DATA SCIENCE DASHBOARD

TOPIC: AQI INDEX DASHBOARD

Submitted By: TANISHA PARKASH

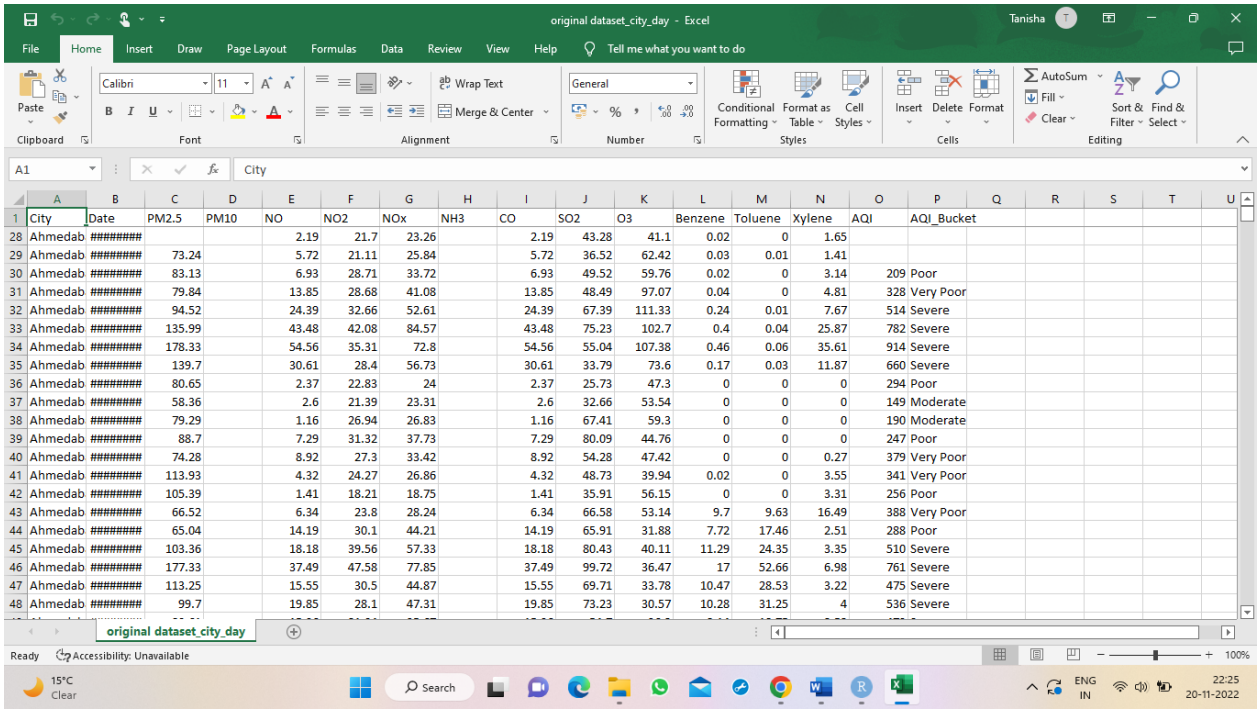
3CO18

102003447

3CO18

1. **Description:** My project aims to depict the Air Quality Index Variation in various cities of India recorded over a period of years. It represents the quantity of various Particulate matter (PM) and gases present in the air in those cities. To achieve the goal, the “City hour” dataset, which is a part of the AQI India dataset present on Kaggle has been imported in R. I have performed preprocessing in various parts, starting from removing the NULL values, replacing NULL with respective means, normalizing values, calculating missing values to splitting dataset and finally writing it into separate CSV files. The preprocessed datasets are then loaded into Tableau. I have established a relationship between the various datasets according to city names and AQI. Separate sheets present views regarding PM and gas values in some of the major cities of India like Delhi, Gurugram, Hyderabad, Shillong, Chennai, etc. One sheet represents an India map view of AQI values of the cities in a broader prospect. Finally, combining all sheets draws a comparison between all Graphs and the AQI values of cities. This is a descriptive dashboard prepared in Tableau.

2. Previous Dataset



	City	Date	PM2.5	PM10	NO	NO2	NOx	NH3	CO	SO2	O3	Benzene	Toluene	Xylene	AQI	AQI_Bucket
28	Ahmedab	########			2.19	21.7	23.26		2.19	43.28	41.1	0.02	0	1.65		
29	Ahmedab	########	73.24		5.72	21.11	25.84		5.72	36.52	62.42	0.03	0.01	1.41		
30	Ahmedab	########	83.13		6.93	28.71	33.72		6.93	49.52	59.76	0.02	0	3.14	209	Poor
31	Ahmedab	########	79.84		13.85	28.68	41.08		13.85	48.49	97.07	0.04	0	4.81	328	Very Poor
32	Ahmedab	########	94.52		24.39	32.66	52.61		24.39	67.39	111.33	0.24	0.01	7.67	514	Severe
33	Ahmedab	########	135.99		43.48	42.08	84.57		43.48	75.23	102.7	0.4	0.04	25.87	782	Severe
34	Ahmedab	########	178.33		54.56	35.31	72.8		54.56	55.04	107.38	0.46	0.06	35.61	914	Severe
35	Ahmedab	########	139.7		30.61	28.4	56.73		30.61	33.79	73.6	0.17	0.03	11.87	660	Severe
36	Ahmedab	########	80.65		2.37	22.83	24		2.37	25.73	47.3	0	0	0	294	Poor
37	Ahmedab	########	58.36		2.6	21.39	23.31		2.6	32.66	53.54	0	0	0	149	Moderate
38	Ahmedab	########	79.29		1.16	26.94	26.83		1.16	67.41	59.3	0	0	0	190	Moderate
39	Ahmedab	########	88.7		7.29	31.32	37.73		7.29	80.09	44.76	0	0	0	247	Poor
40	Ahmedab	########	74.28		8.92	27.3	33.42		8.92	54.28	47.42	0	0	0.27	379	Very Poor
41	Ahmedab	########	113.93		4.32	24.27	26.86		4.32	48.73	39.94	0.02	0	3.55	341	Very Poor
42	Ahmedab	########	105.39		1.41	18.21	18.75		1.41	35.91	56.15	0	0	3.31	256	Poor
43	Ahmedab	########	66.52		6.34	23.8	28.24		6.34	66.58	53.14	9.7	9.63	16.49	388	Very Poor
44	Ahmedab	########	65.04		14.19	30.1	44.21		14.19	65.91	31.88	7.72	17.46	2.51	288	Poor
45	Ahmedab	########	103.36		18.18	39.56	57.33		18.18	80.43	40.11	11.29	24.35	3.35	510	Severe
46	Ahmedab	########	177.33		37.49	47.58	77.85		37.49	99.72	36.47	17	52.66	6.98	761	Severe
47	Ahmedab	########	113.25		15.55	30.5	44.87		15.55	69.71	33.78	10.47	28.53	3.22	475	Severe
48	Ahmedab	########	99.7		19.85	28.1	47.31		19.85	73.23	30.57	10.28	31.25	4	536	Severe

3. Preprocessing Code:

```
//reading data
aqidata1<- read.csv(file.choose())
library(dplyr)

aqidata1 %>%
  distinct(City)

colSums(is.na(aqidata1))

//removing na values
nona=aqidata1 %>%
  filter(!is.na(CO))
nona

nona %>%
  distinct(City)

cities=nona %>%
  distinct(City)

cities

colSums(is.na(nona))
```

```
nona %>%
 filter(City=="Ahmedabad")
```

```
//replacing na values
nona$NO[is.na(nona$NO[1:62])]<- mean(nona$NO[1:62], na.rm=TRUE)

nona %>%
 filter(City=="Amritsar")

nona$NO[is.na(nona$NO[63:124])]<- mean(nona$NO[63:124], na.rm=TRUE)

nona %>%
 filter(is.na(NO))

nona %>%
 filter(City==cities[3,])

nona$NO[is.na(nona$NO[125:186])]<- mean(nona$NO[125:186], na.rm=TRUE)
nona$NO[is.na(nona$NO[187:248])]<- mean(nona$NO[187:248], na.rm=TRUE)
nona %>%
 filter(City==cities[4,])

nona$NO[is.na(nona$NO[nona$City=="Delhi"])]<- mean(nona$NO[nona$City=="Delhi"],
na.rm=TRUE)
nona %>%
 filter(City=="Delhi")


for (i in cities[,1]){
 nona$NO[is.na(nona$NO[nona$City==i])]<-mean(nona$NO[nona$City==i], na.rm=TRUE)
}

for (i in cities[,1]){
 nona$PM2.5[is.na(nona$PM2.5[nona$City==i])]<-mean(nona$PM2.5[nona$City==i], na.rm=TRUE)
}

for (i in cities[,1]){
 nona$PM10[is.na(nona$PM10[nona$City==i])]<-mean(nona$PM10[nona$City==i], na.rm=TRUE)
}

for (i in cities[,1]){
 nona$NO2[is.na(nona$NO2[nona$City==i])]<-mean(nona$NO2[nona$City==i], na.rm=TRUE)
}

for (i in cities[,1]){
 nona$NOx[is.na(nona$NOx[nona$City==i])]<-mean(nona$NOx[nona$City==i], na.rm=TRUE)
}
```

```
for (i in cities[,1]){
  nona$NH3[is.na(nona$NH3[nona$City==i])]<-mean(nona$NH3[nona$City==i], na.rm=TRUE)
}

for (i in cities[,1]){
  nona$SO2[is.na(nona$SO2[nona$City==i])]<-mean(nona$SO2[nona$City==i], na.rm=TRUE)
}

for (i in cities[,1]){
  nona$NH3[is.na(nona$NH3[nona$City==i])]<-mean(nona$NH3[nona$City==i], na.rm=TRUE)
}
nona["NH3"]=aqidata1["NH3"]
library(tidyr)
nona %>%
  drop_na()
```

