

2015-2024 Trends of Bicycle Crashes in Michigan Counties

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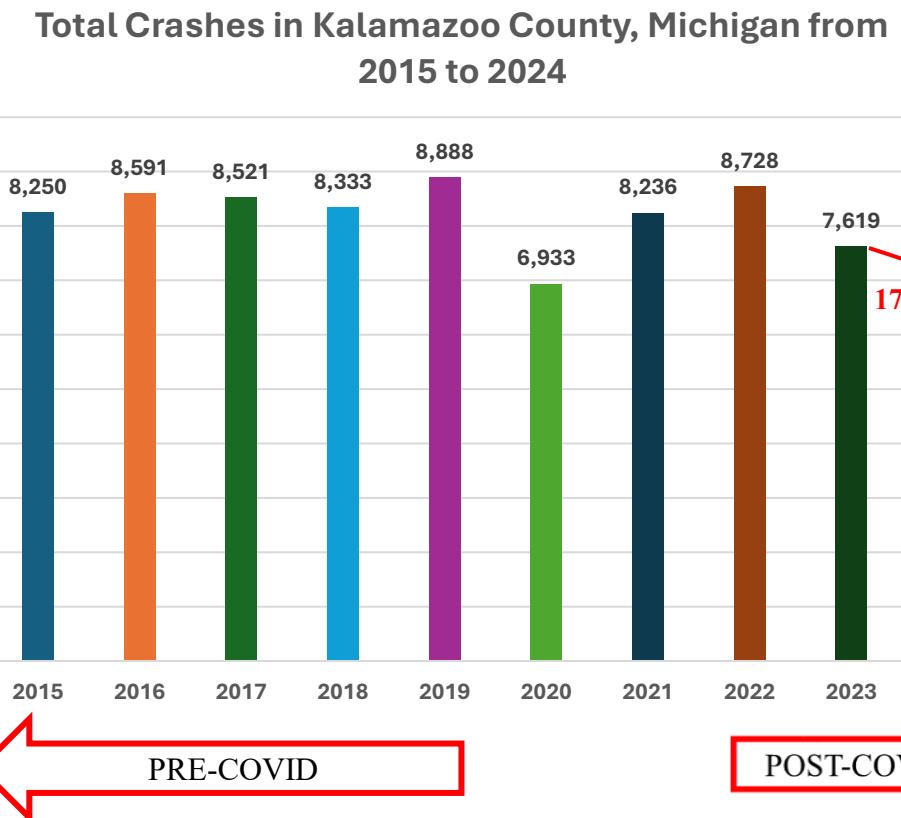
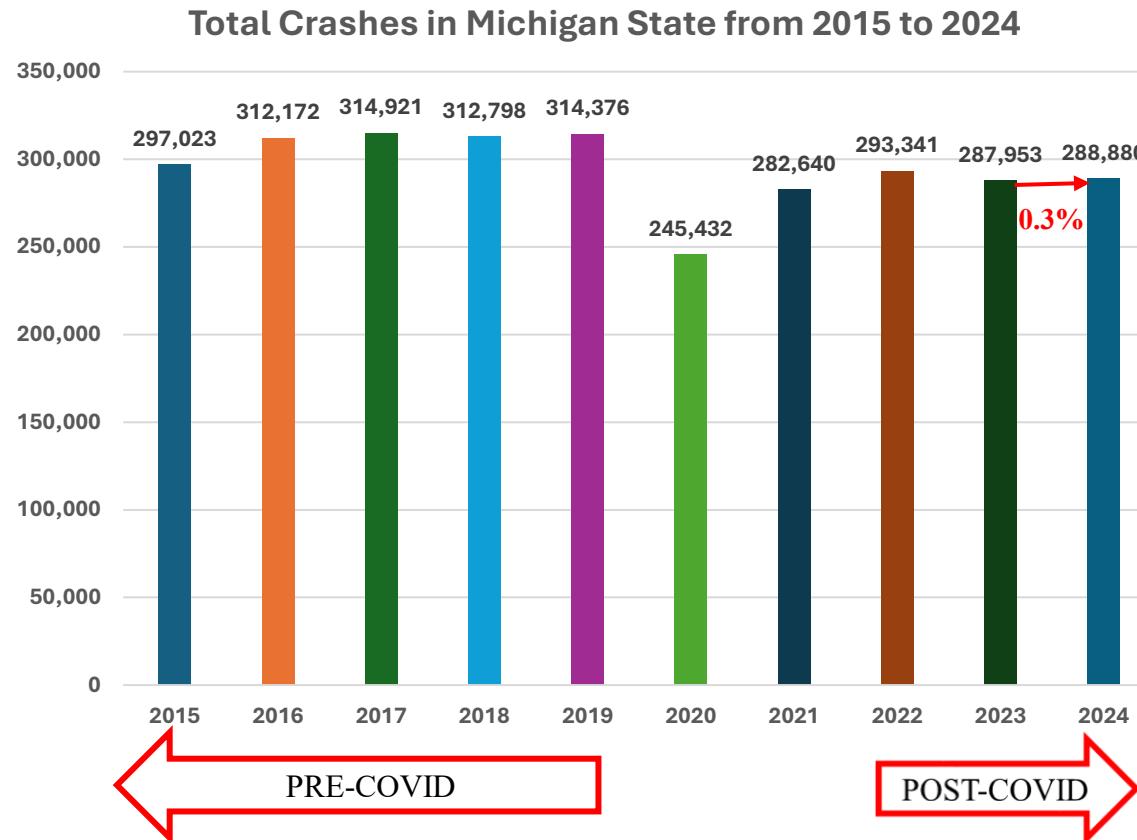
Western Michigan University



