MIT | Academy of Engineering

(An Autonomous Institute Affiliated to Savitribai Phule Pune University)

AIR QUILITY INDEX ANALYSIS USING BIG DATA ANALYTICS

Group Presentation

GROUP Members name

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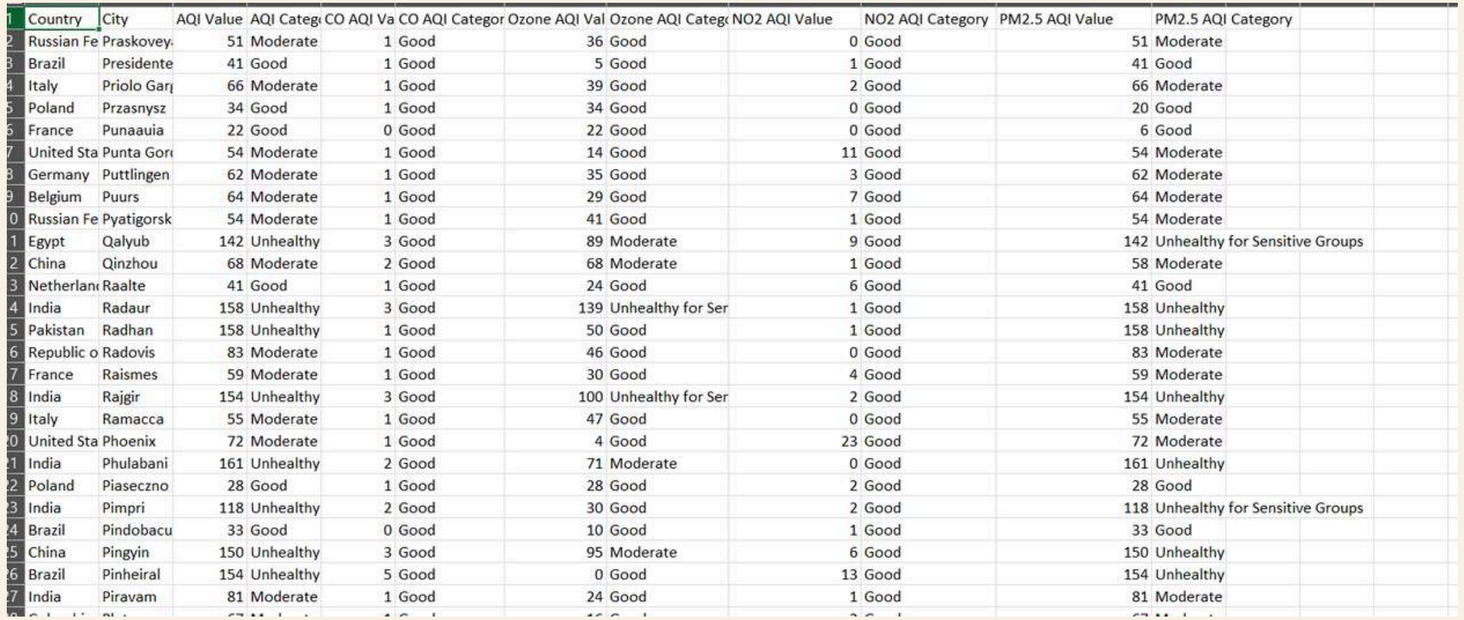
Problem Statement:

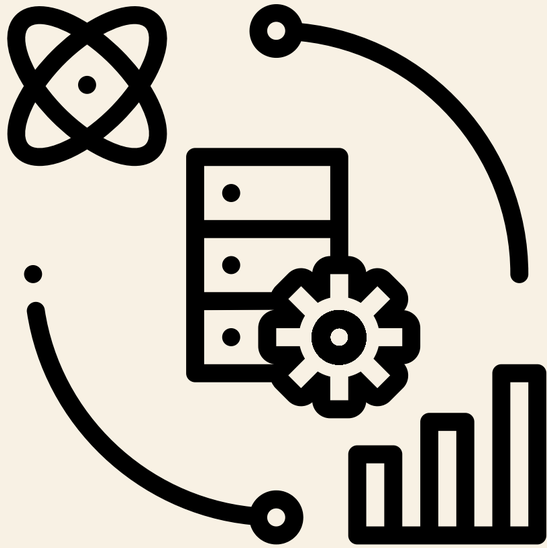
Due to increasing global pollution, air quality has become a major health concern worldwide. This project analyzes AQI data to identify the most polluted countries and categorize air quality levels to support better environmental decision-making.

