

## AI-Powered Fleet Performance & Delivery Efficiency Dashboard -Power BI

### 1. Data Cleaning & Modeling:

1. Fix missing fuel consumption values (use mean imputation).

Query Editor Formula Bar: `= List.Average(#"Changed Type"[Fuel_Consumed_L])`

Result: 91.882978723404264

Query Settings: Trip\_Data

APPLIED STEPS:

- Source
- Navigation
- Promoted Headers
- Changed Type
- Calculated Average**
- Replaced mean

Query Editor Formula Bar: `= Table.ReplaceValue(#"Changed Type",null,91.882978723404264,Replacer.ReplaceValue,{"Fuel_Consumed_L"})`

Origin	Destination	Distance_km	Fuel_Consumed_L	Delivery_Station
Delhi	Pune	1173	108.42	On-Time
Mumbai	Bangalore	1727	161.33	On-Time
Mumbai	Pune	1459	154.7	On-Time
Hyderabad	Pune	382	26.6	On-Time
Pune	Mumbai	398	33.2	On-Time
Chennai	Mumbai	1275	85.04	Late
Chennai	Kolkata	752	58.08	On-Time
Delhi	Pune	74	5.24	On-Time
Delhi	Hyderabad	186	16.22	On-Time
Bangalore	Hyderabad	1375	105.21	Late
Kolkata	Hyderabad	419	51.77	On-Time
Kolkata	Chennai	1571	188.52	Late
Hyderabad	Bangalore	1524	104.51	On-Time
Kolkata	Mumbai	1956	179.88	On-Time
Bangalore	Mumbai	858	91.88297872	Late
Pune	Kolkata	1269	102.91	On-Time
Pune	Delhi	1565	107.23	On-Time
Hyderabad	Pune	1796	155.52	On-Time
Mumbai	Bangalore	1640	148.87	On-Time
Delhi	Mumbai	446	31.98	Late
Hyderabad	Delhi	140	11.44	On-Time

