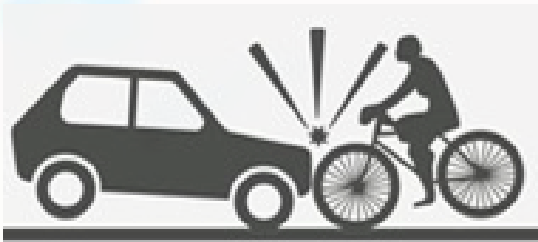


# 2015-2024 Trends of Bicycle Crashes in Michigan Counties

**Valerian Kwigizile, Ph. D., P. E.  
Upendo Bitaliho**

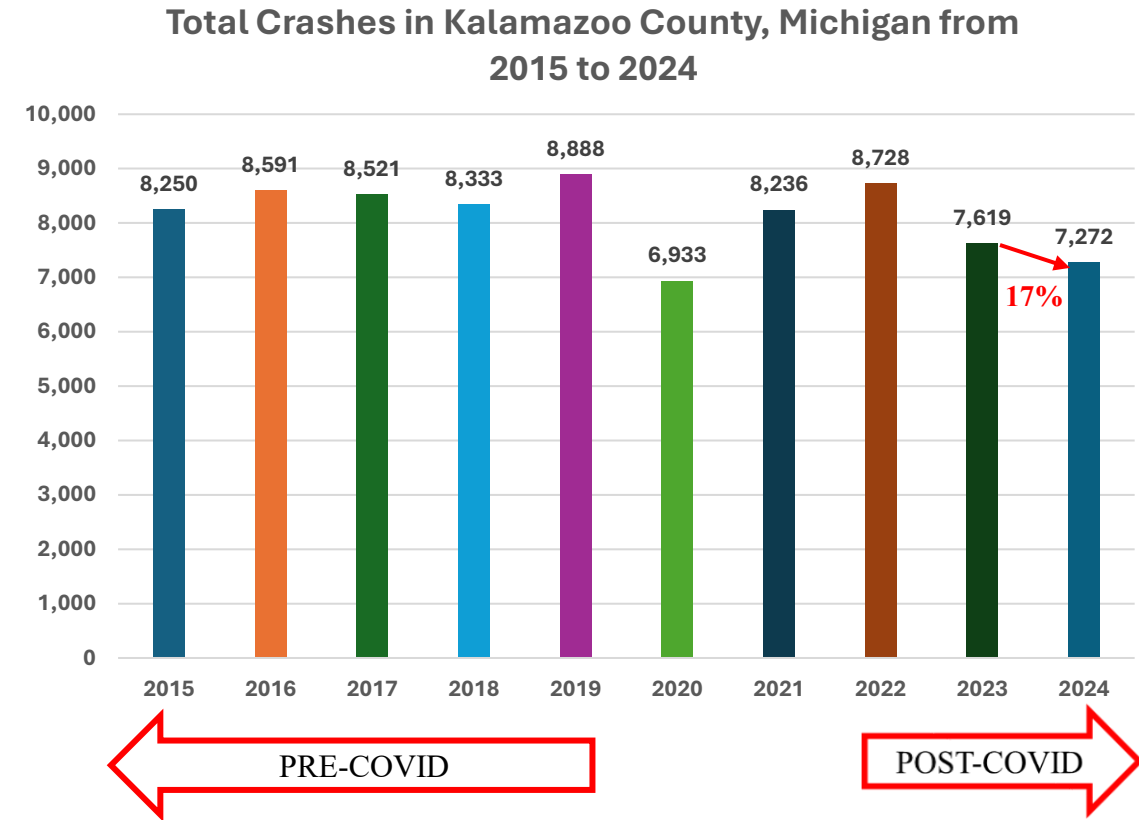
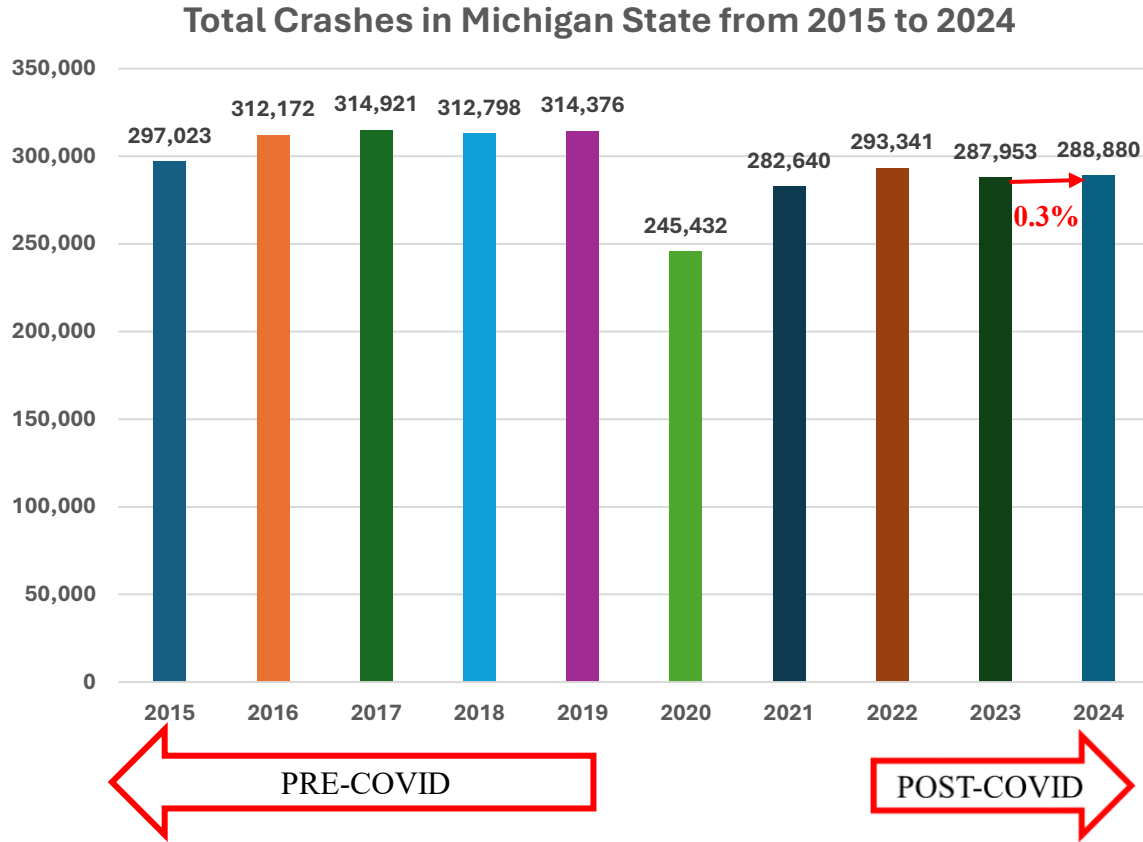
**Western Michigan University**



