Provide Insights & Performance Analysis in Transport Domain

Resume Project Challenge #13 organized by Codebasics

thejaswinisv

Outline

- Problem Statement
- Data Summary
- Data Model
- Dashboard view
- Primary Analysis & Insights
- Secondary Analysis & Recommendations
- Ad-Hoc Business Request Reports
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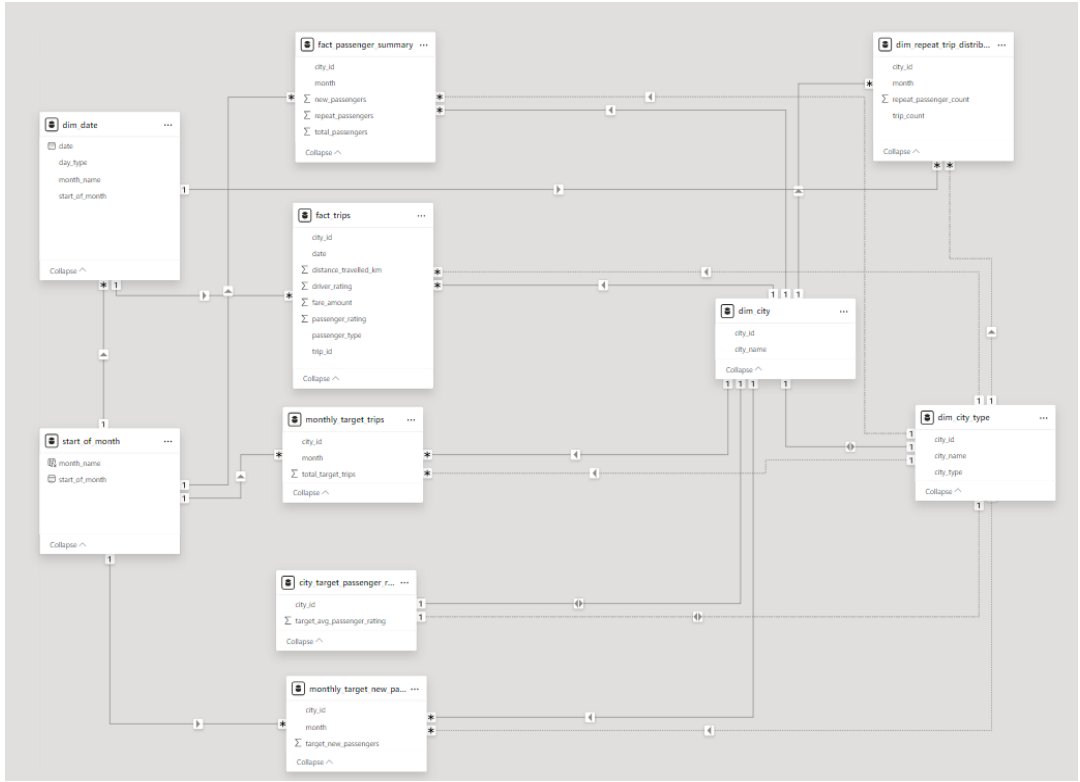
Problem Statement

- GoodCabs, a leading cab service operating in 10 tier-2 cities across India, is committed to empowering local drivers while ensuring top-notch service for passengers.
- With ambitious growth and customer satisfaction targets set for 2024, the company is eager to track its progress.
- The Chief of Operations requires immediate insights into critical performance metrics such as trip volume, passenger satisfaction, repeat passenger rates, trip distribution, and the balance between new and returning passengers.
- Due to the unavailability of the analytics manager, I have been entrusted with this crucial task to analyse these metrics and provide actionable insights to help drive the company's goals forward.

Data Summary

Table Name	Database	Description
dim_city	trips_db	Provides city-specific details for location-based analysis of trips and passenger behavior.
dim_date	trips_db	Contains date-specific details for time-based grouping and analysis (e.g., weekdays vs weekends).
fact_passenger_summary	trips_db	Aggregated summary of passenger counts by city and month, including new and repeat passengers.
dim_repeat_trip_distribution	trips_db	Breakdown of repeat trip behavior by month and city, categorized by trip frequency.
fact_trips	trips_db	Detailed trip-specific metrics, including distance, fare, and ratings, for granular analysis.
city_target_passenger_rating	targets_db	Holds target average passenger ratings for each city to monitor satisfaction.
monthly_target_new_passengers	targets_db	Monthly targets for new passenger acquisition by city, used for growth tracking.
monthly_target_trips	targets_db	Monthly trip volume targets for each city, enabling performance assessment.

Data Model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Dashboard View

Primary Analysis

1. Identify the top 3 and bottom 3 cities by total trips over the entire analysis period.

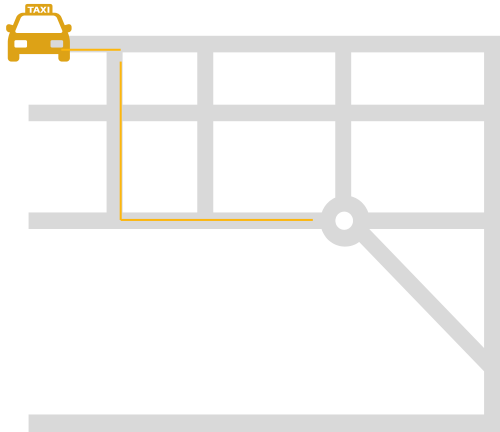
Top 3 cities by Total Trips

city_name	Total_trip	NPR %	RPR	Revenue%	Avg_Fare_Per_KM	Contribution_TT%
Jaipur	76888	67.93%	40.36	34.39%	16.12	18.05%
Lucknow	64299	22.58%	74.71	8.75%	11.76	15.10%
Surat	54843	20.40%	78.80	5.94%	10.66	12.88%
Total	**196030**	**37.53%**	**62.38**	**49.08%**	**14.29**	**46.03%**

