

Project Title: Logistics & Transportation- Fleet Performance & Delivery Efficiency

Project steps:

*Below the question, answer description and respective screenshots attached.

1. Data Cleaning & Modeling:

Q1a) Fix missing fuel consumption values (use avg. per vehicle type)?

The missing fuel value was replaced with the **average fuel consumption for its vehicle type** (Trip ID T050, Vehicle ID,V06 Van) using the **Group By method in Power Query**. The calculated average was **81.38 litres**, and this value was used to fill the null using replace values.

Group By

Specify the column to group by and the desired output.

Basic Advanced

Vehicle Type

New column name: Average Fuel

Operation: Average

Column: Fuel_Consumed_L

OK Cancel

Vehicle Type	Average Fuel
Mini-Truck	105.714444
Van	81.38809524
Truck	95.57210526

File Home Transform Add Column View Tools Help

Queries [1]

Trip_Data

Fuel_Consumed_L

ReplaceValue(#"Removed Blank Rows",null,81.388,Replace.ReplaceValue,{"Fuel_Consumed_L"})

Destination	Distance_km	Fuel_Consumed_L	Delivery_Status	Delivery_Date
Delhi	1188	92.84	On-Time	2/
Kolkata	398	43.89	Late	2/
Chennai	385	31.03	Late	1/2
Hyderabad	818	94.24	Late	2/1
Kolkata	1806	121.36	On-Time	2/1
Pune	424	37.63	On-Time	2/1
Bangalore	909	70.4	On-Time	1/1
Mumbai	1404	151.36	Late	2/2
Pune	555	37.39	On-Time	1/1
Kolkata	705	62.94	Late	1/1
Delhi	64	4.96	Late	1/2
Chennai	1245	95.14	On-Time	2/1
Bangalore	116	8.71	Late	1/
Mumbai	1259	87.59	Late	1/2
Chennai	1803	211.34	On-Time	2/1
Hyderabad	1096	100.52	Late	1/2
Delhi	572	61.6	On-Time	1/2
Bangalore	1441	140.79	Late	2/2
Mumbai	1685	119.01	Late	2/1
Delhi	1233	81.388	On-Time	1/1

Query Settings

PROPERTIES

Name: Trip_Data

APPLIED STEPS

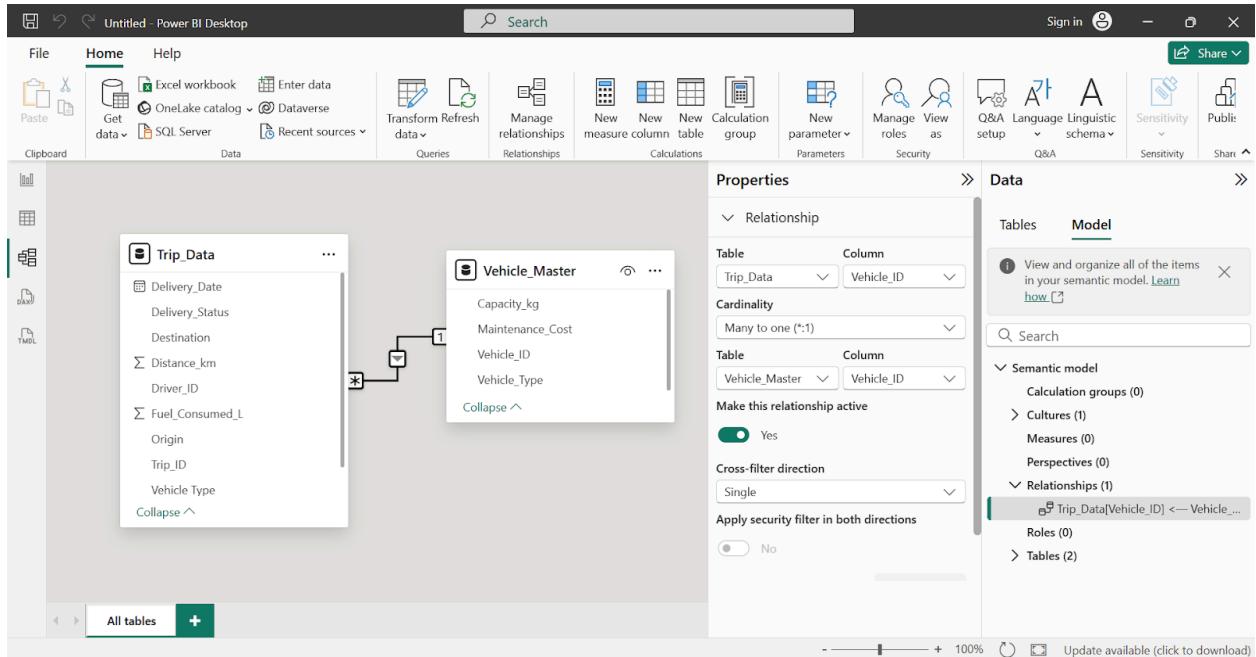
Source: Navigation: Promoted Headers: Changed Type: Removed Blank Rows: Replaced Value(MissingValue...)