9/24/2025



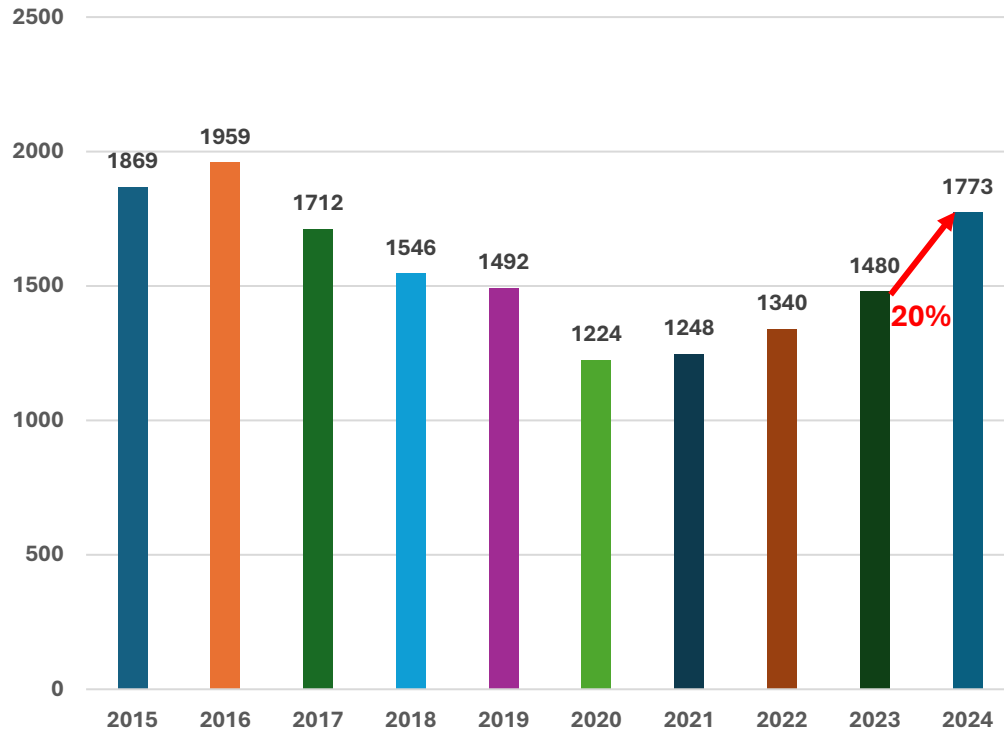
# Total Crash Trends in Michigan and Kalamazoo County



- 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

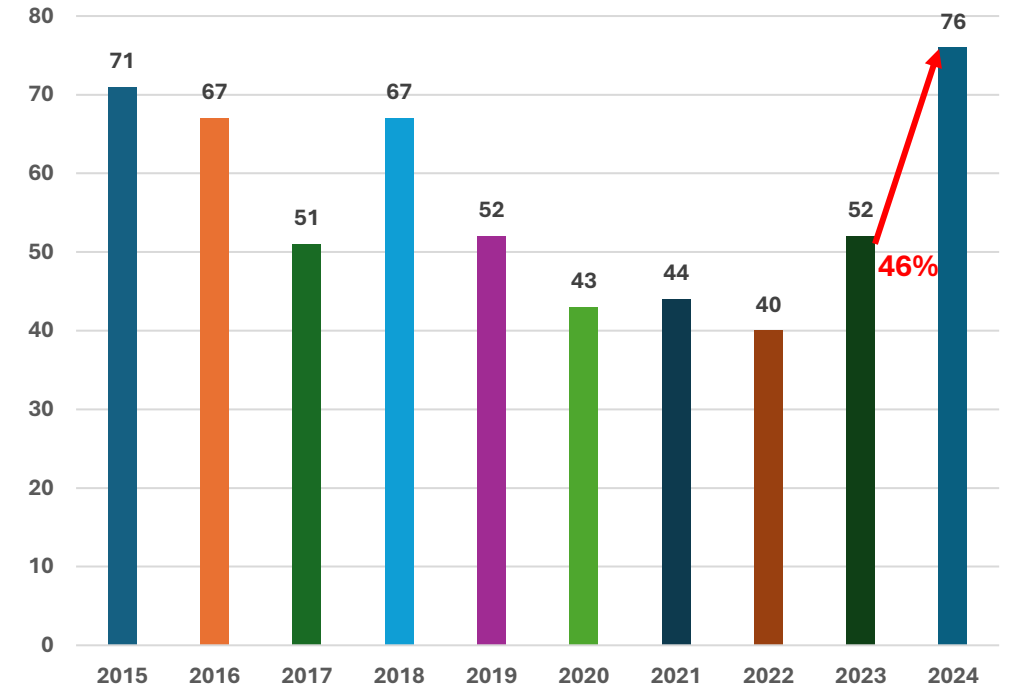
## Bicycle Crashes in Michigan from 2015 to 2024



