

Analyzing Traffic and Weather Patterns in Riyadh

Content

Problem identification	1	Fact and Dimension Table	6
Goals and objectives	2	ETL Process	7
Dataset Overview	3	Dashboard	8
KPIs	4	Recommendations	9
Star Schema	5		

Problem

- The persistent issue of travel delays in major cities like Riyadh, which hinder productivity.

Goals and objectives

- Analyze historical traffic and weather data.
- Investigate factors like rush hours and Riyadh Season traffic flow.
- Finding Recommendations

Dataset Overview:

- General Information: Includes city, datetime, day, and day type (weekday/weekend).
- Traffic Data: Covers traffic congestion (Traffic Index), jam count, delays, and travel times, along with historical data for comparison.
- Weather Data: Contains temperature, humidity, wind speed, visibility, cloud cover, and weather conditions (e.g., clear, cloudy, rainy).

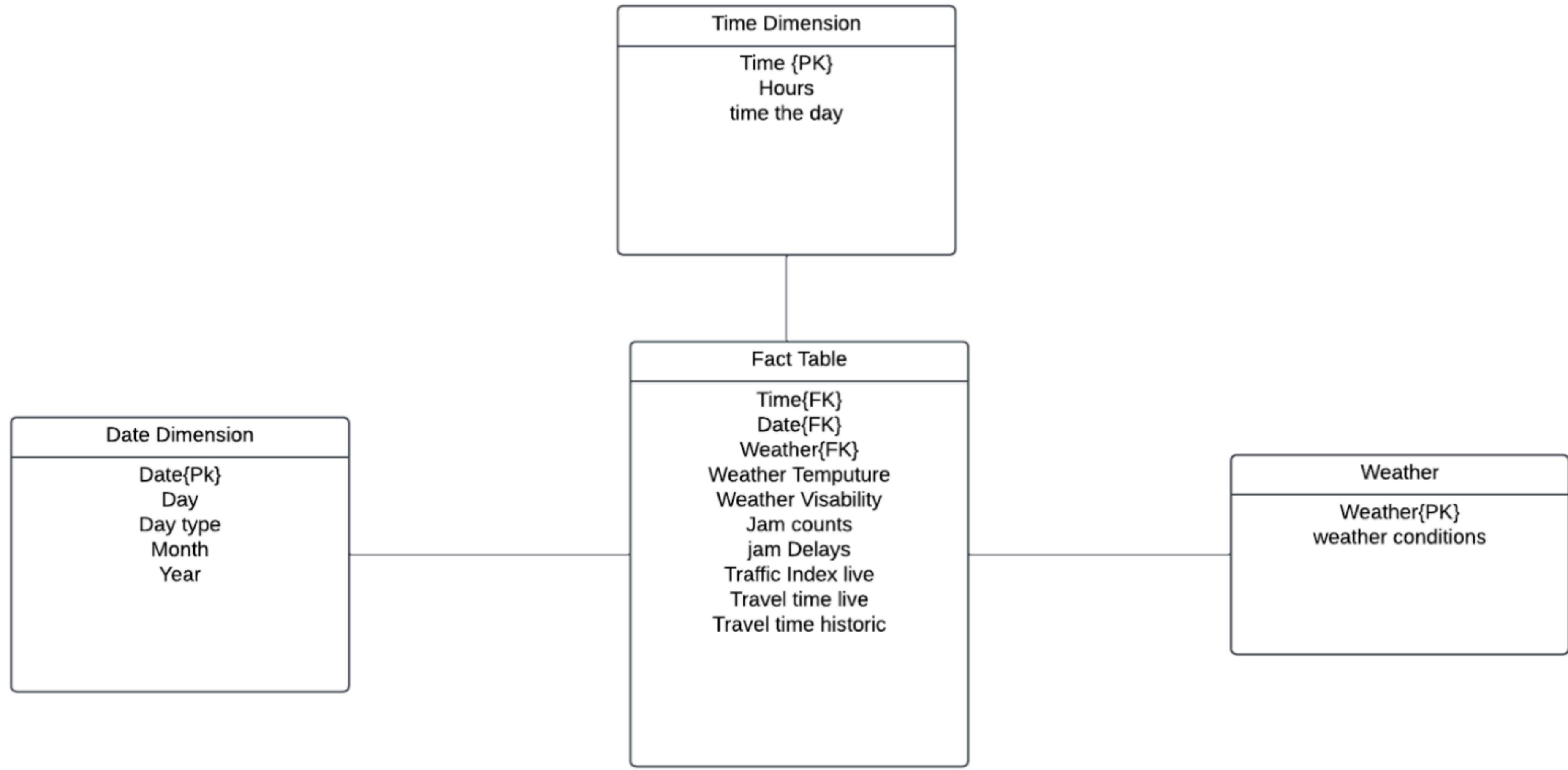
KPIs

- ◆ Track the average jam delay and the average jam count per hour in Riyadh in 2023
- ◆ Compare the Average Travel Time Live with the Average Travel Time Historic during the months of Riyadh Season

