UBER TRIP OPTIMIZATION

Agenda

- ✓ Problem Statement
- ✓ Research Questions
- ✓ Data overview
- ✓ Methodology
- ✓ Analysis and finding
- ✓ Recommendations

Problem Statement

❖ Uber face challenges with high **surge fee** and **unprofitable** short trips or traffic area and **inefficient driver allocation**, leading to rider dissatisfaction, longer **wait time**, and reduced driver earning.

❖ We want to optimize surge fee, balancing trip profitability and driver deployment effectively, and indentify Hotspot location, low traffic.

Research Questions

- High traffic zones.
- Surge Fee Transparency.
- Time of Day and Location wise Surge Fee, trip DIST.
- Peak Hour Demand.
- Location wise Demand.
- Return Trip Opportunities.
- Daily & Seasonal Demand Trend.
- Low Activity Locations.
- Vehicle Performance and Profitability.
- Passengers Behaviour.
- Location Demand Imbalance.
- Payment Method Reliability.
- Revenue Concentration by zone.

Data overview

Trip Table

1. Trip ID
2. Pickup Time
3. Drop Off Time
4. passenger_count
5. trip_distance
6. PULocationID
7. DOLocationID
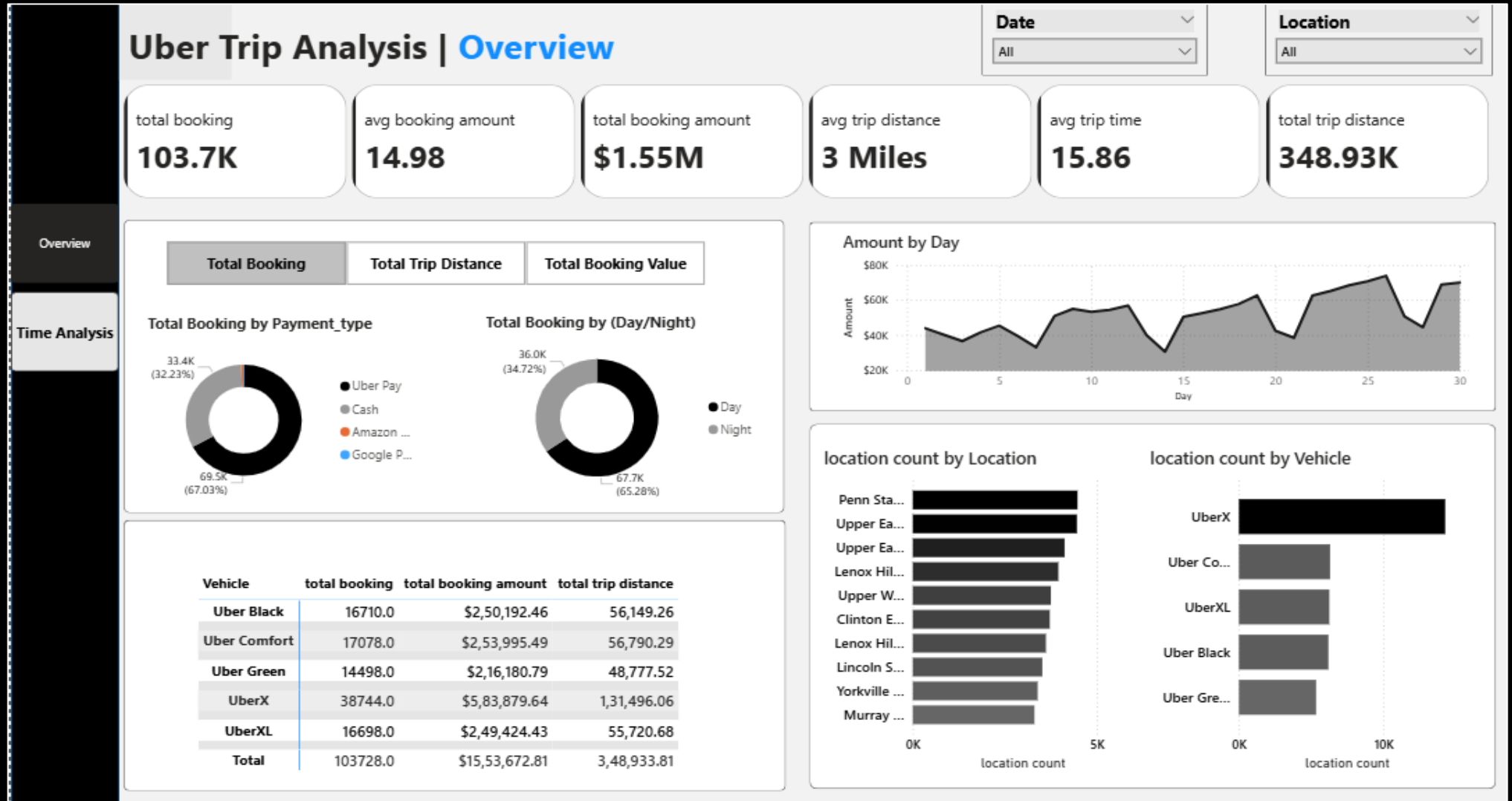8. fare_amount
9. Surge Fee
10. Vehicle
11. Payment_type