//removing na columns

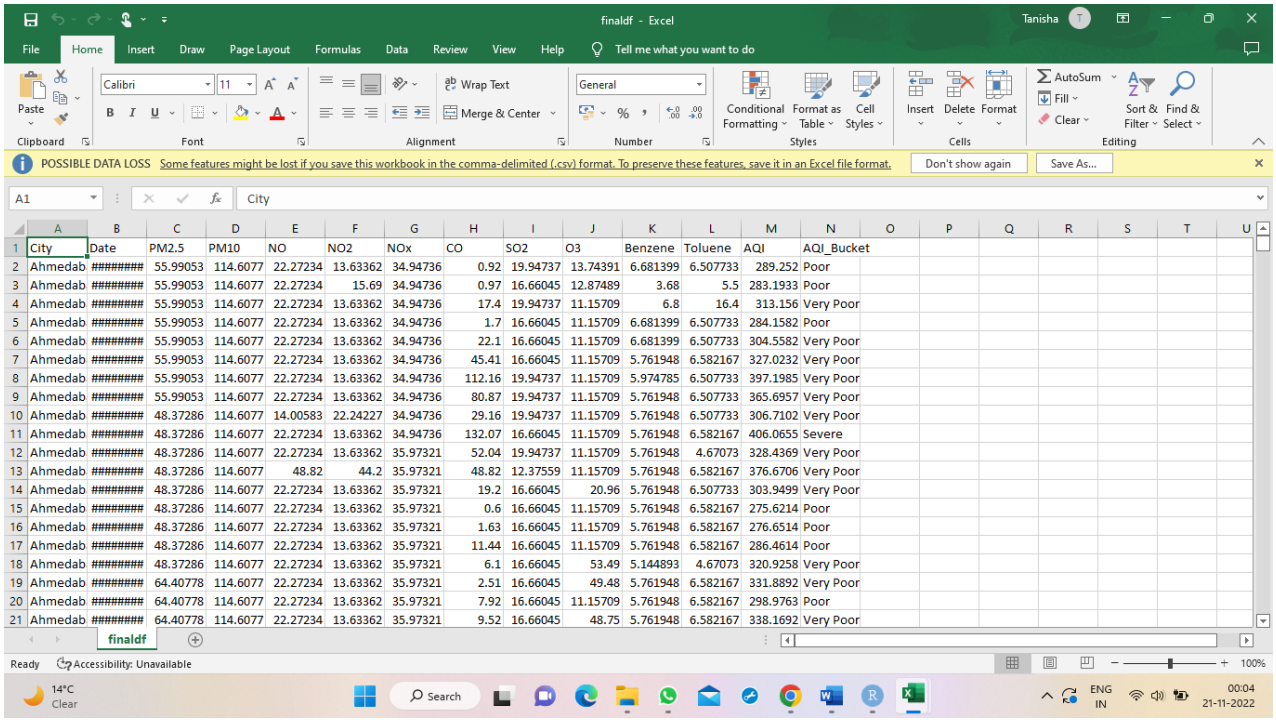
```
df = subset(nona, select = -c(8) )
df

colSums(is.na(df))

for (i in cities[,1]){
  df$O3[is.na(df$O3[df$City==i])]<-mean(df$O3[df$City==i], na.rm=TRUE)
}

for (i in cities[,1]){
  df$Benzene[is.na(df$Benzene[df$City==i])]<-mean(df$Benzene[df$City==i], na.rm=TRUE)
}

for (i in cities[,1]){
  df$Toluene[is.na(df$Toluene[df$City==i])]<-mean(df$Toluene[df$City==i], na.rm=TRUE)
}

for (i in cities[,1]){
  df$Xylene[is.na(df$Xylene[df$City==i])]<-mean(df$Xylene[df$City==i], na.rm=TRUE)
}

df2 = subset(df, select = -c(13) )
df2

colSums(is.na(df2))

df3=df2
df3
```

```
//calculating na values of column
for(i in 1:nrow(df4)){
  if(df4[i,13]==df4[i,3]){
    df4[i,13]=df4[i,3]+df4[i,4]+df4[i,5]+df4[i,6]+df4[i,7]+df4[i,8]+df4[i,9]+df4[i,10]+df4[i,11]+df4[i,12]

  }
}

aqi=df3[,13]
aqi
df4<-df3 %>%
  na.omit()

colSums(is.na(df4))

df5=df4

//determining categories
for(i in 1:nrow(df5))
{
  if(df5[i,14]==""){
    if(df5[i,13]>=400) df5[i,14]="Severe"
    else if(df5[i,13]>=300) df5[i,14]="Very Poor"
    else if(df5[i,13]>=200) df5[i,14]="Poor"
    else if (df5[i,13]>=100) df5[i,14]="Moderate"
    else if (df5[i,13]>=50) df5[i,14]="satisfactory"
    else df5[i,14]="Good"
  }
}

colSums(is.na(df5))

//writing back to csv files
write.table(df5, "D:\\AI\\data science\\dashboard project\\finaldf.csv",
            append = TRUE,
            sep = ",",
            col.names = TRUE,
            row.names = FALSE,
            quote = FALSE)

colSums(is.na(df5))
cities
delhi<-subset(df5,City=="Delhi")
delhi
bglr<-subset(df5,City=="Bengaluru")
bglr
chni<-subset(df5,City=="Chennai")
```

```
mbai<-subset(df5,City=="Mumbai")
kkta<-subset(df5,City=="Kolkata")
shlg<-subset(df5,City=="Shillong")
ggrm<-subset(df5,City=="Gurugram")
hybd<-subset(df5,City=="Hyderabad")
chdh<-subset(df5,City=="Chandigarh")


write.table(delhi, "D:\\AI\\data science\\dashboard project\\delhidf.csv",
          append = TRUE,
          sep = ",",
          col.names = TRUE,
          row.names = FALSE,
          quote = FALSE)

write.table(bglr, "D:\\AI\\data science\\dashboard project\\bengaloredf.csv",
          append = TRUE,
          sep = ",",
          col.names = TRUE,
          row.names = FALSE,
          quote = FALSE)

write.table(chni, "D:\\AI\\data science\\dashboard project\\chennaidf.csv",
          append = TRUE,
          sep = ",",
          col.names = TRUE,
          row.names = FALSE,
          quote = FALSE)

write.table(mbai, "D:\\AI\\data science\\dashboard project\\mumbai.csv",
          append = TRUE,
          sep = ",",
          col.names = TRUE,
          row.names = FALSE,
          quote = FALSE)

write.table(kkta, "D:\\AI\\data science\\dashboard project\\kolkatadf.csv",
          append = TRUE,
          sep = ",",
          col.names = TRUE,
          row.names = FALSE,
          quote = FALSE)

write.table(shlg, "D:\\AI\\data science\\dashboard project\\shillongdf.csv",
          append = TRUE,
          sep = ",",
          col.names = TRUE,
          row.names = FALSE,
```

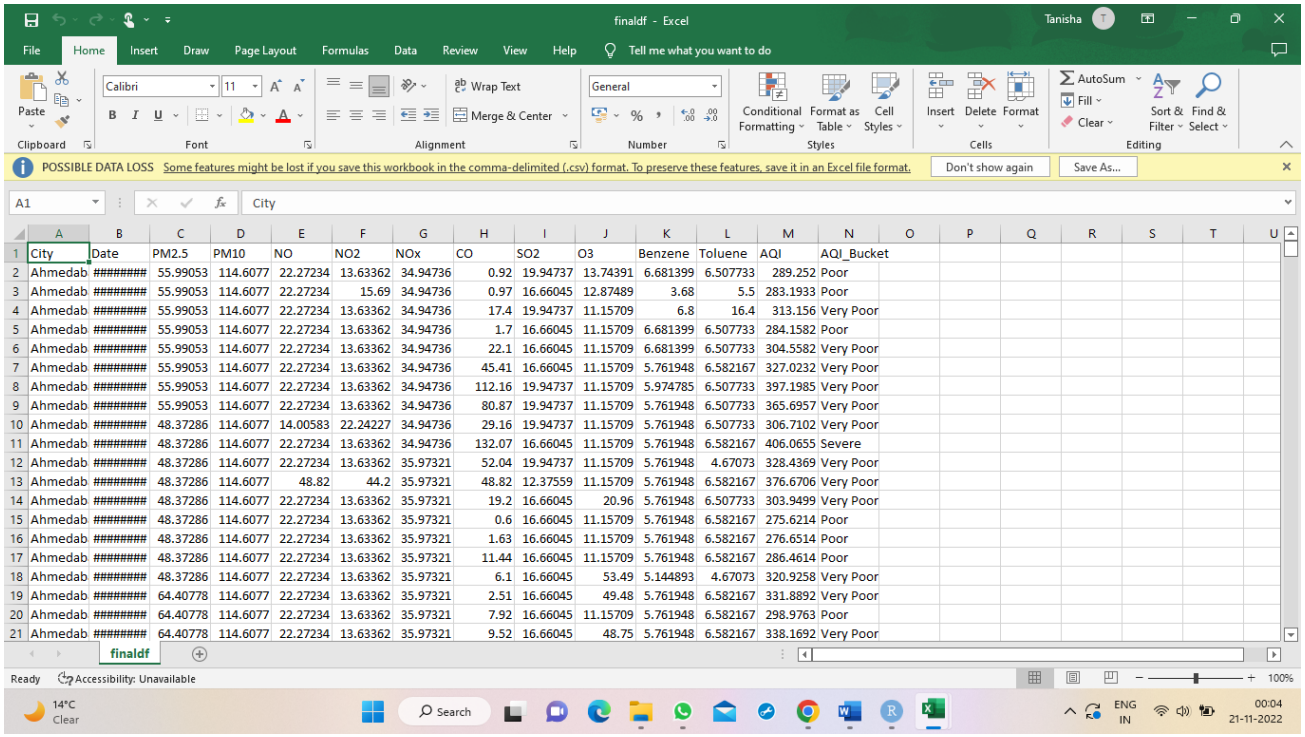
```
        quote = FALSE)

write.table(ggrm, "D:\\AI\\data science\\dashboard project\\gurugramdf.csv",
        append = TRUE,
        sep = ",",
        col.names = TRUE,
        row.names = FALSE,
        quote = FALSE)

write.table(hybd, "D:\\AI\\data science\\dashboard project\\hyderabaddf.csv",
        append = TRUE,
        sep = ",",
        col.names = TRUE,
        row.names = FALSE,
        quote = FALSE)

write.table(chdh, "D:\\AI\\data science\\dashboard project\\chandigarhdf.csv",
        append = TRUE,
        sep = ",",
        col.names = TRUE,
        row.names = FALSE,
        quote = FALSE)
```

4. PreProcessed Dataset



	City	Date	PM2.5	PM10	NO	NO2	NOx	CO	SO2	O3	Benzene	Toluene	AQI	AQI_Bucket
2	Ahmedab	########	55.99053	114.6077	22.27234	13.63362	34.94736	0.92	19.94737	13.74391	6.681399	6.507733	289.252	Poor
3	Ahmedab	########	55.99053	114.6077	22.27234	15.69	34.94736	0.97	16.66045	12.87489	3.68	5.5	283.1933	Poor
4	Ahmedab	########	55.99053	114.6077	22.27234	13.63362	34.94736	17.4	19.94737	11.15709	6.8	16.4	313.156	Very Poor
5	Ahmedab	########	55.99053	114.6077	22.27234	13.63362	34.94736	1.7	16.66045	11.15709	6.681399	6.507733	284.1582	Poor
6	Ahmedab	########	55.99053	114.6077	22.27234	13.63362	34.94736	22.1	16.66045	11.15709	6.681399	6.507733	304.5582	Very Poor
7	Ahmedab	########	55.99053	114.6077	22.27234	13.63362	34.94736	45.41	16.66045	11.15709	5.761948	6.582167	327.0232	Very Poor
8	Ahmedab	########	55.99053	114.6077	22.27234	13.63362	34.94736	112.16	19.94737	11.15709	5.974785	6.507733	397.1985	Very Poor
9	Ahmedab	########	55.99053	114.6077	22.27234	13.63362	34.94736	80.87	19.94737	11.15709	5.761948	6.507733	365.6957	Very Poor
10	Ahmedab	########	48.37286	114.6077	14.00583	22.24227	34.94736	29.16	19.94737	11.15709	5.761948	6.507733	306.7102	Very Poor
11	Ahmedab	########	48.37286	114.6077	22.27234	13.63362	34.94736	132.07	16.66045	11.15709	5.761948	6.582167	406.0655	Severe
12	Ahmedab	########	48.37286	114.6077	22.27234	13.63362	35.97321	52.04	19.94737	11.15709	5.761948	4.67073	328.4369	Very Poor
13	Ahmedab	########	48.37286	114.6077	48.82	44.2	35.97321	48.82	12.37559	11.15709	5.761948	6.582167	376.6706	Very Poor
14	Ahmedab	########	48.37286	114.6077	22.27234	13.63362	35.97321	19.2	16.66045	20.96	5.761948	6.507733	303.9499	Very Poor
15	Ahmedab	########	48.37286	114.6077	22.27234	13.63362	35.97321	0.6	16.66045	11.15709	5.761948	6.582167	275.6214	Poor
16	Ahmedab	########	48.37286	114.6077	22.27234	13.63362	35.97321	1.63	16.66045	11.15709	5.761948	6.582167	276.6514	Poor
17	Ahmedab	########	48.37286	114.6077	22.27234	13.63362	35.97321	11.44	16.66045	11.15709	5.761948	6.582167	286.4614	Poor
18	Ahmedab	########	48.37286	114.6077	22.27234	13.63362	35.97321	6.1	16.66045	53.49	5.144893	4.67073	320.9258	Very Poor
19	Ahmedab	########	64.40778	114.6077	22.27234	13.63362	35.97321	2.51	16.66045	49.48	5.761948	6.582167	331.8892	Very Poor
20	Ahmedab	########	64.40778	114.6077	22.27234	13.63362	35.97321	7.92	16.66045	11.15709	5.761948	6.582167	298.9763	Poor
21	Ahmedab	########	64.40778	114.6077	22.27234	13.63362	35.97321	9.52	16.66045	48.75	5.761948	6.582167	338.1692	Very Poor

