Car Crash Analysis

PowerBI Project

Explore the in-depth analysis of car crash data using Power BI - a business analytics tool. Gain insights and recommendations for road safety improvements based on the findings.

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Problem Statement

1

Identifying Issues

Traffic incidents in Chicago pose significant challenges to road safety and traffic management. Despite efforts to mitigate risks, understanding the underlying factors contributing to accidents remains crucial for effective intervention strategies.

2

Statistical Analysis

Insights into the frequency, severity, and causes of car crashes.

3

Trends and Patterns

Identification of recurring trends and patterns in car crash data.

Key Findings and Insights

The lack of traffic control devices or the presence of stop signs/flashing signals seems to be a major factor in accidents, suggesting the importance of proper traffic management.

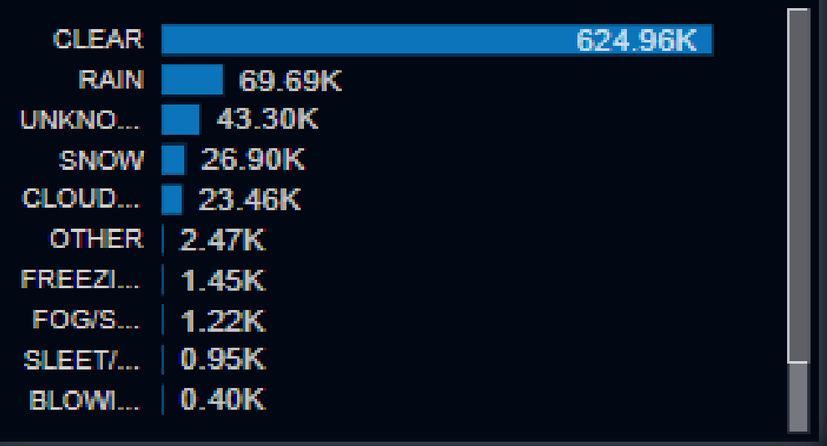
Weather conditions like rain, snow, and fog significantly contribute to the number of accidents, with rain causing the highest number of accidents due to weather.

A large portion of accidents (around 85K) result in non-incapacitating injuries, indicating the need for improved road safety measures.

Dashboard

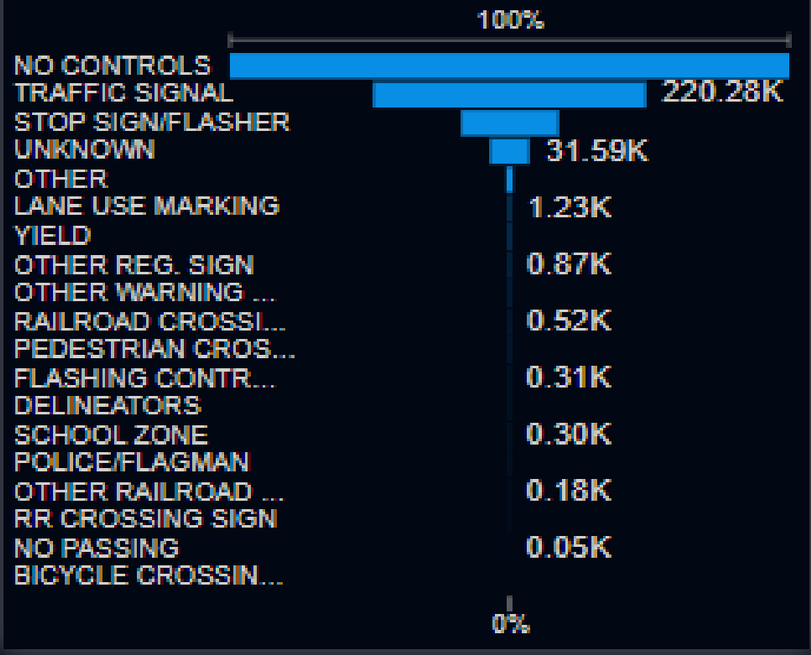
Total Accidents	Fatal Injuries	Injuries: Incapacitating	Injuries: Non-Incapacitating
795K	948	16K	85K

