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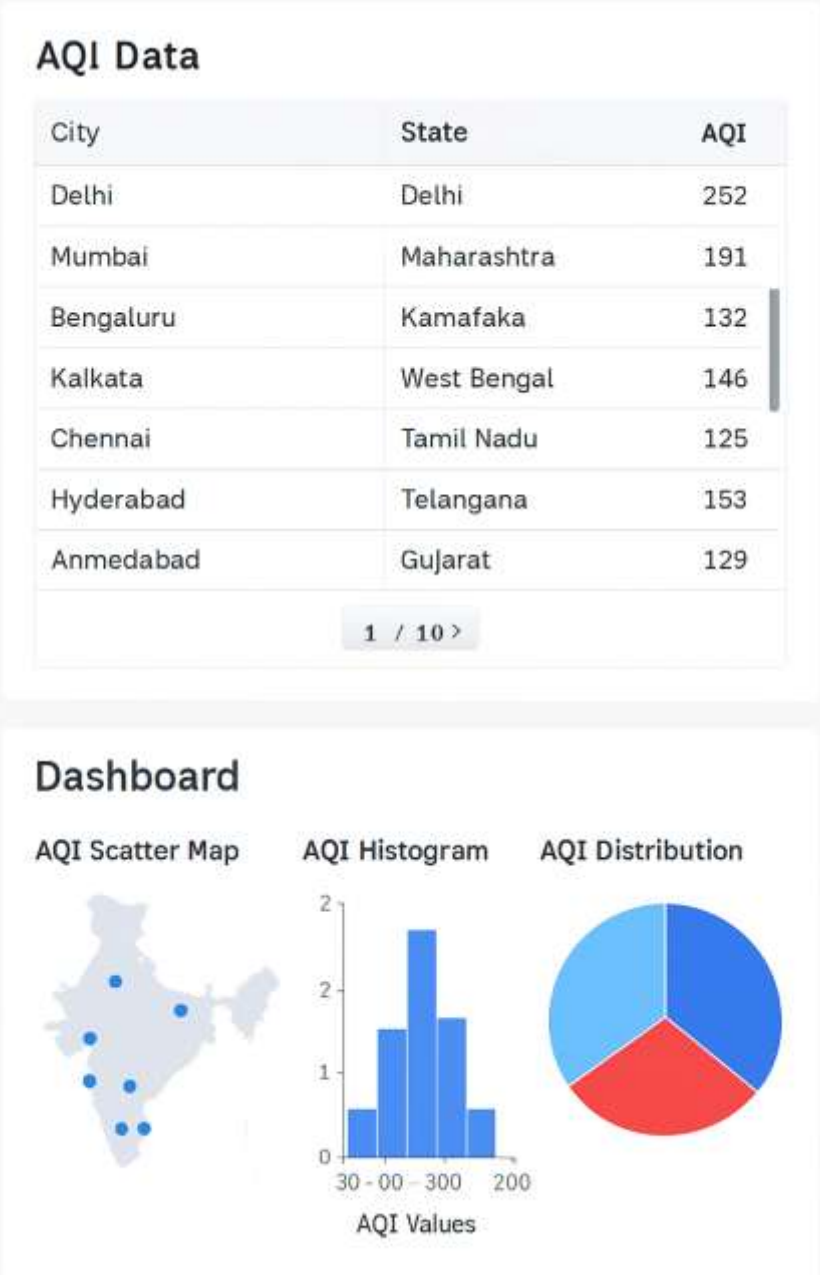
GitHub Link: https://github.com/ArpanC03/Guvi-Project-1-Data-Science



DATA SCIENCE INTERN

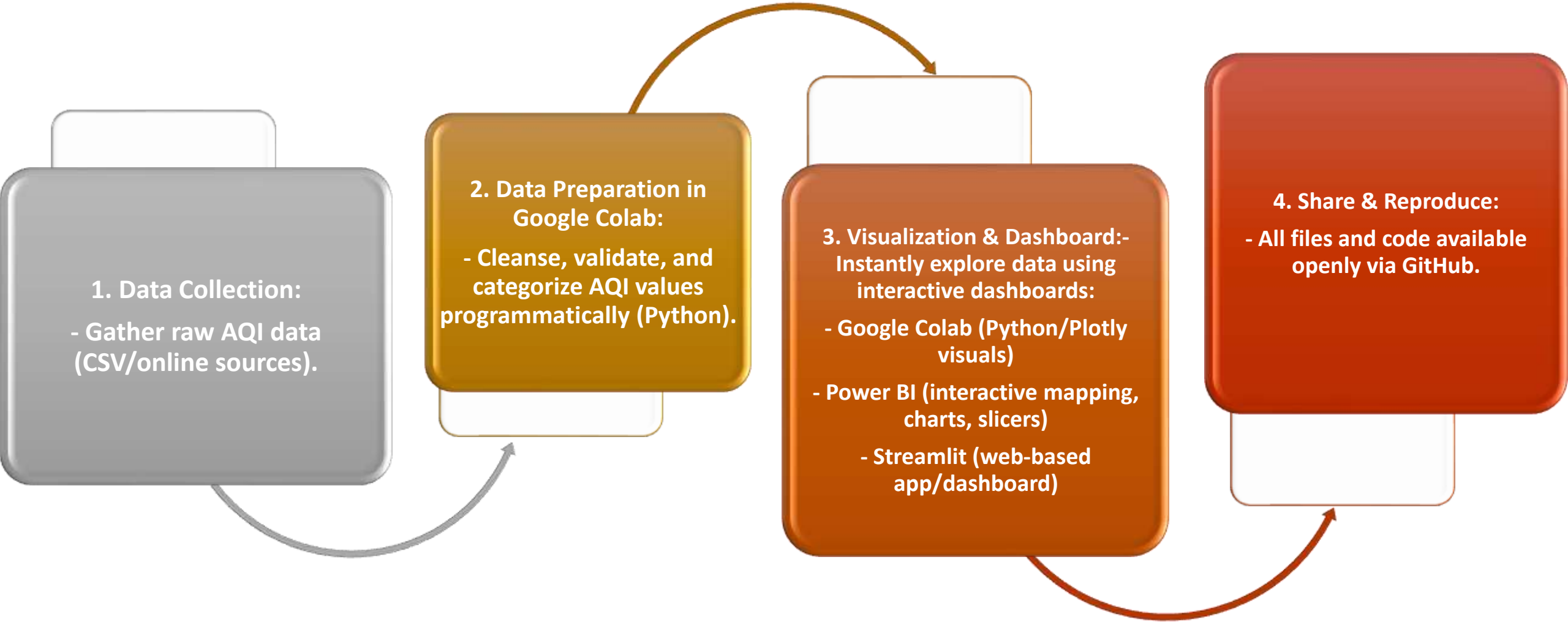
Problem Statement 5:

- AQI Mapping of Indian Cities
- Mapping of AQI readings using geospatial visualizations.
- Choropleth map by AQI
- Tooltip: City name + AQI
- AQI filter: Good, Moderate, Poor

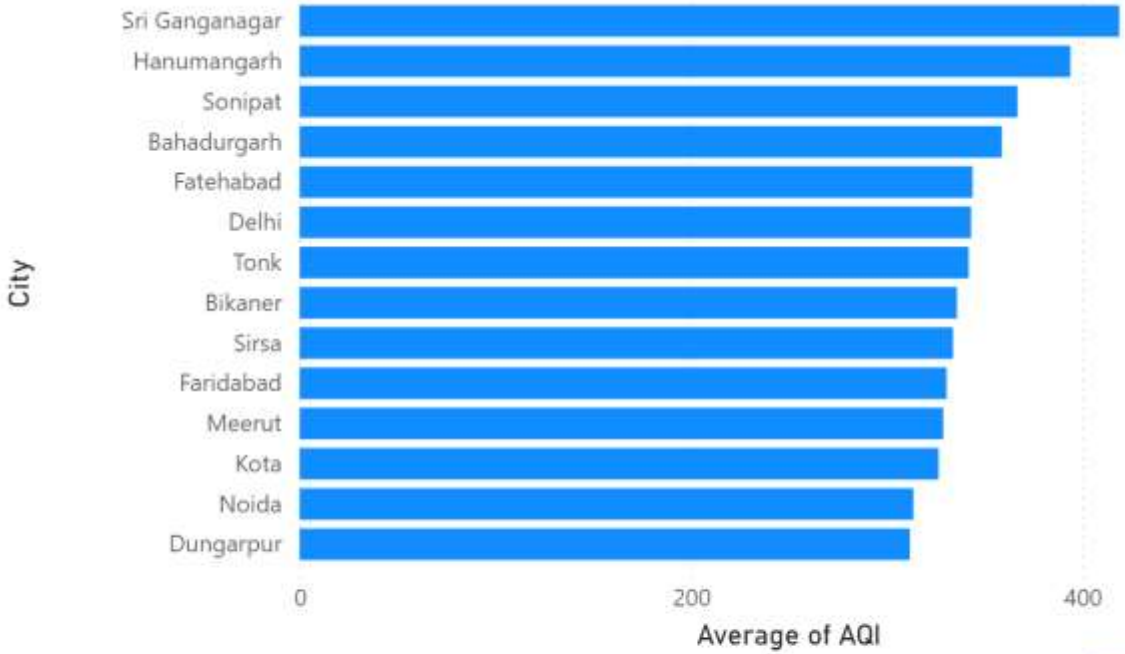
Air pollution in Indian cities is a major environmental and health concern, but city-level AQI data is complex, scattered, and difficult for citizens or policymakers to interpret quickly.

Our goal: Build an interactive dashboard that streamlines exploration, visualization, and analysis of real AQI data for all major Indian cities, to empower evidence-driven action and awareness.