Bottom 3 Cities by Total Trips

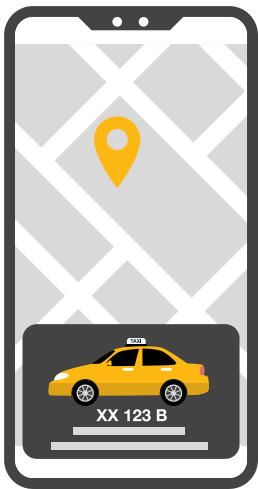
city_name	Total_trip	NPR%	RPR	Revenue%	Avg_Fare_Per_KM	Contribution_TT%
Visakhapatnam	28366	44.73%	55.06	7.41%	12.53	6.66%
Coimbatore	21104	40.54%	59.66	3.26%	11.15	4.96%
Mysore	16238	86.53%	28.06	3.75%	15.14	3.81%
Total	**65708**	**52.29%**	**49.87**	**14.42%**	**12.75**	**15.43%**

Here: NPR =New Passenger Rate, RPR =Repeat Passengers Rate, TT =Total Trips

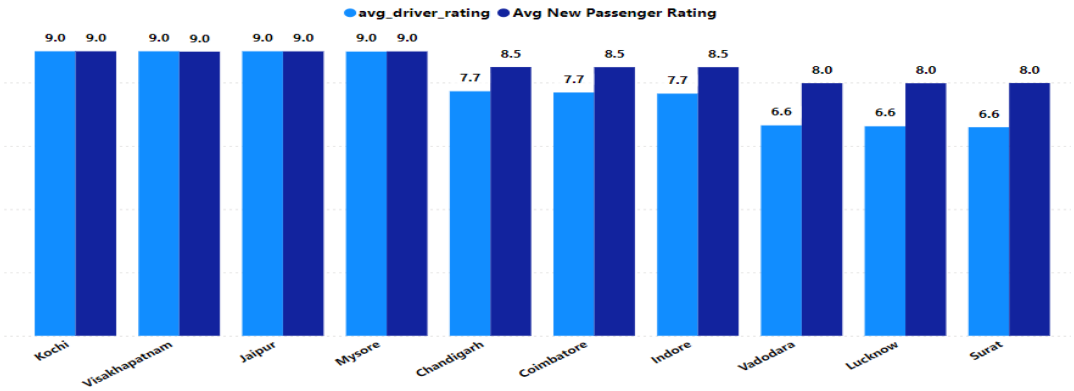


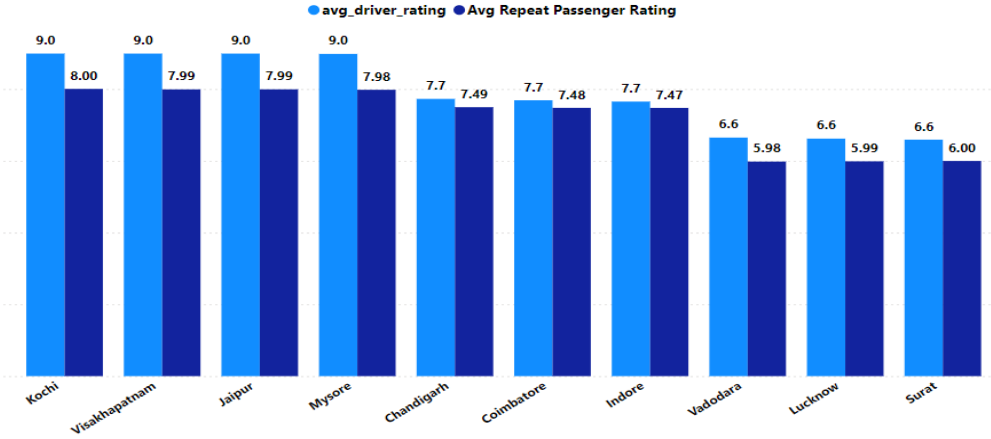
2. Calculate the average fare per trip for each city and compare it with the city's average trip distance. Identify the cities with the highest and lowest average fare per trip to assess pricing efficiency across locations

city_name	Avg_fare per trip	Average Distance Travelled	Average_Fare_Per_KM
Chandigarh	283.69	23.52	12.06
Coimbatore	166.98	14.98	11.15
Indore	179.84	16.50	10.90
Jaipur	483.92	30.02	16.12
Kochi	335.25	24.07	13.93
Lucknow	147.18	12.51	11.76
Mysore	249.71	16.50	15.14
Surat	117.27	11.00	10.66
Vadodara	118.57	11.52	10.29
Visakhapatnam	282.67	22.55	12.53



3. Calculate the average passenger and driver ratings for each city, segmented by passenger type (new vs. repeat). Identify cities with the highest and lowest average ratings.





4. For each city, identify the month with the highest total trips (peak demand) and the month with the lowest total trips (low demand).