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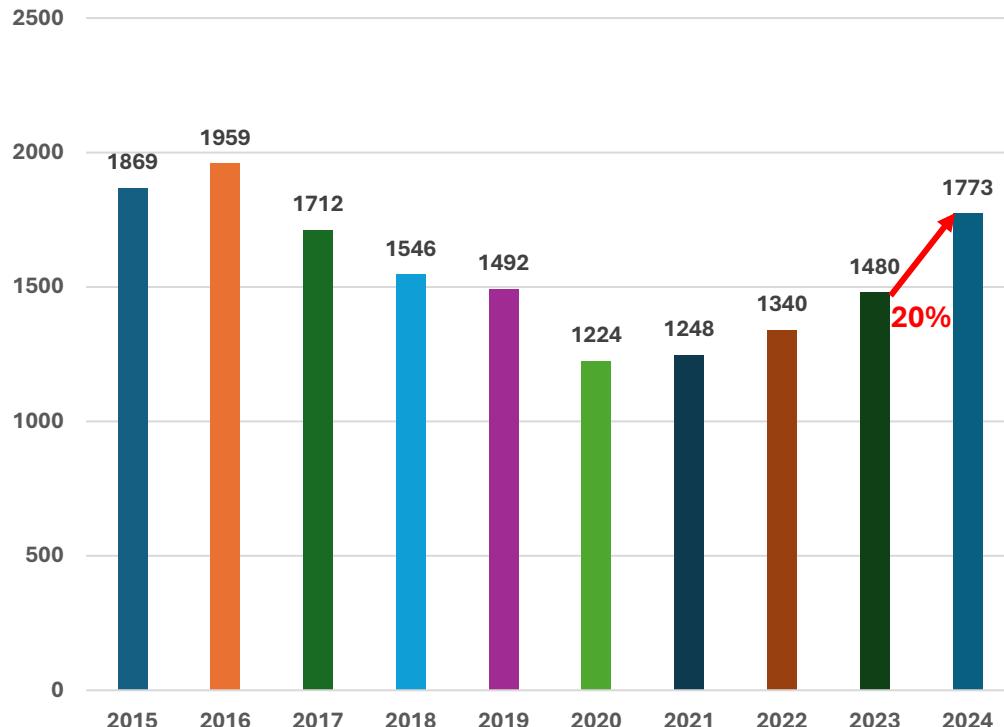
Total Crash Trends in Michigan and Kalamazoo County



- Statewide reports for 2024 showed a slight increase of 0.3% in total crashes across Michigan, while Kalamazoo County declined significantly by 17%, when compared to 2023.
- There is no clear crash pattern statewide while crashes in Kalamazoo County have **decreased consistently after COVID**.