10 COLUMNS, 50 ROWS Column profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 10:04 PM

Q1b) Relate Trips with Vehicle Master?

A **One-to-Many** relationship was created between **Vehicle Master (1)** and **Trips (*)** using **Vehicle ID** as the key, with a **single-direction cross filter** from Vehicle Master to Trips.



2. Dax Measures:

Q2a) Fuel Efficiency = Distance / Fuel Consumed?

A calculated measure was created for aggregated fuel efficiency, to be used in KPIs and charts, and a calculated column was created for per-trip fuel efficiency.

~Syntax:

Fuel Efficiency =DIVIDE(Sum(Trip_Data[Distance_km]),sum(Trip_Data[Fuel_Consumed_L]))

The screenshot shows the Power BI Desktop interface with the 'Format' tab selected. A new measure is being defined with the formula: `Fuel Efficiency = DIVIDE(Sum(Trip_Data[Distance_km]),sum(Trip_Data[Fuel_Consumed_L]))`. The value '11.62' is displayed in the preview area.

~Syntax:

Fuel Efficiency Per Trip = DIVIDE(Trip_Data[Distance_km],Trip_Data[Fuel_Consumed_L])

The screenshot shows the Power BI Desktop interface with the 'Column tools' tab selected. A new calculated column is being defined with the formula: `Fuel Efficiency Per Trip = DIVIDE(Trip_Data[Distance_km],Trip_Data[Fuel_Consumed_L])`. The data table on the left lists various trips with their details, and the 'Fuel Efficiency Per Trip' column is highlighted. The data pane on the right shows the relationships between tables like 'Trip_Data', 'Delivery_Status', and 'Fuel Efficiency'.

Q2b) On-Time Delivery % = On-Time Trips / Total Trips?

A measure was created to calculate the percentage of on-time trips out of total trips to find On-Time delivery %:

~*Syntax*:

On-Time Delivery % = DIVIDE(CALCULATE(COUNTROWS(Trip_Data),
Trip_Data[Delivery_Status] = "On-Time"), COUNTROWS(Trip_Data))

The screenshot shows the Power BI Desktop interface with the following details:

- Measure tools tab:** The current tab is "Measure tools". A new measure named "On-Time Delivery %" has been created, with the formula: `1 On-Time Delivery % = DIVIDE(CALCULATE(COUNTROWS(Trip_Data), Trip_Data[Delivery_Status] = "On-Time"), COUNTROWS(Trip_Data))`.
- Formatting:** The measure is formatted as a Percentage (\$%, 0 decimal places).
- Properties:** The measure is categorized under "Uncategorized".
- Visualizations:** A single value visual is displayed, showing the value **11.62** and the label **60%** (On-Time Delivery %).
- Data:** The data source is "Trip_Data", which includes fields like Delivery_Status, Destination, Distance_km, Driver_ID, Fuel_Efficiency, Fuel_Consumption, and On-Time Del... (partially visible).

Q2c) Cost per km = (Fuel Cost + Maintenance Cost) / Distance?

A measure was created to calculate the cost per kilometre, considering fuel and maintenance cost. This measure uses the given fuel price (₹85.50 per litre) and adds maintenance cost from the vehicle master table.

~Syntax: Cost per km =
DIVIDE((SUM(Trip_Data[Fuel_Consumed_L]) * 85.50)
+SUM(Vehicle_Master[Maintenance_Cost]), SUM(Trip_Data[Distance_km]))

The screenshot shows the Power BI Desktop interface with the 'Measure tools' tab selected. A new measure named 'Cost per km' is being defined. The structure of the measure is:

```
1 Cost per km =
2 DIVIDE( (SUM(Trip_Data[Fuel_Consumed_L]) * 85.50) +SUM(Vehicle_Master[Maintenance_Cost]),
3 | SUM(Trip_Data[Distance_km]))
```

The visual pane displays a single value of 8.80 for 'Cost per km'. The Data pane on the right shows the 'Trip_Data' table with the 'Cost per km' measure selected.