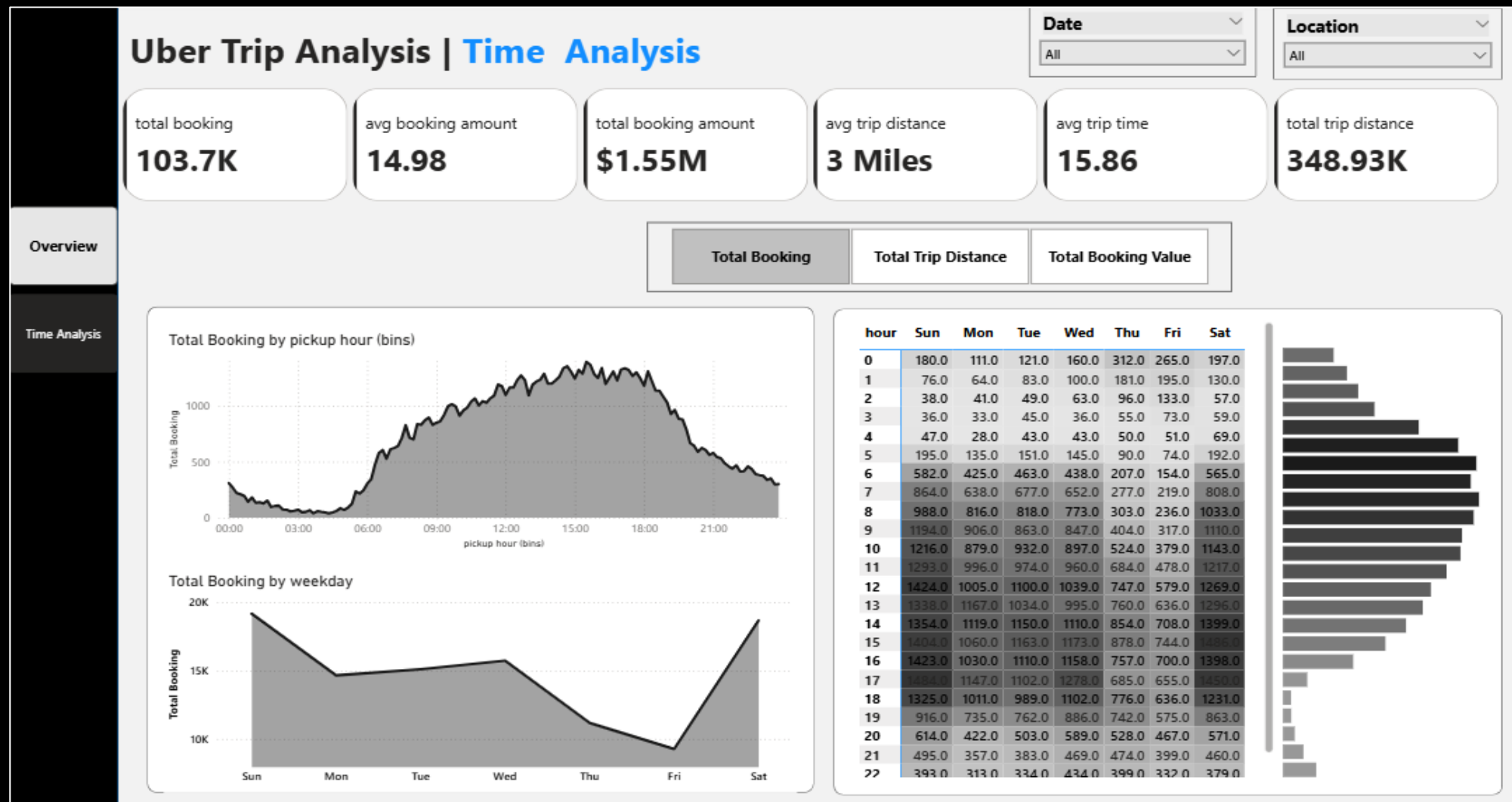**Location Table**

1. Location_id
2. City
3. location

Methodology

➤ Power BI (Dashboard)
➤ SQL (Analysis)
➤ Power Point (report building)

Analysis and finding

Analysis and finding

Analysis and findings

- This table shows high traffic area based on high "average trip duration" in minutes.

	pickup_location character varying (100)	time_of_day text	avg_trip_duration_min numeric	trip_count bigint
1	Laurelton	Night	1416.00	1
2	Grymes Hill/Clifton	Afternoon	1402.00	1
3	Co-Op City	Night	1116.00	1
4	Saint Albans	Night	1041.00	1
5	Elmhurst/Maspeth	Evening	714.50	2
6	East New York/Pennsylvania Aven…	Night	710.50	2
7	Crown Heights South	Afternoon	492.00	3
8	Charleston/Tottenville	Afternoon	392.75	4
9	Brownsville	Night	387.63	8
10	Grymes Hill/Clifton	Night	377.75	4

Analysis and findings

- Tables indicates "High Surge Fee" in serval cities in evening-night time due to low driver availability and high trip bookings.