Bicycle Crash Trends in Michigan and Kalamazoo County

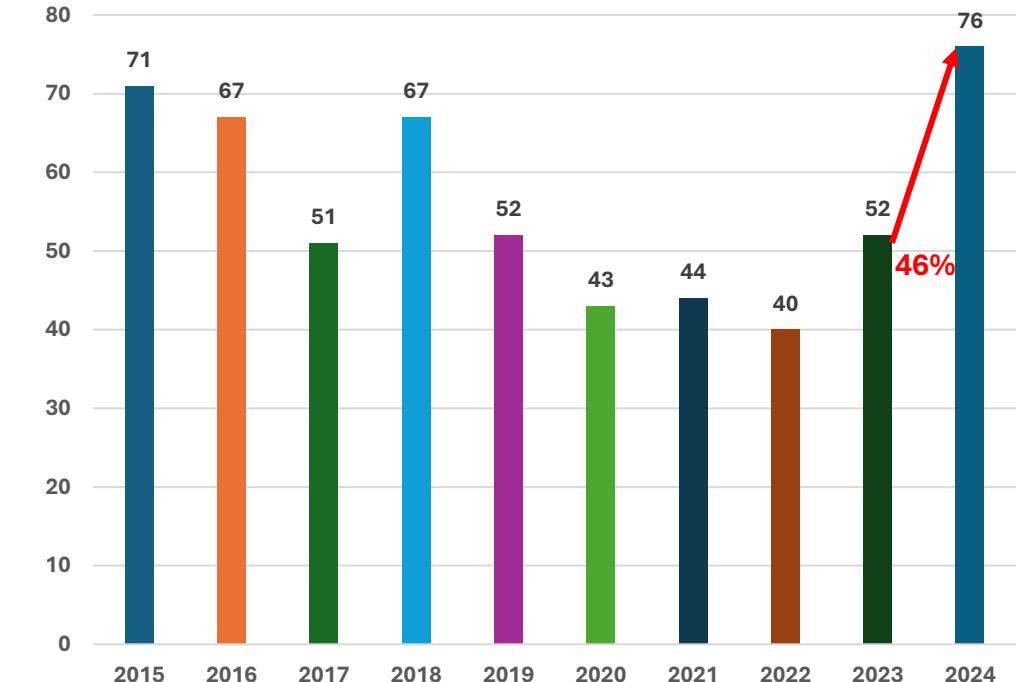
Bicycle Crashes in Michigan from 2015 to 2024



