Mobility in Cairo

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Project Summary

- Smart Cairo Mobility is a data analytics project focused on optimizing Cairo's urban transportation through integrated analysis of ride-hailing, driver, customer, fuel, and metro data. It applies advanced analytics to reveal mobility patterns, efficiency gaps, and sustainability trends.

- The project provides actionable insights for improving transport operations and forecasting demand. By linking private and public transport systems, it supports data-driven mobility planning. Its outcomes align with Egypt's vision for smart and sustainable urban development.

Project Methodology

Dataset overview

The dataset contains 5 sheets, with the following numbers of rows, columns, and data types:

Sheet name	# of rows	# of columns	Types of data
Trips	1000	10	• Numeric • String • Date and time
Customers	200	6	
Drivers	100	6	
Metro ridership	4053	3	
Fuel prices	20	4	• Numeric • Date and time

Project Methodology - Cont'd

Snapshot of raw data

customer_id	name	age	gender	city_area	signup_date
1	Customer_1	43	Female	6th Octob	2023-06-12 00:00:00
2	Customer_2	61	Female	Nasr City	2023-06-03 00:00:00
3	Customer_3	19	Male	Maadi	2022-06-29 00:00:00
4	Customer_4	37	Male	Heliopolis	2021-11-06 00:00:00
5	Customer_5	32	Male	New Cairo	2023-02-13 00:00:00
6	Customer_6	21	Female	Heliopolis	2022-05-18 00:00:00
7	Customer_7	39	Male	Maadi	2023-07-05 00:00:00
8	Customer_8	55	Female	6th Octob	2022-08-21 00:00:00
9	Customer_9	40	Female	6th Octob	2023-02-16 00:00:00
10	Customer_10	43	Female	Downtow	2023-10-11 00:00:00
11	Customer_11	28	Female	New Cairo	2023-03-05 00:00:00
12	Customer_12	45	Female	New Cairo	2023-04-15 00:00:00
13	Customer_13	19	Male	New Cairo	2021-11-09 00:00:00
14	Customer_14	25	Male	Nasr City	2023-06-16 00:00:00
15	Customer_15	46	Female	6th Octob	2023-05-07 00:00:00
16	Customer_16	28	Female	Maadi	2021-07-02 00:00:00
17	Customer_17	54	Male	6th Octob	2022-02-09 00:00:00
18	Customer_18	35	Male	Heliopolis	2021-06-02 00:00:00
19	Customer_19	31	Female	Nasr City	2022-02-18 00:00:00

Trips | Customers | Drivers | Metro_Ridership | Fuel_Prices

driver_id	name	car_model	car_year	rating	join_date
1	Driver_1	Toyota	2010	4.79	2021-05-08 00:00:00
2	Driver_2	Hyundai	2011	4.12	2020-11-04 00:00:00
3	Driver_3	Chevrolet	2017	3.63	2020-05-25 00:00:00
4	Driver_4	Hyundai	2010	4.16	2018-09-29 00:00:00
5	Driver_5	Hyundai	2012	3.85	2020-11-02 00:00:00
6	Driver_6	Toyota	2011	3.94	2023-01-11 00:00:00
7	Driver_7	Kia	2014	4.66	2021-01-19 00:00:00
8	Driver_8	Nissan	2013	3.61	2021-07-26 00:00:00
9	Driver_9	Toyota	2022	4.74	2021-10-31 00:00:00
10	Driver_10	Nissan	2016	4.14	2020-02-21 00:00:00
11	Driver_11	Hyundai	2014	4.39	2023-04-12 00:00:00
12	Driver_12	Nissan	2017	3.63	2021-04-25 00:00:00
13	Driver_13	Kia	2013	4.01	2020-08-11 00:00:00
14	Driver_14	Toyota	2021	3.63	2019-12-10 00:00:00
15	Driver_15	Kia	2015	4.94	2019-12-12 00:00:00
16	Driver_16	Kia	2013	4.71	2021-10-22 00:00:00
17	Driver_17	Toyota	2011	4.19	2023-11-20 00:00:00
18	Driver_18	Kia	2010	3.84	2019-08-06 00:00:00
19	Driver_19	Chevrolet	2023	4.9	2021-08-23 00:00:00

