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Centre for Research on Energy and Clean Air

Monthly ambient air quality snapshot for India

September 2024

Key highlights

- Compliance: In September 2024, [260 out of 264](#) cities with more than 80% of the days with CAAQMS data available, recorded $PM_{2.5}$ concentrations below India's NAAQS of 60 µg/m³. 44 cities complied with the WHO's daily safe guideline concentration of 15 µg/m³.
  - NCAP cities: The monthly average $PM_{2.5}$ levels in 90 NCAP cities (out of 97 cities with more than 80% of days with data) surpassed the WHO's daily guideline for $PM_{2.5}$, while 95 cities met India's daily NAAQS.
  - Non-NCAP cities: Among the 167 non-NCAP cities with over 80% of days with CAAQMS data, 130 cities reported monthly average $PM_{2.5}$ levels above the WHO daily guideline. 165 cities adhered to the daily NAAQS.
  - **The number of cities exceeding daily WHO standards rose to 220 in September, up from 177 in August , as the monsoon has ended.**
- AQI category: In September 2024, the number of cities with "Good (0-30 µg/m³)" air quality dropped to 201 from 218 in August. The number of cities with "Satisfactory (31-60 µg/m³)" air quality increased from 26 to 59. Additionally, 4 cities experienced "Moderate (61-90 µg/m³)" air quality in September, compared to just 1 city in August. **Overall, September saw a slow transition from the "Good" to the "Satisfactory" category, largely attributable to shifts observed in the states of Haryana, Uttar Pradesh, and Rajasthan within the Indo-Gangetic Plain.**
- Delhi: Delhi recorded an average concentration of 43 µg/m³ in September, with 9 days in the "Good" category, 16 days in the "Satisfactory" category, 4 days in the "Moderate" category, and 1 day in the "Very Poor (121-250)" category. This is higher than August's average of 27 µg/m³, when there were 24 days in the "Good" category and 7 days in the "Satisfactory" category.
- Cleanest city: Aizawl, in the state of Mizoram, was the cleanest city in India during September, with monthly average PM2.5 of 3 µg/m³.
  - The top 10 cleanest cities comprise four cities from Karnataka, two from Maharashtra, and one city each from Mizoram, Sikkim, Tamil Nadu, and Bihar.
  - Chikkamagaluru in Karnataka made its first appearance in the top 10 cleanest cities list.

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- Most polluted city: **Byrnihat in Assam/Meghalaya ranked as the most polluted city in India in September 2024**, recording a monthly average $PM_{2.5}$ concentration of 73 µg/m³, surpassing the daily National Ambient Air Quality Standards (NAAQS of 60 µg/m³) 57% of the days in the month.

    - Byrnihat has consistently ranked among the top 10 most polluted cities every month this year, and this is the sixth time it has claimed the top spot for highest pollution levels.

    - Chittorgarh city in Rajasthan made its debut in the top 10 polluted list in September 2024.

    - **Among India's top 10 polluted cities, two cities each were located in Uttar Pradesh, Bihar, and Rajasthan and one city each from Tamil Nadu, Maharashtra, Assam, and Punjab**.

- Frequency in top 10 polluted cities: **A total of 67 cities were featured in the daily top 10 most polluted cities list in September 2024**. Of these, 26 cities made an appearance at least five times over the 30-day period, topped by Byrnihat in Assam/Meghalaya, which featured the most times (17 days), followed by Jalna (17 days), Sri Ganganagar (15 days), Mandi Gobindgarh (14 days), Nandesari (13 days), Ghaziabad (12 days), and Gummidipoondi (11 days).

- NCAP: **Only 25 out of the 67 cities featured in the daily top 10 most polluted cities list during September 2024 are part of the National Clean Air Programme (NCAP)**. The remaining 43 have no action plan to reduce hazardous air pollution concentrations.

- Megacities: With the exception of Delhi, all other megacities, such as Chennai, Mumbai, Kolkata, and Bangalore, saw all their days in September falling within the 'Good' and 'Satisfactory' category.

- Monitoring infrastructure: **One new continuous ambient air quality monitoring stations (CAAQMS) was installed in September 2024 at Indore.** This increased the national total to 551 stations.

Real-time ambient air quality monitoring in India using Continuous Ambient Air Quality Monitoring Stations (CAAQMS) – September 2024

Total number (#) of CAAQMS installed in India	# of operational CAAQMS with >80% of the days with data in September 2024	# of CAAQMS with <80% but >1% of the days with data in September 2024	# of non-operational CAAQMS with no data in September 2024
551	482	30	39

Total number (#) of cities covered by CAAQMS	# of cities with >80% of the days in September with CAAQMS data in September 2024	# of cities with <80% but >1% of the days with CAAQMS data in September 2024	# of cities with CAAQMS installed but no available data in September 2024
282	264	9	9

CAAQMS and cities coverage

# of stations in August 2024	550
# of stations in September 2024	551
# of cities covered by CAAQMS in August 2024	282
# of cities covered by CAAQMS in September 2024	282

New station installed: Indore

Total number (#) of NCAP cities	131	NCAP cities with CAAQMS	101
		NCAP cities without CAAQMS	30

NCAP cities with CAAQMS			Non-NCAP cities with CAAQMS		
101			181		
# of NCAP cities with >80% of the days with CAAQMS data	# of NCAP cities with <80% of the days with CAAQMS	# of NCAP cities with CAAQMS installed but no available data	# of Non-NCAP cities with >80% of the days with CAAQMS data	# of Non-NCAP cities with <80% of the days with CAAQMS	# of Non-NCAP cities with CAAQMS installed but no available data
97	2	2	167	7	7

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Compliance of PM$_{2.5}$ concentration across Indian cities with NAAQS and WHO guidelines – September 2024

