

transport data

Report



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# Introduction

In today's dynamic business environment, effective transportation management plays a pivotal role in ensuring the smooth flow of goods and services across supply chains. The analysis of transportation data offers valuable insights into various aspects of shipping and delivery operations, allowing organizations to optimize processes, reduce costs, and enhance customer satisfaction.

This report presents an in-depth analysis of transportation data, focusing on key trends, performance metrics, and actionable insights derived from the analysis. By leveraging the power of data analytics, organizations can make informed decisions, drive operational excellence, and gain a competitive edge in the marketplace.

Throughout this report, we will explore the import and cleansing of the dataset, conduct data exploration to understand the distribution and characteristics of the transportation data, define and calculate relevant Key Performance Indicators (KPIs) for transportation performance, and perform a time series analysis on key variables such as ship date and delivery date.

By the end of this report, stakeholders will gain a comprehensive understanding of transportation operations, enabling them to identify opportunities for improvement, optimize resource allocation, and ultimately enhance the efficiency and effectiveness of their transportation processes.

# Data Import and Cleaning

The dataset was seamlessly imported into Power BI for analysis, laying the groundwork for insightful exploration. Leveraging Power BI's capabilities, we meticulously addressed missing values, outliers, and inconsistencies through robust data cleansing techniques. By ensuring the integrity and quality of the dataset, we established a reliable foundation for subsequent analysis, empowering our interpretation of transportation trends and performance metrics with accuracy and precision.

# Data Exploration

During the data exploration phase, we delved into the distribution and characteristics of the transportation data. Through a series of visualizations including histograms, box plots, and bar charts, we gained insights into both numerical and categorical variables. Histograms and box plots allowed us to understand the distribution and variability of numerical variables such as total miles, loaded miles, shipping cost, revenue, and ship days. Meanwhile, bar charts provided a clear visualization of categorical variables, such as category ID and trip type, enabling us to discern patterns and frequencies within the data. Additionally, summary statistics were computed for key variables, shedding light on central tendencies and variability within the dataset. This comprehensive exploration laid the groundwork for deeper analysis and informed decision-making regarding transportation operations.

# Key Performance Indicators (KPIs)

In the context of transportation performance evaluation, several key metrics, commonly referred to as Key Performance Indicators (KPIs), have been defined and calculated. These metrics serve as benchmarks for assessing the efficiency, effectiveness, and overall performance of transportation operations.

Among the KPIs identified are metrics such as the On-Time Delivery Rate (OTDR), which measures the percentage of shipments delivered on or before the scheduled delivery date. Transit Time, another critical KPI, provides insight into the average time taken for shipments to travel from the origin to the destination. Delivery Accuracy, expressed as a percentage, indicates the proportion of shipments delivered without errors or discrepancies.

Cost per Mile and Revenue per Mile are essential financial KPIs that help in understanding the cost-effectiveness of transportation operations. Capacity Utilization measures the percentage of available capacity utilized for shipping, offering insights into resource optimization. Lastly, Shipping Efficiency, calculated as the ratio of revenue generated to shipping costs incurred, provides an indication of the overall profitability and effectiveness of transportation activities.

By monitoring and analysing these KPIs, organizations can identify areas for improvement, optimize resource allocation, and enhance overall performance in transportation management. These metrics serve as actionable insights for decision-makers, enabling them to drive continuous improvement and achieve strategic objectives in transportation operations.

# Time Series Analysis

Time series analysis was conducted on the ship date and delivery date columns to discern temporal patterns and trends in shipping and delivery activity. Line charts were employed to visualize the fluctuations in shipping and delivery volumes over time, facilitating the identification of recurring patterns, seasonal trends, and irregularities. By examining the data at different granularities such as year, quarter, month, or day, insights into the dynamics of transportation operations were gleaned. Additionally, comparisons between shipping trends and delivery trends were made to assess the efficiency of delivery processes and uncover any discrepancies between expected and actual delivery times. This analysis provides valuable insights into the temporal dynamics of transportation operations, enabling informed decision-making and the formulation of strategies to optimize shipping and delivery efficiency.

# Conclusion

In conclusion, the analysis of transportation data has provided valuable insights into the dynamics of shipping and delivery operations. By leveraging data-driven approaches, organizations can optimize their transportation processes, improve efficiency, and ultimately enhance customer satisfaction. The identification of key trends and performance metrics through this analysis lays the groundwork for informed decision-making and strategic planning in transportation management. Moving forward, continued monitoring and analysis of transportation data will be crucial for identifying areas for improvement and implementing targeted interventions to drive operational excellence and maximize business outcomes.