PRE - COVID

POST - COVID

Bicycle Crashes in Kalamazoo County, Michigan from 2015 to 2024



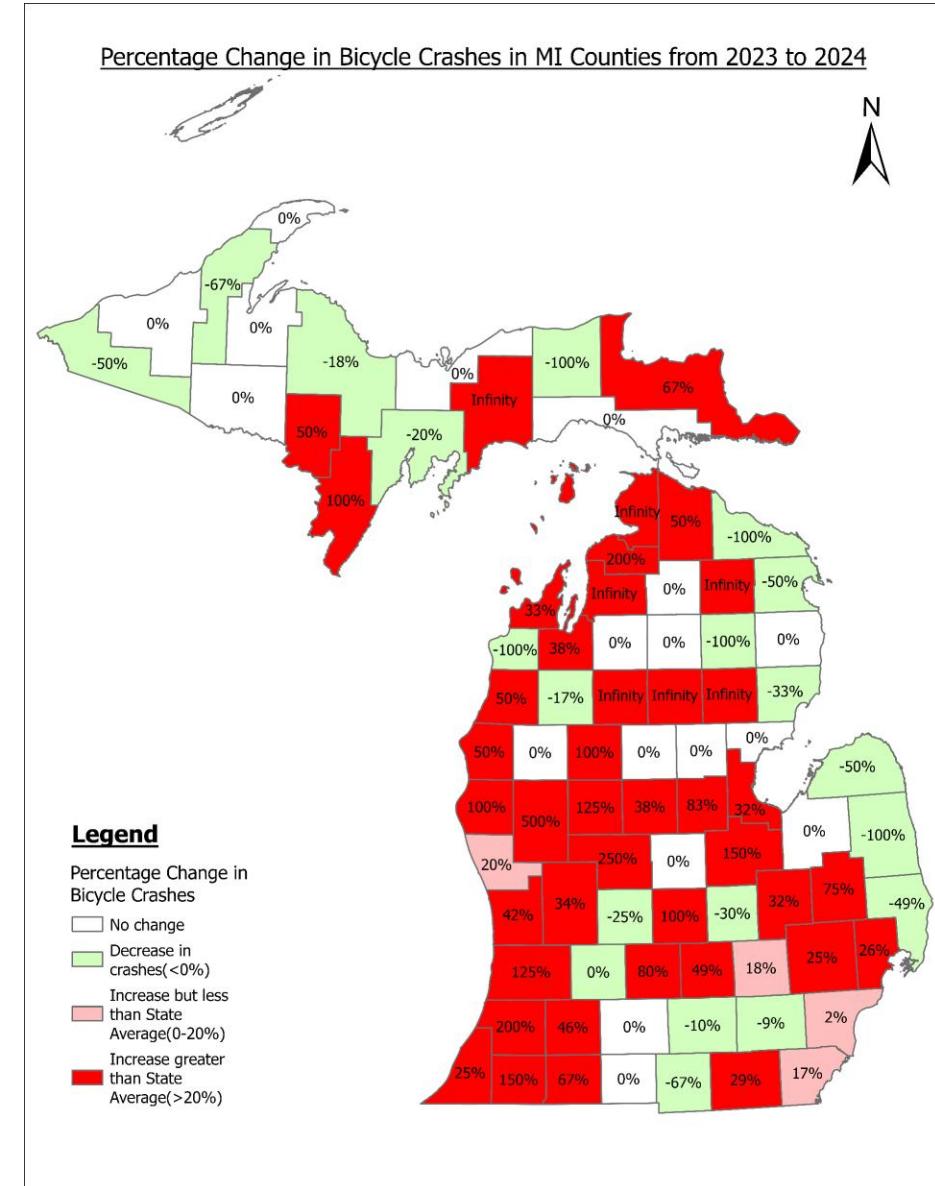
PRE - COVID

POST - COVID

- Statewide reports for 2024 showed a 20% increase in bicycle crashes across Michigan, with **Kalamazoo County experiencing a rise of 46%**, compared to 2023.
- Overall, bicycle crashes trended downwards pre-COVID but upward post-COVID statewide. However, **Kalamazoo County shows a steep increase rate post-COVID (with a record high in 2024)**.

2023-2024 Bicycle Crash Changes Across Michigan Counties

- Many counties depicted rising bicycle crashes, with several above the 20% state average.
- Note that percentage changes in counties with very few crashes may be an unreliable measure.

