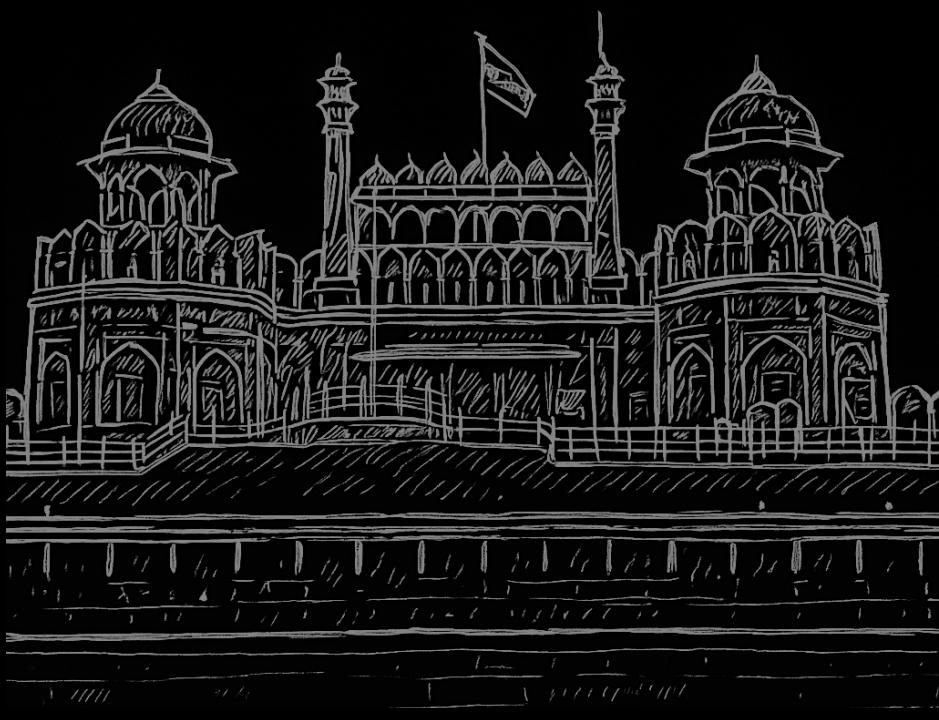




Delhi is suffocating !!

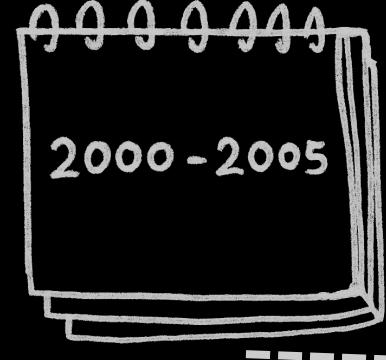
Policy failures in plain sight



CNG → EV's : (2000 → 2025)

Delhi's Air Pollution Policies Timeline

CNG Push



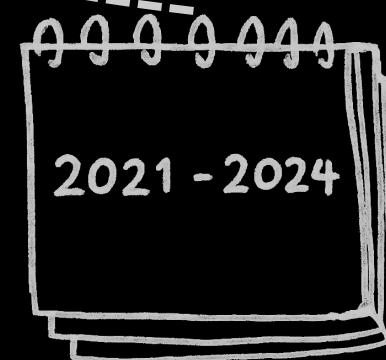
- 2001 (April) - Supreme Court orders all Delhi buses, autos, and taxis to switch to CNG.
2002 - Delhi's entire public transport fleet (buses, autos, taxis) moves to CNG.
2005 - Delhi launches the Bhure Lal Committee recommendations for air quality.
Impact - Drop in PM₁₀ levels.

Public Outcry and Odd/Even Scheme

- 2014 - WHO ranks Delhi as the most polluted city globally.
2016 - First Odd-Even scheme enforced. 2017 - Firecracker ban in Diwali.
2019 - 2020 - Introduction of BS VI fuel, supreme court bans BS IV vehicle registration beyond 2020.
Impact: Showed - 5-6% drop in PM_{2.5}, especially in traffic hotspots, though effects were short-lived.



