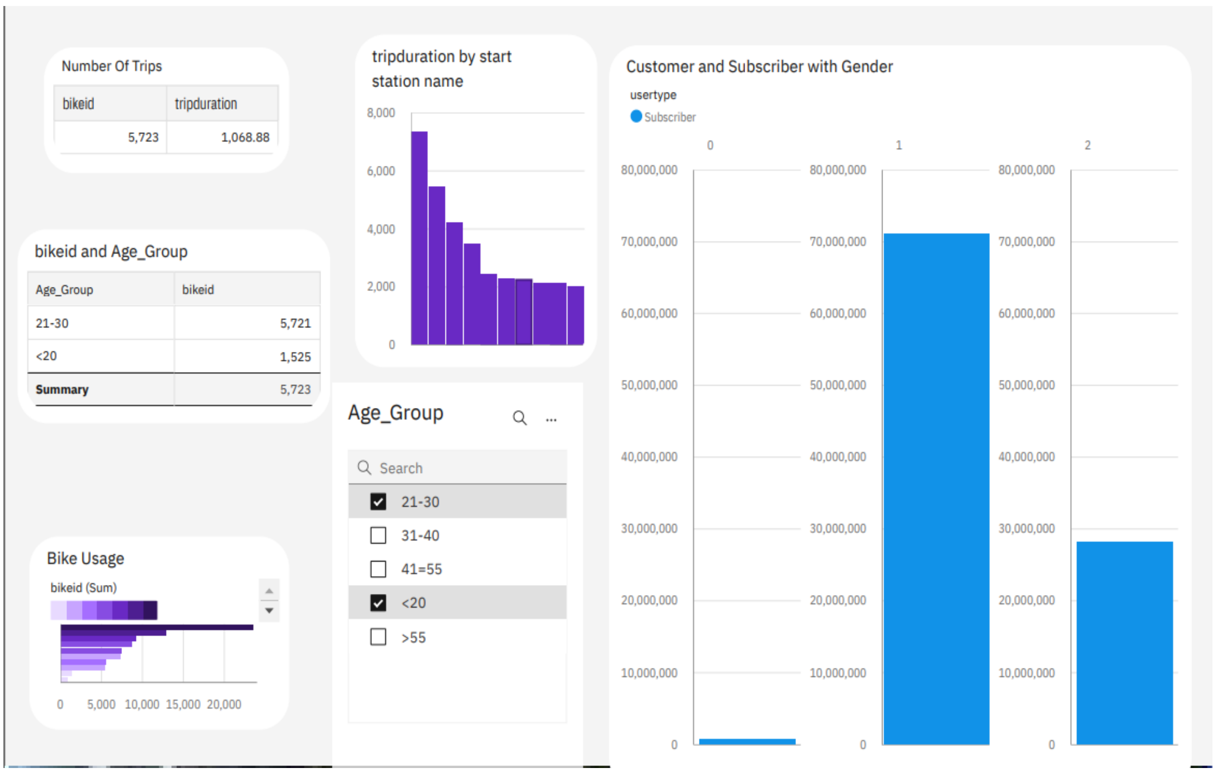
Project Development Phase – Sprint 3

Date	6th November 2022
Team ID	PNT2022TMID39201
Project Name	A new hint to transportation – Analysis of the NYC bike share system.
Maximum Marks	20 Marks

Creating a dashboard including all the visualizations created in the cognos platform:

This dashboard has the charts including

i) **Number of trips**
ii) **Customer and Subscriber percentage with gender**
iii) **Bike Usage**
iv) **BikeId and Age Group**
v) **Trip duration by start station name**



Number Of Trips

bikeid	tripduration
5,723	1,068.88

bikeid and Age_Group

Age_Group	bikeid
21-30	5,721
<20	1,525
Summary	5,723

Visualization Charts using Python:

Finding the number of trips per bike:

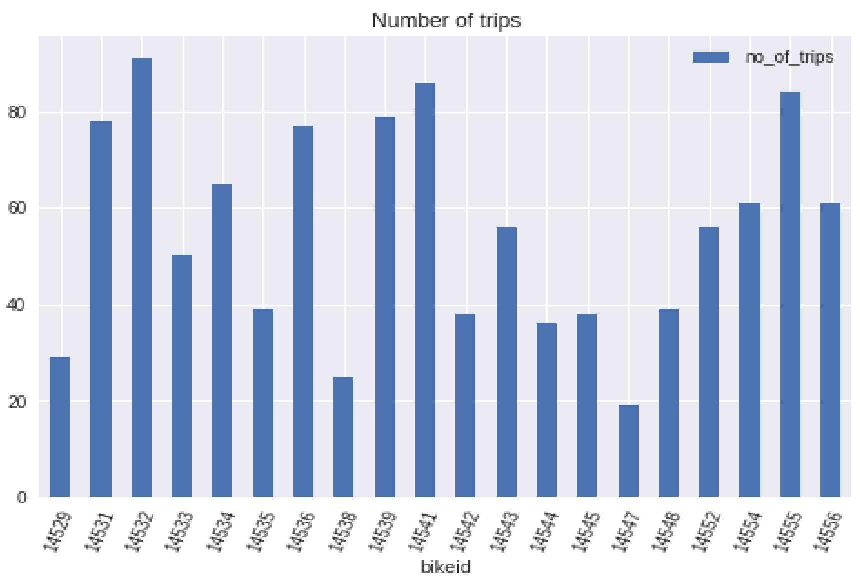
trips = pd.DataFrame() #creating a dataframe

trips['no_of_trips'] = df.groupby("bikeid")["bikeid"].count() #finding the number of trips by each bike

trips['avg_duration'] = df.groupby("bikeid")["tripduration"].mean() #avg duration of the trips

trips_graph=trips.head(20)

trips_graph.plot.bar(x="bikeid", y="no_of_trips", rot=70, title="Number of trips")

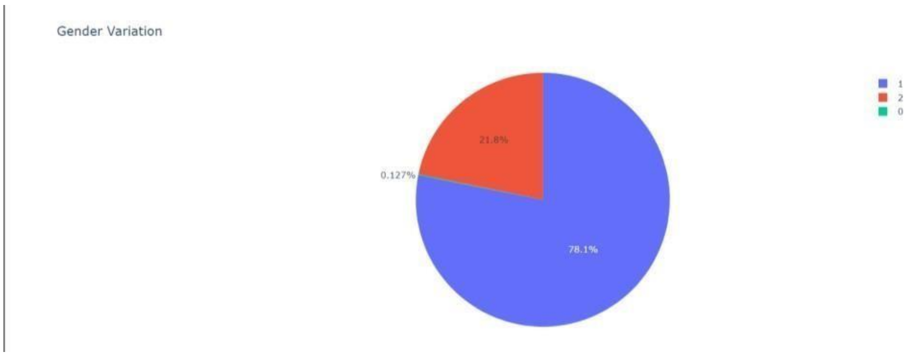


Gender Variation:

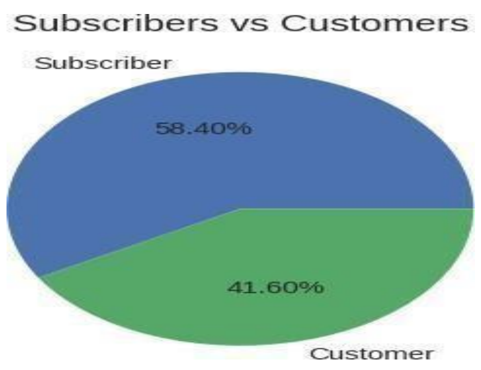
plt.pie(values = df_bike['Gender'].value_counts(),

names =df_bike['Gender'].value_counts().index,

title ="Gender Variation")