PRE - COVID

POST - COVID

## Bicycle Crashes in Kalamazoo County, Michigan from 2015 to 2024



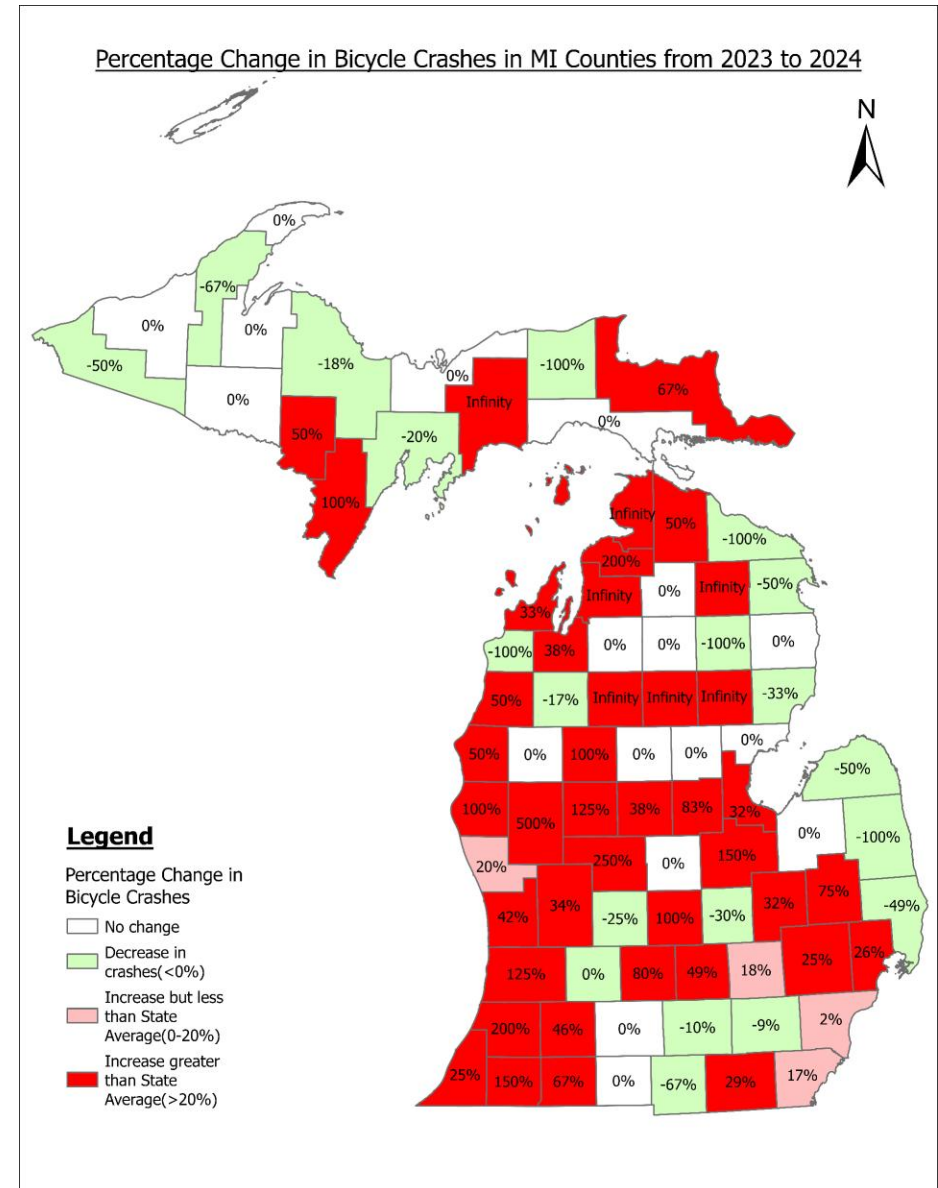
PRE - COVID

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.

