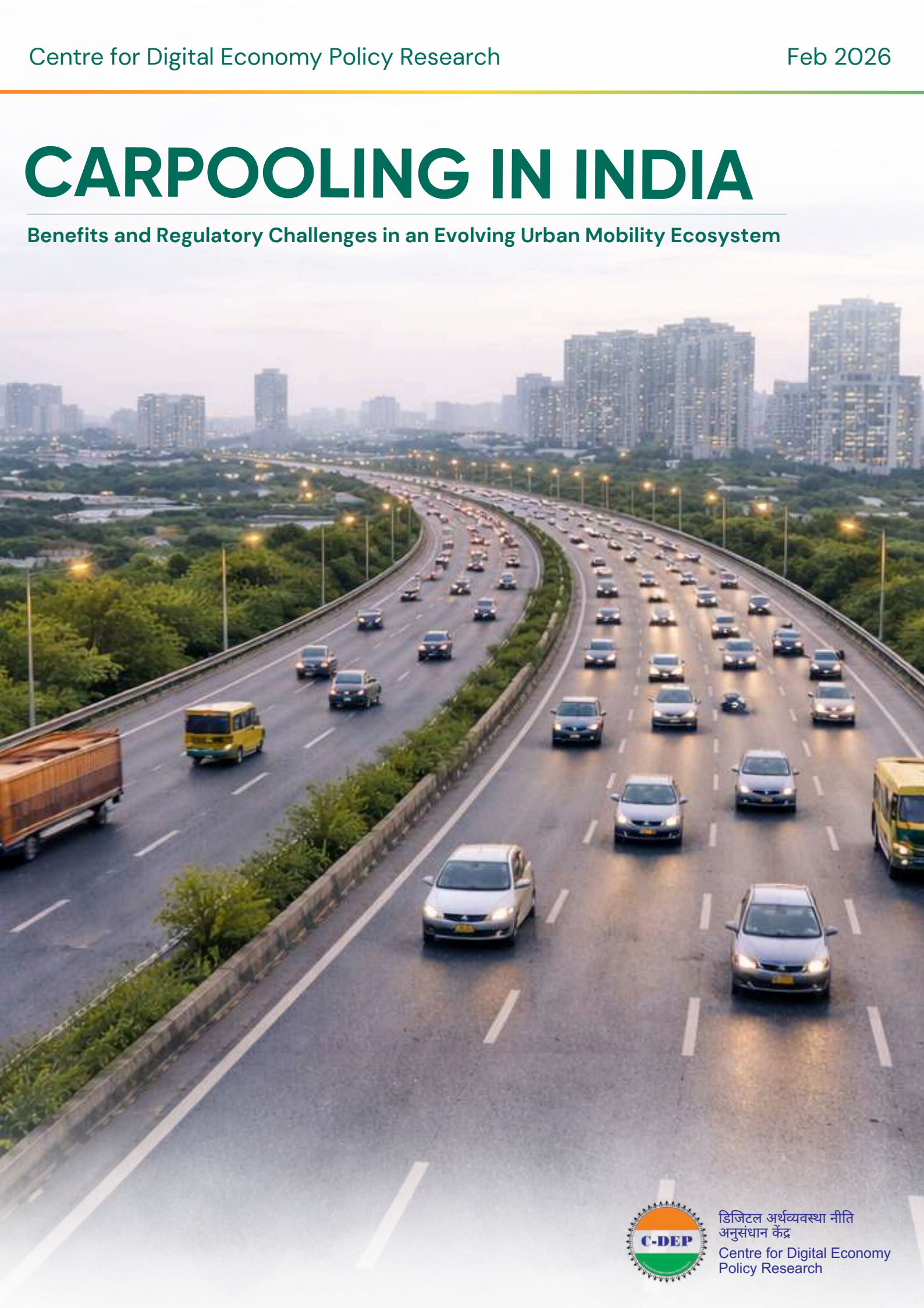
CARPOOLING IN INDIA

Benefits and Regulatory Challenges in an Evolving Urban Mobility Ecosystem



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Executive Summary

India's urban transport landscape is under mounting pressure due to rapid urbanisation, a surge in vehicle ownership, and overstretched public transportation systems. These factors have resulted in severe congestion, increased pollution, and worsening commuter experiences.

Rising vehicle ownership and urban sprawl

Between 2011 and 2025, registered vehicles increased from about 142 million to nearly 390 million. Over the same period, India's urban population grew by roughly 38 percent from 395 million to 542 million. These parallel trends have intensified pressure on road networks.

At the same time, **cities have expanded outward. Economic activity has moved toward peri-urban and satellite areas.** The Economic Survey 2025–26 notes that peri-urban areas are emerging as important hubs for housing, industry, and logistics, and that planning frameworks must move beyond statutory city limits to manage this shift effectively. As a result, commute distances have increased, especially along inter-city corridors.

While metro rail and highways have expanded, **flexible and reliable transport options for medium-distance travel, roughly 30 to 500 kilometres, remain limited.** Bus and train services on many such routes face issues of frequency, predictability, and last-mile connectivity.

Conversely, **private travel, though flexible, is becoming increasingly unaffordable** due to escalating costs associated with fuel, tolls, vehicle depreciation, and insurance. This has resulted in limited transport options for many, especially those in underserved areas.

This white paper proposes carpooling as a practical, affordable, and readily implementable solution. **Carpooling can be defined as a non-commercial, peer-to-peer arrangement where individuals voluntarily share empty seats on their planned journeys.** It effectively utilises existing vehicle capacity without requiring additional public infrastructure.

Carpooling offers a transformative solution

Over 1.9 million inter-city carpooling trips were recorded in Maharashtra in 2024

- Five major corridors accounted for **54%** of this traffic.

Over 80% cheaper than solo travel

- Average cost per kilometer for a shared seat **~ ₹2.33**

Around ₹360 per person in operating cost

- On a 120 km trip, operating costs (fuel, tolls, depreciation, insurance, and maintenance), when shared with four riders, falls from ₹1800 to approximately ₹360 per person.

Trust and inclusivity via carpooling platforms

- User ratings, women-only ride options and digital payment verification enhance safety
- Improves last-mile connectivity, especially in rural and peri-urban areas

Upto a 22% decrease in CO_2 emissions

- Raising average occupancy from 1.5 to 2.5 persons could reduce per capita emissions from transport by up to 22%

0.87 million tonnes of CO2 emissions annually reduced

- Scaling carpooling across urban corridors could eliminate 380 million litres of annual fuel consumption and prevent 0.87 million tonnes of CO_2 emissions, equivalent to the carbon absorption capacity of 44 million trees each year.

On corridors like Delhi–Gurgaon, where over 3,00,000 vehicles move daily, **shifting just 20% of trips to carpooling could remove around 60,000 vehicles from the road.**

Carpooling offers a timely and effective resolution to India's evolving mobility challenges. It complements public transport, improves vehicle utilisation, reduces congestion and emissions, and expands affordable travel options. The Draft Motor Vehicle Aggregator Guidelines, 2024, and the Maharashtra Draft Motor Vehicle Aggregators Rules, 2025, clearly recognise non-commercial carpooling as distinct from ride-hailing services, reinforcing its cost-sharing, non-profit nature. As India moves toward a more resilient and sustainable transport system, such regulatory clarity will help unlock its benefits without creating unnecessary regulatory barriers.


ri Maha Dev
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PURPOSE

1. Purpose of this report

India's urban mobility crisis calls for low-cost, high-impact solutions that can work alongside existing infrastructure efforts. Rising vehicle ownership, growing urban populations, and pressure on public transportation systems have together led to persistent challenges such as traffic congestion, air pollution, and commuter delays.

This white paper highlights the potential of carpooling as a non-commercial, peer-to-peer activity that can directly contribute to easing some of these challenges. It explores how carpooling offers an immediate, inclusive, and scalable solution that complements broader mobility strategies by unlocking unused vehicle capacity and promoting shared travel.

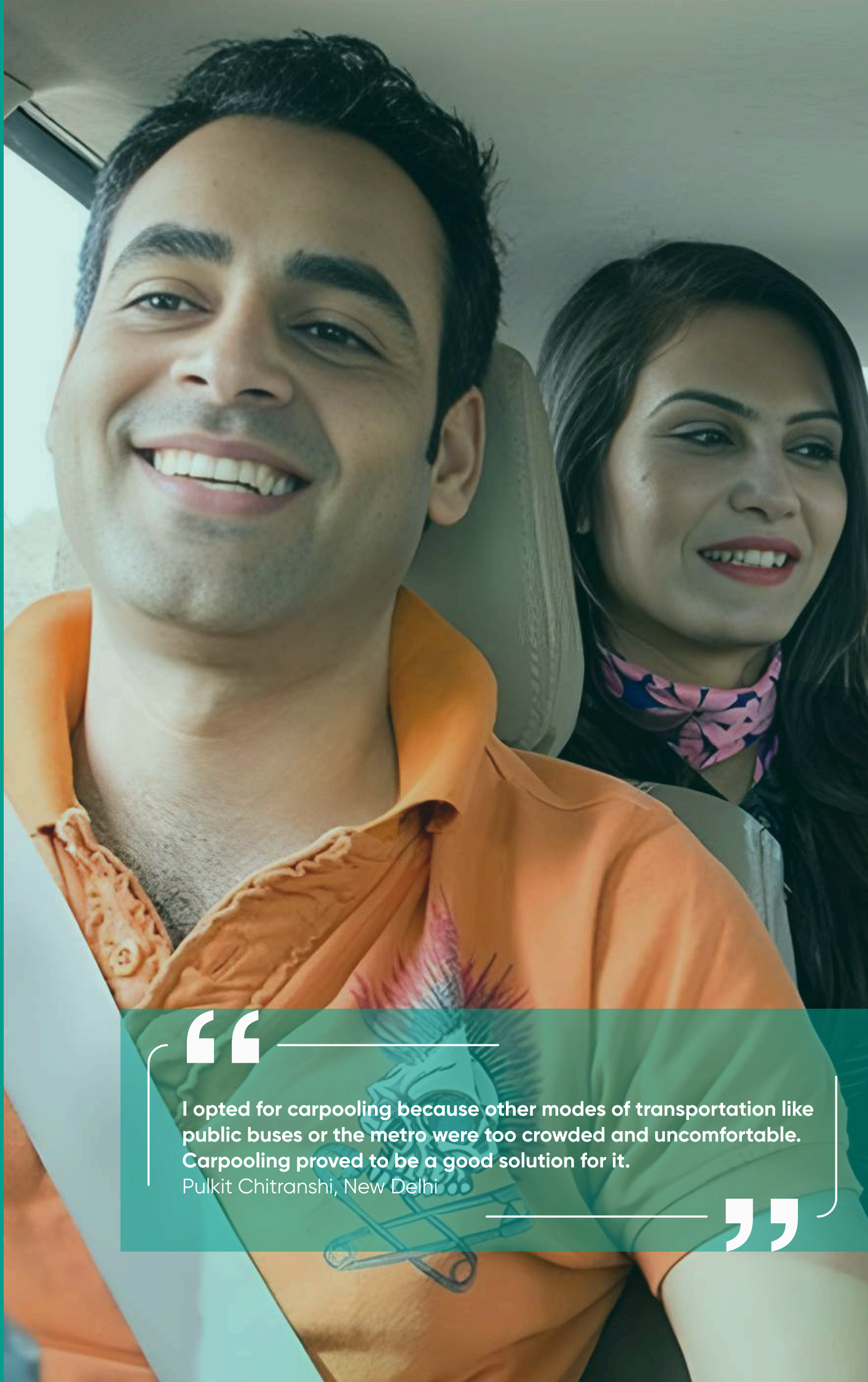
Unlike ride-hailing services, carpooling does not operate for profit. It is a cost-sharing social activity wherein private individuals voluntarily share empty seats on pre-planned trips. This distinction is foundational to creating a regulatory environment that encourages carpooling in India.

