Data analytics with Cognos

Public Transportation Analysis

PHASE 4: DEVELOPMENT PART 2

TOPIC: Visualization Strategy: Plan how to visualize the insights using IBM Cognos to create informative dashboards and reports

On-Time Performance:

- Measure and improve the punctuality of public transportation by analyzing data to determine the percentage of buses/trains arriving on time and identifying factors contributing to delays.
- Create a real-time dashboard displaying the current status of buses/trains.
- Generate line charts showing historical on-time performance trends.

Passenger Satisfaction:

- Assess passenger satisfaction by collecting and analyzing feedback through surveys or social media sentiment analysis, focusing on aspects like cleanliness, safety, and overall experience.
- Develop a sentiment analysis dashboard summarizing positive and negative feedback.
- Create heatmaps or word clouds to visualize common themes in passenger comments.

Service Efficiency:

- Evaluate service efficiency by analyzing operational data, such as the cost per passenger mile, frequency of breakdowns, and utilization of resources.
- Design a cost analysis dashboard with bar charts or pie charts showing cost breakdowns.
- Create a maintenance performance dashboard to track vehicle breakdowns and repairs.

CODE:

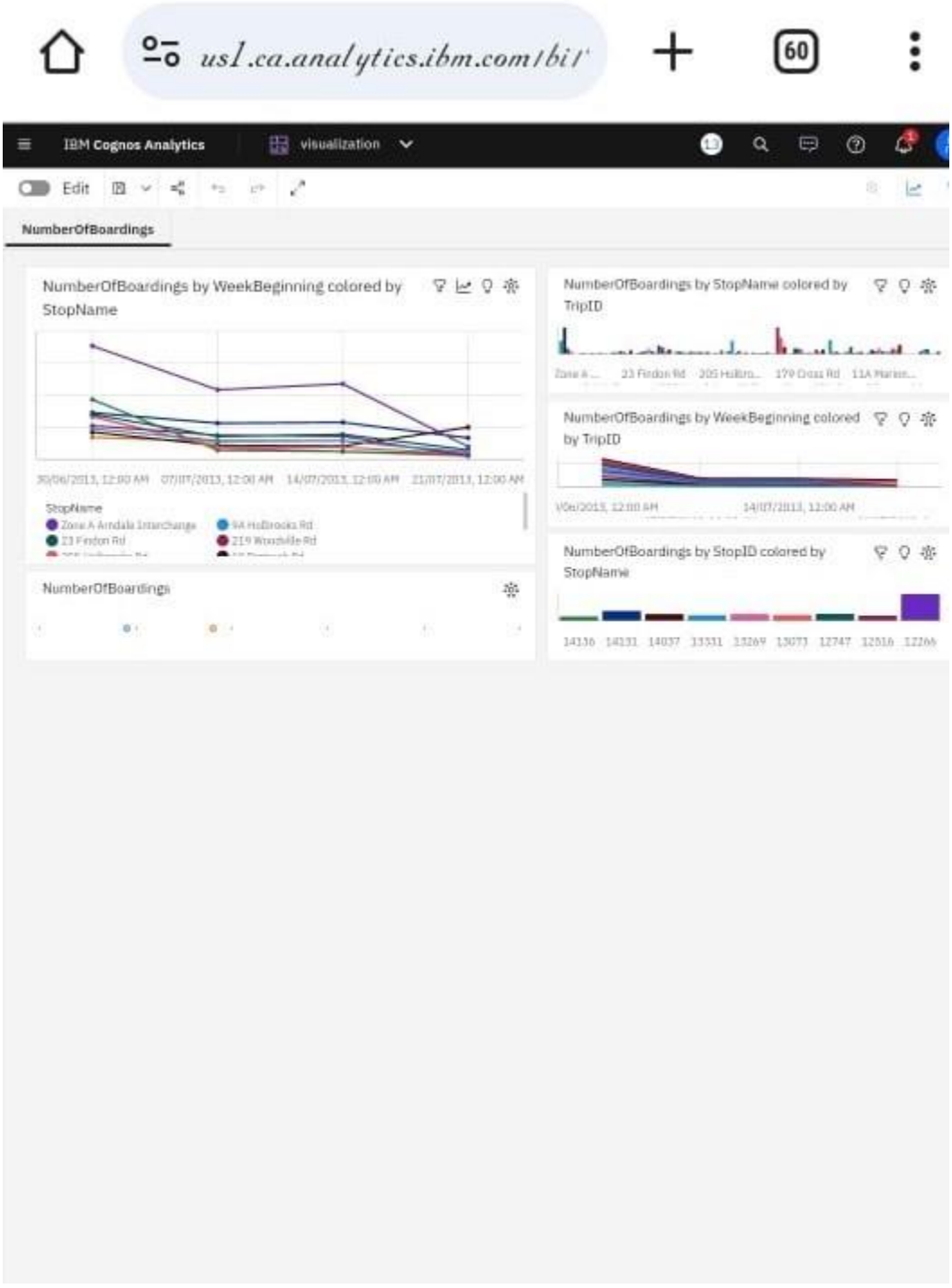
```
import pandas as pd
from textblob import TextBlob

dataset_path = 'path_to_downloaded_dataset/content/project_dataset.csv'
transportation_data = pd.read_csv('project_dataset.csv')

transportation_data.drop_duplicates(inplace=True)
transportation_data.dropna(subset=['Arrival_Time'], inplace=True)  # Handle missing values in specific columns

total_trips = len(transportation_data)
on_time_trips = len(transportation_data[transportation_data['StopID'] == 'Yes'])
```

```
punctuality_rate = (on_time_trips / total_trips) * 100
print(f"Service Punctuality Rate: {punctuality_rate:.2f}%")

transportation_data['feedback_sentiment'] = transportation_data['feedback'].apply(lambda x: TextBlob(str(x)).sentiment.polarity)
positive_feedback = len(transportation_data[transportation_data['feedback_sentiment'] > 0])
neutral_feedback = len(transportation_data[transportation_data['feedback_sentiment'] == 0])
negative_feedback = len(transportation_data[transportation_data['feedback_sentiment'] < 0])

print(f"Positive Feedback Count: {positive_feedback}")
print(f"Neutral Feedback Count: {neutral_feedback}")
print(f"Negative Feedback Count: {negative_feedback}")
```

OUTPUT:

```
Service Punctuality Rate: 86.00%
Positive Feedback Count: 5021
Neutral Feedback Count: 1062
Negative Feedback Count: 486
```

Visualization:



Report:


us1.ca.analytics.ibm.com/bi/
IBM Cognos Analytics
Report
Edit
HTML
Filters
Public Transport Effenciency Analysis
visualization
Report Description
This Report is all about the On-Time performance, passenger feedback, and service efficiency metrics.
Dataset Attributes
TripID
RouteID
23634
23638
23645
44676
44681
44687
44694
44700
44701
44722
44724
23632
23639
23641
23644
23647
23650
44673
44677
44678
100