Analyzing the changing pattern and relationships between road accidents and the average temperature in Germany

Presented By

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Introduction

- Overview of the project and its goals

- The correlation between environmental factors and road safety has long been a subject of interest. In this report, I tried to find the relationship between the average temperature in Germany from 2018 to 2020 and the incidence of accidents on motorways. Understanding this connection could provide valuable insights for developing strategies to enhance road safety and mitigate the impact of adverse weather conditions.

Data Sources

- Data source 1: **Federal Statistical Office of Germany**
- Data Type: CSV
- The road accident data in Germany. This data also shows that the accident in Indoor and outdoor as well.

- Data source 2: **Climate_environment**
- Data Type: .txt
- This is monthly average air temperature in Germany. In this dataset it also shows that the temperature in state wise.

Project Plan

- **Data Collection and Preprocessing:** Collecting and preprocessing the accident and the average temperature data.
- **Feature Engineering:** Creating relevant features from the data to enhance analysis.
- **Interpretation and Insights:** Analyzing the results and extracting meaningful insights.
- **Reporting on Findings:** Presenting the findings and recommendations.

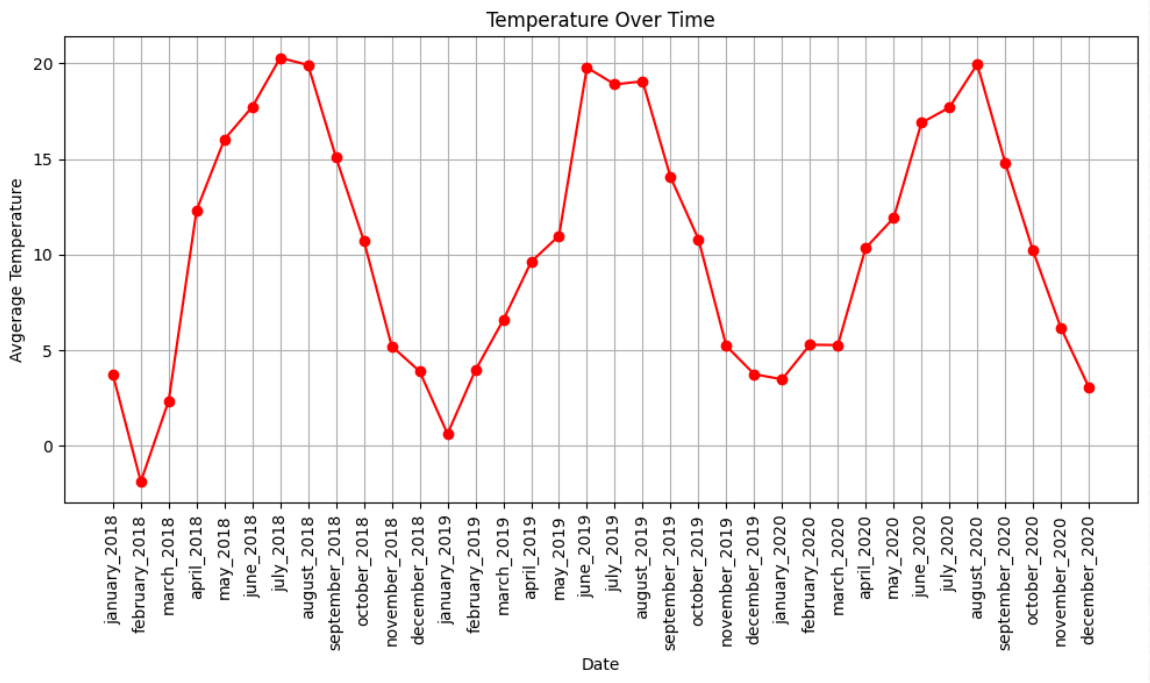
Data Collection and Pre-processing

- ● Retrieve data from the provided data sources.
- ● Perform data cleaning and preprocessing.
- ● Handle missing values and data inconsistencies.