The paper outlines the current landscape of carpooling in India and showcases how it bridges critical mobility gaps, particularly in medium-distance and underserved routes. It demonstrates how carpooling contributes to:

- **Unlocking latent vehicle capacity on Indian roads**
- **Reducing peak-hour traffic congestion in urban centers**
- **Lowering per capita emissions from transport**
- **Enhancing access and connectivity, especially where public transport coverage is limited**

As Indian cities transition toward smarter and more sustainable mobility models, carpooling, if appropriately embedded within the regulatory architecture, can serve as a citizen-led solution and act as a keystone in national efforts toward decarbonisation, decongestion, and digital-first mobility governance.

INTRODUCTION



I opted for carpooling because other modes of transportation like public buses or the metro were too crowded and uncomfortable. Carpooling proved to be a good solution for it.
Pulkit Chitranshi, New Delhi

2. Introduction

2.1 Defining carpooling

The Ministry of Road Transport and Highways (MoRTH), through the Draft Motor Vehicle Aggregator Guidelines, 2024, and the Maharashtra Draft Motor Vehicle Aggregator Rules, 2025, have formally recognised and outlined the concept of carpooling.

Drawing from these frameworks, carpooling could be described as

> **A journey undertaken using a motor car driven by a Driver-User for his private purpose, along with traveller-users, with pre-determined origin and destination points, where the Driver-User through the app shall charge only the operational charges for the trip and shall not make any profit[1] out of these trips.**

A Driver-User is defined as an individual who holds a valid driving licence and uses their non-transport (private) vehicle for personal use, listing their planned journeys on a registered carpooling or bike pooling platform.

Distinguishing carpooling from commercial aggregation services

Parameter	Carpooling	Ride Pooling	Ride Hailing
Nature of Activity	Non-commercial	Commercial shared-ride transport service	Hire and reward commercial transport service
How the Trip is Formed	Individual posts a pre-planned personal trip and offers spare seats	Multiple passengers independently book a cab around the same time; the platform matches those with broadly similar routes into one shared commercial ride	Passenger books a cab exclusively for themselves on demand
Purpose of Trip	Personal, pre-planned journey	On demand trip	On demand trip
Vehicle Type	Private (non-transport) vehicle	Registered transport vehicle	Registered transport vehicle
Revenue Model	Cost-sharing only; no profit	Fare -based	Fare - based
Frequency	Casual, incidental to personal travel	Professional, repeated activity	Professional, repeated activity

2.2 Mobility landscape in India

2.2.1 Vehicle ownership trends in India

India's vehicular landscape has undergone a fundamental shift over the past seven decades growing from just 0.3 million registered vehicles in 1951 to over 389 million by 2025[3]. This growth reflects long-term structural changes in the economy, including rising household incomes, improved credit access, and greater availability of vehicles across geographies.

The pace of vehicle registration has accelerated in the past decade. Between 2015 and 2024, India's per capita income rose from USD 1,584 to USD 2,969,[4] coinciding with a rapid increase in vehicle registrations. The data suggests that higher disposable incomes and expanding consumer credit have translated into greater vehicle ownership.

389M+
registered vehicles by 2025

2.0x
increase in per capita income (2015-2024)

7.34% CAGR
projected growth in passenger vehicles (2025-2030)

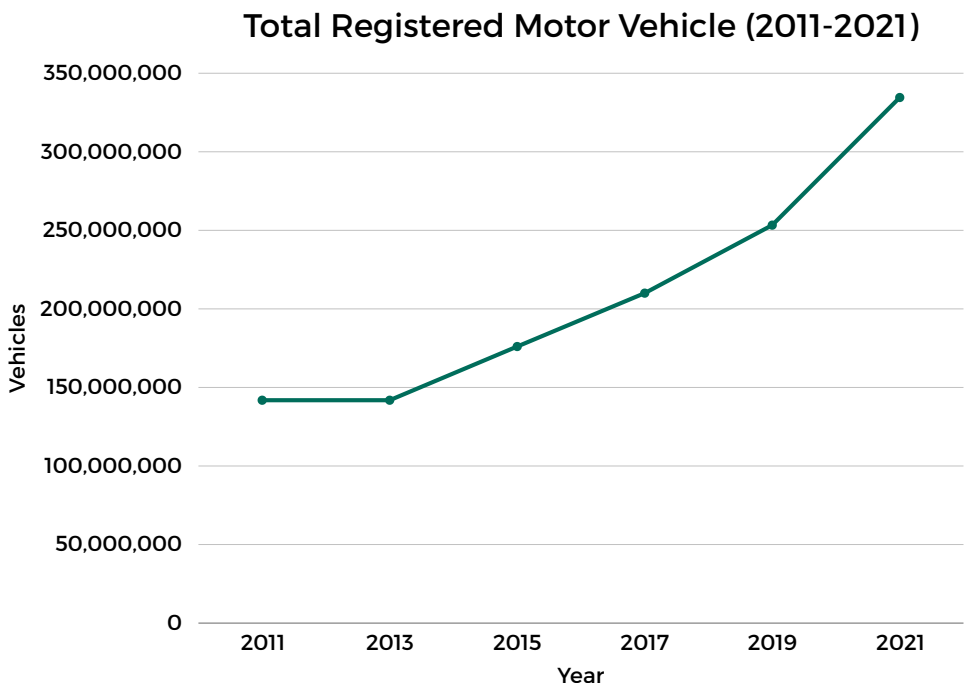


Figure 1: Total Number of Registered Motor Vehicles in India (2005–2021)
Source: CEIC Data, MoSPI Statistical Year Book 2013-14, MoRTH Year Book 2021-22

Looking ahead, **India's passenger vehicle segment is expected to grow at a CAGR of 7.34% between 2025 and 2030,**[4A] driven by urbanisation, a growing middle class, and rising white-collar employment. As mobility becomes central to quality of life, personal vehicles are increasingly seen as symbols of socio-economic progress.

While this rapid motorisation signals economic growth, it also poses challenges for urban planning, road capacity, air quality, and transport equity, making shared mobility solutions like carpooling not just relevant, but essential.

2.2.2 Urbanisation and the shift towards private transport

The rise in urban population has significantly impacted transportation infrastructure. As more people migrate to cities, the reliance on private vehicles has increased, contributing to huge traffic congestion, longer commute times, and deteriorating road infrastructure.

India's urban population was estimated at ~542 million in 2025, reflecting a continued trend of urbanisation[6]. There has been an increase of over 150 million urban dwellers between 2011 and 2025.

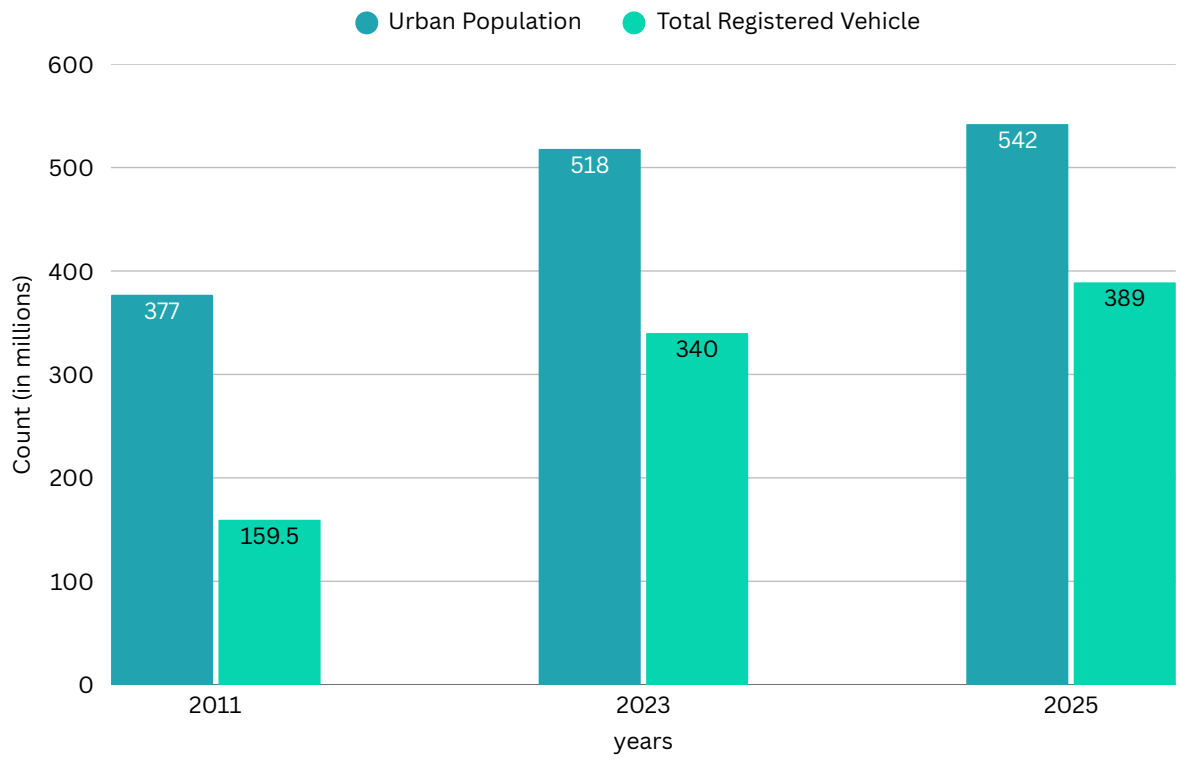


Figure 2: Urban populations vs. Vehicle growth in India

Source: Urban Population – PIB & Worldometer
Total Registered Vehicle- PIB & MoRTH

Private vehicle ownership in India has grown steadily alongside rapid population growth and urbanization, contributing to a sharp increase in the number of vehicles on city roads. As a result, metropolitan areas such as Delhi, Bengaluru, and Mumbai are grappling with severe traffic congestion, with average commute time worsening each year.

"What started as a one-time trial became a regular means of transport. Carpooling helps me save time, especially when it comes to last-mile travel, and it's made daily commuting a lot less stressful.
Sandeep Jugran, Dehradun

3. Role of carpooling in enabling inter-city mobility in India

India's rapid urbanisation has sharply increased demand for inter-city travel. The Government has expanded core infrastructure. National Highway network increased by 60% from 91,287 km in 2014 to 1,46,145 km in year 2023.[10C] At the same time, the capital expenditure on Railways has increased by 77 per cent over the past 5 years (₹2.62 lakh crore in FY24)[10D] with significant investments in the construction of new lines, gauge conversion, and doubling.