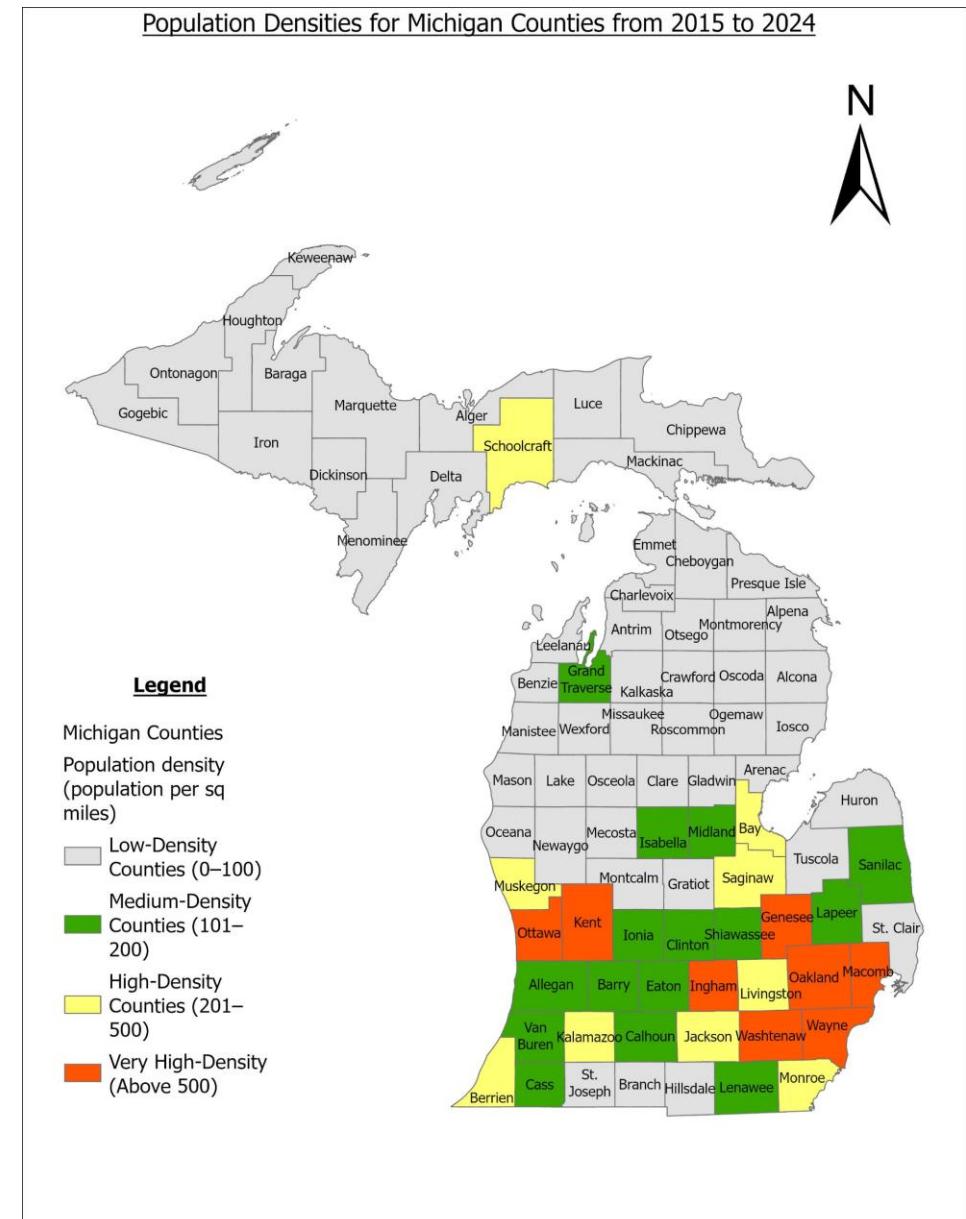


Grouping Michigan Counties by Population Density

- The number of counties in each category:

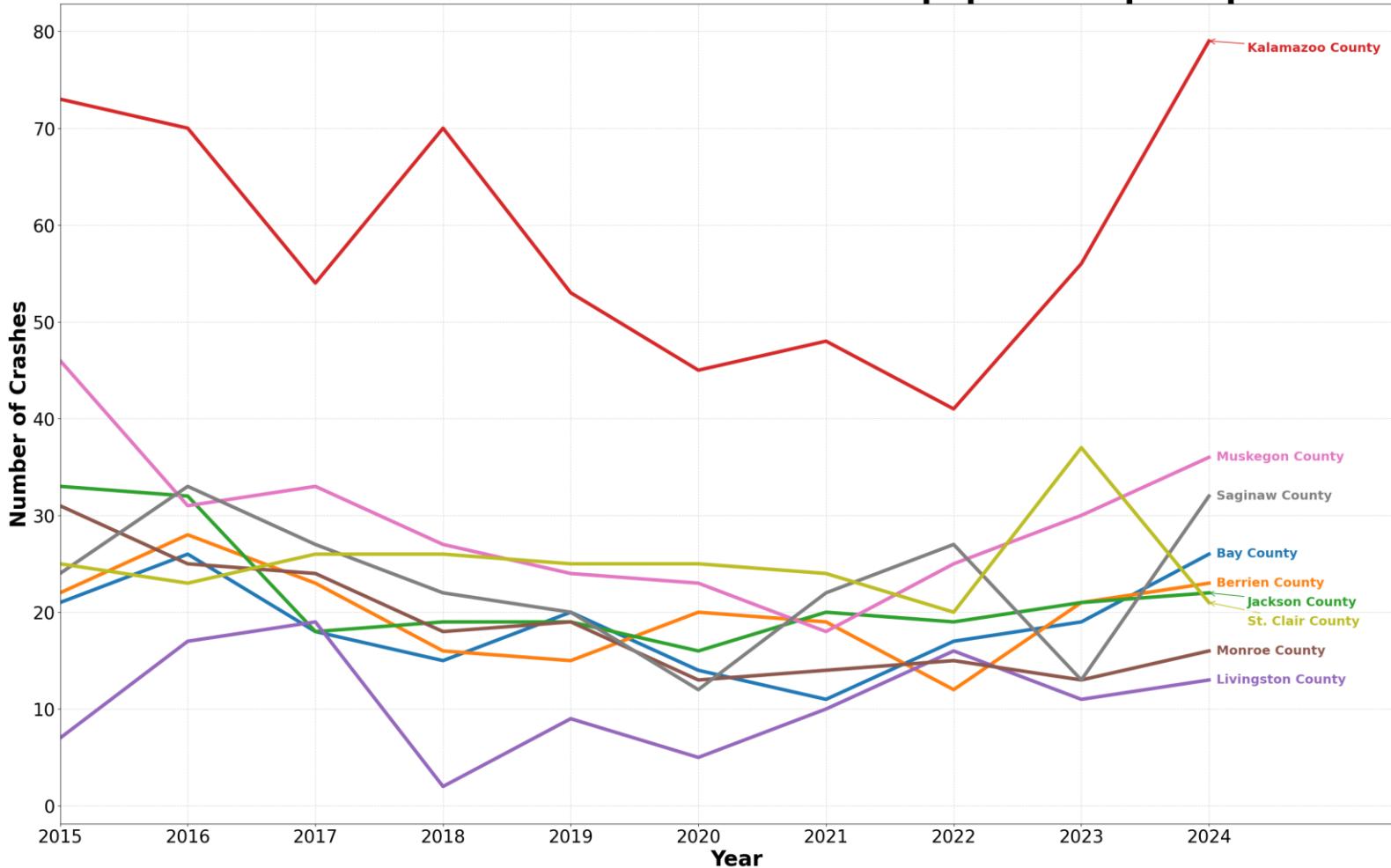
Low-Density (0-100 people/sq. mi)	51
Medium-Density (101-200 people/sq. mi)	15
High-Density (201-500 people/sq. mi)	9
Very High-Density (>500 people/sq. mi)	8

- Difference in population density has implication on the number of crashes observed.
- Comparative analysis should focus on categories of counties.



Variation in Crash Counts Across High-Density Counties (2015–2024)

