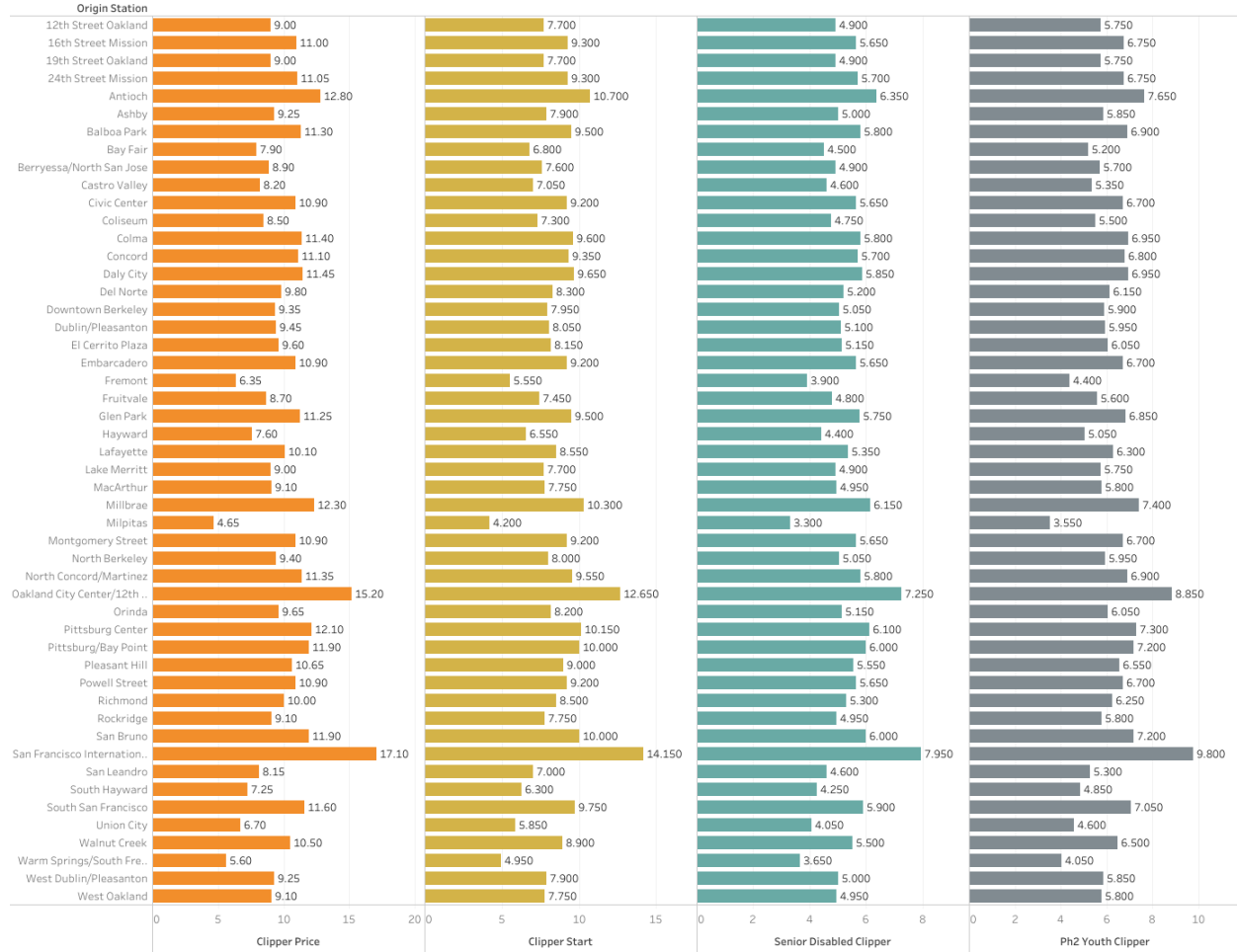


Visualizations

Current BART+VTA Cost to reach SJSU (Till Phase 2)



The above visualization shows, current cost to commute to SJSU from different BART stations. We have also similarly shown what would be the cost if Phase 2 is implemented.

<https://public.tableau.com/app/profile/nikhil3423/viz/SJSU-dbms/BARTFareCalculator> - This Visualization helps with the fare calculation between different BART stations.