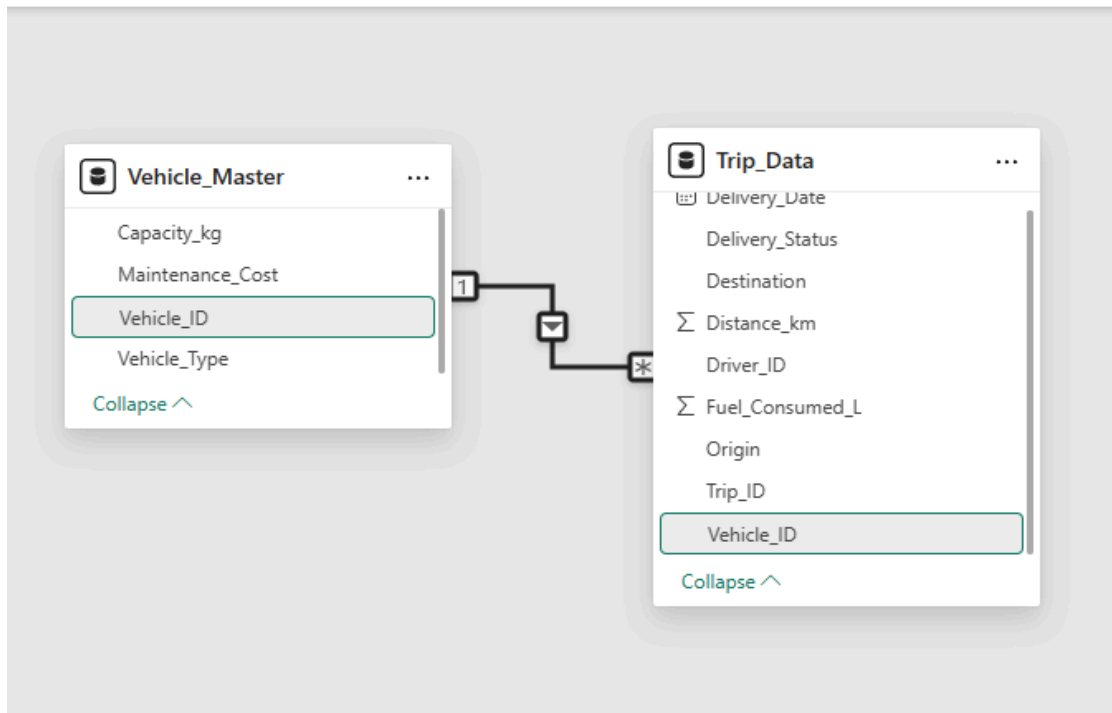
Query Settings: Trip\_Data

APPLIED STEPS:

- Source
- Navigation
- Promoted Headers
- Changed Type
- Replaced mean Value**
- Bounded Off

I have imputed the average instead of null values in fuel consumption column

2. Create a relationship using Vehicle\_ID between Trip\_Data and the Vehicle Master table.



## 2. DAX Measures:

1. Fuel Efficiency = Distance / Fuel Consumed (Fuel Efficiency =  $\text{DIVIDE}(\text{Trip\_Data}[\text{Distance\_km}], \text{Trip\_Data}[\text{Fuel\_Consumed\_L}])$ )

✓

1 Fuel Efficiency = DIVIDE(Trip\_Data[Distance\_km],Trip\_Data[Fuel\_Consumed\_L])

▼

ID	Vehicle_ID	Driver_ID	Origin	Destination	Distance_km	Fuel_Consumed_L	Delivery_Status	Delivery_Date	Fuel Efficiency
	V04	D01	Delhi	Pune	1173	108.42	On-Time	27 January 2023	1081.90%
	V06	D08	Mumbai	Bangalore	1727	161.33	On-Time	21 February 2023	1070.48%
	V06	D08	Mumbai	Pune	1459	154.7	On-Time	17 February 2023	943.12%
	V04	D09	Hyderabad	Pune	382	26.6	On-Time	18 February 2023	1436.09%
	V06	D08	Pune	Mumbai	398	33.2	On-Time	15 February 2023	1198.80%
	V06	D07	Chennai	Mumbai	1275	85.04	Late	25 February 2023	1499.29%
	V07	D03	Chennai	Kolkata	752	58.08	On-Time	19 January 2023	1294.77%
	V02	D10	Delhi	Pune	74	5.24	On-Time	01 January 2023	1412.21%
	V02	D07	Delhi	Hyderabad	186	16.22	On-Time	23 February 2023	1146.73%
	V02	D02	Bangalore	Hyderabad	1375	105.21	Late	02 February 2023	1306.91%
	V06	D03	Kolkata	Hyderabad	419	31.17	On-Time	21 January 2023	1344.24%
	V06	D01	Kolkata	Delhi	751	51.77	On-Time	15 February 2023	1450.65%
	V05	D04	Kolkata	Chennai	1571	188.52	Late	02 February 2023	833.33%
	V05	D05	Hyderabad	Bangalore	1524	104.51	On-Time	16 February 2023	1458.23%
	V05	D06	Kolkata	Mumbai	1956	179.88	On-Time	21 January 2023	1087.39%
	V05	D06	Bangalore	Mumbai	858	91.88	Late	18 January 2023	933.83%
	V07	D07	Pune	Kolkata	1269	102.91	On-Time	16 January 2023	1233.12%
	V07	D10	Pune	Delhi	1565	107.23	On-Time	12 February 2023	1459.48%
	V07	D10	Hyderabad	Pune	1796	155.52	On-Time	28 February 2023	1154.84%
	V04	D02	Mumbai	Bangalore	1640	148.87	On-Time	06 January 2023	1101.63%
	V07	D07	Delhi	Mumbai	446	31.98	Late	11 January 2023	1394.62%
	V07	D09	Hyderabad	Delhi	140	11.44	On-Time	07 February 2023	1223.78%