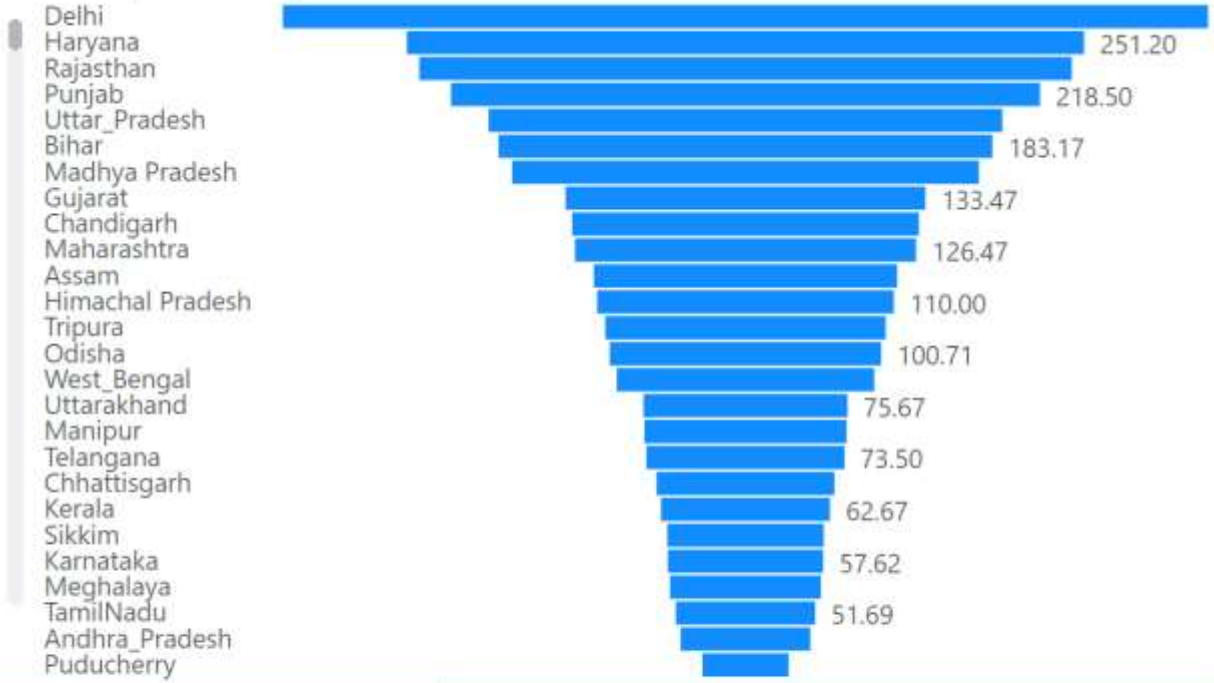
DATA PIPELINE AND WORKFLOW



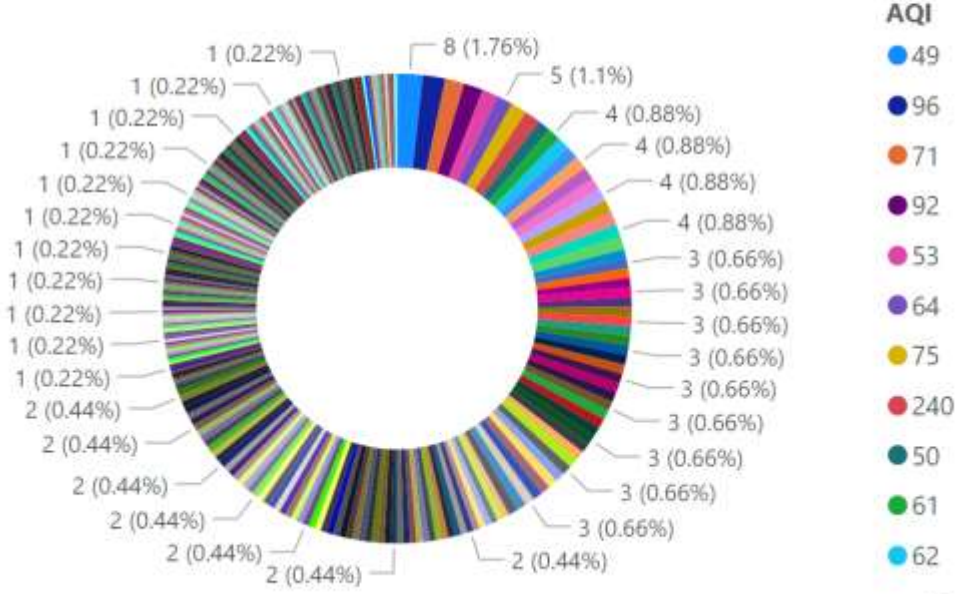
Average of AQI by City



Average of AQI by State



Count of City by AQI



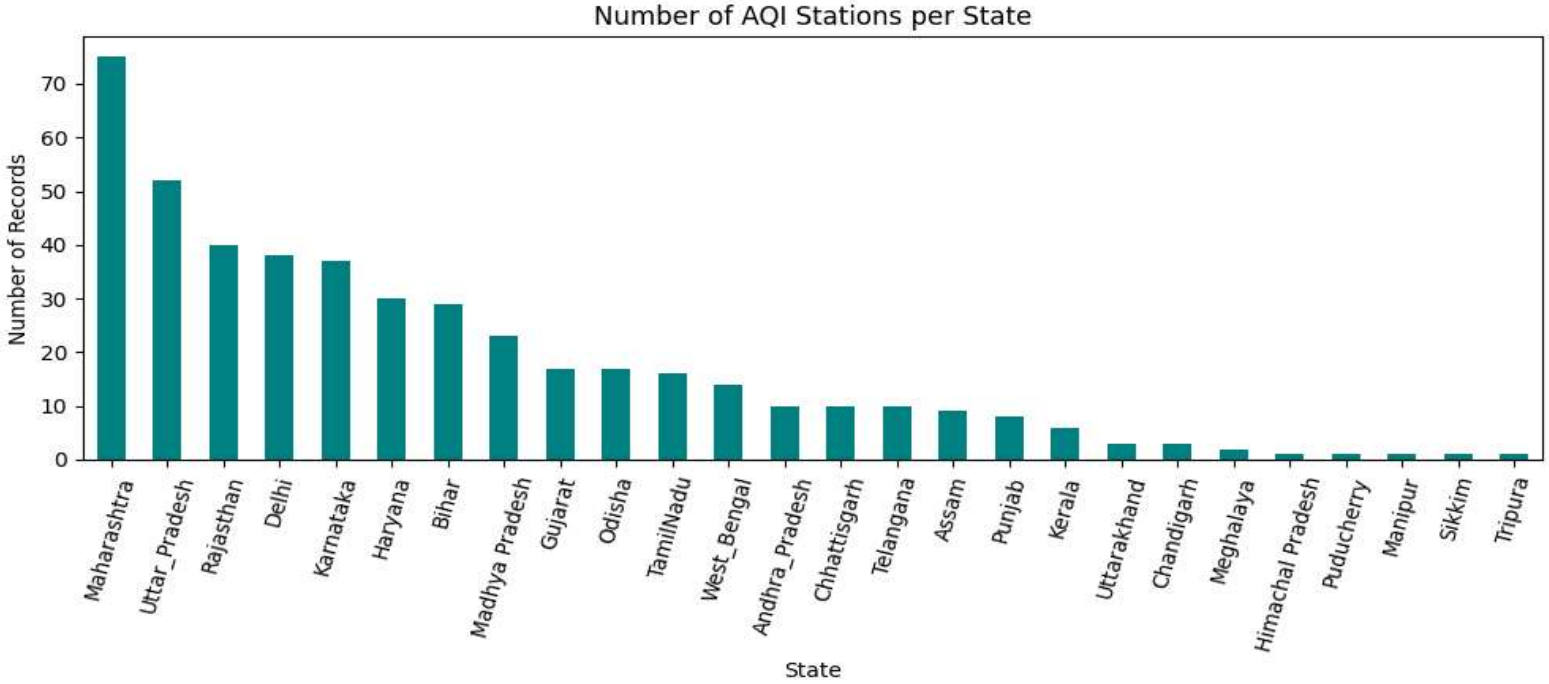
244

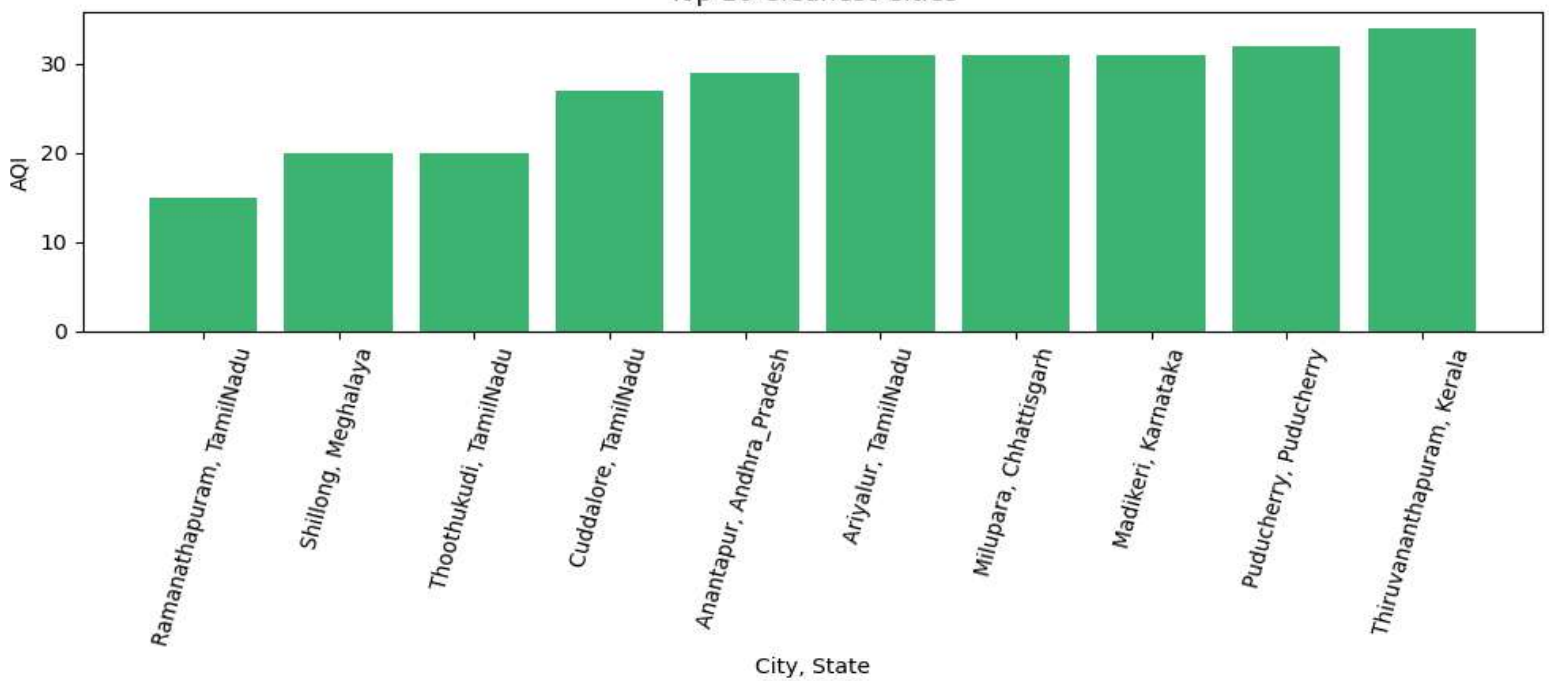
Count of City

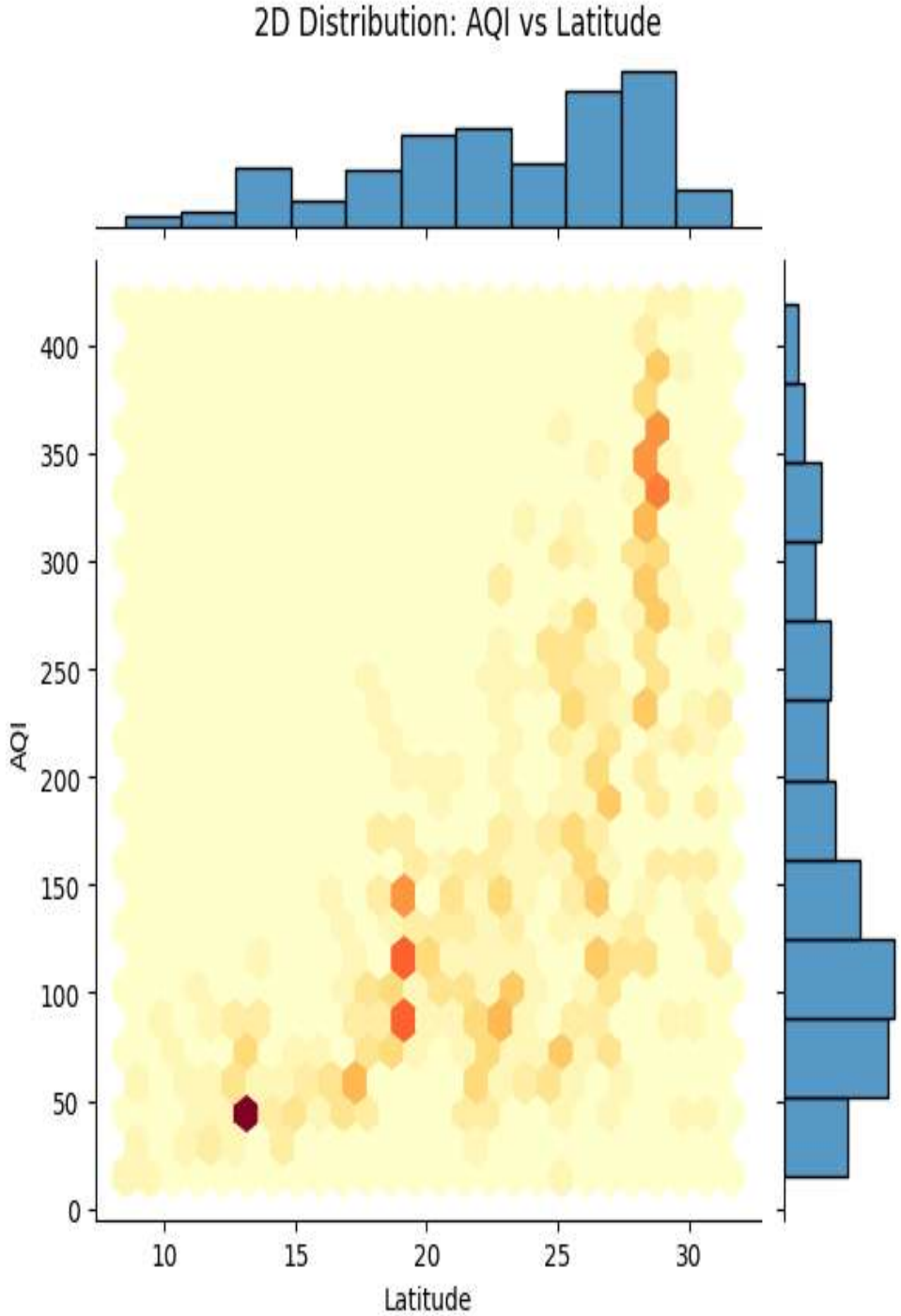
Average of AQI by State

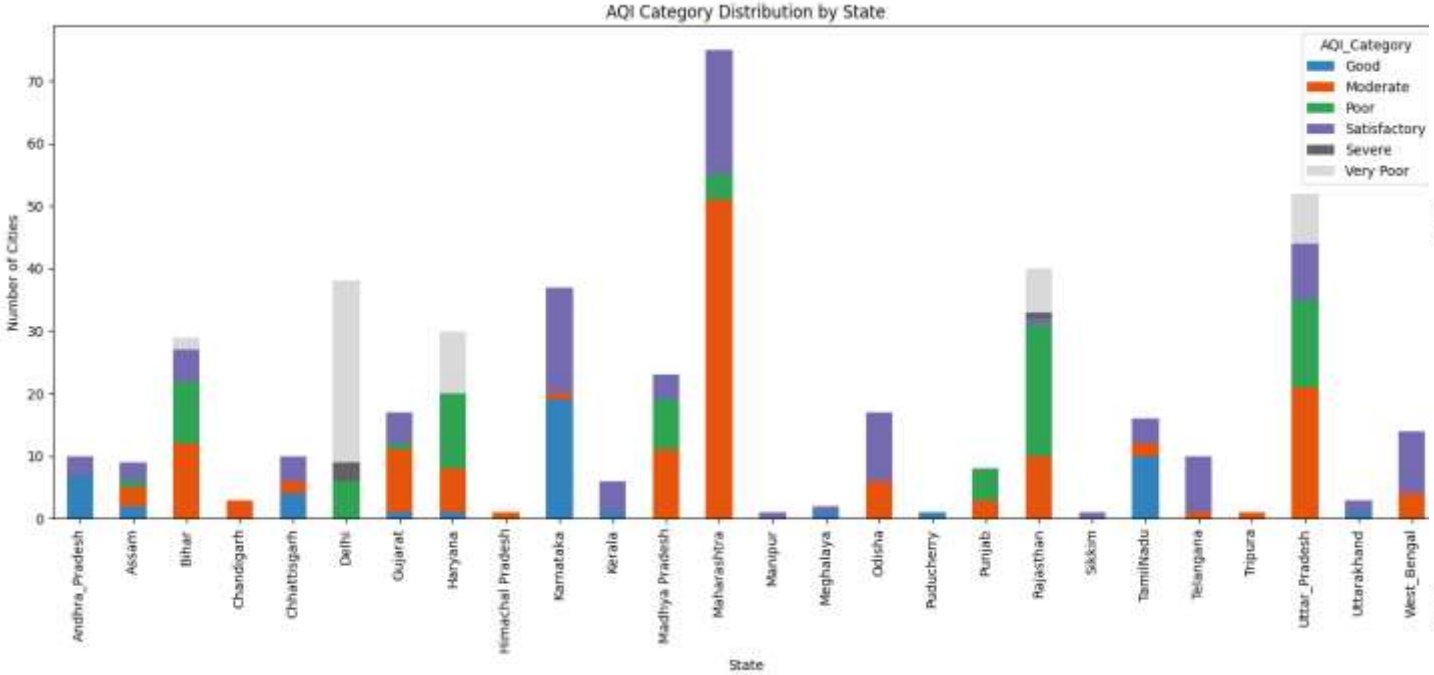
95.50

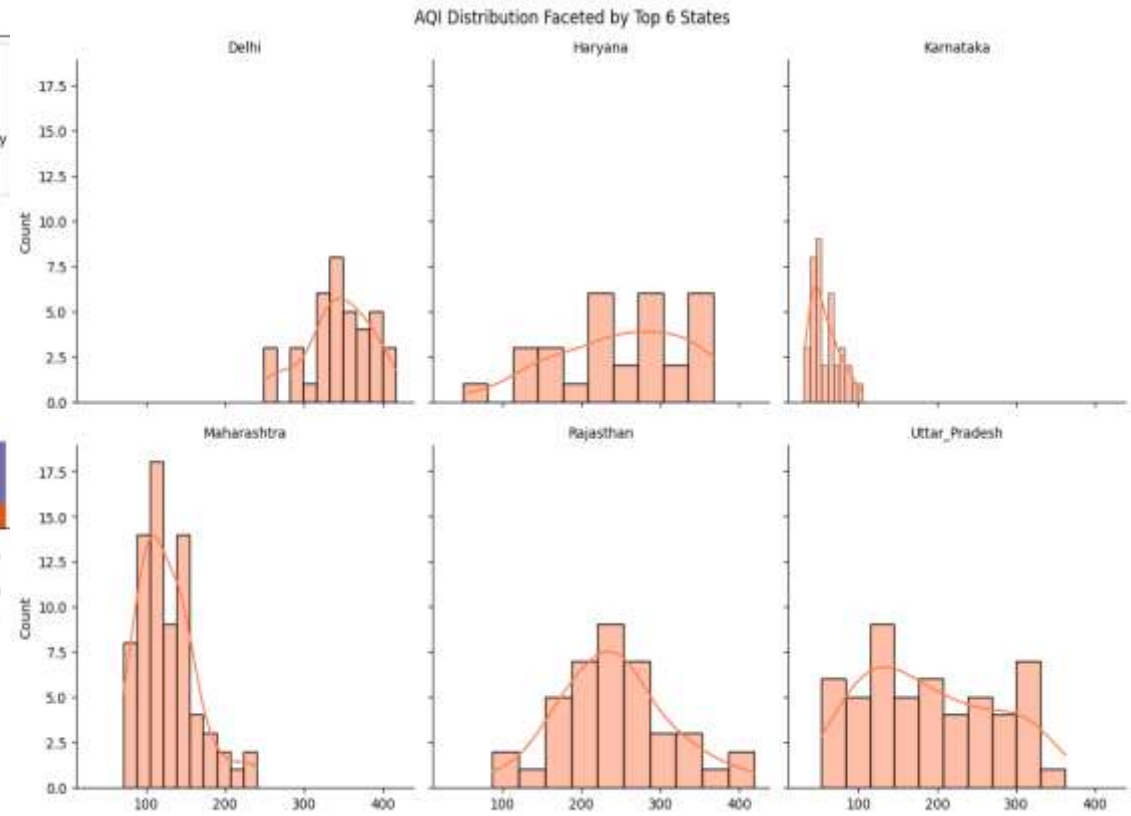
City	State	Average of AQI	Sum of AQI
Agartala	Tripura	104.00	104
Agra	Uttar_Pradesh	93.00	558
Ahmedabad	Gujarat	126.44	1138