dataset used - https://www.kaggle.com/datasets/hasibalmuzdadid/global-air-pollution-dataset?resource=download



Country	City	AQI Value	AQI Categ	CO AQI Va	CO AQI Categor	Ozone AQI Val	Ozone AQI Categ	NO2 AQI Value	NO2 AQI Category	PM2.5 AQI Value	PM2.5 AQI Category
Russian Fe	Praskovey	51	Moderate	1	Good	36	Good	0	Good	51	Moderate
Brazil	Presidente	41	Good	1	Good	5	Good	1	Good	41	Good
Italy	Priolo Gar	66	Moderate	1	Good	39	Good	2	Good	66	Moderate
Poland	Przasnysz	34	Good	1	Good	34	Good	0	Good	20	Good
France	Punaauia	22	Good	0	Good	22	Good	0	Good	6	Good
United Sta	Punta Gor	54	Moderate	1	Good	14	Good	11	Good	54	Moderate
Germany	Puttlingen	62	Moderate	1	Good	35	Good	3	Good	62	Moderate
Belgium	Puurs	64	Moderate	1	Good	29	Good	7	Good	64	Moderate
Russian Fe	Pyatigorsk	54	Moderate	1	Good	41	Good	1	Good	54	Moderate
Egypt	Qalyub	142	Unhealthy	3	Good	89	Moderate	9	Good	142	Unhealthy for Sensitive Groups
China	Qinzhou	68	Moderate	2	Good	68	Moderate	1	Good	58	Moderate
Netherlan	Raalte	41	Good	1	Good	24	Good	6	Good	41	Good
India	Radaur	158	Unhealthy	3	Good	139	Unhealthy for Ser	1	Good	158	Unhealthy
Pakistan	Radhan	158	Unhealthy	1	Good	50	Good	1	Good	158	Unhealthy
Republic o	Radovis	83	Moderate	1	Good	46	Good	0	Good	83	Moderate
France	Raismes	59	Moderate	1	Good	30	Good	4	Good	59	Moderate
India	Rajgir	154	Unhealthy	3	Good	100	Unhealthy for Ser	2	Good	154	Unhealthy
Italy	Ramacca	55	Moderate	1	Good	47	Good	0	Good	55	Moderate
United Sta	Phoenix	72	Moderate	1	Good	4	Good	23	Good	72	Moderate
India	Phulabani	161	Unhealthy	2	Good	71	Moderate	0	Good	161	Unhealthy
Poland	Piaseczno	28	Good	1	Good	28	Good	2	Good	28	Good
India	Pimpri	118	Unhealthy	2	Good	30	Good	2	Good	118	Unhealthy for Sensitive Groups
Brazil	Pindobacu	33	Good	0	Good	10	Good	1	Good	33	Good
China	Pingyin	150	Unhealthy	3	Good	95	Moderate	6	Good	150	Unhealthy
Brazil	Pinheiral	154	Unhealthy	5	Good	0	Good	13	Good	154	Unhealthy
India	Piravam	81	Moderate	1	Good	24	Good	1	Good	81	Moderate

Hadoop / HDFS Operations



Hadoop Operations

hdfs dfs -ls /

```
[cloudera@quickstart ~]$ hdfs dfs -ls /
Found 6 items
drwxrwxrwx   - hdfs  supergroup          0 2017-10-23 09:15 /benchmarks
drwxr-xr-x   - hbase supergroup          0 2025-11-20 00:54 /hbase
drwxr-xr-x   - solr  solr                0 2017-10-23 09:18 /solr
drwxrwxrwt   - hdfs  supergroup          0 2025-11-19 13:27 /tmp
drwxr-xr-x   - hdfs  supergroup          0 2017-10-23 09:17 /user
drwxr-xr-x   - hdfs  supergroup          0 2017-10-23 09:17 /var
[cloudera@quickstart ~]$
```

hdfs dfs -ls /user/cloudera/airquality2

```
[cloudera@quickstart ~]$ hdfs dfs -ls /user/cloudera/airquality2
Found 1 items
-rw-r--r--   1 cloudera cloudera    1630831 2025-11-19 13:35 /user/cloudera/airquality2/airquality.csv
[cloudera@quickstart ~]$
```

