**Project Task 1: Dashboard**

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**DSC 640: Data Presentation & Visualization**

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**Summary Paper: Strategic Data Analysis and Visualization on Airline Safety**

In response to heightened media scrutiny regarding airline safety, my role as a data analyst involved crafting a sophisticated data visualization strategy to inform and reassure internal stakeholders within our airline. The objective was to mitigate the potential negative impact of media coverage by presenting a compelling narrative supported by robust data analysis.

**Data Sources and Strategic Analysis**

I strategically leveraged three primary datasets:

1. **Airline Safety Data (airline-safety.csv):** This dataset provided detailed historical records of incidents and fatalities, enabling a longitudinal analysis of safety trends across different airlines. Additionally, I enhanced this dataset by including the geographic location of each airline's headquarters to facilitate geospatial analysis.
2. **Accidents and Fatalities per Year (Accidents and fatalities per year.csv)**: This dataset facilitated a comprehensive review of global accident trends over time, offering insights into the overall safety trajectory of the aviation industry.
3. **Passenger Traffic Data (Traffic and Operations 1929-Present\_data.csv):** Analyzing passenger traffic trends allowed me to contextualize safety incidents within the broader framework of increasing air travel demand.
4. **Automobile Deaths in the USA:** As an additional data element, I incorporated historical data on automobile fatalities in the USA to provide a comparative perspective on transportation safety.

**Strategic Visualizations and Decision-Making**

1. **Temporal Trends in Passenger Traffic (Line Graph):** Highlighted the steady growth in passenger traffic over time, punctuated by a dip during the COVID-19 pandemic, underscoring the resilience of air travel demand.
2. **Safety Performance Over Time (Line Graph):** Presented a nuanced analysis of accident and fatality rates over decades, showcasing a consistent decline in fatalities despite fluctuations in accident rates, thereby illustrating significant safety advancements.
3. **Comparative Safety Analysis (Clustered Column Chart):** Focused on U.S. airlines, comparing safety performance between two distinct periods (1985-1999 vs. 2000-2014), revealing a marked reduction in accidents and fatalities, substantiating the industry's commitment to safety improvement initiatives.
4. **Incident Distribution Among Airlines (Stacked Bar Graph):** Visualized incident and fatality distributions across airlines from 2000-2014, offering a granular view of safety records and highlighting variances among carriers.
5. **Geospatial Analysis of Fatalities (Global Map Visualization):** Mapped global fatalities to identify geographical hotspots, with Southeast Asia emerging as a region of interest, fostering a nuanced understanding of global safety disparities and enabling targeted safety interventions.
6. **Comparison with Automobile Fatality Rates (External Data Integration):** Integrated U.S. automobile fatality data to underscore the stark contrast in safety risk between air travel and ground transportation, reinforcing the safety superiority of air travel.

**Presentation Strategy**

To effectively communicate findings, I will adopt a strategic presentation approach:

* **Introduction and Context Setting:** Provide a comprehensive overview of data sources and analytical methodologies.
* **Visualization Narratives:** Articulate each visualization's significance, emphasizing key trends, anomalies, and strategic insights derived.
* **Findings and Implications:** Summarize critical findings, such as the industry's demonstrable safety improvements and the negligible risk of air travel compared to other modes of transport.
* **Strategic Recommendations:** Propose proactive measures to address public perception challenges, including targeted communication strategies and stakeholder engagement initiatives.

**Ethical Considerations**

Ethically, utmost care was taken to ensure data accuracy, transparency, and unbiased interpretation. Given the potential ramifications of public perception on airline sales and industry reputation, each visualization was meticulously crafted to uphold integrity and foster informed decision-making among stakeholders.

In conclusion, this strategic data visualization initiative serves as a pivotal tool in navigating the current media landscape, empowering our organization to proactively address concerns and reaffirm confidence in the safety of air travel through data-driven insights and compelling visual narratives.