KPIs

- ◆ Average Traffic Jams Count per weekend day in Riyadh
- ◆ Compare the average Travel time live and the Travel time historic for last week
- ◆ Track the average Traffic index live and the average jam delay per weather conditions in Riyadh

Star Schema



Fact and Dimension Table

Fact Table:

- Traffic Index: Reflects congestion levels.
- Time (FK), Date (FK), Weather (FK): Link to respective dimension tables.
- Weather Temperature & Visibility and more: Recorded at the time of data.

Dimension Tables:

- Date: Includes day of the week and type (weekday/weekend).
- Time: Time intervals (e.g., hourly).
- Weather: Describes weather conditions (e.g., clear, rainy).

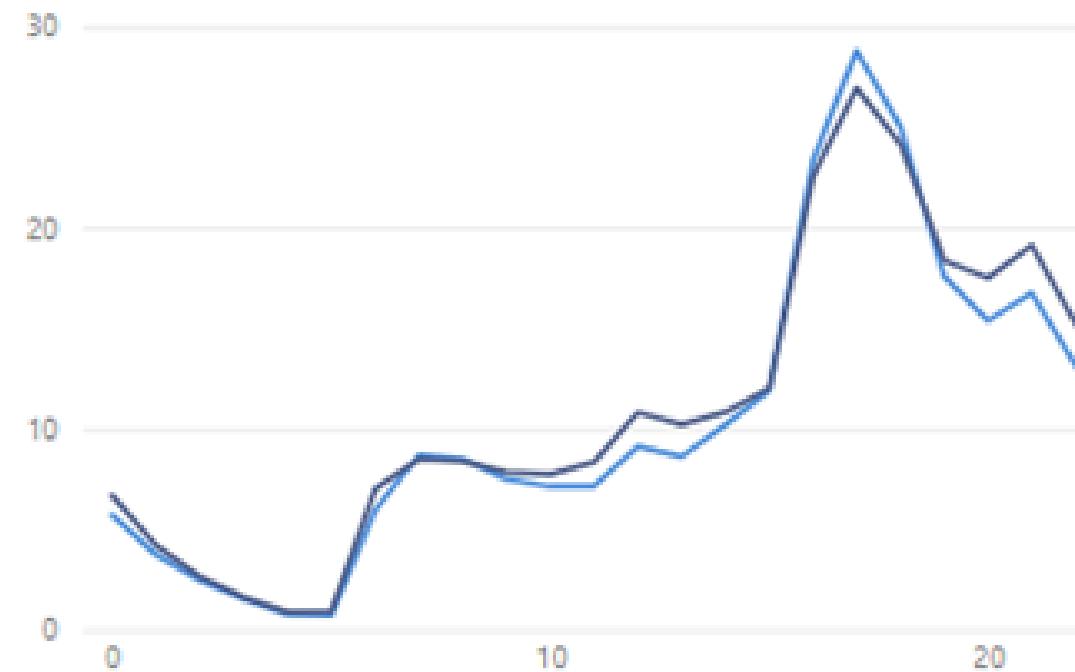
ETL Process:

- Extract: Dataset uploaded into Python.
- Transform: Removing missing values, duplicates rows and creating new columns, (Year, Month, Month number and Hour).
- Load: Cleaned dataset loaded with 8,316 rows and 24 columns