	Trip ID integer	pickup_location character varying (100)	pickup_city character varying (100)	Pickup Time timestamp without time zone	Surge Fee numeric (10,2)
1	15634	UN/Turtle Bay South	Manhattan	2024-06-05 22:36:00	117.93
2	43342	JFK Airport	Queens	2024-06-14 14:07:00	100.00
3	65894	Kips Bay	Manhattan	2024-06-19 21:01:00	100.00
4	5240	UN/Turtle Bay South	Manhattan	2024-06-02 16:10:00	100.00
5	106291	Greenwich Village South	Staten Island	2024-06-29 03:24:00	100.00
6	23273	Central Harlem	Manhattan	2024-06-08 18:28:00	85.70
7	53310	West Concourse	Bronx	2024-06-17 08:36:00	77.74
8	15437	Kips Bay	Manhattan	2024-06-05 20:30:00	75.00
9	14781	Penn Station/Madison Sq West	Manhattan	2024-06-05 17:04:00	74.51
10	109153	Gramercy	Brooklyn	2024-06-29 15:01:00	62.00
11	56124	Midtown North	Brooklyn	2024-06-17 17:28:00	58.23
12	103603	East Harlem South	Brooklyn	2024-06-28 10:15:00	56.23

Analysis and findings

- Tables indicates "avg Surge Fee" and "trip count" at different "time stages".