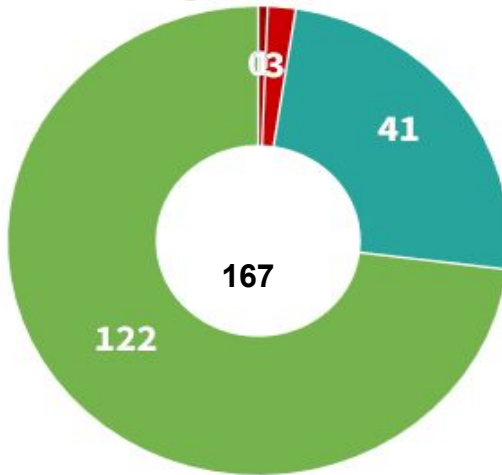| Total # of cities with >80% of the days with CAAQMS data									
264									
# of NCAP cities with >80% of the days with CAAQMS data					# of non-NCAP cities with >80% of the days with CAAQMS data				
97					167				
# of NCAP cities with monthly average PM$_{2.5}$ concentration complying with WHO daily guideline levels	# of NCAP cities with monthly average PM$_{2.5}$ concentration > WHO daily guideline levels	# of NCAP cities with monthly average PM$_{2.5}$ concentration complying with the daily NAAQS	# of NCAP cities with monthly average PM$_{2.5}$ concentration > the daily NAAQS	# of NCAP cities with monthly average PM$_{2.5}$ concentration > 2 times daily NAAQS	# of non-NCAP cities with monthly average PM$_{2.5}$ concentration complying with WHO daily guideline levels	# of non-NCAP cities with monthly average PM$_{2.5}$ concentration > WHO daily guideline levels	# of non-NCAP cities with monthly average PM$_{2.5}$ concentration complying with the daily NAAQS	# of non-NCAP cities with monthly average PM$_{2.5}$ concentration > the daily NAAQS	# of non-NCAP cities with monthly average PM$_{2.5}$ concentration > 2 times the daily NAAQS
7	90	95	2	0	37	130	165	2	0

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Number of cities vs frequency of days
with PM$_{2.5}$ concentration above NAAQS and WHO guidelines – September 2024

Categorisation of Non-NCAP cities against compliance to NAAQS guidelines

1 3
41
122
167

Total # of cities with >80% of the days with CAAQMS data

NCAP cities
97

Non- NCAP Cities
167

264

Categorisation of NCAP cities against compliance to NAAQS guidelines

1 2 2
21
72

Categorisation of Non-NCAP cities against compliance to WHO guidelines

8
16
23
18
34
68
167

Categorisation of NCAP cities against compliance to WHO guidelines

5 3 1
17
20
51

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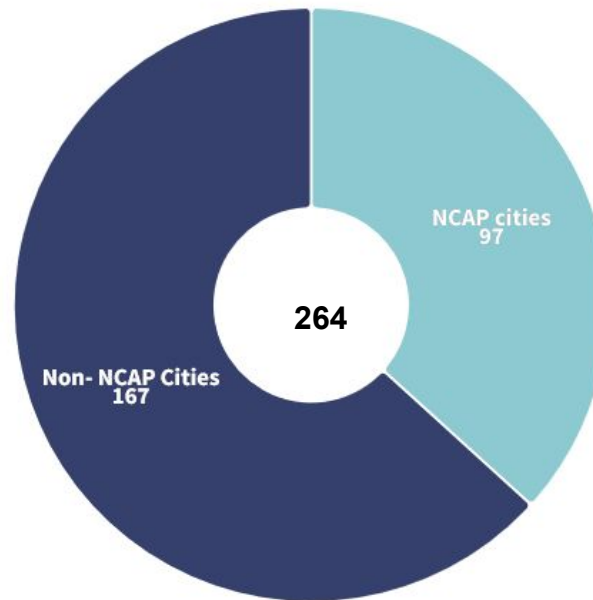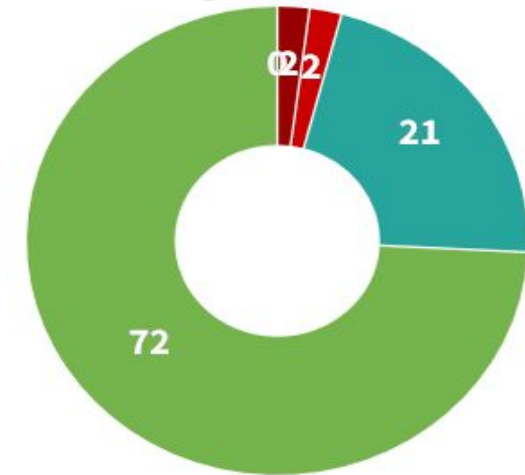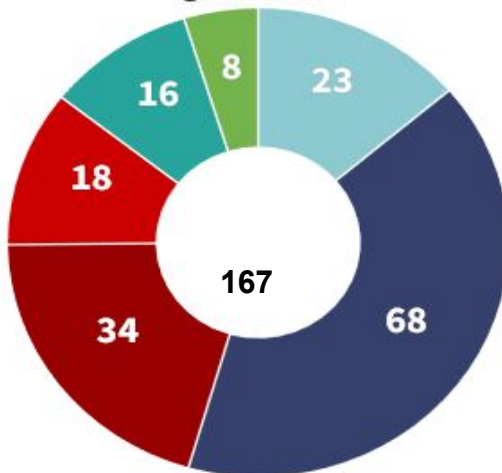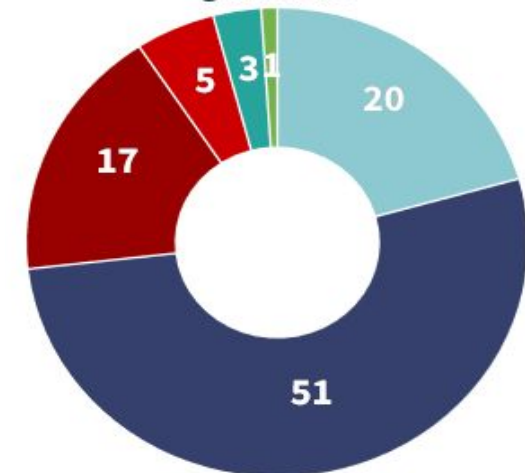
Legends
- 100% of the days >Standard
- 75%-99% of the days >Standard
- 50%-74% of the days >Standard
- 25%-49% of the days >Standard
- 1%-24% of the days >Standard
- 100% of the days < Standard

Distribution of cities by Graded Response Action Plan (GRAP) categorisation based on monthly average PM$_{2.5}$ concentrations – September 2024