hdfs dfs -cat /user/cloudera/airquality2/airquality.csv | head

```
[cloudera@quickstart ~]$ hdfs dfs -cat /user/cloudera/airquality2/airquality.csv | head
Country,City,AQI Value,AQI Category,CO AQI Value,CO AQI Category,Ozone AQI Value,Ozone AQI Category,NO2 AQI Value,NO2 AQI Category,PM2.5 AQI Value,PM2.5 AQI Category
Russian Federation,Praskoveya,51,Moderate,1,Good,36,Good,0,Good,51,Moderate
Brazil,Presidente Dutra,41,Good,1,Good,5,Good,1,Good,41,Good
Italy,Priolo Gargallo,66,Moderate,1,Good,39,Good,2,Good,66,Moderate
Poland,Przasnysz,34,Good,1,Good,34,Good,0,Good,20,Good
France,Punaauia,22,Good,0,Good,22,Good,0,Good,6,Good
United States of America,Punta Gorda,54,Moderate,1,Good,14,Good,11,Good,54,Moderate
Germany,Puttlingen,62,Moderate,1,Good,35,Good,3,Good,62,Moderate
Belgium,Puurs,64,Moderate,1,Good,29,Good,7,Good,64,Moderate
Russian Federation,Pyatigorsk,54,Moderate,1,Good,41,Good,1,Good,54,Moderate
cat: Unable to write to output stream.
[cloudera@quickstart ~]$
```

Copy + Move example

```
cat: Unable to write to output stream.
[cloudera@quickstart ~]$ hdfs dfs -cp /user/cloudera/airquality2/airquality.csv /user/cloudera/airquality2/airquality_copy.csv
[cloudera@quickstart ~]$ hdfs dfs -ls /user/cloudera/airquality2
Found 2 items
-rw-r--r--   1 cloudera cloudera    1630831 2025-11-19 13:35 /user/cloudera/airquality2/airquality.csv
-rw-r--r--   1 cloudera cloudera    1630831 2025-11-20 01:12 /user/cloudera/airquality2/airquality_copy.csv
[cloudera@quickstart ~]$ hdfs dfs -mkdir /user/cloudera/airquality_backup
[cloudera@quickstart ~]$ hdfs dfs -mv /user/cloudera/airquality2/airquality_copy.csv /user/cloudera/airquality_backup/
[cloudera@quickstart ~]$ hdfs dfs -ls /user/cloudera/airquality_backup
Found 1 items
-rw-r--r--   1 cloudera cloudera    1630831 2025-11-20 01:12 /user/cloudera/airquality_backup/airquality_copy.csv
[cloudera@quickstart ~]$
```

Size + count

hdfs dfs -du -h /user/cloudera/airquality2
hdfs dfs -count /user/cloudera/airquality2

```
1.6 M  1.6 M  /user/cloudera/airquality2/airquality.csv
[cloudera@quickstart ~]$ hdfs dfs -count /user/cloudera/airquality2
           1            1            1630831 /user/cloudera/airquality2
[cloudera@quickstart ~]$ hdfs dfs -du -h /user/cloudera/airquality2
1.6 M  1.6 M  /user/cloudera/airquality2/airquality.csv
[cloudera@quickstart ~]$ hdfs dfs -count /user/cloudera/airquality2
           1            1            1630831 /user/cloudera/airquality2
[cloudera@quickstart ~]$
```

Apache Pig

PIG OPERATION

Pig Script (Data Processing)

[cloudera@quickstart ~]$ pig

Load Air Quality Dataset and Filter Valid AQI Records

```
grunt> airdata = LOAD '/user/cloudera/airquality2/airquality.csv' USING PigStorage(',')
>> AS (
>>     country:chararray,
>>     city:chararray,
>>     aqi_value:int,
>>     aqi_category:chararray,
>>     co_value:int,
>>     co_category:chararray,
>>     ozone_value:int,
>>     ozone_category:chararray,
>>     no2_value:int,
>>     no2_category:chararray,
>>     pm25_value:int,
>>     pm25_category:chararray
>> );
grunt>
grunt> air_clean = FILTER airdata BY aqi_category IS NOT NULL;
grunt>
```

Countries with best air quality (max Good cities):

```
good = FILTER air_clean BY aqi_category == 'Good';
good_grp = GROUP good BY country;
good_count = FOREACH good_grp GENERATE group AS country, COUNT(good) AS good_cities;
sorted_good = ORDER good_count BY good_cities DESC;
top10_good = LIMIT sorted_good 10;
DUMP top10_good;
```

```
2025-11-20 01:28:51,319 [main] INFO  org.apache.pig.backend.hadoop.executionengine.util.MapRedUtil - Total input paths to process : 1
(Brazil,1125)
(Russian Federation,1025)
(United States of America,1001)
(Germany,717)
(Japan,432)
(France,414)
(Spain,372)
(United Kingdom of Great Britain and Northern Ireland,319)
(Italy,283)
(Netherlands,274)
grunt>
```

