Bicycle Accident Analysis in Great Britain (1979–2018)

Lei Zhao

Objective.....3
Data & Tools.....3
Dashboard Overview (Page 1).....4
In-Depth Analysis (Page 2).....6
Conclusion.....8

Objective

The purpose of this project is to analyze patterns and key insights from bicycle accident data in Great Britain (1979–2018). By performing exploratory and statistical analysis on over 827,000 records, the project aims to identify risk factors and guide potential safety improvements through interactive visualizations.

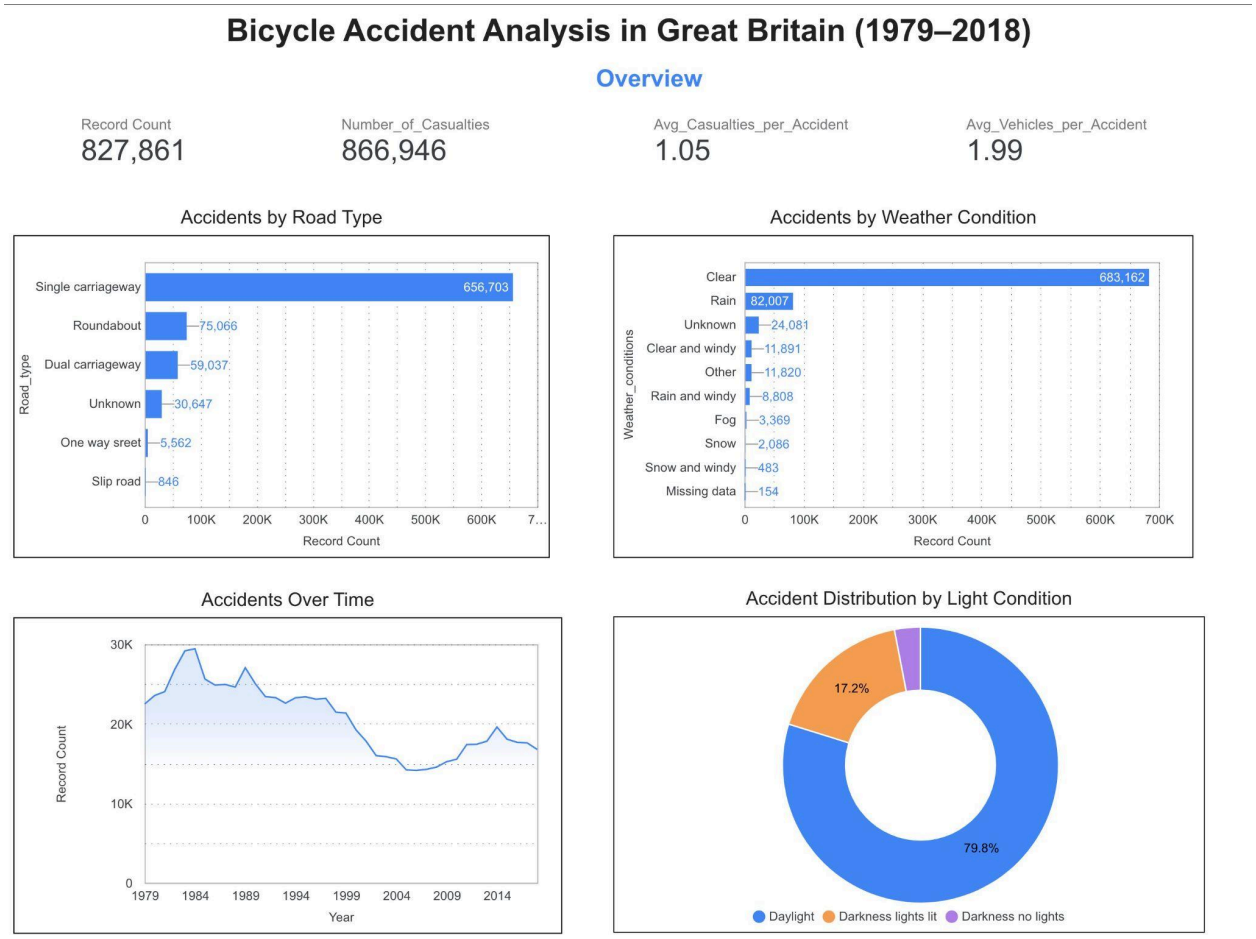
Data & Tools

Source: Kaggle Bicycle Accident Dataset
Files Used: Accidents.csv (accident details), Bikers.csv (rider demographics)

Platform: Google Looker Studio (free version)

Integration: Data blended via Accident_Index as primary key

Dashboard Overview (Page 1)



The first page provides a **high-level summary** using four KPI cards and four exploratory visualizations:

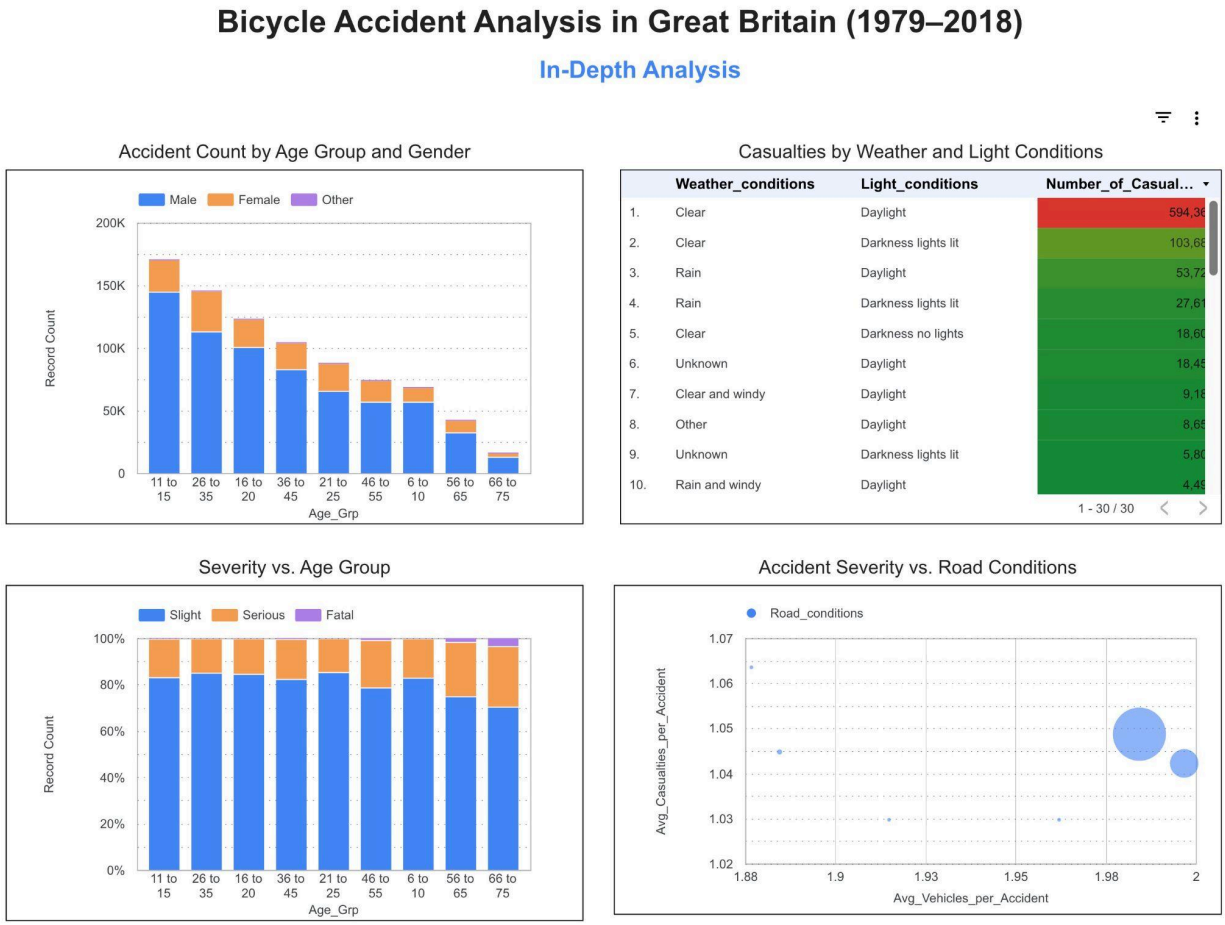
- **Key Metrics:**
    - Total Records: 827,861
    - Total Casualties: 866,946

    - Avg. Casualties per Accident: 1.05
    - Avg. Vehicles per Accident: 1.99

- **Visualizations:**
    - **Accidents by Road Type:** Most accidents occurred on *single carriageway roads* (79.3%).
    - **Accidents by Weather:** *Clear* weather dominates (82.5%), indicating good weather doesn't imply safety.
    - **Trends Over Time:** A long-term decrease in annual accident count is observed, with recent upticks.
    - **Light Condition Distribution:** Most accidents occur in *daylight* (79.8%), again challenging assumptions.

These insights use descriptive statistics to identify major accident conditions and trends.

In-Depth Analysis (Page 2)



To further understand rider risk profiles and accident severity, Page 2 dives into more complex, segmented, and prescriptive visualizations:

- **Chart 1:** *Accident Count by Age Group and Gender*
    - Males aged 11–35 dominate accident statistics.

    - Suggests a need for targeted safety education for young male cyclists.

- **Chart 2:** *Casualties by Weather and Light Conditions* (heat table)

    - The most dangerous combination is **clear daylight**, suggesting overconfidence and exposure in good weather may be a risk factor.

    - Supports **prescriptive insight**: Reinforce safety even in favorable conditions.

- **Chart 3:** *Severity vs. Age Group (Stacked % bar)*

    - Younger age groups tend to have higher proportions of *slight injuries*, while older riders experience more *serious or fatal* outcomes.

    - Implication: Elderly riders are more vulnerable—calls for age-specific protection policies.

- **Chart 4:** *Bubble Chart: Severity vs. Road Conditions*

    - Cross-analysis using custom fields (Avg. Casualties per Accident and Avg. Vehicles per Accident) shows that **complex intersections** and **multi-vehicle involvement** are tied to more severe outcomes.

    - Used **prescriptive metrics** for risk assessment and safety prioritization.

Conclusion

This dashboard provides a comprehensive look into bicycle accident patterns using both descriptive and prescriptive statistical methods. By combining demographic and environmental data, it identifies high-risk groups and conditions—offering actionable insights for policymakers, safety advocates, and urban planners.