	time_of_day text	avg_surge_fee numeric	trip_count bigint
1	Evening	2.19	27081
2	Night	2.03	7949
3	Afternoon	1.94	37567
4	Morning	1.83	31131

Analysis and findings

- Tables indicates "Pickup Location" wise "Surge Fee" and "trip count".

	pickup_location character varying (100)	City character varying (100)	avg_surge_fee numeric	trip_count bigint
1	Gowanus	Staten Island	6.54	11
2	East Elmhurst	Brooklyn	4.35	342
3	LaGuardia Airport	Manhattan	4.16	2320
4	Hammels/Arverne	Queens	3.77	15
5	JFK Airport	Queens	3.63	1595
6	DUMBO/Vinegar Hill	Brooklyn	3.42	15
7	Williamsburg (North Side)	Brooklyn	3.30	25
8	Park Slope	Queens	3.13	67
9	Cobble Hill	Brooklyn	3.09	21
10	Battery Park City	Manhattan	3.01	272
11	Cambria Heights	Queens	2.92	13
12	Greenpoint	Manhattan	2.87	18
13	West Concourse	Bronx	2.86	46

Analysis and findings

- Tables indicates all 5 types of "Vehicle Performance" their total trip,total_fare_amount,total_trip distance,total trip duration,avg fare per trip,avg distance per trip,avg duration per trip .

	Vehicle character varying (50)	total_trips bigint	total_fare_amount numeric	total_trip_distance numeric	total_trip_duration_min numeric	avg_fare_per_trip numeric	avg_distance_per_trip numeric	avg_duration_per_trip_min numeric
1	UberX	38744	507140.77	131496.06	625475.00	13.09	3.39	16.14
2	Uber Comfort	17078	220584.98	56790.29	268496.00	12.92	3.33	15.72
3	Uber Black	16710	217094.00	56149.26	262968.00	12.99	3.36	15.74
4	UberXL	16698	216026.50	55720.68	266206.00	12.94	3.34	15.94
5	Uber Green	14498	187445.20	48777.52	222248.00	12.93	3.36	15.33

Analysis and findings

- Tables indicates TOP "Pickup Location" their city wise "trip count".

LocationID [PK] integer	Location character varying (100)	City character varying (100)	pickup_trip_count bigint
1	186	Penn Station/Madison Sq West	Manhattan	4475
2	236	Upper East Side North	Manhattan	4459
3	237	Upper East Side South	Manhattan	4124
4	140	Lenox Hill East	Queens	3955
5	238	Upper West Side North	Manhattan	3752
6	48	Clinton East	Manhattan	3722
7	141	Lenox Hill West	Manhattan	3617
8	142	Lincoln Square East	Manhattan	3519
9	263	Yorkville West	Manhattan	3393
10	170	Murray Hill	Queens	3305
11	239	Upper West Side South	Manhattan	3245
12	137	Kips Bay	Manhattan	3164

13	75	East Harlem South	Brooklyn	2989
14	162	Midtown East	Queens	2929
15	107	Gramercy	Brooklyn	2687
16	229	Sutton Place/Turtle Bay North	Manhattan	2472
17	138	LaGuardia Airport	Manhattan	2320
18	161	Midtown Center	The Bronx	2274
19	151	Manhattan Valley	Manhattan	2060
20	68	East Chelsea	The Bronx	2053
21	234	Union Sq	Manhattan	1984
22	79	East Village	Brooklyn	1940
23	100	Garment District	Queens	1907
24	163	Midtown North	Brooklyn	1777

Analysis and findings

- Tables indicates TOP "Drop off Location" their city wise "trip count".

