Project Development Phase – Sprint 2

Date	18 November 2022
Team ID	PNT2022TMID48013
Project Name	A new hint to transportation – Analysis of the NYC bike share system.
Maximum Marks	20 Marks

Feature Engineering:

calculating Age from birth year

```
from datetime import datetime, date

age=2018-df['birth_year']

df['Age']=age

df.head()
```

	tripduration	starttime	stoptime	start station id	start station name	start station latitude	start station longitude	end station id	end station name	end station latitude	end station longitude	bikeid	usertype	birth_year	gender	tripduration_bins	Age
0	11.583333	2013-06-01 00:00:01	2013-06-01 00:11:36	444	Broadway & W 24 St	40.742354	-73.989151	434.0	9 Ave & W 18 St	40.743174	-74.003664	19678	Subscriber	1983.0	1	(0.0, 30.0]	35.0
1	11.550000	2013-06-01 00:00:08	2013-06-01 00:11:41	444	Broadway & W 24 St	40.742354	-73.989151	434.0	9 Ave & W 18 St	40.743174	-74.003664	16649	Subscriber	1984.0	1	(0.0, 30.0]	34.0
3	2.050000	2013-06-01 00:01:04	2013-06-01 00:03:07	475	E 15 St & Irving Pl	40.735243	-73.987586	262.0	Washington Park	40.691782	-73.973730	16352	Subscriber	1960.0	1	(0.0, 30.0]	58.0
4	25.350000	2013-06-01 00:01:22	2013-06-01 00:26:43	2008	Little West St & 1 Pl	40.705693	-74.016777	310.0	State St & Smith St	40.689269	-73.989129	15567	Subscriber	1983.0	1	(0.0, 30.0]	35.0
6	34.283333	2013-06-01 00:02:33	2013-06-01 00:36:50	285	Broadway & E 14 St	40.734546	-73.990741	532.0	S 5 Pl & S 5 St	40.710451	-73.960876	15693	Subscriber	1991.0	1	(30.0, 60.0]	27.0

calculating age group from age

```
max_limit = df['Age'].max()

max_limit

bins = [0,20,40,60,max_limit]

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

Agegroup
```

```
(20.0, 40.0]     161563
(40.0, 60.0]     148805
(60.0, 119.0]     27014
(0.0, 20.0]           0
Name: Age, dtype: int64
```

Calculating hour:

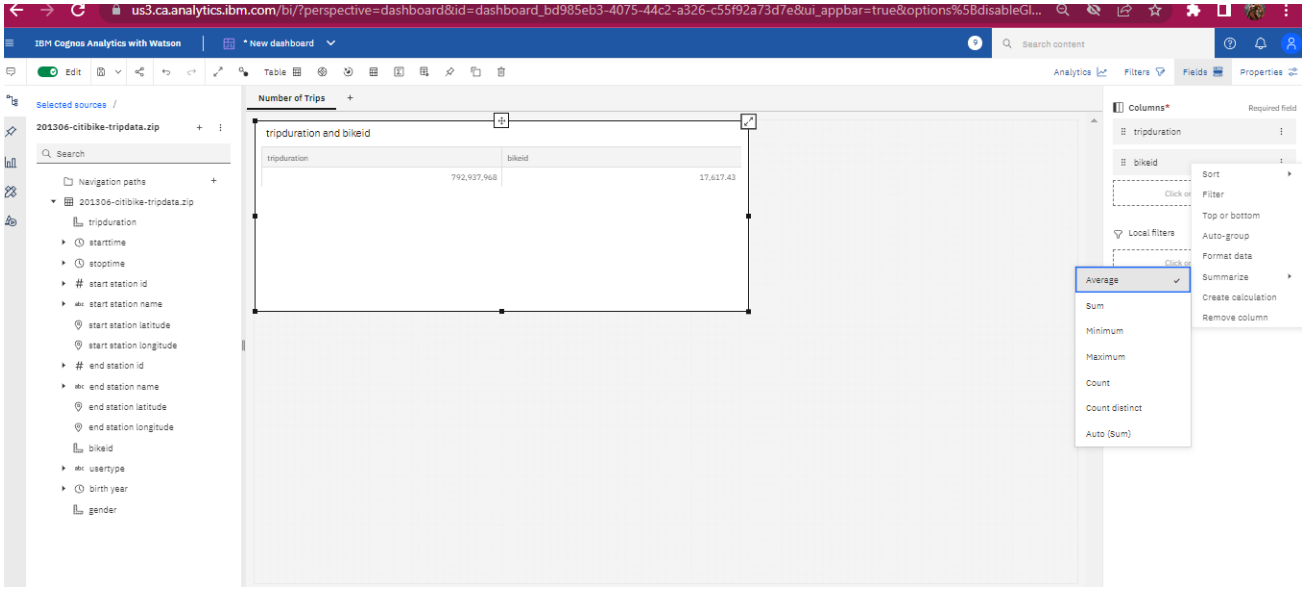
```
peak_hour['Start Date'] = pd.to_datetime(df['starttime'])
peak_hour['Stop Date'] = pd.to_datetime(df['stoptime'])
peak_hour['year'] =peak_hour["Start Date"].dt.year
peak_hour["Hour"] = peak_hour["Start Date"].dt.hour
```