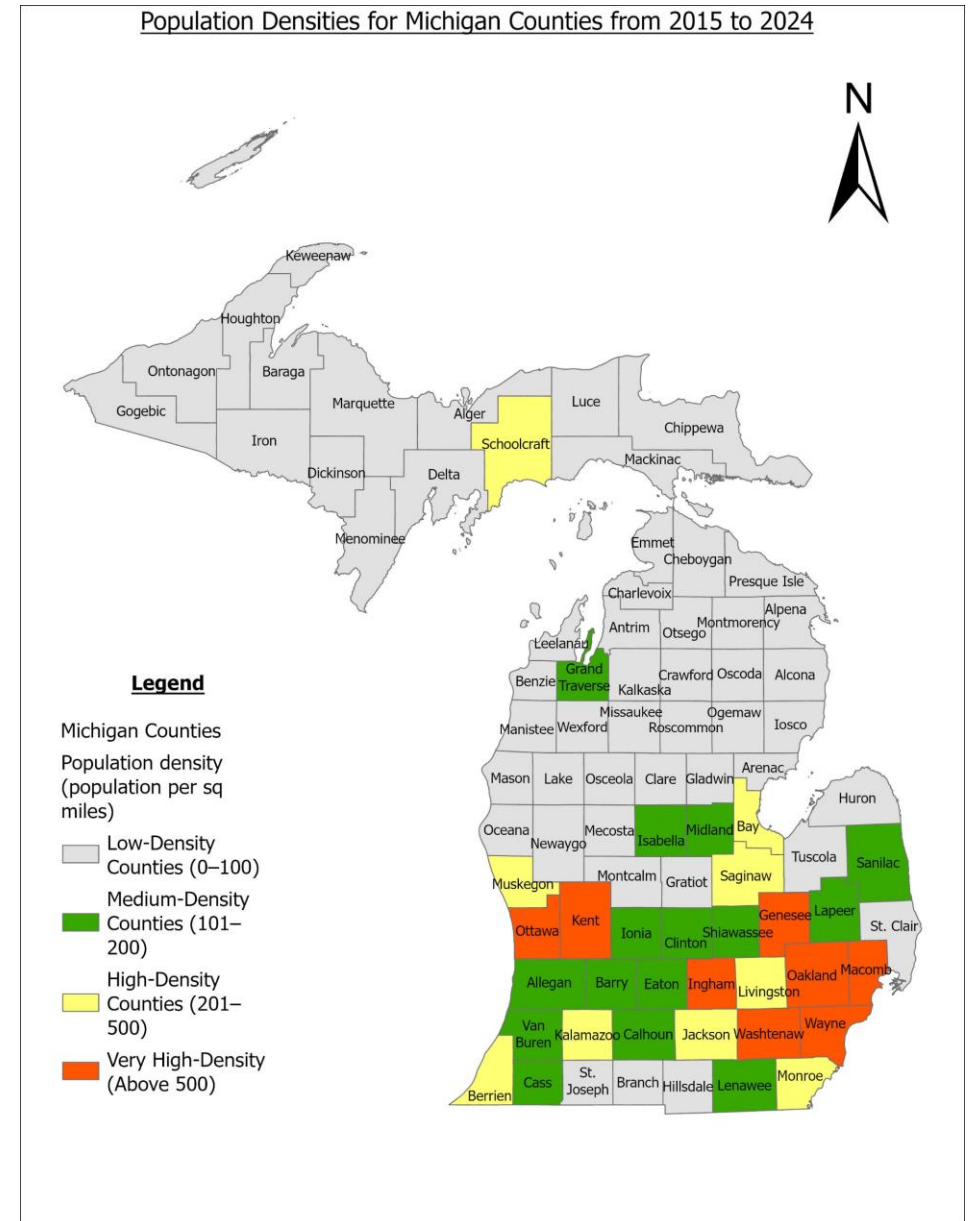


# Grouping Michigan Counties by Population Density

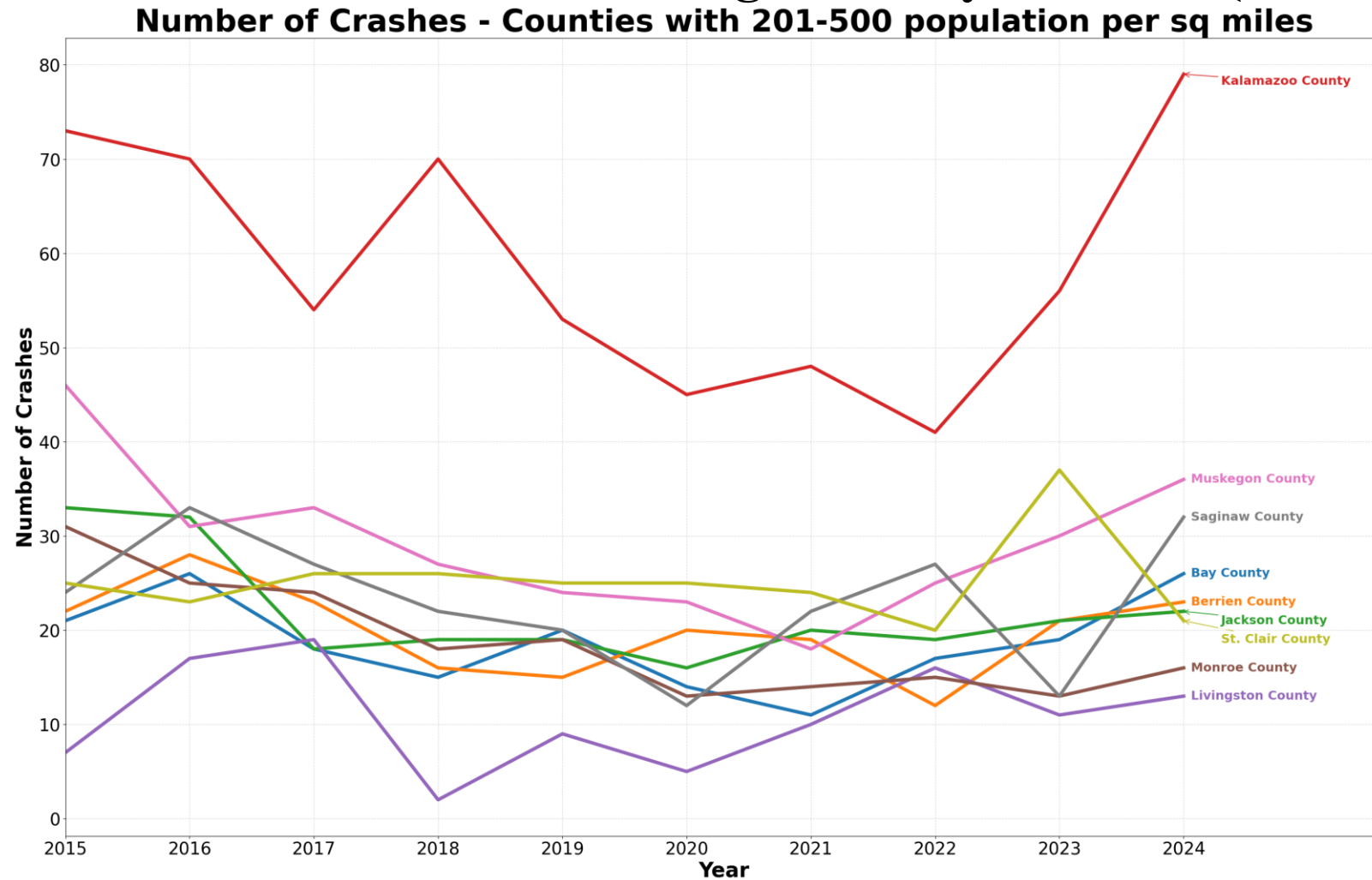
- The number of counties in each category:

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.