Store result in HDFS

```
STORE top10_good INTO '/user/cloudera/pig_output/top10_good_countries' USING PigStorage(',');
```

```
        at org.apache.hadoop.util.RunJar.main(RunJar.java:136)
2025-11-20 01:32:11,991 [main] INFO  org.apache.hadoop.mapred.ClientServiceDelegate - Application state is completed. FinalApplicationStatus=SUCCEEDED. Redirecting to job history server
2025-11-20 01:32:12,304 [main] WARN  org.apache.pig.backend.hadoop.executionengine.mapReduceLayer.MapReduceLauncher - Encountered Warning FIELD_DISCARDED_TYPE_CONVERSION_FAILED 5 time(s).
2025-11-20 01:32:12,304 [main] INFO  org.apache.pig.backend.hadoop.executionengine.mapReduceLayer.MapReduceLauncher - Success!
grunt> quit
[cloudera@quickstart ~]$ hdfs dfs -get /user/cloudera/pig_output/top10_good_countries /home/cloudera/output/
[cloudera@quickstart ~]$ mv /home/cloudera/output/top10_good_countries/part-r-00000 /home/cloudera/output/pig_top10_good_countries.csv
[cloudera@quickstart ~]$ sudo cp /home/cloudera/output/pig_top10_good_countries.csv /media/sf_global_air_pollution_dataset.csv/
[cloudera@quickstart ~]$
```

Top 10 Most Polluted Cities (Highest AQI)

```
airdata = LOAD '/user/cloudera/airquality2/airquality.csv' USING PigStorage(',')
AS (country:chararray, city:chararray, aqi_value:int, aqi_category:chararray,
  co_value:int, co_category:chararray, ozone_value:int, ozone_category:chararray,
  no2_value:int, no2_category:chararray, pm25_value:int, pm25_category:chararray);
air_filter = FILTER airdata BY aqi_value IS NOT NULL;
sorted_aqi = ORDER air_filter BY aqi_value DESC;
top10_polluted = LIMIT sorted_aqi 10;
DUMP top10_polluted;
```

```
(India,Ratangarh,500,Hazardous,0,Good,37,Good,0,Good,471,Hazardous)
(India,Nuh,500,Hazardous,1,Good,44,Good,1,Good,420,Hazardous)
(India,Phalodi,500,Hazardous,0,Good,34,Good,0,Good,467,Hazardous)
(India,Bilari,500,Hazardous,4,Good,158,Unhealthy,4,Good,457,Hazardous)
(United States of America,Durango,500,Hazardous,133,Unhealthy for Sensitive Groups,0,Good,53,Moderate,500,Hazardous)
(India,Gohana,500,Hazardous,1,Good,47,Good,1,Good,500,Hazardous)
(India,Pilani,500,Hazardous,1,Good,39,Good,0,Good,433,Hazardous)
(India,Jahangirpur,500,Hazardous,1,Good,49,Good,1,Good,493,Hazardous)
(India,Gopamau,500,Hazardous,1,Good,52,Moderate,1,Good,378,Hazardous)
(India,Kasganj,500,Hazardous,1,Good,61,Moderate,3,Good,476,Hazardous)
grunt>
```

Count by AQI Category (Good / Moderate / Unhealthy)

```
grp_cat = GROUP airdata BY aqi_category;
cat_count = FOREACH grp_cat GENERATE group, COUNT(airdata);
sorted_cat = ORDER cat_count BY $1 DESC;
DUMP sorted_cat;
```

```
2025-11-20 01:47:19,837 [main] INFO  org.ap
(Good,9688)
(Moderate,9088)
(Unhealthy,2215)
(Unhealthy for Sensitive Groups,1568)
(Very Unhealthy,286)
(Hazardous,191)
(AQI Category,1)
grunt>
```

```
[cloudera@quickstart ~]$ hdfs dfs -ls /user/cloudera/output/aqi_category_count_pig
Found 2 items
-rw-r--r--   1 cloudera cloudera          0 2025-11-20 01:55 /user/cloudera/output/aqi_category_count_pig/_SUCCESS
-rw-r--r--   1 cloudera cloudera        123 2025-11-20 01:55 /user/cloudera/output/aqi_category_count_pig/part-r-00000
[cloudera@quickstart ~]$ hdfs dfs -get /user/cloudera/output/aqi_category_count_pig/part-r-00000 \
> /home/cloudera/aqi_category_count_pig.csv
[cloudera@quickstart ~]$ sudo cp /home/cloudera/aqi_category_count_pig.csv \
> /media/sf_global_air_pollution_dataset.csv/
[cloudera@quickstart ~]$
```

