

Policy Brief: Enhancing Road Safety in Wisconsin

- Janhavi Gosavi, Rohith Gowda, Arya Bafna

Executive Summary:

Every year, thousands of accidents occur on Wisconsin roads, causing significant loss of life, injuries, and economic costs. Contrary to common assumptions, most accidents happen during clear or cloudy weather, often due to human factors. Urban areas like Milwaukee and Madison are prominent hotspots, and seasonal trends show a spike in accidents during mid-year months. This brief provides data-driven recommendations to improve road safety through traffic control measures, infrastructure upgrades, and driver education programs. Recent data shows a 5% increase in road accidents over the past year, underscoring the urgent need for effective interventions. Successful initiatives from other states, such as New York's Vision Zero program, demonstrate the potential for significant improvements in road safety.

Current Landscape:

Introduction: The Need for Better Road Safety

Traffic accidents are among the leading causes of injuries and fatalities in Wisconsin. The Wisconsin crash dataset reveals critical patterns related to weather, road conditions, and geographic hotspots. These insights are essential for developing targeted interventions to reduce accidents and improve road safety across the state. For example, Milwaukee alone accounted for 20% of the state's total accidents last year. Case studies of specific incidents in Milwaukee and Madison illustrate the urgent need for targeted interventions.

Key Questions:

- How do weather and road conditions influence accident frequency and severity?
- Which locations are hotspots for traffic incidents?
- What are the peak accident months in different regions?
- How effective are current road safety measures?

Current Trends:

1. Weather and Accident Severity:

- Most accidents occur during favorable weather conditions (clear/cloudy), highlighting the role of human error. Snow and rain, though hazardous, contribute less to total incidents.
- Human factors: Discuss in more detail the types of human errors contributing to accidents (e.g., distracted driving, speeding, DUI).

2. Urban Hotspots:

- Urban centers like Milwaukee and Madison record the highest accident rates due to high traffic density, complex road networks, and infrastructure challenges.

3. Seasonal Variations:

- Accident counts peak in June and July, with northern regions experiencing sharper increases. Winter months see fewer incidents due to reduced travel and cautious driving behavior.

- Technological advancements: Mention how advancements in vehicle safety technology (e.g., automatic braking systems) could influence accident rates.

Challenges:

- High traffic density and inadequate infrastructure in urban areas.
- Public misconceptions about weather-related accident risks.
- Limited resources for implementing widespread safety measures.
- Funding issues: Address the financial challenges of implementing widespread safety measures and potential funding sources.
- Public awareness: Discuss the challenge of changing public perceptions and behaviors regarding road safety.

Policy Recommendations

1. Enhanced Traffic Control in Urban Hotspots:

- Deploy adaptive traffic signals to manage congestion dynamically.
- Increase police patrols in high-incident zones.
- Install automated speed enforcement cameras to deter reckless driving.
- Engage local communities in identifying and addressing specific traffic issues.

2. Infrastructure Improvements:

- Expand road capacity and improve signage in accident-prone areas.
- Add safety features like roundabouts at high-risk intersections.
- Enhance lighting in urban areas for better visibility at night.
- Leverage federal and state funding to support infrastructure projects.

3. Weather-Responsive Safety Measures:

- Implement real-time weather warning systems on major highways.
- Conduct preemptive salting and snow-clearing operations in winter.
- Introduce variable speed limits based on prevailing weather conditions.
- Utilize advanced weather forecasting tools to anticipate and mitigate risks.