Data

Q Search

▼ Trip\_Data

▼ Delivery\_Date

Delivery\_Status

Destination

Σ Distance\_km

Driver\_ID

Fuel Efficiency

Σ Fuel\_Consumed\_L

On-Time Delivery %

Origin

Trip\_ID

Vehicle\_ID

▼ Vehicle\_Master

Capacity\_kg

Maintenance\_Cost

Vehicle\_ID

Vehicle\_Type

## 2. On-Time Delivery % = On-Time Trips / Total Trips: On-Time Delivery % =

$\text{DIVIDE}(\text{CALCULATE}(\text{COUNTA}(\text{Trip\_Data}[\text{Delivery\_Status}]), \text{Trip\_Data}[\text{Delivery\_Status}] = \text{"On-Time"}), \text{COUNTA}(\text{Trip\_Data}[\text{Delivery\_Status}]))$

1 On-Time Delivery % = CALCULATE(COUNTA(Trip_Data[Delivery_Status]),Trip_Data[Delivery_Status]="On-Time")/COUNTA(Trip_Data[Delivery_Status])							
Vehicle_ID	Driver_ID	Origin	Destination	Distance_km	Fuel_Consumed_L	Delivery_Status	Delivery_Date
V04	D01	Delhi	Pune	1173	108.42	On-Time	27 January 2023
V06	D08	Mumbai	Bangalore	1727	161.33	On-Time	21 February 2023
V06	D08	Mumbai	Pune	1459	154.7	On-Time	17 February 2023
V04	D09	Hyderabad	Pune	382	26.6	On-Time	18 February 2023
V06	D08	Pune	Mumbai	398	33.2	On-Time	15 February 2023
V06	D07	Chennai	Mumbai	1275	85.04	Late	25 February 2023
V07	D03	Chennai	Kolkata	752	58.08	On-Time	19 January 2023
V02	D10	Delhi	Pune	74	5.24	On-Time	01 January 2023
V02	D07	Delhi	Hyderabad	186	16.22	On-Time	23 February 2023
V02	D02	Bangalore	Hyderabad	1375	105.21	Late	02 February 2023
V06	D03	Kolkata	Hyderabad	419	31.17	On-Time	21 January 2023
V06	D01	Kolkata	Delhi	751	51.77	On-Time	15 February 2023
V05	D04	Kolkata	Chennai	1571	188.52	Late	02 February 2023
V05	D05	Hyderabad	Bangalore	1524	104.51	On-Time	16 February 2023
V05	D06	Kolkata	Mumbai	1956	179.88	On-Time	21 January 2023
V05	D06	Bangalore	Mumbai	858	91.88	Late	18 January 2023
V07	D07	Pune	Kolkata	1269	102.91	On-Time	16 January 2023
V07	D10	Pune	Delhi	1565	107.23	On-Time	12 February 2023