However, demand often exceeds available seats, especially during peak periods and on routes connecting smaller cities and towns. In this context, carpooling can act as a practical complement. This section examines carpooling's potential to bridge critical gaps in inter-city mobility across urban, semi-urban, and rural regions, emphasising its role in supporting cost-efficient transportation and enhancing connectivity.

> **There were no other travel options available for my route, and carpooling became the only practical solution. With limited connectivity, it offered a reliable and cost-effective way to commute, while also helping reduce congestion and emissions.**
> Vivek Manan, New Delhi

3.1 Cost-effective transportation

Carpooling directly addresses one of the most prohibitive barriers to inter-city mobility in India, the **high per-kilometre cost of private travel.** Given India's high fuel prices relative to income levels, carpooling serves as a practical cost-saving option for middle- and lower-middle-income riders.

As of June 2025, petrol prices in key states like Uttar Pradesh and Delhi average around ₹95 per litre, while diesel averages ₹87–88 per litre[12]. A typical mid-sized personal vehicle delivering 20 km/l fuel efficiency therefore incurs **₹4.75/km on petrol and ₹4.40/km on diesel**, before tolls are even considered[13]. Additionally, **fuel prices in India especially when adjusted for purchasing power parity (PPP) are among the highest in the world, ranking third globally at around $5.20 per litre,** according to IMF data[28]. This drives up ticket prices across all forms of paid transport.

Now layering in toll charges, on national highways, NHAI levies **₹0.95–₹1.00/km toll on average for private vehicles**[14], with premium corridors such as the Delhi-Meerut Expressway or the Western Peripheral Expressway charging up to ₹1.35 - ₹2.34/km[15].

This means that a solo driver on a 300 km round trip can easily spend ₹1,700 - ₹2,000 factoring both fuel and tolls.

In India, the depreciation of personal vehicles is governed by the Income Tax Department under Section 32 of the Income Tax Act. Motor cars are subject to a **depreciation rate of 15% per annum**, calculated using the Written Down Value (WDV) method. This approach applies depreciation on the reduced value of the vehicle each year rather than its original purchase price. Over a five-year period, this results in a cumulative depreciation of approximately 56% of the vehicle's original value.[16].

For a mid-sized personal car priced at ₹8 lakh such as a Maruti Swift Dzire or Hyundai Aura, this equates to a total depreciation of ₹4.45 lakh in five years.

Cost per Km for a private car

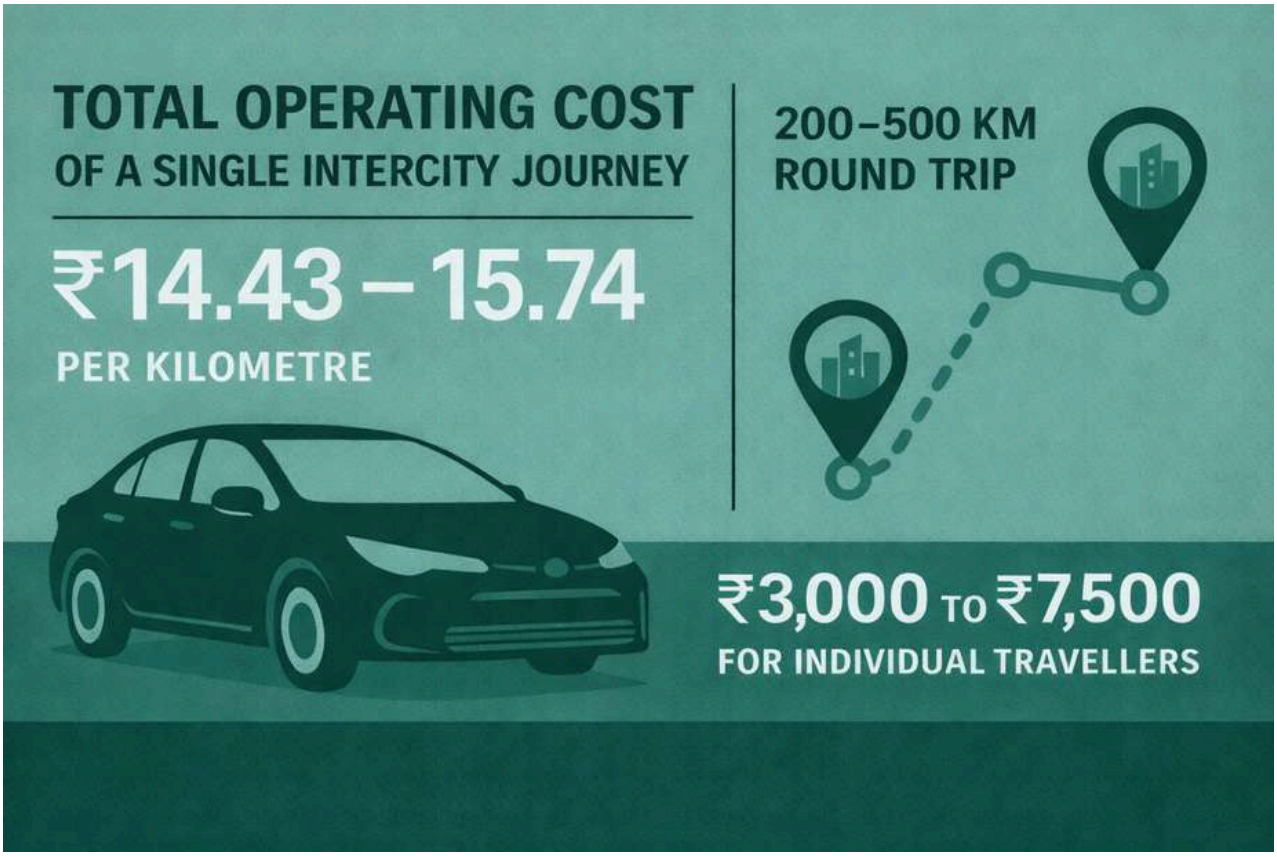
Fuel	₹4.75/km – ₹4.40/km
Toll	₹0.95/km – ₹1.00/km
Depreciation	₹7.42/km
Maintenance	₹0.42/ km – ₹0.50/km
Insurance	₹0.89/km – ₹1.72/km

If the car has travelled around 60,000 km in this period, which is typical for many Indian passenger vehicles, **the depreciation cost comes to approximately ₹7.42/km.**

Routine maintenance is a recurring cost for private vehicle owners. As per manufacturer data and long-term reviews, a mid-sized petrol car like the Maruti Dzire incurs ₹5,000-₹6,000 annually in servicing, consumables, and minor replacements[17]. Over five years, this totals ₹25,000-₹30,000, translating to a **maintenance cost of ₹0.42–₹0.50/km** when spread over 60,000 km of usage.

Insurance is another mandatory cost factored into total vehicle ownership. For a mid-sized petrol car, the average annual comprehensive insurance premium ranges from ₹10,000 to ₹20,000[18], including own-damage and third-party insurance[19] along with Passenger Accident (PA) insurance of ₹750 per year[20]. Over a 5-year period, this adds up to ₹50,000–₹100,000. When spread over 60,000 km of driving, this results in **an insurance cost of approximately ₹0.89–₹1.72 per kilometre.**

When fuel and toll charges are combined with depreciation, maintenance, and insurance, the total operating cost of a single intercity journey ranges between **₹14.43 and ₹15.74 per kilometre for petrol vehicles, and ₹14.08 to ₹15.39 per kilometre for diesel vehicles.** Over a 200–500 km round trip, typical for travel between Tier 1 and Tier 2 cities, this results in a total cost of ₹3,000 to ₹7,500, making routine commuting economically unviable for individual travellers.



Carpooling changes the equation completely.

Recent industry dataset reviewed by the authors, covering 811,804 confirmed inter-city carpooling trips in Maharashtra (2024), shows that the **average per-seat cost per kilometre was ₹2.33 in 2024.** This suggests that carpooling can reduce effective travel costs by over 65% compared to single-occupancy driving.

To illustrate, a 120 km journey that would otherwise cost ₹1,800 in total operating expenses (including fuel, tolls, depreciation, maintenance, and insurance) for a solo driver becomes ₹360 per person when shared with four others. This remains cheaper than Tatkal train tickets and significantly more affordable than inter-city taxis, which typically charge ₹15–₹20/km.

This cost compression is even more significant for daily and weekly commuters, industrial workers, students, and gig workers, who travel between satellite towns and urban centres. For them, carpooling enables reliable, affordable access to employment hubs without dependency on erratic bus routes or unaffordable ride-hailing fares.

Inter-city taxi per km charge

₹15-₹20/km

Carpooling per km charge per person

₹2.8-₹3/km

assuming 5 people in one car

Figure 4: Difference in the cost of travel using ride hailing services and carpooling

3.2 Improving connectivity in rural and semi-urban areas

50-200 km

Typical rural to city travel

Limited direct connectivity

Many villages lack train or bus connectivity

Unreliable ticket availability

Daily/weekly commuting poorly supported

Rural India faces a persistent gap in mobility access. Every day, lakhs of individuals from villages and small towns travel to nearby cities for work, education, or healthcare. However, existing public transport options often fall short—many villages lack direct train or bus connectivity, and even where services exist, ticket availability, especially on trains, is unreliable and poorly suited to daily or weekly commuting needs.

For trips in the 50–200 km range, these limitations leave rural travellers with few viable options. Carpooling fills this gap by enabling affordable, shared access to private vehicles already operating along these corridors, offering a reliable, comfortable alternative where public transport has not scaled.

With BharatNet and rising smartphone penetration, app-based mobility solutions are increasingly becoming accessible to rural users. However, the ground reality is that millions in small towns and villages undertake these trips daily, but via tempos or goods carriers, overcrowded buses, or at personal expense using owned two-wheelers. The cost, discomfort, and unpredictability of these modes constrain both productivity and access. Carpooling provides a structured alternative that combines the cost-effectiveness of buses with the flexibility and safety of private travel.

Figure 5: Lack of public transport facilities between villages and cities

Gehoon Kheri - Jhalawar

Gehoon Kheri is a rural village in Bakani tehsil, Jhalawar district, with a population of approximately 2,941 as per the 2011 census. Lacking both a railway station and direct bus service, villagers travel daily for employment, education, and healthcare due to limited local opportunities. To catch buses, they first cover 5 km to the nearest stop. With no station in the village and the closest railhead 45 km away, travel is inconvenient.