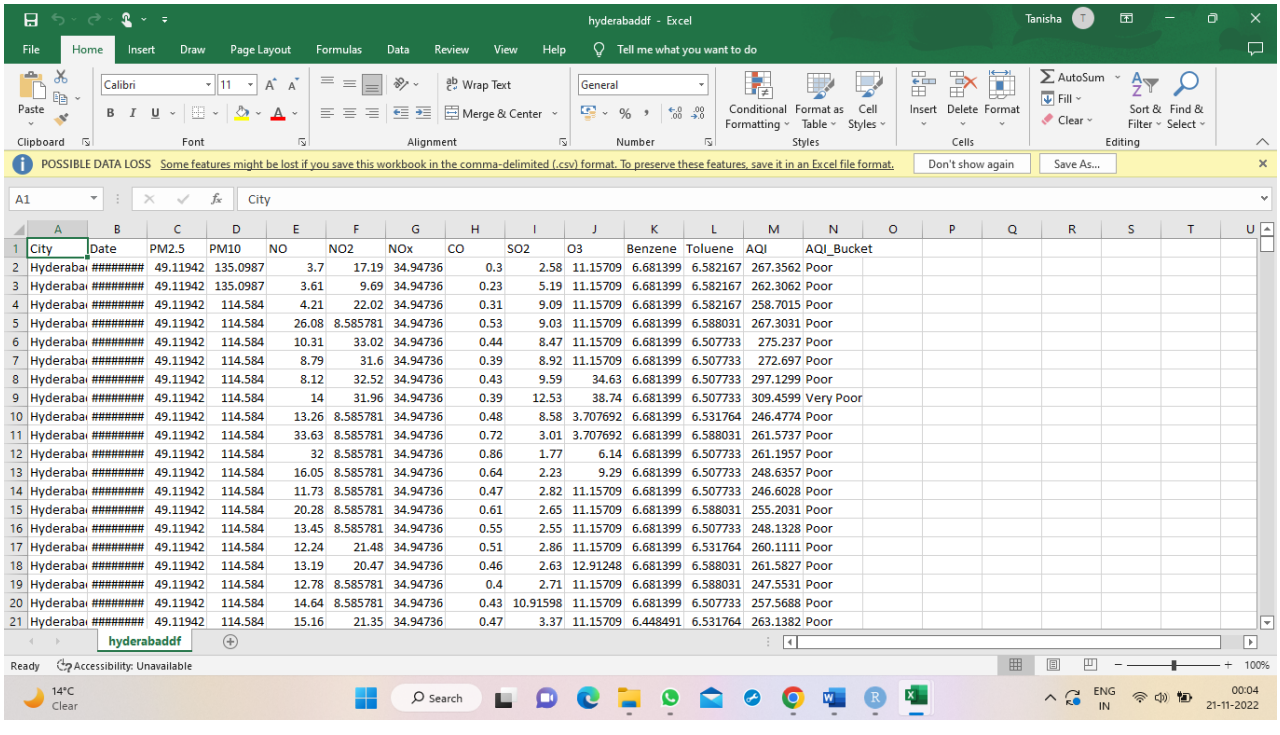
Finaldf.csv



finaldf - Excel

City	Date	PM2.5	PM10	NO	NO2	NOx	CO	SO2	O3	Benzene	Toluene	AQI	AQI_Bucket
Ahmedab	########	55.99053	114.6077	22.27234	13.63362	34.94736	0.92	19.94737	13.74391	6.681399	6.507733	289.252	Poor
Ahmedab	########	55.99053	114.6077	22.27234	15.69	34.94736	0.97	16.66045	12.87489	3.68	5.5	283.1933	Poor
Ahmedab	########	55.99053	114.6077	22.27234	13.63362	34.94736	17.4	19.94737	11.15709	6.8	16.4	313.156	Very Poor
Ahmedab	########	55.99053	114.6077	22.27234	13.63362	34.94736	1.7	16.66045	11.15709	6.681399	6.507733	284.1582	Poor
Ahmedab	########	55.99053	114.6077	22.27234	13.63362	34.94736	22.1	16.66045	11.15709	6.681399	6.507733	304.5582	Very Poor
Ahmedab	########	55.99053	114.6077	22.27234	13.63362	34.94736	45.41	16.66045	11.15709	5.761948	6.582167	327.0232	Very Poor
Ahmedab	########	55.99053	114.6077	22.27234	13.63362	34.94736	112.16	19.94737	11.15709	5.974785	6.507733	397.1985	Very Poor
Ahmedab	########	55.99053	114.6077	22.27234	13.63362	34.94736	80.87	19.94737	11.15709	5.761948	6.507733	365.6957	Very Poor
Ahmedab	########	48.37286	114.6077	14.00583	22.24227	34.94736	29.16	19.94737	11.15709	5.761948	6.507733	306.7102	Very Poor
Ahmedab	########	48.37286	114.6077	22.27234	13.63362	34.94736	132.07	16.66045	11.15709	5.761948	6.582167	406.0655	Severe
Ahmedab	########	48.37286	114.6077	22.27234	13.63362	35.97321	52.04	19.94737	11.15709	5.761948	4.67073	328.4369	Very Poor
Ahmedab	########	48.37286	114.6077	48.82	44.2	35.97321	48.82	12.37559	11.15709	5.761948	6.582167	376.6706	Very Poor
Ahmedab	########	48.37286	114.6077	22.27234	13.63362	35.97321	19.2	16.66045	20.96	5.761948	6.507733	303.9499	Very Poor
Ahmedab	########	48.37286	114.6077	22.27234	13.63362	35.97321	0.6	16.66045	11.15709	5.761948	6.582167	275.6214	Poor
Ahmedab	########	48.37286	114.6077	22.27234	13.63362	35.97321	1.63	16.66045	11.15709	5.761948	6.582167	276.6514	Poor
Ahmedab	########	48.37286	114.6077	22.27234	13.63362	35.97321	11.44	16.66045	11.15709	5.761948	6.582167	286.4614	Poor
Ahmedab	########	48.37286	114.6077	22.27234	13.63362	35.97321	6.1	16.66045	53.49	5.144893	4.67073	320.9258	Very Poor
Ahmedab	########	64.40778	114.6077	22.27234	13.63362	35.97321	2.51	16.66045	49.48	5.761948	6.582167	331.8892	Very Poor
Ahmedab	########	64.40778	114.6077	22.27234	13.63362	35.97321	7.92	16.66045	11.15709	5.761948	6.582167	298.9763	Poor
Ahmedab	########	64.40778	114.6077	22.27234	13.63362	35.97321	9.52	16.66045	48.75	5.761948	6.582167	338.1692	Very Poor