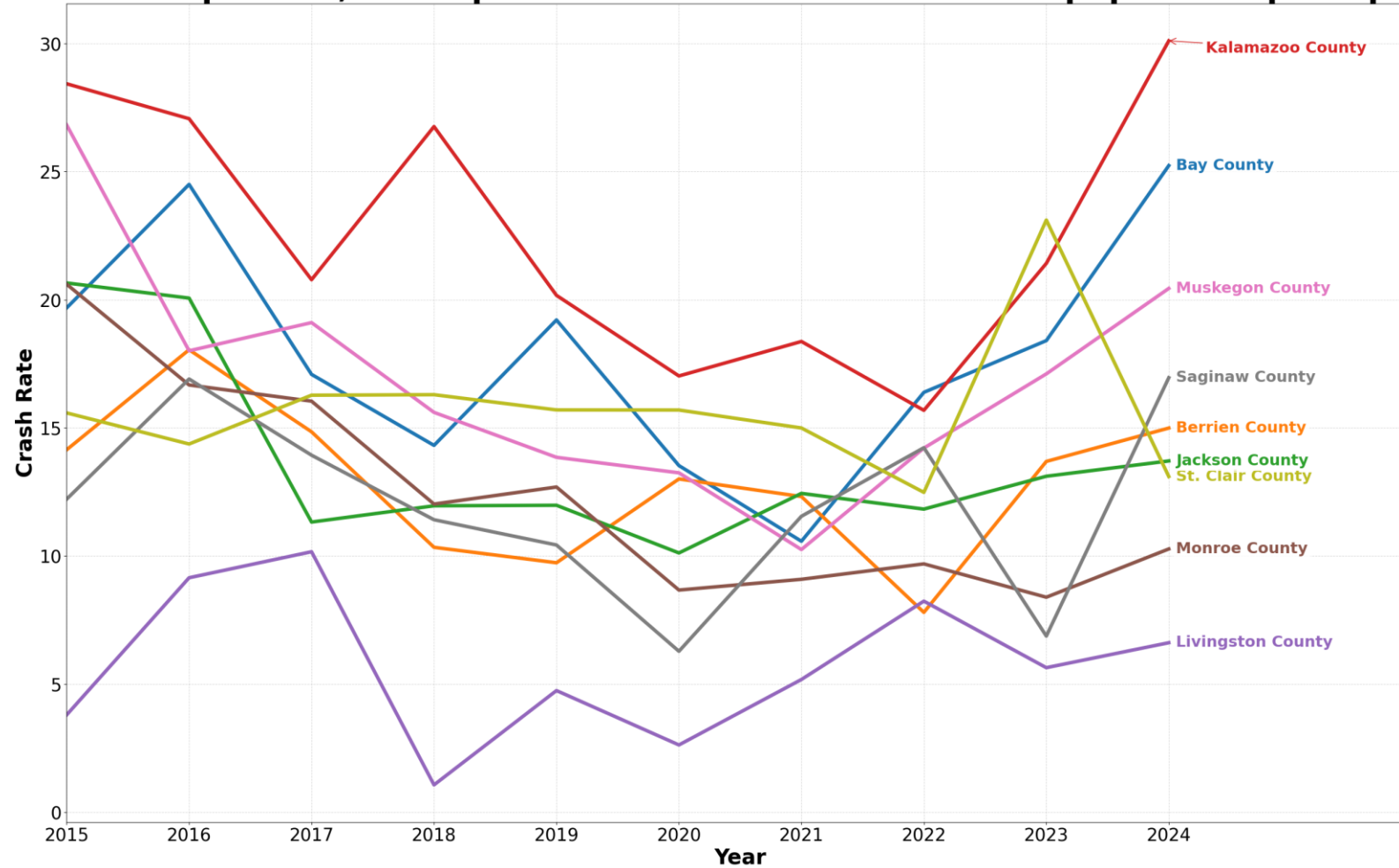
# Variation in Crash Counts Across High-Density Counties (2015–2024)



- Crashes trended downwards during pre-COVID but upward during post-COVID across several counties.
- Some counties depicted no clear trends such as 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