Peak Demand Month for Cities

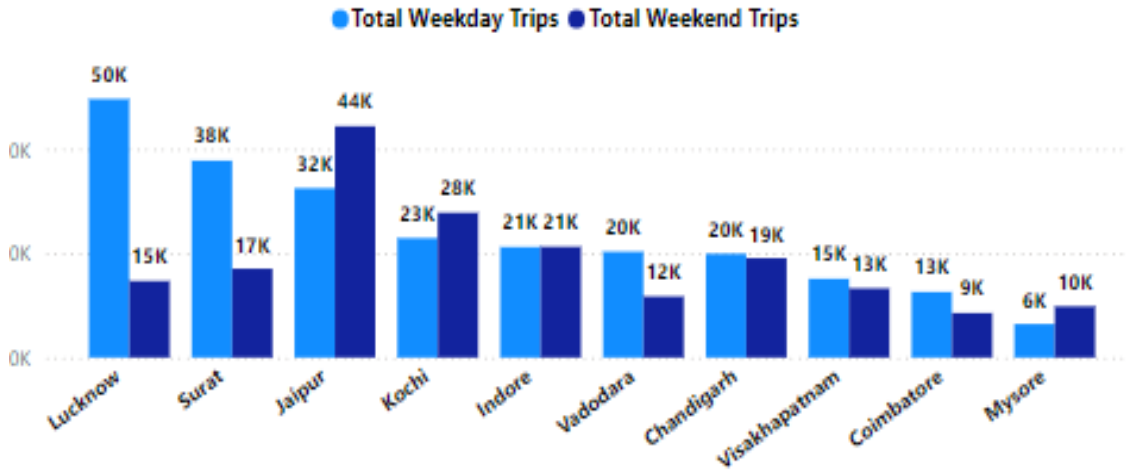
city_name	PDM	NP	RPR %	Revenue%
Jaipur	February	46K	14.34%	34.39%
Kochi	May	26K	15.41%	15.71%
Chandigarh	February	19K	13.00%	10.22%
Lucknow	February	16K	13.33%	8.75%
Visakhapatnam	April	13K	17.92%	7.41%
Indore	May	15K	16.59%	7.06%
Surat	April	12K	15.15%	5.94%
Mysore	May	12K	10.94%	3.75%
Vadodara	April	10K	11.59%	3.51%
Coimbatore	March	9K	12.15%	3.26%

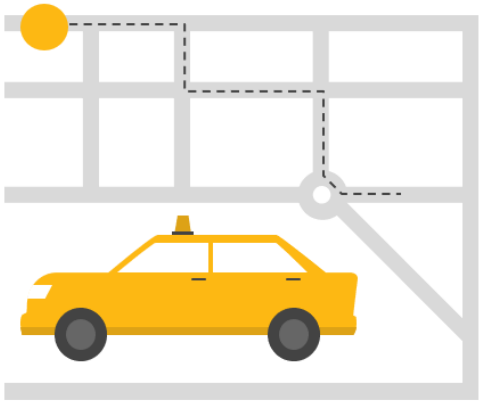
Low Demand Month for Cities

city_name	LDM	NP	RPR %	Revenue %
Jaipur	June	46K	17.43%	34.39%
Kochi	June	26K	22.40%	15.71%
Chandigarh	April	19K	21.14%	10.22%
Lucknow	May	16K	37.12%	8.75%
Indore	June	15K	32.68%	7.06%
Visakhapatnam	January	13K	28.61%	7.41%
Mysore	January	12K	11.23%	3.75%
Surat	January	12K	42.63%	5.94%
Vadodara	June	10K	30.03%	3.51%
Coimbatore	June	9K	23.05%	3.26%

Here: PDM =Peak Demand Month, NP =New Passenger, RPR =Repeat Passengers Rate, LDM = Low Demand Month

5. Compare the total trips taken on weekdays versus weekends for each city over the six-month period. Identify cities with a strong preference for either weekend or weekday trips to understand demand variations





6. Identify which cities contribute most to higher trip frequencies among repeat passengers, and examine if there are distinguishable patterns between tourism-focused and business-focused cities.

city_name	NPT	RPT2	RPT3	RPT4	RPT5	RPT6	RPT7	RPT8	RPT9	RPT10
Chandigarh	18908	1638	976	798	619	376	278	176	118	91
Coimbatore	8514	286	378	397	526	450	267	157	59	31
Indore	14863	2478	1637	967	746	494	378	235	172	109
Jaipur	45856	4855	2007	1173	609	400	244	184	116	94
Kochi	26416	3635	1857	901	494	298	161	126	92	62
Lucknow	16260	927	1417	1555	1768	1937	1087	617	183	106
Mysore	11681	720	361	188	86	60	26	21	8	7
Surat	11626	843	1232	1430	1706	1594	1027	539	150	117
Vadodara	10127	429	616	718	785	829	559	251	89	70
Visakhapatnam	12747	2618	1275	510	278	163	101	71	45	47
Total	**176998**	**18429**	**11756**	**8637**	**7617**	**6601**	**4128**	**2377**	**1032**	**734**

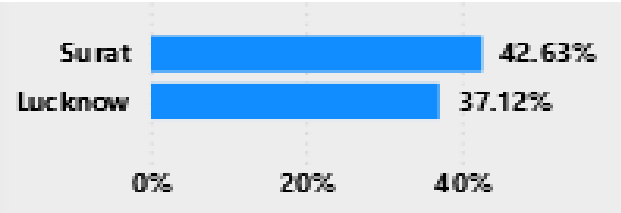
Here: NPT =New Passenger Trip, RPT =Repeat Passenger Trip

7. For each city, evaluate monthly performance against targets for total trips, new passengers, and average passenger ratings. Determine if each metric met, exceeded, or missed the target, and calculate the percentage difference

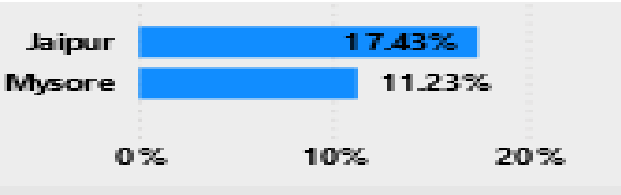
city_name	Target Trips	Actual Trips	Performance_Status	%Gap b/w AT&TT	TNP	NP	% Gap b/w TNP vs NP	TAPR	ToAPR	%Gap b/w TAPR vs ToAPR
Jaipur	67.50K	76.89K	Above Target	-17.72	54.0K	45.9K	-15.08%	8.25	8.58	4.05%
Lucknow	72.00K	64.30K	Below Target	-64.09	15.6K	16.3K	4.23%	7.25	6.49	-10.49%
Surat	57.00K	54.84K	Below Target	-64.45	10.5K	11.6K	10.72%	7.00	6.42	-8.33%
Kochi	49.50K	50.70K	Above Target	-31.23	27.0K	26.4K	-2.16%	8.50	8.52	0.19%
Indore	43.50K	42.46K	Below Target	-49.24	14.1K	14.9K	5.41%	8.00	7.83	-2.15%
Chandigarh	39.00K	38.98K	Below Target	-38.52	21.0K	18.9K	-9.96%	8.00	7.98	-0.29%
Vadodara	37.50K	32.03K	Below Target	-61.41	9.9K	10.1K	2.29%	7.50	6.61	-11.85%
Visakhapatnam	28.50K	28.37K	Below Target	-37.35	13.5K	12.7K	-5.58%	8.50	8.43	-0.79%
Coimbatore	21.00K	21.10K	Above Target	-47.31	7.5K	8.5K	13.52%	8.25	7.88	-4.45%
Mysore	13.50K	16.24K	Above Target	-2.53	12.0K	11.7K	-2.66%	8.50	8.70	2.37%