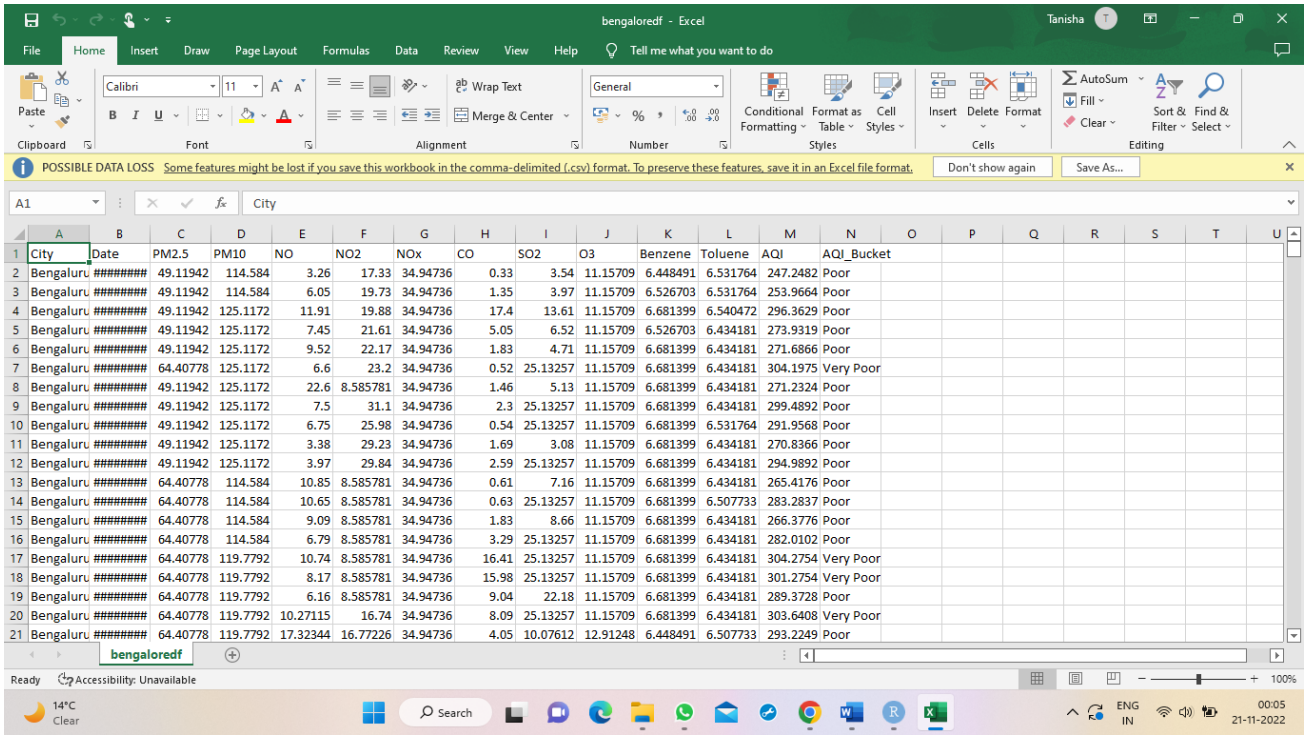
Gurugramdf.csv



hyderabaddf - Excel

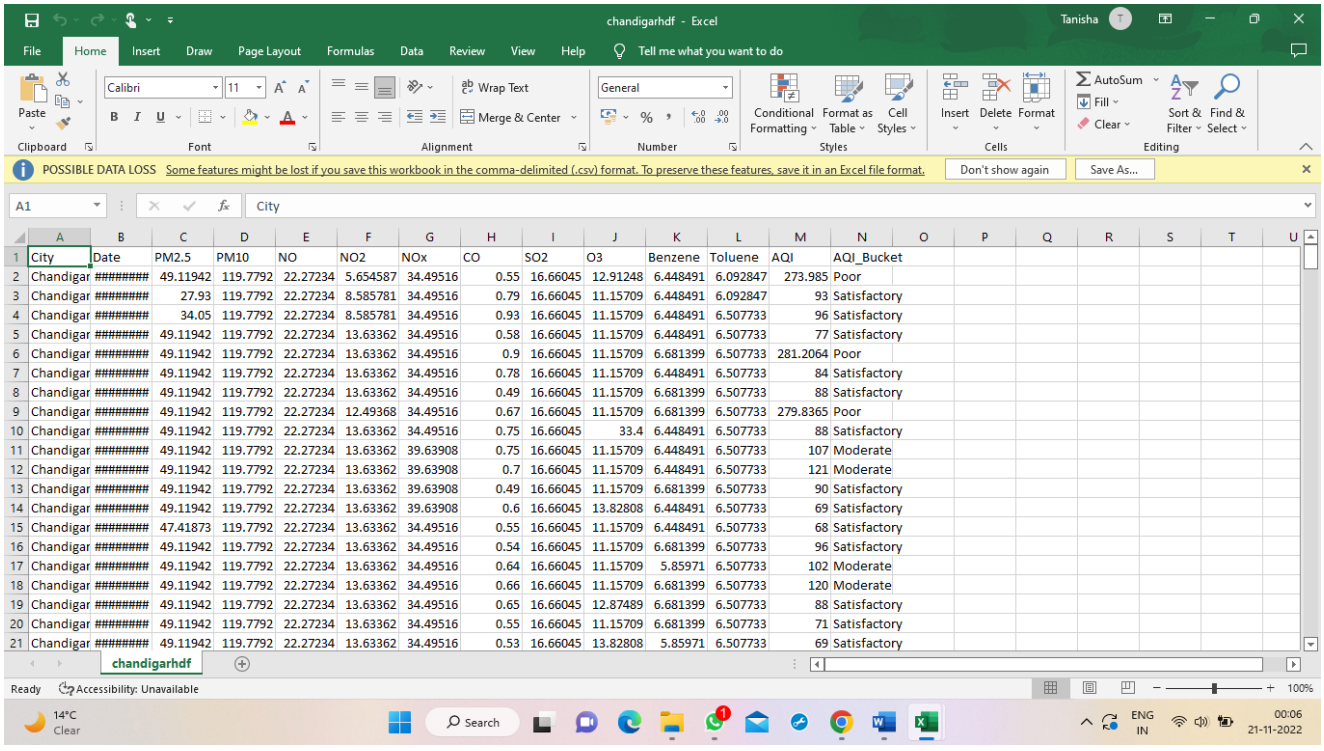
City	Date	PM2.5	PM10	NO	NO2	NOx	CO	SO2	O3	Benzene	Toluene	AQI	AQI_Bucket
Hyderaba	########	49.11942	135.0987	3.7	17.19	34.94736	0.3	2.58	11.15709	6.681399	6.582167	267.3562	Poor
Hyderaba	########	49.11942	135.0987	3.61	9.69	34.94736	0.23	5.19	11.15709	6.681399	6.582167	262.3062	Poor
Hyderaba	########	49.11942	114.584	4.21	22.02	34.94736	0.31	9.09	11.15709	6.681399	6.582167	258.7015	Poor
Hyderaba	########	49.11942	114.584	26.08	8.585781	34.94736	0.53	9.03	11.15709	6.681399	6.588031	267.3031	Poor
Hyderaba	########	49.11942	114.584	10.31	33.02	34.94736	0.44	8.47	11.15709	6.681399	6.507733	275.237	Poor
Hyderaba	########	49.11942	114.584	8.79	31.6	34.94736	0.39	8.92	11.15709	6.681399	6.507733	272.697	Poor
Hyderaba	########	49.11942	114.584	8.12	32.52	34.94736	0.43	9.59	34.63	6.681399	6.507733	297.1299	Poor
Hyderaba	########	49.11942	114.584	14	31.96	34.94736	0.39	12.53	38.74	6.681399	6.507733	309.4599	Very Poor
Hyderaba	########	49.11942	114.584	13.26	8.585781	34.94736	0.48	8.58	3.707692	6.681399	6.531764	246.4774	Poor
Hyderaba	########	49.11942	114.584	33.63	8.585781	34.94736	0.72	3.01	3.707692	6.681399	6.588031	261.5737	Poor
Hyderaba	########	49.11942	114.584	32	8.585781	34.94736	0.86	1.77	6.14	6.681399	6.507733	261.1957	Poor
Hyderaba	########	49.11942	114.584	16.05	8.585781	34.94736	0.64	2.23	9.29	6.681399	6.507733	248.6357	Poor
Hyderaba	########	49.11942	114.584	11.73	8.585781	34.94736	0.47	2.82	11.15709	6.681399	6.507733	246.6028	Poor
Hyderaba	########	49.11942	114.584	20.28	8.585781	34.94736	0.61	2.65	11.15709	6.681399	6.588031	255.2031	Poor
Hyderaba	########	49.11942	114.584	13.45	8.585781	34.94736	0.55	2.55	11.15709	6.681399	6.507733	248.1328	Poor
Hyderaba	########	49.11942	114.584	12.24	21.48	34.94736	0.51	2.86	11.15709	6.681399	6.531764	260.1111	Poor
Hyderaba	########	49.11942	114.584	13.19	20.47	34.94736	0.46	2.63	12.91248	6.681399	6.588031	261.5827	Poor
Hyderaba	########	49.11942	114.584	12.78	8.585781	34.94736	0.4	2.71	11.15709	6.681399	6.588031	247.5531	Poor
Hyderaba	########	49.11942	114.584	14.64	8.585781	34.94736	0.43	10.91598	11.15709	6.681399	6.507733	257.5688	Poor
Hyderaba	########	49.11942	114.584	15.16	21.35	34.94736	0.47	3.37	11.15709	6.448491	6.531764	263.1382	Poor

Hyderabaddf.csv



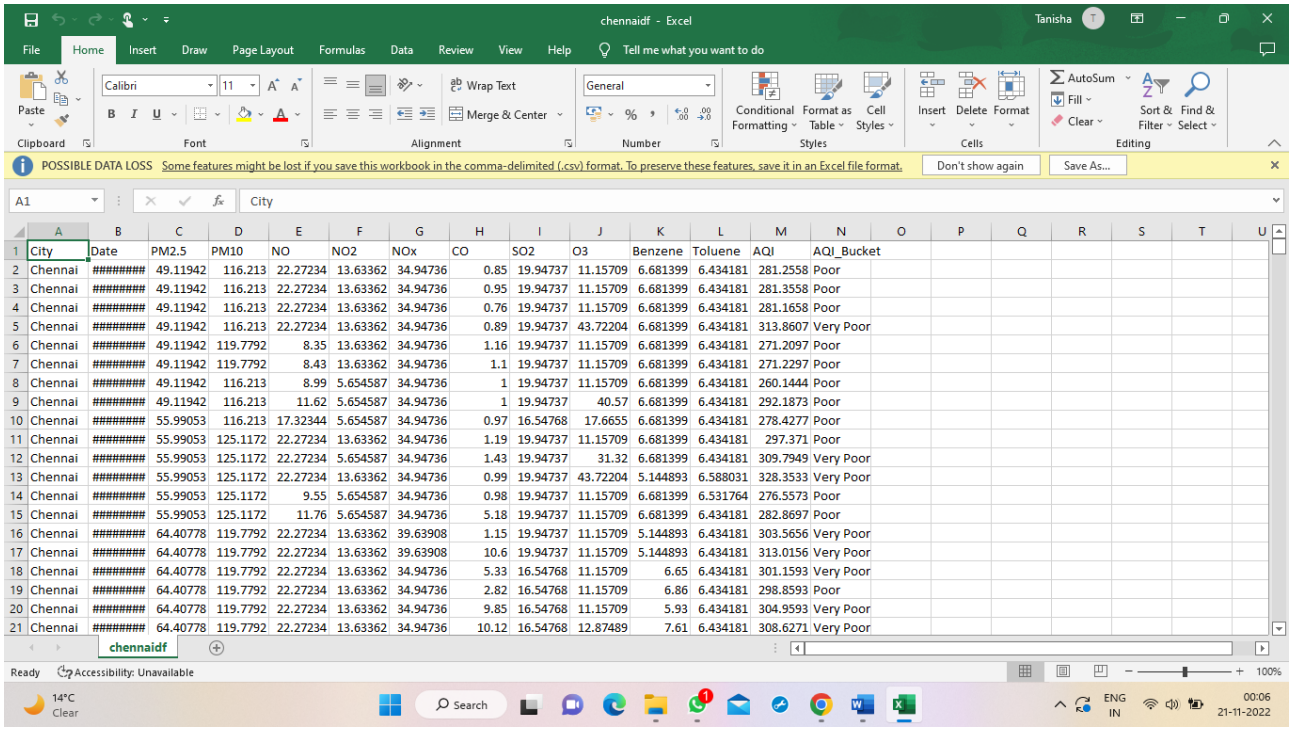
City	Date	PM2.5	PM10	NO	NO2	NOx	CO	SO2	O3	Benzene	Toluene	AQI	AQI_Bucket
Bengaluru	########	49.11942	114.584	3.26	17.33	34.94736	0.33	3.54	11.15709	6.448491	6.531764	247.2482	Poor
Bengaluru	########	49.11942	114.584	6.05	19.73	34.94736	1.35	3.97	11.15709	6.526703	6.531764	253.9664	Poor
Bengaluru	########	49.11942	125.1172	11.91	19.88	34.94736	17.4	13.61	11.15709	6.681399	6.540472	296.3629	Poor
Bengaluru	########	49.11942	125.1172	7.45	21.61	34.94736	5.05	6.52	11.15709	6.526703	6.434181	273.9319	Poor
Bengaluru	########	49.11942	125.1172	9.52	22.17	34.94736	1.83	4.71	11.15709	6.681399	6.434181	271.6866	Poor
Bengaluru	########	64.40778	125.1172	6.6	23.2	34.94736	0.52	25.13257	11.15709	6.681399	6.434181	304.1975	Very Poor
Bengaluru	########	49.11942	125.1172	22.6	8.585781	34.94736	1.46	5.13	11.15709	6.681399	6.434181	271.2324	Poor
Bengaluru	########	49.11942	125.1172	7.5	31.1	34.94736	2.3	25.13257	11.15709	6.681399	6.434181	299.4892	Poor
Bengaluru	########	49.11942	125.1172	6.75	25.98	34.94736	0.54	25.13257	11.15709	6.681399	6.531764	291.9568	Poor
Bengaluru	########	49.11942	125.1172	3.38	29.23	34.94736	1.69	3.08	11.15709	6.681399	6.434181	270.8366	Poor
Bengaluru	########	49.11942	125.1172	3.97	29.84	34.94736	2.59	25.13257	11.15709	6.681399	6.434181	294.9892	Poor
Bengaluru	########	64.40778	114.584	10.85	8.585781	34.94736	0.61	7.16	11.15709	6.681399	6.434181	265.4176	Poor
Bengaluru	########	64.40778	114.584	10.65	8.585781	34.94736	0.63	25.13257	11.15709	6.681399	6.507733	283.2837	Poor
Bengaluru	########	64.40778	114.584	9.09	8.585781	34.94736	1.83	8.66	11.15709	6.681399	6.434181	266.3776	Poor
Bengaluru	########	64.40778	114.584	6.79	8.585781	34.94736	3.29	25.13257	11.15709	6.681399	6.434181	282.0102	Poor
Bengaluru	########	64.40778	119.7792	10.74	8.585781	34.94736	16.41	25.13257	11.15709	6.681399	6.434181	304.2754	Very Poor
Bengaluru	########	64.40778	119.7792	8.17	8.585781	34.94736	15.98	25.13257	11.15709	6.681399	6.434181	301.2754	Very Poor
Bengaluru	########	64.40778	119.7792	6.16	8.585781	34.94736	9.04	22.18	11.15709	6.681399	6.434181	289.3728	Poor
Bengaluru	########	64.40778	119.7792	10.27115	16.74	34.94736	8.09	25.13257	11.15709	6.681399	6.434181	303.6408	Very Poor
Bengaluru	########	64.40778	119.7792	17.32344	16.77226	34.94736	4.05	10.07612	12.91248	6.448491	6.507733	293.2249	Poor