Accidents due to weather conditions

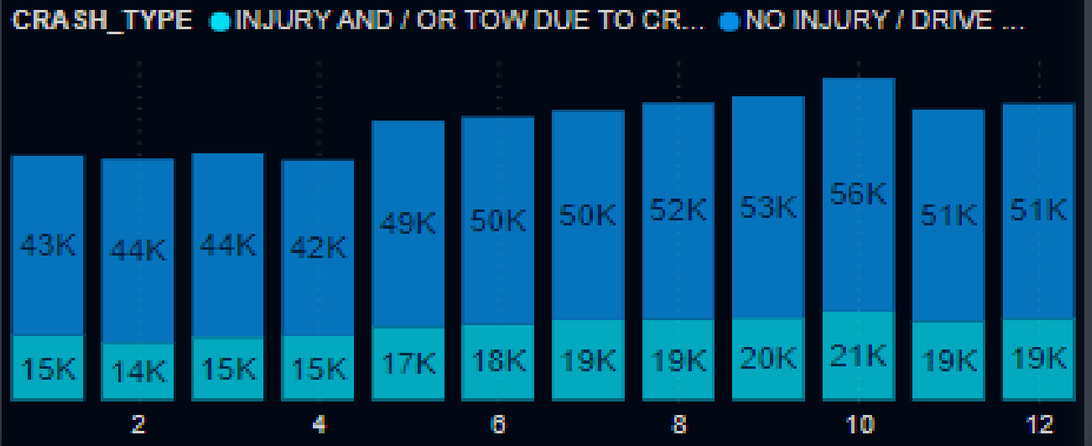


Car Crash Analysis

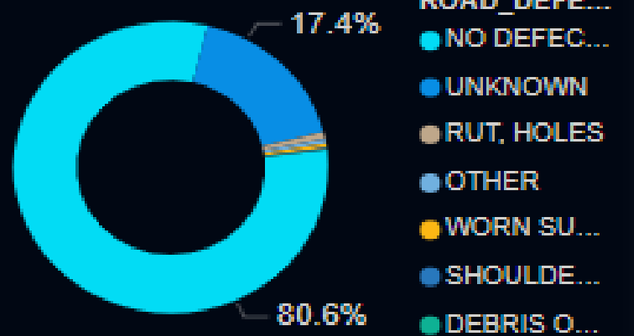
Accident type by traffic control device



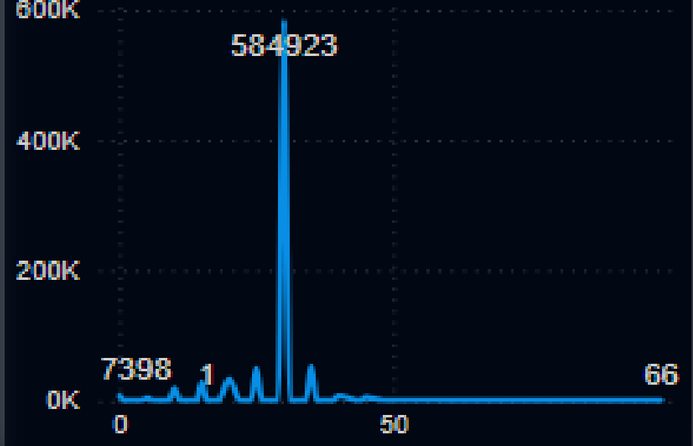
Monthly Accident Breakdown by Type