8. Identify the top 2 and bottom 2 cities based on their RPR% to determine which locations have the strongest and weakest rates. Similarly, analyze the RPR% by month across all cities and identify the months with the highest and lowest repeat passenger rates.

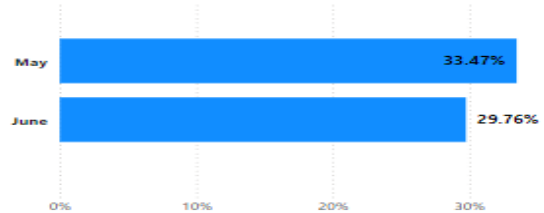
Top 2 Cities by RPR %



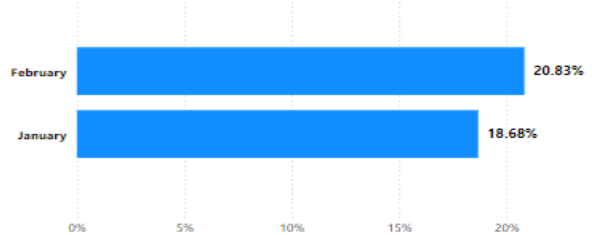
Bottom 2 Cities by RPR %



Top 2 RPR % Months



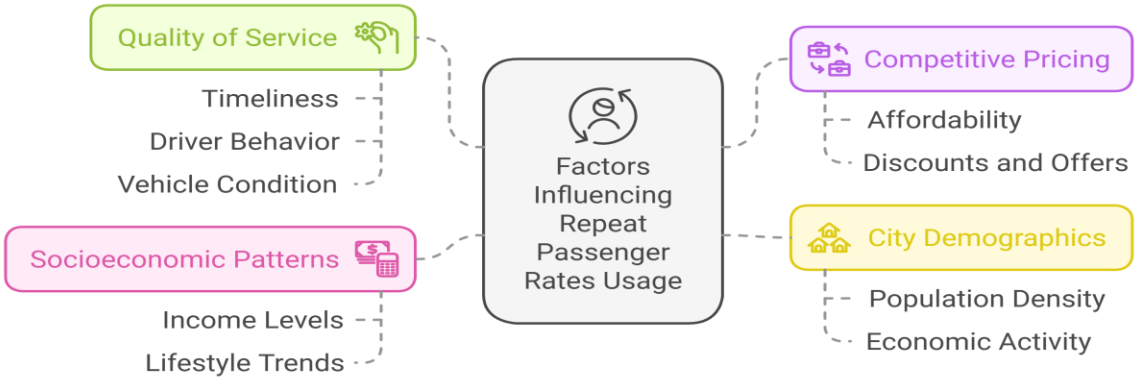
Bottom 2 RPR % Months



