

CREA

Centre for Research on Energy and Clean Air

Monthly ambient air quality snapshot for India

July 2024

Legend Very Poor Poor Moderate Satisfactory Good

Key highlights

- **Byrnihat in Assam/Meghalaya ranked as the most polluted city in India in July 2024**, recording a monthly average $PM_{2.5}$ concentration of $90 \mu g/m^3$, surpassing the daily National Ambient Air Quality Standards (NAAQS) 70% of the days in the month. **Among India's top 10 polluted cities, three were located in Rajasthan, two each in Bihar and Haryana, while Punjab, Assam, and Uttar Pradesh each had one.**
- Ranking as India's 26th most polluted city in July 2024, Delhi's $PM_{2.5}$ pollution levels at $40 \mu g/m^3$ were just equivalent to the annual NAAQS but eight times the World Health Organization's (WHO) annual guideline.
- Other megacities, such as Chennai, Mumbai, Kolkata and Bangalore, had $PM_{2.5}$ concentrations below the annual NAAQS, with all days in July falling within the 'Good' category ($0-30 \mu g/m^3$).
- **A total of 61 cities were featured in the daily top 10 most polluted cities list in July 2024.** Of this, 23 made an appearance at least five times over the 31-day period, topped by Byrnihat in Assam/Meghalaya, which featured the most times (21 days), followed by Mandi Gobindgarh (17 days), Sri Ganganagar (15 days), Muzaffarpur (14 days), Faridabad (14 days), Dholpur (13 days), Dungarpur (12 days), Munger (10 days), Muzaffarnagar (10 days), and Rohtak (10 days).
- **Only 20 out of the 61 cities featured in the daily top 10 most polluted cities list during July 2024 are part of the National Clean Air Programme (NCAP).** The remaining 41 have no action plan to reduce hazardous air pollution concentrations.
- **Two new continuous ambient air quality monitoring stations (CAAQMS) were installed in July 2024: one each in Pune and Asansol.** This increased the national total to 547 stations.
- In July 2024, [226 out of 250 cities](#), with more than 80% of the days with CAAQMS data, recorded $PM_{2.5}$ concentrations below India's annual NAAQS of $40 \mu g/m^3$. Only five cities complied with the WHO's annual safe guideline concentration of $5 \mu g/m^3$.
 - In July 2024, the monthly average $PM_{2.5}$ levels in all NCAP cities (out of 98 cities with more than 80% of days with data) surpassed the WHO's annual guideline for $PM_{2.5}$, while 90 cities met India's annual NAAQS.
 - Among the 152 non-NCAP cities with over 80% of days with CAAQMS data, 147 cities reported monthly average $PM_{2.5}$ levels above the WHO annual guideline. 136 cities adhered to the annual NAAQS, while the air quality in the remaining 16 cities was poorer than the annual NAAQS.
- July 2024 experienced a substantial improvement in air quality, with 196 cities falling under the 'Good' category, a stark contrast to June's 130 cities. June 2024 witnessed 98 cities classified as 'Satisfactory' and 20 as 'Moderate', while July saw a slight decline to 50 and 4, respectively. In July, no city fell into the 'Poor', 'Very Poor' or 'Severe' category.
- The improvement in air quality during July 2024 can be largely credited to increased rainfall. Rain helps in washing down the pollutants from the atmosphere, leading to cleaner air. This natural cleansing process results in a higher number of cities being classified under the 'Good' category.

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

Total number (#) of CAAQMS installed in India	# of operational CAAQMS with >80% of the days with data in July 2024	# of CAAQMS with <80% but >1% of the days with data in July 2024	# of non-operational CAAQMS with no data in July 2024
547	464	35	48
Total number (#) of cities covered by CAAQMS	# of cities with >80% of the days in July with CAAQMS data in July 2024	# of cities with <80% but >1% of the days with CAAQMS data in July 2024	# of cities with CAAQMS installed but no available data in July 2024
281	250	20	11

CAAQMS and cities coverage	
# of stations in June 2024	545
# of stations in July 2024	547
# of cities covered by CAAQMS in June 2024	281
# of cities covered by CAAQMS in July 2024	281

New stations installed: one each in Pune and Asansol

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			180		
# 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
98	1	2	152	19	9

Compliance of PM_{2.5} concentration across Indian cities with NAAQS and WHO guidelines – July 2024