Ahmednagar	Maharashtra	110.00	110
Ajmer	Rajasthan	151.00	151
Akola	Maharashtra	113.00	113
Alwar	Rajasthan	114.00	114
Ambala	Haryana	163.00	163
Amravati	Maharashtra	119.50	239
Amritsar	Punjab	261.00	261
Anantapur	Andhra_Pradesh	29.00	29
Total		**161.56**	**73346**

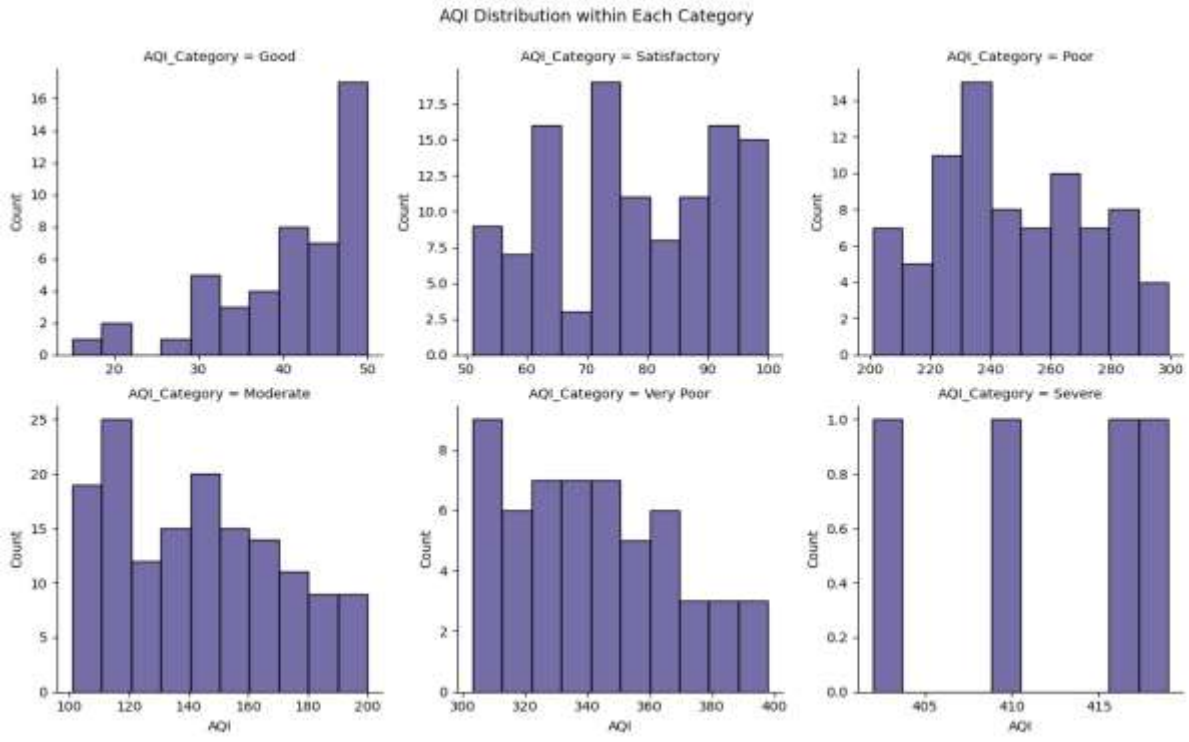

Number of AQI Stations per State
Number of Records
0
10
20
30
40
50
60
70
Maharashtra
Uttar_Pradesh
Rajasthan
Delhi
Karnataka
Haryana
Bihar
Madhya Pradesh
Gujarat
Odisha
TamilNadu
West_Bengal
Andhra_Pradesh
Chhattisgarh
Telangana
Assam
Punjab