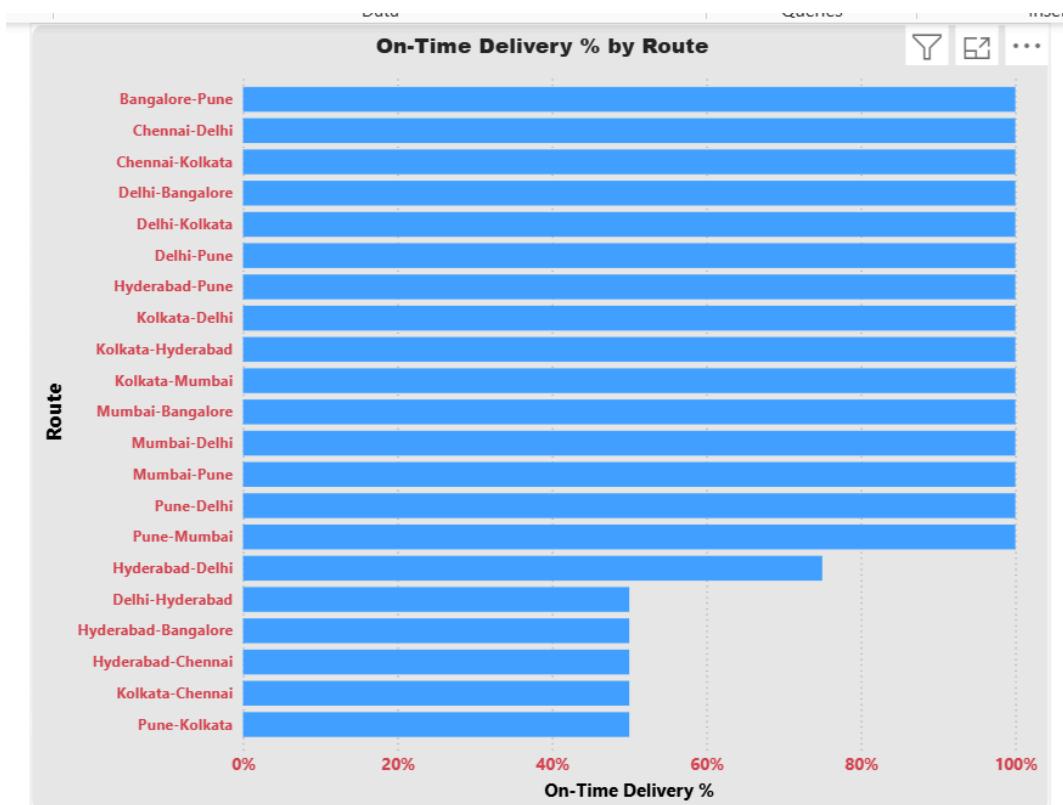
3. Visualisation

Q3a) Bar chart: On-Time Delivery % by Route?

A clustered bar chart was created to display the On-Time Delivery Percentage for each route. A calculated Route column was created by combining Origin and Destination fields. The On-Time Delivery % measure was used as the value.

X-Axis - On-Time Delivery%

Y-Axis - Route

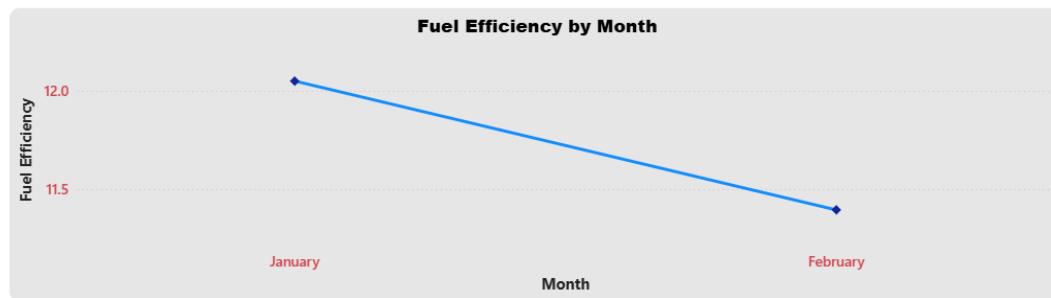


Q3b) Line chart: Fuel Efficiency trend by month?

A line chart was created to show the Fuel Efficiency trend across months using the measure Fuel Efficiency. This visualisation helps analyse how fuel efficiency changes over time and supports decisions to improve fleet performance.

X-Axis - Delivery Date (Hierarchy Month)

Y-Axis - Fuel Efficiency measure



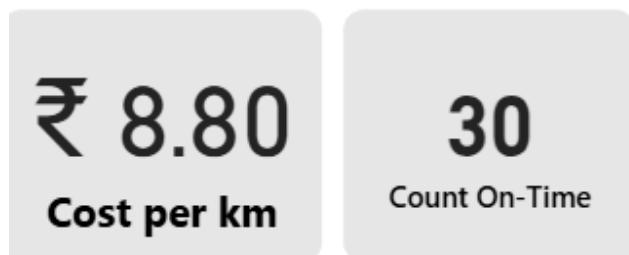
Q3c) KPI Card: Avg. Delivery Time, cost per km?

Avg. Delivery Time - As the dataset only includes the delivery status column (on-time/late) card visual was created based on the **count of on-time deliveries**.