EV Expansion and Technological Monitoring



- 2021 - Introduction of anti-smog guns, smog towers, Pusa bio-decomposer.
2022 - Delhi government introduces 'Red Light On, Gaadi Off' campaign.
2023 - Winter Action Plan 2023 launched targeting stubble burning, dust control.
2024 - Expansion of EV charging stations across Delhi.
Impact - No significant impact in PM_{2.5}, but better AQI in some parts of Delhi.

End of Life Vehicle refueling ban.

2025 (July) - A ban on refuelling for diesel vehicles > 10 yrs & petrol vehicles older than 15 yrs, enforced via ANPR cameras with real time alert in petrol pumps and CNG stations.

This move may seem to be similar to the ban imposed by AAP government on diesel vehicles which relied on manual checks, but this policy is a smarter choice to lure mass audience which tend to be more tech-savvy.

Although it affected many fuel pumps and generated significant public resistance, leading to an immediate policy pause.



What's in the Air? Where it's from? How it affects us?



Hydrocarbons

What? - A group of volatile organic compounds (VOCs) from unburnt fuel.

Benzene, Toluene, Xylene, and other VOCs under the HC umbrella.

Where? - Vehicle exhaust (especially diesel), construction dust, industrial smoke, burning garbage.

How? - React with sunlight to form ground level ozone, which causes asthma, eye irritation, and lung damage.

Nitrogen Oxides

What? - A group of highly reactive gases containing nitrogen and oxygen.

Mostly NO (Nitric Oxide) and NO₂ (Nitrogen Dioxide) are present in the air.

Where? - High temperature combustion in vehicles, power plants, industrial boilers.

How? - Triggers smog and acid rain, worsens asthma, and damages lungs and soil. Combines with HC to form ozone.

Carbon Monoxide

What? - Colorless, odorless gas released when fuel does not burn completely.

Where? - Comes from Old vehicles, traffic jams, diesel/petrol engines, and burning wood/coal.

How? - Reduces oxygen supply to the body, threatening for heart patients.

Particulate Matter

What? - Tiny particles suspended in air, made of solids or liquids.

PM₁₀ - coarse particles (dust, pollen).

PM_{2.5} - fine particles (soot, smoke), most dangerous.

Where? - Vehicle exhaust (especially diesel), construction dust, industrial smoke, burning garbage.

How? - Enters lungs and bloodstream, linked to heart attacks, lung diseases, and reduced lifespan.

Drop in emission levels post CNG Push

BUS (diesel/petrol)

| | CO | HC | NO _x | PM |
|-----------|-----|------|-----------------|------|
| 1986-1990 | 5.5 | 1.78 | 19 | 3 |
| 1991-1995 | 5.5 | 1.78 | 19 | 3 |
| 1996-2000 | 4.5 | 1.21 | 16.8 | 1.6 |
| 2001-2005 | 3.6 | 0.87 | 12 | 0.56 |

BUS (CNG)

| | CO | HC | NO _x | PM |
|-----------|------|-------|-----------------|-------|
| 1986-1990 | 5.6 | 8.92 | 2.2 | 0.032 |
| 1991-1995 | 5.6 | 8.92 | 2.2 | 0.032 |
| 1996-2000 | 5.6 | 8.92 | 2.2 | 0.032 |
| 2001-2005 | 1.46 | 1.958 | 6.68 | 0.02 |

Drops in emissions: CO fell from ~3.6 to 1.46 g/km, PM from 0.56 to 0.02 g/km, and NO_x dropped significantly.