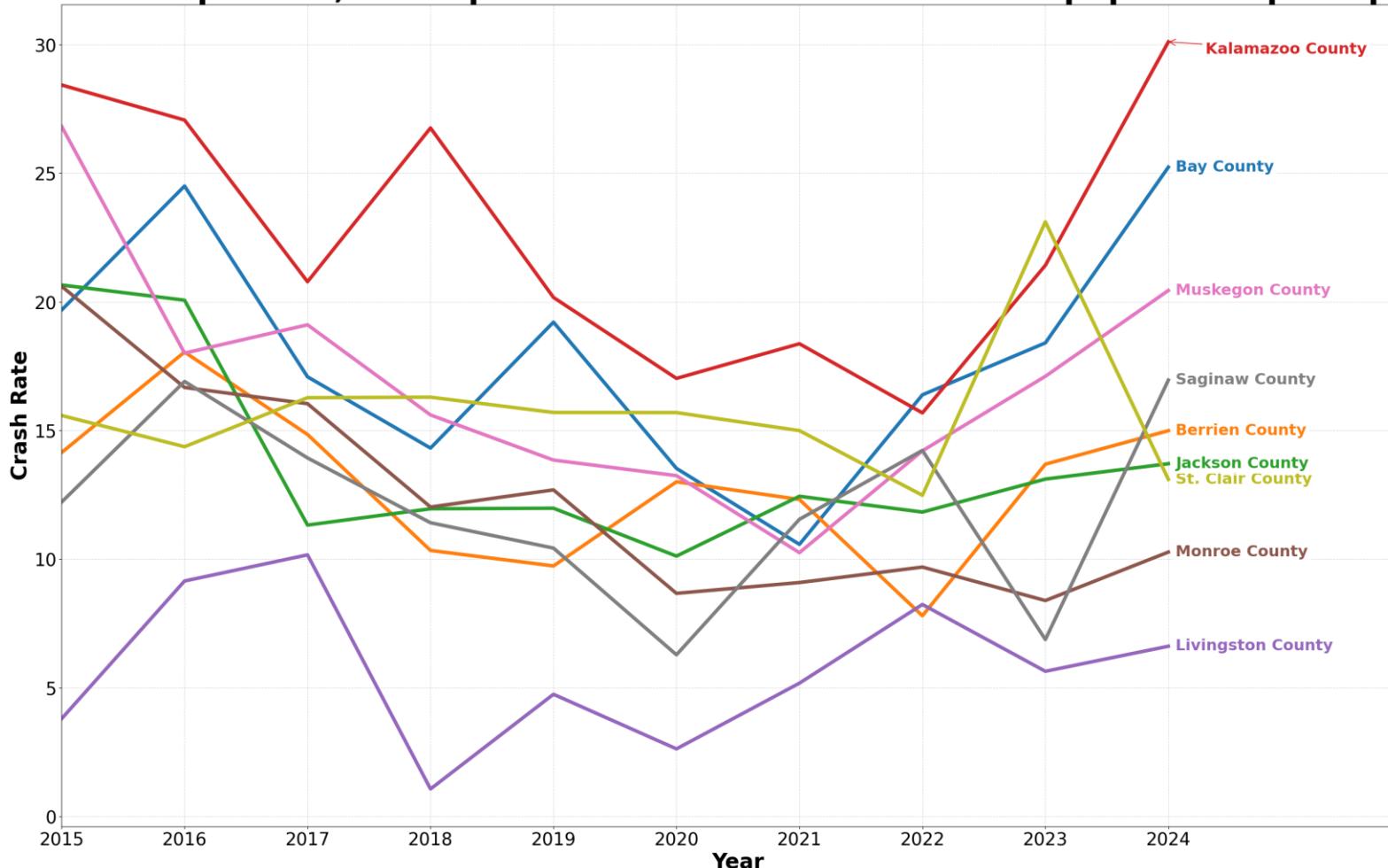
Number of Crashes - Counties with 201-500 population per sq miles



- Crashes trended downwards during pre-COVID but upward during post-COVID across several counties.
- Some counties depicted no clear trends such St. Clair, Saginaw and Livingston County.
- Post-COVID crashes are increasing but remain below pre-COVID levels except for Kalamazoo and Bay County.

Variation in Crash Rates Across High-Density Counties (2015–2024)