HIVE OPERATION

Hive Operation

Start Hive Services

sudo service hive-metastore start
sudo service hive-server2 start

```
[cloudera@quickstart ~]$ sudo service hive-metastore start
Starting Hive Metastore (hive-metastore):                  [  OK  ]
Hive Metastore is running                                  [  OK  ]
[cloudera@quickstart ~]$ sudo service hive-server2 start
Hive Server2 is running                                    [  OK  ]
[cloudera@quickstart ~]$
```

Connect to Hive Using Beeline

beeline -u "jdbc:hive2://localhost:10000/airquality" -n cloudera

Creating the table- *air_table1*

```
CREATE TABLE air_table1 (
  country STRING,
  city STRING,
  aqi_value INT,
  aqi_category STRING,
  co_value INT,
  co_category STRING,
  ozone_value INT,
  ozone_category STRING,
  no2_value INT,
  no2_category STRING,
  pm25_value INT,
  pm25_category STRING
)
ROW FORMAT DELIMITED
FIELDS TERMINATED BY ','
STORED AS TEXTFILE;
```

```
LOAD DATA INPATH '/user/cloudera/airquality/airquality.csv'
INTO TABLE air_table1;
```

Display all records

SELECT COUNT(*) FROM air_table1;

```
INFO  : 2025-11-20 02:14:51,149 Stage-1 map = 100%,  reduce = 0%, Cumu
INFO  : 2025-11-20 02:15:31,574 Stage-1 map = 100%,  reduce = 100%, Cu
INFO  : MapReduce Total cumulative CPU time: 27 seconds 230 msec
INFO  : Ended Job = job_1763628883521_0020
INFO  : MapReduce Jobs Launched:
INFO  : Stage-Stage-1: Map: 1  Reduce: 1   Cumulative CPU: 27.23 sec
INFO  : Total MapReduce CPU Time Spent: 27 seconds 230 msec
INFO  : Completed executing command(queryId=hive_20251120021313_831717
INFO  : OK
+--------+--+
|  _c0   |
+--------+--+
| 23464  |
+--------+--+
1 row selected (134.813 seconds)
0: jdbc:hive2://localhost:10000/airquality>
```

Netherlands	Kesteren	37	Good	1	Good	31	Good	3	Good	37	Good
Belgium	Jabbeke	39	Good	1	Good	26	Good	3	Good	39	Good
Azerbaijan	Imisli	90	Moderate	1	Good	43	Good	0	Good	90	Moderate
Brazil	Ji Parana	42	Good	1	Good	6	Good	0	Good	42	Good
United States of America	Kaneohe	36	Good	0	Good	35	Good	0	Good	36	Good
Italy	San Giuliano Terme	76	Moderate	1	Good	42	Good	4	Good	76	Moderate
China	Sanchazi	39	Good	2	Good	39	Good	1	Good	37	Good
Sri Lanka	Matara	43	Good	1	Good	17	Good	2	Good	43	Good
Netherlands	Meerssen	55	Moderate	1	Good	39	Good	1	Good	55	Moderate
Serbia	Cacak	61	Moderate	1	Good	32	Good	0	Good	61	Moderate
Italy	Darfo	64	Moderate	1	Good	22	Good	3	Good	64	Moderate
Greece	Aiyion	78	Moderate	1	Good	40	Good	0	Good	78	Moderate
Russian Federation	Odintsovo	36	Good	1	Good	32	Good	6	Good	36	Good
Uganda	Bushenyi	74	Moderate	3	Good	21	Good	0	Good	74	Moderate
Germany	Beckum	68	Moderate	2	Good	29	Good	8	Good	68	Moderate
Pakistan	Faruka	178	Unhealthy	2	Good	120	Unhealthy for Sensitive Groups	0	Good	178	Unhealthy
Netherlands	Duiven	30	Good	1	Good	30	Good	2	Good	21	Good
Belgium	Blegny	61	Moderate	1	Good	32	Good	4	Good	61	Moderate

HIVE SCRIPT (DATA PROCESSING)