Kerala
Uttarakhand
Chandigarh
Meghalaya
Himachal Pradesh
Puducherry
Manipur
Sikkim
Tripura
State

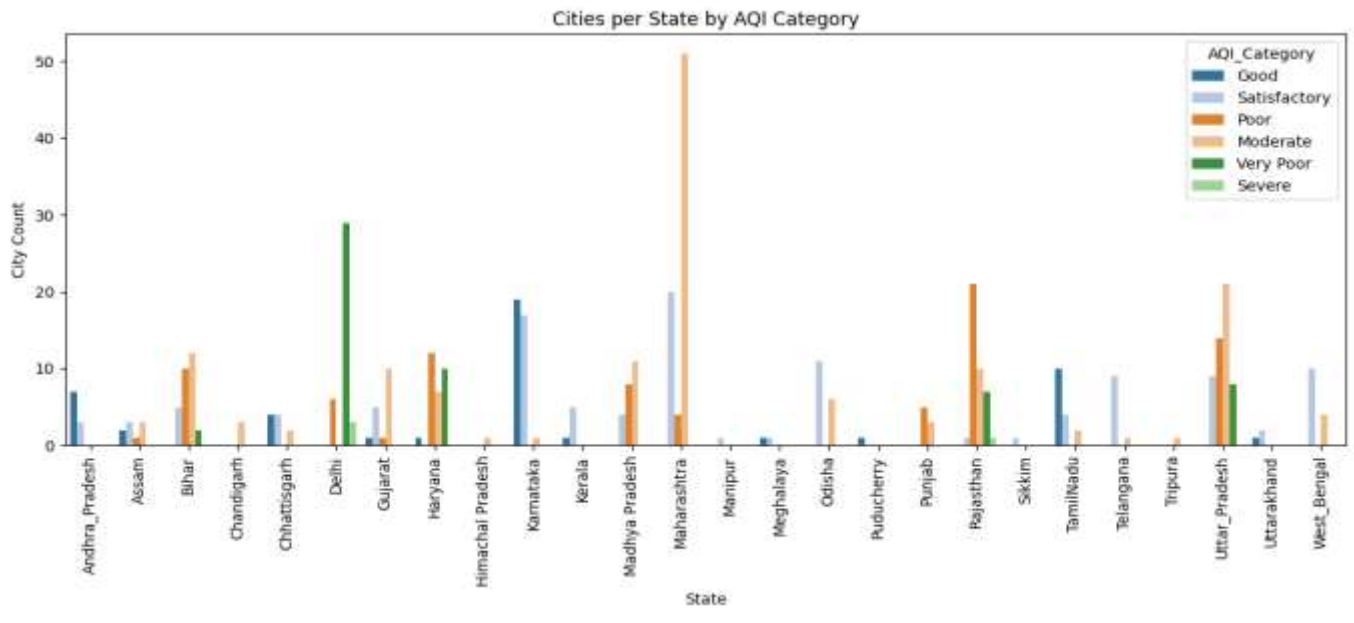

Top 10 Cleanest Cities
AQI
0
10
20
30
Ramanathapuram, TamilNadu
Shillong, Meghalaya
Thoothukudi, TamilNadu
Cuddalore, TamilNadu
Anantapur, Andhra_Pradesh
Ariyalur, TamilNadu
Milupara, Chhattisgarh
Madikeri, Karnataka
Puducherry, Puducherry
Thiruvananthapuram, Kerala
City, State

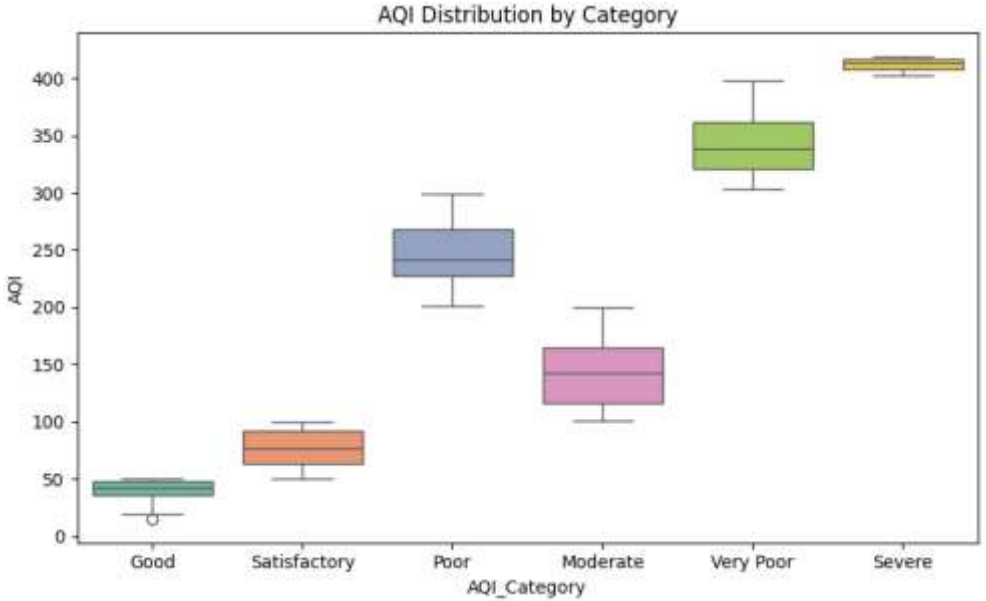

2D Distribution: AQI vs Latitude
AQI
0
50
100
150
200
250
300
350
400
10
15
20
25
30
Latitude