<https://public.tableau.com/app/profile/nikhil3423/viz/BARTupdatedpriceswithPhase2/Sheet3> - This Visualization helps us in understanding the cost to commute to SJSU from different BART stations after the Phase 2 is implemented

<https://public.tableau.com/app/profile/nikhil3423/viz/dbms-sjsu4/Sheet2> - This Visualization helps us know the BART stations with the highest number of touchpoints through different schedules

<https://public.tableau.com/app/profile/nikhil3423/viz/dbms-sjsu3/Sheet1> - This Visualization helps us to know the BART stations with the highest number of functional routes attached to that BART station.

The screenshot shows the Google Cloud Data Studio interface. On the left is the Explorer pane with a search bar and a list of workspace resources including 'BART_transform', 'VTA', 'VTA_model', 'VTA_transform', 'date', 'dbt', 'dbt_demo', 'bart_next_stop', 'bart_riders_fare', 'bart_service', 'date', and 'next_arrival'. The main panel displays a query titled 'Untitled' with the SQL statement: `select * from dbms-sjsu.VTA_model1.from_sjsu`. Below the query is a 'Query results' section with tabs for 'JOB INFORMATION', 'RESULTS', 'JSON', 'EXECUTION DETAILS', 'EXECUTION GRAPH', and 'PREVIEW'. The 'RESULTS' tab is active, showing a table with 13 rows and 5 columns: 'Row', 'route_name', 'stop_name', 'arrival_time', and 'departure_time'. The table lists various BART routes, all of which pass through 'Santa Clara & 6th' station. The bottom of the interface shows 'PERSONAL HISTORY' and 'PROJECT HISTORY' tabs, along with a 'REFRESH' button.

Row	route_name	stop_name	arrival_time	departure_time
1	Rapid 500 North	Santa Clara & 6th	4:32:11	4:32:11
2	Rapid 500 North	Santa Clara & 6th	4:59:11	4:59:11
3	Rapid 500 North	Santa Clara & 6th	5:29:11	5:29:11
4	Rapid 500 North	Santa Clara & 6th	5:29:11	5:29:11
5	Rapid 500 North	Santa Clara & 6th	5:44:11	5:44:11
6	Rapid 500 North	Santa Clara & 6th	5:59:11	5:59:11
7	Rapid 500 North	Santa Clara & 6th	6:29:11	6:29:11
8	Rapid 500 North	Santa Clara & 6th	7:29:11	7:29:11
9	Rapid 500 North	Santa Clara & 6th	7:45:11	7:45:11
10	Rapid 500 North	Santa Clara & 6th	5:58:23	5:58:23
11	Rapid 500 North	Santa Clara & 6th	6:13:23	6:13:23
12	Rapid 500 North	Santa Clara & 6th	6:28:23	6:28:23
13	Rapid 500 North	Santa Clara & 6th	6:43:23	6:43:23

This table essentially gives us all the routes which directly touch Santa Clara 6th (considered as the SJSU bus stop due to the rush here)

The Below Table gives us all the routes from Berryessa BART station along with their arrival and departure times.

Google Cloud dbms-sjsu

Search (/) for resources, docs, products, and more

Search

Explorer

+ ADD

Q *Untitled x

Q Search

Query completed.

1 select * from dbms-sjsu.VTA_model1.to_fro_berryessa

Press Alt+F1 for Accessibility Options.

Query results

SAVE RESULTS EXPLORE DATA

JOB INFORMATION RESULTS JSON EXECUTION DETAILS EXECUTION GRAPH PREVIEW

Row	route_short_name	stop_name	sjsu_tag	arrival_time	departure_time
1	Rapid 500	Berryessa Transit Center (Bay 2)	towards SJSU	5:24:00	5:24:00
2	Rapid 500	Berryessa Transit Center (Bay 2)	towards SJSU	6:00:00	6:00:00
3	Rapid 500	Berryessa Transit Center (Bay 2)	towards SJSU	6:16:00	6:16:00
4	Rapid 500	Berryessa Transit Center (Bay 2)	towards SJSU	6:29:00	6:29:00
5	Rapid 500	Berryessa Transit Center (Bay 2)	towards SJSU	6:31:00	6:31:00
6	Rapid 500	Berryessa Transit Center (Bay 2)	towards SJSU	6:45:00	6:45:00
7	Rapid 500	Berryessa Transit Center (Bay 2)	towards SJSU	6:57:00	6:57:00
8	Rapid 500	Berryessa Transit Center (Bay 2)	towards SJSU	7:01:00	7:01:00
9	Rapid 500	Berryessa Transit Center (Bay 2)	towards SJSU	7:15:00	7:15:00
10	Rapid 500	Berryessa Transit Center (Bay 2)	towards SJSU	7:15:00	7:15:00
11	Rapid 500	Berryessa Transit Center (Bay 2)	towards SJSU	7:29:00	7:29:00
12	Rapid 500	Berryessa Transit Center (Bay 2)	towards SJSU	7:30:00	7:30:00
13	Rapid 500	Berryessa Transit Center (Bay 2)	towards SJSU	7:45:00	7:45:00