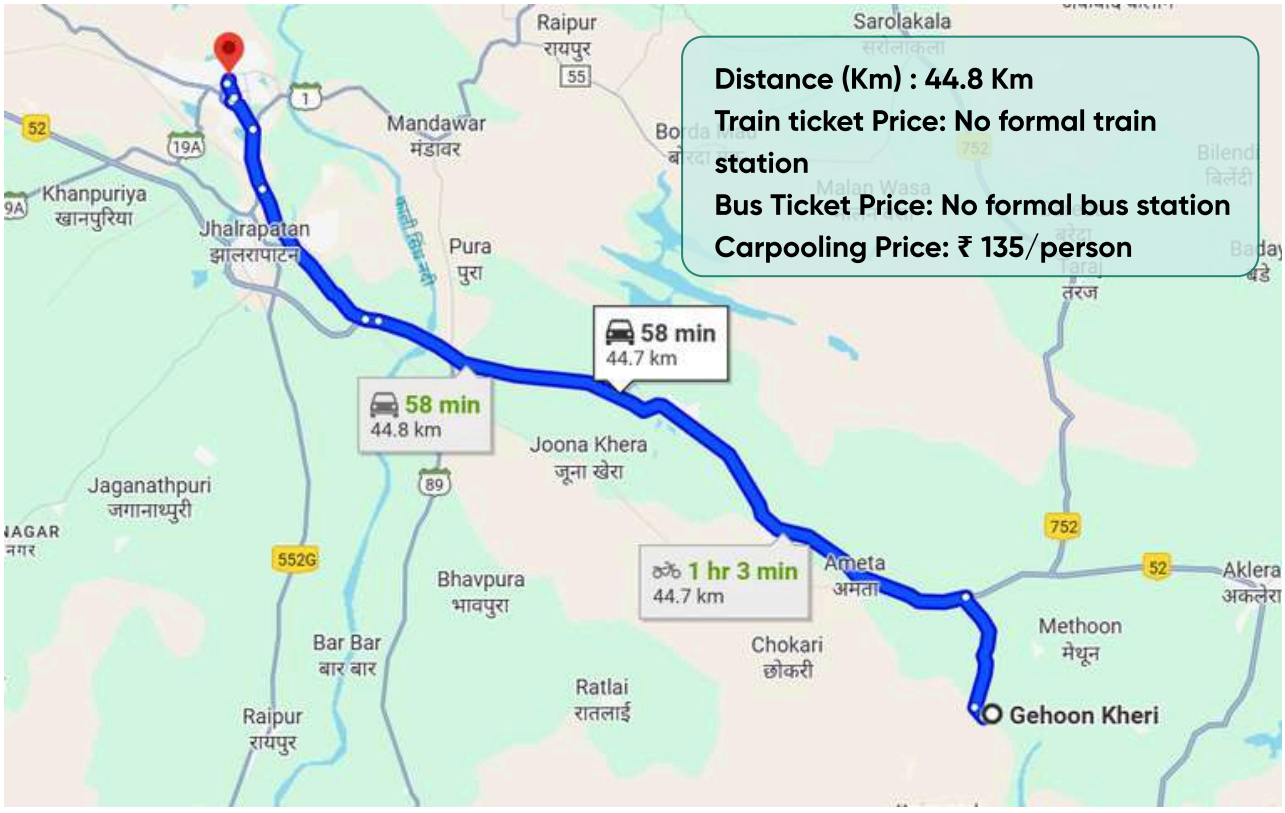


Figure 6: Availability of public transportation services between Gehoon Kheri and Jhalawar

Kelkachh - Ratlam

Kelkachh, a remote tribal village over 50 km from Ratlam, lacks both a railway station and formal bus stop. Residents depend on shared autos or motorbikes to reach Bajna or other transit points before continuing to the city. Daily commutes are long, unsafe, and tiresome posing a burden on low-income workers. Carpooling offers a direct and safer ride at the same price, enabling villagers to access jobs and services in Ratlam without relying on unreliable or distant public transport.

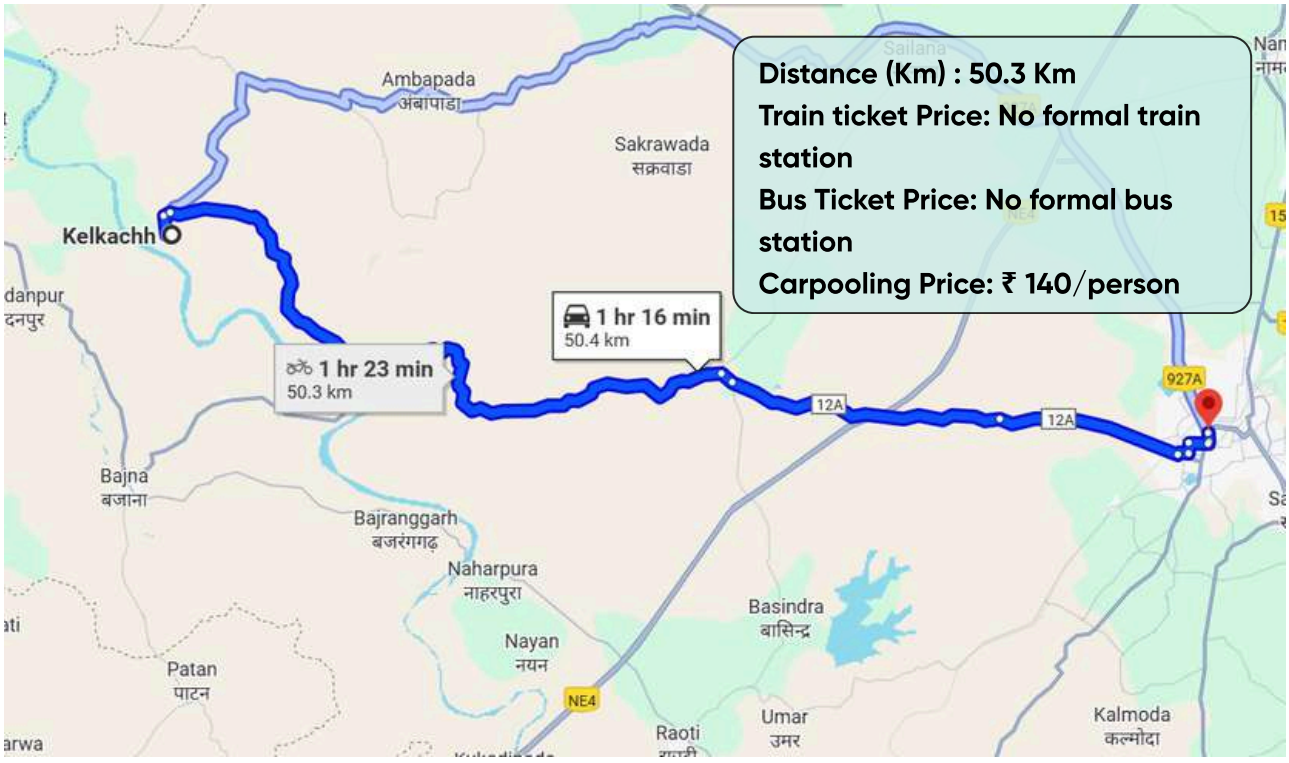


Figure 7 : Availability of public transportation services between Kelkachh and Ratlam

Khurja – Noida

A ceramics town ~80 km from Noida, sees heavy daily commuting by workers, students, and traders. While state buses are available at around ₹145, they are often overcrowded, unreliable, and lack basic safety and comfort. In contrast, carpooling at ₹195 per person offers door-to-door flexibility, trusted co-riders, and greater travel comfort, especially for women and long-distance daily commuters. It bridges the mobility gap for rural users who need affordable access to Noida's industrial and educational hubs and shared autos lack safety and pricing transparency.

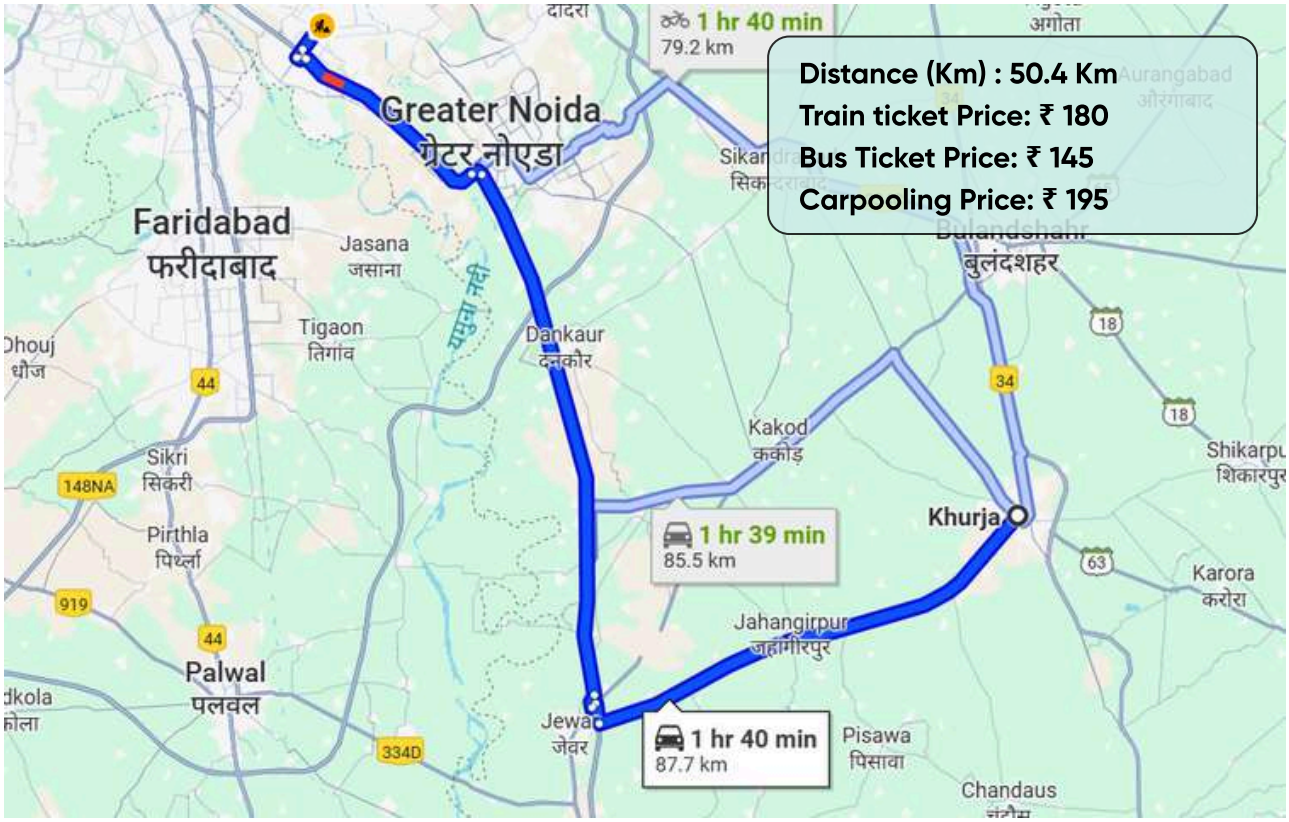


Figure 8 : Availability of public transportation services between Khurja and Noida

These real-world examples mirror growing informal ride-sharing behaviours in rural Tamil Nadu, Karnataka, and Haryana, where WhatsApp or Facebook groups are already being used to match drivers with regular passengers[21]. By institutionalising such arrangements through platform-based systems, carpooling can serve as a reliable tool for rural economic inclusion. It enables people to access jobs, education, and services in urban centres without facing the high costs of relocation or expensive daily travel.

3.3 Supporting access to urban and industrial hubs

India's major urban clusters are expanding into interconnected economic corridors, where daily inter-city travel has become the norm for lakhs of commuters. Routes such as Delhi–Gurgaon, Mumbai-Pune, Noida-Delhi, and Gandhinagar-Ahmedabad witness massive daily traffic volumes as commuters travel from residential outskirts to business districts. In such high-density corridors, inter-city carpooling is a cost-effective and sustainable alternative to solo driving or high-priced commercial ride-hailing services.