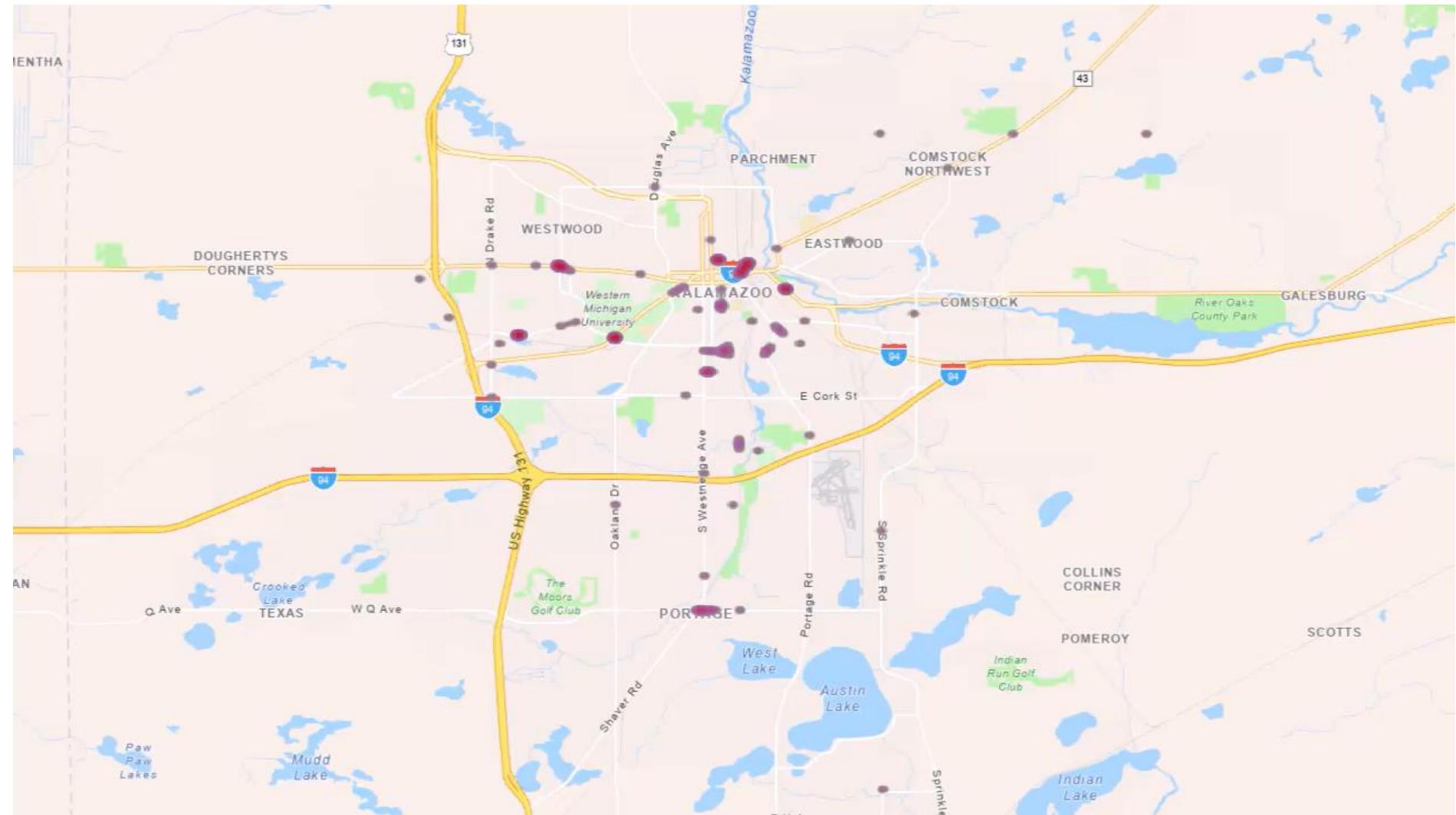
Crash Rate per 100,000 Population - Counties with 201-500 population per sq miles



- Crash rates declined during pre-COVID but rose during post-COVID.
- The crash rate trends were inconsistent in some counties such as St. Clair, Livingston, and Saginaw County.
- Post-COVID crash rates exceeded pre-COVID rates in counties like Kalamazoo and Bay, while counties such as Muskegon, Jackson, and Berrien remained below pre-COVID rates.

Video Showing the Spatial Trend of Bicycle Crashes in Kalamazoo from 2015 to 2024

- Bicycle crashes have not been concentrated in same locations through the years.



Potential Further Research

- How to **reliably measure** bicycle exposure
- Examining the potential contributing factors of crashes involving bicyclists while comparing pre- and post-COVID period.
- Analyzing crash locations particularly at intersections, driveways, crosswalks and sidewalks.
- Investigating crash patterns by time of day, day of week, lighting conditions, etc.
- Assessing the social demographics of the bicyclists involved in those crashes.
- Evaluating injury severity with respect to the bicycle infrastructure.