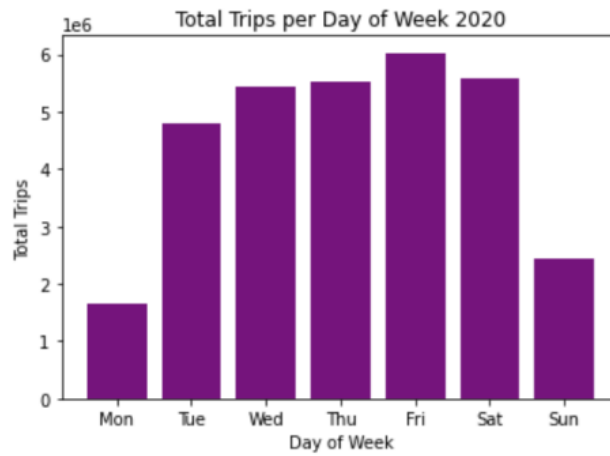
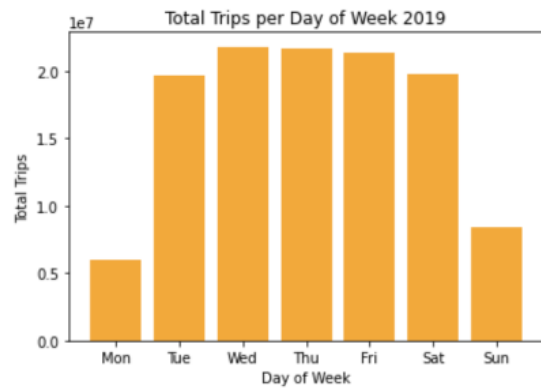
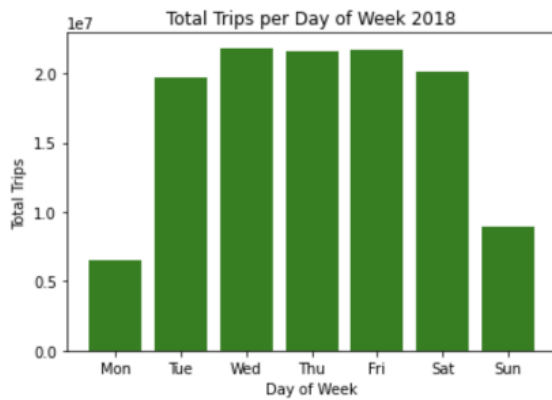
Results per page: 50 1 - 50 of 4154