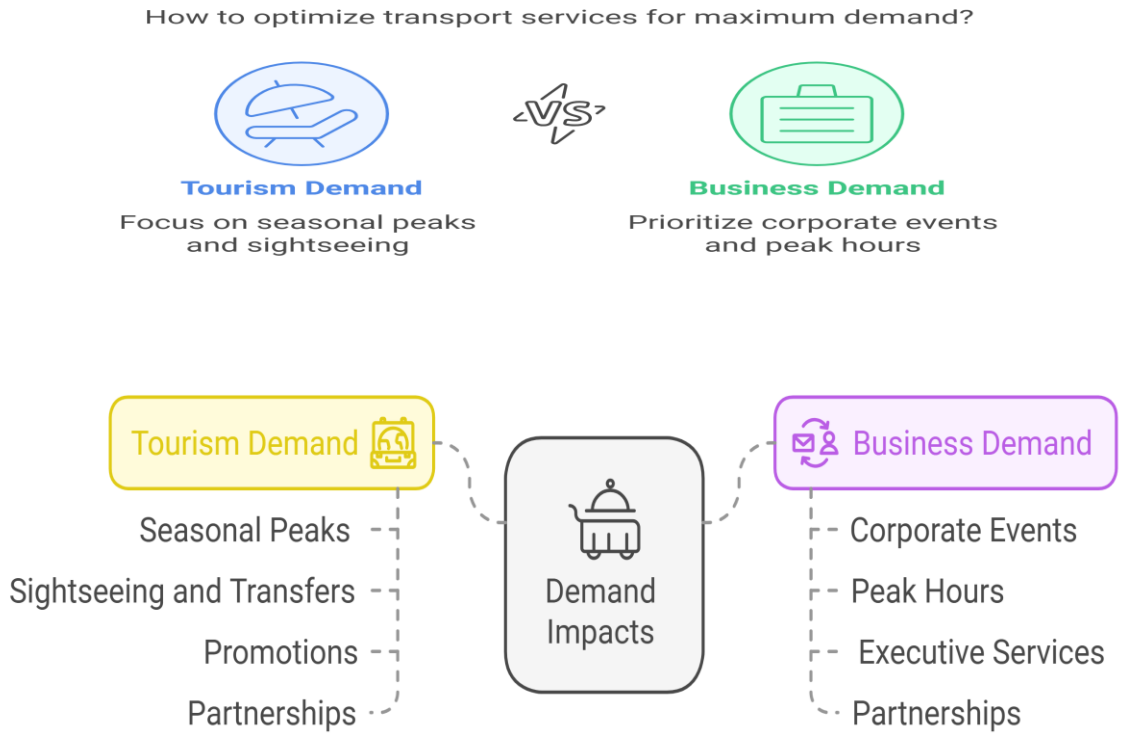
Here: RPR = Repeat Passenger Rate

Secondary Analysis

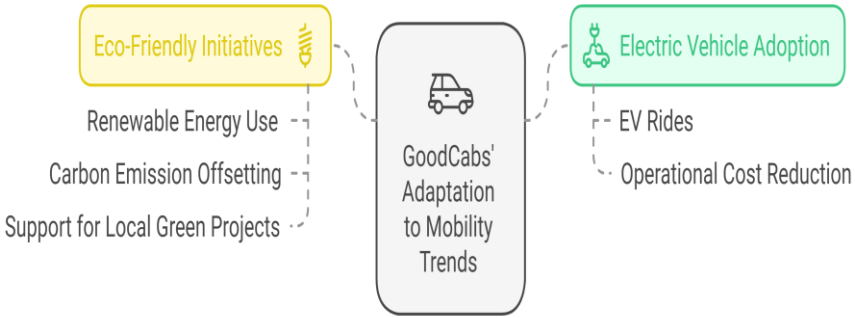
1.Factor Influencing Repeat Passenger Rates



2.Tourism vs Business Demand Impact

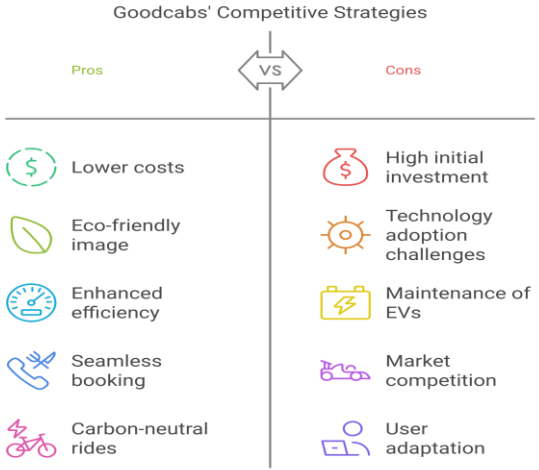


3.Emerging Mobility Trend and Goodcabs’ Adaptation

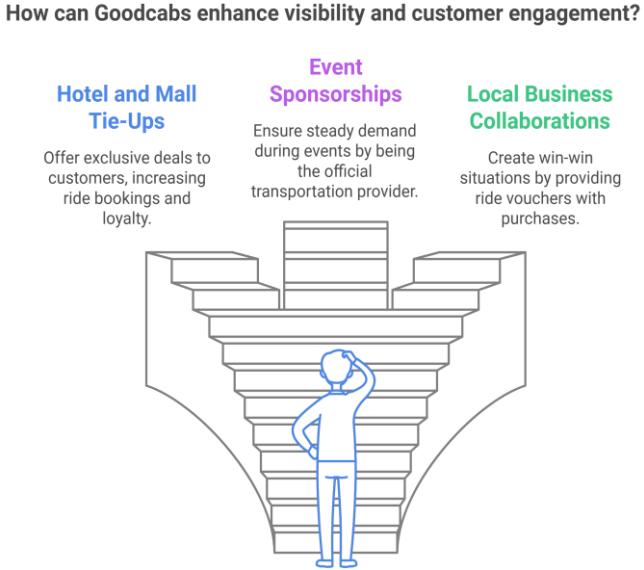


Technology Integration

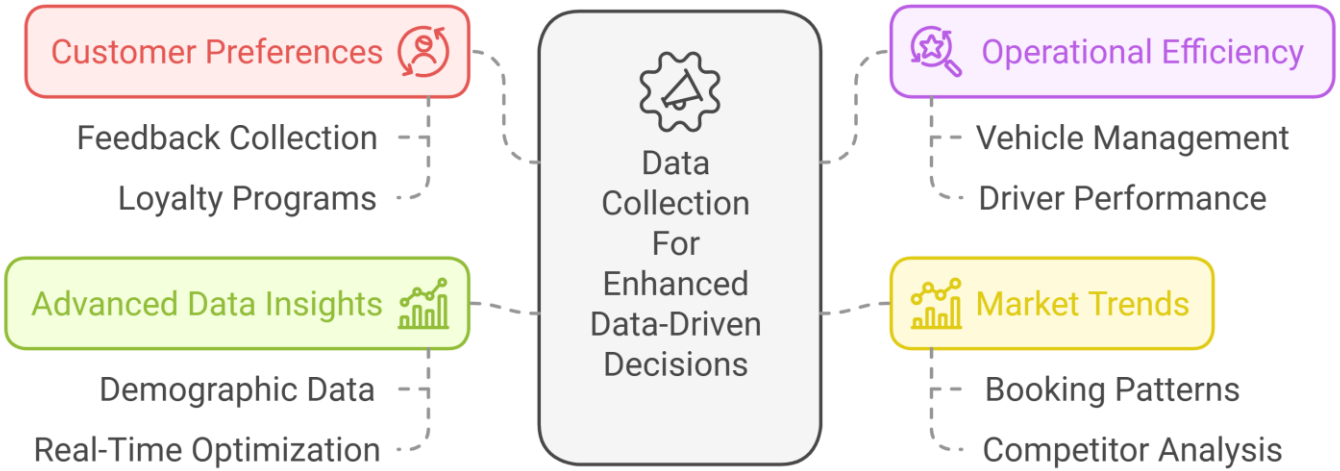
Implementing AI and tech solutions to enhance efficiency and user experience.