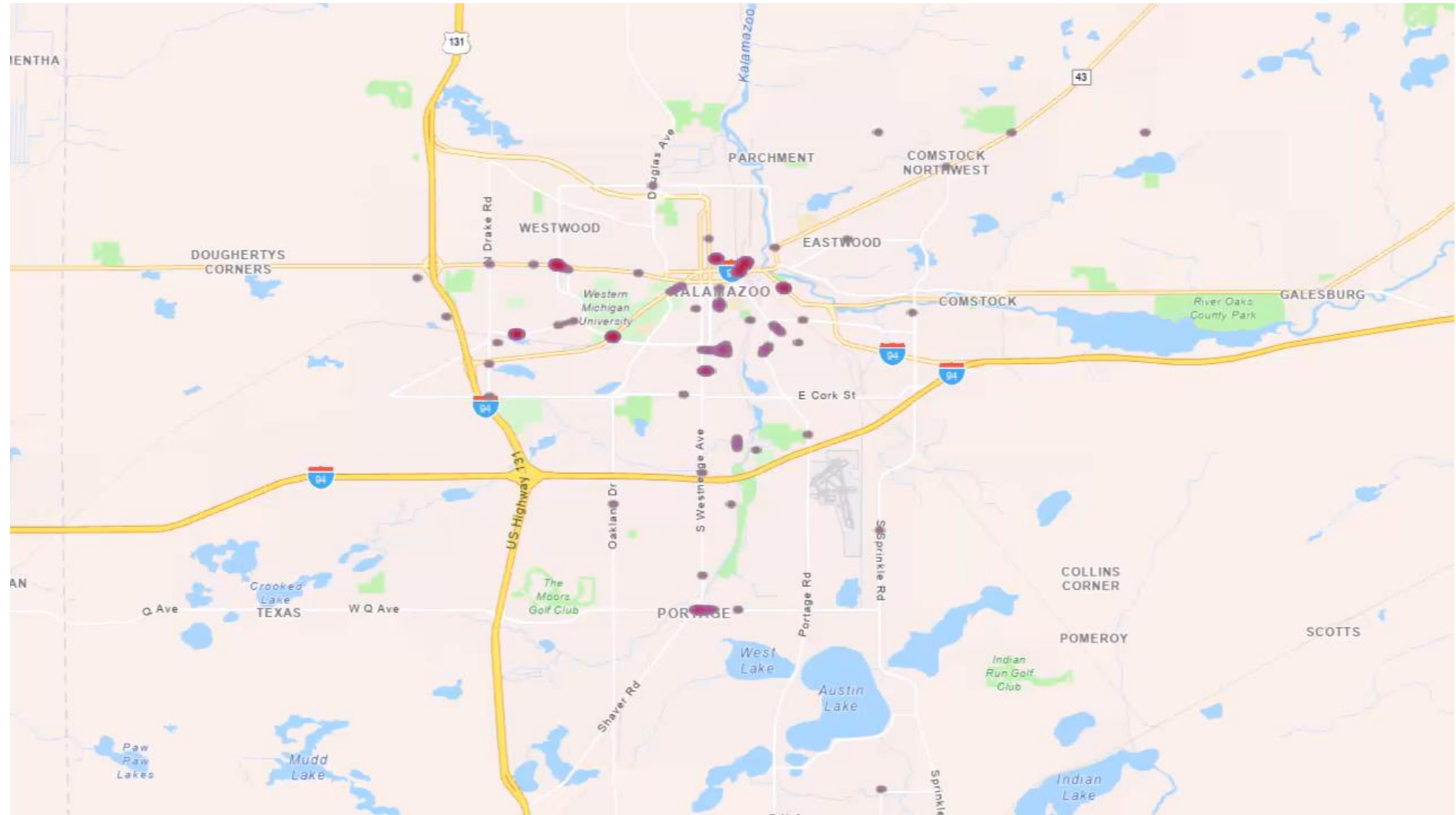


- Crash rates declined during pre-COVID but rose during post-COVID.
- The crash rate trends were inconsistent in some counties such as St. Clair, Livingston, and Saginaw County.
- Post-COVID crash rates exceeded pre-COVID rates in counties like Kalamazoo and Bay, while counties such as Muskegon, Jackson,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