Trips | Customers | Drivers | Metro_Ridership | Fuel_Prices

Project Methodology - Cont'd

Snapshot of raw data - cont'd

	A	B	C	D	E
1	month	octane92_price	octane95_price	diesel_price	
2	2024-01-01 00:00:00	11.5	12.5	10	
3	2024-02-01 00:00:00	11.5	12.5	10	
4	2024-03-01 00:00:00	12.5	13.5	11	
5	2024-04-01 00:00:00	12.5	13.5	11	
6	2024-05-01 00:00:00	12.5	13.5	11	
7	2024-06-01 00:00:00	12.5	13.5	11	
8	2024-07-01 00:00:00	13.75	15	12.25	
9	2024-08-01 00:00:00	13.75	15	12.25	
10	2024-09-01 00:00:00	13.75	15	12.25	
11	2024-10-01 00:00:00	15.25	17	13.75	
12	2024-11-01 00:00:00	15.25	17	13.75	
13	2024-12-01 00:00:00	15.25	17	13.75	
14	2025-01-01 00:00:00	15.25	17	13.75	
15	2025-02-01 00:00:00	15.25	17	13.75	
16	2025-03-01 00:00:00	15.25	17	13.75	
17	2025-04-01 00:00:00	17.25	19	15.75	
18	2025-05-01 00:00:00	17.25	19	15.75	
19	2025-06-01 00:00:00	17.25	19	15.75	
20	2025-07-01 00:00:00	17.25	19	15.75	

Trips | Customers | Drivers | Metro_Ridership | Fuel_Prices

	A	B	C	D	E	F	G
1	station	date	passengers				
2	Sadat	2024-01-01 00:00:00	10163				
3	Maadi	2024-01-01 00:00:00	15358				
4	Ramses	2024-01-01 00:00:00	8668				
5	Helwan	2024-01-01 00:00:00	15016				
6	Giza	2024-01-01 00:00:00	10001				
7	Cairo Univ	2024-01-01 00:00:00	11921				
8	Abbasiya	2024-01-01 00:00:00	4191				
9	Sadat	2024-01-02 00:00:00	10859				
10	Maadi	2024-01-02 00:00:00	10872				
11	Ramses	2024-01-02 00:00:00	6922				
12	Helwan	2024-01-02 00:00:00	6392				
13	Giza	2024-01-02 00:00:00	15541				
14	Cairo Univ	2024-01-02 00:00:00	17015				
15	Abbasiya	2024-01-02 00:00:00	5227				
16	Sadat	2024-01-03 00:00:00	4024				
17	Maadi	2024-01-03 00:00:00	18713				
18	Ramses	2024-01-03 00:00:00	4486				
19	Helwan	2024-01-03 00:00:00	3155				
20	Giza	2024-01-03 00:00:00	12082				