bengaloredf.csv



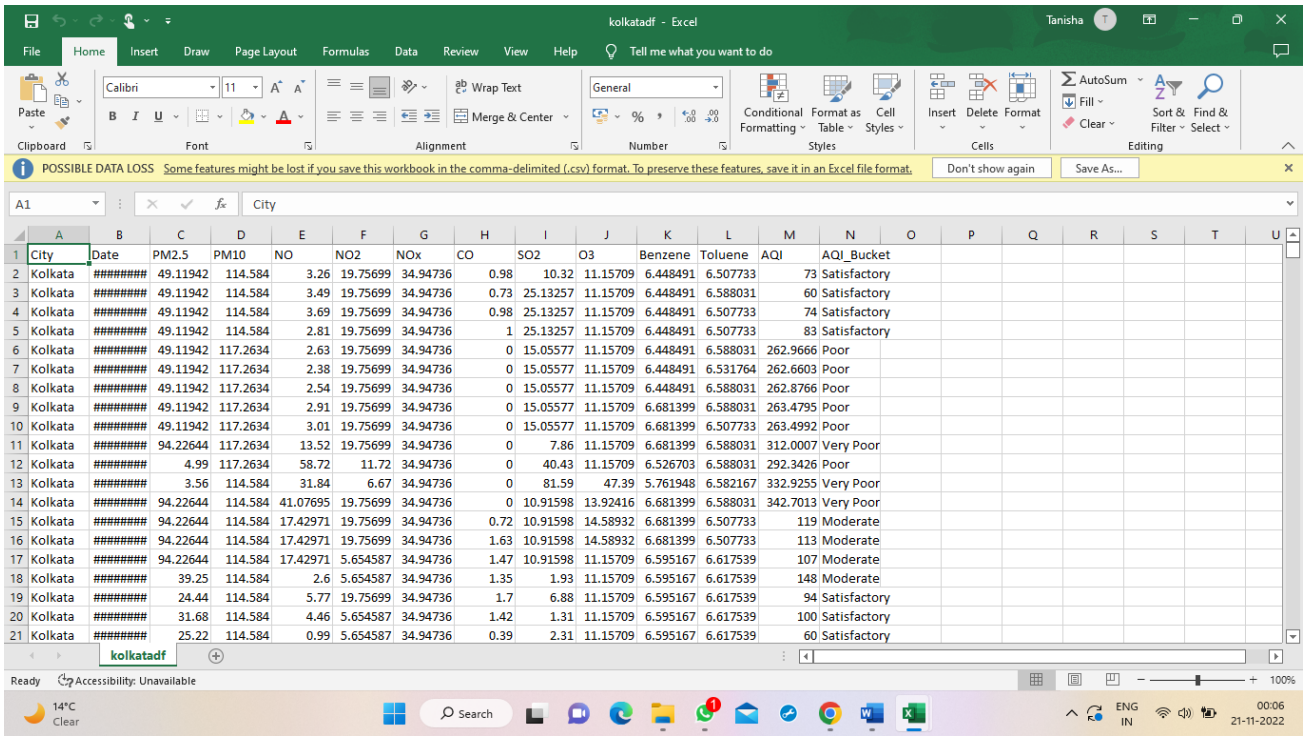
City	Date	PM2.5	PM10	NO	NO2	NOx	CO	SO2	O3	Benzene	Toluene	AQI	AQI_Bucket
Chandigar	########	49.11942	119.7792	22.27234	5.654587	34.49516	0.55	16.66045	12.91248	6.448491	6.092847	273.985	Poor
Chandigar	########	27.93	119.7792	22.27234	8.585781	34.49516	0.79	16.66045	11.15709	6.448491	6.092847	93	Satisfactory
Chandigar	########	34.05	119.7792	22.27234	8.585781	34.49516	0.93	16.66045	11.15709	6.448491	6.507733	96	Satisfactory
Chandigar	########	49.11942	119.7792	22.27234	13.63362	34.49516	0.58	16.66045	11.15709	6.448491	6.507733	77	Satisfactory
Chandigar	########	49.11942	119.7792	22.27234	13.63362	34.49516	0.9	16.66045	11.15709	6.681399	6.507733	281.2064	Poor
Chandigar	########	49.11942	119.7792	22.27234	13.63362	34.49516	0.78	16.66045	11.15709	6.448491	6.507733	84	Satisfactory
Chandigar	########	49.11942	119.7792	22.27234	13.63362	34.49516	0.49	16.66045	11.15709	6.681399	6.507733	88	Satisfactory
Chandigar	########	49.11942	119.7792	22.27234	12.49368	34.49516	0.67	16.66045	11.15709	6.681399	6.507733	279.8365	Poor
Chandigar	########	49.11942	119.7792	22.27234	13.63362	34.49516	0.75	16.66045	33.4	6.448491	6.507733	88	Satisfactory
Chandigar	########	49.11942	119.7792	22.27234	13.63362	39.63908	0.75	16.66045	11.15709	6.448491	6.507733	107	Moderate
Chandigar	########	49.11942	119.7792	22.27234	13.63362	39.63908	0.7	16.66045	11.15709	6.448491	6.507733	121	Moderate
Chandigar	########	49.11942	119.7792	22.27234	13.63362	39.63908	0.49	16.66045	11.15709	6.681399	6.507733	90	Satisfactory
Chandigar	########	49.11942	119.7792	22.27234	13.63362	39.63908	0.6	16.66045	13.82808	6.448491	6.507733	69	Satisfactory
Chandigar	########	47.41873	119.7792	22.27234	13.63362	34.49516	0.55	16.66045	11.15709	6.448491	6.507733	68	Satisfactory
Chandigar	########	49.11942	119.7792	22.27234	13.63362	34.49516	0.54	16.66045	11.15709	6.681399	6.507733	96	Satisfactory
Chandigar	########	49.11942	119.7792	22.27234	13.63362	34.49516	0.64	16.66045	11.15709	5.85971	6.507733	102	Moderate
Chandigar	########	49.11942	119.7792	22.27234	13.63362	34.49516	0.66	16.66045	11.15709	6.681399	6.507733	120	Moderate
Chandigar	########	49.11942	119.7792	22.27234	13.63362	34.49516	0.65	16.66045	12.87489	6.681399	6.507733	88	Satisfactory
Chandigar	########	49.11942	119.7792	22.27234	13.63362	34.49516	0.55	16.66045	11.15709	6.681399	6.507733	71	Satisfactory
Chandigar	########	49.11942	119.7792	22.27234	13.63362	34.49516	0.53	16.66045	13.82808	5.85971	6.507733	69	Satisfactory

chandigarhdf.csv



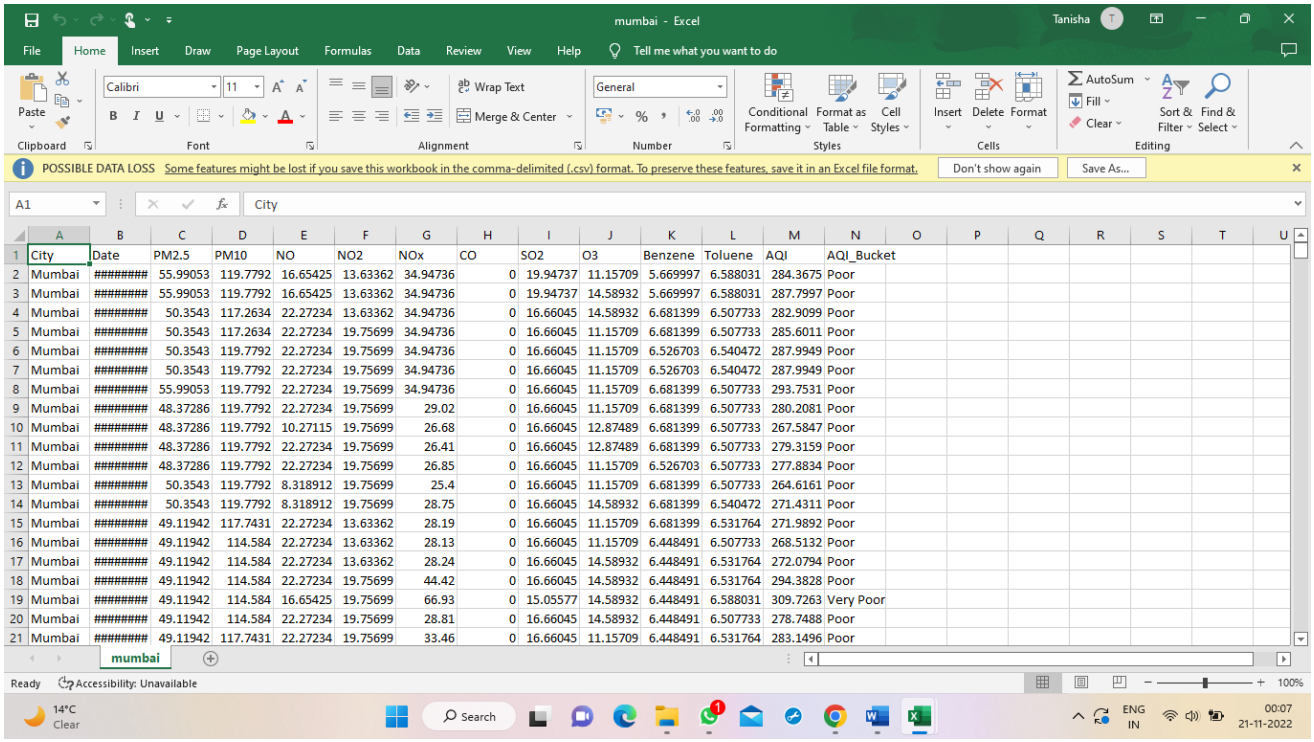
City	Date	PM2.5	PM10	NO	NO2	NOx	CO	SO2	O3	Benzene	Toluene	AQI	AQI_Bucket
Chennai	########	49.11942	116.213	22.27234	13.63362	34.94736	0.85	19.94737	11.15709	6.681399	6.434181	281.2558	Poor
Chennai	########	49.11942	116.213	22.27234	13.63362	34.94736	0.95	19.94737	11.15709	6.681399	6.434181	281.3558	Poor
Chennai	########	49.11942	116.213	22.27234	13.63362	34.94736	0.76	19.94737	11.15709	6.681399	6.434181	281.1658	Poor
Chennai	########	49.11942	116.213	22.27234	13.63362	34.94736	0.89	19.94737	43.72204	6.681399	6.434181	313.8607	Very Poor
Chennai	########	49.11942	119.7792	8.35	13.63362	34.94736	1.16	19.94737	11.15709	6.681399	6.434181	271.2097	Poor
Chennai	########	49.11942	119.7792	8.43	13.63362	34.94736	1.1	19.94737	11.15709	6.681399	6.434181	271.2297	Poor
Chennai	########	49.11942	116.213	8.99	5.654587	34.94736	1	19.94737	11.15709	6.681399	6.434181	260.1444	Poor
Chennai	########	49.11942	116.213	11.62	5.654587	34.94736	1	19.94737	40.57	6.681399	6.434181	292.1873	Poor
Chennai	########	55.99053	116.213	17.32344	5.654587	34.94736	0.97	16.54768	17.6655	6.681399	6.434181	278.4277	Poor
Chennai	########	55.99053	125.1172	22.27234	13.63362	34.94736	1.19	19.94737	11.15709	6.681399	6.434181	297.371	Poor
Chennai	########	55.99053	125.1172	22.27234	5.654587	34.94736	1.43	19.94737	31.32	6.681399	6.434181	309.7949	Very Poor
Chennai	########	55.99053	125.1172	22.27234	13.63362	34.94736	0.99	19.94737	43.72204	5.144893	6.588031	328.3533	Very Poor
Chennai	########	55.99053	125.1172	9.55	5.654587	34.94736	0.98	19.94737	11.15709	6.681399	6.531764	276.5573	Poor
Chennai	########	55.99053	125.1172	11.76	5.654587	34.94736	5.18	19.94737	11.15709	6.681399	6.434181	282.8697	Poor
Chennai	########	64.40778	119.7792	22.27234	13.63362	39.63908	1.15	19.94737	11.15709	5.144893	6.434181	303.5656	Very Poor
Chennai	########	64.40778	119.7792	22.27234	13.63362	39.63908	10.6	19.94737	11.15709	5.144893	6.434181	313.0156	Very Poor
Chennai	########	64.40778	119.7792	22.27234	13.63362	34.94736	5.33	16.54768	11.15709	6.65	6.434181	301.1593	Very Poor
Chennai	########	64.40778	119.7792	22.27234	13.63362	34.94736	2.82	16.54768	11.15709	6.86	6.434181	298.8593	Poor
Chennai	########	64.40778	119.7792	22.27234	13.63362	34.94736	9.85	16.54768	11.15709	5.93	6.434181	304.9593	Very Poor
Chennai	########	64.40778	119.7792	22.27234	13.63362	34.94736	10.12	16.54768	12.87489	7.61	6.434181	308.6271	Very Poor