4.Partnership Opportunities with Local Businesses

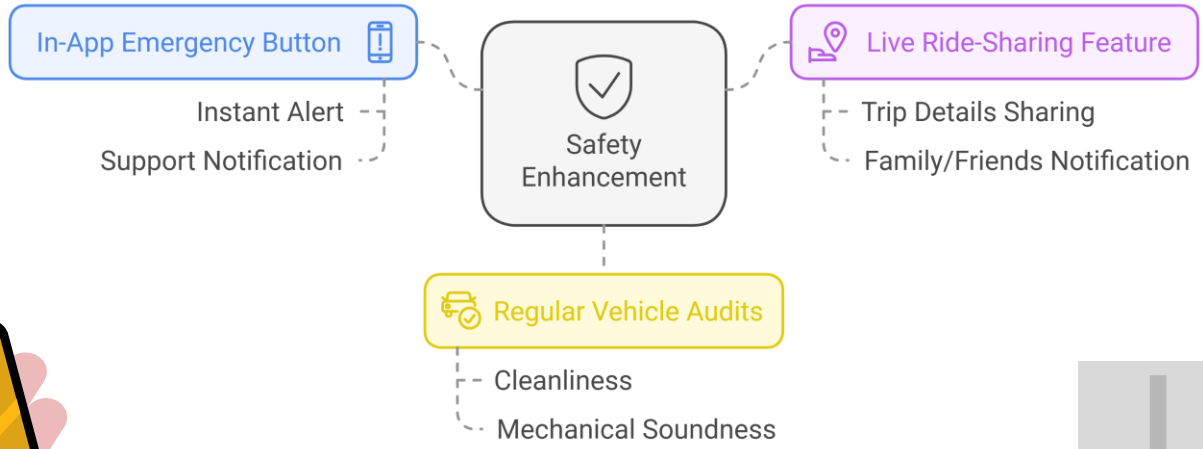


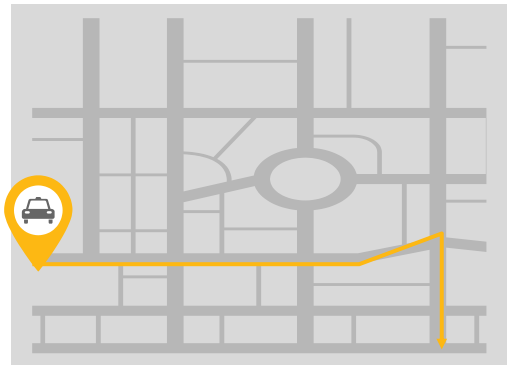
5. Data Collection For Enhanced Data-Driven Decisions



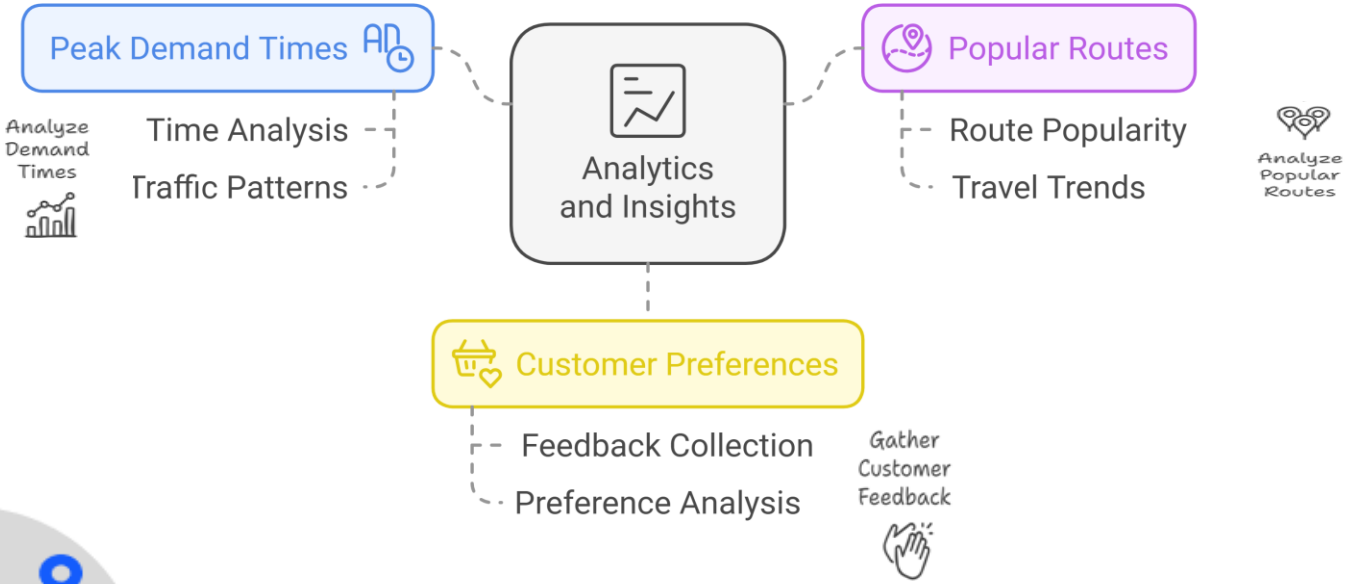
Recommendation

6. Safety in the cab





7. Feedback and Analysis



Ad–Hoc Business Request

1.Genrate a repeat that displays the total trips, average fare per km, average fare per trip & percentage contribution of each city's trips to the overall trip.