Take the Delhi–Gurgaon Expressway: it carries close to 300,000 vehicles a day [22]. With an **average occupancy of just 1.5 persons per vehicle**[23], more than 7,50,000 seats go unused every day. If even 20% of drivers offered one shared seat, nearly 60,000 fewer cars would be on the road—directly reducing congestion and emissions Studies by the International Transport Forum (ITF) show that under optimal conditions, carpooling can cut vehicle demand by up to 90% for urban commutes[24].

The Delhi–Gurgaon Expressway

~ 300,000
Vehicles per day

1.5 Persons
Average occupancy per vehicle

750,000 +
Seats unused daily

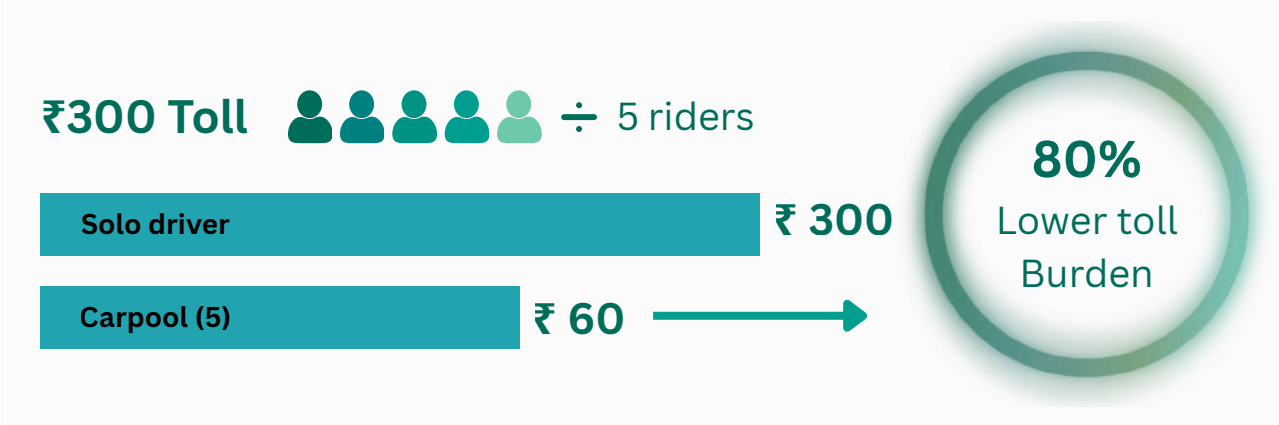
If 20%
Drivers offered one shared seat

→

~ 60,000
Fewer cars on road

A key pain point in daily intercity commuting is toll pricing. Urban expressways like Delhi–Meerut, Mumbai–Pune, and Ahmedabad–Vadodara levy tolls roughly between ₹75 - ₹320 per trip[26] .

These tolls reflect higher road quality and speed, but significantly increase the daily commute cost. Carpooling neutralises this burden: **when five passengers split a ₹300 toll, the cost drops to ₹60 per person**, bringing high-speed road access within reach of lower- and middle-income commuters.



For instance, a round trip between Noida and Delhi or Gandhinagar and Ahmedabad typically costs ₹1200–₹1475. When carpooled with four others, the per-person cost falls below ₹240-₹295, offering a compelling alternative to both cabs and public transport for regular commuters.

This balance between cost-efficiency and convenience is particularly visible in Maharashtra, where inter-city carpooling has seen notable traction across both urban and semi-urban corridors. In 2024 alone, **Maharashtra recorded over 1.9 million confirmed carpooling passengers (PAX), spanning rural-to-urban, urban-to-urban, and intra-district routes. Five major corridors, including Pune - Thane and Pune - Nashik, accounted for 54% of this volume, highlighting concentrated demand along key economic corridors.**

Cities like Tathawade (Pune) and Aurangabad alone contributed 17% and 11% of Maharashtra's total carpooling trips, showing how peri-urban and tier-2 hubs are becoming critical anchors in the shared mobility landscape.

Recent industry dataset reviewed by the authors shows that the **average cost contribution per seat per kilometre in Maharashtra stood at just ₹2.33/km, with car owners saving nearly ₹4.92/km.** These savings make carpooling significantly cheaper than solo travel or on-demand cabs, especially on daily 50–150 km routes.

Maharashtra's model demonstrates how individuals across urban and semi-urban India are actively using app-based carpooling as an alternative to unreliable or underdeveloped public transport. It showcases how shared mobility, when supported by digital platforms and rising fuel cost sensitivities, can deliver scalable solutions across a wide socio-economic and geographic spectrum.

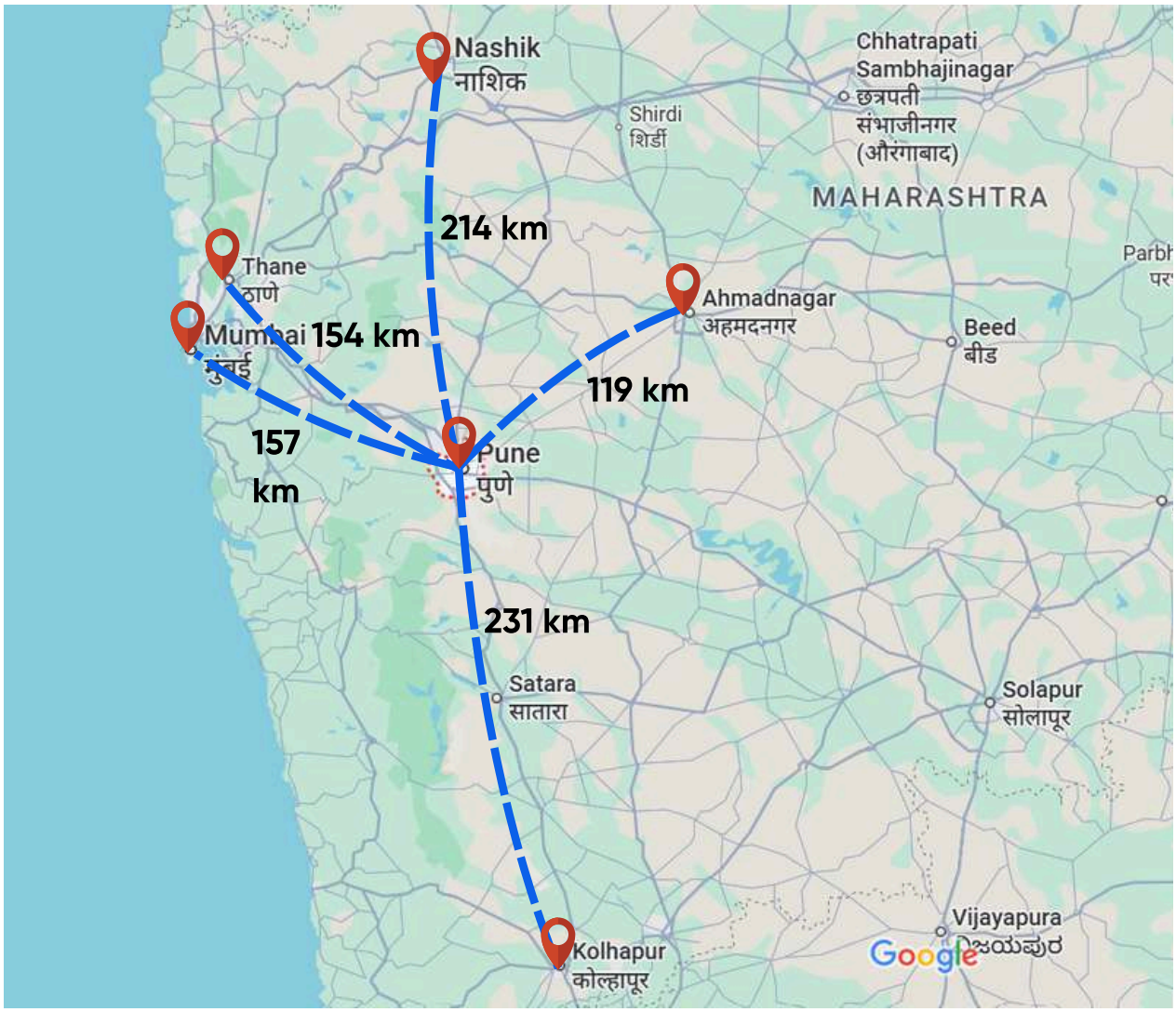


Figure 9 : Most prominent carpooling routes in Maharashtra

I don't like driving alone, and carpooling makes it easier. It gives me a chance to meet new people and build connections, while also reducing the number of cars on the road. It's good for both people and the environment.
Sanjay Kukreja, Amritsar

3.4 Carpooling as a complement to public transport infrastructure

3.4.1. Bridging the gaps in India's public transport system

India has made remarkable progress in developing its national road infrastructure, significantly improving inter-city connectivity.

India's national highway network **expanded by over 60%,** from 91,000 km in 2014 to 146,000 km in 2024.[8]

91,000 km (2014) → +146,000 km (2024)

- Delhi–Mumbai Expressway
- **Bharatmala Pariyojana**
- Purvanchal Expressway
- **PM Gati Shakti**

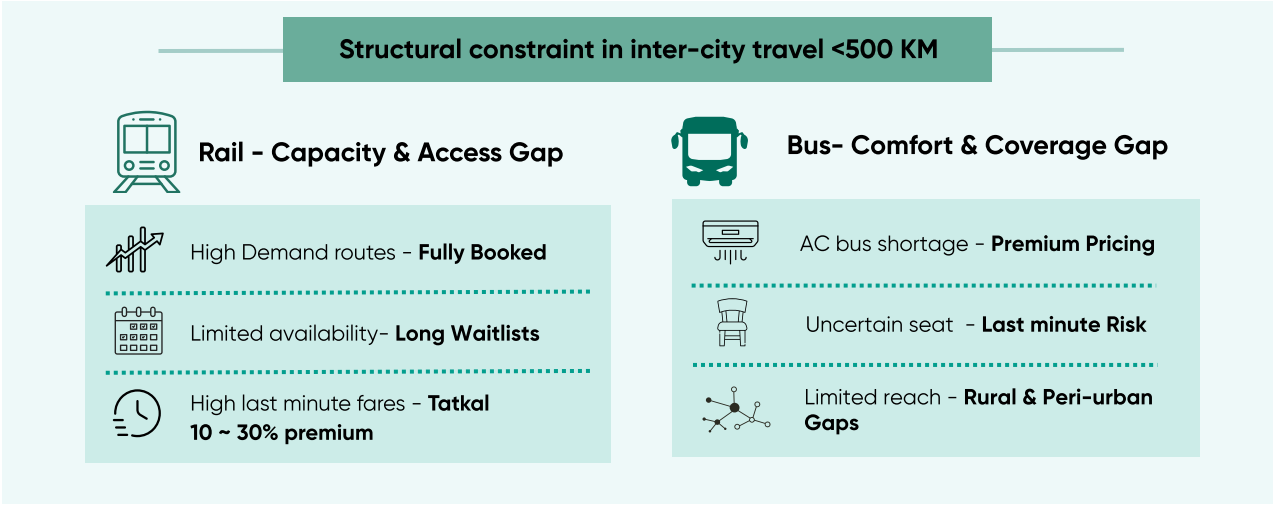
Despite these achievements, public transportation, essential to a large portion of India's population, particularly middle and lower-income groups, remains significantly overstretched. The **existing public transport systems, especially in Tier-2 and Tier-3 cities, face challenges such as overcrowding, irregular schedules, and inadequate last-mile connectivity.** Consequently, millions of commuters lack consistent access to affordable and reliable mobility.