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

250

of NCAP cities with >80% of the days with CAAQMS data

of non-NCAP cities with >80% of the days with CAAQMS data

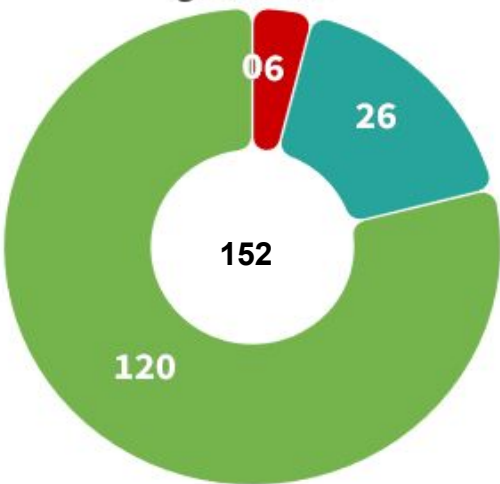
98

152

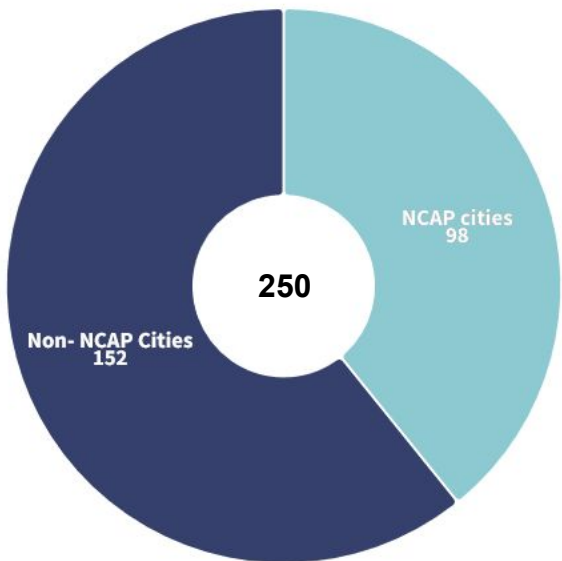
# of NCAP cities with monthly average PM _{2.5} concentration complying with WHO annual guideline levels	# of NCAP cities with monthly average PM _{2.5} concentration > WHO annual guideline levels	# of NCAP cities with monthly average PM _{2.5} concentration complying with the annual NAAQS	# of NCAP cities with monthly average PM _{2.5} concentration > the annual NAAQS	# of NCAP cities with monthly average PM _{2.5} concentration > 2 times annual NAAQS	# of non-NCAP cities with monthly average PM _{2.5} concentration complying with WHO annual guideline levels	# of non-NCAP cities with monthly average PM _{2.5} concentration > WHO annual guideline levels	# of non-NCAP cities with monthly average PM _{2.5} concentration complying with the annual NAAQS	# of non-NCAP cities with monthly average PM _{2.5} concentration > the annual NAAQS	# of non-NCAP cities with monthly average PM _{2.5} concentration > 2 times the annual NAAQS
0	98	90	8	1	5	147	136	16	0

Number of cities vs frequency of days with PM_{2.5} concentration above NAAQS and WHO guidelines – July 2024

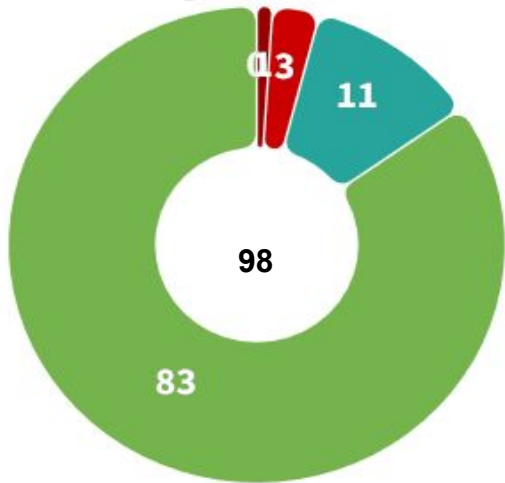
Categorisation of Non-NCAP cities against compliance to NAAQS guidelines



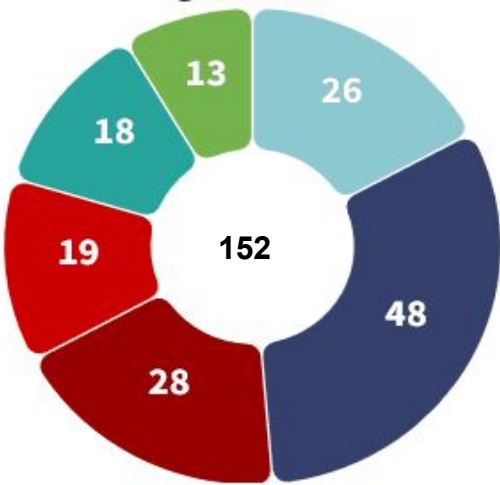
Total # of cities with >80% of the days with CAAQMS data



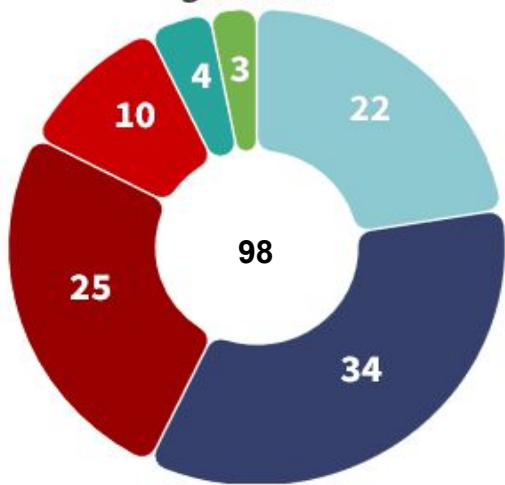
Categorisation of NCAP cities against compliance to NAAQS guidelines