4. Driver Education Campaigns:

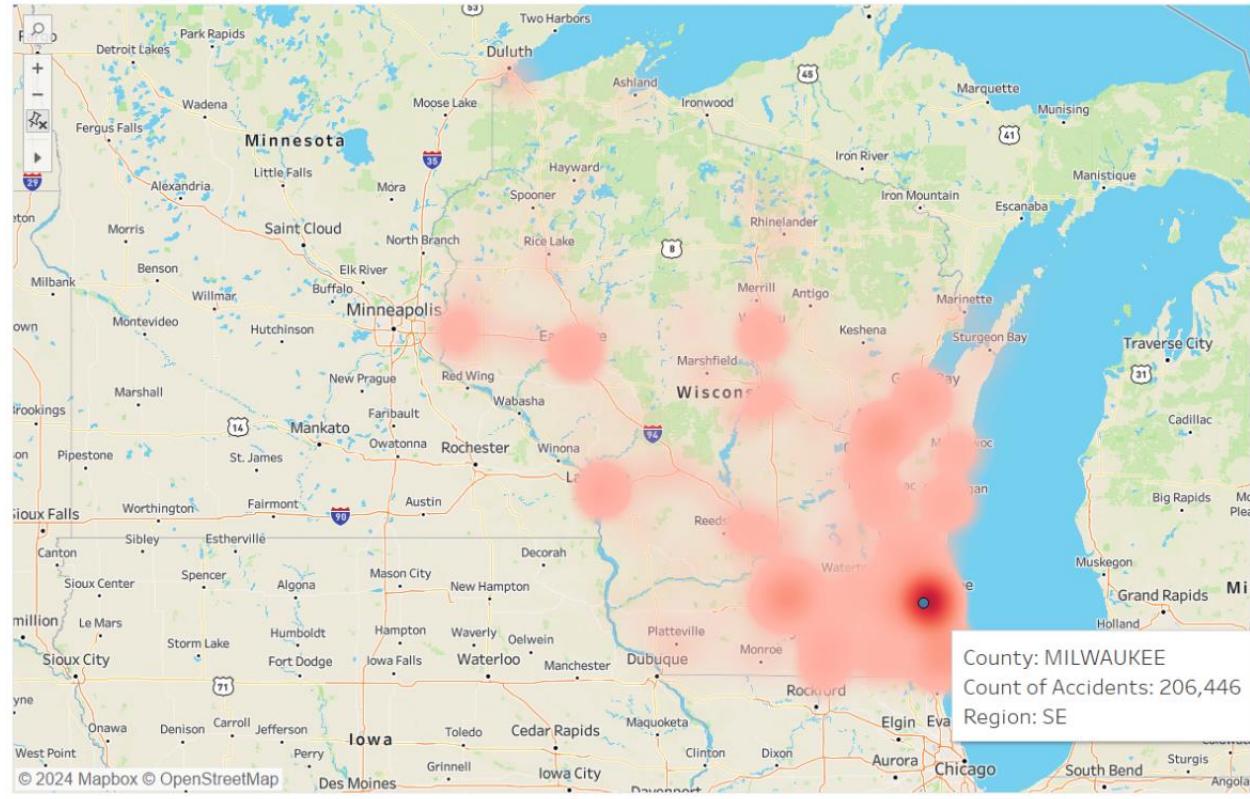
- Launch statewide campaigns emphasizing safe driving during favorable weather.
- Utilize simulators and interactive tools to train drivers in handling adverse conditions.
- Mandate additional training for commercial drivers in urban and high-risk areas.
- Incorporate road safety education into school curriculums to instill safe driving habits early.

Visualization of Key Findings:

Link: [Workbook Sheets](#)

1. Heat Map:

Heat Map of Traffic Incident Hotspots in Wisconsin (2017 - 2024)



Description: The heat map identifies urban hotspots, highlighting Milwaukee and Madison as priority areas for intervention.