Dashboard Overview

Track the jam delay and jam count per hour in Riyadh in 2023

● Average of JamDelay_Hours ● Average of JamsCount

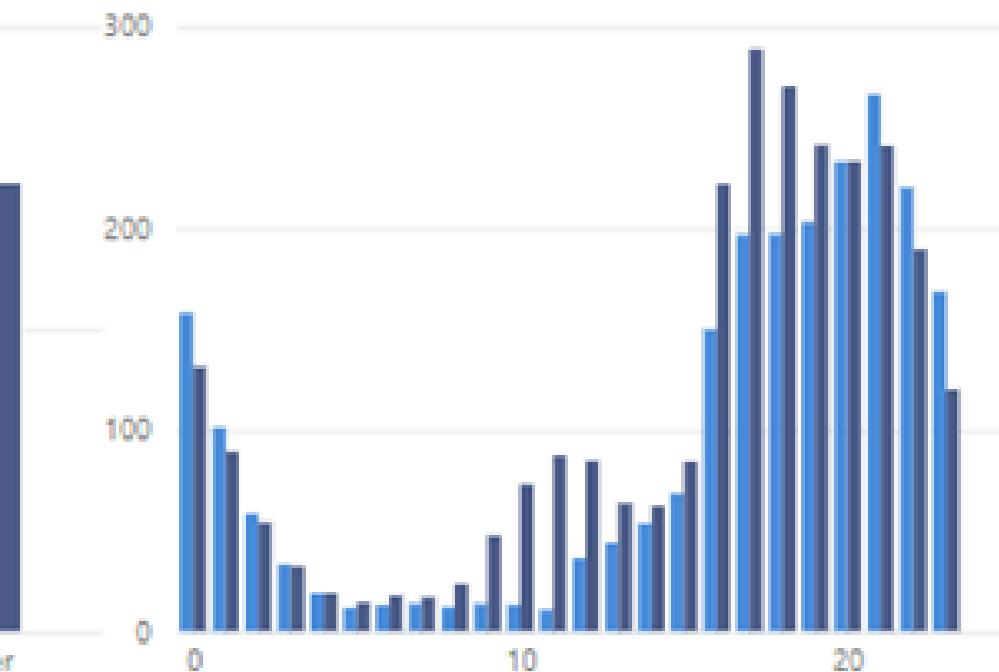


Compare the travel time live and the travel time historic during the months of Riyadh Season Average traffic jams count per weekend day in Riyadh