Legend: Very Poor | Poor | Moderate | Satisfactory | Good

Source: CPCB
Note: Note: Cities that have data coverage for at least 80% of the days in a month are considered for analysis

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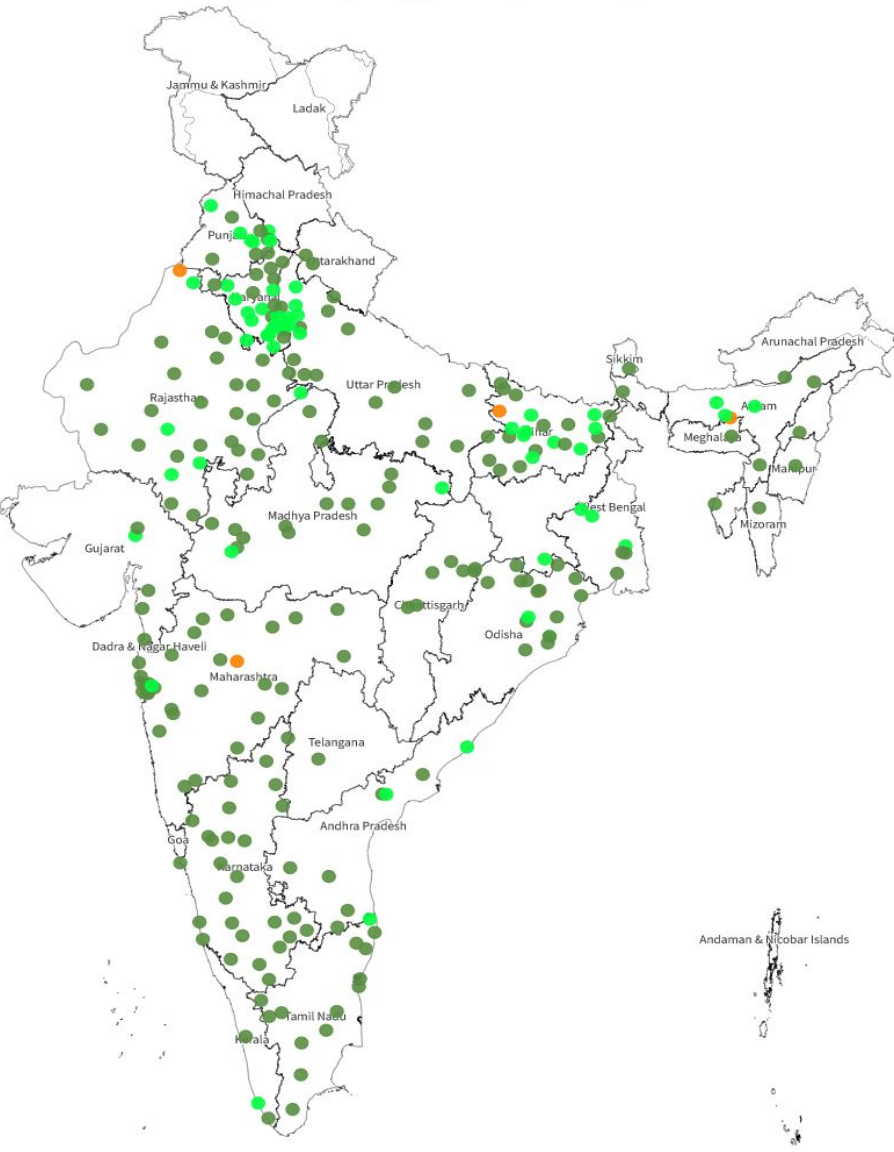| State/UT	Number of cities in AQI category (PM$_{2.5}$ µg/m^3)				
	Good (0-30)	Satisfactory (31-60)	Moderate (61-90)	Poor (91-120)	Very Poor (121-250)
Andhra Pradesh	6	2	0	0	0
Arunachal Pradesh	1	0	0	0	0
Assam	2	3	1	0	0
Bihar	14	9	1	0	0
Chandigarh	1	0	0	0	0
Chhattisgarh	7	0	0	0	0
Gujarat	4	1	0	0	0
Haryana	10	14	0	0	0
Himachal Pradesh	0	1	0	0	0
Jharkhand	0	1	0	0	0
Karnataka	27	0	0	0	0
Kerala	2	1	0	0	0
Madhya Pradesh	13	2	0	0	0
Maharashtra	29	1	1	0	0
Manipur	1	0	0	0	0
Meghalaya	1	0	0	0	0
Mizoram	1	0	0	0	0
Nagaland	1	0	0	0	0
NCT of Delhi	0	1	0	0	0
Odisha	14	2	0	0	0
Puducherry	1	0	0	0	0
Punjab	4	4	0	0	0
Rajasthan	26	6	1	0	0
Sikkim	1	0	0	0	0
Tamil Nadu	13	1	0	0	0
Telangana	1	0	0	0	0
Tripura	1	0	0	0	0
Uttar Pradesh	13	7	0	0	0
Uttarakhand	3	0	0	0	0
West Bengal	4	3	0	0	0

Top 10 most polluted cities in India by PM$_{2.5}$ concentration – September 2024

Days in respective AQI categories based on PM$_{2.5}$ (µg/m³) – September 2024							
City	Monitored days	%Days > NAAQS	Good (0-30)	Satisfactory (31-60)	Moderate (61-90)	Poor (91-120)	Very poor (121-250)	Severe (>250)
Byrnihat	30	57	0	13	11	3	3	0
Sri Ganganagar	30	60	0	12	11	0	7	0
Jalna	30	57	3	11	11	2	3	0
Siwan	30	24	17	5	0	5	0	2
Mandi Gobindgarh	30	37	5	14	4	0	7	0
Araria	30	28	10	11	6	0	1	1
Ghaziabad	30	27	10	12	5	0	3	0
Gummidipoondi	30	20	3	22	5	0	0	0
Muzaffarnagar	30	25	6	15	5	1	1	0
Chittorgarh	30	30	9	13	6	0	2	0