	LocationID [PK] integer	Location character varying (100)	City character varying (100)	drop_trip_count bigint
1	236	Upper East Side North	Manhattan	4024
2	75	East Harlem South	Brooklyn	3512
3	237	Upper East Side South	Manhattan	3357
4	140	Lenox Hill East	Queens	3194
5	170	Murray Hill	Queens	2906
6	141	Lenox Hill West	Manhattan	2881
7	238	Upper West Side North	Manhattan	2841
8	48	Clinton East	Manhattan	2800
9	74	East Harlem North	Manhattan	2732
10	263	Yorkville West	Manhattan	2724
11	239	Upper West Side South	Manhattan	2626
12	142	Lincoln Square East	Manhattan	2607
13	161	Midtown Center	The Bronx	2433

14	162	Midtown East	Queens	2324
15	229	Sutton Place/Turtle Bay North	Manhattan	2238
16	137	Kips Bay	Manhattan	2117
17	107	Gramercy	Brooklyn	1936
18	186	Penn Station/Madison Sq West	Manhattan	1929
19	68	East Chelsea	The Bronx	1917
20	79	East Village	Brooklyn	1833
21	41	Central Harlem	Manhattan	1756
22	42	Central Harlem North	Manhattan	1672
23	233	UN/Turtle Bay South	Manhattan	1665
24	262	Yorkville East	Manhattan	1651
25	143	Lincoln Square West	Brooklyn	1614

Analysis and findings

- Tables indicates "Drop ofLocation" and their city with LOW activity(no trips).

ID ger	Location character varying (100)	City character varying (100)	pickup_trips bigint	drop_trips bigint	total_activity bigint
1	105	Governor's Island/Ellis Island/Liberty Island	Brooklyn	0	0	
2	110	Great Kills Park	Manhattan	0	0	
3	199	Rikers Island	Bronx	0	0	
4	154	Marine Park/Floyd Bennett Field	Brooklyn	0	0	
5	103	Governor's Island/Ellis Island/Liberty Island	Brooklyn	0	0	
6	104	Governor's Island/Ellis Island/Liberty Island	Manhattan	0	0	
7	5	Arden Heights	Staten Island	0	0	
8	118	Heartland Village/Todt Hill	Queens	0	1	
9	187	Port Richmond	Staten Island	0	1	
10	2	Jamaica Bay	Queens	1	0	
11	59	Crotona Park	The Bronx	0	1	
12	99	Freshkills Park	Manhattan	0	1	

ID ger	Location character varying (100)	City character varying (100)	pickup_trips bigint	drop_trips bigint	total_activity bigint
13	84	Eltingville/Annadale/Prince's Bay	Brooklyn	0	1	
14	57	Corona	The Bronx	0	2	
15	30	Broad Channel	Queens	0	2	
16	176	Oakwood	Queens	0	2	
17	111	Green-Wood Cemetery	Staten Island	0	2	
18	253	Willets Point	Queens	2	0	
19	6	Arrochar/Fort Wadsworth	Staten Island	0	3	
20	251	Westerleigh	Staten Island	0	3	
21	34	Brooklyn Navy Yard	Brooklyn	1	3	
22	184	Pelham Bay Park	Bronx	1	3	
23	19	Bellerose	Queens	1	3	
24	1	Newark Airport	Newark, New Jersey	1	3	
25	204	Rossville/Woodrow	Staten Island		3	

Analysis and findings

- Tables indicates "Passenger behaviour".

	passenger_count integer	trip_count bigint	avg_distance numeric	avg_fare numeric	avg_surge numeric	avg_duration_min numeric
1	1	82324	3.35	12.94	1.99	15.50
2	2	12499	3.47	13.35	1.94	15.93
3	3	3173	3.32	12.87	1.87	15.57
4	4	1135	3.56	13.41	2.07	14.32
5	5	2485	3.23	12.71	2.00	24.79
6	6	2112	3.46	13.34	1.97	20.30

Analysis and findings

- Tables indicates "LOCATION" wise REVENUE.