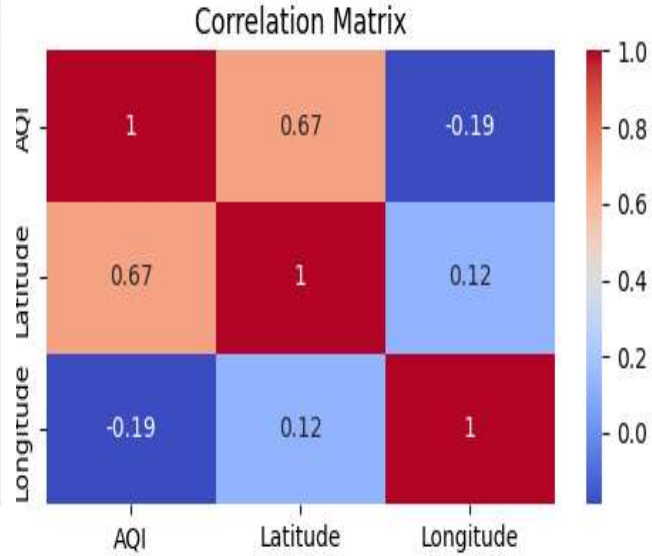

AQI Category Distribution by State
AQI_Category
Good
Moderate
Poor
Satisfactory
Severe
Very Poor
Number of Cities
State
Andhra_Pradesh
Assam
Bihar
Chandigarh
Chhattisgarh
Delhi
Gujarat
Haryana
Himachal Pradesh
Karnataka
Kerala
Madhya Pradesh
Maharashtra
Manipur
Meghalaya
Odisha
Puducherry
Punjab
Rajasthan
Sikkim
Tamilnadu
Telangana
Tripura
Uttar_Pradesh
Uttarakhand
West_Bengal

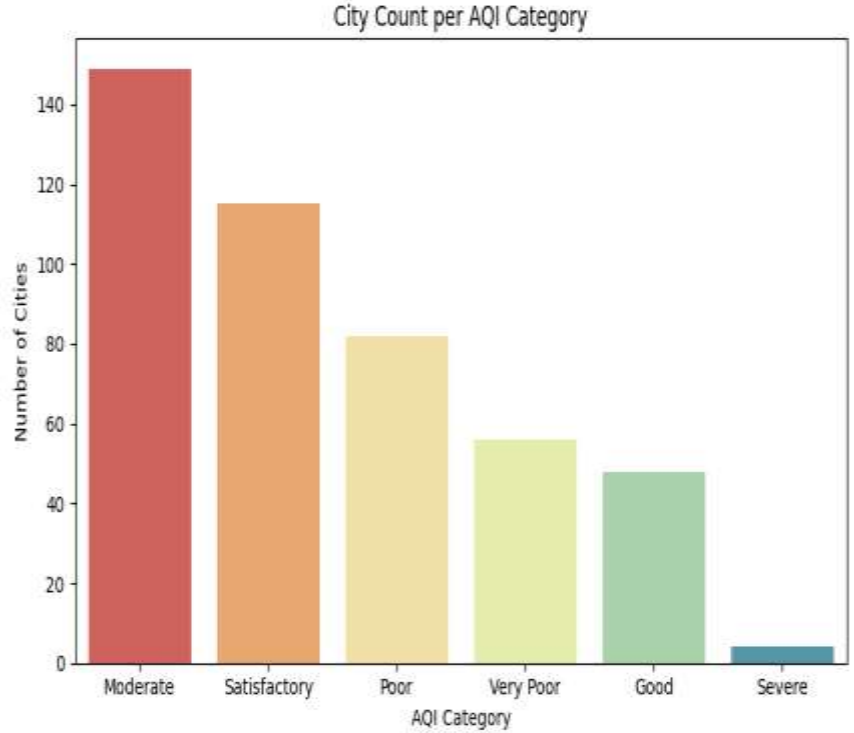

AQI Distribution Faceted by Top 6 States
Delhi
Haryana
Karnataka
Maharashtra
Rajasthan
Uttar_Pradesh
Count

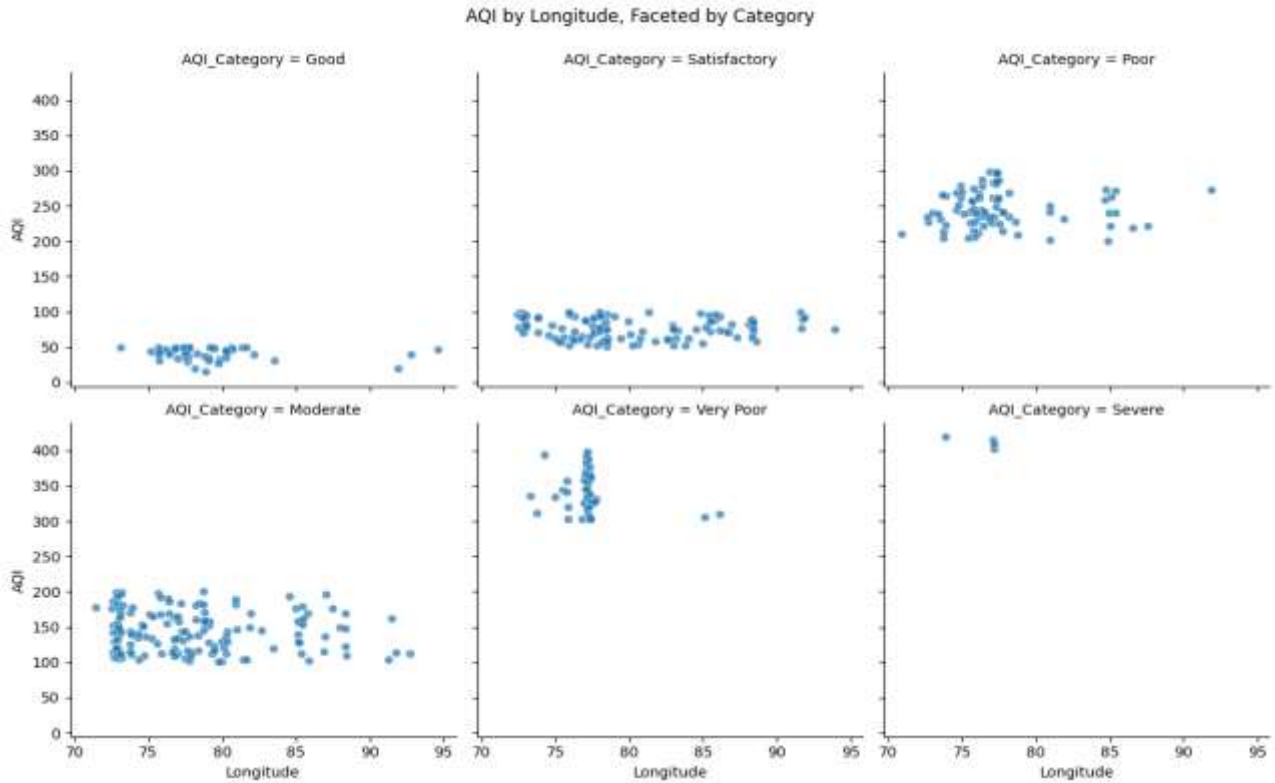

AQI Distribution within Each Category
AQI_Category = Good
AQI_Category = Satisfactory
AQI_Category = Poor
AQI_Category = Moderate
AQI_Category = Very Poor
AQI_Category = Severe
Count
AQI

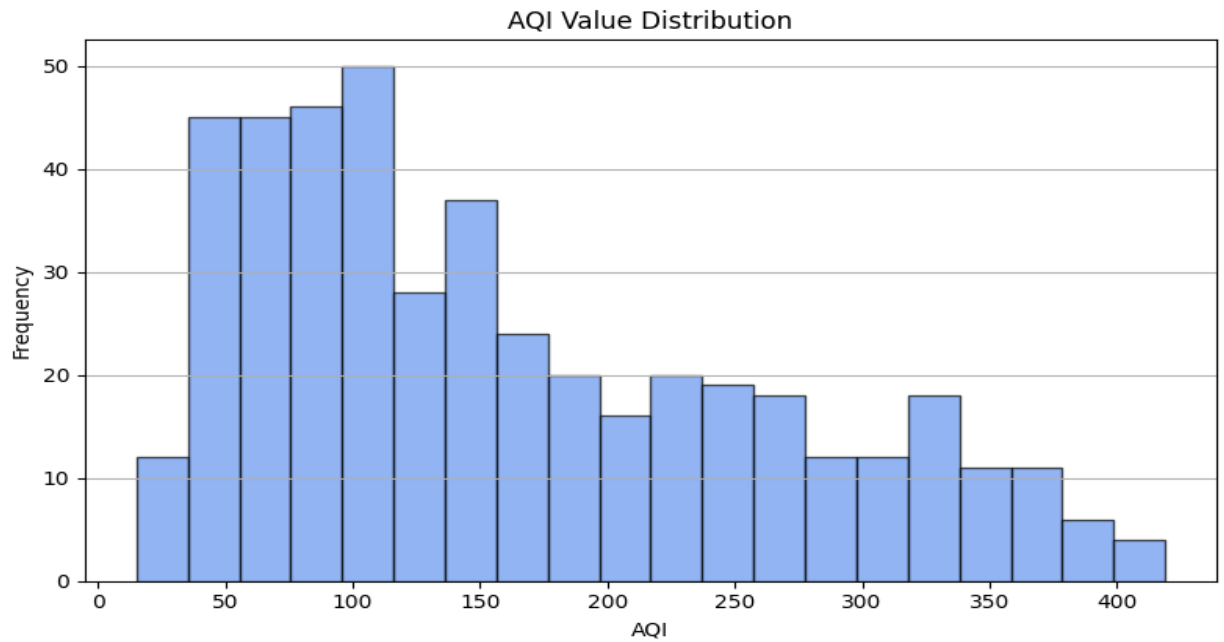

Cities per State by AQI Category
AQI_Category
Good
Satisfactory
Poor
Moderate
Very Poor
Severe
City Count
State
Andhra_Pradesh
Assam
Bihar
Chandigarh
Chhattisgarh
Delhi
Gujarat
Haryana
Himachal Pradesh
Karnataka
Kerala
Madhya Pradesh
Maharashtra
Manipur
Meghalaya
Odisha
Puducherry
Punjab
Rajasthan
Sikkim
Tamilnadu
Telangana
Tripura
Uttar_Pradesh
Uttarakhand
West_Bengal