Temperature pattern in Germany from 2018 to 2020

We can see the temperature pattern in Germany al most similar

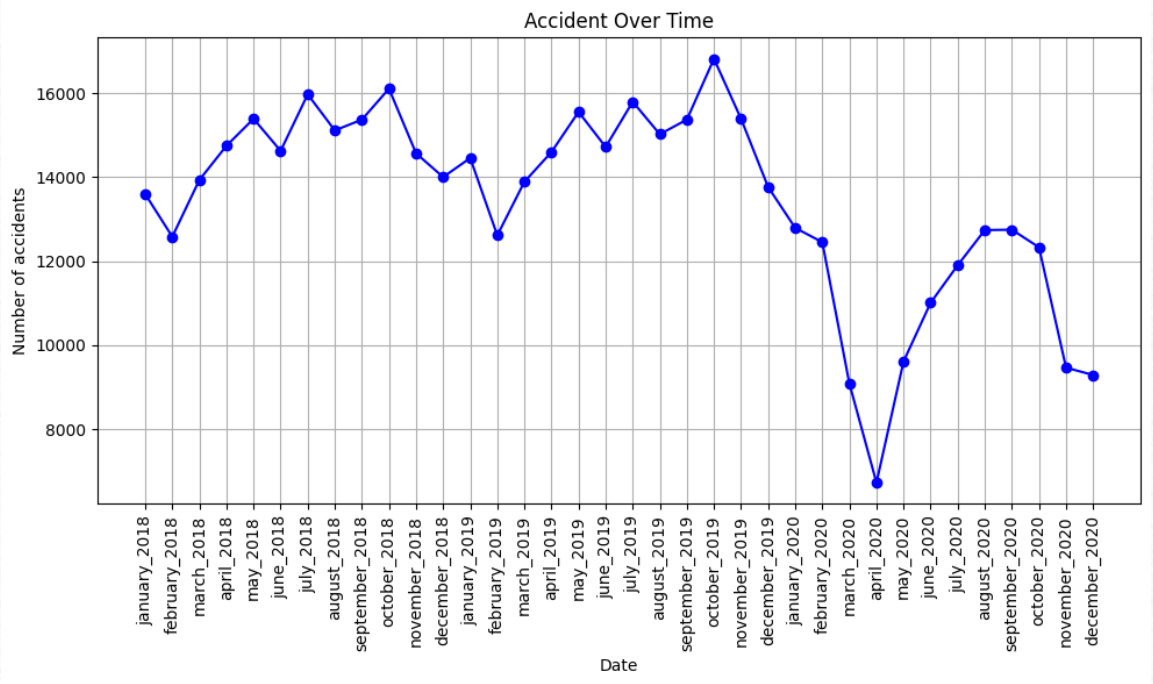
The average temperature is increasing



The total road accident pattern from 2018 to 2020

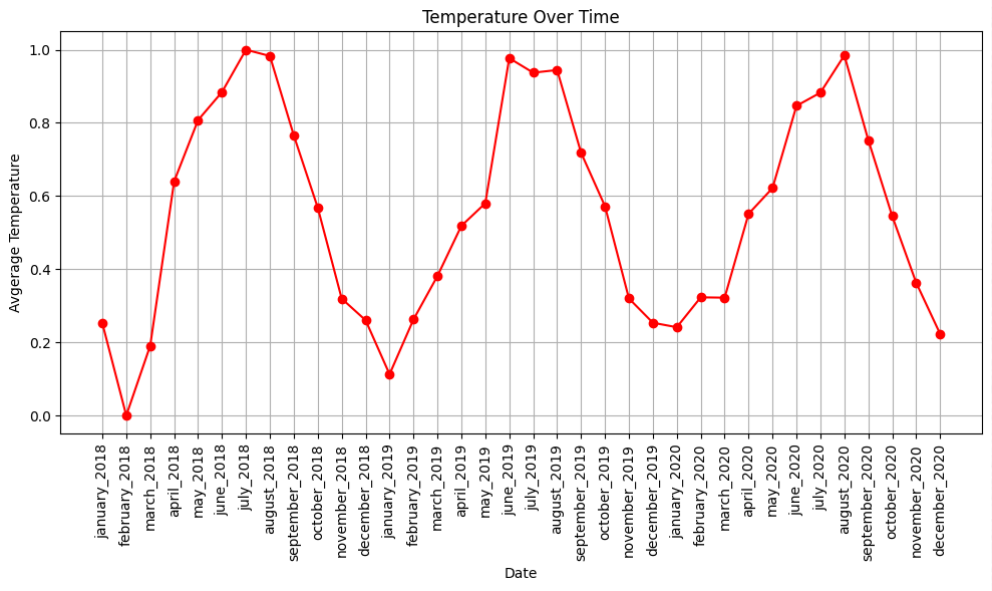
Here we can see road accidents had increased April to November