Categorisation of Non-NCAP cities against compliance to WHO guidelines



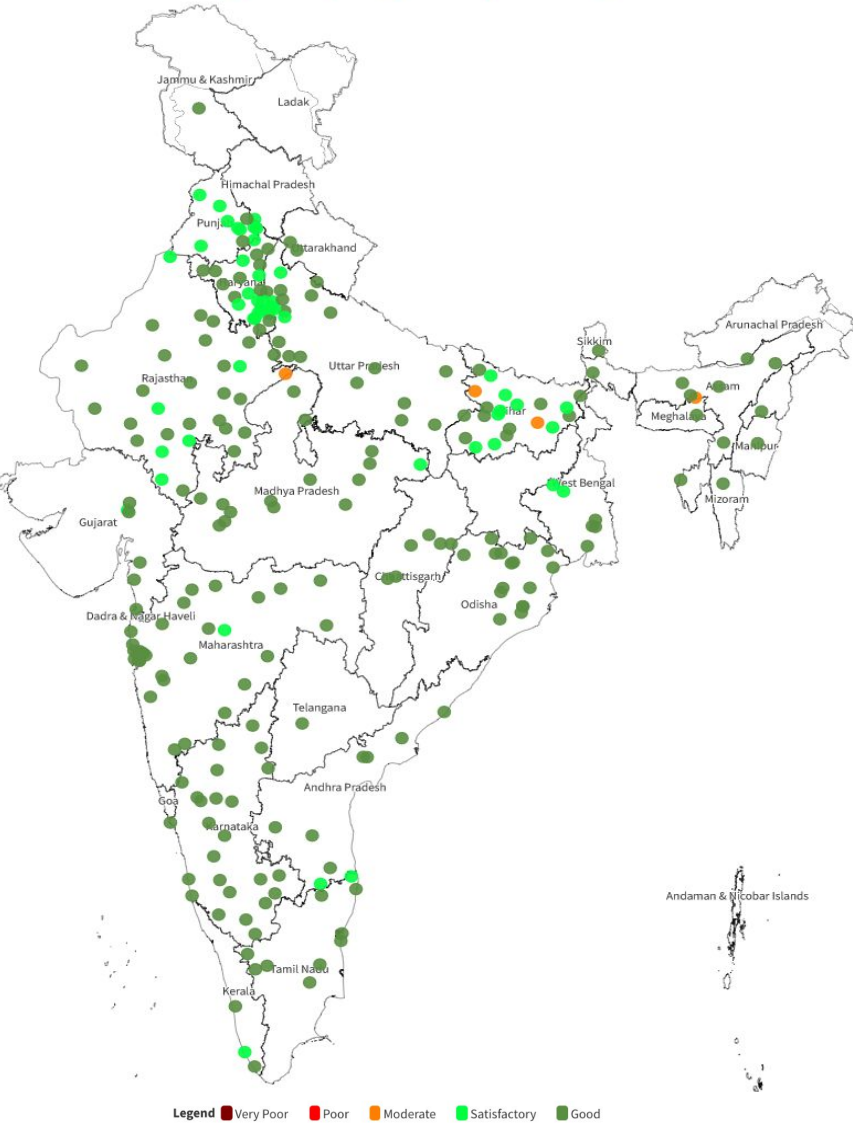
Categorisation of NCAP cities against compliance to WHO guidelines



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 – July 2024



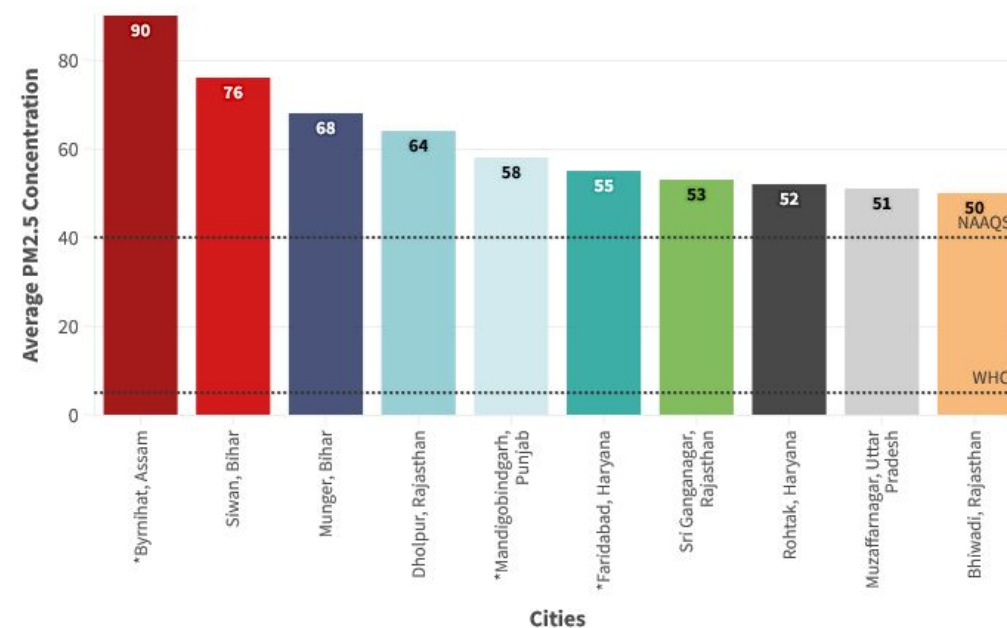
State/UT	Number of cities in AQI category (PM _{2.5} µg/m ³)				
	Good (0-30)	Satisfactory (31-60)	Moderate (61-90)	Poor (91-120)	Very Poor (121-250)
Andhra Pradesh	7	1	0	0	0
Arunachal Pradesh	1	0	0	0	0
Assam	5	0	1	0	0
Bihar	10	9	2	0	0
Chandigarh	0	1	0	0	0
Chhattisgarh	6	0	0	0	0
Gujarat	5	1	0	0	0
Haryana	11	12	0	0	0
Himachal Pradesh	0	1	0	0	0
Jammu and Kashmir	1	0	0	0	0
Karnataka	25	0	0	0	0
Kerala	2	1	0	0	0
Madhya Pradesh	13	1	0	0	0
Maharashtra	29	1	0	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	16	0	0	0	0
Puducherry	1	0	0	0	0
Punjab	2	6	0	0	0
Rajasthan	24	7	1	0	0
Sikkim	1	0	0	0	0
Tamil Nadu	8	1	0	0	0
Telangana	1	0	0	0	0
Tripura	1	0	0	0	0
Uttar Pradesh	15	5	0	0	0
Uttarakhand	3	0	0	0	0
West Bengal	5	2	0	0	0