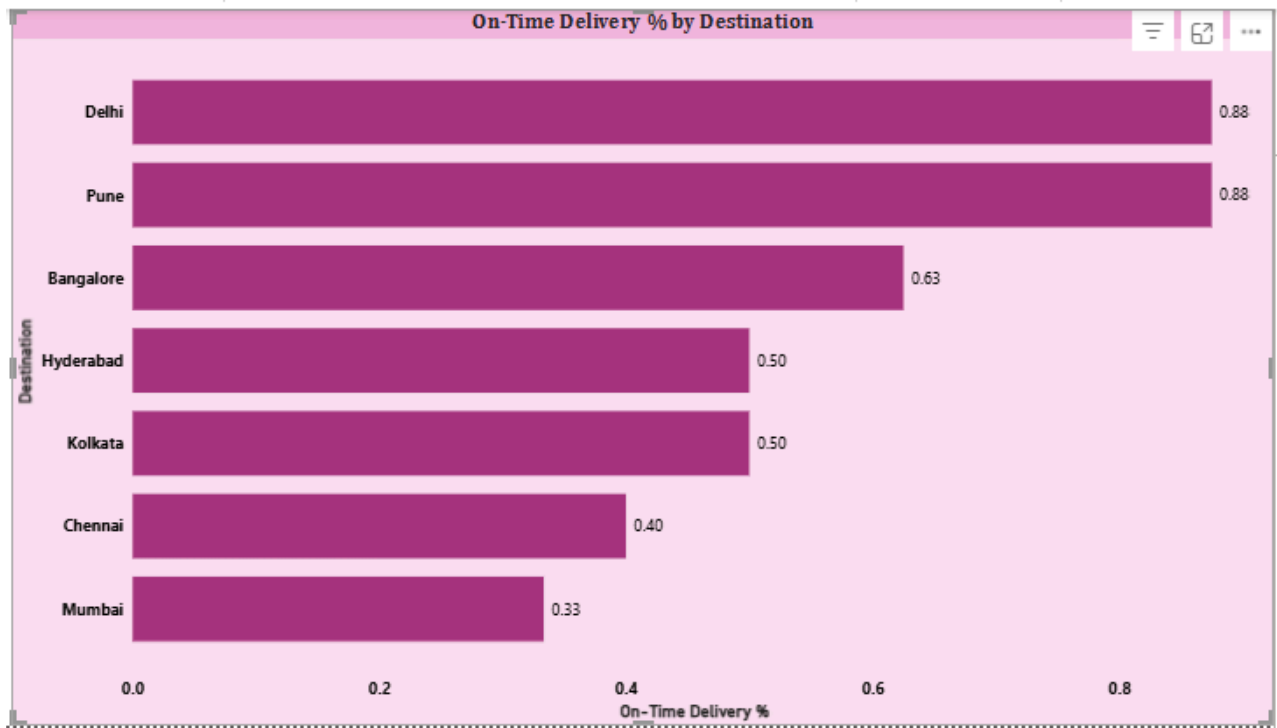
## 3. Cost per km = (fuel cost + Maintenance Cost) / Distance: Cost Per Km =

$\text{DIVIDE}((\text{Trip\_Data}[\text{Fuel\_Consumed\_L}] * 100) + (\text{RELATED}(\text{Vehicle\_Master}[\text{Maintenance\_Cost}])), \text{Trip\_Data}[\text{Distance\_km}])$