Top 10 most polluted cities in India by PM2.5 concentrations (µg/m3) – September 2024
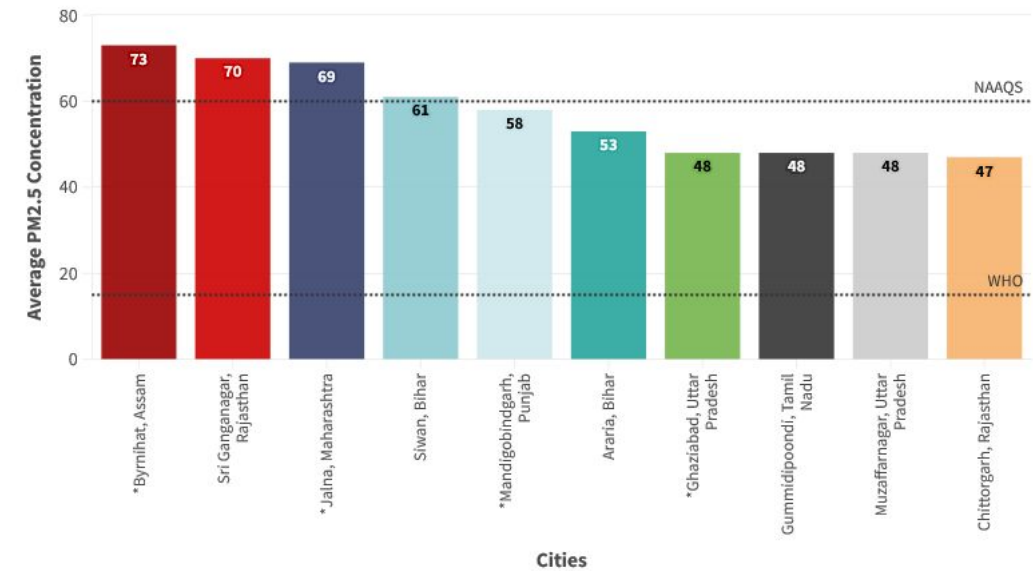
Source: CCR
* NCAP cities

Status of PM$_{2.5}$ concentration in September 2023 for top 10 most polluted cities in September 2024 across India

Days in respective AQI categories based on PM$_{2.5}$ (µg/m^3) – September 2023							
City	Monitored days	Days > NAAQS	Good (0-30)	Satisfactory (31-60)	Moderate (61-90)	Poor (91-120)	Very poor (121-250)	Severe (>250)
Byrnihat	30	27	0	3	7	9	11	0
Sri Ganganagar	30	1	15	14	1	0	0	0
Jalna	30	0	29	1	0	0	0	0
Siwan	30	10	8	12	6	3	1	0
Mandi Gobindgarh	30	6	6	18	6	0	0	0
Araria	30	0	16	14	0	0	0	0
Ghaziabad	30	4	13	13	4	0	0	0
Gummidipoondi	26	0	3	23	0	0	0	0
Muzaffarnagar	25	11	6	8	10	1	0	0
Chittorgarh	30	2	9	19	1	1	0	0

Top 10 most polluted cities in India by PM2.5 concentrations (µg/m3) - September 2024 Vs September 2023
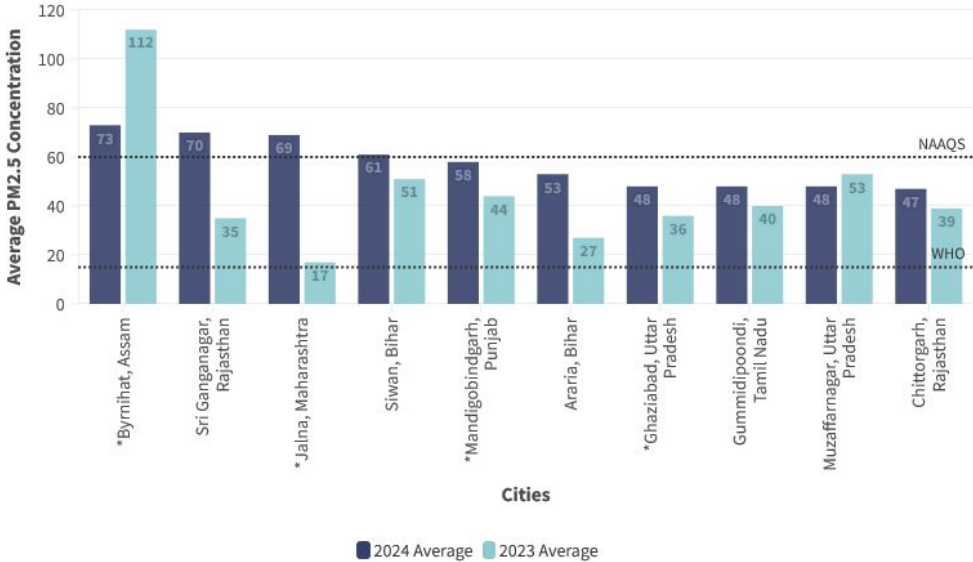
Source: CCR
* NCAP cities

Status of PM$_{2.5}$ concentration in September 2023 for top 10 cleanest cities in September 2024 across India

Days in respective AQI categories based on PM$_{2.5}$ (µg/m3) – September 2024							
City	Monitored days	%Days > NAAQS	Good (0-30)	Satisfactory (31-60)	Moderate (61-90)	Poor (91-120)	Very poor (121-250)	Severe (>250)
Aizawl	30	0	30	0	0	0	0	0
Tirupur	30	0	30	0	0	0	0	0
Gangtok	25	0	25	0	0	0	0	0
Koppal	28	0	28	0	0	0	0	0
Udupi	30	0	30	0	0	0	0	0
Kalyan	28	0	28	0	0	0	0	0
Raichur	29	0	29	0	0	0	0	0
Gadag	30	0	30	0	0	0	0	0
Sasaram	30	0	30	0	0	0	0	0
Sangli	29	0	29	0	0	0	0	0