Trips | Customers | Drivers | Metro_Ridership | Fuel_Prices

Project Methodology - Cont'd

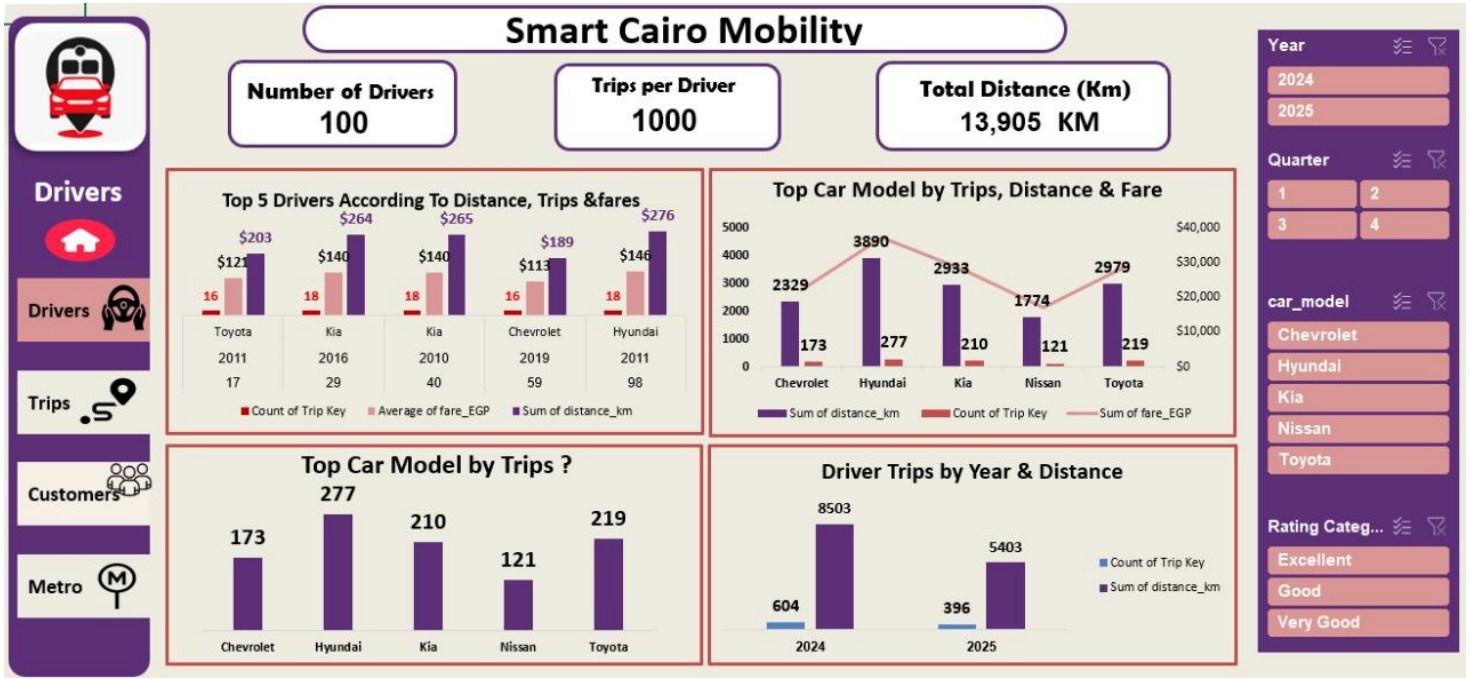
Snapshot of raw data - cont'd

	A	B	C	D	E	F	G	H	I	J
1	trip_id	ustomer_i	driver_id	art_locatic	end_location	istance_kr	uration_m	fare_EGP	ment_met	date_time
2	1	103	40	New Cairo	Maadi	7.26	28	69.32	Card	2025-08-10 08:09:00
3	2	180	83	Zamalek	Zamalek	24.48	94	233.72	Wallet	2025-05-19 01:47:00
4	3	93	42	Zamalek	6th October	14.23	55	135.86	Card	2024-02-08 01:00:00
5	4	15	41	6th Octob	Zamalek	5.12	20	48.88	Wallet	2025-03-10 03:23:00
6	5	107	6	6th Octob	6th October	4.28	16	40.86	Cash	2025-01-20 13:01:00
7	6	72	52	Nasr City	Heliopolis	6.8	26	64.92	Wallet	2024-10-11 14:11:00
8	7	189	26	Maadi	6th October	23.29	89	222.36	Card	2024-06-04 19:38:00
9	8	21	64	Maadi	Downtown	11.53	44	110.08	Card	2024-10-06 20:09:00
10	9	103	98	6th Octob	Zamalek	11.09	43	105.88	Wallet	2024-05-07 11:21:00
11	10	122	59	Nasr City	Nasr City	9.2	35	87.84	Card	2025-03-29 03:44:00
12	11	75	56	Maadi	Heliopolis	5.38	21	51.37	Card	2025-02-23 21:13:00
13	12	88	59	Nasr City	Downtown	13.22	51	126.22	Cash	2024-12-21 23:24:00
14	13	117	70	Nasr City	Maadi	4.99	19	47.64	Wallet	2024-04-05 00:44:00
15	14	100	33	Nasr City	Zamalek	21.22	81	202.6	Wallet	2024-06-12 19:17:00
16	15	104	53	Heliopolis	New Cairo	10.52	40	100.44	Wallet	2024-10-20 02:22:00
17	16	152	22	Zamalek	New Cairo	10.62	41	101.39	Card	2025-04-24 12:58:00
18	17	131	21	Nasr City	Nasr City	12.9	50	123.16	Wallet	2025-02-03 04:03:00
19	18	150	70	Heliopolis	6th October	12.21	47	116.58	Wallet	2024-04-13 18:13:00
20	19	53	70	6th Octob	Nasr City	24.88	95	237.54	Cash	2025-01-30 15:16:00

