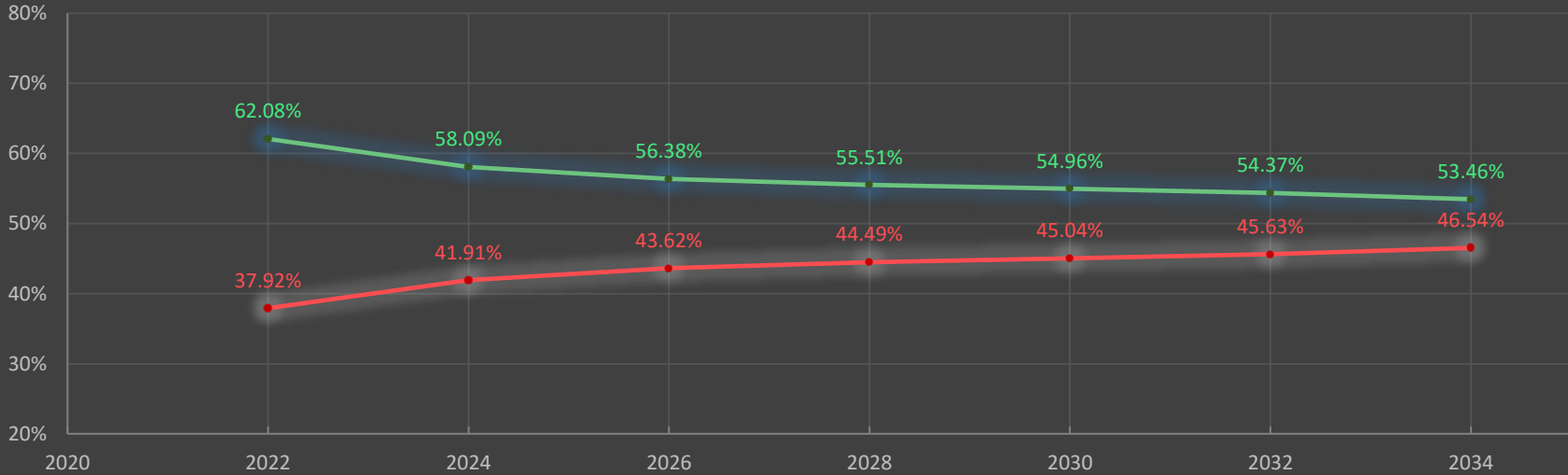
2033 →
Forecast

2023	2025	2027	2029	2031	2033
65%	62%	59%	57%	55%	52%
35%	38%	41%	43%	45%	48%

*2022/21 Starting Condition 66.9% good/fair

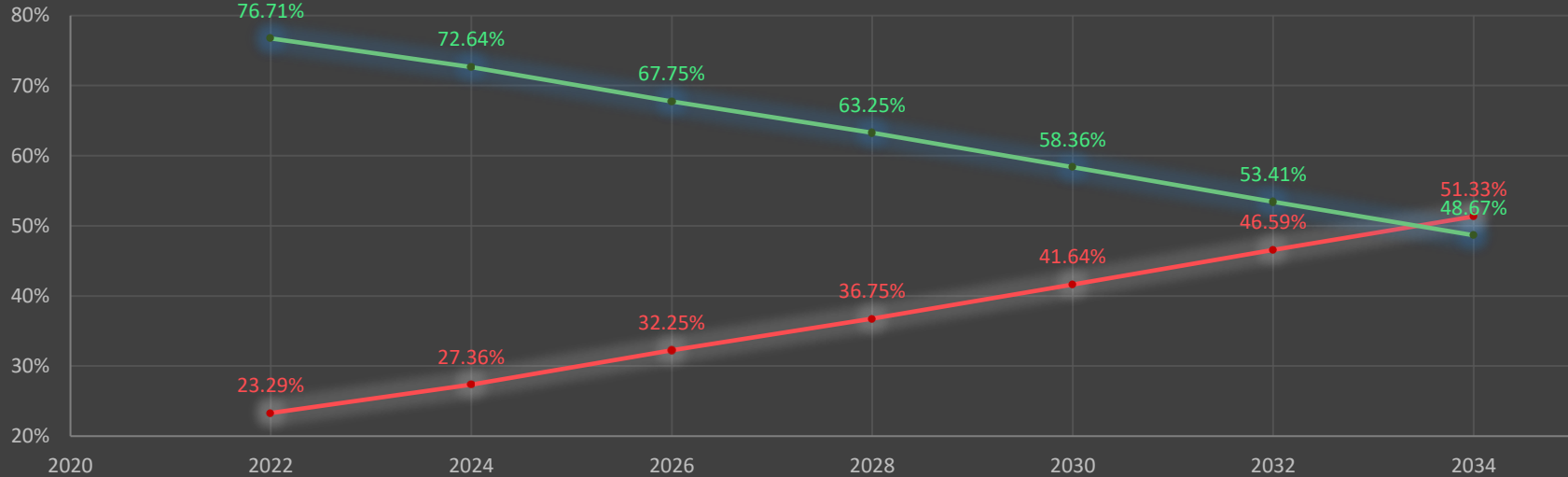
Local Statewide PFA Forecast

Percent Poor Percent Good & Fair

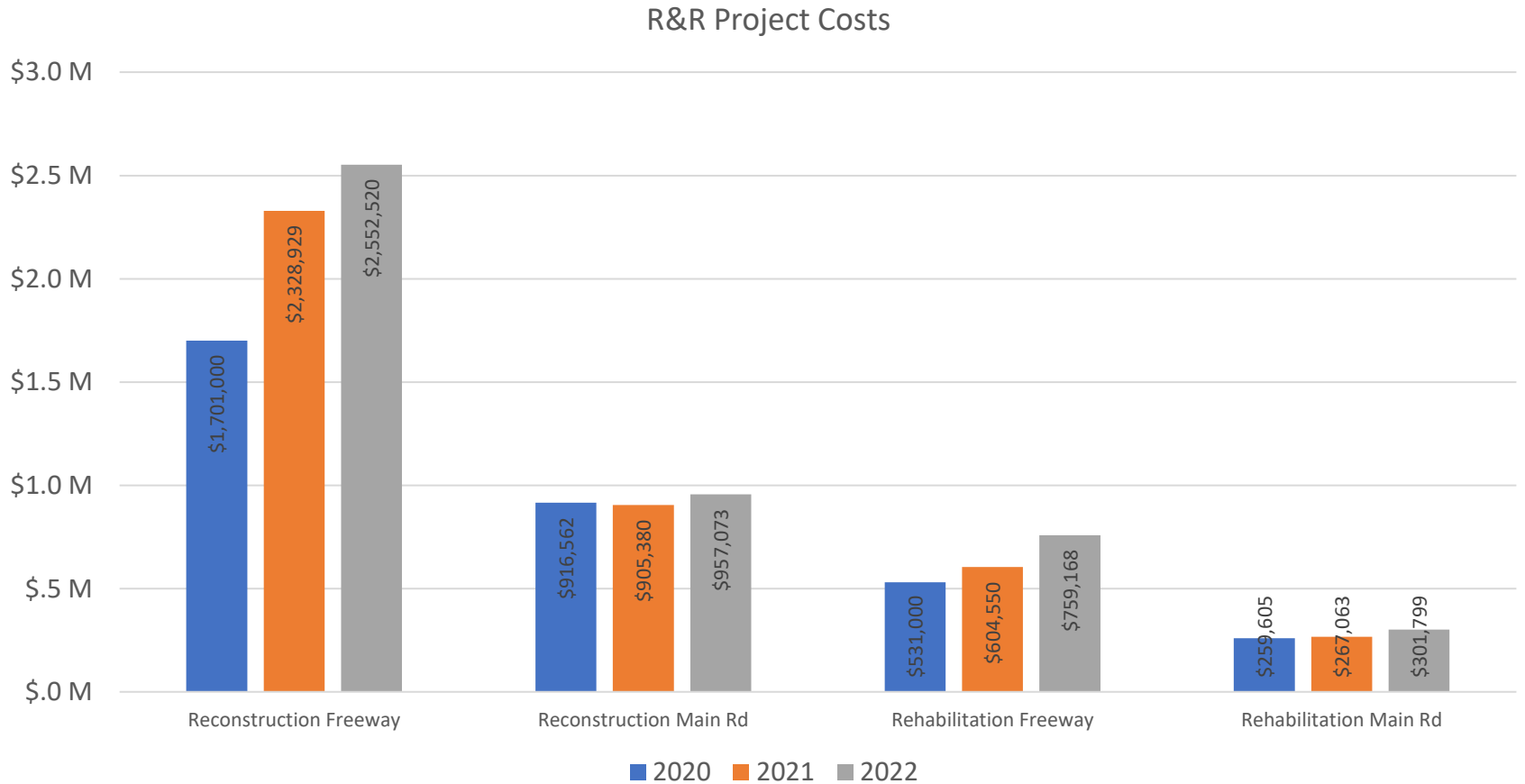


Trunkline Statewide PFA Forecast

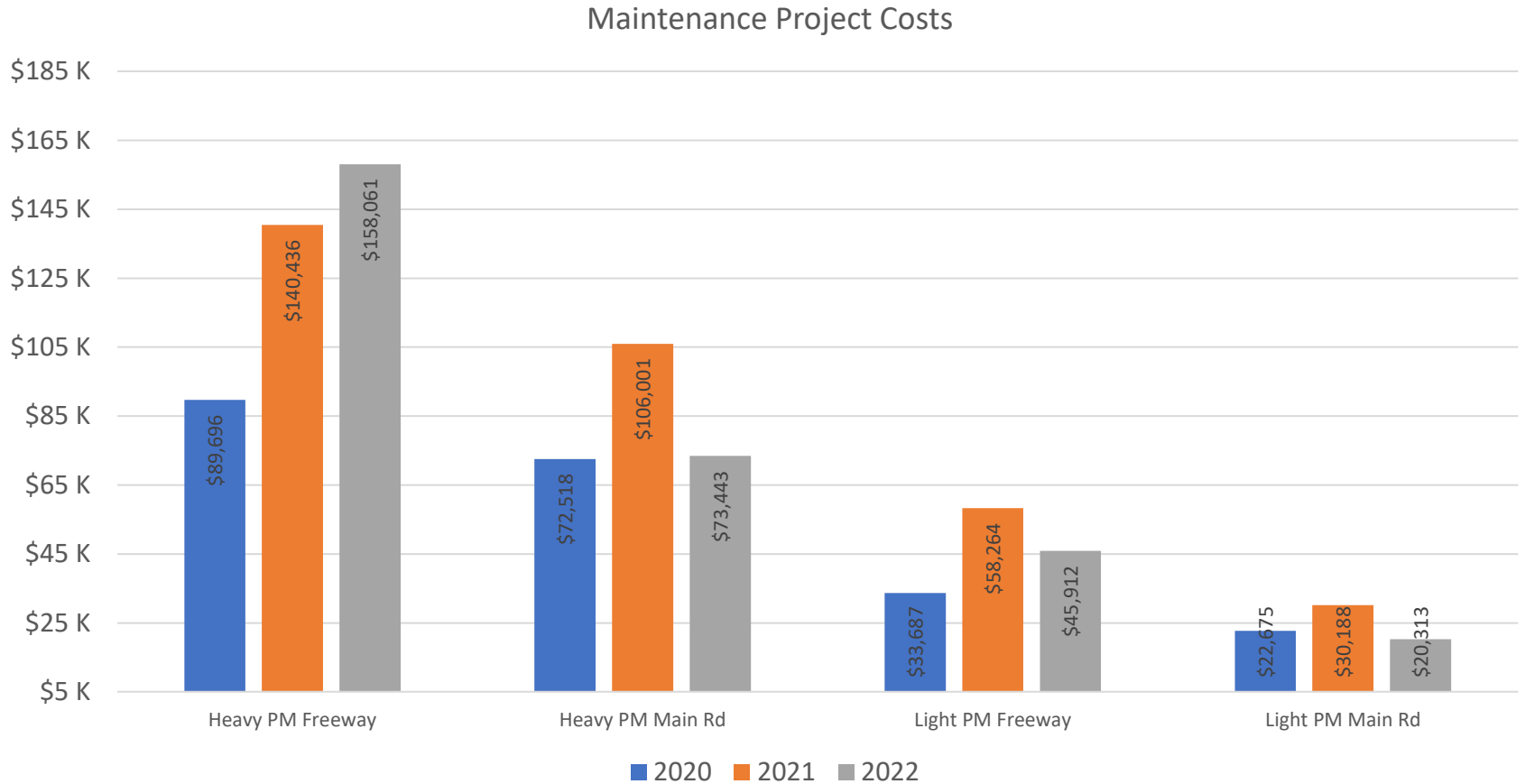
Percent Poor Percent Good & Fair



PCFS Input – Project Costs