~Syntax - Count On-Time = `CALCULATE(COUNTROWS(Trip_Data),FILTER(Trip_Data, Trip_Data[Delivery_Status] = "On-Time"))`

Cost Per Km - Measure was created to calculate the cost per kilometre for card visual.

~Syntax: `Cost per km = DIVIDE((SUM(Trip_Data[Fuel_Consumed_L]) * 85.50) + SUM(Vehicle_Master[Maintenance_Cost]), SUM(Trip_Data[Distance_km]))`



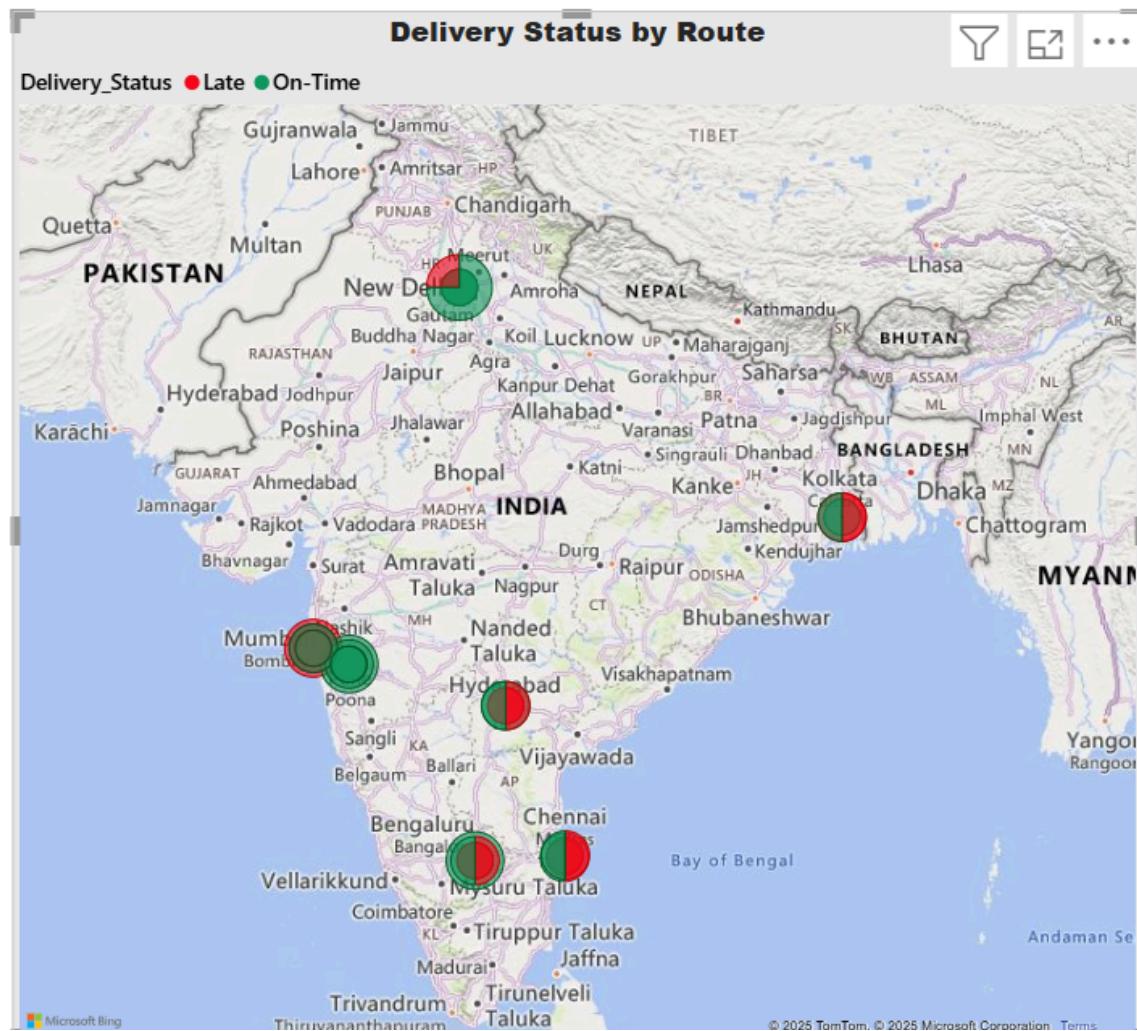
Q3d) Map Visual: Delivery Performance by route (Origin-Destination) ?

A map visual chart created to display the delivery performance by route.

Location - Route

Legend - Delivery Status

Tool Tips - Fuel Efficiency / Vehicle ID



4. Dashboard :

This dashboard presents key metrics for transport fleet performance and delivery efficiency. It highlights the cost per km, total on-time deliveries and allows filtering by Vehicle ID and delivery status. Visuals include a bar chart of on-time percentages by route, a route map showing delivery status, and a line graph of monthly fuel efficiency, offering a quick and clear view of operational performance and delivery reliability.