Accidents due to defective roads



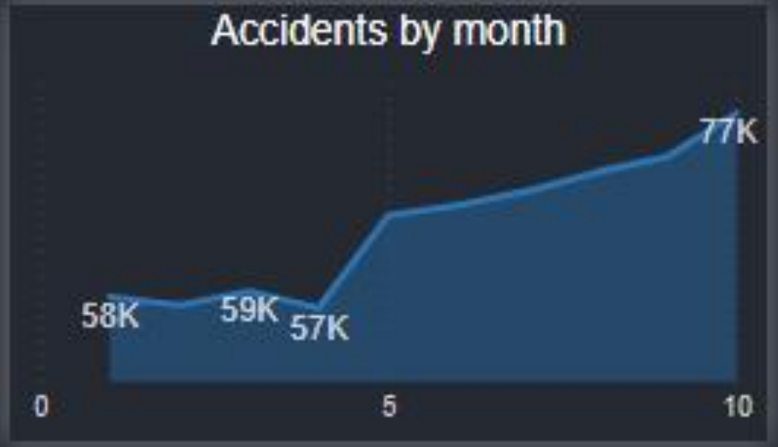
Effect of Speed Limits on Accident

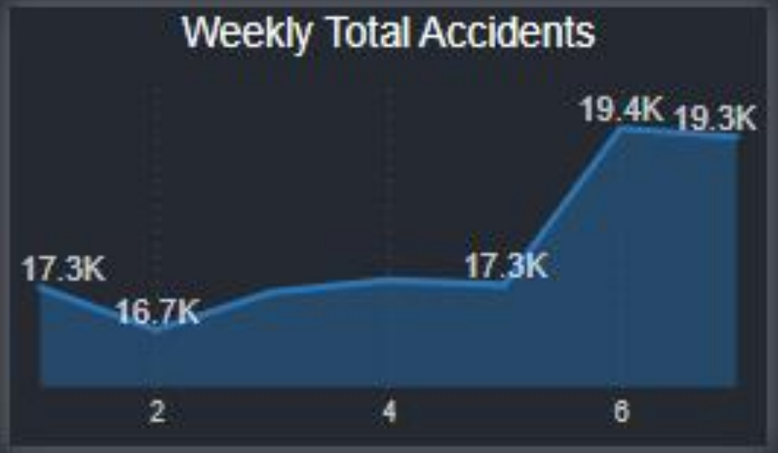


Insights

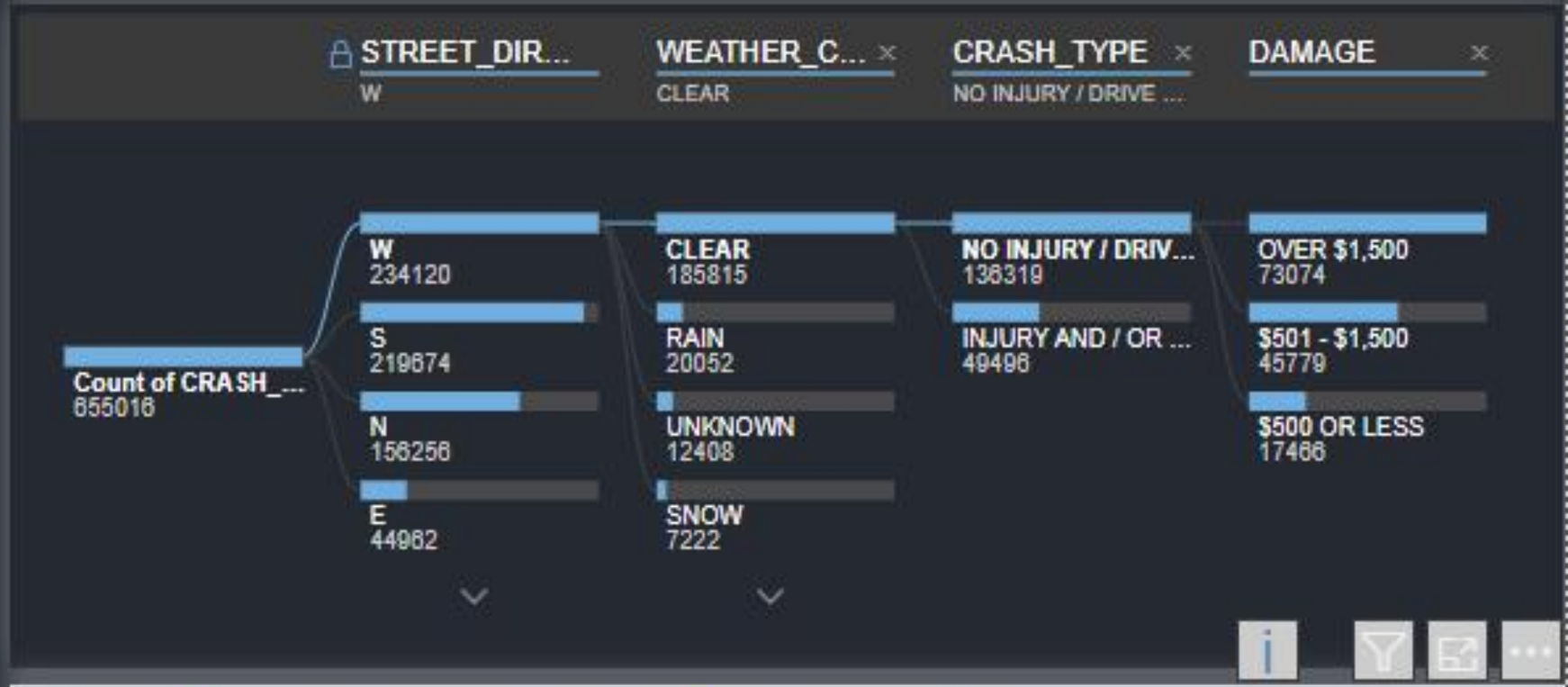
Following inferences can be drawn from the dashboard :