city_name	total_trips	Average_fare_per_km	average_fare_per_trip	percentage_contribution
Visakhapatnam	28366	12.70	282.67	6.66
Chandigarh	38981	12.18	283.69	9.15
Surat	54843	10.92	117.27	12.88
Vadodara	32026	10.54	118.57	7.52
Mysore	16238	15.40	249.71	3.81
Kochi	50702	14.13	335.25	11.90
Indore	42456	11.07	179.84	9.97
Jaipur	76888	16.25	483.92	18.05
Coimbatore	21104	11.30	166.98	4.96
Lucknow	64299	12.14	147.18	15.10

2. Generate a report that evaluates the target performance for trips at the monthly and city level. For each city and month, compare the actual total trips with the target trips and categories the performance as follows:
If actual trips > target trips - "Above Target“.
If actual trips <= target trips - "Below Target".
Additionally, calculate the percentage difference between actual and target trips to quantify the performance gap.

city_name	month_name	actual_trips	target_trips	performance_status	%_difference
Chandigarh	January	6810	7000	Below Target	-2.71
Coimbatore	January	3651	3500	Above Target	4.31
Indore	January	6737	7000	Below Target	-3.76
Jaipur	January	14976	13000	Above Target	15.20
Kochi	January	7344	7500	Below Target	-2.08
Lucknow	January	10858	13000	Below Target	-16.48
Mysore	January	2485	2000	Above Target	24.25
Surat	January	8358	9000	Below Target	-7.13
Vadodara	January	4775	6000	Below Target	-20.42
Visakhapatnam	January	4468	4500	Below Target	-0.71

city_name	month_name	actual_trips	target_trips	performance_status	%_difference
Chandigarh	February	7387	7000	Above Target	5.53
Coimbatore	February	3404	3500	Below Target	-2.74
Indore	February	7210	7000	Above Target	3.00
Jaipur	February	15872	13000	Above Target	22.09
Kochi	February	7688	7500	Above Target	2.51
Lucknow	February	12060	13000	Below Target	-7.23
Mysore	February	2668	2000	Above Target	33.40
Surat	February	9069	9000	Above Target	0.77
Vadodara	February	5228	6000	Below Target	-12.87
Visakhapatnam	February	4793	4500	Above Target	6.51

city_name	month_name	actual_trips	target_trips	performance_status	%_difference
Chandigarh	March	6569	7000	Below Target	-6.16
Coimbatore	March	3680	3500	Above Target	5.14
Indore	March	7019	7000	Above Target	0.27
Jaipur	March	13317	13000	Above Target	2.44
Kochi	March	9495	7500	Above Target	26.60
Lucknow	March	11224	13000	Below Target	-13.66
Mysore	March	2633	2000	Above Target	31.65
Surat	March	9267	9000	Above Target	2.97
Vadodara	March	5598	6000	Below Target	-6.70
Visakhapatnam	March	4877	4500	Above Target	8.38

city_name	month_name	actual_trips	target_trips	performance_status	%_difference
Chandigarh	April	5566	6000	Below Target	-7.23
Coimbatore	April	3661	3500	Above Target	4.60
Indore	April	7415	7500	Below Target	-1.13
Jaipur	April	11406	9500	Above Target	20.06
Kochi	April	9762	9000	Above Target	8.47
Lucknow	April	10212	11000	Below Target	-7.16
Mysore	April	2603	2500	Above Target	4.12
Surat	April	9831	10000	Below Target	-1.69
Vadodara	April	5941	6500	Below Target	-8.60
Visakhapatnam	April	4938	5000	Below Target	-1.24

2. Generate a report that evaluates the target performance for trips at the monthly and city level. For each city and month, compare the actual total trips with the target trips and categories the performance as follows:
If actual trips > target trips - "Above Target“.
If actual trips <= target trips - "Below Target".
Additionally, calculate the percentage difference between actual and target trips to quantify the performance gap.

city_name	month_name	actual_trips	target_trips	performance_status	%_difference
Chandigarh	May	6620	6000	Above Target	10.33
Coimbatore	May	3550	3500	Above Target	1.43
Indore	May	7787	7500	Above Target	3.83
Jaipur	May	11475	9500	Above Target	20.79
Kochi	May	10014	9000	Above Target	11.27
Lucknow	May	9705	11000	Below Target	-11.77
Mysore	May	3007	2500	Above Target	20.28
Surat	May	9774	10000	Below Target	-2.26
Vadodara	May	5799	6500	Below Target	-10.78
Visakhapatnam	May	4812	5000	Below Target	-3.76

city_name	month_name	actual_trips	target_trips	performance_status	%_difference
Chandigarh	June	6029	6000	Above Target	0.48
Coimbatore	June	3158	3500	Below Target	-9.77
Indore	June	6288	7500	Below Target	-16.16
Jaipur	June	9842	9500	Above Target	3.60
Kochi	June	6399	9000	Below Target	-28.90
Lucknow	June	10240	11000	Below Target	-6.91
Mysore	June	2842	2500	Above Target	13.68
Surat	June	8544	10000	Below Target	-14.56
Vadodara	June	4685	6500	Below Target	-27.92
Visakhapatnam	June	4478	5000	Below Target	-10.44

3.Generate a report that shows the percentage distribution of repeat passengers by the number of trips they have taken in each city. Calculate the percentage of repeat passengers who took 2 trips, 3 trips, and so on, up to 10 trips. Each column should represent a trip count category, displaying the percentage of repeat passengers who fall into that category out of the total repeat passengers for that city.

city_name	2-Trips	3-Trips	4-Trips	5-Trips	6-Trips	7-Trips	8-Trips	9-Trips	10-Trips
Chandigarh	32.31	19.25	15.74	12.21	7.42	5.48	3.47	2.33	1.79
Coimbatore	11.21	14.82	15.56	20.62	17.64	10.47	6.15	2.31	1.22
Indore	34.34	22.69	13.40	10.34	6.85	5.24	3.26	2.38	1.51
Jaipur	50.14	20.73	12.12	6.29	4.13	2.52	1.90	1.20	0.97
Kochi	47.67	24.35	11.81	6.48	3.91	2.11	1.65	1.21	0.81
Lucknow	9.66	14.77	16.20	18.42	20.18	11.33	6.43	1.91	1.10
Mysore	48.75	24.44	12.73	5.82	4.06	1.76	1.42	0.54	0.47
Surat	9.76	14.26	16.55	19.75	18.45	11.89	6.24	1.74	1.35
Vadodara	9.87	14.17	16.52	18.06	19.08	12.86	5.78	2.05	1.61
Visakhapatnam	51.25	24.96	9.98	5.44	3.19	1.98	1.39	0.88	0.92

