

Analysis Report on Airline Passenger Numbers (1949-1960)

Executive Summary

This report presents a detailed analysis of airline passenger numbers from 1949 to 1960. It explores trends, seasonal patterns, and includes a prediction using statistical models.

Project Objectives

- Analyze the historical evolution of airline passenger numbers.
- Identify seasonal patterns and long-term trends.
- Forecast future passenger numbers using an ARIMA model.

Methodology

1. Data Collection:

Historical data on airline passenger numbers was collected from a reliable data source.

2. Exploratory Data Analysis:

An initial analysis was conducted to understand data distribution, identify outliers, and detect long-term trends.

3. Seasonal Analysis:

Seasonal decomposition analysis was applied to understand monthly and seasonal patterns in the data.

4. Predictive Modeling:

An ARIMA model was implemented to predict future passenger numbers, evaluating its ability to fit historical data.

Results

Exploratory Data Analysis:

A general upward trend in passenger numbers over time was observed.

Seasonal peaks were identified during summer and holiday months.

Seasonal Analysis:

Seasonal decomposition analysis revealed consistent patterns with seasonal increases in summer months and decreases in winter months.

ARIMA Model

The ARIMA model provided reasonable predictions of passenger numbers for upcoming periods, considering seasonal variations and historical trends.

Conclusions

Airline passenger numbers show a clear upward trend over the analyzed period.

Seasonal variations significantly impact flight demand, with peaks observed during holiday months.

The ARIMA model effectively predicts seasonal variations and provides a robust foundation for future projections.