India's mass mobility network, comprising trains, buses, and metro systems, supports large passenger volumes. However, for inter-city travel under 500 km, capacity constraints and service limitations become evident.

Figure 3: Public transport in India often operates beyond their intended capacity

The Indian Railways, despite being one of the largest rail networks in the world, trains often operate at full capacity. When passengers attempt to book train tickets less than fifteen days in advance, especially on popular routes they are often placed on waitlists due to high demand[27]. Even when confirmed seats are available, **last-minute Tatkal fares can exceed 10-30% for a journey** that would otherwise cost much less if booked in advance. This unpredictability leaves travellers with few reliable and affordable options for short-notice travel.

State-run and private bus services do cater to inter-city commuters, but they face limitations in comfort, safety, and reliability particularly on long routes or at night. **Air-conditioned buses tend to charge steep fares, and the availability of seats at short notice can be uncertain.**



3.4.2. Strengtheing inter-city connectivity through carpooling

Carpooling provides a practical mechanism to bridge this gap by connecting private vehicle owners with spare capacity to passengers seeking affordable travel. It optimises existing road infrastructure without requiring new public investment.

This model is particularly suited for medium-distance journeys of 100–400 km routes that are often underserved by rail or bus services. By sharing fuel, toll, and related costs, carpooling reduces per-passenger expenses while offering the comfort and flexibility of private vehicle travel.

The relevance of carpooling has grown alongside India's expanding expressway network, including corridors such as the Delhi–Mumbai Expressway, the Lucknow–Ghaziabad Expressway, and the Pune–Bengaluru corridor. **While road travel has become faster and safer, access to this improved infrastructure remains limited for non-car-owning citizens.** Carpooling unlocks access to these highways without requiring vehicle ownership.

> **Carpooling is much more convenient than opting for other available options like the local train or any other public transport. I don't have to wait for tickets anymore, carpooling is easy and light on pocket.**
> Sanjeev Verma, Mumbai

Carpooling also mitigates last-mile challenges. Trains and buses typically operate between fixed terminals, often located at city peripheries. In contrast, carpooling allows greater route flexibility, enabling drop-offs closer to final destinations or in industrial and peripheral zones where public transit connectivity is limited.

For office workers, students, and gig workers in regions such as NCR, the Pune belt, and Ahmedabad–Gandhinagar, this point-to-point flexibility delivers time savings and cost efficiency.

Importantly, **carpooling also addresses last-mile challenges.** While public trains or buses may only reach city outskirts or fixed terminals, a carpooling journey can be customised, dropping passengers closer to their destination or in peripheral industrial zones where transit connectivity is weak.

For office workers, students, and gig workers in regions like NCR, Pune belt, or Ahmedabad-Gandhinagar, this door-to-door or point-to-point advantage is both time-saving and cost-efficient.

Therefore, Carpooling does not compete with public transport; it complements and extends it. It serves segments where train waitlists, bus limitations, and rising fuel costs restrict mobility options. With fuel affordability declining and ticket unpredictability rising, carpooling emerges as a scalable, and user-friendly mobility layer within India's evolving transportation ecosystem.

> **I initially tried carpooling out of curiosity, but it turned out to be incredibly helpful especially in saving time and providing easier last-mile connectivity.**
> Ayush Negi, Dehradun

TRANSPORT EMISSIONS AND URBAN AIR QUALITY IN INDIA

4. Transport emissions and urban air quality in India

Rapid urbanisation in India has led to higher levels of pollution, particularly in northern cities where air quality has deteriorated sharply. Transportation is a major contributor to rising pollution and greenhouse gas (GHG) emissions, with private vehicles playing a disproportionate role due to low occupancy rates and dependence on fossil fuels. India's mobility system remains overwhelmingly road-based and petroleum-dependent. **Personalised vehicles, including cars and two-wheelers, account for approximately 88% of all registered vehicles in urban cities like Mumbai.**[8B]

Road transport accounted for

~92%

of transport energy demand in 2021[8B]

~95%

of this demand was met by petrol and diesel

embedding high carbon and pollution intensity in everyday mobility

4.1 Urban air pollution and emissions

According to the Centre for Science and Environment (CSE), Indian cities are in the midst of a mobility and pollution crisis, driven largely by the increasing reliance on private transport[29]. Among the 30 most polluted cities globally, 19 are in India, with Delhi, Ghaziabad, Noida, Gurugram, and Faridabad consistently ranking among the worst[30].

Vehicular emissions contribute significantly to this pollution load. In Delhi, for instance, **road transport accounts for 28% of PM 2.5 emissions during the winter season**[31]. Diesel cars typically emit more NOx and particulates, exacerbating urban smog.

Given the low average occupancy rate of private cars, approximately 1.5 persons per vehicle in Indian urban areas, the emissions per passenger-kilometer are disproportionately high compared to other modes of transportation. These emissions are major contributors to local air pollution, with transportation contributing over 30% of nitrogen oxides (NOx) and carbon monoxide (CO) emissions (CPCB, 2021).[31A]

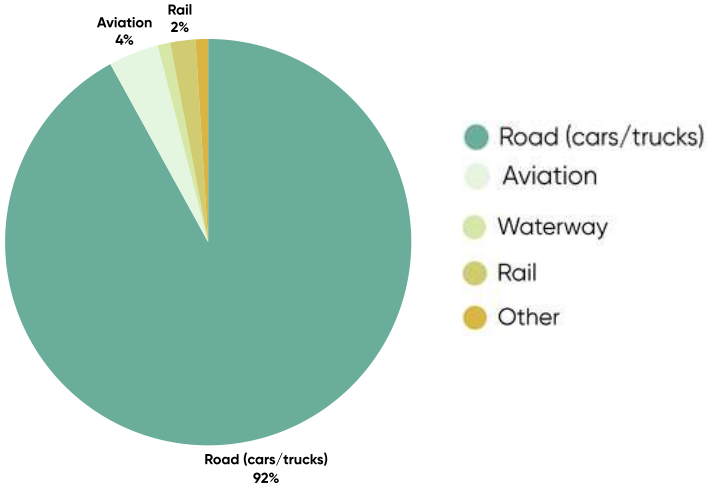


Figure 11: Contribution of different modes of transportion to India's carbon emissions
Source: CEEW Transport Energy Outlook (2020)

4.2 Emissions profile of private passenger vehicles

Private vehicles in India predominantly rely on internal combustion engines, which emit various pollutants including CO_2, NOx, hydrocarbons, and particulate matter. According to the International Council on Clean Transportation (ICCT), the **average CO_2 emissions for new passenger cars in India was 121.3 grams per kilometer in the year 2020-21**[32]. In comparison, the European Union's 2021 target for passenger cars was 95 grams of CO_2 per kilometer.

This gap reflects both technological differences and usage patterns. Combined with low vehicle occupancy, the result is elevated per-passenger carbon intensity in urban transport.

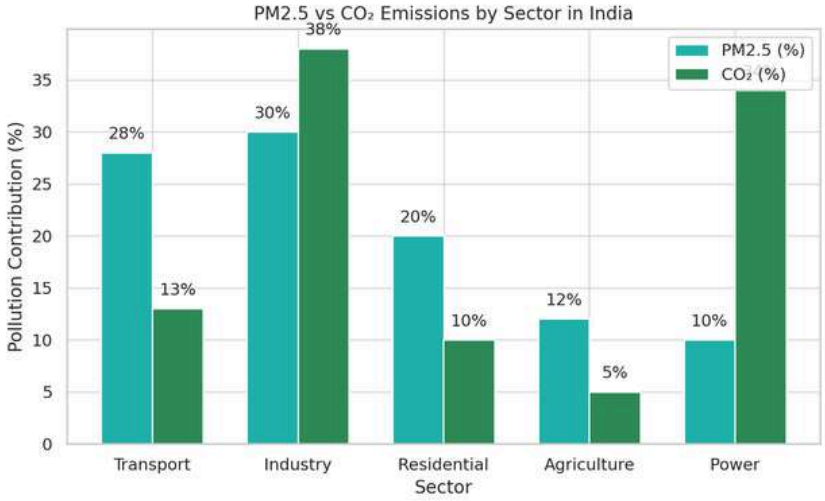


Figure 12: Transport sector ranks as the third-largest contributor to PM2.5 and CO_2 emissions in India
Source: Conibear et al. for $PM_{2.5}$(2015 baseline year) and CO_2(2019 baseline year)

4.3 Economic cost of congestion and pollution

The environmental burden of transport emissions translates directly into economic losses.

A study by the Institute for Social and Economic Change (ISEC) estimated that **traffic congestion in Bengaluru alone resulted in productivity losses of approximately ₹1,170 crore in 2018** [10A]**.** These losses were driven by delayed arrivals, time lost in peak-hour traffic, and excess fuel consumption. These estimates capture only a part of congestion costs and do not fully account for logistics delays, increased vehicle operating expenses, and stress-related health impacts.

At the macro level, air pollution translates directly into foregone economic output. A report by Dalberg Advisors, estimates that **air pollution costs Indian businesses approximately USD 95 billion (around ₹7 lakh crore) annually, nearly 3% of GDP,**[10B] through absenteeism, reduced labour productivity, lower consumer activity, and premature mortality attributed to air pollution.

These recurring losses stem from a transport model heavily dependent on private, fuel-powered vehicles. While electrification is expanding, its benefits will materialise gradually. In the interim, scalable and low-cost interventions are required.

4.3 Carpooling as a scalable solution

Carpooling increases average vehicle occupancy and directly lowers emissions per passenger-kilometre. **Increasing average occupancy from 1.5 to 2.5 persons per vehicle can reduce CO_2 emissions per passenger-kilometre by up to 22%[33].**

The Economic Survey 2024–25 notes that large-scale adoption of carpooling could reduce nearly 7,80,000 vehicle trips per day and save approximately 380 million litres of fuel annually. Using a standard emission factor of 2.31 kg of CO_2 per litre of petrol [33A], this corresponds to an estimated reduction of about 0.88 million tonnes of CO_2 each year. This is broadly equivalent to the annual carbon absorption of around 40 million mature trees, underscoring the climate impact achievable through better utilisation of existing vehicle capacity.