Trucks (Diesel/Petrol)

| | CO | HC | PM |
|-----------|-----|------|------|
| 1986-1990 | 5.5 | 1.78 | 9.5 |
| 1991-1995 | 5.5 | 8.4 | 0.8 |
| 1996-2000 | 4.5 | 6.3 | 0.28 |
| 2001-2005 | 3.6 | 5.5 | 0.12 |

Trucks (CNG)

| | CO | HC | PM |
|-----------|------|-------|-------|
| 1986-1990 | 5.6 | 8.92 | 0.032 |
| 1991-1995 | 5.6 | 8.92 | 0.032 |
| 1996-2000 | 5.6 | 8.92 | 0.032 |
| 2001-2005 | 1.46 | 1.958 | 0.02 |

Diesel-to-CNG conversions in trucks produced steep drops in CO (5.6 → 1.46 g/km), HC (8.92 → 1.958 g/km), and PM (0.032 → 0.02 g/km)

Car (Petrol)

| | CO | HC | PM |
|-----------|------|------|------|
| 1986-1990 | 9.8 | 1.7 | 0.06 |
| 1991-1995 | 9.8 | 1.7 | 0.06 |
| 1996-2000 | 3.9 | 0.8 | 0.05 |
| 2001-2005 | 1.98 | 0.25 | 0.03 |

Car (Diesel)

| | CO | HC | NO _x | PM |
|-----------|-----|------|-----------------|------|
| 1986-1990 | 7.3 | 0.37 | 2.77 | 0.84 |
| 1991-1995 | 7.3 | 0.37 | 2.77 | 0.84 |
| 1996-2000 | 1.2 | 0.37 | 0.69 | 0.42 |
| 2001-2005 | 0.9 | 0.13 | 0.5 | 0.07 |

Car (CNG)

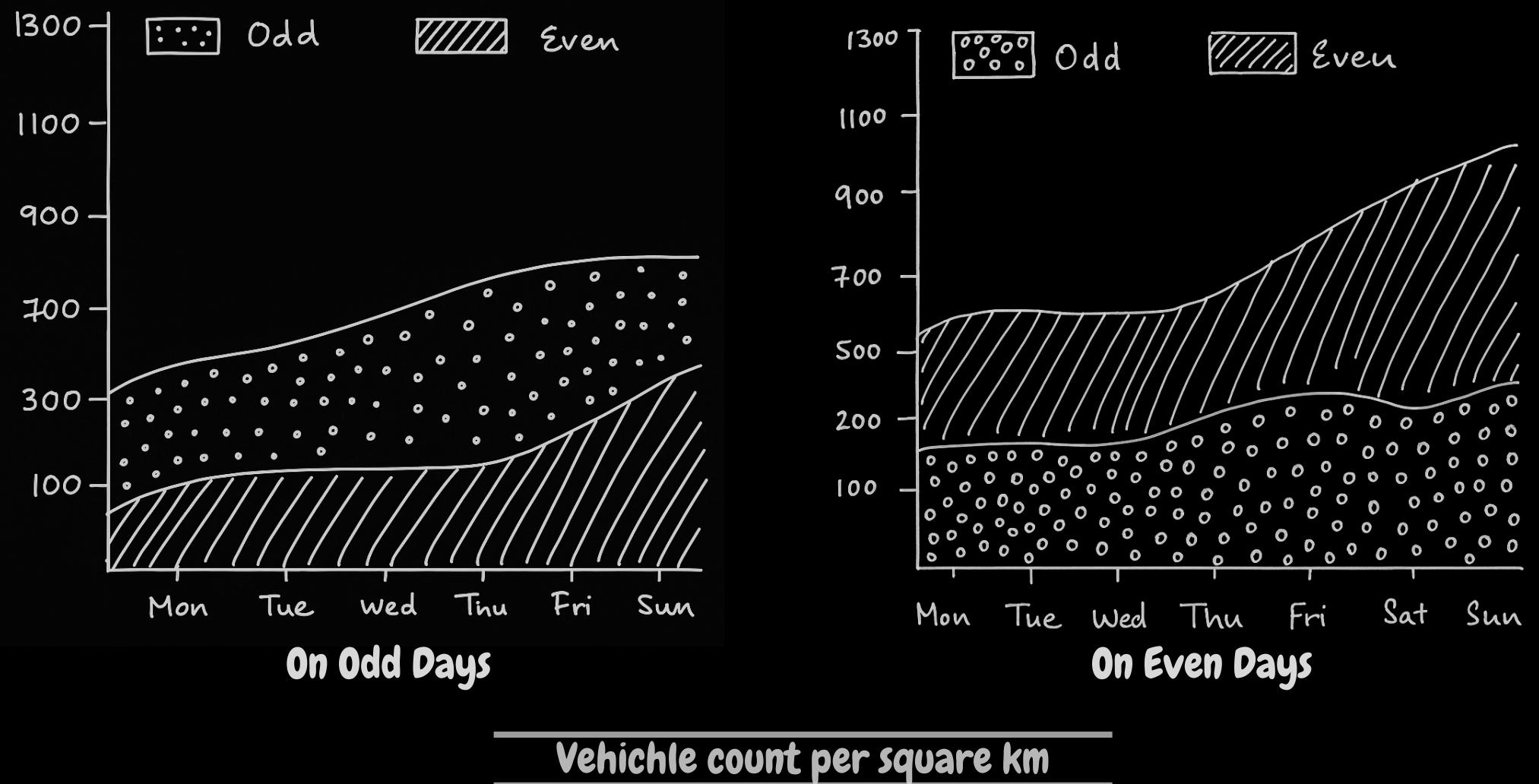
| | CO | HC | NO _x | PM |
|-----------|-------|------|-----------------|------|
| 1986-1990 | 3.85 | 1.19 | 0.71 | 0.02 |
| 1991-1995 | 3.85 | 1.19 | 0.71 | 0.02 |
| 2006-2000 | 0.786 | 1.55 | 0.92 | 0.02 |
| 2001-2005 | 0.786 | 1.55 | 0.92 | 0.02 |