Top 10 cleanest cities in India by PM2.5 concentration - September 2024

Source: CCR

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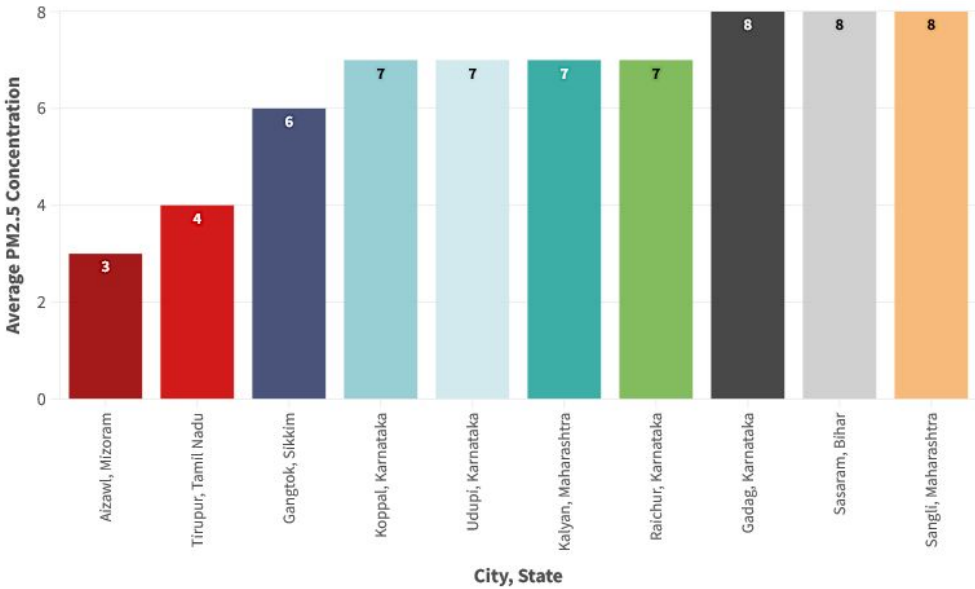
Frequency of appearance of respective cities in top 10 most polluted cities in India list by PM$_{2.5}$ concentration – September 2024
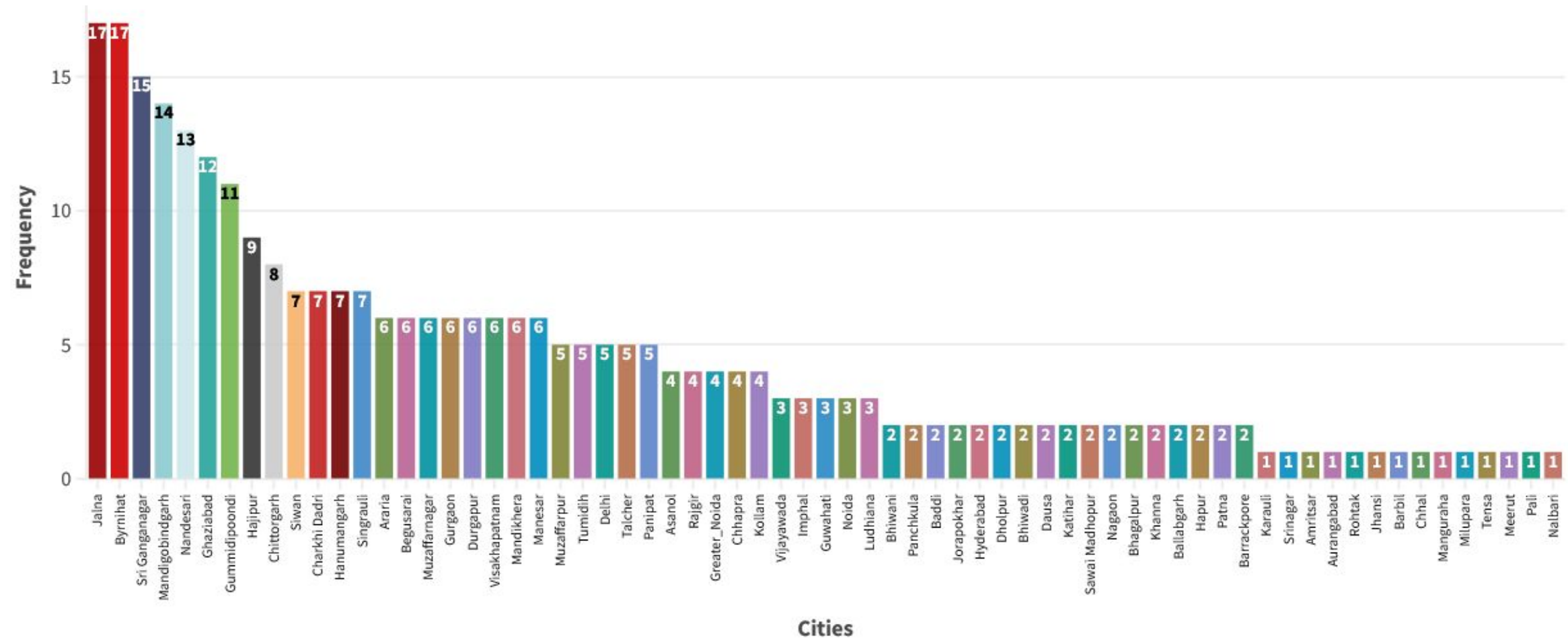
Source: CCR

State-wise most polluted cities (PM$_{2.5}$, µg/m^3) in India – September 2024

Source: CCR

PM$_{2.5}$ concentrations across state/provincial capital cities in India – September 2024

Monthly Average Concentration (µg/m3)