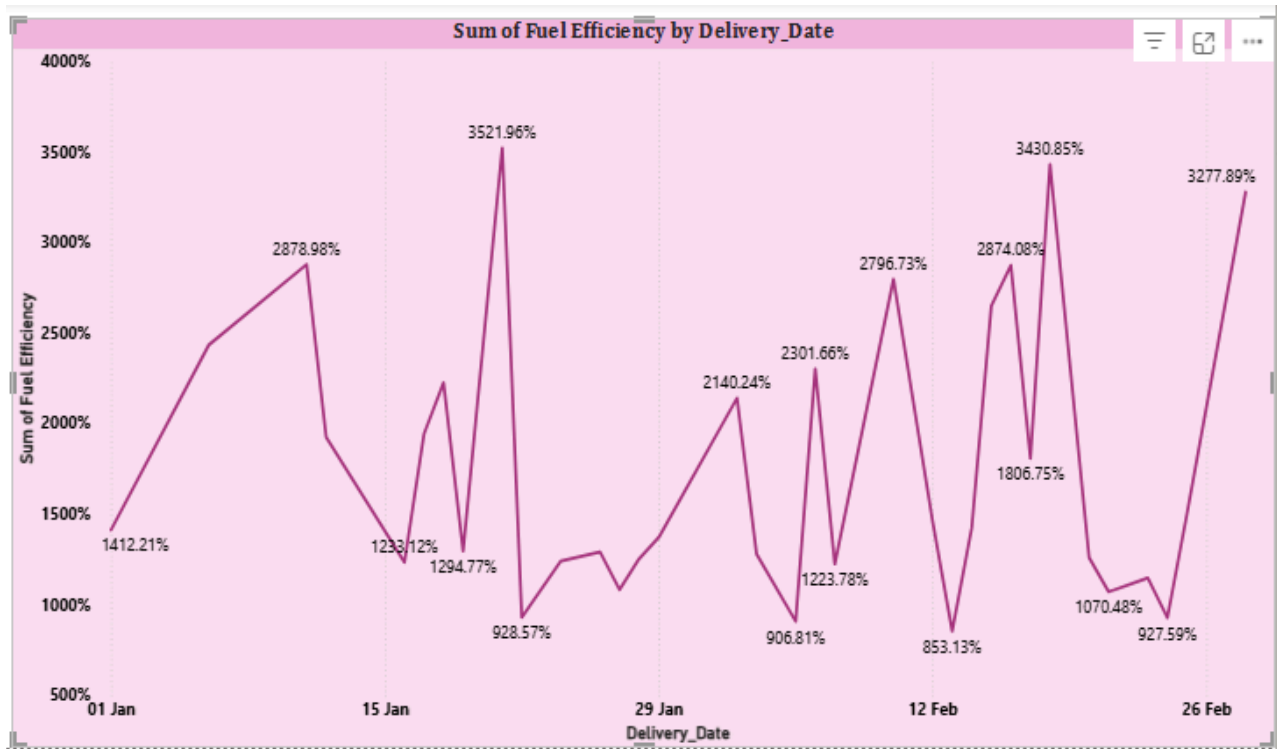
1 Cost Per Km = DIVIDE((Trip_Data[Fuel_Consumed_L]*100)+(RELATED(Vehicle_Master[Maintenance_Cost])),Trip_Data[Distance_km])									
Vehicle_ID	Driver_ID	Origin	Destination	Distance_km	Fuel_Consumed_L	Delivery_Status	Delivery_Date	Fuel Efficiency	Cost Per Km
V04	D01	Delhi	Pune	1173	108.42	On-Time	27 January 2023	1081.90%	\$16.94
V06	D08	Mumbai	Bangalore	1727	161.33	On-Time	21 February 2023	1070.48%	\$12.77
V06	D08	Mumbai	Pune	1459	154.7	On-Time	17 February 2023	943.12%	\$14.66
V04	D09	Hyderabad	Pune	382	26.6	On-Time	18 February 2023	1436.09%	\$30.61
V06	D08	Pune	Mumbai	398	33.2	On-Time	15 February 2023	1198.80%	\$23.20
V06	D07	Chennai	Mumbai	1275	85.04	Late	25 February 2023	1499.29%	\$11.31
V07	D03	Chennai	Kolkata	752	58.08	On-Time	19 January 2023	1294.77%	\$24.79
V02	D10	Delhi	Pune	74	5.24	On-Time	01 January 2023	1412.21%	\$98.65
V02	D07	Delhi	Hyderabad	186	16.22	On-Time	23 February 2023	1146.73%	\$45.15
V02	D02	Bangalore	Hyderabad	1375	105.21	Late	02 February 2023	1306.91%	\$12.58
V06	D03	Kolkata	Hyderabad	419	31.17	On-Time	21 January 2023	1344.24%	\$21.55
V06	D01	Kolkata	Delhi	751	51.77	On-Time	15 February 2023	1450.65%	\$14.77
V05	D04	Kolkata	Chennai	1571	188.52	Late	02 February 2023	833.33%	\$23.30
V05	D05	Hyderabad	Bangalore	1524	104.51	On-Time	16 February 2023	1458.23%	\$18.51
V05	D06	Kolkata	Mumbai	1956	179.88	On-Time	21 January 2023	1087.39%	\$18.27
V05	D06	Bangalore	Mumbai	858	91.88	Late	18 January 2023	933.83%	\$31.40
V07	D07	Pune	Kolkata	1269	102.91	On-Time	16 January 2023	1233.12%	\$18.23
V07	D10	Pune	Delhi	1565	107.23	On-Time	12 February 2023	1459.48%	\$15.05
V07	D10	Hyderabad	Pune	1796	155.52	On-Time	28 February 2023	1154.84%	\$15.81
V04	D02	Mumbai	Bangalore	1640	148.87	On-Time	06 January 2023	1101.63%	\$14.59
V07	D07	Delhi	Mumbai	446	31.98	Late	11 January 2023	1394.62%	\$35.95
V07	D09	Hyderabad	Delhi	140	11.44	On-Time	07 February 2023	1223.78%	\$99.86