All Emission Factors are in gm/km

Across cars, emission factors improved significantly: diesel CO decreased (1.2 → 0.9 g/km), CNG cars even lower (~0.786 g/km), and PM dropped under 0.1 g/km. This change helped reduce overall urban air pollution from personal vehicles.

Adoption of CNG was slow but among public transport it was fast due to subsidiary benefits and strict jurisdiction during this period

Odd & Even



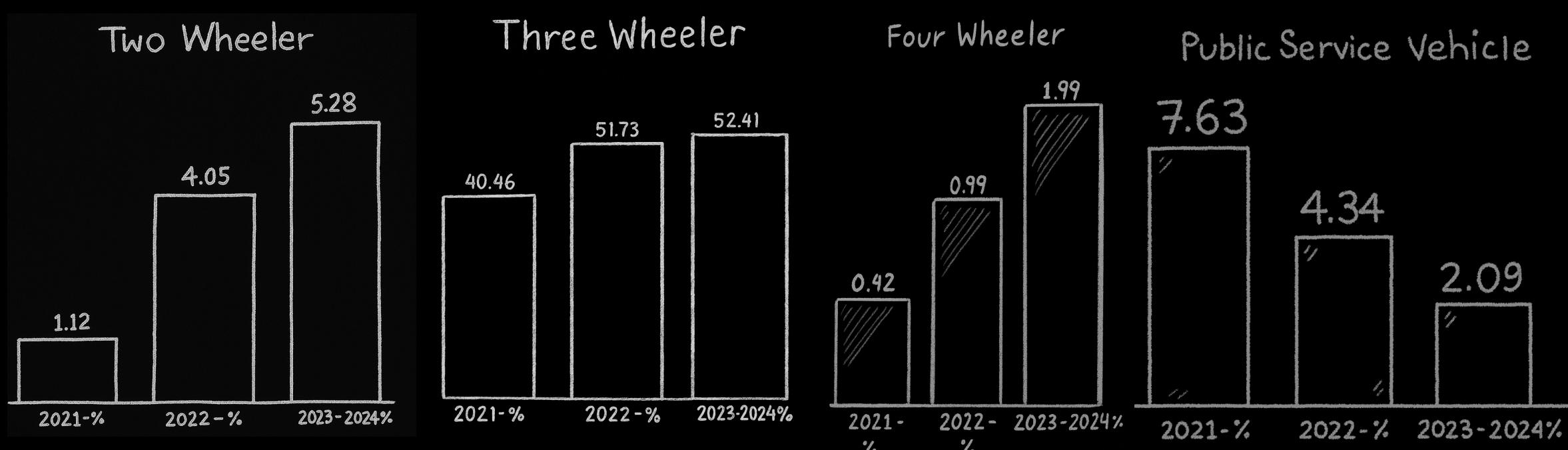
Several reports show that there was no significant drop in emission levels with this rule as it was a major flop.