WHO

Capital Cities

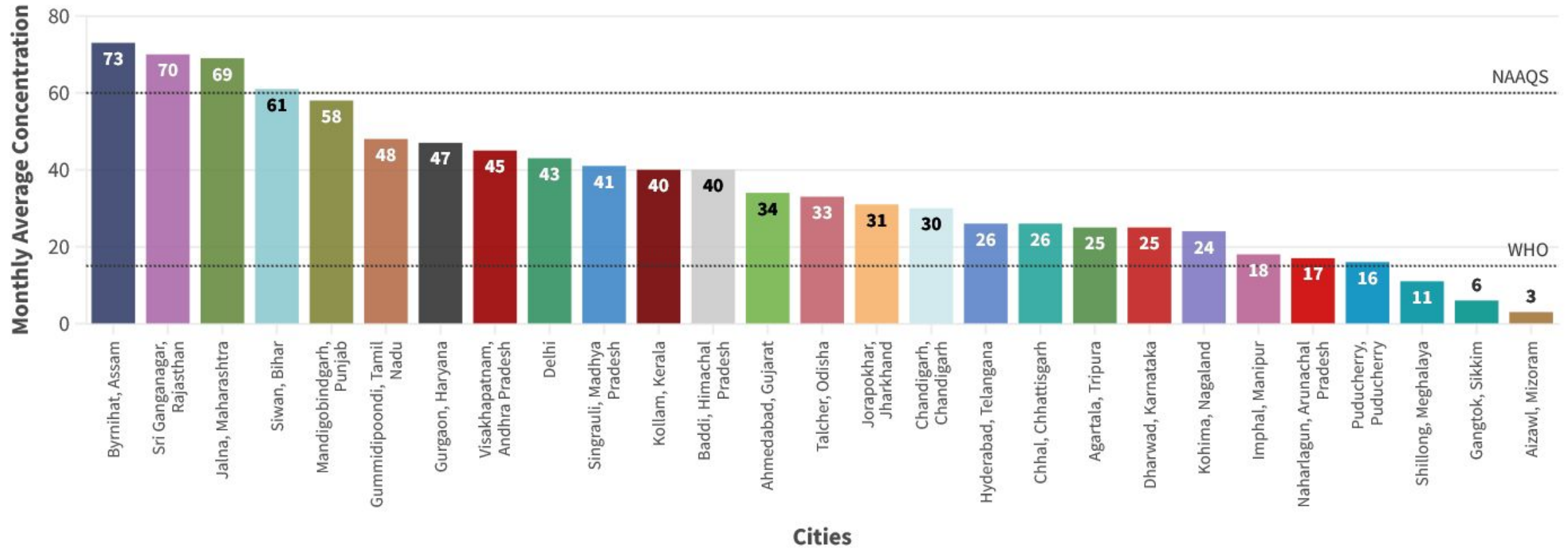| City	Value
Delhi	43
Patna, Bihar	38
Chandigarh, Chandigarh	30
Chandigarh, Punjab	30
Chandigarh, Haryana	30
Jaipur, Rajasthan	29
Lucknow, Uttar Pradesh	28
Bhopal, Madhya Pradesh	27
Hyderabad, Telangana	26
Agartala, Tripura	25
Gandhinagar, Gujarat	25
Kohima, Nagaland	24
Bangalore, Karnataka	24
Kolkata, West Bengal	21
Chennai, Tamil Nadu	21
Bhubaneswar, Odisha	18
Dehradun, Uttarakhand	18
Imphal, Manipur	18
Thiruvananthapuram, Kerala	18
Raipur, Chhattisgarh	17
Puducherry	16
Mumbai, Maharashtra	15
Amaravati, Andhra Pradesh	14
Shillong, Meghalaya	11
Gangtok, Sikkim	6
Aizawl, Mizoram	3

Source: CCR

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Itanagar (Arunachal Pradesh); Dispur (Assam); Panaji (Goa); Shimla (Himachal Pradesh); Ranchi (Jharkhand); Port Blair (Andaman and Nicobar Islands); Daman (Dadra and Nagar Haveli and Daman & Diu); Leh (Ladakh); and Kavaratti (Lakshadweep) don't have an operational CAAQMS.

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PM$_{2.5}$ concentrations across million plus cities in Indo-Gangetic Plain in India (with CAAQMS) – September 2024

Legend ■ Very Poor ■ Poor ■ Moderate ■ Satisfactory ■ Good

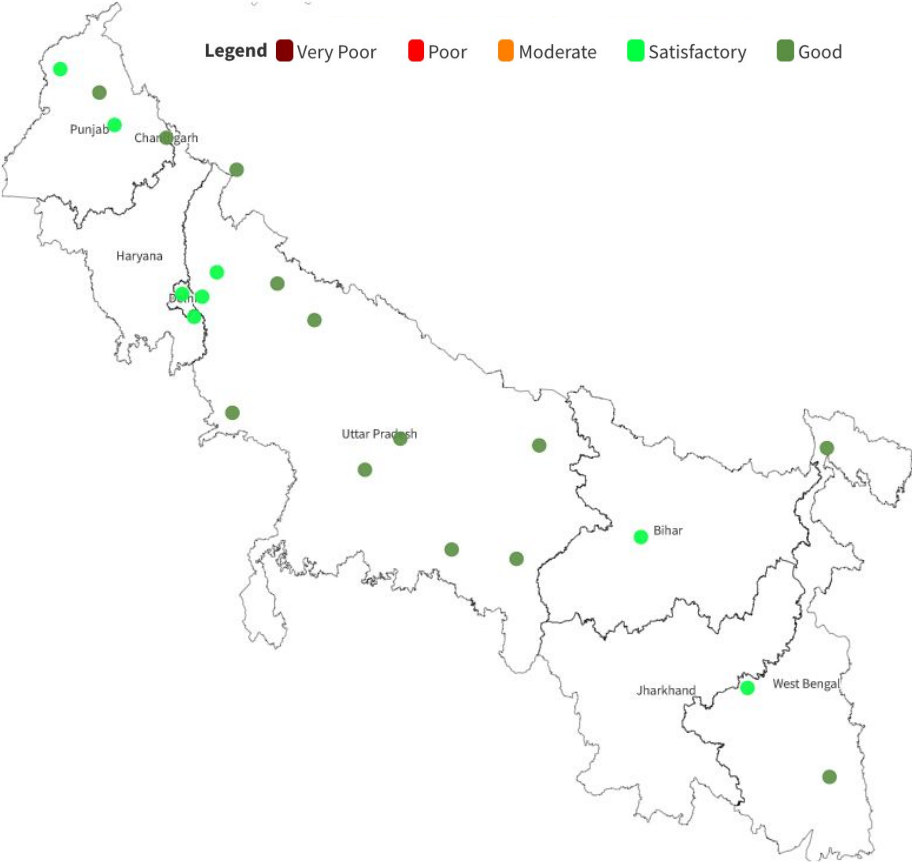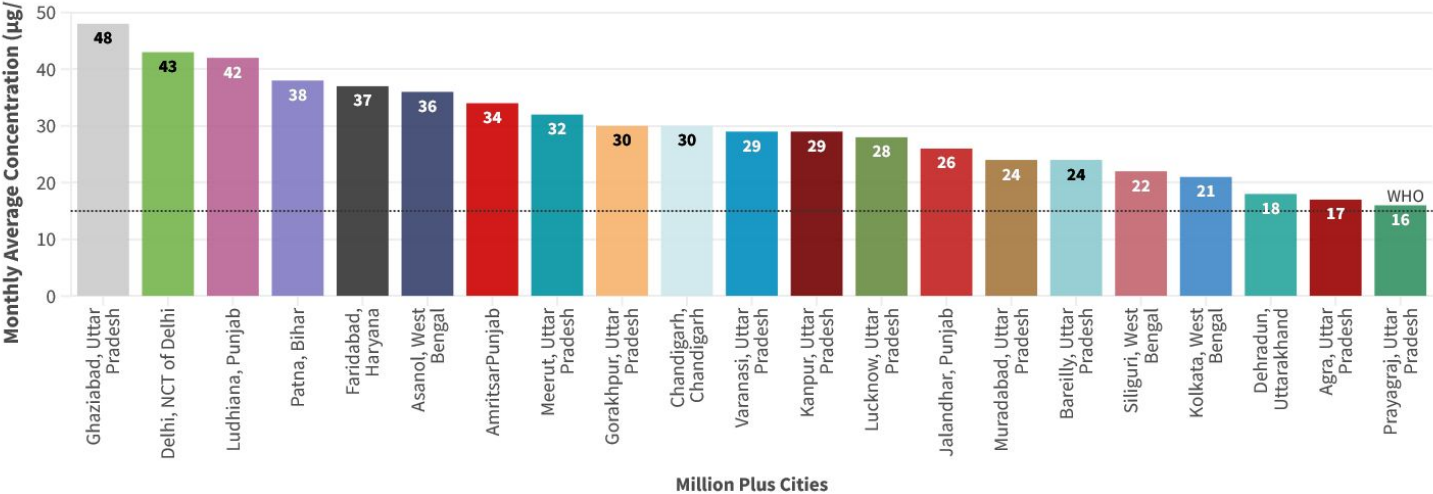Source: CPCB
Note: Cities that have data coverage for at least 80% of the days in a month are considered for analysis