Increasing Average Car Occupancy with Carpooling

1.5 passengers per vehicle
(current)

2.5 passengers per vehicle
(with scaled carpooling)

Key Benefits of Carpooling

Upto
22%
lower CO2 emissions per passenger kilometer

Approximately **380 million litres** of fuel saved annually

= 0.88 million tonnes of CO2 avoided each year

= 40 million tress annual carbon absorption

Success stories

- France: BlaBlaCar, one of the world's largest carpooling platforms, estimates that its users saved 1.6 million tons of CO_2 emissions in 2022 alone, based on shared rides displacing solo trips[35].
- United States: The Metropolitan Washington Council of Governments (MWCOG) implemented a regional ridesharing program that resulted in annual emission savings of 1.5 million pounds of CO_2, largely by reducing the number of single-occupancy vehicle commutes[36].
- United Kingdom (multi-employer scaling): Liftshare & Mobilityways. A case-study synthesis reports that by 2022 the platform helped organisations eliminate 402 million km of commuter travel and avoid ~300,000 tonnes of commuter carbon emissions (also presented as ~50,000 tonnes/year on average).[36A]

TRAFFIC CONGESTION AND ITS ECONOMIC COSTS IN INDIAN CITIES

5. Traffic congestion and its economic costs in Indian cities

According to the TomTom Traffic Index 2023, four Indian cities Bengaluru, Pune, Delhi, and Mumbai rank among the world's most congested urban areas. Bengaluru tops the list, where driver-users spend an average of 168 hours a year in traffic during peak hours, with average speeds dropping to 16.6 km/h during rush hour travel routes[37]. Kolkata follows a similar pattern, with peak-hour average speed of around 17 km/h[38].

Figure 13: Most Congested cities in the World in 2025
Source: TomTom Trafiic Index

The economic consequences are substantial. A study by the Transport Corporation of India and IIM Calcutta estimated that the **cost of congestion, including fuel wastage, time lost, and increased emissions, amounts to over INR 1.4 lakh crore annually across major Indian cities[39], equivalent to almost 0.5% of India's nominal GDP in FY 2023-24.**

Despite the staggering increase in the number of vehicles, the **average occupancy of private cars in India remains low typically between 1.2 to 1.5 persons per vehicle[40]**. These low-occupancy vehicles occupy disproportionately large amounts of road space while moving fewer people compared to public transport. This mismatch in space utilisation is a problem in high-density cities like Bengaluru, Mumbai or Hyderabad, where road infrastructure is not expanding at a pace commensurate with private vehicle growth.

Carpooling can increase the vehicular occupancy rate, and therefore reduce the number of cars driven on the road. Moreover, carpooling complements, rather than competes with public transport. It fills the gap between demand and supply, without the need to invest significant amounts for transportation options for citizens.

> **I believe carpooling helps significantly to reduce congestion between Gurgaon and Delhi. As this was my primary reason for opting and continuing using carpooling platforms."**
> Sunil Cnndel, New Delhi

PASSENGER SAFETY

6. Passenger safety

6.1 Trust mechanisms

With carpooling evolving from informal networks to technology-driven mobility solution, establishing trust among users becomes increasingly vital for scaling carpooling services in India.

A robust way to foster trust in peer-to-peer arrangements is through transparent social mechanisms, specifically user-generated ratings and reviews. Allowing both drivers and passengers to rate their experience promotes accountability, ensures better behavior, and helps users confidently participate in the carpooling ecosystem. These ratings and reviews provide critical insights that help users make informed choices, significantly reducing uncertainty and enhancing the reliability of carpooling services.

Global platforms like BlaBlaCar, sRide, Quickride demonstrate the efficacy of rating systems by prominently showcasing user-generated ratings and reviews. This transparency reinforces trust, encourages accountability among users, and consistently delivers a reliable and positive experience within the carpooling community. In cases of consistently negative feedback, platforms may even restrict or ban drivers, further upholding community standards and user confidence.

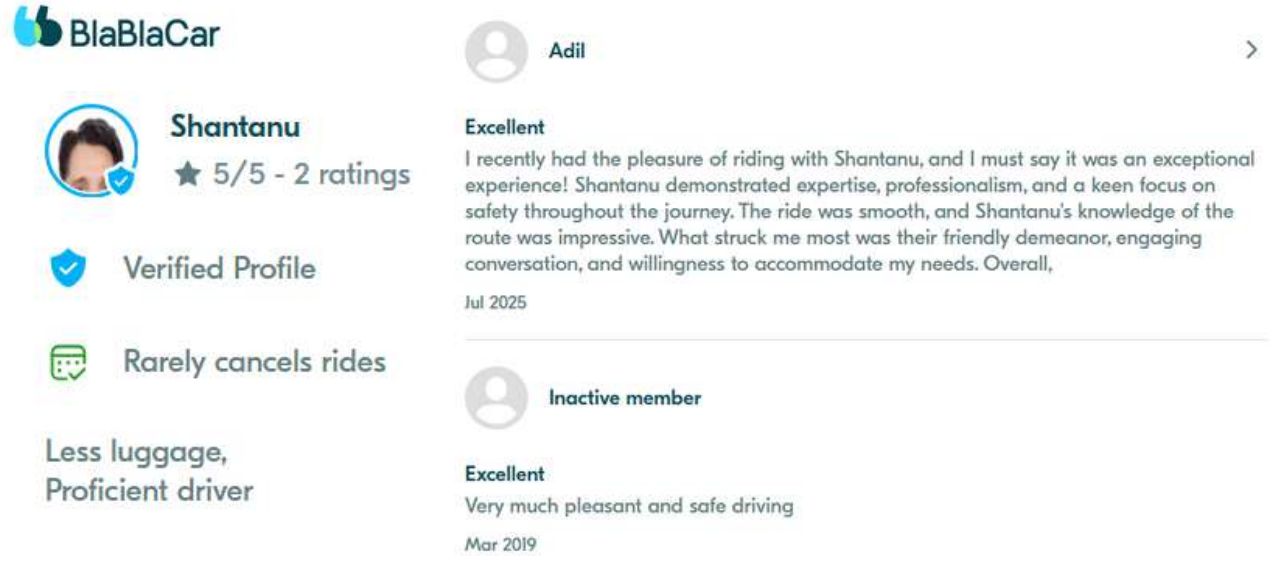


Figure 14: Carpooling apps providing ratings and review system as a social proof mechanism

6.2 Road safety

The relationship between vehicle occupancy and road safety is an essential consideration in improving transportation infrastructure and reducing traffic-related fatalities. While the safety implications of vehicle congestion have been widely acknowledged, secondary research suggests that an increase in the number of passengers in a vehicle, particularly in the context of carpooling, may lead to a lower risk of accidents.

When a driver-user is transporting other individuals, particularly those they do not know personally, there is an implicit social responsibility that can encourage them to exercise more caution. This is especially important when compared to driving alone, where the driver-user might be more prone to distractions or risky behaviours.

Moreover, An observational study published in Accident Analysis & Prevention found that drivers accompanied by passengers exhibited a consistent reduction in aggressive driving.[40A] A study examining accidents in the European Union found that shared rides resulted in fewer instances of speeding and erratic lane changes, as the presence of passengers increases the likelihood of safer driving practices.

The direct correlation between increased vehicle occupancy and enhanced road safety is further evidenced by the reduced number of vehicles on the road.[41] Lower traffic congestion is directly linked to lower accident rates, as fewer cars translate to fewer opportunities for collisions. As carpooling becomes more widespread, particularly in urban areas, the reduction in the total number of vehicles on the road can significantly alleviate traffic-related risks. This effect is consistent with findings in countries where carpooling initiatives have been successfully integrated into urban mobility strategies.

6.3 Women's safety

Ensuring the safety and comfort of women in shared mobility is paramount, particularly in India, where safety concerns can limit women's participation.

A "Women-Only" mode feature enables women driver-users and passengers to choose ride-sharing arrangements exclusively with other women, significantly reducing perceived risks and enhancing comfort. In an environment where personal safety directly influences mobility choices, such digital tools offer women a greater sense of agency and control.

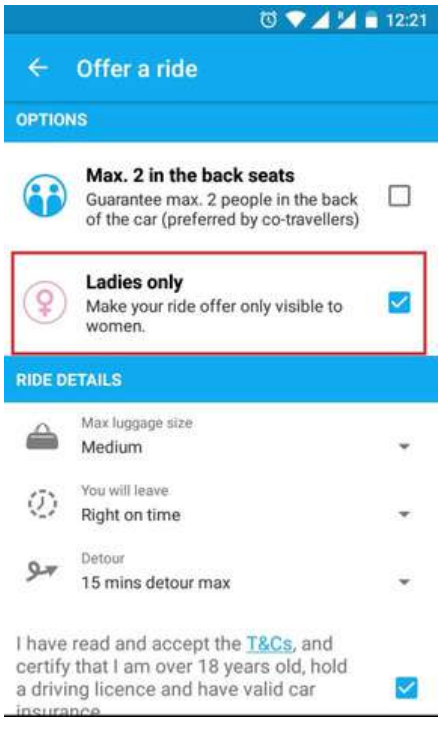


Figure 15: Carpooling apps providing Women Only filter for Femals


ENTRY

POLICY RECOMMENDATIONS

7. Policy recommendations

7.1. Separate regulatory classification for carpooling platforms

Carpooling platforms are fundamentally different from commercial transport aggregators. A ride-hailing aggregator facilitates a commercial activity. It connects passengers with professional drivers offering transportation as a paid service.

In contrast, a carpooling intermediary enables a non-commercial, social arrangement. It connects individuals already undertaking a pre-planned private journey offer empty seats to others travelling along the same route. The purpose is limited to sharing travel costs. The intermediary does not create transportation demand, employ professional drivers, or operate a fleet. Nor does the individual offering the ride derive any profit from the arrangement.

Accordingly, it is recommended that both central and state regulations explicitly recognise and reflect this distinction. This can be done by the creation of a dedicated legal category for "Carpooling Intermediaries" as defined in the Maharashtra Draft Aggregator and Carpooling Rules.

> Under the Maharashtra Draft Aggregator and Carpooling Rules 2025, a Carpooling intermediary is defined as **'any entity which owns, operates, or manages a carpooling intermediary platform used for the purpose of connecting users for a Carpooling Arrangement'.**
>
> At the central level, a similar approach can be adopted by amending the Motor Vehicles Act, 1988 to include the above mentioned definition of carpooling along with a **definition of 'Carpooling Arrangement,' which can be defined as "a shared journey between a driver user and a traveler user carried out on a non-commercial basis, except, where applicable, for the sharing of costs."**

7.2. Allow 100% cost-sharing of carpooling

The foundational principle of carpooling is cost sharing among all occupants of the vehicle. For example, if a journey costs ₹800 up to a particular point on the route, carrying four individuals, the should be permitted to recover this entire ₹800 from those who has offered carpooling.

Driver should therefore be permitted to recover their full proportionate share of actual running costs, including fuel, tolls, depreciation, maintenance, tyres, and parking. The sole governing safeguard could be that the driver derives no profit from the arrangement.

7.3. Enable single-window centralised registration

Significant carpooling happens intercity and often interstate. Requiring platforms to obtain separate registrations in every state or district creates a regulatory burden that is disproportionate to the non-commercial nature of the carpooling activity. It may also push carpooling into informal and unregulated channels.

It is therefore recommended that a streamlined, single-window registration process could be set up at the central level. A single national registration would suffice for a Carpooling Intermediary. This would eliminate fragmented state-by-state compliance requirements and provide greater regulatory clarity and operational efficiency.

7.4. Adoption of appropriate safety standards

Passenger safety remains an important consideration in the regulatory design of carpooling. Passenger safety could be addressed through scalable, technology-enabled, and platform-agnostic standards. The following measures may be considered:

- Platforms may provide a journey-sharing feature that enables passengers to share live trip details, route, and estimated time of arrival with a trusted contact.
- Platforms may offer a prominently accessible women-only matching option, allowing female passengers to travel exclusively with female drivers.
- A centralised 24/7 multilingual helpline covering all operating regions may be provided instead of requiring separate physical call centres in each state.
- User safeguards may include DigiLocker-based government ID verification, and a post-trip mutual rating system to enhance accountability and transparency.