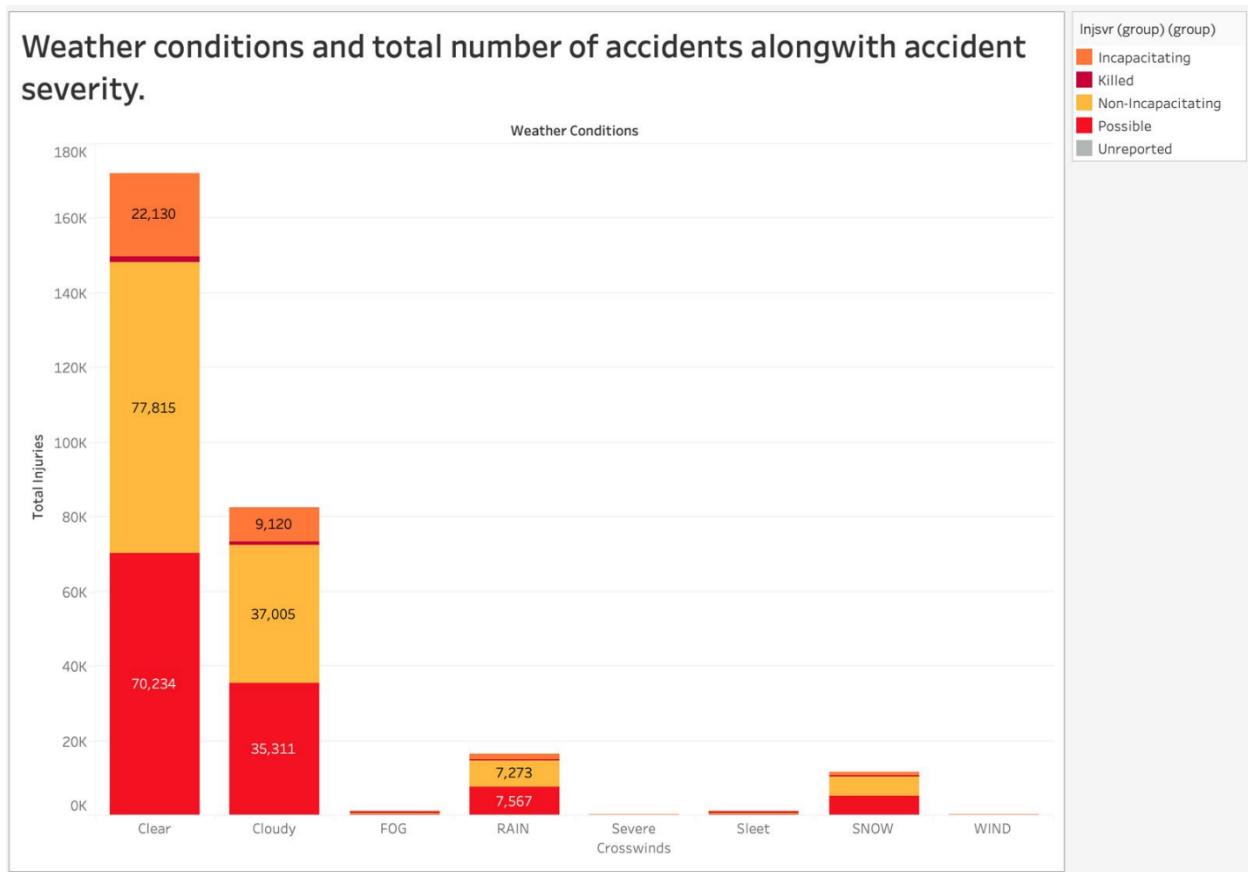
Trends:

- Urban Hotspots: The heat map visually represents the concentration of accidents in urban areas. Milwaukee and Madison are shown as significant hotspots due to high traffic density and complex road networks.
- Seasonal Variations: By overlaying seasonal data, the heat map can also show how accident hotspots shift or intensify during different times of the year.

Solutions:

- Enhanced Traffic Control: The heat map helps in pinpointing specific areas where adaptive traffic signals and increased police patrols can be most effective.
- Infrastructure Improvements: Identifying high-risk intersections and areas with inadequate signage or lighting can guide infrastructure upgrades.
- Community Involvement: Engaging local communities in these hotspots can help tailor interventions to specific needs and behaviors.

2. Stacked Bar Chart:



Description: The stacked bar chart demonstrates the correlation between weather conditions and accident severity, challenging the perception of "safe" conditions.