Enforcement method: Relied on manual checkpoints and random vehicle inspections—not technology-driven—making it partially effective and limited in scope.

On days where vehicle allowed with odd number plate, people were seen driving even numbered vehicles and vice versa indicating it as a major policy fail without any proper regulation or control measures.

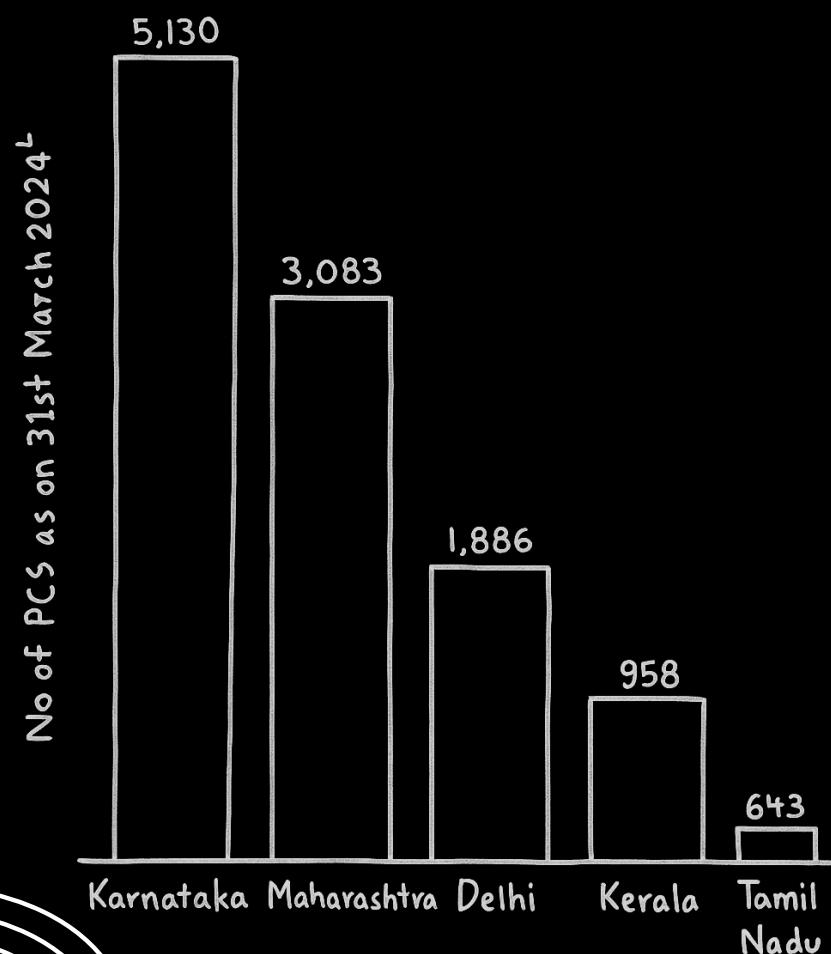
EV expansion

- Adoption among Four wheeler was fast and impressive with advance technologies and companies trying to be first mover in this premium segment.
- Public Service vehicle were slow and gradual as they were either CNG or already Eve'd by that time.
- Three and Two wheeler segment showed good improvement but major concern was people lacking general knowledge and know-how of EV as a product.