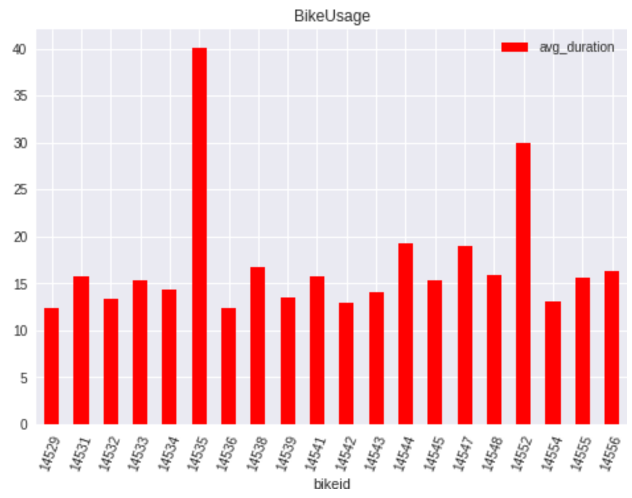


Percentage of Subscribers and Customers:



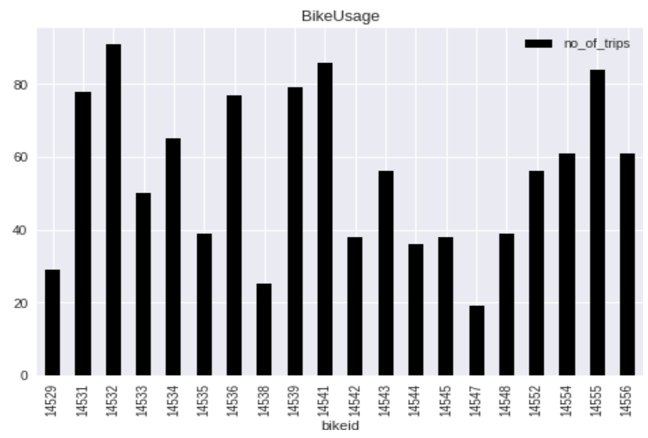
Bike Usage Based on Average Duration:

trips_graph.plot.bar(x="bikeid", y="avg_duration", rot=70, title="BikeUsage",color="red")



Bike Usage Based on No of Trips:

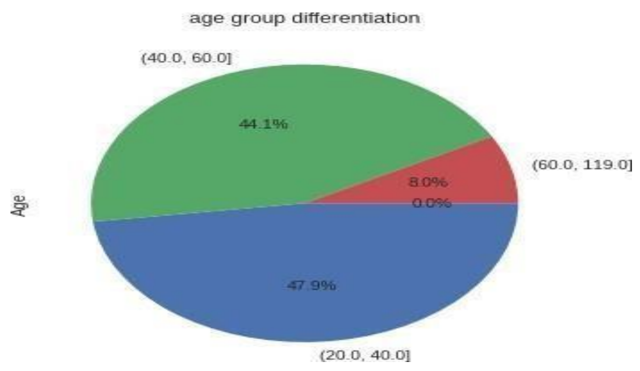
trips_graph.plot.bar(x="bikeid", y="no_of_trips", rot=90, title="BikeUsage",color="black")



Age Group Differentiation:

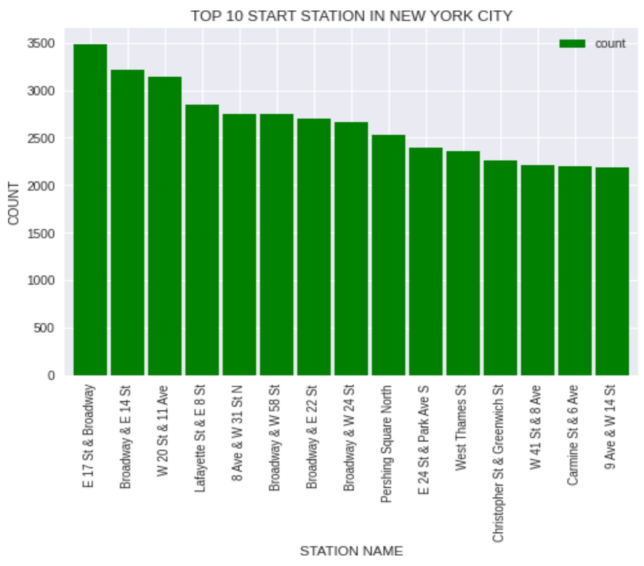
agegroup = pd.cut(df['Age'], bins=bins).value_counts()

agegroup.plot.pie(autopct="%.1f%%",title='age group differentiation',counterclock=False);