0: jdbc:hive2://localhost:10000/airquality>

Countries with Maximum Good AQI Cities

```
SELECT country, COUNT(*) AS good_count
FROM air_table1
WHERE aqi_category = 'Good'
GROUP BY country
ORDER BY good_count DESC
LIMIT 10;
```

```
INFO  : Completed executing command(queryId=hive_20251120022325_3de04c18-c12a-491c-811b-a34
INFO  : OK
+-----------------------------------------------------+-------------+--+
|                       country                       | good_count  |
+-----------------------------------------------------+-------------+--+
| Brazil                                              | 1125        |
| Russian Federation                                  | 1025        |
| United States of America                            | 1001        |
| Germany                                             | 717         |
| Japan                                               | 432         |
| France                                              | 414         |
| Spain                                               | 372         |
| United Kingdom of Great Britain and Northern Ireland | 319         |
| Italy                                               | 283         |
| Netherlands                                         | 274         |
+-----------------------------------------------------+-------------+--+
10 rows selected (199.934 seconds)
0: jdbc:hive2://localhost:10000/airquality>
```

Average AQI by Country + Category Combination

```
INSERT OVERWRITE DIRECTORY
'/user/cloudera/hive_output/avg_aqi_country_category'
ROW FORMAT DELIMITED
FIELDS TERMINATED BY ','
SELECT country, aqi_category, AVG(aqi_value) AS avg_aqi
FROM air_table1
GROUP BY country, aqi_category
ORDER BY avg_aqi DESC;
```

```
hdfs dfs -ls
user/cloudera/hive_output/avg_aqi_country_category
hdfs dfs -cat
/cloudera/hive_output/avg_aqi_country_category/000000
_0 | head
```

country	aqi_category	avg_aqi
United States of America	Hazardous	500.0
Russian Federation	Hazardous	500.0
India	Hazardous	450.62025316455697
Republic of Korea	Hazardous	421.0
Pakistan	Hazardous	419.46153846153845
Democratic Republic of the Congo	Hazardous	415.0
South Africa	Hazardous	403.0
Chile	Hazardous	358.0
Mexico	Hazardous	339.6666666666667
China	Hazardous	332.3333333333333
Uzbekistan	Hazardous	300.0
Angola	Very Unhealthy	285.0
Australia	Very Unhealthy	264.0
Democratic Republic of the Congo	Very Unhealthy	249.5
Brazil	Very Unhealthy	239.33333333333334
Chile	Very Unhealthy	235.75
South Africa	Very Unhealthy	233.6
Mexico	Very Unhealthy	233.42105263157896
India	Very Unhealthy	232.91603053435114
Pakistan	Very Unhealthy	227.45833333333334
Mauritania	Very Unhealthy	224.0
Indonesia	Very Unhealthy	223.0
Nepal	Very Unhealthy	222.33333333333334
Iran (Islamic Republic of)	Very Unhealthy	220.25
Namibia	Very Unhealthy	218.0
Russian Federation	Very Unhealthy	214.0
Bangladesh	Very Unhealthy	214.0
Senegal	Very Unhealthy	211.0
Nigeria	Very Unhealthy	210.66666666666666
China	Very Unhealthy	210.04444444444445
Malaysia	Very Unhealthy	209.0
	Very Unhealthy	202.0
Guinea-Bissau	Unhealthy	195.0
Bahrain	Unhealthy	188.0
United Republic of Tanzania	Unhealthy	183.0
Peru	Unhealthy	179.0
Democratic Republic of the Congo	Unhealthy	175.125
Chile	Unhealthy	173.0
Libya	Unhealthy	172.71428571428572
Saudi Arabia	Unhealthy	172.33333333333334
Angola	Unhealthy	172.0
Russian Federation	Unhealthy	172.0
Mexico	Unhealthy	171.56976744186048

Storing the output in HDFS

hdfs dfs -ls /user/cloudera/hive_output/avg_aqi_country_category
hdfs dfs -cat /user/cloudera/hive_output/avg_aqi_country_category/000000_0 | head

```
-rwxr-xr-x   1 cloudera cloudera      17326 2025-11-20 02:38 /user/cloudera/hive_output/avg_aqi_country_category/000000_0
[cloudera@quickstart ~]$ hdfs dfs -cat /user/cloudera/hive_output/avg_aqi_country_category/000000_0 | head
United States of America,Hazardous,500.0
Russian Federation,Hazardous,500.0
India,Hazardous,450.62025316455697
Republic of Korea,Hazardous,421.0
Pakistan,Hazardous,419.46153846153845
Democratic Republic of the Congo,Hazardous,415.0
South Africa,Hazardous,403.0
Chile,Hazardous,358.0
Mexico,Hazardous,339.6666666666667
China,Hazardous,332.3333333333333
cat: Unable to write to output stream.
[cloudera@quickstart ~]$
```