PERSONAL HISTORY PROJECT HISTORY

REFRESH

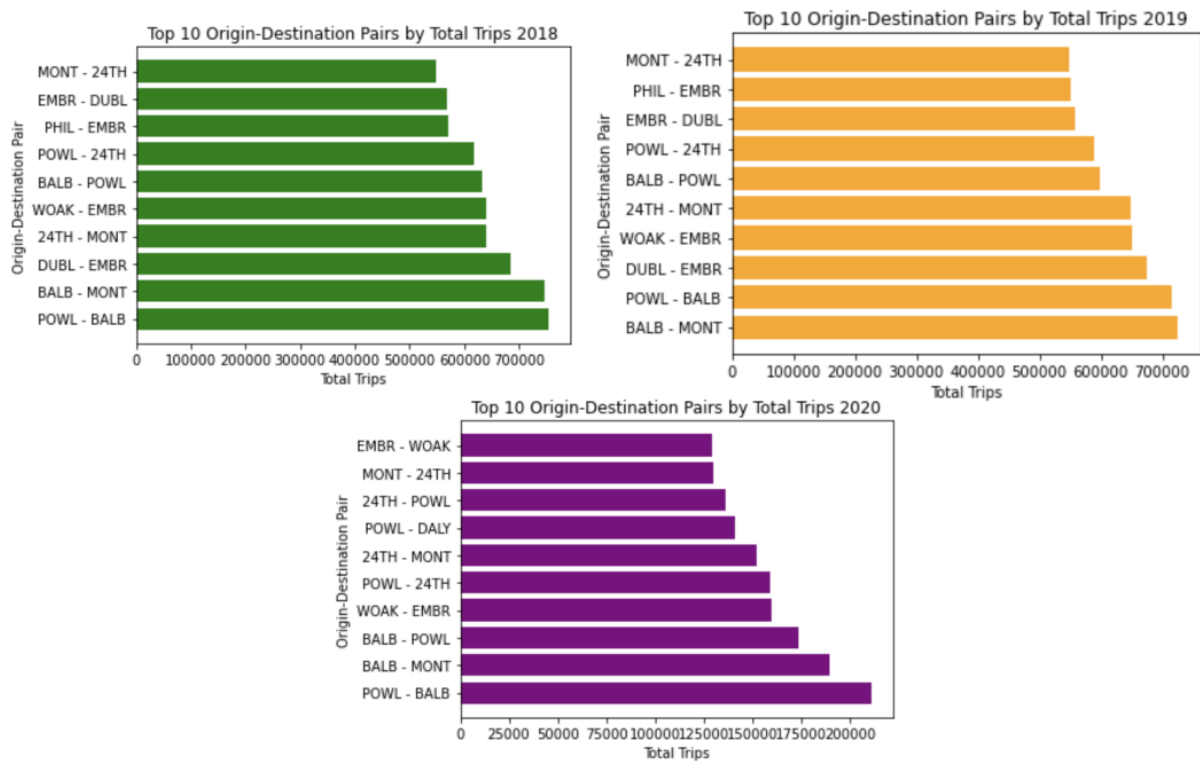
By gaining insights into which stations are the busiest and which experienced the largest drop in ridership, BART can allocate resources more efficiently, such as adding additional trains or staff at the busiest stations

Comparison of ridership by day of the week in 2018, 2019 and 2020



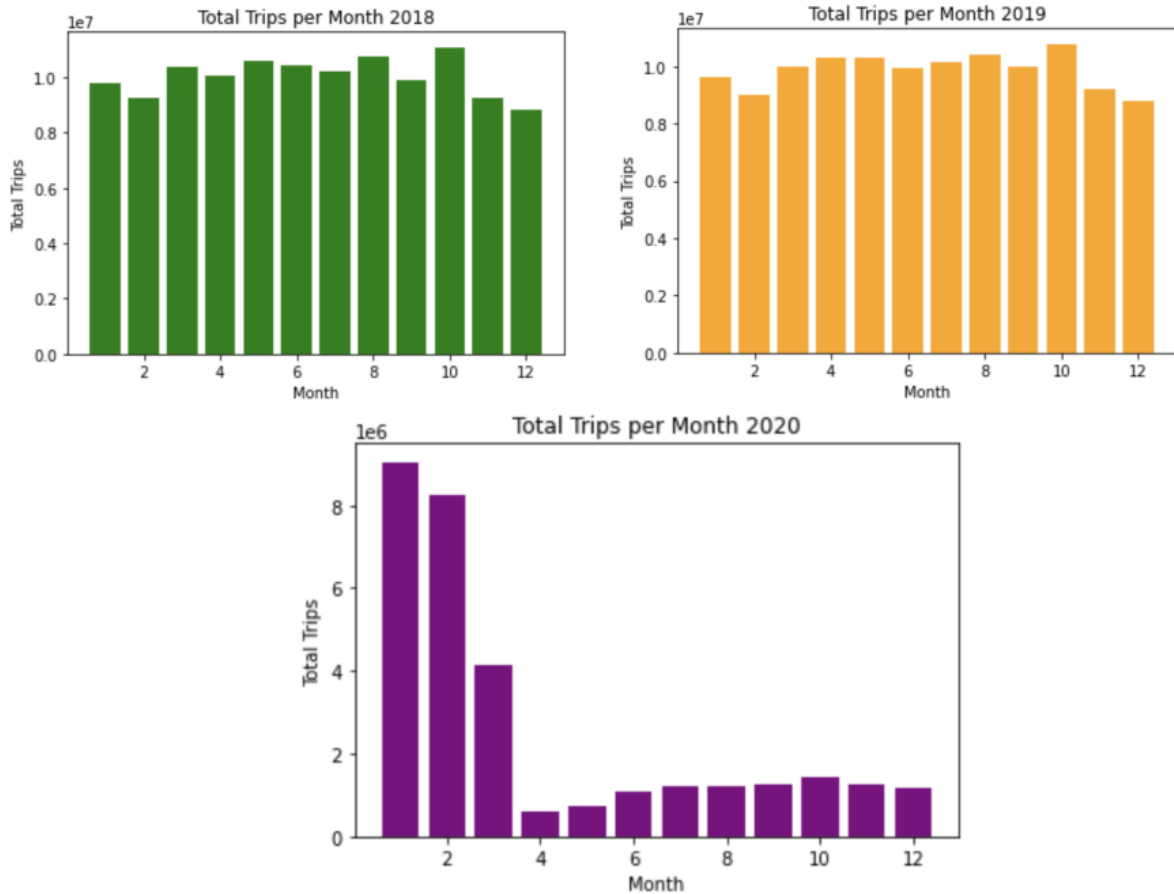
Understanding the average number of trips per day/hour can also allow BART to adjust schedules and staffing to accommodate ridership patterns and improve overall efficiency