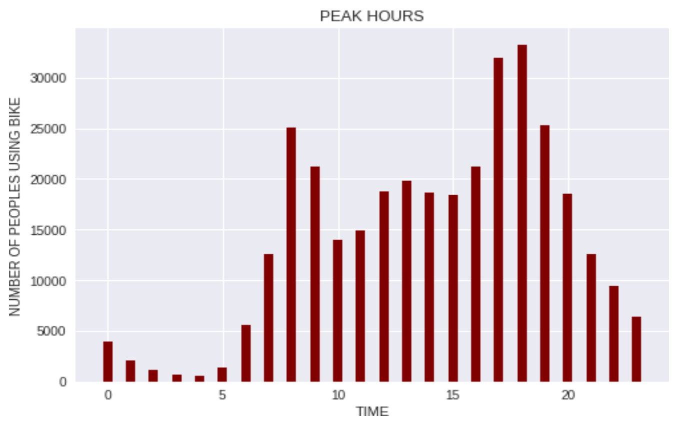
Top 10 Start Station:

```
most=pd.DataFrame()

most_graph=pd.DataFrame()

most['name']=df["start station name"].value_counts().index

most['count']=df["start station name"].value_counts().values

most_graph=most.head(15)


most_graph.plot.bar(x="name", y="count", width=0.9,rot=90, title="BikeUsage",color="green")

plt.xlabel("STATION NAME")

plt.ylabel("COUNT")

plt.title("TOP 10 START STATION IN NEW YORK CITY")

plt.show()
```



Finding the Peak Hours of Travel:

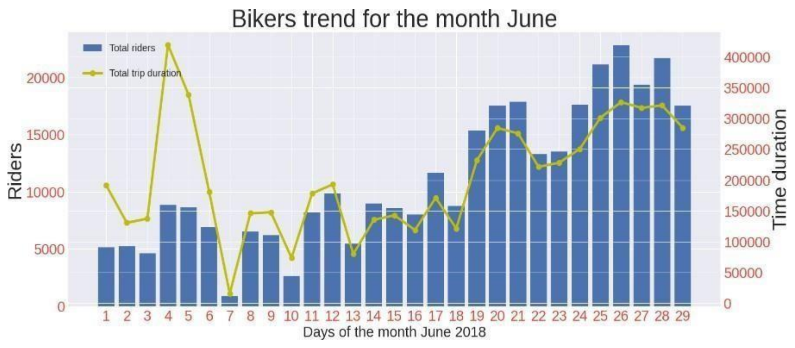
```
ind=peak_hour["Hour"].value_counts().index

y=peak_hour["Hour"].value_counts().values

plt.bar(ind, y, color ='maroon', width = 0.4)

plt.xlabel("TIME")

plt.ylabel("NUMBER OF PEOPLES USING BIKE")

plt.title("PEAK HOURS")

plt.show()
```



Bike Trend for the month June:

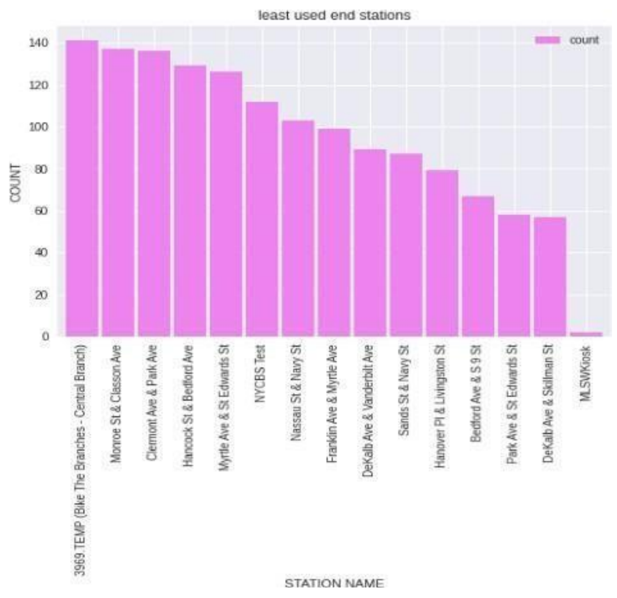
```
#converting string to datetime object
df['starttime']= pd.to_datetime(df['starttime'])

#since we are dealing with single month, we grouping by days
#using count aggregation to get number of occurances i.e, total trips per day
start_time_count = df.set_index('starttime').groupby(pd.Grouper(freq='D')).count()

#we have data from July month for only one day which is at last row, lets drop it
start_time_count.drop(start_time_count.tail(1).index, axis=0, inplace=True)

#again grouping by day and aggregating with sum to get total trip duration per day
#which will used while plotting
trip_duration_count = df.set_index('starttime').groupby(pd.Grouper(freq='D')).sum()

#again dropping the last row for same reason
trip_duration_count.drop(trip_duration_count.tail(1).index, axis=0, inplace=True)

#plotting total rides per day
#using start station id to get the count
fig,ax=plt.subplots(figsize=(25,10))
ax.bar(start_time_count.index, 'start station id', data=start_time_count, label='Total riders')
#bbox_to_anchor is to position the legend box
ax.legend(loc ="lower left", bbox_to_anchor=(0.01, 0.89), fontsize='20')
ax.set_xlabel('Days of the month June 2018', fontsize=30)
ax.set_ylabel('Riders', fontsize=40)
ax.set_title('Bikers trend for the month June', fontsize=50)

#creating twin x axis to plot line chart is same figure
ax2=ax.twinx()
#plotting total trip duration of all user per day
ax2.plot('tripduration', data=trip_duration_count, color='y', label='Total trip duration', marker='o', line
width=5, markersize=12)
ax2.set_ylabel('Time duration',  fontsize=40)
ax2.legend(loc ="upper left", bbox_to_anchor=(0.01, 0.9), fontsize='20')
```

```
ax.set_xticks(trip_duration_count.index)
ax.set_xticklabels([i for i in range(1,31)])

#tweeking x and y ticks labels of axes1
ax.tick_params(labelsize=30, labelcolor='#eb4034')
#tweeking x and y ticks labels of axes2
ax2.tick_params(labelsize=30, labelcolor='#eb4034')

plt.show()
```



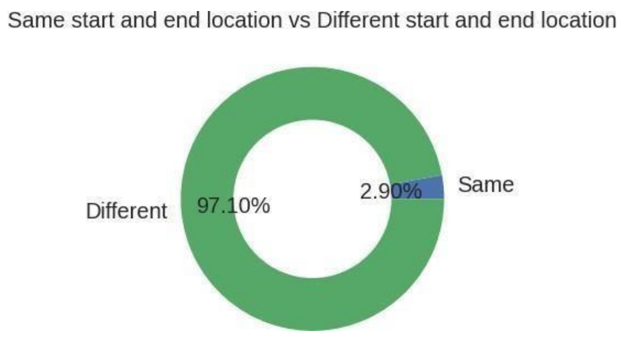
Least Used End Stations:

```
least=pd.DataFrame()

least_graph=pd.DataFrame()

least['name']=df["end station name"].value_counts().index

least['count']=df["end station name"].value_counts().values

least_graph=most.tail(15)

least_graph

least_graph.plot.bar(x="name", y="count", width=0.9,rot=90, title="BikeUsage",color="violet")

plt.xlabel("STATION NAME")

plt.ylabel("COUNT")

plt.title("least used end stations")

plt.show()
```



Same start and end location Vs Different start and end location:

```
#number of trips that started and ended at same station
start_end_same = df[df['start station name'] == df['end station name']].shape[0]

#number of trips that started and ended at different station
start_end_diff = df.shape[0]-start_end_same

fig,ax=plt.subplots()
ax.pie([start_end_same,start_end_diff], labels=['Same', 'Different'], autopct='%1.2f%%', textprops={'f
ontsize': 20})
ax.set_title('Same start and end location vs Different start and end location', fontsize=20)


circle = Circle((0,0), 0.6, facecolor='white')
ax.add_artist(circle)

plt.show()
```


Same start and end location vs Different start and end location
Different
Same