● Average of TravelTimeLive ● Average of TravelTimeHistoric

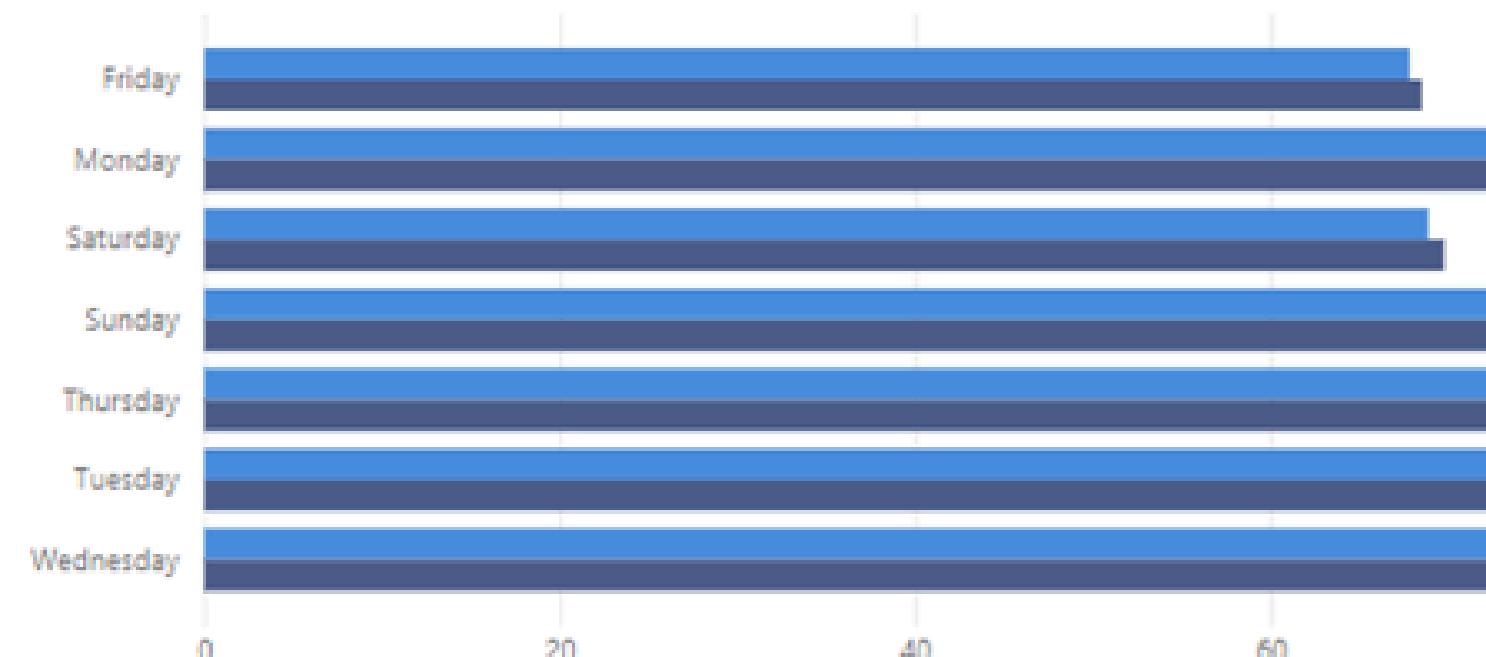


Day ● Friday ● Saturday



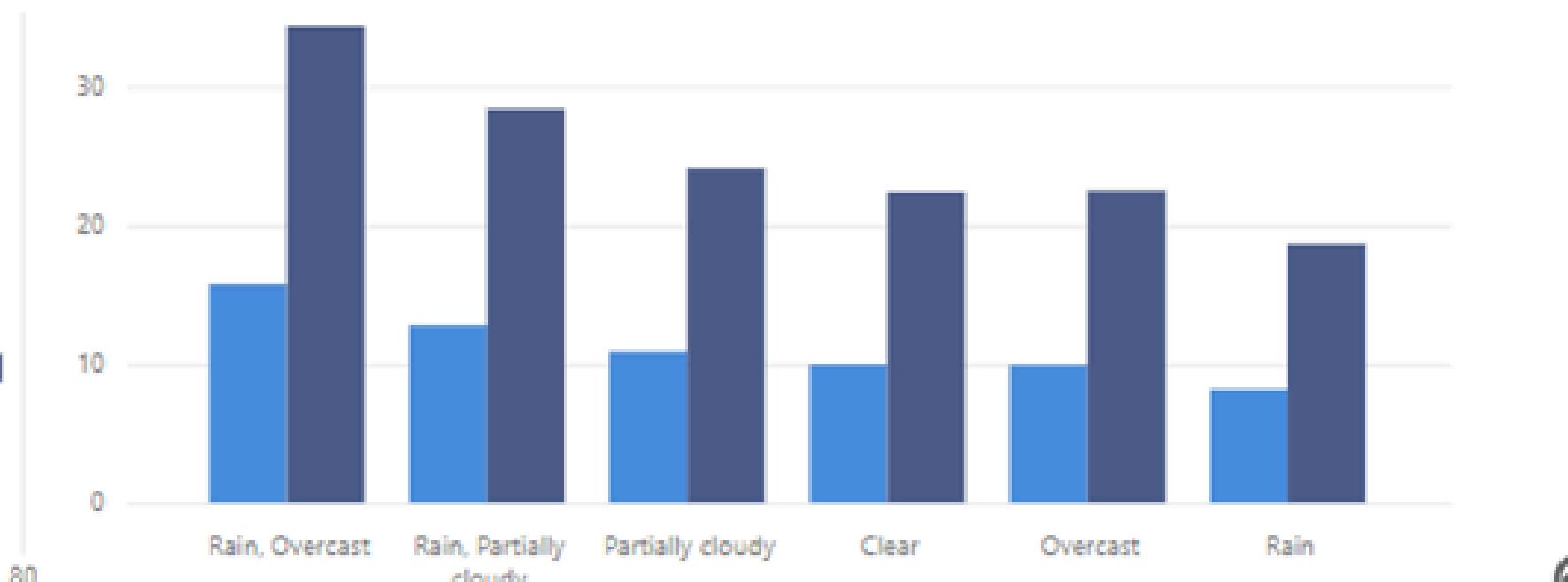
Compare the average Travel time live and the Travel time historic for last week

● Average of TravelTimeHistoric ● Average of TravelTimeLive



Track the average Traffic index live and the average jam delay per weather conditions in Riyadh