Unhealthy Cities % Contribution by Country

```
INSERT OVERWRITE DIRECTORY
'/user/cloudera/hive_output/unhealthy_percentage'
ROW FORMAT DELIMITED
FIELDS TERMINATED BY ','
SELECT country,
    ROUND((COUNT(*) * 100.0) / total.total_count, 2) AS
unhealthy_percentage
FROM air_table1
CROSS JOIN
(
  SELECT COUNT(*) AS total_count
  FROM air_table1
) total
WHERE aqi_category = 'Unhealthy'
GROUP BY country, total.total_count
ORDER BY unhealthy_percentage DESC;
```

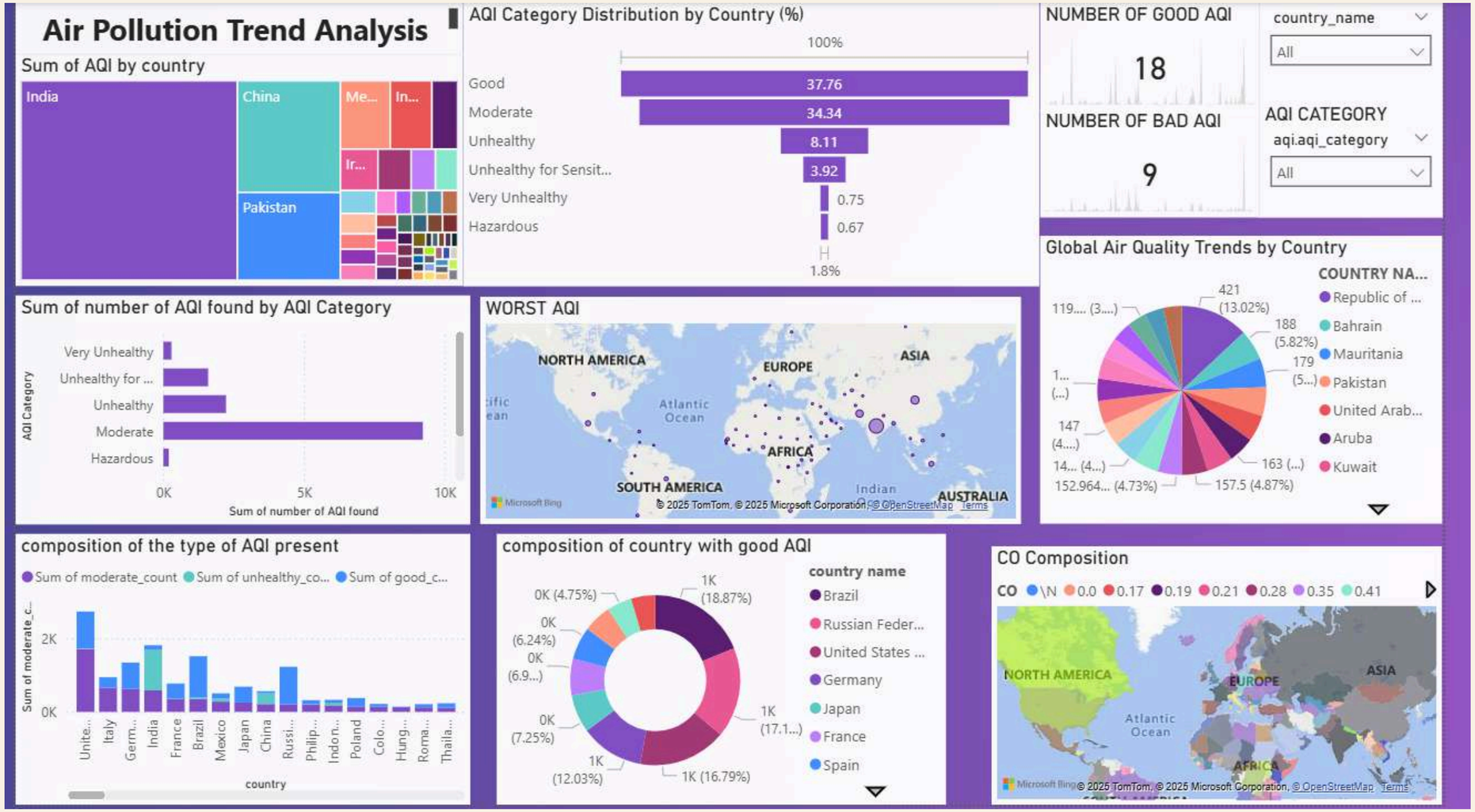
country	unhealthy_percentage
India	4.69
China	1.25
Pakistan	0.98
Mexico	0.37
Indonesia	0.31
Brazil	0.19
Iran (Islamic Republic of)	0.17
South Africa	0.15
Bangladesh	0.11
Senegal	0.1
Nigeria	0.09
United States of America	0.08
Chile	0.06
Viet Nam	0.06
Uzbekistan	0.06
	0.05
Venezuela (Bolivarian Republic of)	0.04
Philippines	0.04
Saudi Arabia	0.04
Dominican Republic	0.04
Libya	0.03
Uganda	0.03
Nepal	0.03
Malaysia	0.03
Kenya	0.03
Gambia	0.03
France	0.03
Egypt	0.03
Democratic Republic of the Congo	0.03
Angola	0.02
Afghanistan	0.02
Ethiopia	0.02
Oman	0.02
Yemen	0.02
United Republic of Tanzania	0.01
Mauritania	0.01
Mali	0.01