Most popular origin-destination pairs in 2018, 2019 and 2020



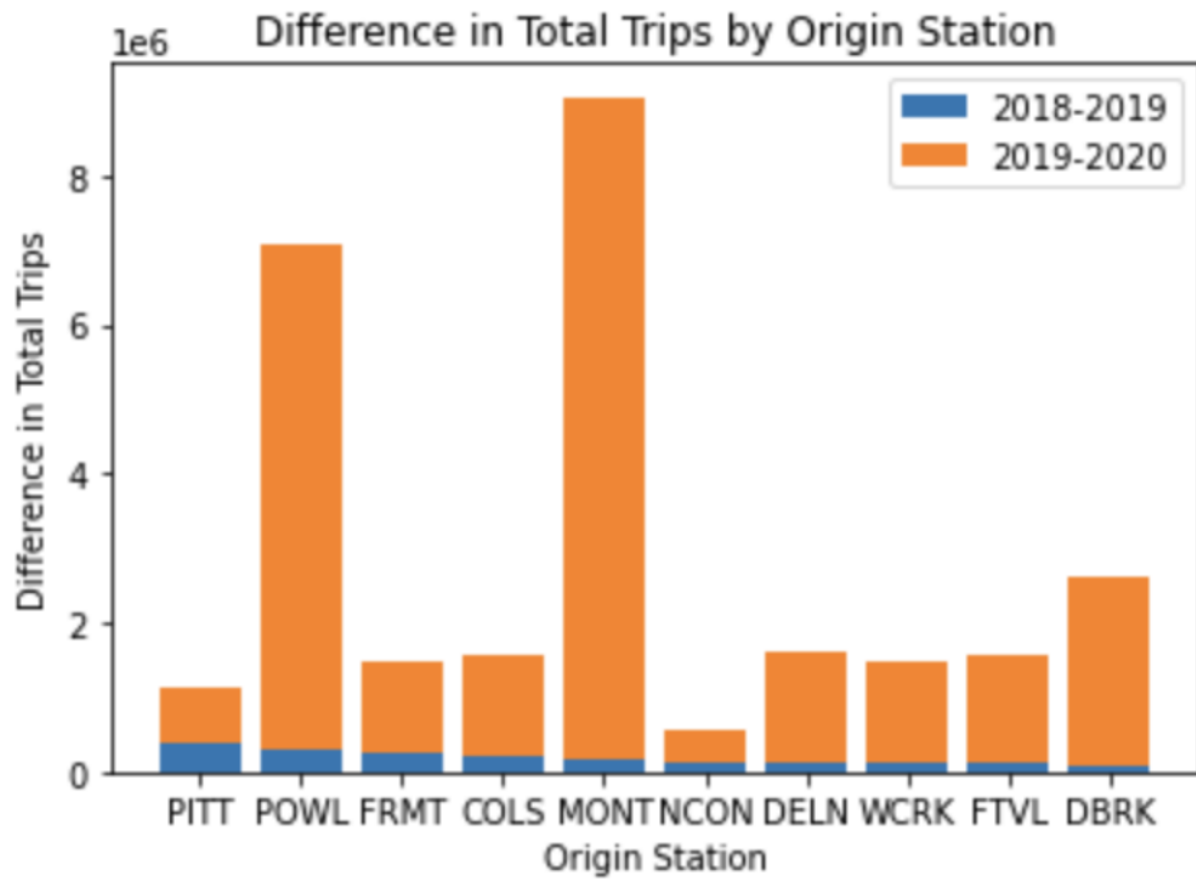
Most popular origin-destination pairs can provide valuable information for businesses looking to tailor their offerings to meet the unique needs of commuters along those routes.