Top 10 most polluted cities in India by PM_{2.5} concentration – July 2024

Days in respective AQI categories based on PM_{2.5} (µg/m³) – July 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	70	2	7	9	3	9	0
Siwan	29	10	11	15	1	0	0	2
Munger	31	26	15	8	1	2	2	3
Dholpur	30	37	9	10	3	3	5	0
Mandi Gobindgarh	31	48	6	11	9	5	0	0
Faridabad	31	26	1	22	8	0	0	0
Sri Ganganagar	31	32	4	17	10	0	0	0
Rohtak	31	26	7	16	4	4	0	0
Muzaffarnagar	31	32	4	17	9	1	0	0
Bhiwadi	31	29	3	19	9	0	0	0

Top 10 most polluted cities in India by PM_{2.5} concentrations (µg/m³) - July 2024

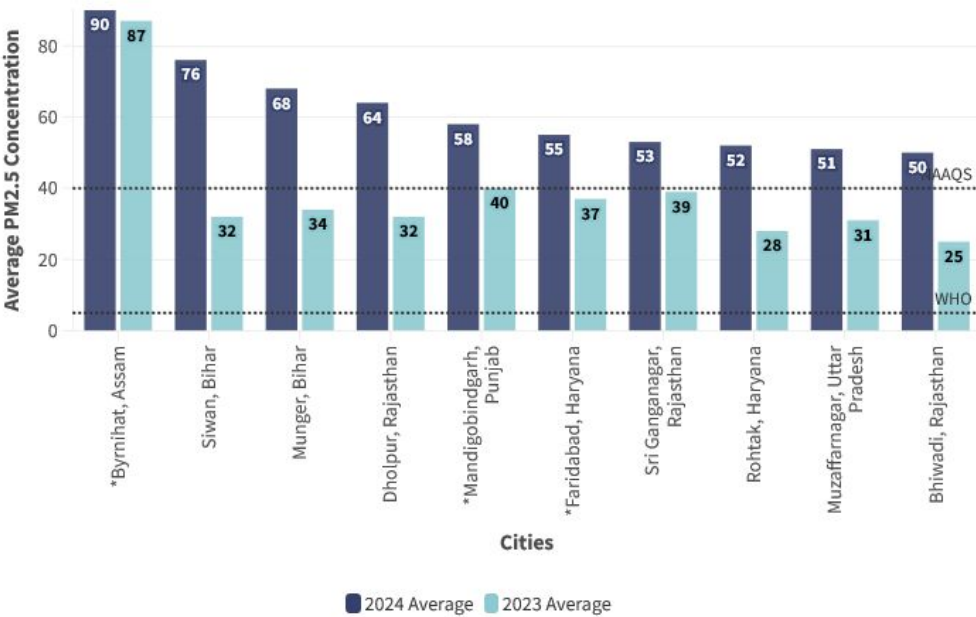


Source: CCR
* NCAP cities

Status of PM_{2.5} concentration in July 2023 for top 10 most polluted cities in July 2024 across India

Days in respective AQI categories based on PM _{2.5} (µg/m³) – July 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	26	19	2	5	5	8	6	0
Siwan	31	3	20	8	2	1	0	0
Munger	31	1	15	15	1	0	0	0
Dholpur	25	1	13	11	1	0	0	0
Mandi Gobindgarh	30	5	11	14	4	1	0	0
Faridabad	31	2	10	19	1	0	1	0
Sri Ganganagar	31	2	10	19	2	0	0	0
Rohtak	31	0	20	11	0	0	0	0
Muzaffarnagar	26	2	18	6	2	0	0	0
Bhiwadi	31	0	24	7	0	0	0	0

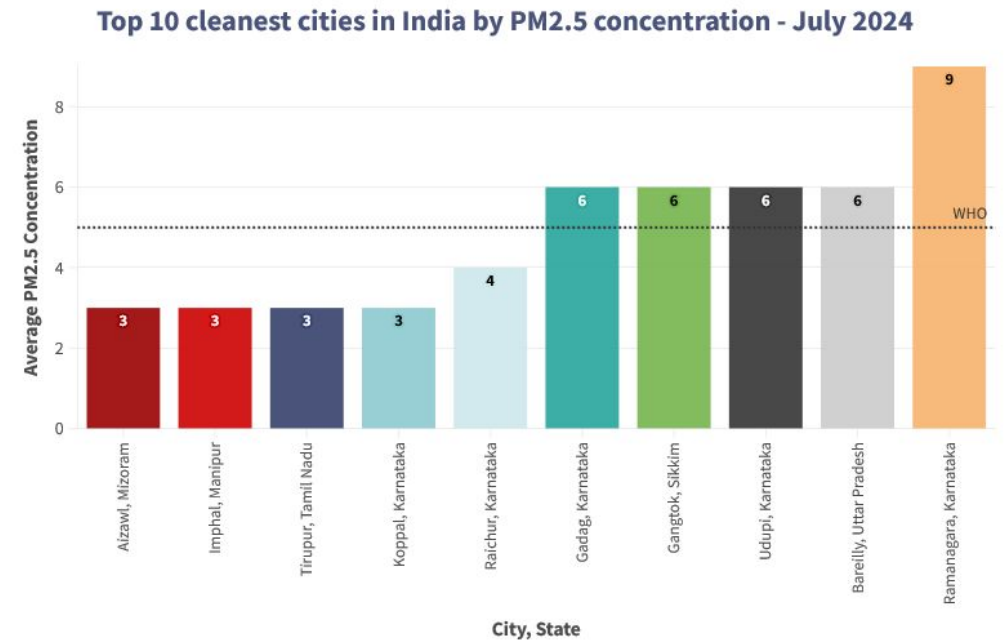
Top 10 most polluted cities in India by PM2.5 concentrations (µg/m3) - July 2024 Vs July 2023