CO vs Ozone pollution Comparison per Country

```
SELECT
   country,
   ROUND(AVG(co_value), 2) AS avg_co,
   ROUND(AVG(ozone_value), 2) AS avg_ozone
FROM air_table1
GROUP BY country
ORDER BY avg_co DESC;
```

country	avg_co	avg_ozone
Republic of Korea	27.0	0.0
South Africa	5.38	16.67
Democratic Republic of the Congo	5.29	27.14
Kingdom of Eswatini	4.67	15.67
Nigeria	3.81	24.85
Chile	3.8	10.05
Rwanda	3.62	22.08
China	3.42	88.32
Angola	3.15	22.7
Lesotho	2.8	14.0
Kuwait	2.67	135.67
Uganda	2.65	20.25
Burundi	2.62	21.38
El Salvador	2.58	13.64
Congo	2.58	23.83
Nepal	2.45	67.58
Bangladesh	2.44	46.2
Indonesia	2.42	46.57
Kenya	2.37	21.3
Viet Nam	2.37	46.23
Guatemala	2.33	11.16
Cameroon	2.33	17.05
Malaysia	2.23	36.5
Pakistan	2.07	89.14
Central African Republic	2.0	12.23
Bahrain	2.0	127.0
Algeria	1.92	47.17
Dominican Republic	1.82	17.63
Panama	1.78	18.04
Mexico	1.75	16.82
India	1.74	55.06
Haiti	1.72	22.94
Colombia	1.7	9.78
Chad	1.58	19.21

POWER BI


Air Pollution Trend Analysis
Sum of AQI by country
India
China
Pakistan
AQI Category Distribution by Country (%)
100%
Good
37.76
Moderate
34.34
Unhealthy
8.11
Unhealthy for Sensit...
3.92
Very Unhealthy
0.75
Hazardous
0.67
1.8%
NUMBER OF GOOD AQI
18
NUMBER OF BAD AQI
9
country_name
All
AQI CATEGORY
aqi.aqi_category
All
Sum of number of AQI found by AQI Category
Very Unhealthy
Unhealthy for ...
Unhealthy
Moderate
Hazardous
AQI Category
0K
5K
10K
Sum of number of AQI found
WORST AQI
NORTH AMERICA
EUROPE
ASIA
Atlantic Ocean
AFRICA
SOUTH AMERICA
Indian
AUSTRALIA
Global Air Quality Trends by Country
COUNTRY NA...
Republic of ...
Bahrain
Mauritania
Pakistan
United Arab...
Aruba
Kuwait
421 (13.02%)
188 (5.82%)
179 (5...)
163 (...)
157.5 (4.87%)
152.964... (4.73%)
147 (4....)
14... (4...)
119.... (3....)
composition of the type of AQI present
Sum of moderate_count
Sum of unhealthy_co...
Sum of good_c...
Sum of moderate_c...
2K
0K
country
composition of country with good AQI
country name
Brazil
Russian Feder...
United States ...
Germany
Japan
France
Spain
1K (18.87%)
1K (17.1...)
1K (16.79%)
1K (12.03%)
0K (7.25%)
0K (6.9...)
0K (6.24%)
0K (4.75%)
CO Composition
CO
\N
0.0
0.17
0.19
0.21
0.28
0.35
0.41
NORTH AMERICA
EUROPE
ASIA
Atlantic Ocean
AFRICA

THANK YOU