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| **PROJECT OVERVIEW STATEMENT** | **Project Name:**  Flight Delay Analysis | **Student Name:**  Bhargava Naidu Kommineni |
| **Problem/Opportunity:** Delays in the aviation industry have been an ongoing problem with far-reaching consequences. The delays impact passengers, disrupt their journey plans, and cause operational inefficiencies, increased costs, and decreased customer satisfaction. Weather and security concerns to mechanical issues and staffing problems, are major causes of these delays.  This work affords an opportunity to attempt to solve some of these challenges. Such analysis of flight delays over the last two decades enables us to outline patterns and trends that show which airports and airlines experience the most disruptions. These findings offer a good opportunity to make improvement efforts where they are needed most. For instance, the identification of the most delay-prone airports can assist airport authorities in resource allocation. Similarly, identifying carriers with high delay rates could give them an incentive to streamline their operations.  This analysis gives us the added advantage of showing how different causes of delay for instance, those emanating from weather, carrier operations, and air traffic control 8interact so that airlines and regulators can better plan and make informed decisions. | | |
| ****Goal :**** We will analyze flight arrival and departure delays of the U.S. commercial flights from 1987 to 2008 in this project. By doing so, we want to be able to reveal interesting information on how factors such as problematic airports, airlines, or specific delay types help identify key contributors to delays. By examining the dataset, we hope to:  \* Highlight the top three airports and carriers that had the greatest delays.  \* Compare arrival and departure delays to understand which one impacts the overall schedules of flights more.  \* Classify the types of delays and their frequency to identify which factor is most influential to the delays.  Ultimately, it is hoped that actionable recommendations can be provided to airlines, airports, and regulators on how to reduce delays, improve flight scheduling, and enhance the passenger experience. | | |
| Objectives :  · Identify the top three airports with the highest delay times to pinpoint locations needing operational improvements.  · Identify the three carriers with the longest delays to identify operational inefficiencies in specific airlines.  · Compare arrival and departure delays to know which phase is prone to causing more delays for this flight.  · Analyze the causes of delays, such as CarrierDelay, WeatherDelay, and NASDelay, to determine which cause is most prevalent.  • Provide actionable recommendations based on the analysis to help airlines, airports, and regulators reduce delays and optimize operations. | | |
| ****Success Criteria**** Well, the comprehensive identification of trends in flight delays for airports, airlines, and causes of delay will be well elaborated, providing an overall view of all factors that affect delays.  But what will ultimately determine its success is precisely how well this can be translated into actionable recommendations on how airlines, airports, and regulators can reduce delays and improve operations.  Data-driven insights: The project would be successful with the proper deployment of techniques regarding data analysis so that valid results could be inferred, based on evidence. It should be informed by the data set.  Effective articulation of results or findings: Success here involves clarity and good accessibility in respect to the last report or even presentation. Those results have to be clearly stipulated and clearly communicated so stakeholders can easily assimilate them or put them to work.  Timely completion of the project: The project will be successful if it falls within the timeline set for its completion, while the quality and depth of the analysis are not compromised. | | |
| **Assumptions, Risks, Obstacles:**  This project will assume that the dataset is complete, accurate, and with reliable information about delay causes. We also assume necessary tools and computational resources will be available and that relevant experts and stakeholders will be engaged. The risks involve the inaccuracy of data, the limitation of time due to the size of the dataset, and the inaccuracy of attributing delay causes. Moreover, resistance might be put forward to the changes recommended, and the analysis might face challenges in managing large volumes of data, understanding complex variables, and identifying consistent patterns across years. Further limitations could come from biases in the data or external factors that are not represented in the dataset. | | |