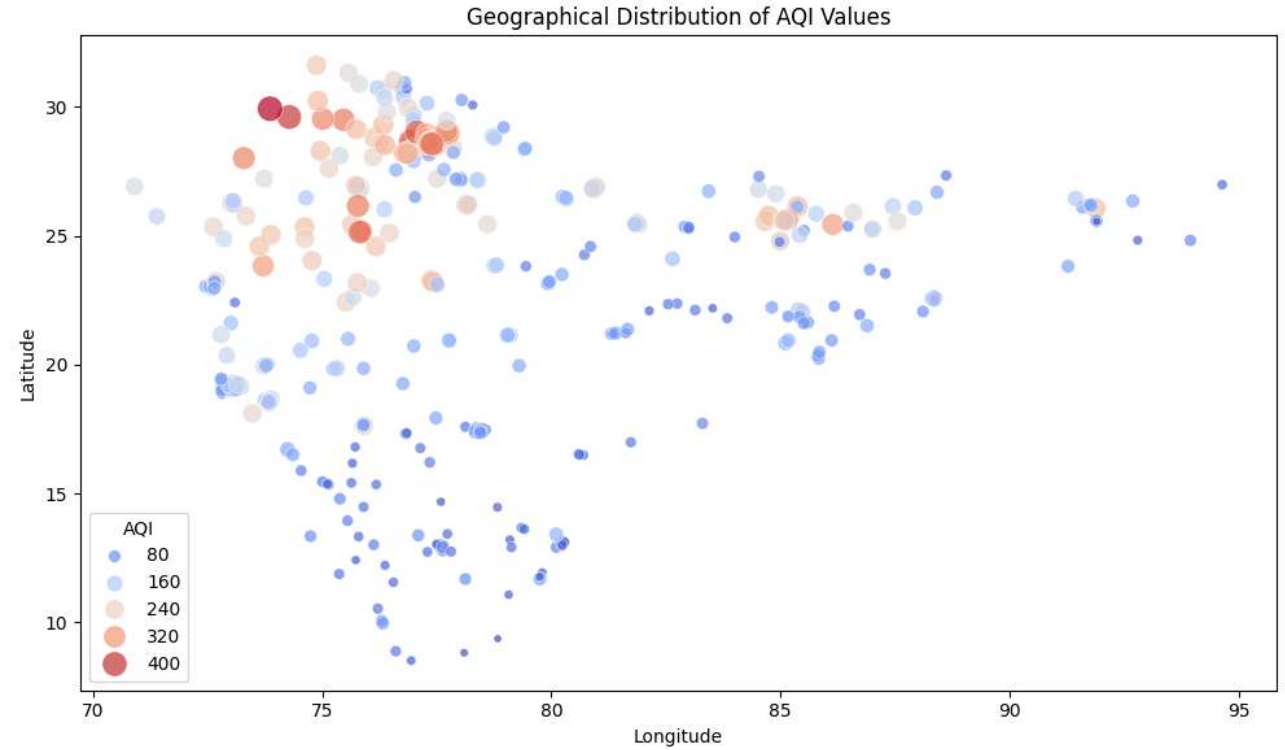

AQI Distribution by Category
AQI
AQI_Category
Good
Satisfactory
Poor
Moderate
Very Poor
Severe

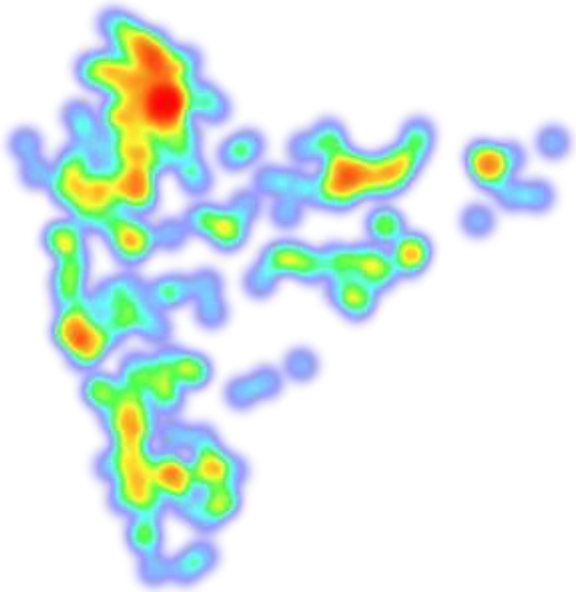

Correlation Matrix
AQI
Latitude
Longitude
1
0.67
-0.19
0.67
1
0.12
-0.19
0.12
1

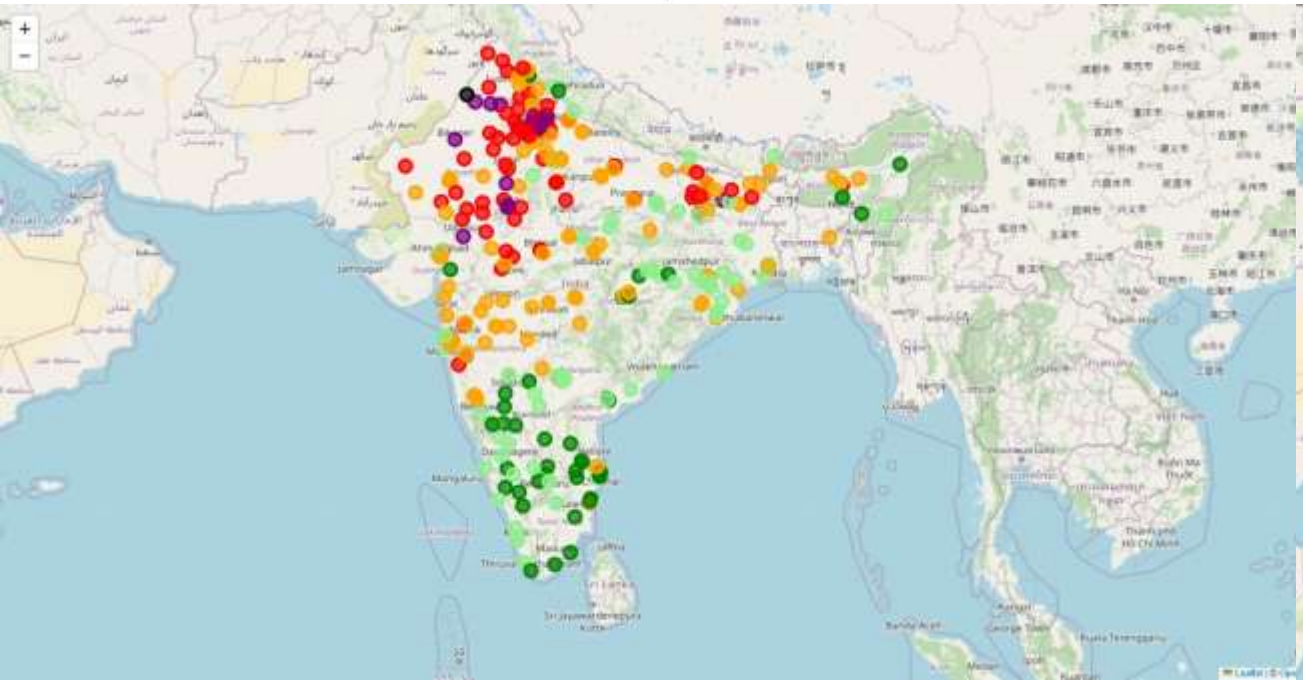

City Count per AQI Category
Number of Cities
AQI Category
Moderate
Satisfactory
Poor
Very Poor
Good
Severe

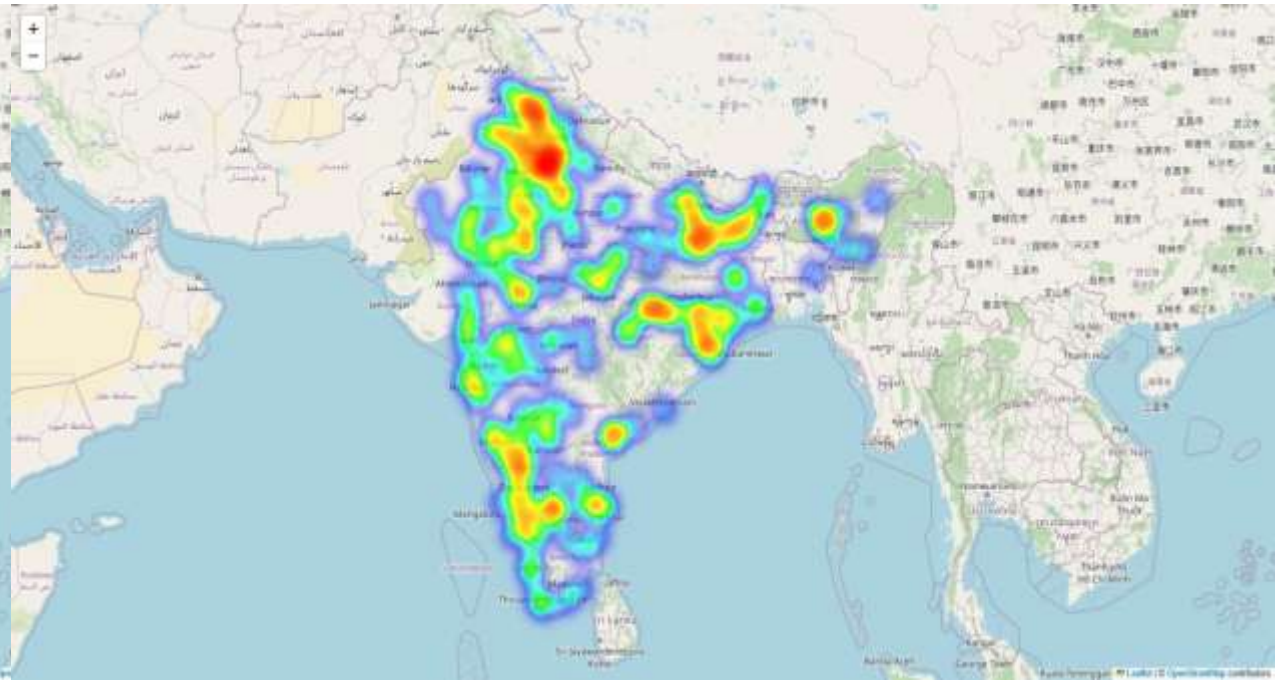

AQI by Longitude, Faceted by Category
AQI_Category = Good
AQI_Category = Satisfactory
AQI_Category = Poor
AQI_Category = Moderate
AQI_Category = Very Poor
AQI_Category = Severe
AQI
Longitude