Chennaidf.csv



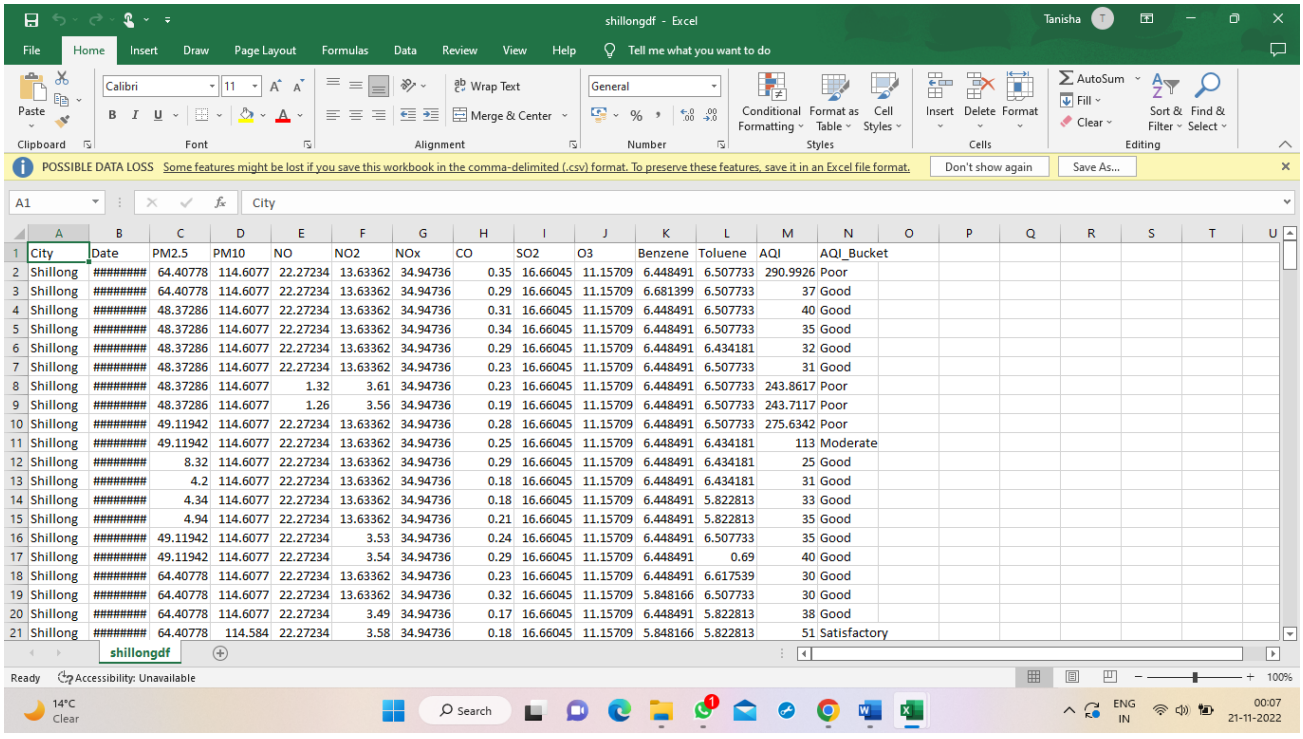
City	Date	PM2.5	PM10	NO	NO2	NOx	CO	SO2	O3	Benzene	Toluene	AQI	AQI_Bucket
Kolkata	########	49.11942	114.584	3.26	19.75699	34.94736	0.98	10.32	11.15709	6.448491	6.507733	73	Satisfactory
Kolkata	########	49.11942	114.584	3.49	19.75699	34.94736	0.73	25.13257	11.15709	6.448491	6.588031	60	Satisfactory
Kolkata	########	49.11942	114.584	3.69	19.75699	34.94736	0.98	25.13257	11.15709	6.448491	6.507733	74	Satisfactory
Kolkata	########	49.11942	114.584	2.81	19.75699	34.94736	1	25.13257	11.15709	6.448491	6.507733	83	Satisfactory
Kolkata	########	49.11942	117.2634	2.63	19.75699	34.94736	0	15.05577	11.15709	6.448491	6.588031	262.9666	Poor
Kolkata	########	49.11942	117.2634	2.38	19.75699	34.94736	0	15.05577	11.15709	6.448491	6.531764	262.6603	Poor
Kolkata	########	49.11942	117.2634	2.54	19.75699	34.94736	0	15.05577	11.15709	6.448491	6.588031	262.8766	Poor
Kolkata	########	49.11942	117.2634	2.91	19.75699	34.94736	0	15.05577	11.15709	6.681399	6.588031	263.4795	Poor
Kolkata	########	49.11942	117.2634	3.01	19.75699	34.94736	0	15.05577	11.15709	6.681399	6.507733	263.4992	Poor
Kolkata	########	94.22644	117.2634	13.52	19.75699	34.94736	0	7.86	11.15709	6.681399	6.588031	312.0007	Very Poor
Kolkata	########	4.99	117.2634	58.72	11.72	34.94736	0	40.43	11.15709	6.526703	6.588031	292.3426	Poor
Kolkata	########	3.56	114.584	31.84	6.67	34.94736	0	81.59	47.39	5.761948	6.582167	332.9255	Very Poor
Kolkata	########	94.22644	114.584	41.07695	19.75699	34.94736	0	10.91598	13.92416	6.681399	6.588031	342.7013	Very Poor
Kolkata	########	94.22644	114.584	17.42971	19.75699	34.94736	0.72	10.91598	14.58932	6.681399	6.507733	119	Moderate
Kolkata	########	94.22644	114.584	17.42971	19.75699	34.94736	1.63	10.91598	14.58932	6.681399	6.507733	113	Moderate
Kolkata	########	94.22644	114.584	17.42971	5.654587	34.94736	1.47	10.91598	11.15709	6.595167	6.617539	107	Moderate
Kolkata	########	39.25	114.584	2.6	5.654587	34.94736	1.35	1.93	11.15709	6.595167	6.617539	148	Moderate
Kolkata	########	24.44	114.584	5.77	19.75699	34.94736	1.7	6.88	11.15709	6.595167	6.617539	94	Satisfactory
Kolkata	########	31.68	114.584	4.46	5.654587	34.94736	1.42	1.31	11.15709	6.595167	6.617539	100	Satisfactory
Kolkata	########	25.22	114.584	0.99	5.654587	34.94736	0.39	2.31	11.15709	6.595167	6.617539	60	Satisfactory

Kolkatadf.csv



City	Date	PM2.5	PM10	NO	NO2	NOx	CO	SO2	O3	Benzene	Toluene	AQI	AQI_Bucket
Mumbai	########	55.99053	119.7792	16.65425	13.63362	34.94736	0	19.94737	11.15709	5.669997	6.588031	284.3675	Poor
Mumbai	########	55.99053	119.7792	16.65425	13.63362	34.94736	0	19.94737	14.58932	5.669997	6.588031	287.7997	Poor
Mumbai	########	50.3543	117.2634	22.27234	13.63362	34.94736	0	16.66045	14.58932	6.681399	6.507733	282.9099	Poor
Mumbai	########	50.3543	117.2634	22.27234	19.75699	34.94736	0	16.66045	11.15709	6.681399	6.507733	285.6011	Poor
Mumbai	########	50.3543	119.7792	22.27234	19.75699	34.94736	0	16.66045	11.15709	6.526703	6.540472	287.9949	Poor
Mumbai	########	50.3543	119.7792	22.27234	19.75699	34.94736	0	16.66045	11.15709	6.526703	6.540472	287.9949	Poor
Mumbai	########	55.99053	119.7792	22.27234	19.75699	34.94736	0	16.66045	11.15709	6.681399	6.507733	293.7531	Poor
Mumbai	########	48.37286	119.7792	22.27234	19.75699	29.02	0	16.66045	11.15709	6.681399	6.507733	280.2081	Poor
Mumbai	########	48.37286	119.7792	10.27115	19.75699	26.68	0	16.66045	12.87489	6.681399	6.507733	267.5847	Poor
Mumbai	########	48.37286	119.7792	22.27234	19.75699	26.41	0	16.66045	12.87489	6.681399	6.507733	279.3159	Poor
Mumbai	########	48.37286	119.7792	22.27234	19.75699	26.85	0	16.66045	11.15709	6.526703	6.507733	277.8834	Poor
Mumbai	########	50.3543	119.7792	8.318912	19.75699	25.4	0	16.66045	11.15709	6.681399	6.507733	264.6161	Poor
Mumbai	########	50.3543	119.7792	8.318912	19.75699	28.75	0	16.66045	14.58932	6.681399	6.540472	271.4311	Poor
Mumbai	########	49.11942	117.7431	22.27234	13.63362	28.19	0	16.66045	11.15709	6.681399	6.531764	271.9892	Poor
Mumbai	########	49.11942	114.584	22.27234	13.63362	28.13	0	16.66045	11.15709	6.448491	6.507733	268.5132	Poor
Mumbai	########	49.11942	114.584	22.27234	13.63362	28.24	0	16.66045	14.58932	6.448491	6.531764	272.0794	Poor
Mumbai	########	49.11942	114.584	22.27234	19.75699	44.42	0	16.66045	14.58932	6.448491	6.531764	294.3828	Poor
Mumbai	########	49.11942	114.584	16.65425	19.75699	66.93	0	15.05577	14.58932	6.448491	6.588031	309.7263	Very Poor
Mumbai	########	49.11942	114.584	22.27234	19.75699	28.81	0	16.66045	14.58932	6.448491	6.507733	278.7488	Poor
Mumbai	########	49.11942	117.7431	22.27234	19.75699	33.46	0	16.66045	11.15709	6.448491	6.531764	283.1496	Poor