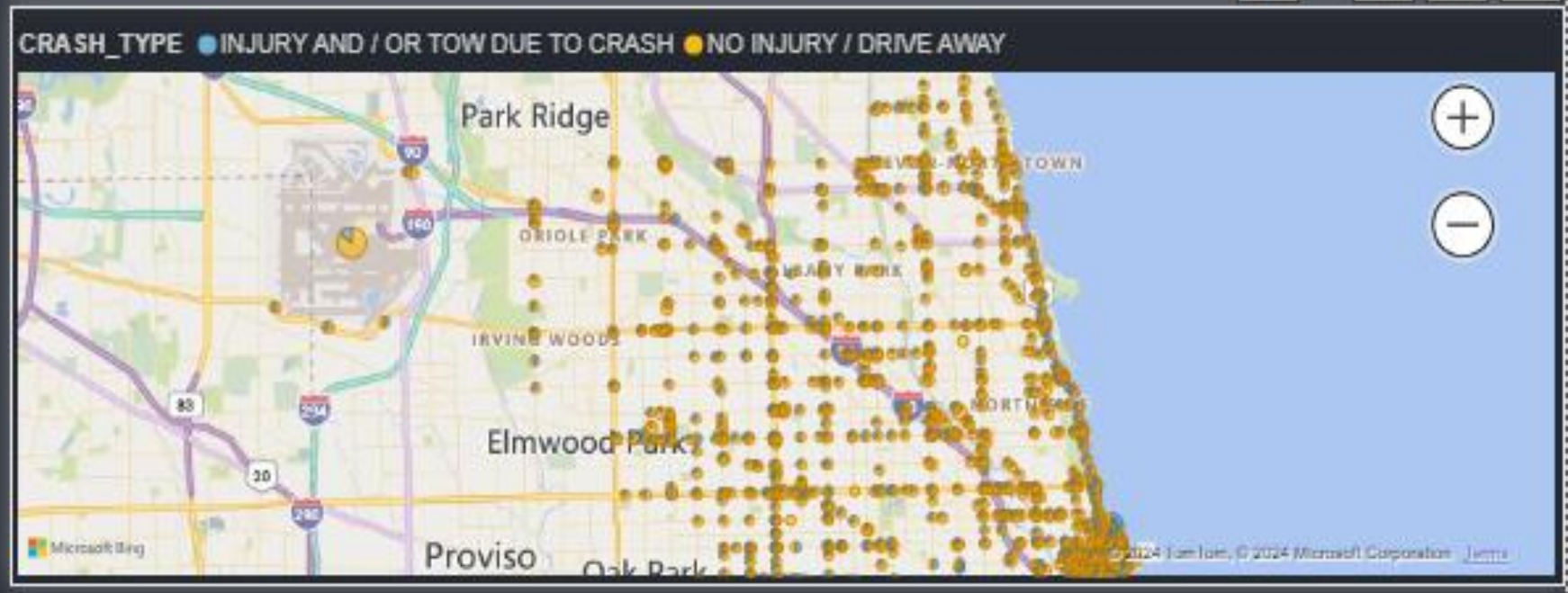
- Total Accidents: There were approximately 795,000 total accidents recorded.
- Fatal Injuries: Around 948 injuries were classified as fatal.
- Injury Types: There were 16,000 incapacitating injuries and 85,000 non-incapacitating injuries reported.
- Weather Conditions: The highest number of accidents occurred during clear weather conditions (624,988), followed by rain (69,698) and snow (26,790).
- Monthly Breakdown: The monthly accident breakdown shows a consistent pattern, with the majority of accidents resulting in either injury/tow due to crash or no injury/driven away.
- Accident Type by Traffic Control Device: The highest percentage of accidents occurred in areas with no traffic control device (100%), followed by traffic signals (22.28%) and stop signs/flashers (11.39%).
- Defective Roads: A significant portion (80.6%) of accidents was attributed to no defects on the roads, while 17.4% were due to road defects.
- Speed Limits: The chart suggests that higher speed limits may contribute to an increase in accidents, as indicated by the rising trend line.