	pickup_location character varying (100)	City character varying (100)	total_revenue numeric	trip_count bigint
1	LaGuardia Airport	Manhattan	74160.64	2320
2	Penn Station/Madison Sq W...	Manhattan	63114.86	4475
3	JFK Airport	Queens	62204.51	1595
4	Lenox Hill East	Queens	59975.45	3955
5	Upper East Side North	Manhattan	56960.35	4459
6	Clinton East	Manhattan	51766.38	3722
7	Upper East Side South	Manhattan	51465.80	4124
8	Upper West Side North	Manhattan	50761.60	3752
9	Lenox Hill West	Manhattan	47943.49	3617
10	Kips Bay	Manhattan	47120.57	3164
11	Yorkville West	Manhattan	46043.99	3393
12	Murray Hill	Queens	45592.46	3305
13	Lincoln Square East	Manhattan	45270.45	3519

Analysis and findings

- Tables indicates "Time of day" wise REVENUE and trip count.

	time_of_day text	total_revenue numeric	trip_count bigint
1	Afternoon	557250.51	37567
2	Morning	430862.64	31131
3	Evening	423327.05	27081
4	Night	142232.61	7949

Analysis and findings

- Tables indicates "DAY" wise REVENUE and trip count.

	day_of_week text	total_revenue numeric	trip_count bigint
1	Sunday	282693.13	19165
2	Saturday	276207.42	18663
3	Wednesday	238565.38	15718
4	Tuesday	224344.81	15098
5	Monday	212843.49	14653
6	Thursday	172651.75	11171
7	Friday	146366.83	9260

Analysis and findings

- Tables indicates "HOUR" wise trip count.

	pickup_location character varying (100)	hour numeric	trips_per_hour bigint
1	Penn Station/Madison Sq West	6	411
2	Upper East Side North	14	408
3	Upper East Side North	12	398
4	Upper East Side South	16	395
5	Upper East Side North	11	387
6	Upper East Side South	14	384
7	Upper East Side South	15	380
8	Upper East Side South	17	379
9	Upper East Side North	13	370
10	Upper East Side South	13	349
11	Upper East Side North	15	344
12	Upper East Side North	10	344
13	Penn Station/Madison Sq West	7	339

13	Penn Station/Madison Sq West	7	339
14	Upper East Side North	16	328
15	Upper East Side North	9	325
16	Upper East Side South	12	323
17	Murray Hill	15	318
18	Upper East Side South	18	311
19	Lenox Hill East	17	308
20	Upper West Side North	13	307
21	Upper East Side North	17	306
22	Upper West Side North	11	305
23	Murray Hill	16	295
24	Penn Station/Madison Sq West	16	289
25	Upper West Side North	14	288

26	Lenox Hill East	15	287
27	Upper West Side North	12	285
28	Penn Station/Madison Sq West	18	283
29	Murray Hill	12	279
30	Lenox Hill East	13	279
31	Lenox Hill West	14	277
32	Midtown East	14	277
33	Upper East Side North	8	276
34	Lincoln Square East	15	274
35	Kips Bay	16	274
36	Lenox Hill East	10	273
37	Penn Station/Madison Sq West	15	273
38	Upper West Side South	14	272

Analysis and findings

- Tables indicates ZONES WITH HIGH PICK UP BUT LOW DROP-OFFS.

	Location character varying (100) 🔒	total_pickups bigint 🔒	total_dropoffs bigint 🔒	pickup_drop_gap bigint 🔒
1	Penn Station/Madison Sq West	4475	1929	2546
2	LaGuardia Airport	2320	376	1944
3	JFK Airport	1595	119	1476
4	Kips Bay	3164	2117	1047
5	Clinton East	3722	2800	922
6	Lincoln Square East	3519	2607	912
7	Upper West Side North	3752	2841	911
8	Garment District	1907	1092	815
9	Upper East Side South	4124	3357	767
10	Lenox Hill East	3955	3194	761
11	Gramercy	2687	1936	751
12	Lenox Hill West	3617	2881	736
13	Yorkville West	3393	2724	669