Comparison of ridership by month in 2018, 2019 and 2020

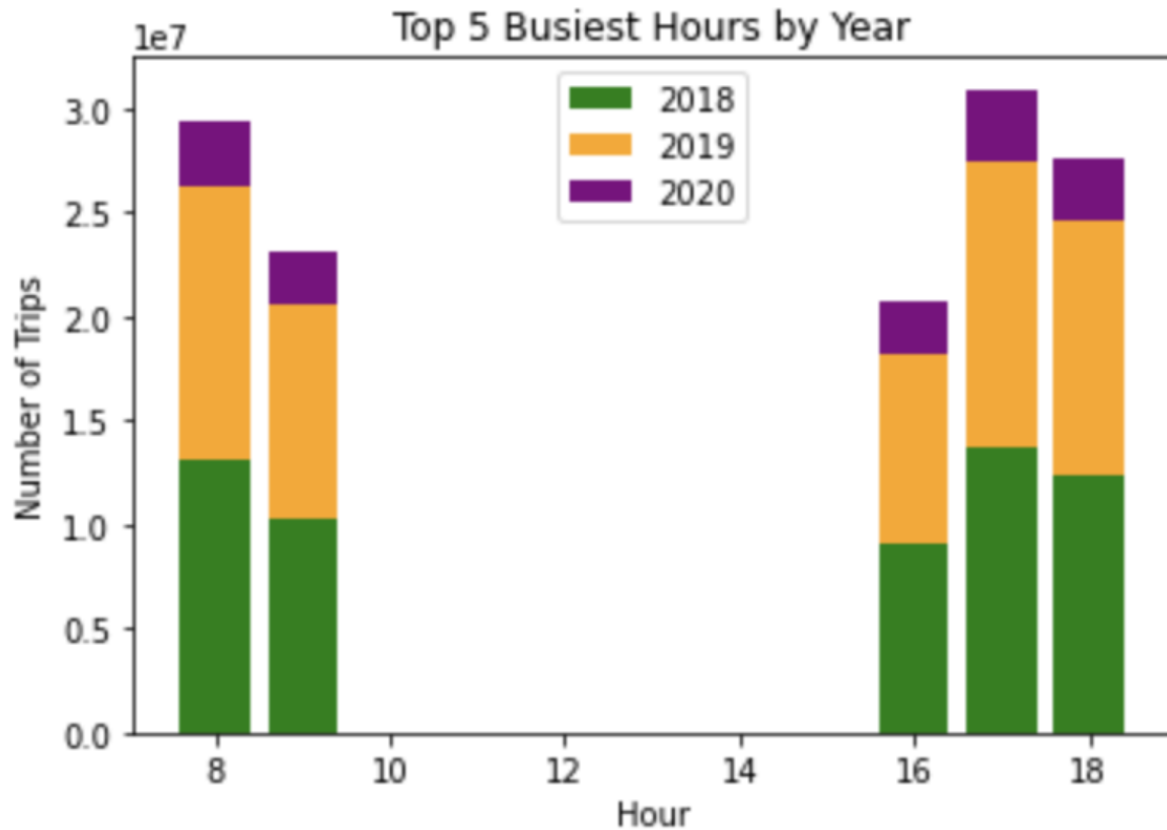


By analyzing the comparison of ridership by day of the week and month, BART can identify trends and patterns in ridership that can inform future planning and decision-making. This data can be used to adjust services during peak periods and identify areas for growth and improvement.

Top 10 stations that experienced the largest drop in ridership from 2018 to 2020



Comparison of the busiest hour in 2018, 2019 and 2020



By identifying the busiest stations and times of day, businesses can target promotions and advertisements more strategically, maximizing exposure to their target audience

Performance analysis between MySQL and Neo4j for Fare calculation query:

MySQL	Neo4j
423ms	10ms