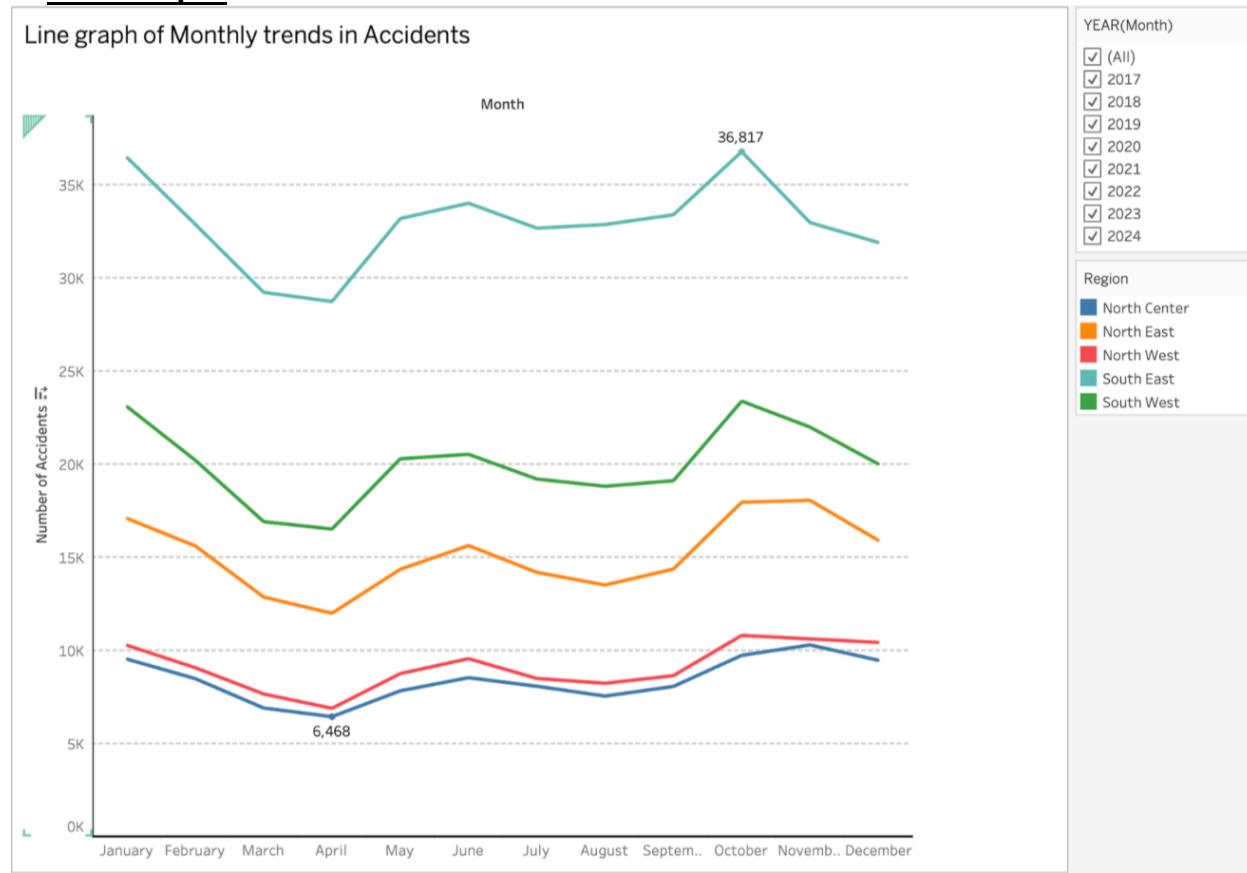
Trends:

- Weather and Accident Severity: The chart shows that most accidents occur during clear or cloudy weather, emphasizing the role of human error over adverse weather conditions.
- Human Factors: It highlights the need to address human errors such as distracted driving, speeding, and DUI, which are prevalent even in favorable weather.

Solutions:

- Driver Education Campaigns: The chart supports the need for campaigns emphasizing safe driving practices during all weather conditions, not just adverse ones.
- Weather-Responsive Safety Measures: While adverse weather contributes less to total incidents, real-time weather warning systems and variable speed limits can still mitigate risks during hazardous conditions.

3. Line Graph:



Description: The line graph depicts monthly accident trends, showcasing seasonal patterns and identifying months requiring heightened safety measures.

Trends:

- Seasonal Variations: The graph shows peaks in accident counts during June and July, with a notable decrease in winter months due to reduced travel and cautious driving.
- Technological Advancements: Understanding these trends can help in planning the deployment of new vehicle safety technologies and seasonal safety campaigns.

Solutions:

- Enhanced Traffic Control: During peak months, adaptive traffic signals and increased patrols can help manage higher traffic volumes and reduce accidents.
- Infrastructure Improvements: Seasonal trends can guide the timing of infrastructure projects, ensuring that upgrades are completed before peak accident periods.
- Driver Education Campaigns: Tailoring education campaigns to address seasonal risks, such as increased travel during summer months, can improve driver awareness and safety.

Limits to the Data:

- Circulation rates may not capture all road usage patterns, particularly in adverse weather.
- Urban hotspots could shift due to ongoing infrastructure projects.
- Seasonal data requires continuous monitoring for long-term relevance.

Conclusion:

Wisconsin's crash data underscores the need for targeted, data-informed road safety measures. Implementing the proposed policies can save lives, reduce injuries, and minimize economic costs. By addressing urban hotspots, adapting to weather-related challenges, and educating drivers, Wisconsin can lead the way in effective traffic management and enhanced road safety. A strong call to action urges policymakers to prioritize road safety and allocate necessary resources. A vision for the future of road safety in Wisconsin highlights the long-term benefits of the proposed measures.

Sources:

- Wisconsin Crash Data Request Form, Wisconsin Traffic Operations and Safety Laboratory.
- <https://transportal.cee.wisc.edu/resources/folders/downloads/MV4000/Lange/2024%20sent%20data/Nov/Wisconsin%20crashes%202017-%20Oct%202024.csv>
- Data visualization insights from Janhavi Gosavi, Rohith Gowda, and Arya Bafna