Source: CCR
* NCAP cities

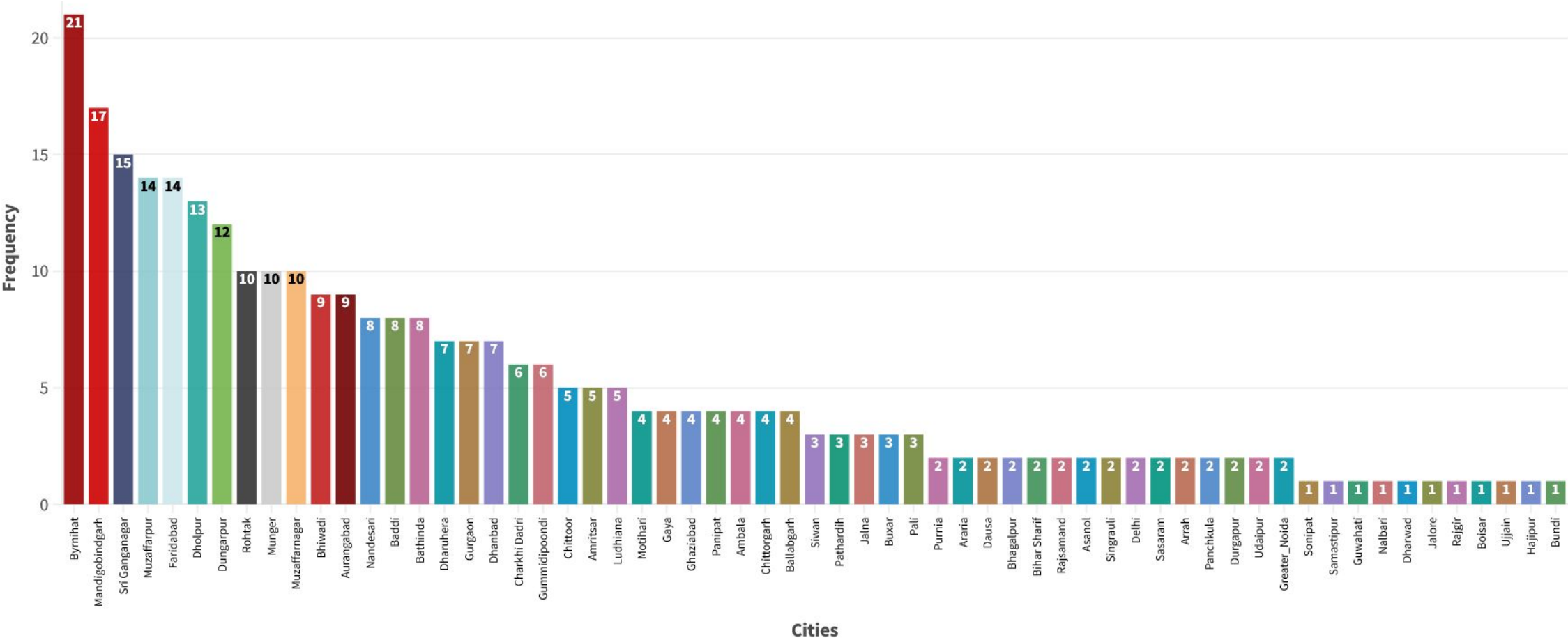
Status of PM_{2.5} concentration in July 2023 for top 10 cleanest cities in July 2024 across India

Days in respective AQI categories based on PM _{2.5} (µg/m3) – July 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
Imphal	27	0	27	0	0	0	0	0
Tirupur	27	0	27	0	0	0	0	0
Koppal	30	0	30	0	0	0	0	0
Raichur	30	0	30	0	0	0	0	0
Gadag	31	0	31	0	0	0	0	0
Gangtok	30	0	30	0	0	0	0	0
Udupi	31	0	31	0	0	0	0	0
Bareilly	31	0	31	0	0	0	0	0
Aizawl	28	0	28	0	0	0	0	0



Source: [CCR](#)