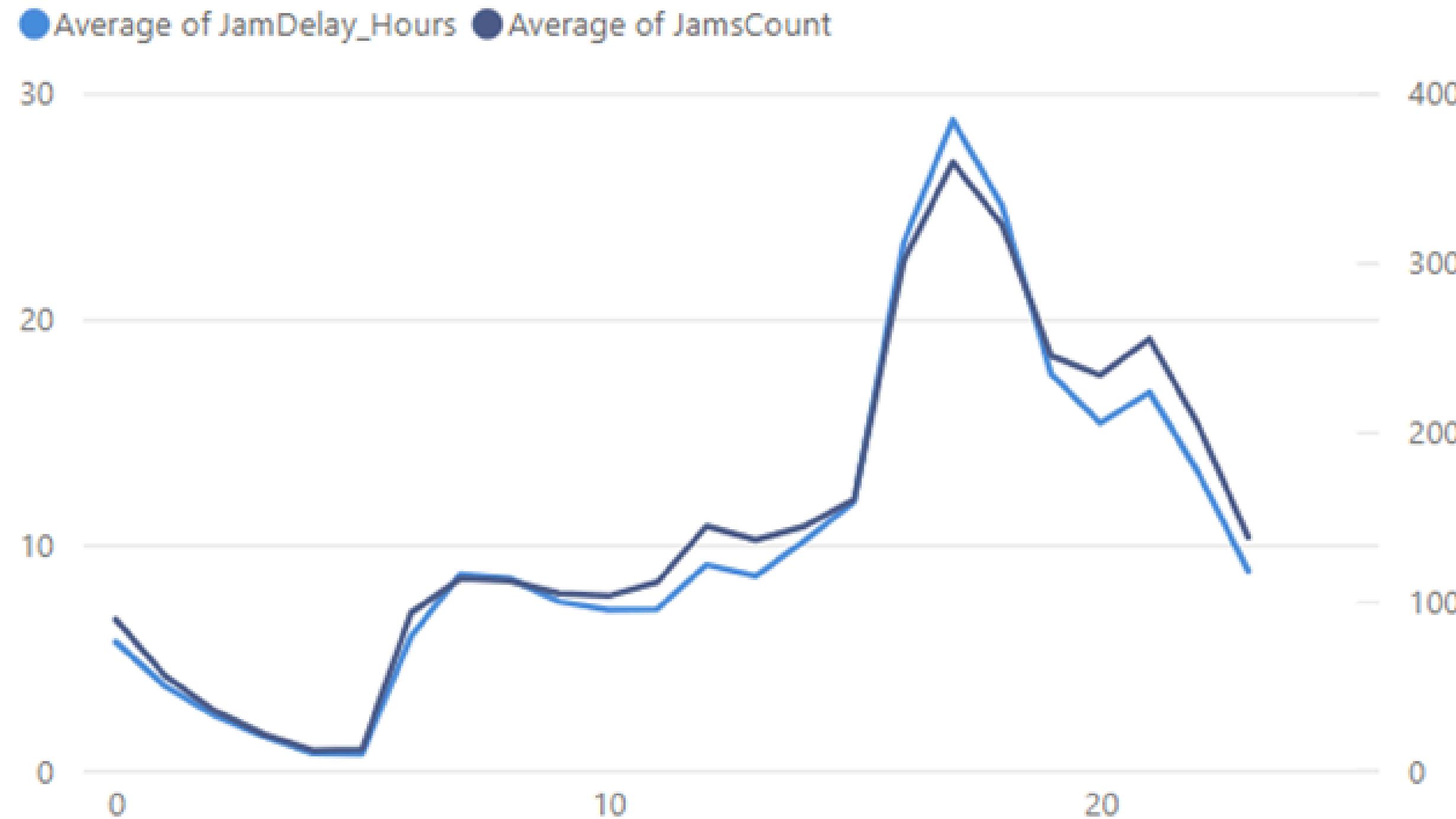
● Average of JamDelay_Hours ● Average of TrafficIndexLive



Dashboard Elements

- 1
- 2
- 3
- 4
- 5

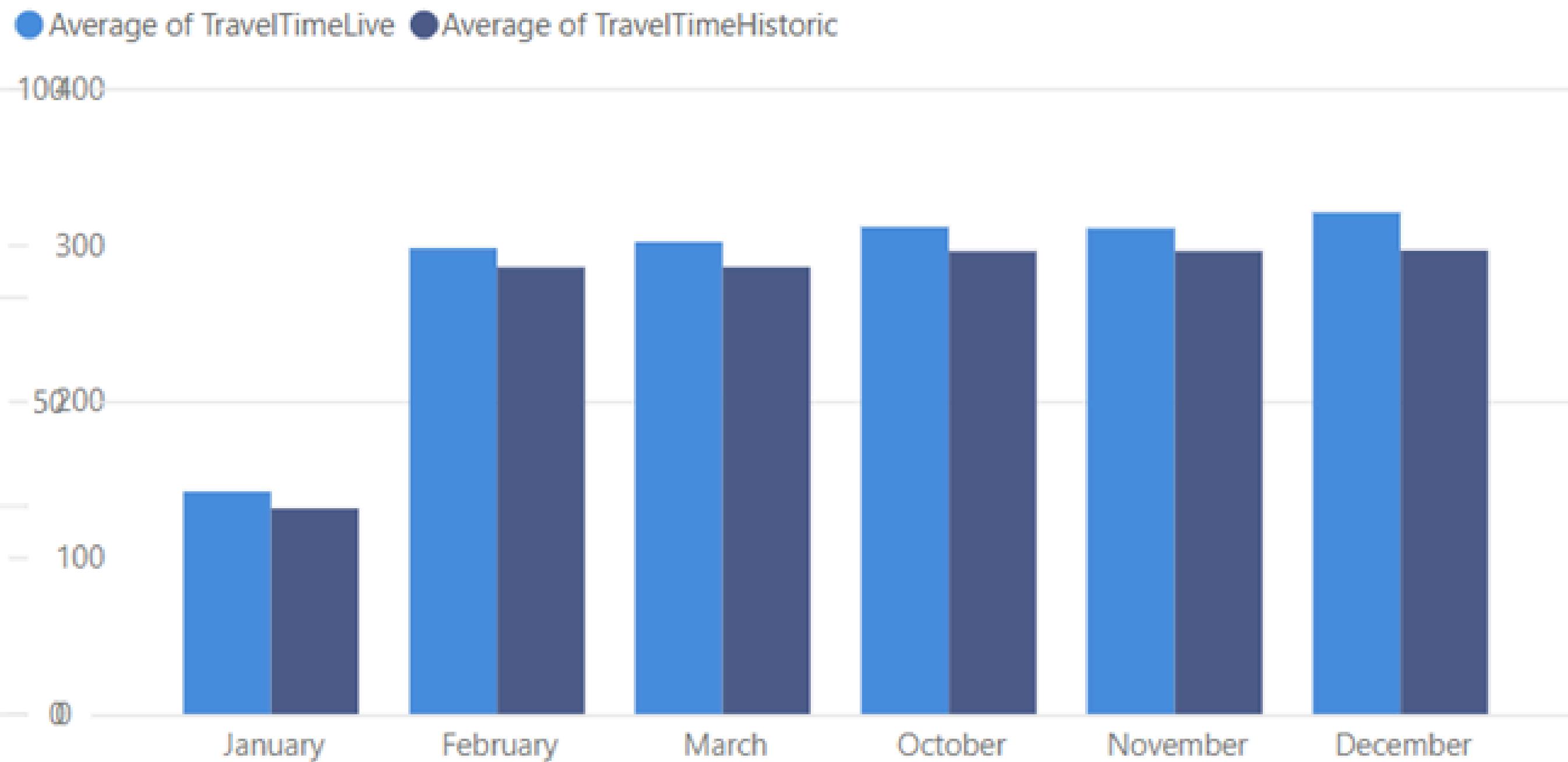
Track the jam delay and jam count per hour in Riyadh in 2023