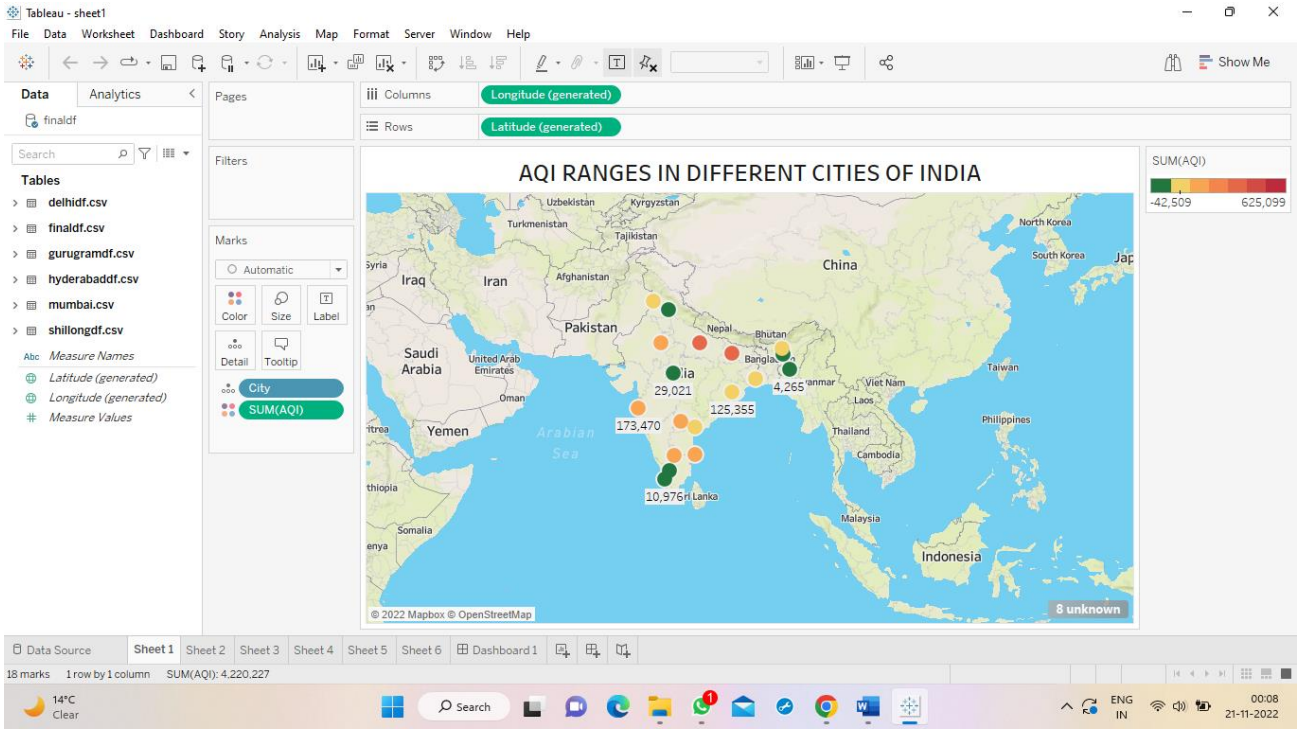
mumbaidf.csv



City	Date	PM2.5	PM10	NO	NO2	NOx	CO	SO2	O3	Benzene	Toluene	AQI	AQI_Bucket
Shillong	########	64.40778	114.6077	22.27234	13.63362	34.94736	0.35	16.66045	11.15709	6.448491	6.507733	290.9926	Poor
Shillong	########	64.40778	114.6077	22.27234	13.63362	34.94736	0.29	16.66045	11.15709	6.681399	6.507733	37	Good
Shillong	########	48.37286	114.6077	22.27234	13.63362	34.94736	0.31	16.66045	11.15709	6.448491	6.507733	40	Good
Shillong	########	48.37286	114.6077	22.27234	13.63362	34.94736	0.34	16.66045	11.15709	6.448491	6.507733	35	Good
Shillong	########	48.37286	114.6077	22.27234	13.63362	34.94736	0.29	16.66045	11.15709	6.448491	6.434181	32	Good
Shillong	########	48.37286	114.6077	22.27234	13.63362	34.94736	0.23	16.66045	11.15709	6.448491	6.507733	31	Good
Shillong	########	48.37286	114.6077	1.32	3.61	34.94736	0.23	16.66045	11.15709	6.448491	6.507733	243.8617	Poor
Shillong	########	48.37286	114.6077	1.26	3.56	34.94736	0.19	16.66045	11.15709	6.448491	6.507733	243.7117	Poor
Shillong	########	49.11942	114.6077	22.27234	13.63362	34.94736	0.28	16.66045	11.15709	6.448491	6.507733	275.6342	Poor
Shillong	########	49.11942	114.6077	22.27234	13.63362	34.94736	0.25	16.66045	11.15709	6.448491	6.434181	113	Moderate
Shillong	########	8.32	114.6077	22.27234	13.63362	34.94736	0.29	16.66045	11.15709	6.448491	6.434181	25	Good
Shillong	########	4.2	114.6077	22.27234	13.63362	34.94736	0.18	16.66045	11.15709	6.448491	6.434181	31	Good
Shillong	########	4.34	114.6077	22.27234	13.63362	34.94736	0.18	16.66045	11.15709	6.448491	5.822813	33	Good
Shillong	########	4.94	114.6077	22.27234	13.63362	34.94736	0.21	16.66045	11.15709	6.448491	5.822813	35	Good
Shillong	########	49.11942	114.6077	22.27234	3.53	34.94736	0.24	16.66045	11.15709	6.448491	6.507733	35	Good
Shillong	########	49.11942	114.6077	22.27234	3.54	34.94736	0.29	16.66045	11.15709	6.448491	0.69	40	Good
Shillong	########	64.40778	114.6077	22.27234	13.63362	34.94736	0.23	16.66045	11.15709	6.448491	6.617539	30	Good
Shillong	########	64.40778	114.6077	22.27234	13.63362	34.94736	0.32	16.66045	11.15709	5.848166	6.507733	30	Good
Shillong	########	64.40778	114.6077	22.27234	3.49	34.94736	0.17	16.66045	11.15709	6.448491	5.822813	38	Good
Shillong	########	64.40778	114.584	22.27234	3.58	34.94736	0.18	16.66045	11.15709	5.848166	5.822813	51	Satisfactory

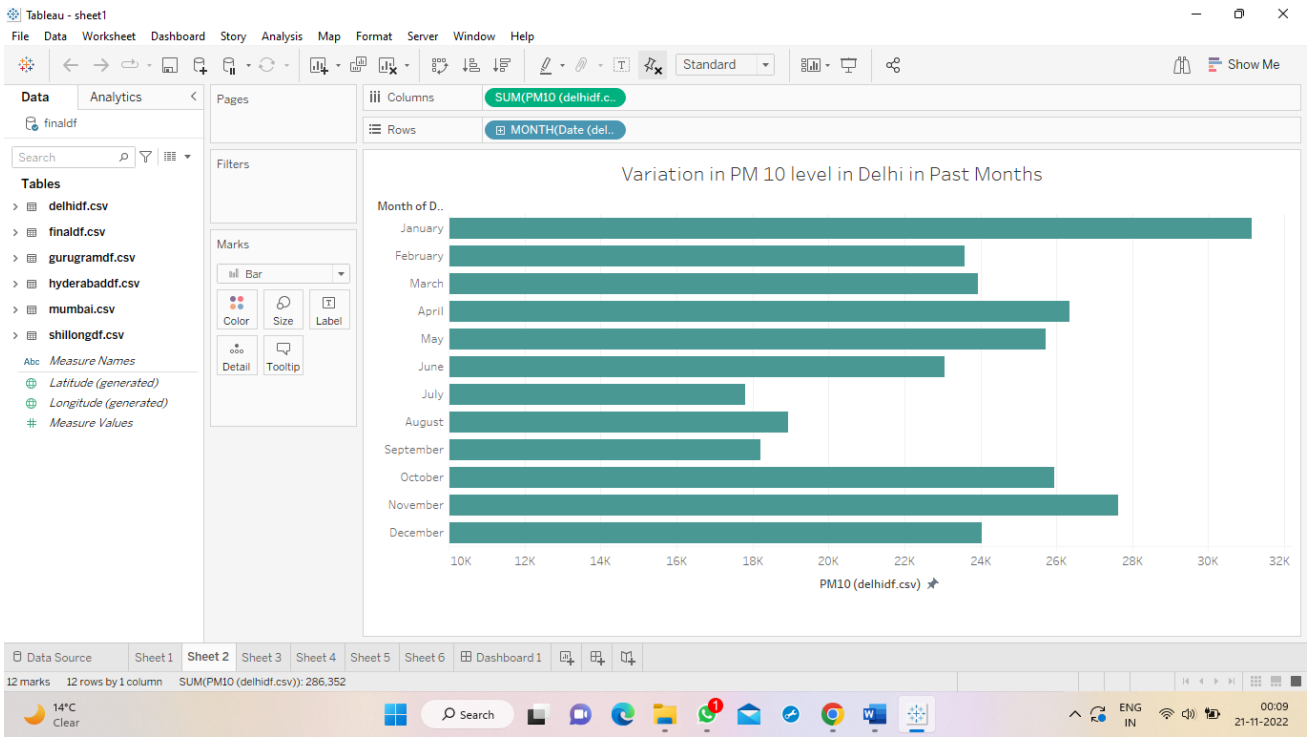
Shillongdf.csv

5. Tableau Sheet Views



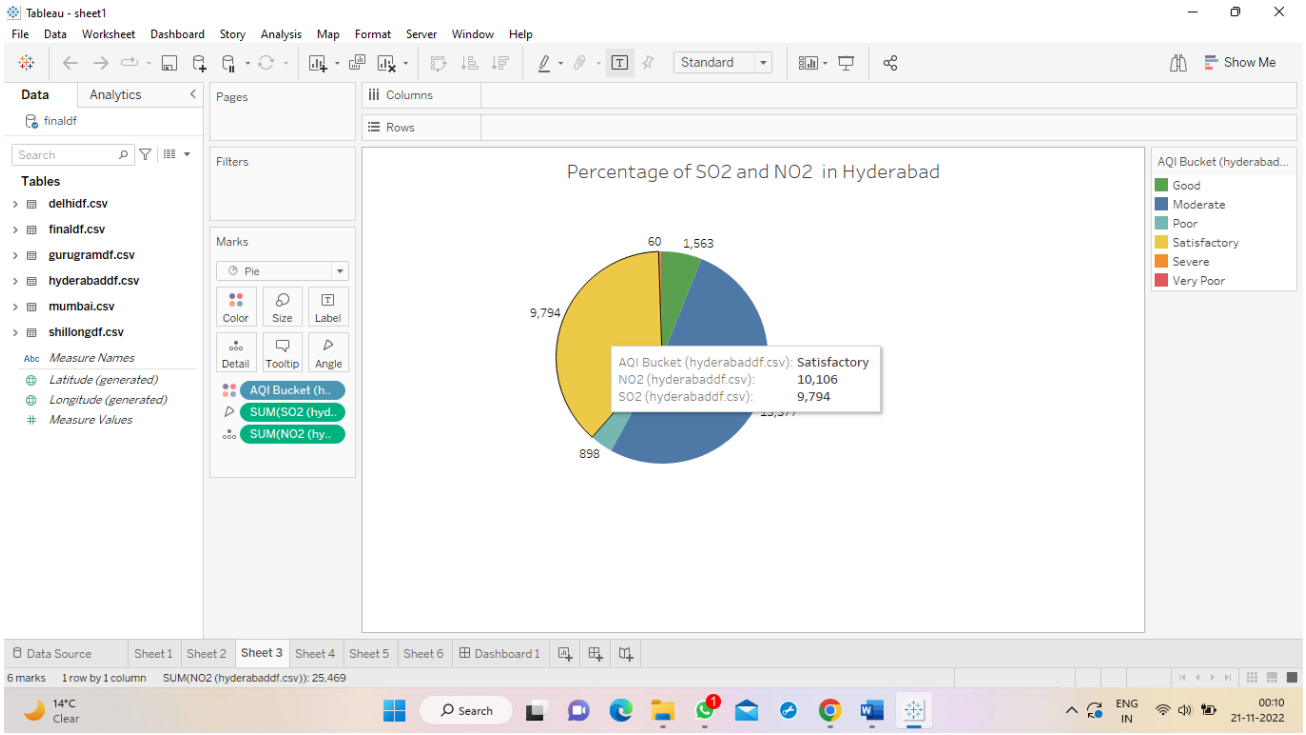
AQI ranges in different Cities of India

We have plotted the cities against the AQI measure on Graph to obtain the desired view.



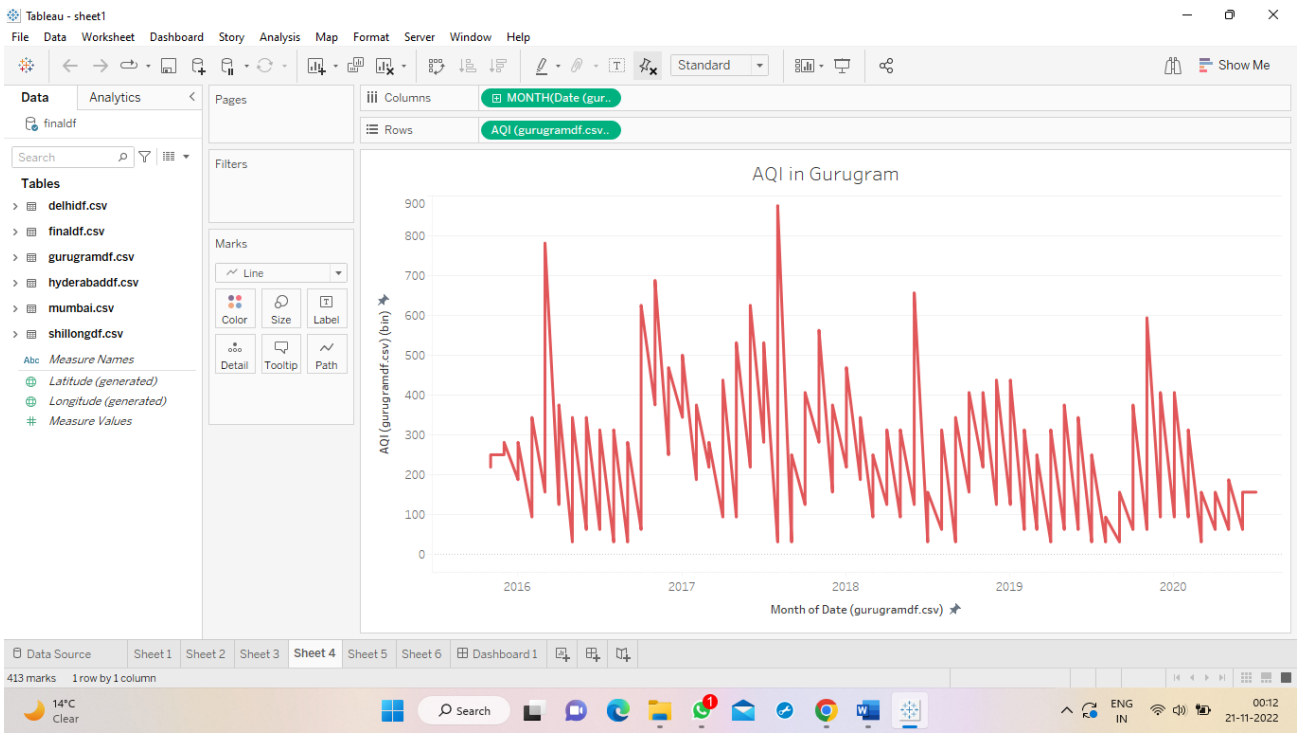
Variation in PM10 level in Delhi in Past Months

We have plotted the PM10 level against the Date field on the basis of Months of Delhi dataset to obtain the desired view.