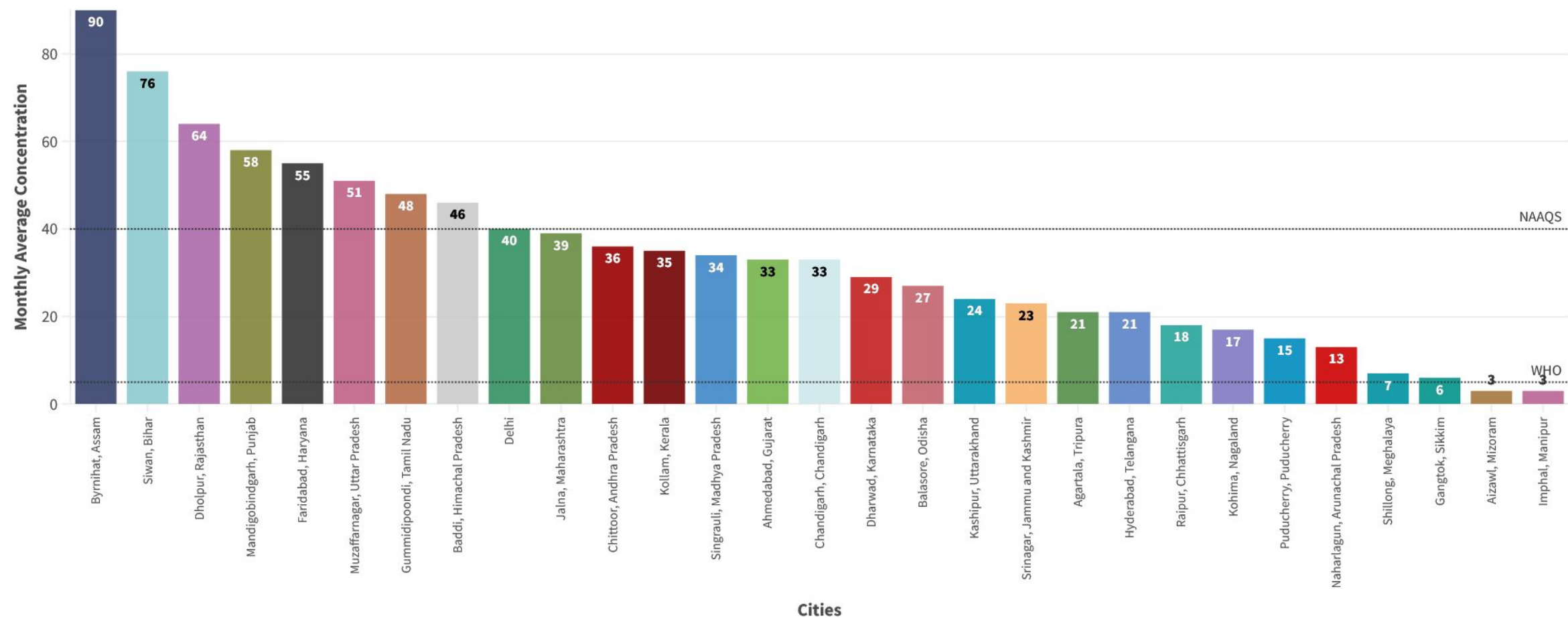
Frequency of appearance of respective cities in top 10 most polluted cities in India list by PM_{2.5} concentration – July 2024



Source: CCR



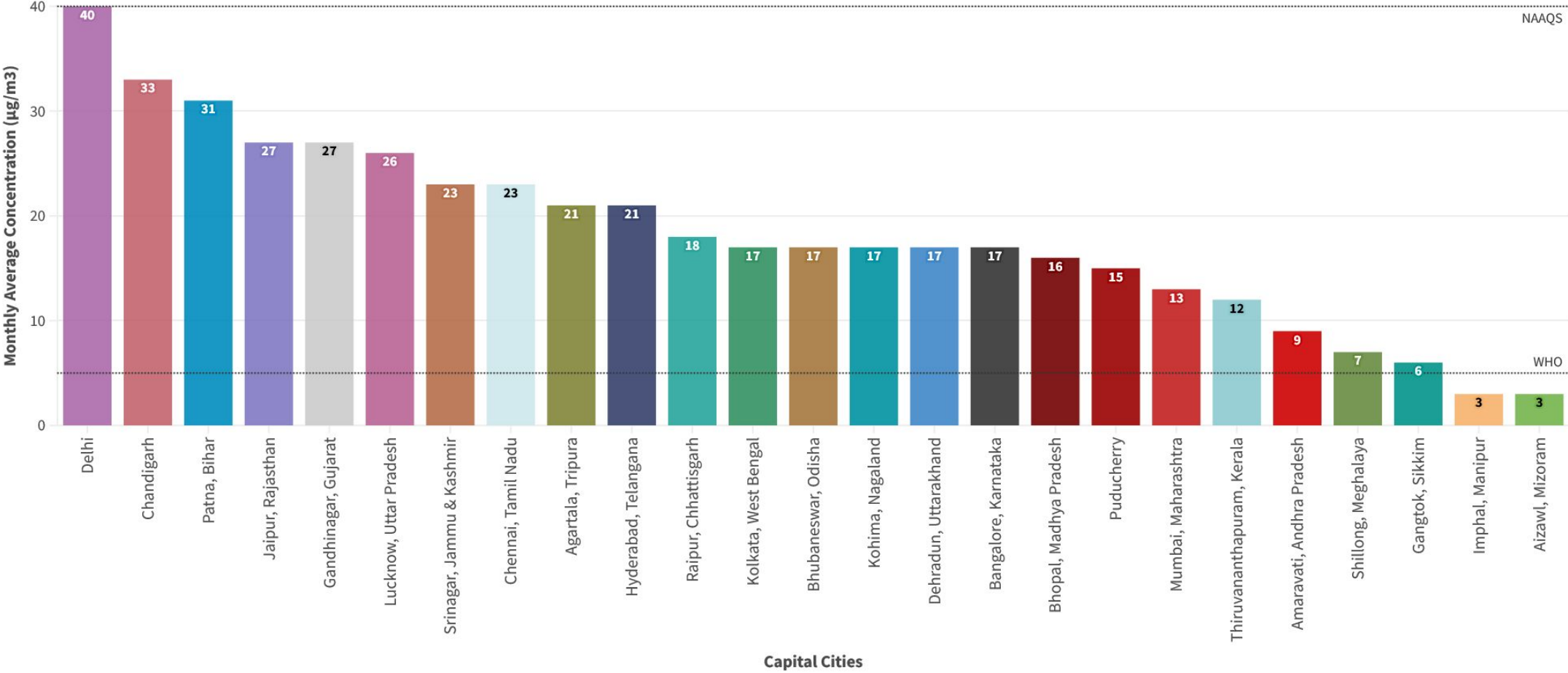
State-wise most polluted cities (PM_{2.5}, µg/m³) in India – July 2024