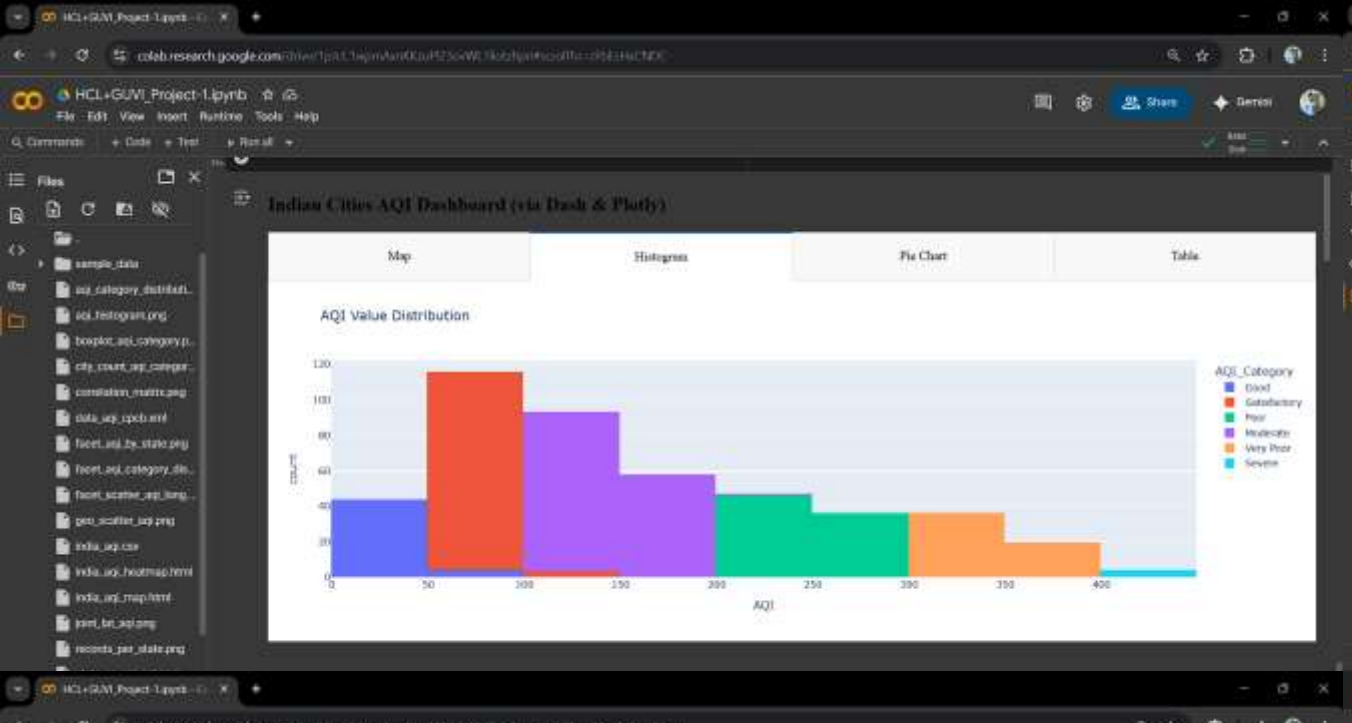

AQI Value Distribution
Frequency
AQI

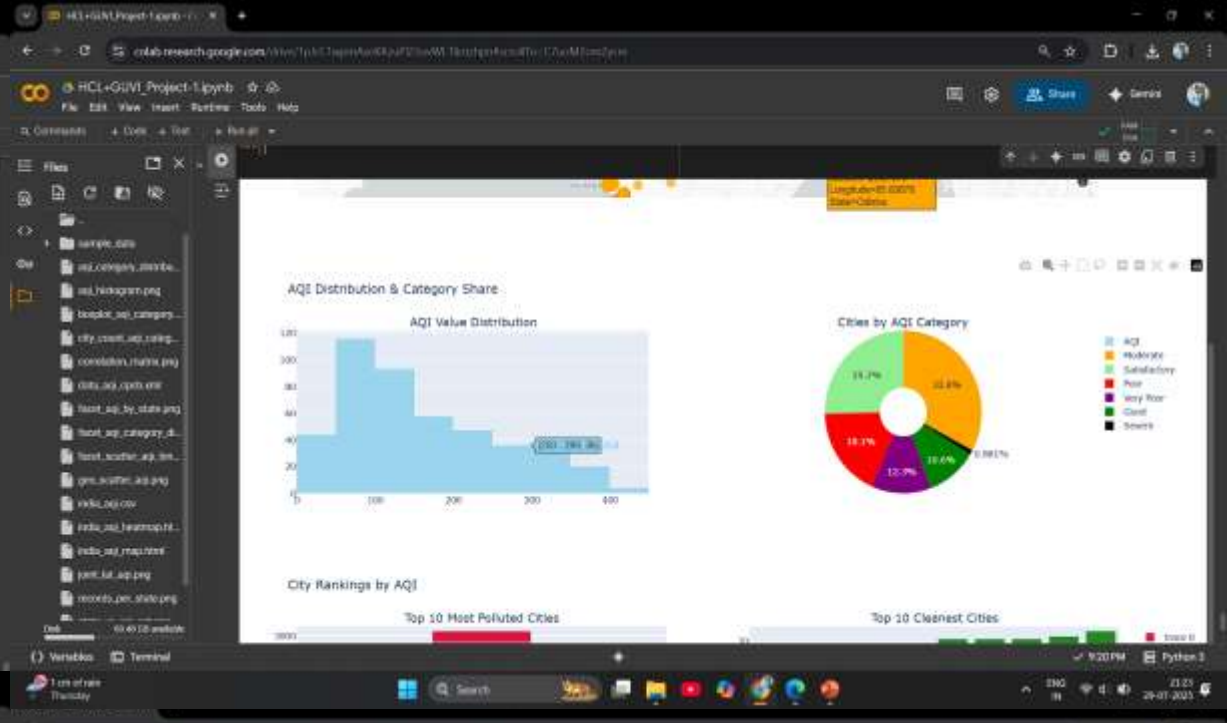

Geographical Distribution of AQI Values
Latitude
Longitude
AQI
80
160
240
320
400
30
25
20
15
10
70
75
80
85
90
95