Dashboard Elements

- 1
- 2
- 3
- 4
- 5

Compare the travel time live and the travel time historic during the months of Riyadh Season



Dashboard Elements

- 1
- 2
- 3
- 4
- 5

Average traffic jams count per weekend day in Riyadh

Day ● Friday ● Saturday

300

200

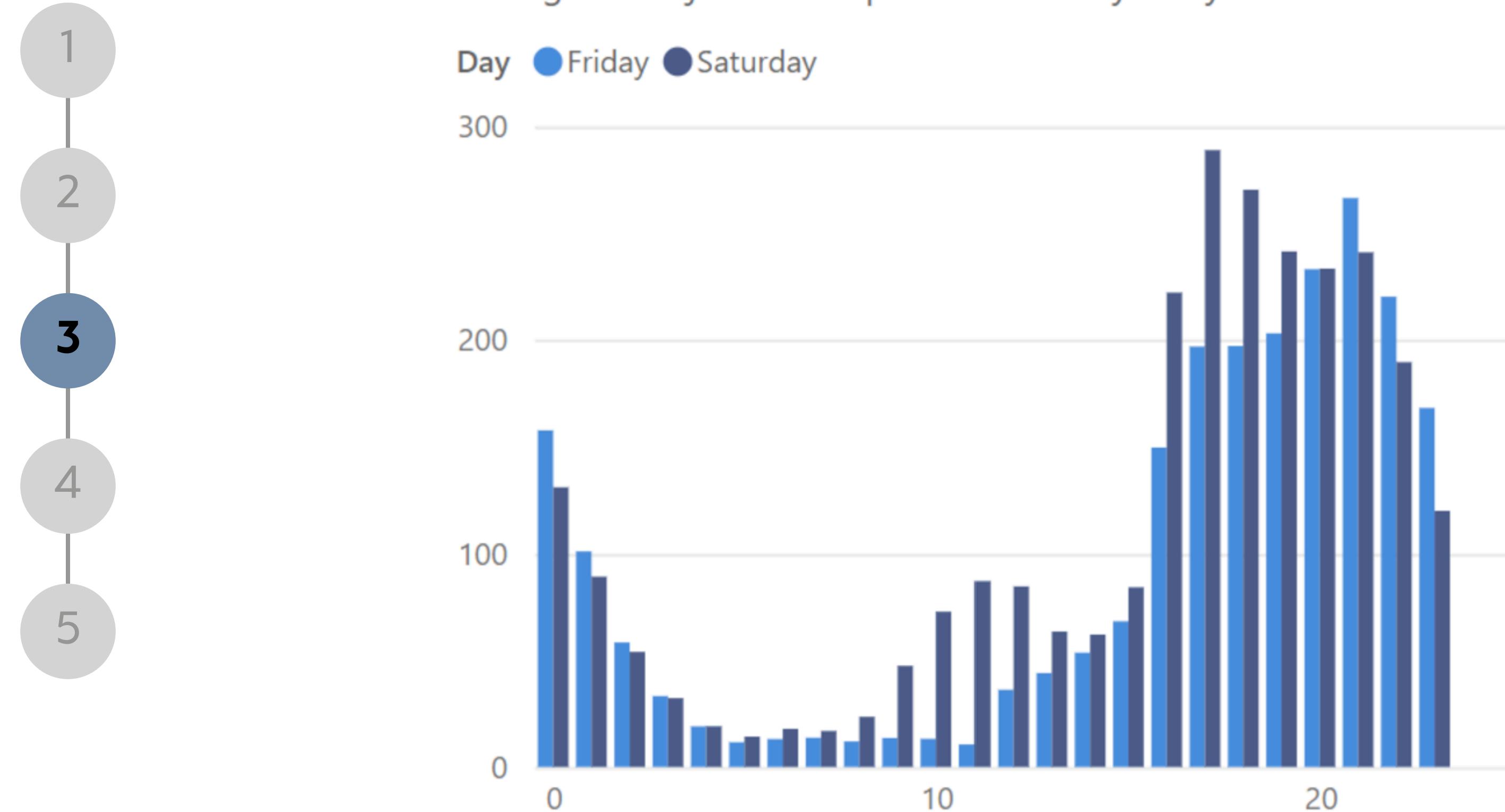
100

0

0

10

20

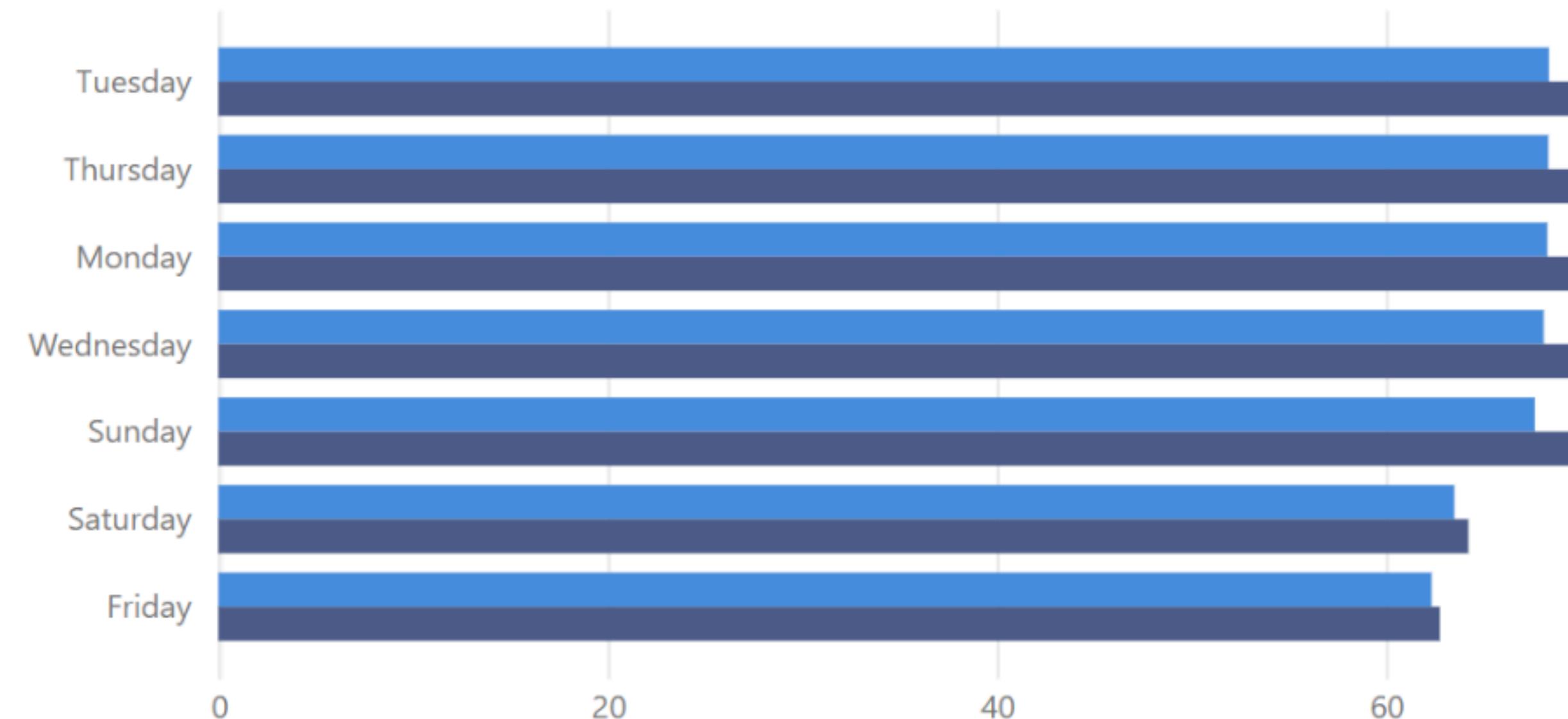


Dashboard Elements

- 1
- 2
- 3
- 4
- 5

Compare the average Travel time live and the Travel time historic for last week

● Average of TravelTimeHistoric ● Average of TravelTimeLive

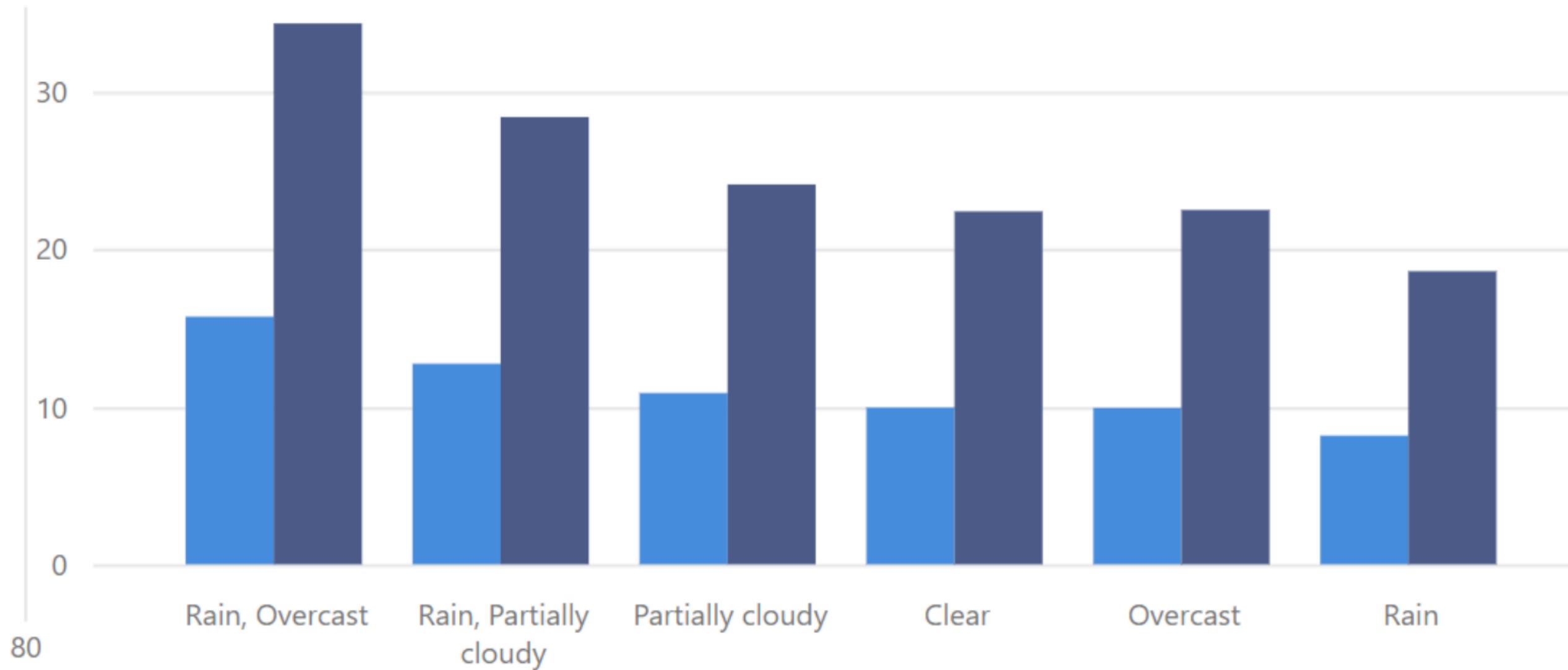


Dashboard Elements

- 1
- 2
- 3
- 4
- 5