14	Upper West Side South	3245	2626	619
15	Midtown East	2929	2324	605
16	Central Park	1758	1267	491
17	Flatiron	1674	1203	471
18	Manhattan Valley	2060	1605	455
19	Upper East Side North	4459	4024	435
20	Murray Hill	3305	2906	399
21	Union Sq	1984	1606	378
22	NV	900	529	371
23	Times Sq/Theatre District	1247	897	350
24	East Elmhurst	342	96	246
25	Sutton Place/Turtle Bay North	2472	2238	234
26	West Village	1341	1159	182

27	Midtown North	1777	1600	177
28	Midtown South	1304	1142	162
29	East Chelsea	2053	1917	136
30	East Village	1940	1833	107
31	Yorkville East	1752	1651	101
32	Greenwich Village North	1054	972	82
33	UN/Turtle Bay South	1731	1665	66
34	Bloomingdale	657	636	21
35	Long Island City/Queens Plaza	170	151	19
36	Willets Point	2	0	2
37	Bloomfield/Emerson Hill	4	3	1
38	Jamaica Bay	1	0	1
39	Charleston/Tottenville	8	7	1

Analysis and findings

- Tables indicates PICK UP DROP-OFF PAIRS BY FREQUENCY.

pickup_location character varying (100)	drop_location character varying (100)	pickup_city character varying (100)	drop_city character varying (100)	trip_count bigint	avg_distance numeric	avg_total_fare numeric
1	NV	NV	N/A	N/A	487	3.33	14.61
2	East Harlem South	East Harlem North	Brooklyn	Manhattan	412	1.49	8.04
3	Upper East Side South	Upper East Side North	Manhattan	Manhattan	395	1.35	8.42
4	Upper East Side North	Upper East Side South	Manhattan	Manhattan	352	1.34	8.66
5	Lenox Hill East	Upper East Side North	Queens	Manhattan	283	1.46	9.23
6	Upper East Side North	Midtown East	Manhattan	Queens	282	1.79	10.28
7	Upper East Side North	Lenox Hill East	Manhattan	Queens	277	1.53	10.47
8	Penn Station/Madison Sq West	Midtown Center	Manhattan	The Bronx	274	1.42	8.50
9	Lincoln Square East	Upper West Side North	Manhattan	Manhattan	260	1.58	8.91
10	Yorkville West	Lenox Hill East	Manhattan	Queens	244	1.40	9.06
11	Upper West Side North	East Harlem South	Manhattan	Brooklyn	239	1.61	9.18
12	Upper East Side North	Upper West Side South	Manhattan	Manhattan	234	1.53	8.91

	pickup_location	drop_location	pickup_city	drop_city	trip_count	avg_distance	avg_total_fare
13	Yorkville West	East Harlem North	Manhattan	Manhattan	233	1.87	9.20
14	Upper West Side North	Lincoln Square East	Manhattan	Manhattan	232	1.53	9.05
15	Lenox Hill West	Upper East Side North	Manhattan	Manhattan	228	1.37	8.48
16	Upper East Side South	East Harlem South	Manhattan	Brooklyn	227	1.80	9.45
17	Clinton East	East Chelsea	Manhattan	The Bronx	227	1.39	8.17
18	Upper East Side North	East Harlem North	Manhattan	Manhattan	225	1.87	9.58
19	Upper West Side North	Upper East Side North	Manhattan	Manhattan	225	1.53	9.23
20	Lenox Hill West	East Harlem South	Manhattan	Brooklyn	223	1.82	9.58

Analysis and findings

- Tables indicates "Payment type behaviour".

	Payment_type character varying (50)	trip_count bigint	total_revenue numeric	avg_revenue_per_trip numeric
1	Google Pay	180	2719.50	15.11
2	Amazon Pay	584	8556.00	14.65
3	Cash	33434	443360.80	13.26
4	Uber Pay	69530	1099036.51	15.81

Analysis and findings

Analysis and findings

UBER TRIP OPTIMIZATION

Thankyou!!

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