Coursework 2, Task 3 Report: Analysis of UK Road Accident Insights Dashboard (2021)

The dashboard titled **"Key Factors Contributing to Great Britain Road Accidents** (2021)" provides a comprehensive analysis of road accidents across Great Britain. The visuals incorporate accident severity, road types, weather conditions, timeframes, and geographical data to reveal trends, patterns, and influencing factors for road traffic incidents. Below is a detailed breakdown of the insights gained:



1. Total Accident Statistics

- Total Accidents Recorded: 93,980
- Total Casualties: 127,000
- Vehicles Involved: 185,000

These figures underscore the significant volume of road accidents and associated casualties, highlighting the severity of the issue in 2021.

2. Heatmap Distribution of Accidents

The heatmap identifies accident hotspots across Great Britain. Key regions, particularly **London and the surrounding areas**, show a high density of accidents. Urban regions experience significantly more traffic congestion and vehicle interactions, which likely contributes to the frequency of accidents. **Heatmap Distribution of the Accidents**



3. Accident Severity and Road Types

The bar chart emphasizes the relationship between road types and accident severity:

- Single carriageways account for over **51,344** slight accidents, over **15,000** serious injuries, and a small but notable number of fatalities.
- Dual carriageways, roundabouts, and unknown road types collectively contribute much lower numbers.
 This suggests that single carriageways are disproportionately dangerous, perhaps due to limited lanes, varying speed limits, and possible poor design compared to multi-lane roads.



4. Speed Limits and Accident Severity

The pie chart focuses on the **speed limit zones** associated with road accidents:

- A significant majority (55.06%) of accidents occur in areas with a speed limit of **30 mph**, suggesting urban areas with heavy traffic are riskier.
- Zones with speed limits of **50 mph or higher** account for a smaller percentage of accidents, likely because these occur in less congested areas or controlled highways.

This aligns with the heatmap indicating urban regions as accident hotspots.



5. Weather and Road Surface Conditions

The scatter plot reveals correlations between road accidents and conditions such as:

• **Dry road surfaces** are predominant in accident records, hinting that typical weather is not a major contributor to crashes.

• Conditions like **wet surfaces**, **frost**, **or snow** lead to fewer accidents but likely involve more severe injuries, reflecting dangerous driving environments.



6. Accidents by Month and Day of Week

The line chart highlights accident trends over months, showing:

- A **peak during June, July, August, September, and November**, potentially correlating with increased summer travel activity.
- A decrease in winter months like January and February, coinciding with reduced travel or increased caution during inclement weather.
 On weekdays, Friday and Monday report higher accident counts, likely linked to commuter activity and work schedules.





7. Key Findings and Insights

- 1. **Urban Focus:** The heatmap and speed limit analysis identify urban areas with 30 mph zones as hotspots, likely due to high vehicle and pedestrian density.
- 2. **Road Types Matter:** Single carriageways see the highest accident numbers, warranting further exploration of their structural and traffic management issues.
- 3. **Summer Risks:** The peak in summer accidents may relate to longer days, increased holiday travel, and complacency during good weather.
- 4. Weather Influence: Most accidents occur under normal weather conditions, indicating driver behavior or road design as pivotal contributors.

8. Interactive Dashboard Design

- **Slicers:** Users can filter data by regions, weather conditions, accident dates, and severity, enhancing exploration.
- **Tooltips:** Provide additional context, enabling deeper insights into specific data points.
- **Colour Coding:** Severity levels (Fatal, Serious, Slight) are represented distinctly, aiding visualization clarity.

Conclusion

This dashboard successfully portrays the complexities of road accidents in Great Britain, linking factors like urban concentration, road type, and seasonal variations to accident trends. Its interactive components allow for dynamic analysis, making it a valuable tool for policymakers, road safety experts, and the public. Further studies might focus on specific urban areas, the effectiveness of speed controls, and infrastructural redesigns of single carriageways to mitigate accident risks. Challenges such as addressing incomplete or ambiguous data (e.g., unknown road types) were acknowledged and factored into the analysis.