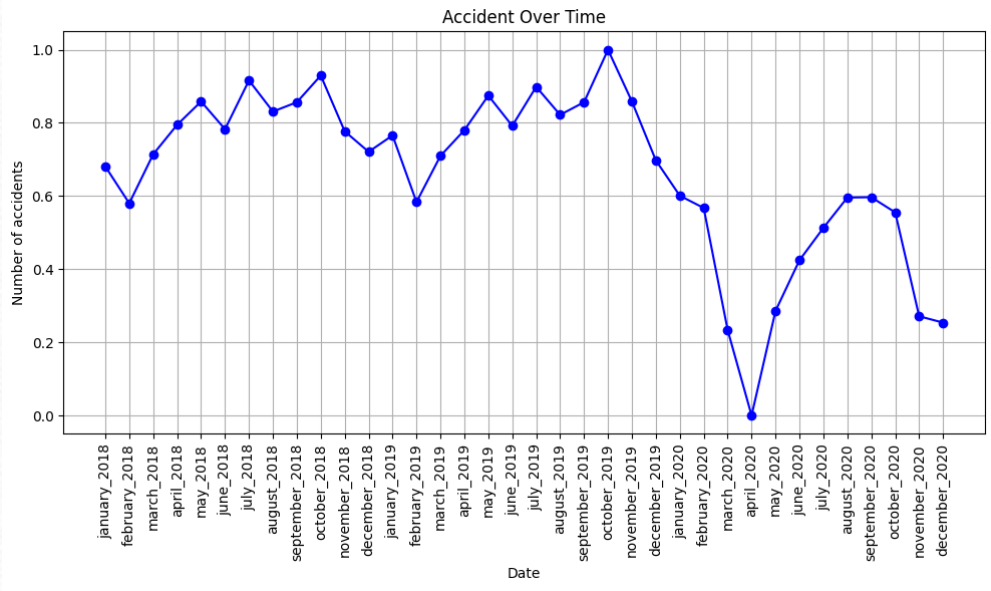
Interestingly road accidents dramatically decreased in April 2020. This is happed because of Covid-19.



Normalization

I need to compare the data, that's why I have to plot the data in the same graph. To Plot the graphs in a same page, I convet them in range 0 to 1



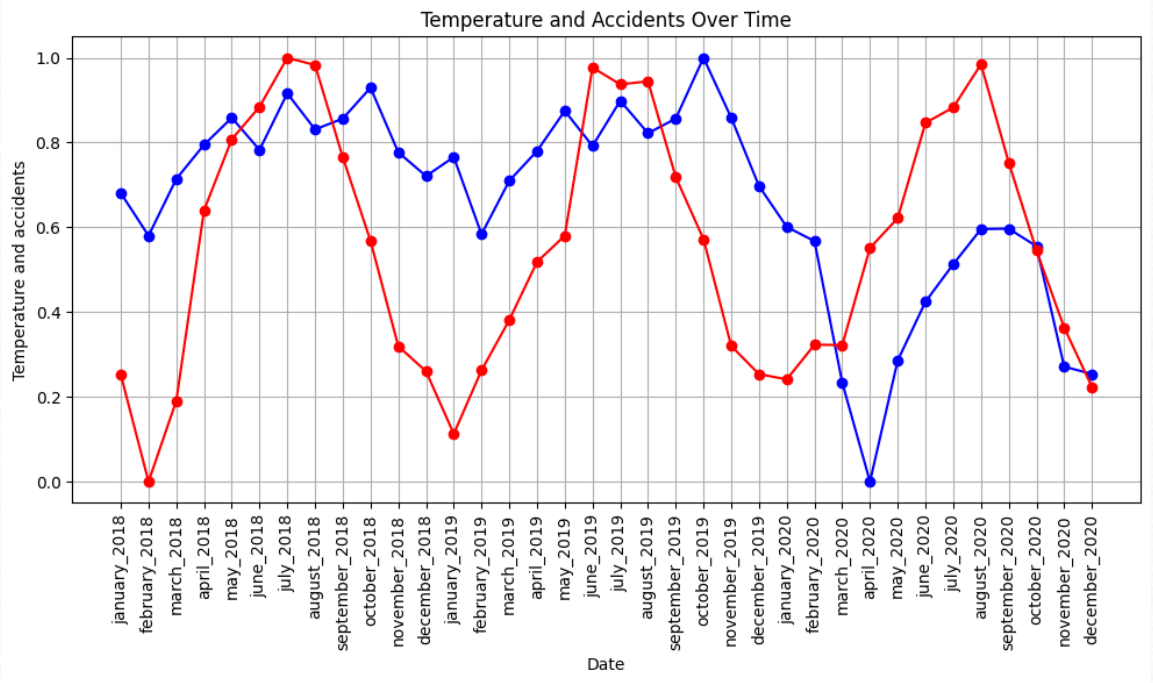


Comparing the Graphs

Findings

There was a significant correlation between **high temperatures and traffic accidents**.

As temperatures **increases**, the number of accidents correspondingly **increased**. This correlation indicates a potential link between weather and road safety, suggesting that rising temperatures may pose unique challenges that increase accident rates



Limitations

- Although the relationship is clear, it is important to acknowledge the limitations of this study . Other factors, such as road maintenance, traffic volume, and driver behavior, can contribute to inappropriate accident rates regardless of temperature.
- Furthermore, the data are limited to a specific time period, and the generalization of these findings to different time periods or geographic areas should be done with caution.

Future work:

- Future research could investigate the specific mechanisms by which temperature affects road safety.
- Furthermore, more detailed studies incorporating other environmental and regional variables may provide nuanced understanding of the relationship between climate and accidents


thank you