4. Generate a report that calculates the total new passengers for each city and ranks them based on this value. Identify the top 3 cities with the highest number of new passengers as well as the bottom 3 cities with the lowest number of new passengers, categorizing them as "Top 3" or "Bottom 3" accordingly.

city_name	total_new_passengers	city_category
Jaipur	45856	Top 3
Kochi	26416	Top 3
Chandigarh	18908	Top 3
Surat	11626	Bottom 3
Vadodara	10127	Bottom 3
Coimbatore	8514	Bottom 3

5. Generate a report that identifies the month with the highest revenue for each city. For each city, display the month name, the revenue amount for that month, and the percentage contribution of that month's revenue to the city's total revenue.

city_name	highest_revenue_month	revenue	percentage_contribution
Visakhapatnam	April	1390682	17.34
Chandigarh	February	2108290	19.07
Surat	April	1154909	17.96
Vadodara	April	706250	18.60
Mysore	May	745170	18.38
Kochi	May	3333746	19.61
Indore	May	1380996	18.09
Jaipur	February	7747202	20.82
Coimbatore	April	612431	17.38
Lucknow	February	1777269	18.78

6.Generate a report that calculates two metrics:
→ Monthly Repeat Passenger Rate: Calculate the repeat passenger rate for each city and month by comparing the number of repeat passengers to the total passengers.
→ City-wise Repeat Passenger Rate: Calculate the overall repeat passenger rate for each city, considering all passengers across months.

city_name	month	total_passengers	repeat_passengers	monthly_repeat_passenger_rate	city_repeat_percentage_rate
Chandigarh	February	4957	853	17.21	21.14
Chandigarh	January	4640	720	15.52	21.14
Chandigarh	June	3297	867	26.30	21.14
Chandigarh	April	3285	789	24.02	21.14
Chandigarh	March	4100	872	21.27	21.14
Chandigarh	May	3699	969	26.20	21.14
Coimbatore	February	1993	346	17.36	23.05
Coimbatore	April	1722	480	27.87	23.05
Coimbatore	January	2214	392	17.71	23.05
Coimbatore	March	1965	427	21.73	23.05
Coimbatore	May	1543	504	32.66	23.05
Coimbatore	June	1628	402	24.69	23.05
Indore	May	3591	1563	43.53	32.68
Indore	January	3876	1033	26.65	32.68
Indore	April	3646	1295	35.52	32.68
Indore	February	3981	1103	27.71	32.68
Indore	March	3833	1091	28.46	32.68
Indore	June	3152	1131	35.88	32.68
Jaipur	February	12450	1661	13.34	17.43
Jaipur	April	7856	1736	22.10	17.43

city_name	month	total_passengers	repeat_passengers	monthly_repeat_passenger_rate	city_repeat_percentage_rate
Jaipur	May	7174	1842	25.68	17.43
Jaipur	June	6956	1181	16.98	17.43
Jaipur	January	11845	1422	12.01	17.43
Kochi	May	6222	1853	29.78	22.40
Kochi	January	5660	795	14.05	22.40
Kochi	April	6515	1576	24.19	22.40
Kochi	March	6213	1348	21.70	22.40
Kochi	February	5372	1005	18.71	22.40
Kochi	June	4060	1049	25.84	22.40
Lucknow	June	3698	1727	46.70	37.12
Lucknow	January	4896	1431	29.23	37.12
Lucknow	April	3807	1496	39.30	37.12
Lucknow	March	4781	1622	33.93	37.12
Lucknow	February	5188	1659	31.98	37.12
Lucknow	May	3487	1662	47.66	37.12
Mysore	April	2072	236	11.39	11.23
Mysore	June	2203	329	14.93	11.23
Mysore	May	2270	349	15.37	11.23
Mysore	January	2129	172	8.08	11.23
Mysore	March	2194	208	9.48	11.23

6.Generate a report that calculates two metrics:
→ Monthly Repeat Passenger Rate: Calculate the repeat passenger rate for each city and month by comparing the number of repeat passengers to the total passengers.
→ City-wise Repeat Passenger Rate: Calculate the overall repeat passenger rate for each city, considering all passengers across months.

city_name	month	total_passengers	repeat_passengers	monthly_repeat_passenger_rate	city_repeat_percentage_rate
Mysore	February	2290	183	7.99	11.23
Surat	May	3217	1606	49.92	42.63
Surat	April	3394	1551	45.70	42.63
Surat	January	3616	1184	32.74	42.63
Surat	March	3440	1494	43.43	42.63
Surat	February	3567	1313	36.81	42.63
Surat	June	3030	1490	49.17	42.63
Vadodara	May	2256	868	38.48	30.03
Vadodara	January	2633	544	20.66	30.03
Vadodara	April	2499	862	34.49	30.03
Vadodara	March	2522	759	30.10	30.03
Vadodara	June	1807	703	38.90	30.03
Vadodara	February	2756	610	22.13	30.03
Visakhapatnam	March	3093	923	29.84	28.61
Visakhapatnam	June	2702	802	29.68	28.61
Visakhapatnam	January	3163	650	20.55	28.61
Visakhapatnam	April	2837	992	34.97	28.61
Visakhapatnam	May	2890	951	32.91	28.61
Visakhapatnam	February	3170	790	24.92	28.61

Thank You

thejaswinisv