### 3. Visualization:

**Bar chart:** On-Time Delivery % by Destination.



**Line chart:** Fuel efficiency trend by delivery date.



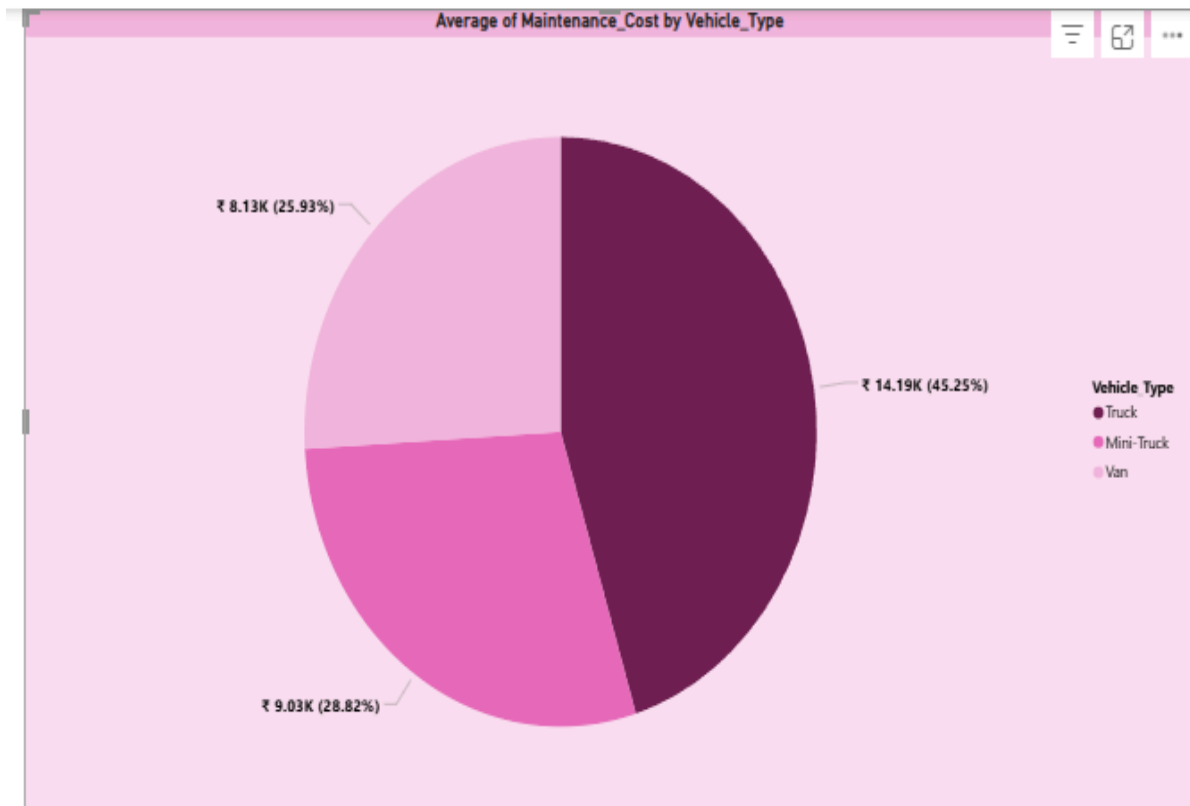
## Cards visualization: 1. Avg. Delivery Time      2. Average cost per km

Average Delivery Time =

```
AVERAGEX('Trip_Data','Trip_Data'[Delivery_Date]-CALCULATE(MAX('Trip_Data'[Delivery_Date]),FILTER('Trip_Data','Trip_Data'[Delivery_Date]<EARLIER('Trip_Data'[Delivery_Date]))))
```