Source: [CCR](#)



PM_{2.5} concentrations across state/provincial capital cities in India – July 2024

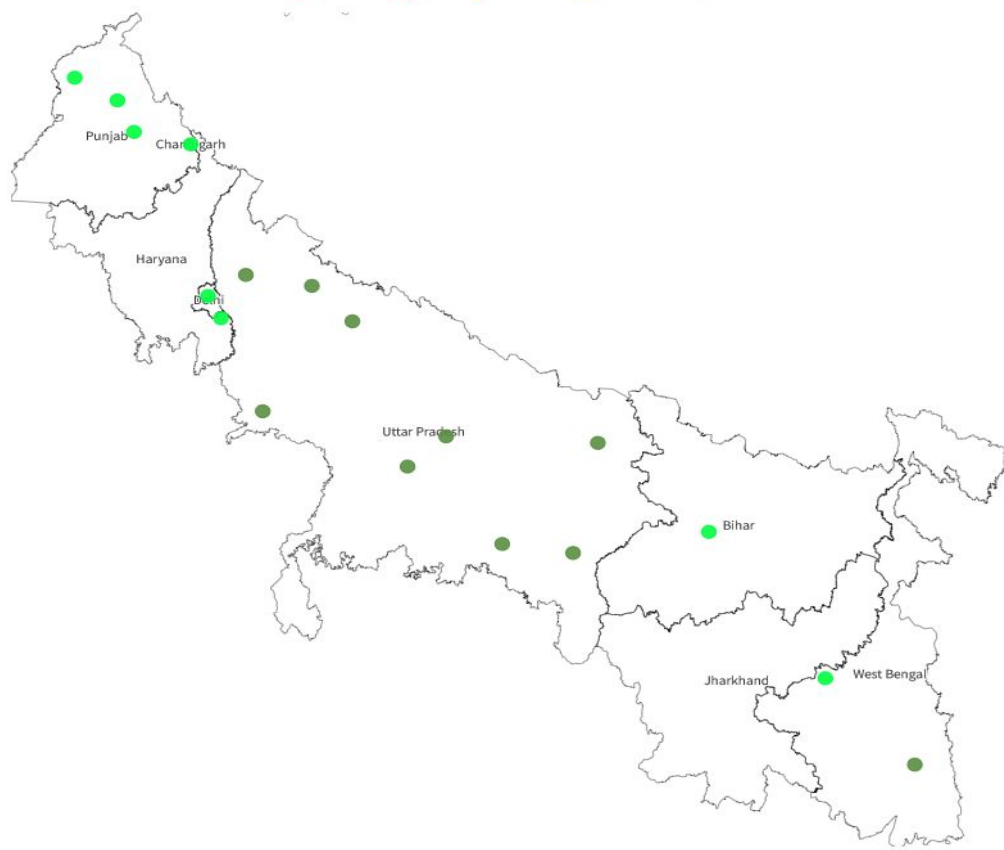


Source: CCR



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.

PM_{2.5} concentrations across million plus cities in Indo-Gangetic Plain in India (with CAAQMS) – July 2024