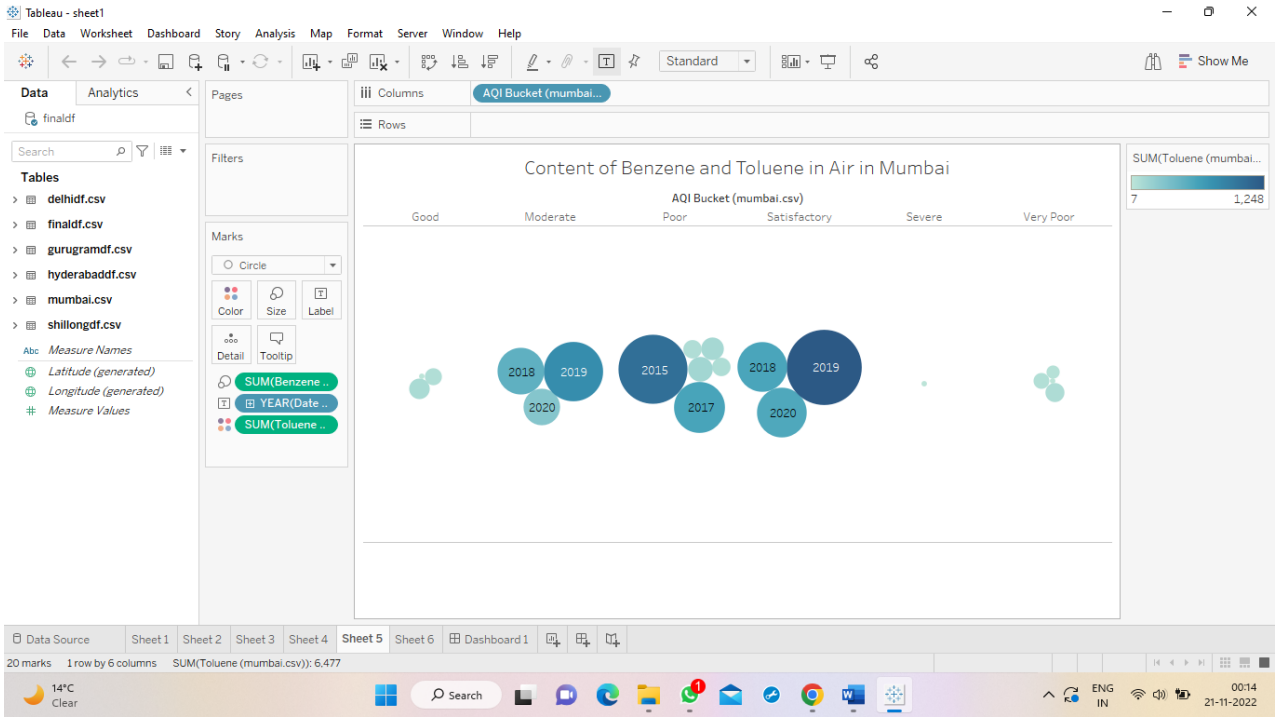
Percentage of SO2 and NO2 in Hyderabad

This pie chart is plotted using SO2 and NO2 details of Hyderabad dataset to depict the percentage of the two gases in AQI level of the city.



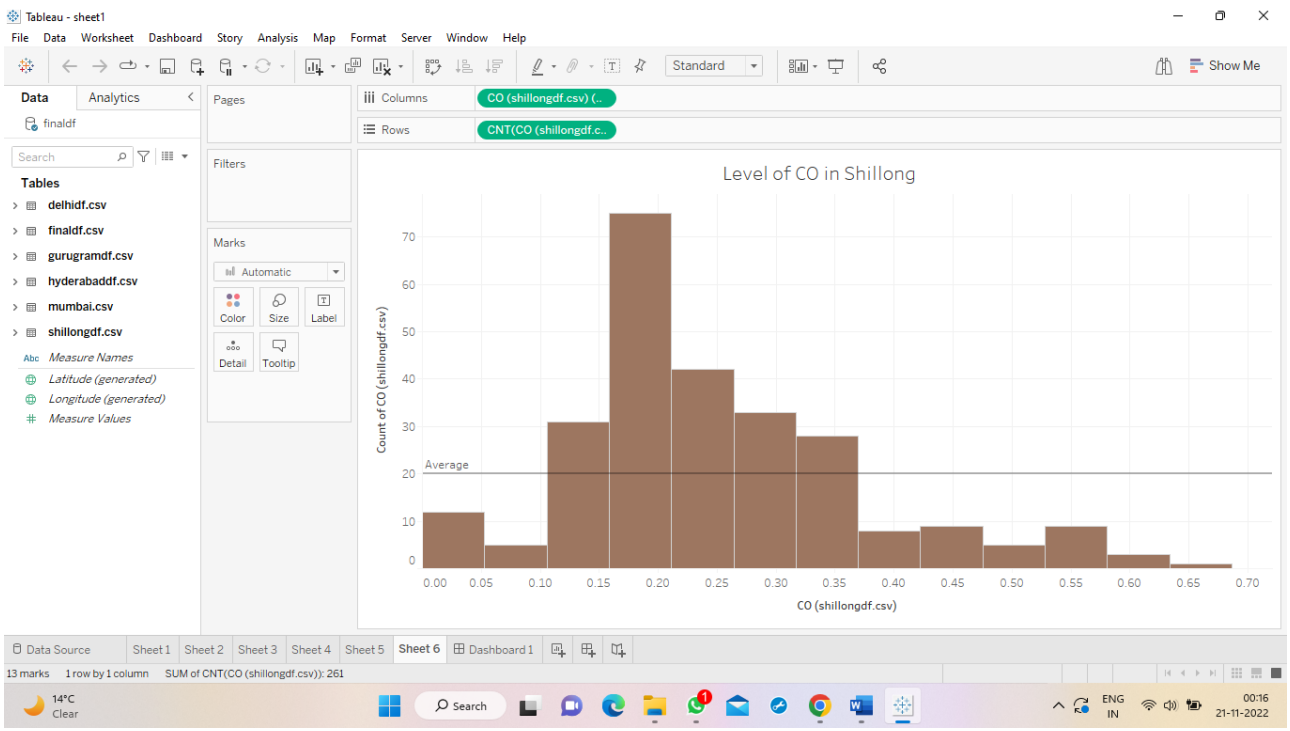
AQI in Gurugram

This line chart is an analysis of the amount of AQI pollutants present in air of Gurugram in the past five years.



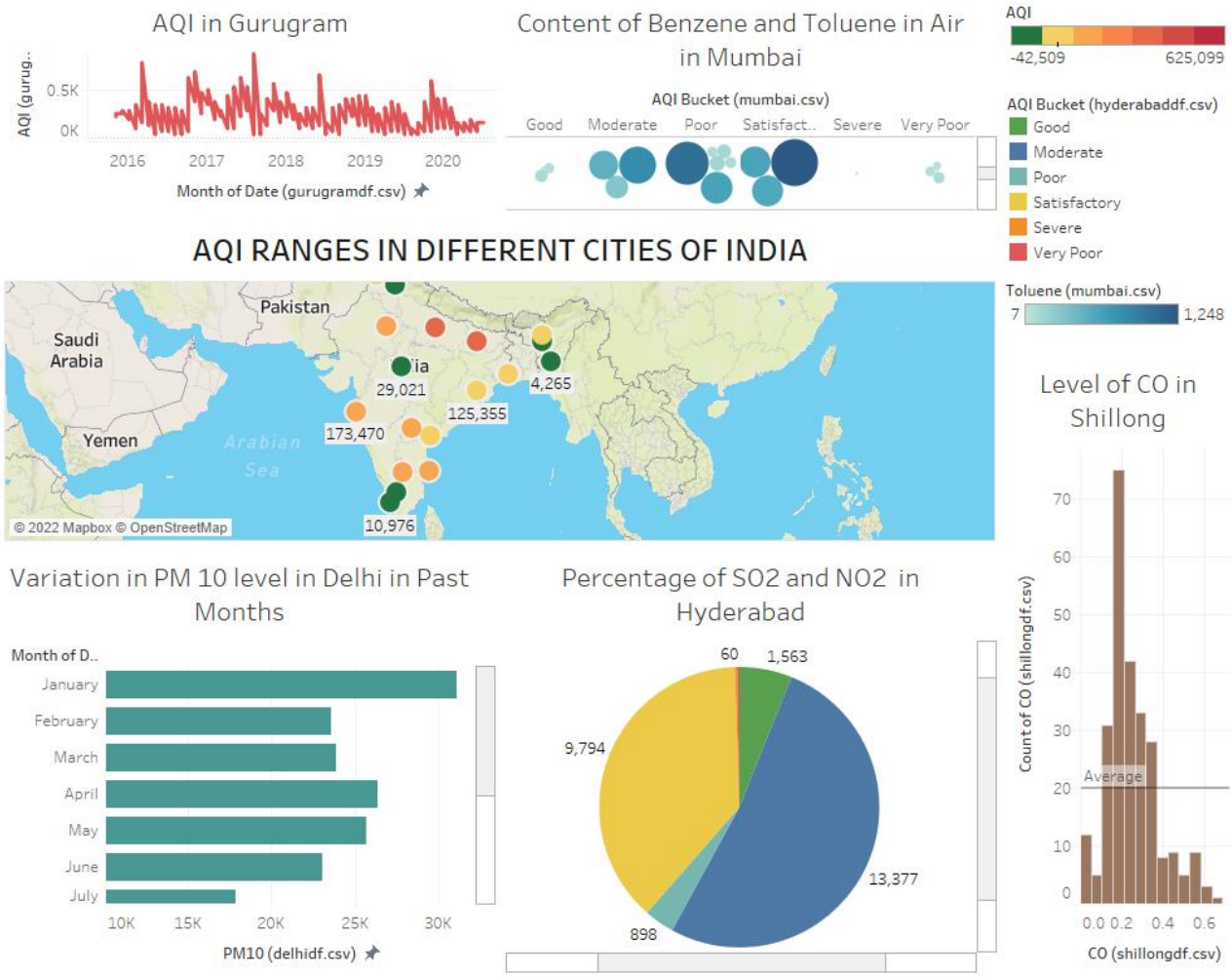
Content of Benzene and Toluene in Air in Mumbai

This is another graph describing the content of the two harmful chemicals in air of Mumbai, and which year they have been the most in quantity.



Level of CO in Shillong

The above histogram is a depiction of CO levels in Shillong according to the dataset. We can infer that lesser quantity of CO is present in more frequency in the city, ie Shillong has comparatively cleaner air!



This is our final AQI Dashboard.

SUBMITTED TO : Mrs. Geeta Kasana