% of EV to all other types (Petrol/Diesel/CNG) in particular vehicle segment

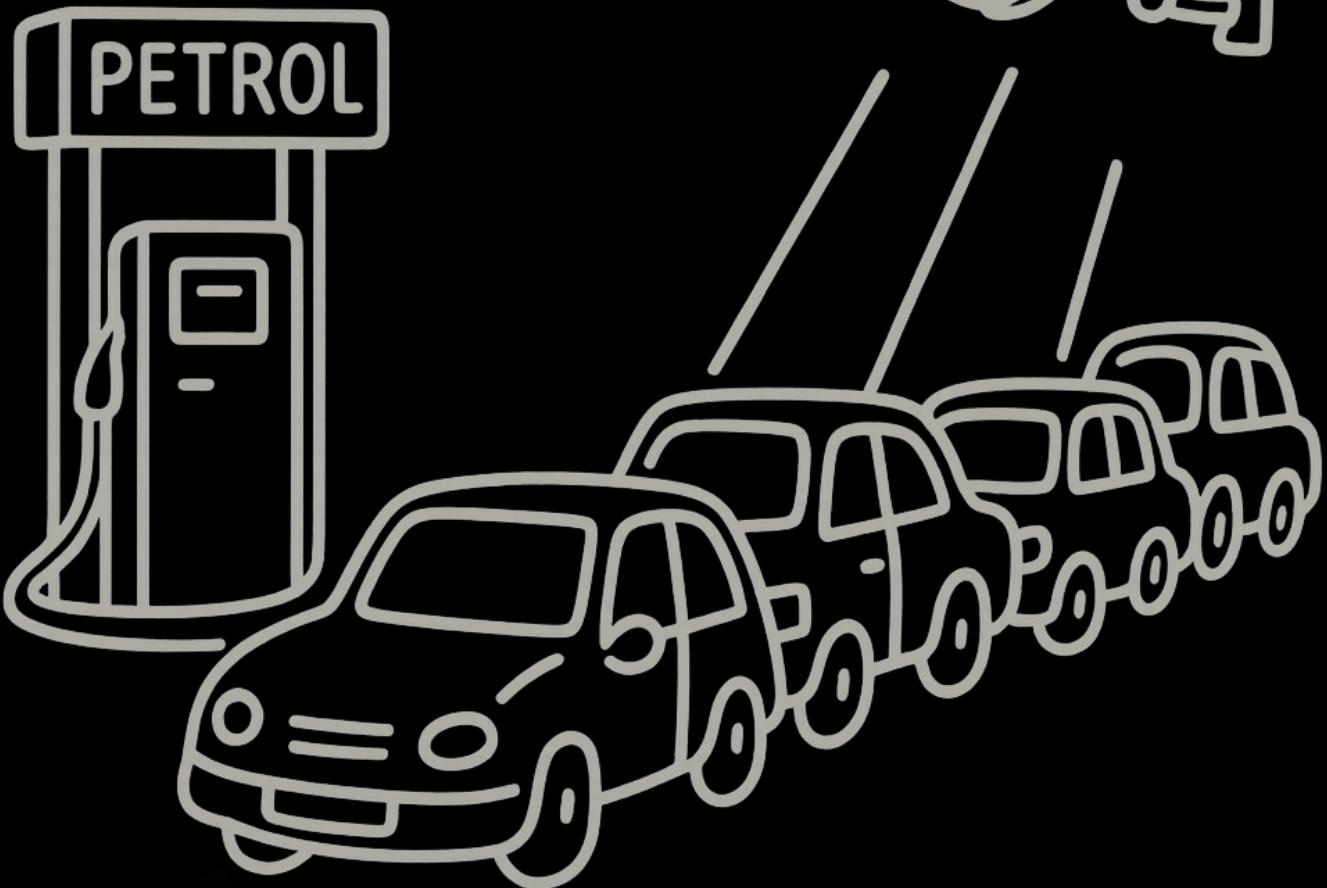
No of Public Charging
Stations in States/UT.



**Delhi government promotes
itself as the leader in India's
EV journey—but where is the
infrastructure to prove it?**

End of Life Vehicle Refueling ban.

ANPR cameras installed at ~500 petrol/diesel stations & ISBTs scan number plates. They check vehicle data via the VAHAN database in real time.



Banned refuelling of diesels older than 10 years and petrol vehicles older than 15 years—applies to all vehicles regardless of registration.