PM2.5 Concentrations Across Million Plus Cities of Indo-Gangetic Plain in India- September 2024

Monthly Average Concentration (µg)

City	Value
Ghaziabad, Uttar Pradesh	48
Delhi, NCT of Delhi	43
Ludhiana, Punjab	42
Patna, Bihar	38
Faridabad, Haryana	37
Asanol, West Bengal	36
AmritsarPunjab	34
Meerut, Uttar Pradesh	32
Gorakhpur, Uttar Pradesh	30
Chandigarh, Chandigarh	30
Varanasi, Uttar Pradesh	29
Kanpur, Uttar Pradesh	29
Lucknow, Uttar Pradesh	28
Jalandhar, Punjab	26
Muradabad, Uttar Pradesh	24
Bareilly, Uttar Pradesh	24
Siliguri, West Bengal	22
Kolkata, West Bengal	21
Dehradun, Uttarakhand	18
Agra, Uttar Pradesh	17
Prayagraj, Uttar Pradesh	16

WHO

Million Plus Cities

Source: CCR

Ambient air quality status in Delhi – September 2024 (PM$_{2.5}$ concentration, µg/m^3)
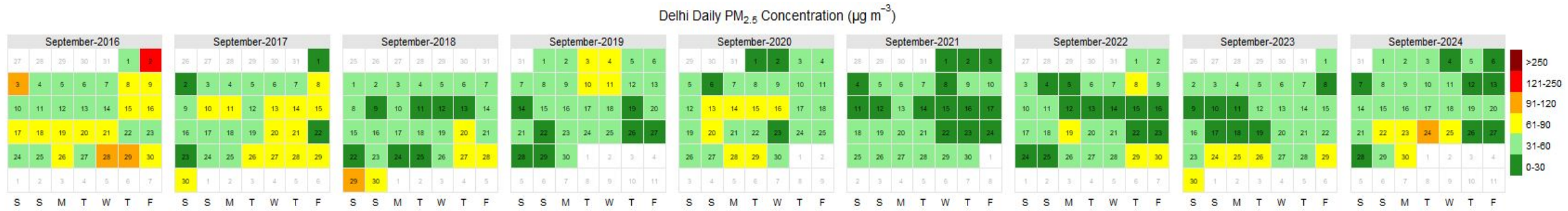
Delhi Daily PM$_{2.5}$ Concentration (µg m^{-3})

Year	September-16	September-17	September-18	September-19	September-20	September-21	September-22	September-23	September-24
Monitored days	30	30	30	30	30	30	30	30	30
Average (µg/m3)	67	53	46	40	47	32	40	42	43
Days > NAAQS	15	12	5	4	7	0	4	5	5
% days > NAAQS	50	40	17	13	23	0	13	17	17
Days in AQI Scale (PM$_{2.5}$ in µg/m3)									
Good (0-30)	0	4	7	7	4	14	11	7	8
Satisfactory (31-60)	15	14	18	19	19	16	15	18	17
Moderate (61-90)	11	12	4	4	7	0	4	5	4
Poor (91-120)	3	0	1	0	0	0	0	0	1
Very Poor (121-250)	1	0	0	0	0	0	0	0	0
Severe (>250)	0	0	0	0	0	0	0	0	0