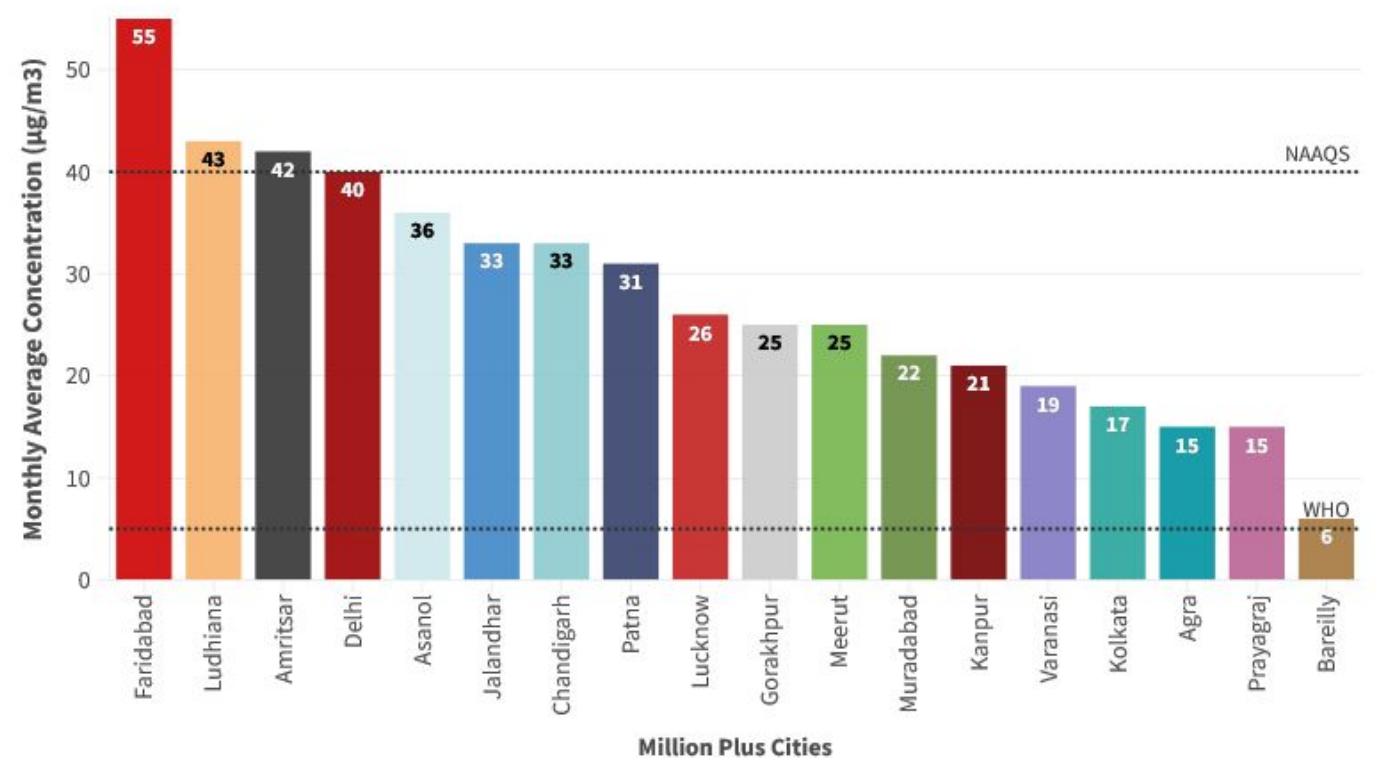


Source: CPCB
Note: Cities that have data coverage for at least 80% of the days in a month are considered for analysis



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

PM_{2.5} Concentrations Across Million Plus Cities of Indo-Gangetic Plain in India- July 2024



Source: CCR



Ambient air quality status in Delhi – July 2024 (PM_{2.5} concentration, µg/m³)



Year	July-16	July-17	July-18	July-19	July-20	July-21	July-22	July-23	July-24
Monitored days	31	31	31	31	31	31	31	31	31
Average (µg/m ³)	59	40	41	47	34	39	36	35	40
Days > NAAQS	13	2	3	9	2	0	2	0	3
% days > NAAQS	42	6	10	29	6	0	6	0	10
Days in AQI Scale (PM _{2.5} in µg/m ³)									
Good (0-30)	0	4	4	4	12	5	11	10	7
Satisfactory (31-60)	18	25	24	18	17	26	18	21	21
Moderate (61-90)	10	2	3	9	2	0	2	0	3
Poor (91-120)	3	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 Mumbai – July 2024 (PM_{2.5} concentration, µg/m³)



Year	July-18	July-19	July-20	July-21	July-22	July-23	July-24
Monitored days	30	31	31	31	31	31	31
Average (µg/m ³)	16	12	9	20	20	33	13
Days > NAAQS	0	0	0	0	1	0	0
% days > NAAQS	0	0	0	0	3	0	0
Days in AQI Scale (PM _{2.5} in µg/m ³)							
Good (0-30)	30	31	31	31	29	15	31
Satisfactory (31-60)	0	0	0	0	1	16	0
Moderate (61-90)	0	0	0	0	1	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 – July 2024 (PM_{2.5} concentration, µg/m³)



Year	July-16	July-17	July-18	July-19	July-20	July-21	July-22	July-23	July-24
Monitored days	31	31	31	31	31	31	31	31	31
Average (µg/m ³)	33	55	51	37	27	17	20	23	23
Days > NAAQS	0	12	4	1	0	0	0	0	0
% days > NAAQS	0	39	13	3	0	0	0	0	0
Days in AQI Scale (PM _{2.5} in µg/m ³)									
Good (0-30)	13	2	0	7	21	31	31	30	31
Satisfactory (31-60)	18	17	27	23	10	0	0	1	0
Moderate (61-90)	0	10	4	1	0	0	0	0	0
Poor (91-120)	0	2	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 Bangalore – July 2024

(PM_{2.5} concentration, µg/m³)



Year	July-16	July-17	July-18	July-19	July-20	July-21	July-22	July-23	July-24
Monitored days	31	31	31	31	31	31	31	31	31
Average (µg/m ³)	20	24	19	21	16	19	24	17	17
Days > NAAQS	0	1	0	0	0	0	0	0	0
% days > NAAQS	0	3	0	0	0	0	0	0	0
Days in AQI Scale (PM _{2.5} in µg/m ³)									
Good (0-30)	27	30	31	31	31	31	28	30	31
Satisfactory (31-60)	4	0	0	0	0	0	3	1	0
Moderate (61-90)	0	0	0	0	0	0	0	0	0
Poor (91-120)	0	1	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 – July 2024 (PM_{2.5} concentration, µg/m³)



Year	July-18	July-19	July-20	July-21	July-22	July-23	July-24
Monitored days	31	31	31	31	31	31	31
Average (µg/m ³)	22	27	15	22	14	13	17
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/m ³)							
Good (0-30)	23	22	31	24	31	31	31
Satisfactory (31-60)	8	9	0	7	0	0	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