IST 718 Proposal

**Team Members**

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**Overview:**

Supply chain logistics create lots of data. There is collaboration between various departments in the logistics department to co-ordinate and ship products ordered by customer. There are various systems that are used in this process create details of a shipment and monitor the shipment at various times until it is delivered to customer.

**Data:**

***Shipping data from Logistics system:***The data is extracted from a logistics system for a period of 5 years from Jan 2015 to June 2021 with almost 0.5 million transactions. The data has following information from\_location\_zipcode, to \_location\_Zipcode, miles driven, cost of shipping, Dispatch date, delivered date and other metrics

The dataset has 2 dimensions (from\_zipcode and to\_zipcode) and rest are all shipping transaction metrics. Total number of attributes – 19

Graphical user interface

Description automatically generated with low confidence

There will be additional variables derived from this dataset to know number of days between estimated ship date and actual ship date. Also, the time it took to deliver dispatch date and delivered date

Another variable that created in the dataset would be the distance between from and to zipcode to understand the actual distance the miles driven and if this distance value affects any of the other metrics

***Average Crude Prices:*** Since logistics has direct relation to the crude oil prices, the data for average crude prices by month/year will be joined to the above dataset on the shipping date to understand if there has been a linear progression between oil prices and cost of shipment

Data will be scraped from the below website

<https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=RWTC&f=M>

***Season:*** This dataset will benefit from having day to day weather information for all zip codes. Since historical weather data by zip code was difficult to obtain, seasons of the year will be added based on the month of shipping

**Inflation Rate:** Adding inflation data by year and month from 2015 to 2021 to understand if the inflation rate has any effect in any of the other metrics

Inflation rate is extracted from the below website

<https://www.usinflationcalculator.com/inflation/current-inflation-rates/>

**Data Relationships:**

**Shipping Data**

Shipping Date

Shipping Month Year

**Season**

Month Year

Season of the Year

**Crude Prices**

Month Year

Crude Price

**Inflation Rate**

Shipping Month Year

Inflation %

**Questions to answer:**

1. Was there any delay in shipping for certain transactions ? if so, what factors might have contributed to delay in shipping and prevent delays in the future
2. Predict number of delay days for a shipment
3. Predict cost of shipment based on average crude prices, season, and other metrics

**Analytics on Supply Chain Logistics:**

The department who runs the supply chain logistics will benefit from predicting delays in shipment, and address challenges withing the supply chain to reduce number of days for certain shipments to be delivered. The business can also use other factors to calculate what the ideal price should be for a shipment based on external factors like oil price and season of the year