HCL+GUVI_Project-1.ipynb
Indian Cities AQI Dashboard (via Dash & Plotly)
Map
Histogram
Pie Chart
Table
AQI Value Distribution
AQI_Category
Good
Satisfactory
Poor
Moderate
Very Poor
Severe
COUNT
AQI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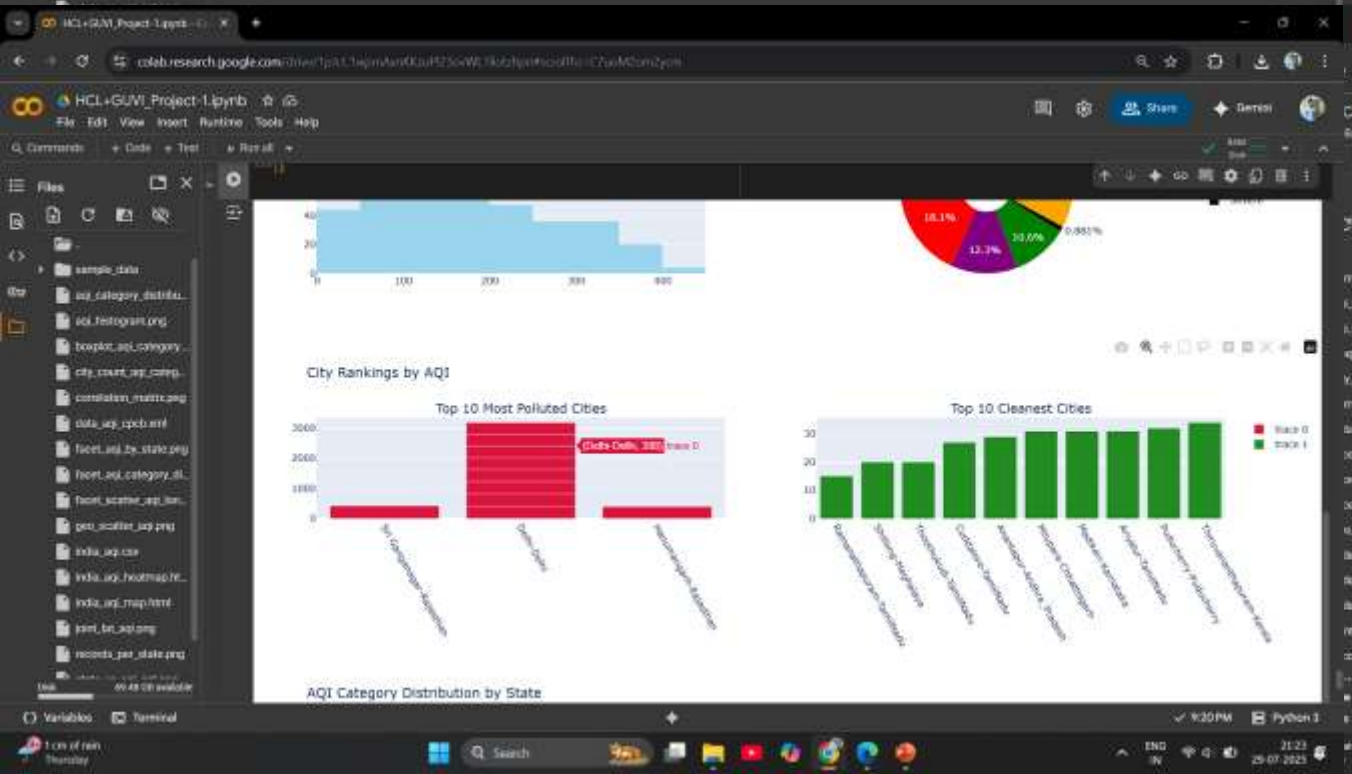
AQI Distribution & Category Share
AQI Value Distribution
Cities by AQI Category
City Rankings by AQI
Top 10 Most Polluted Cities
Top 10 Cleanest Cities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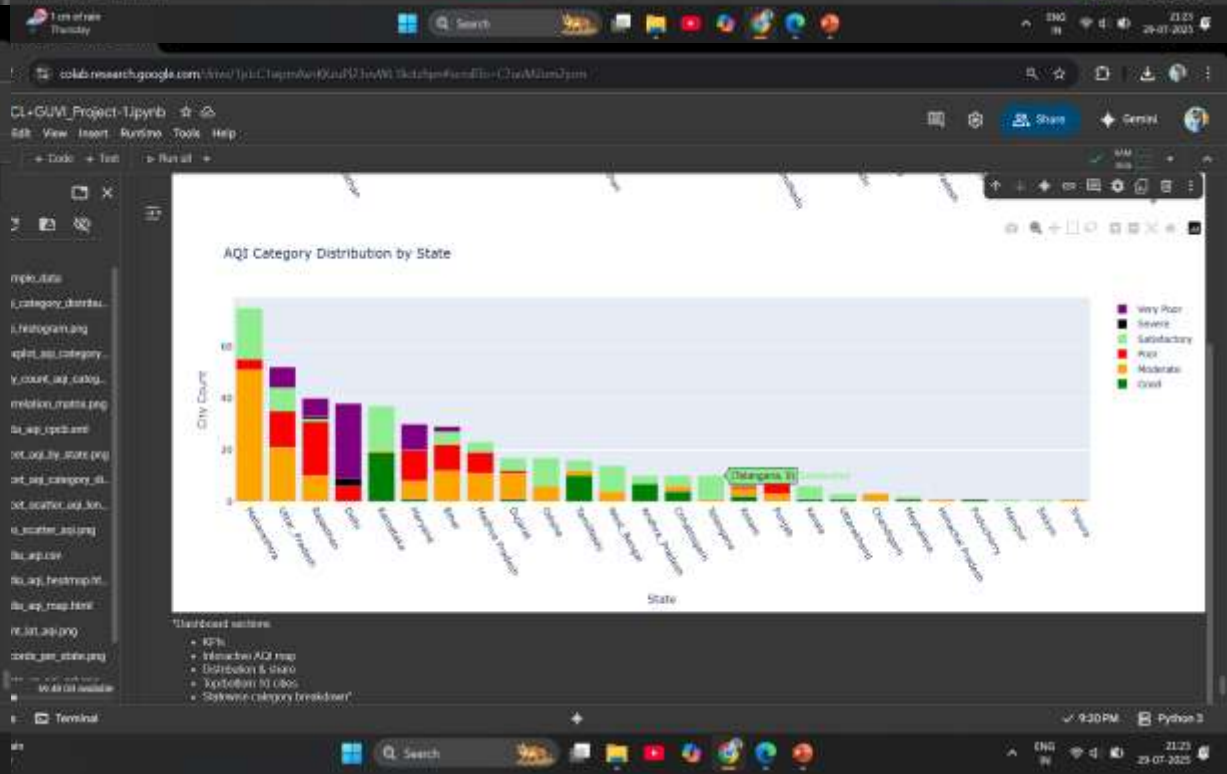
City Rankings by AQI
Top 10 Most Polluted Cities
Top 10 Cleanest Cities
AQI Category Distribution by State


CI+GUVI_Project-1.ipynb
AQI Category Distribution by State
City Count
State
Very Poor
Severe
Satisfactory
Poor
Moderate
Good

Air Quality Index (AQI) Dashboard - Indian Cities

AQI Data Table

Page Number

1

	City	State	Latitude	Longitude	AQI	AQI_Category
0	Anantapur	Andhra_Pradesh	14.6759	77.593	29	Good
1	Chittoor	Andhra_Pradesh	13.2049	79.0979	35	Good
2	Kadapa	Andhra_Pradesh	14.4651	78.8242	37	Good
3	Rajamahendravaram	Andhra_Pradesh	16.9873	81.7363	58	Satisfactory
4	Tirupati	Andhra_Pradesh	13.67	79.35	49	Good
5	Tirupati	Andhra_Pradesh	13.6154	79.4092	48	Good
6	Vijayawada	Andhra_Pradesh	16.5361	80.5942	50	Good
7	Vijayawada	Andhra_Pradesh	16.4867	80.6994	47	Good

Dashboard Visualizations

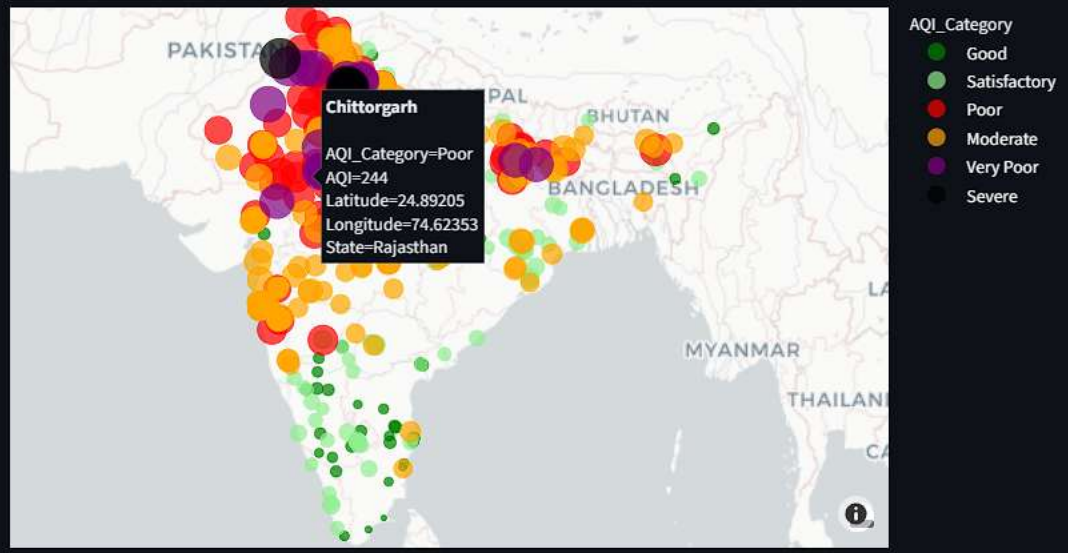
HCL+GUVI_Project-1.ipynb - Co | Streamlit | app.py - Colab

full-crews-smell.loca.lt

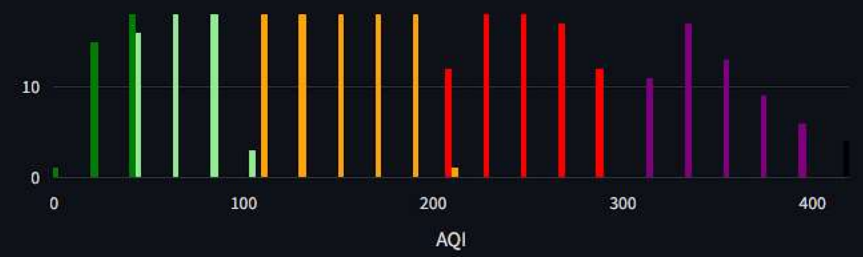
Dashboard Visualizations

Total Cities	Average AQI	Most Polluted City
244	161.6	Sri Gangana...

Cleanest City: Ramanathapuram (15)



27°C Haze | Search | ENG IN | 22:30 29-07-2025



Top 10 Most Polluted Cities

Top 10 Cleanest Cities

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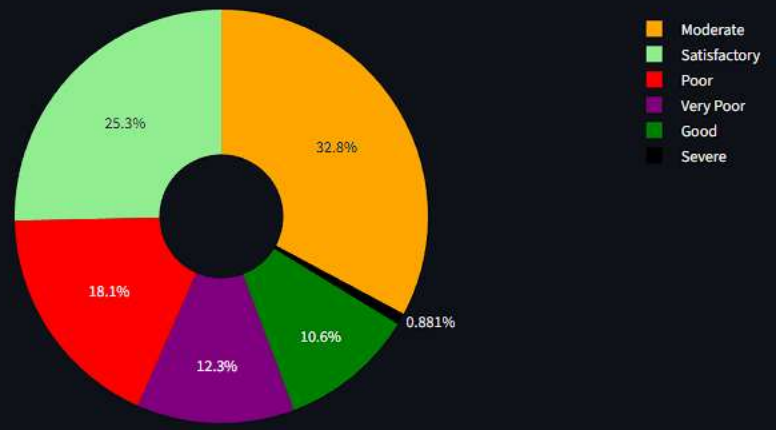
Streamlit
app.py - Colab
full-crews-smell.loca.lt

Top 10 Cleanest Cities



27°C
Haze
Search
ENG
IN
22:30
29-07-2025

Thank You...