	Start Date	Stop Date	year	Hour	bikeid
0	2013-06-01 00:00:01	2013-06-01 00:11:36	2013	0	19678
1	2013-06-01 00:00:08	2013-06-01 00:11:41	2013	0	16649
3	2013-06-01 00:01:04	2013-06-01 00:03:07	2013	0	16352
4	2013-06-01 00:01:22	2013-06-01 00:26:43	2013	0	15567
6	2013-06-01 00:02:33	2013-06-01 00:36:50	2013	0	15693
...	...	...	...	...	...
577687	2013-06-30 23:58:09	2013-07-01 00:05:25	2013	23	19454
577689	2013-06-30 23:57:52	2013-07-01 00:00:57	2013	23	16746
577690	2013-06-30 23:58:39	2013-07-01 00:08:34	2013	23	19290
577698	2013-06-30 23:59:27	2013-07-01 00:14:52	2013	23	15250
577700	2013-06-30 23:59:33	2013-07-01 00:02:14	2013	23	18910

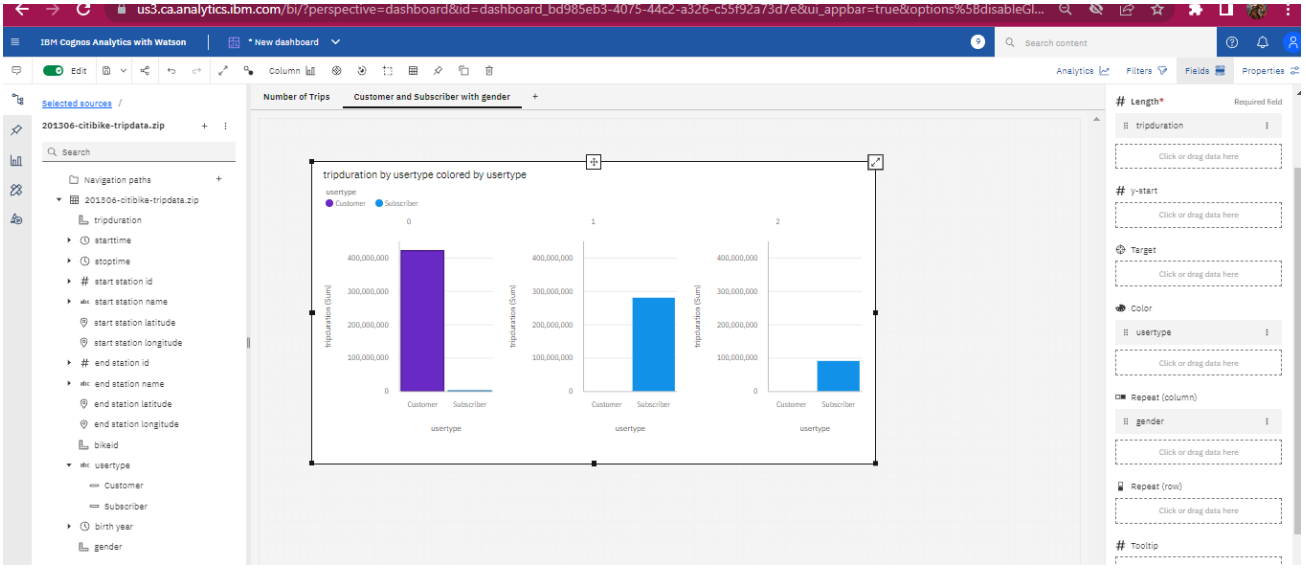
337382 rows × 5 columns

Visualization of the dataset in COGNOS Platform:

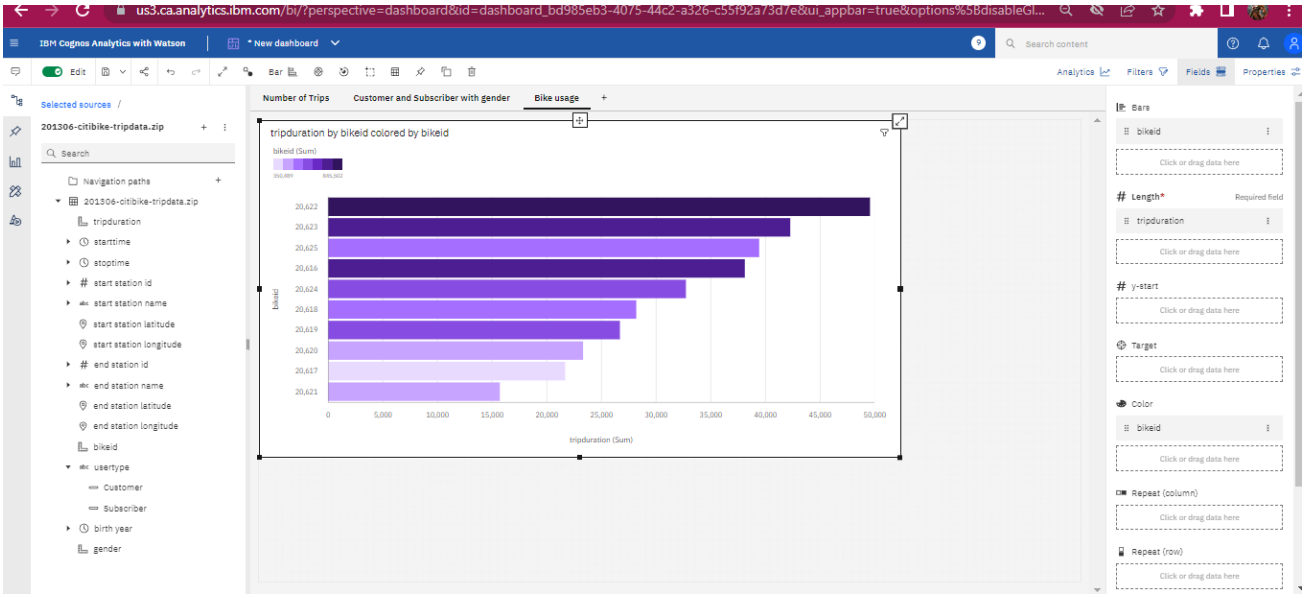
Finding the number of trips per each bike:



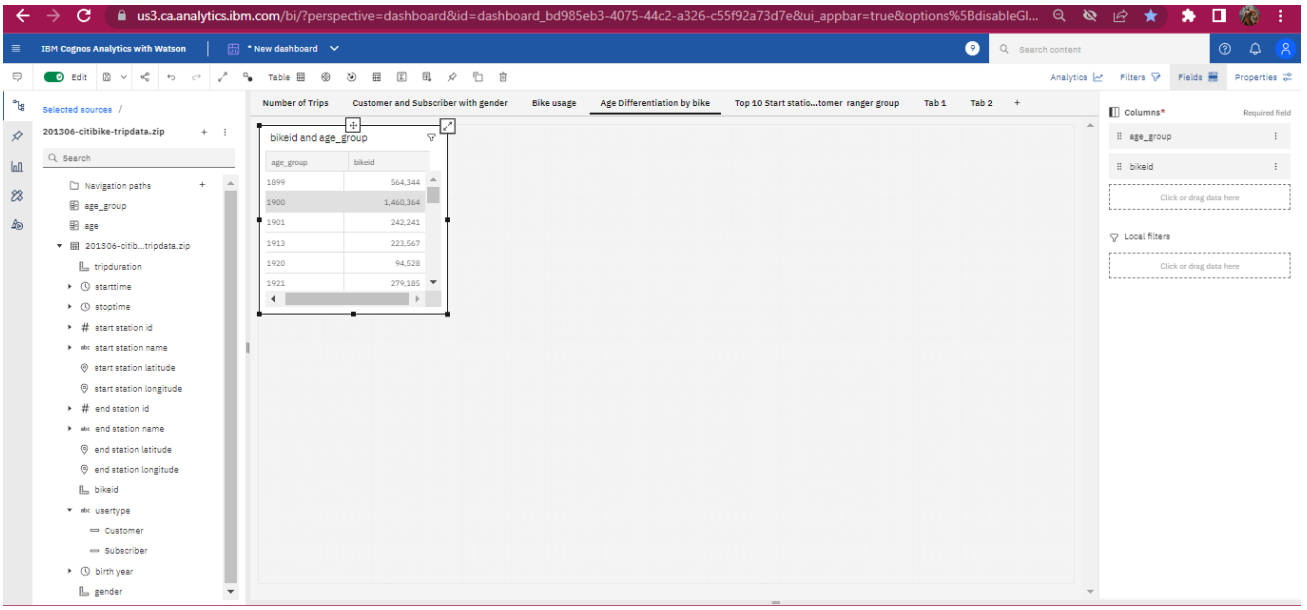
Finding the percentage of customers and subscribers :