7.5. Avoid duplicate driver certification requirements

An individual who holds a valid driving licence already satisfies all statutory requirements for driving, including medical fitness, knowledge testing, driving competency, and background verification. Therefore, imposing additional certifications on carpooling platform users would create unnecessary barriers to participation and would be disproportionate to the non-commercial nature of carpooling.

Verification of the driver can be done through a quick Aadhar based check against the police database through a centralised API.

In order to maintain safety, the platform would need to ensure that the driver-user and traveller-user are the same as those registered on the platform. Platforms may verify these credentials at the time of onboarding through secure digital authentication mechanisms, such as India Stack.

7.6. Avoid passenger add-on insurance obligations on carpoolers

Passenger add-on insurance covers are typically intended for commercial operators who transport passengers for income. Extending such requirements to private individuals who occasionally share their vehicle may increase annual insurance costs and could discourage participation. Existing mandatory third-party insurance already provides statutory protection to passengers in the event of a road accident.

In this context, existing third-party insurance requirements may be treated as adequate for non-commercial carpooling arrangements. Platforms could offer optional travel insurance for passengers who seek additional coverage, without making such coverage a mandatory condition for participation.

7.7. Encourage more startups to facilitate carpooling and introduce behavioural interventions to encourage carpooling in India

A simple behavioural nudge may be introduced to promote environmentally sustainable mobility. The Ministry of Road Transport and Highways (MoRTH) can incorporate a short message such as "Carpooling is better for the environment" on high-visibility platforms, including vehicle Registration Certificates (RC), Driving Licences (DL), and selected National Highway toll plazas and wayside amenities.

Embedding such messaging within official transport documents can normalise and promote carpooling, without imposing mandates or fiscal burdens. Implementation would require minor template updates within existing printing cycles and digital systems such as Parivahan, resulting in minimal cost implications.

The intervention aligns with India's climate commitments, urban decongestion priorities, and fuel conservation goals, while complementing broader sustainable mobility initiatives.

CONCLUSION


SANMAN LODGE
HOTEL SANMAN
MAJESTIC HOTEL
BENGALURU SARIGE
ಬೆಂಗಳೂರು ಸಾರಿಗೆ

8. Conclusion

This paper underscores the pivotal role that carpooling can play in mitigating India's most pressing urban mobility challenges. As a non-commercial, shared-use mobility solution, carpooling delivers immediate and scalable benefits—environmental, economic, and social. It reduces the number of single-occupancy vehicles on roads, thereby easing congestion, lowering emissions, and improving the efficiency of road infrastructure by optimising the use of existing private vehicles.

Carpooling is fundamentally different from ride-hailing. It operates on a peer-to-peer, cost-sharing model where driver-users do not earn a profit but recover operating expenses. This makes it an inclusive and sustainable mode of transport that complements public transit systems, especially where public options are insufficient or irregular.

The decision by the central government to draft dedicated carpooling rules separate from the commercial aggregator guidelines is a welcome move. As the drafting process unfolds, there is an opportunity to shape a forward-looking regulatory framework that actively enables responsible carpooling at scale. This should include flexible compliance mechanisms that are suited to the non-commercial nature of carpooling.

To that end, close collaboration between government and carpooling platforms is essential. Input from operational platforms will ensure that the rules are both practical and future-ready. A supportive regulatory approach will foster user confidence, encourage adoption, and allow the ecosystem to grow responsibly.

As India's cities continue to grow, carpooling can become a vital part of the country's sustainable mobility architecture, offering cleaner, cheaper, and more accessible transport options. With the right policy intent and implementation, carpooling can help India transition toward a more efficient and inclusive urban transport system.

Endnotes

1. Section 15, Draft Motor Vehicle Aggregator Guidelines 2024
2. Statista. (n.d.). *Total number of vehicles in India from financial year 1951 to 2022*.
3. Statista. (n.d.). *Total number of vehicles in India from financial year 1951 to 2022*
4. *World bank data. GDP per Capita (Current $) India*

4A. TechSci Research

5. *TechSci Research. (2023, May 9). India passenger car market to grow at impressive rate through FY2027*
6. World Bank. (2024). *Urban population – India (SP.URB.TOTL)*
7. Tiwari, G., & Jain, D. (2018). *Economic Impact of Traffic Congestion – Estimation and Methodological Issues*.
8. Ministry of Road Transport and Highways. (2024). *Basic Road Statistics of India*.

8A.Niti Aayog: Transitioning India's Road Transport Sector

8B.Private vehicles make up 88% of Mumbai's 50 lakh vehicle fleet

9. d685aa8ad315%2FTransitioningIndiasRoadTransportSector.pdf&design=DAGsvm2KCaQ&accessRole=owner&linkSource=comment
10. Mahato, S., Pal, S., & Ghosh, K. G. (2020). *Effect of lockdown amid COVID-19 pandemic on air quality of the megacity Delhi, India*. *Science of the Total Environment*, 730, 139086.

10A. Estimation of Productivity Loss Due to Traffic Congestion: Evidence from Bengaluru City

10B. Air Pollution and its impact on business

10C. PIB: Year End Review 2023-Ministry of Road Transport and Highways

10D. PIB: Infrastructure expansion in India witnesses significant growth in recent years

11. Institute for Transportation and Development Policy (ITDP). (2024). *3 urgent actions for Indian cities to reduce vehicle emissions*.
12. Gupta, A., Christopher, A., & Dhillon, P. (2019). *The economic burden of air pollution on health in India: Current evidence and future directions*. *Journal of Public Health Policy*, 40(2), 240–253
13. Indian Oil Corporation Limited. (2025, June 11). *Retail Fuel Prices*
14. Assumed vehicle mileage based on common mid-sized vehicles like Maruti Swift Dzire, Hyundai Aura etc., rated at ~20 km/L for mixed driving conditions
15. National Highways Authority of India (NHAI). (2024). *User Fee Manual for Toll Plazas*.
16. Western Peripheral Expressway Toll Calculator. (2024)
17. Government of India. (2024). *Income Tax Department – Depreciation Rates for Motor Vehicles under Section 32*.
18. Maruti Suzuki India Ltd. (2024). *Dzire – Service Cost & Maintenance Schedule*.
19. Average cost of car insurance based on vehicle type
20. Average cost of car insurance in India for 2025
21. Car insurance add on covers
22. NITI Aayog (2023). *Carpooling for Sustainable Urban Transport*.
23. Times of India
24. Carpooling: Who is closest to adopting it? An investigation into the potential car-poolers among private vehicle users: A case of a developing country, India
25. International Transport Forum. (2017). *Shared Mobility: Innovation for Liveable Cities*. OECD
26. https://tollguru.com/toll-wiki/india-toll
27. Delhi-Meerut and Peripheral Expressways toll rates to increase from today; Check revised rates here
28. Ministry of Railways. (2023). Indian Railways Monthly Passenger Traffic Report.
29. IMF Data & Times of India (2022). *India has world's 3rd highest fuel cost on PPP basis*.
30. Centre for Science and Environment. (2020). *The Urban Mobility Crisis*
31. *AQI.in. (n.d.). Real-time 100 most polluted cities in the world 2025.*

31. System of Air Quality and Weather Forecasting and Research (SAFAR). (2023). Delhi Air Quality Reports
31A. Source Apportionment of PM2.5 & PM10 of Delhi NCR for Identification of Major Sources
32. International Council on Clean Transportation. (2022, February 28). Fuel consumption from new passenger cars in India: Manufacturers' performance in fiscal year 2020–21.
33. International Transport Forum. (2017). Shared Mobility: Innovation for Liveable Cities.
33A. www.racfoundation.org/wp-content/uploads/carbon_prices-smmt-300309.pdf
34. International Energy Agency (IEA). (2019). The Future of Shared Mobility.
35. BlaBlaCar. (2023). Impact Report
36. Metropolitan Washington Council of Governments (MWCOG). (2019). Commuter Connections Annual Report.
36A. Liftshare and Mobilityways
37. TomTom. (2023). TomTom Traffic Index.
38. Centre for Science and Environment (CSE). (2022). State of Urban Mobility in India
39. TCI & IIM Calcutta. (2022). Operational Efficiency of Freight Transportation by Road in India.
40. Tendency to commit traffic violations and presence of passengers in the car
40A. Shinar, D., & Compton, R. Aggressive driving: An observational study of driver, vehicle, and situational variables.
41.Correlation of Road Safety Criteria with Occupant Safety Criteria in Impacts on Crash Cushions

Appendix

Petrol and diesel price per Km Calculation

Petrol Price		
Petrol Price	95	price/l
Fuel effeciency	20	km/l
Cost per kilometre	4.75	Price per km
Disel Price		
Diesel Price	88	price/l
Fuel effeciency	20	km/l
Cost per kilometre	4.4	Price per km

Depreciation Calculation

Depreciation		
Original price of vehicle	800000	
Depreciation Rate	15% per year (WDV method)	
Duration	5 years	

Total Depreciation Over 5 Years	
Original Price	₹800,000.00
Book Value After 5 Years	₹354,964.00
Total Depreciation in 5 years	₹445,036.00
Depreciation per km	
Vehicle Usage	60000
Depreciation Cost	₹445,036.00
Per-km Depreciation	₹7.42

Maintenance Cost Calculation

Annual Maintenance Cost	
Range	₹5,000 to ₹6,000 per year
Time period	5 years

Total Maintenance Over 5 Years	
Low Estimate	25000
High Estimate	30000

Maintenance Cost per Kilometre	
Low Estimate	₹0.42
High Estimate	₹0.50

Assuming 60,000 km of usage

Insurance Calculation

INSURANCE	
Comprehensive insurance	₹10,000–₹20,000 annually
Personal Accident (PA) cover	₹750 annually (IRDAI-mandated for ₹15 lakh coverage)
Distance	100,000 km over 5 years

Annual Costs		
Component	**Low Estimate**	**High Estimate**
Comprehensive Cover	₹10,000	₹20,000
PA Cover (fixed)	₹750	₹750
Total per Year	₹10,750	₹20,750

5 Year Insurance Costs		
Component	**Low Estimate**	**High Estimate**
5-Year Total	₹10,750 × 5 = ₹53,750	₹20,750 × 5 = ₹1,03,750

Insurance Cost Per Kilometre (60,000 km)		
Usage Distance	**Low Estimate**	**High Estimate**
100,000 km	₹53,750 ÷ 60,000 = ₹0.89/km	₹1,03,750 ÷ 60,000 = ₹1.72/km

Total cost Per Km

Petrol	
Low Range	
Fuel	4.75
Toll	0.95
Depriciation	7.42
Maintenance	0.42
Insurance	0.89
	14.43
High Range	
Fuel	4.75
Toll	1.35
Depriciation	7.42
Maintenance	0.5
Insurance	1.72
	15.74

Diesel	
Low Range	
Fuel	4.4
Toll	0.95
Depriciation	7.42
Maintenance	0.42
Insurance	0.89
	14.08
High Range	
Fuel	4.4
Toll	1.35
Depriciation	7.42
Maintenance	0.5
Insurance	1.72
	15.39

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