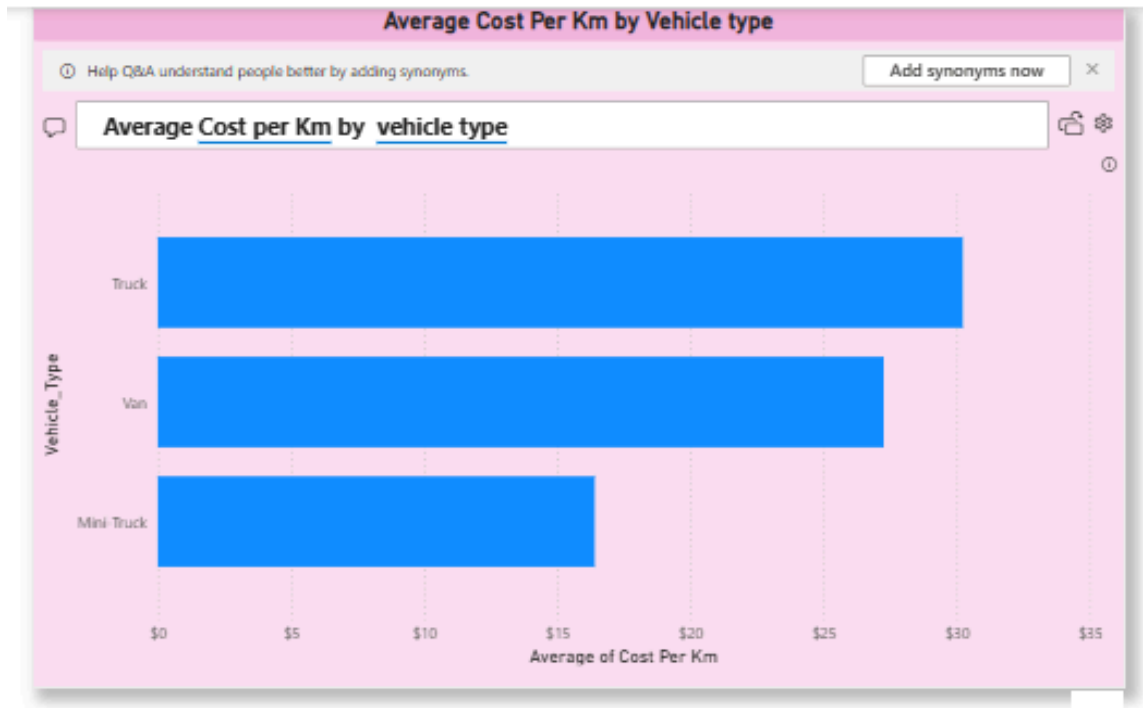


## Pie chart: vehicle type vs Average maintenance cost

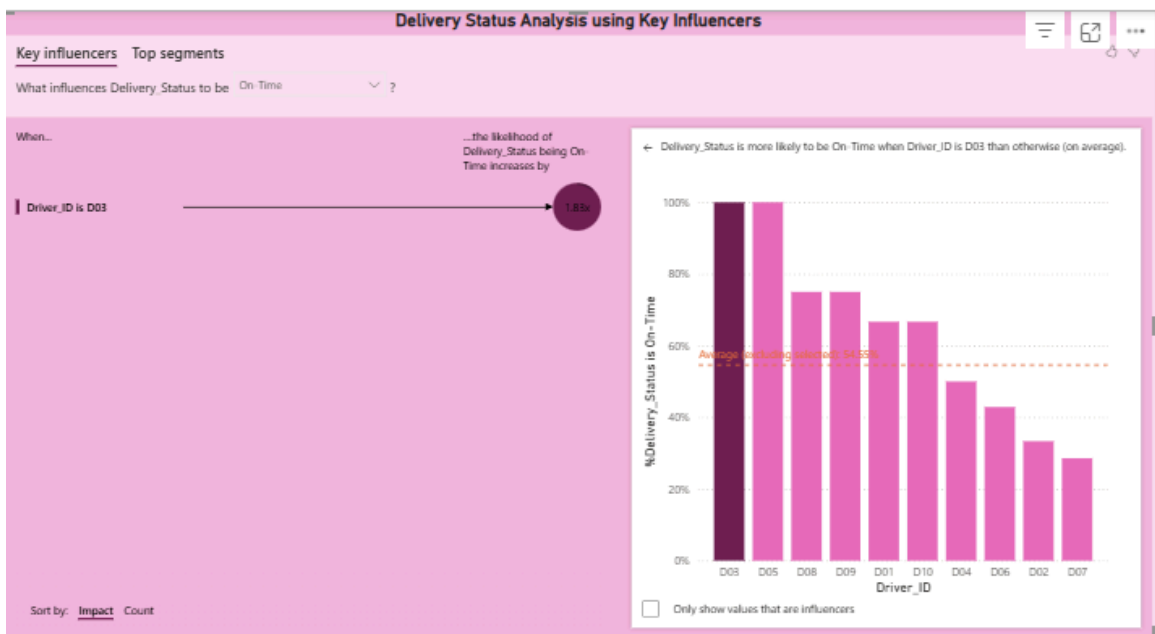


## 4. AI-Powered Visuals:

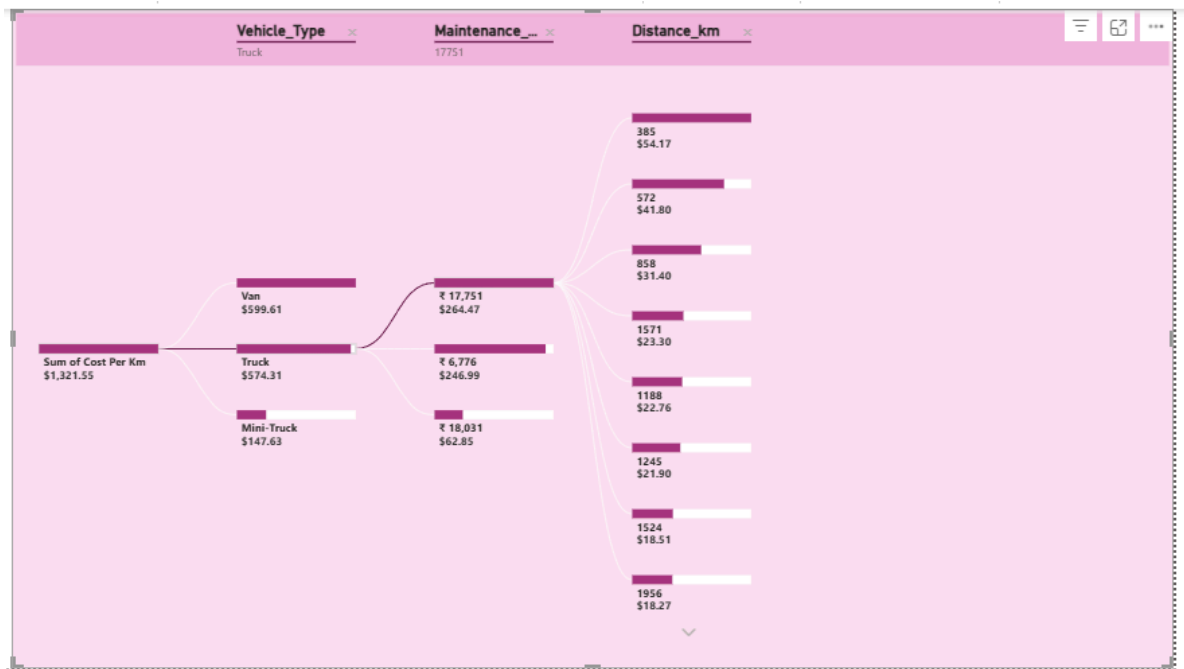
**1.Q&A Visual:** Add Q&A visual . Prompt: “Average Cost per km by vehicle type?”



**2.Key Influencers Visual:** Add Delivery Status in the Analyze and explain by -distance in km,vehicle\_type, Driver\_ID



### 3.Decomposition Tree (AI Visual):. Analyze Cost per km . explained by Vehicle Type, Maintenance\_cost, and Distance\_km.



**Expected Output:** A transport operations dashboard to optimize routes and fleet usage.