Trips | Customers | Drivers | Metro_Ridership | Fuel_Prices

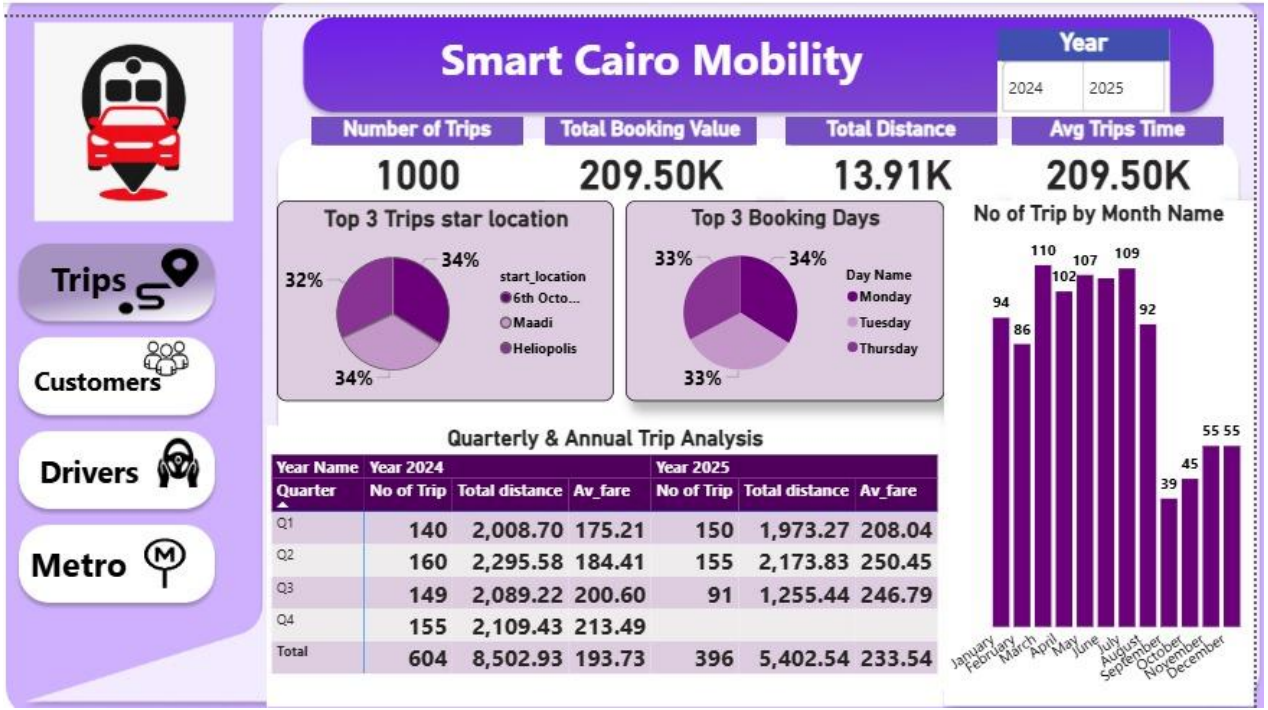
Project Methodology - Cont'd

Data analysis | Excel overview



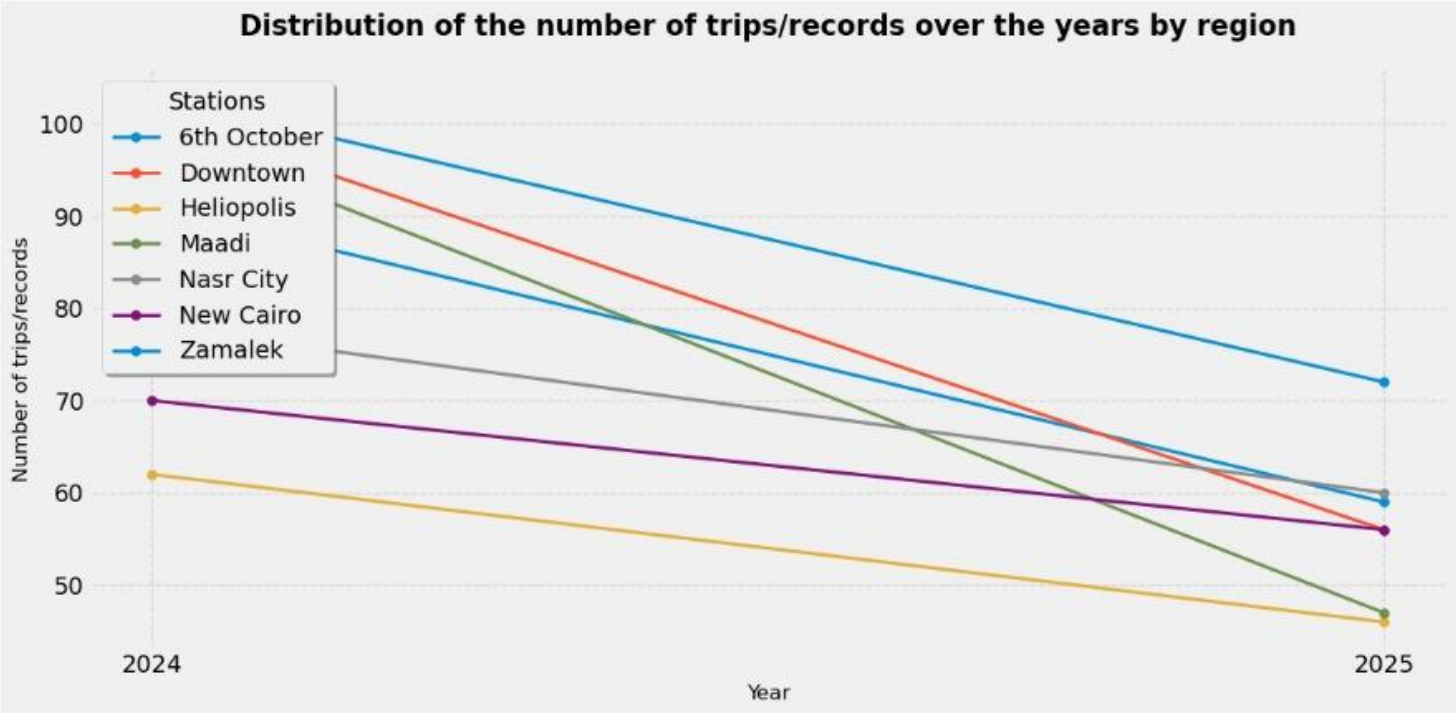
Project Methodology - Cont'd

Data analysis | Power BI overview



Project Methodology - cont'd

Data analysis | Python overview



Project Methodology - cont'd

Data analysis | Tableau overview