Bike Usage - Bike Id Vs Trip Duration:



Age Group Differentiation by Bike Id:



Validation:

if(age<=20) then

('<20')

else if(age>=21 and age<=30)then

('21-30')

else if(age>=31 and age<=40)then

('31-40')

else if(age>=41 and age<=55)then

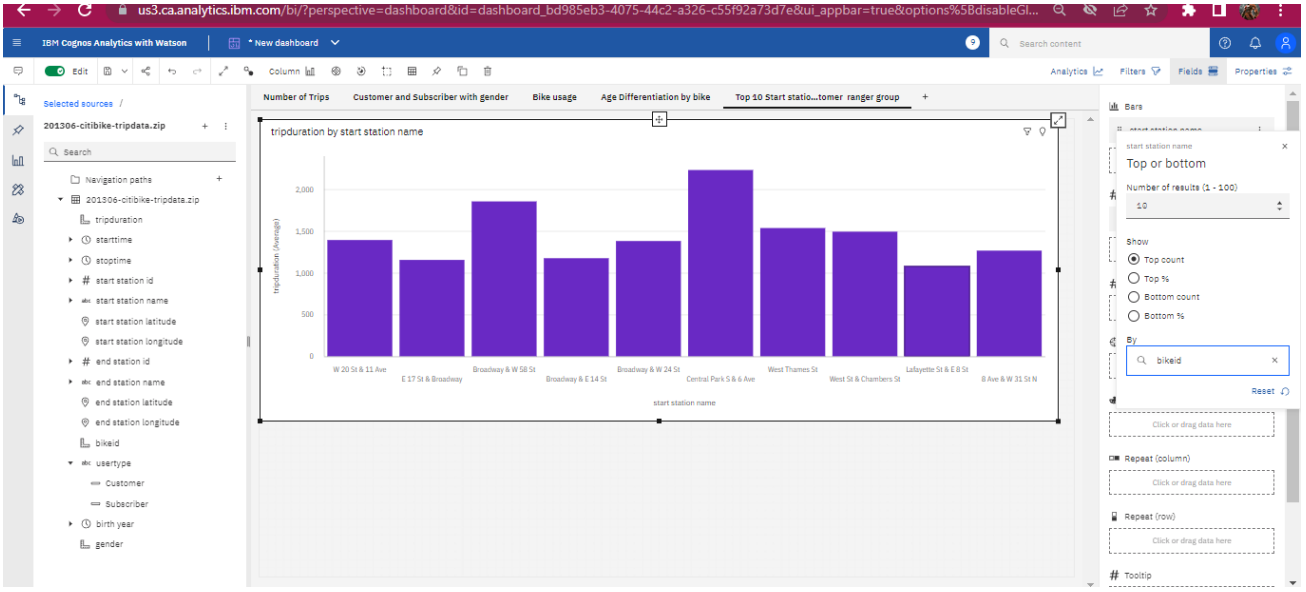
('41-55')

else('>55')

bikeid and Age_Group

Age_Group	bikeid
21-30	5,721
31-40	5,749
41=55	5,741
<20	1,525
>55	5,781
Summary	5,794

Finding the top 10 start stations with customer age group:


us3.ca.analytics.ibm.com/bi/?perspective=dashboard&id=dashboard_bd985eb3-4075-44c2-a326-c55f92a73d7e&ui_appbar=true&options%5BdisableGl...
IBM Cognos Analytics with Watson
* New dashboard
Search content
Edit
Column
Analytics
Filters
Fields
Properties
Selected sources
201306-citibike-tripdata.zip
Search
Navigation paths
201306-citibike-tripdata.zip
tripduration
starttime
stoptime
start station id
start station name
start station latitude
start station longitude
end station id
end station name
end station latitude
end station longitude
bikeid
usertype
Customer
Subscriber
birth year
gender
Number of Trips
Customer and Subscriber with gender
Bike usage
Age Differentiation by bike
Top 10 Start statio...tomer ranger group
tripduration by start station name
tripduration (Average)
2,000
1,500
1,000
500
0
W 20 St & 11 Ave
E 17 St & Broadway
Broadway & W 58 St
Broadway & E 14 St
Broadway & W 24 St
Central Park S & 6 Ave
West Thames St
West St & Chambers St
Lafayette St & E 8 St
8 Ave & W 31 St N
start station name
Bars
start station name
Top or bottom
Number of results (1 - 100)
10
Show
Top count
Top %
Bottom count
Bottom %
By
bikeid
Reset
Click or drag data here
Repeat (column)
Click or drag data here
Repeat (row)
Click or drag data here
Tooltip