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Ambient air quality status in Mumbai – September 2024 (PM$_{2.5}$ concentration, µg/m^3)
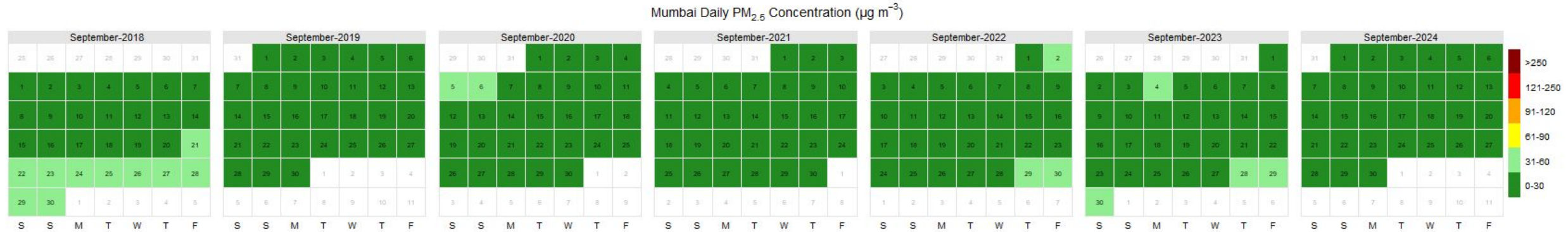
Mumbai Daily PM$_{2.5}$ Concentration (µg m^{-3})

Year	September-18	September-19	September-20	September-21	September-22	September-23	September-24
Monitored days	30	30	30	30	30	30	30
Average (µg/m3)	29	12	21	18	19	22	15
Days > NAAQS	0	0	0	0	0	0	0
% days > NAAQS	0	0	0	0	0	0	0
Days in AQI Scale (PM$_{2.5}$ in µg/m3)							
Good (0-30)	20	30	28	30	27	26	30
Satisfactory (31-60)	10	0	2	0	3	4	0
Moderate (61-90)	0	0	0	0	0	0	0
Poor (91-120)	0	0	0	0	0	0	0
Very Poor (121-250)	0	0	0	0	0	0	0
Severe (>250)	0	0	0	0	0	0	0

Ambient air quality status in Chennai – September 2024 (PM$_{2.5}$ concentration, µg/m^3)

Chennai Daily PM$_{2.5}$ Concentration (µg m^{-3})

Year	September-16	September-17	September-18	September-19	September-20	September-21	September-22	September-23	September-24
Monitored days	30	30	30	30	30	30	30	30	30
Average (µg/m3)	36	35	42	30	29	20	27	18	21
Days > NAAQS	0	2	2	0	0	0	0	0	0
% days > NAAQS	0	7	7	0	0	0	0	0	0
Days in AQI Scale (PM$_{2.5}$ in µg/m3)									
Good (0-30)	8	13	4	18	17	30	24	30	28
Satisfactory (31-60)	22	15	24	12	13	0	6	0	2
Moderate (61-90)	0	2	2	0	0	0	0	0	0
Poor (91-120)	0	0	0	0	0	0	0	0	0
Very Poor (121-250)	0	0	0	0	0	0	0	0	0
Severe (>250)	0	0	0	0	0	0	0	0	0

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Ambient air quality status in Bangalore – September 2024 (PM$_{2.5}$ concentration, µg/m^3)
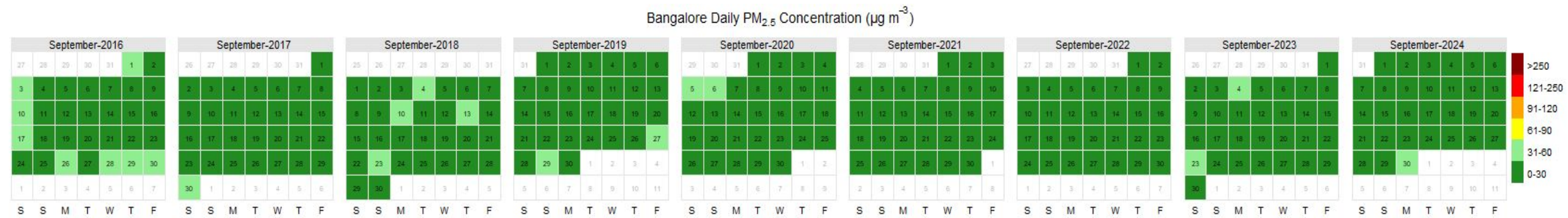
Bangalore Daily PM$_{2.5}$ Concentration (µg m^{-3})

Year	September-16	September-17	September-18	September-19	September-20	September-21	September-22	September-23	September-24
Monitored days	30	30	30	30	30	30	30	30	30
Average (µg/m3)	27	17	25	20	21	21	21	21	24
Days > NAAQS	0	0	0	0	0	0	0	0	0
% days > NAAQS	0	0	0	0	0	0	0	0	0
Days in AQI Scale (PM$_{2.5}$ in µg/m3)									
Good (0-30)	22	29	26	28	28	30	30	28	29
Satisfactory (31-60)	8	1	4	2	2	0	0	2	1
Moderate (61-90)	0	0	0	0	0	0	0	0	0
Poor (91-120)	0	0	0	0	0	0	0	0	0
Very Poor (121-250)	0	0	0	0	0	0	0	0	0
Severe (>250)	0	0	0	0	0	0	0	0	0

Ambient air quality status in Kolkata – September 2024 $(PM_{2.5}$ concentration, µg/m^3)

Kolkata Daily PM$_{2.5}$ Concentration (µg m^{-3})

Year	September-18	September-19	September-20	September-21	September-22	September-23	September-24
Monitored days	30	30	30	30	30	30	30
Average (µg/m3)	39	16	16	21	20	19	21
Days > NAAQS	7	0	0	0	0	0	0
% days > NAAQS	23	0	0	0	0	0	0
Days in AQI Scale (PM$_{2.5}$ in µg/m3)							
Good (0-30)	13	30	29	26	27	27	23
Satisfactory (31-60)	10	0	1	4	3	3	7
Moderate (61-90)	7	0	0	0	0	0	0
Poor (91-120)	0	0	0	0	0	0	0
Very Poor (121-250)	0	0	0	0	0	0	0
Severe (>250)	0	0	0	0	0	0	0

Data sources

Ambient air quality data recorded by Continuous Ambient Air Quality Monitoring Stations (CAAQMS) is downloaded from the '[Central Control Room for Air Quality Management - All India](#)' dashboard operated by the Central Pollution Control Board (CPCB).

Resources

To subscribe to these monthly air quality snapshots and to access the graphs and web version of this snapshot on our website here- [India monthly ambient air quality snapshot](#)