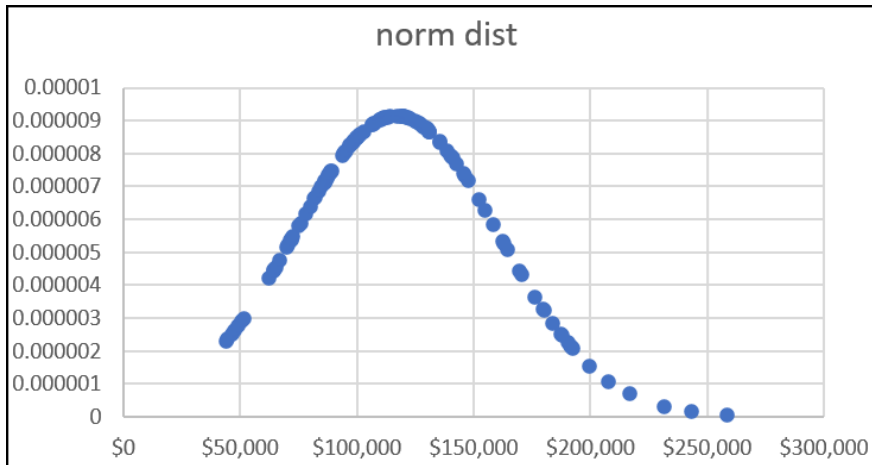
PCFS Input – Project Costs



Project Counts and Normalized Distribution

PCFS Input – Project Costs Continued

Example Only



Number of Projects Used for Statewide Numbers

Row Labels	Average of Cost/LM	Count of Job_Type
Freeway	\$871,560	146
Heavy CPM	\$158,061	54
Light CPM	\$45,912	22
Reconstruction	\$2,552,520	36
Rehabilitation	\$759,168	34
Main Rd	\$262,788	5684
Heavy CPM	\$73,443	2321
Light CPM	\$20,313	553
Reconstruction	\$957,073	708
Rehabilitation	\$301,799	2102
Grand Total	\$278,033	5830

Investment Strategies

- Local – In general, most regions (outside of metro) are pulling back on their reconstruction investments and shifting more toward rehab and functional enhancement work.
- Trunkline – Metro continues heavy investment in freeway reconstruction. Also, increased investment in arterial reconstruction. In general, central region is decreasing future recon investment and investing more in rehab and functional enhancement work. In general, North/Superior is decreasing surface seal work (and arterial network rehab) and redistributing to functional enhancements (heavy rehab).
- Overall Trend – Beginning to shift from higher reconstruction investment toward heavy PM and rehabilitation work in most regions/networks. Some regions are continuing recon investment seen in prior forecast.

Thank you!