Track the average Traffic index live and the average jam delay per weather conditions in Riyadh

● Average of JamDelay_Hours ● Average of TrafficIndexLive



Recommendations

1

Track the jam delay and jam count per hour in Riyadh in 2023

Recommendations:

- Adjust traffic signal timings.
- Expand public transportation options.
- Encourage remote work to reduce congestion.

2

Travel Time During Riyadh Season Recommendations:

- Provide real-time traffic updates via apps/social media.
- Offer incentives to promote public transport use.

3

Weekend Traffic Jams

Recommendations:

- Collaborate with venues to offer off-peak discounts.
- Adjust event timings to reduce congestion.

Recommendations

- | | |
|--|--|
| <p>4 Traffic Index & Jam Delay by Weather Conditions</p> <p>Recommendations:</p> <ul style="list-style-type: none">• Install drainage systems and flood barriers.• Use forecasting to alert public and authorities preemptively. | <p>5 Travel Time Comparison (Last Week)</p> <p>Recommendations:</p> <ul style="list-style-type: none">• Deploy quick-response teams for accidents.• Use media to inform about construction and suggest alternate routes.• Collaborate with event organizers for traffic plans, such as offering shuttle services for attendees. |
|--|--|

OUR TEAM



Roaa Almutairi
443200427

Aljoharah Alsulami
443202090

Hussa Aldriweesh
443201577

Reem Alotaibi
446200429

THANK YOU