Accidents by month
77K
58K
59K
57K
0
5
10


Weekly Total Accidents
19.4K
19.3K
17.3K
16.7K
17.3K
2
4
6


Accidents per hour
51K
34K
14K
8K
17K
0
5
10
15
20


STREET_DIR...
W
WEATHER_C...
CLEAR
CRASH_TYPE
NO INJURY / DRIVE ...
DAMAGE
Count of CRASH_...
655016
W
234120
S
219674
N
156256
E
44962
CLEAR
185815
RAIN
20052
UNKNOWN
12408
SNOW
7222
NO INJURY / DRIV...
136319
INJURY AND / OR ...
49496
OVER $1,500
73074
$501 - $1,500
45779
$500 OR LESS
17466


CRASH_TYPE
INJURY AND / OR TOW DUE TO CRASH
NO INJURY / DRIVE AWAY
Park Ridge
ORIOLE PARK
IRVING WOODS
Elmwood Park
Proviso
Oak Park
Microsoft Bing

- Monthly Accidents: The chart shows a consistent pattern of around 57,000 to 59,000 accidents per month, with a slight peak around 77,000 accidents in one particular month.
- Weekly Total Accidents: The weekly accident totals range from around 17,300 to 19,300, indicating a slightly higher frequency towards the end of the week.
- Hourly Accidents: Accident frequency peaks during the afternoon and evening hours, with the highest number occurring around 5 PM, likely due to increased traffic during rush hour.
- Street Direction: The data shows a count of 37,674 crashes, but the "street direction" filter is not applied, so this number represents the total crashes without a specific direction selected.
- Weather Conditions: The highest number of accidents occurs during clear weather (41,120), followed by rain (12,848), and unknown conditions (12,408). This suggests that clear weather may lead to higher traffic volumes and increased accident risks.
- Crash Type: The majority of accidents result in either "no injury/driven away" (36,224) or "injury and/or tow due to crash" (44,489), indicating a relatively even split between minor and more severe accidents.
- Damage: A significant portion of accidents (17,468) involve damages of $500 or less, while a smaller number (4,483) result in damages between $501 and $1,500. The data does not provide information on accidents with damages exceeding $1,500.
- Geographic Distribution: The map shows the spatial distribution of accidents, with a higher concentration in densely populated areas, likely due to increased traffic volumes and road network complexity.

Conclusion and Next Steps

1

Summary of Findings

The analysis reveals that weather conditions, road defects, traffic control devices, and speed limits are significant contributing factors to accidents. Non-incapacitating injuries and accidents without injuries are prevalent, indicating opportunities for improvement.

2

Future Actions

- Conduct a detailed analysis of accident hotspots and high-risk areas to prioritize targeted interventions.
- Collaborate with relevant stakeholders, including transportation authorities, weather agencies, and community organizations, to develop and implement comprehensive road safety strategies.
- Continuously monitor and evaluate the effectiveness of implemented safety measures, making adjustments as needed to ensure ongoing improvement in road safety.

Thank You