



## Travel 4 LiFE

### A mobile application for ride-sharing

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#### 1. Abstract

Ride-sharing is a concept that is picking up momentum recently but with a slow pace due to lack of awareness and identified issues as mentioned in literature review. Ride-sharing could be considered as one of the basic step an individual can take to add to the combined efforts of society in tackling environmental concerns in short as well as in long run. We've conceptualized the idea of ride sharing through 'Travel 4 LiFE' mobile application. Details of the brief preliminary study and gaps in existing platforms and literature are described in the paper. As far as possible, we've tried to clearly portray the idea of our mobile application and its functioning and how it can contribute in cutting the carbon footprint.

#### 2. Problem Statement

According to AQI data of the top 10 most polluted cities in the world, 7 out of 10 cities are from India namely New Delhi, Ghaziabad, Begusarai, Noida, Faridabad and Saharsa (AQI, 2023). In case of Delhi, annual average PM<sub>2.5</sub> concentration in 2021–2022 was 100 µg/m<sup>3</sup>—20 times more than the WHO recommendation of 5 µg/m<sup>3</sup>. Analysing the source contributions to annual average PM<sub>2.5</sub> concentrations across Delhi, it is evident that *Vehicle exhaust from petrol, diesel, and gas combustion* contributes around 10-30% and another 10-30% is added up by *Dust from roads and construction activities* (Guttikunda, et al., 2023). It is clear that transport sector has got a significant role in pushing up the levels of pollutants. With over 1.4 billion people in India, it is of no surprise that the vehicles on roads are one of the culprits behind the higher pollution indices.

While looking for the fundamental reasons behind the higher pollution levels, it is logical to assume that more number of vehicles on road means more emissions. The targeted behaviour of the public, if tweaked, which can go a long way in reducing the carbon and other emissions from the transport sector is to "*promote ride-sharing*". It could be for daily/weekly travel routine and for single time long journeys as well. The particular behaviour stems from the people's mind-set of "one person-one car" theory. Even though it's natural to travel alone in one's 5-seater car leaving the other 4 seats empty, it is high time to contemplate on the cost incurred on our environment due to the behavioural pattern. Transport sector having accounted for 37% of CO<sub>2</sub> emissions from end-use sectors in 2021 (IEA, 2023), changing the behavioural pattern of the people using the same can be put on top of the priority list.

To comply with the target of achieving Net Zero Emissions by 2050 (India's being 2070), CO<sub>2</sub> emissions from the transport sector must fall by about 3% per year to 2030 (IEA, 2022). Government of India has taken several pro-active steps including adopting BS-VI standard, FAME scheme and the recent launch of Mission LiFE etc. to help our planet for a sustainable present as well as for a sustainable future. But, the initiatives from the side of government needs to be catalysed by the changing the existing behavioural pattern of the individuals. Only a hand-in-hand initiative can get the desired results in the long run.

### 3. Literature Review

The UN Climate Change Conference in Glasgow (COP26) has expressed alarm and paramount concern that human activities have caused around 1.1 °C of warming to date and its impacts are evident in every part of the planet and the carbon budgets consistent with attaining the Paris Agreement temperature goal are now insignificant and being rapidly exhausted and also stresses the urgency of enhancing ambition and action with respect to mitigation, adaptation and finance in this critical decade to address the breaches in the implementation of the goals of the Paris Agreement (UNFCCC, 2022).

As per UNEP's Emission Gap report, Countries' new and updated nationally determined contributions (NDCs) submitted since COP 26 may only reduce expected global greenhouse gas (GHG) emissions in 2030 by only 0.5 gigatonnes of Carbon Dioxide equivalent (GtCO<sub>2</sub>e), compared to emissions estimates based on mitigation pledges at the time of COP 26 (UNEP Emissions Gap Report , 2022). The report highlights that, China, EU27, India, Indonesia, Brazil, the Russian Federation and the USA are the top 7 emitters and adding international transport sector to it, they accounts for the 55 % of the global GHG emissions in 2020. The world's average per capita emissions were at 6.3 tonnes of CO<sub>2</sub> equivalent (tCO<sub>2</sub>e) in the year 2020. USA remains far above this point at 14 tCO<sub>2</sub>e, trailed by 13 tCO<sub>2</sub>e in the Russian Federation, 9.7 tCO<sub>2</sub>e in China, about 7.5 tCO<sub>2</sub>e in Brazil and Indonesia, and 7.2 tCO<sub>2</sub>e in the European Union. Even though India is the third largest emitter of CO<sub>2</sub> in the world after China and the US, with estimated annual emissions of about 2.6 gigatonnes per annum (gtpa) (M. N. Dastur & Co. (P) Ltd, 2022), *India remains far below the world average at 2.4 tCO<sub>2</sub>e*. On average, least developed countries emit 2.3 tCO<sub>2</sub>e per capita annually.

The Indian Model of SDG Localisation report (2022) by Niti Aayog acknowledges that, Government alone cannot achieve the SDGs but the realization of the 2030 Agenda depends on building effective partnerships between the government, the private sector, civil society organisations, and the research and academic community. The 4<sup>th</sup> pillar of Indian model of SDG localisation encompasses promoting a “whole of society approach” (Niti Aayog, 2022).

### Preliminary Analysis of Existing Ride-Share Applications

Ten existing platforms through which people can share rides were identified as enumerated in Table 1.

The brief preliminary study of existing ride-share apps was conducted in a two-prong way as given in figure 1. The first part involved screening number of rides offered through BlaBlaCar application between selected cities

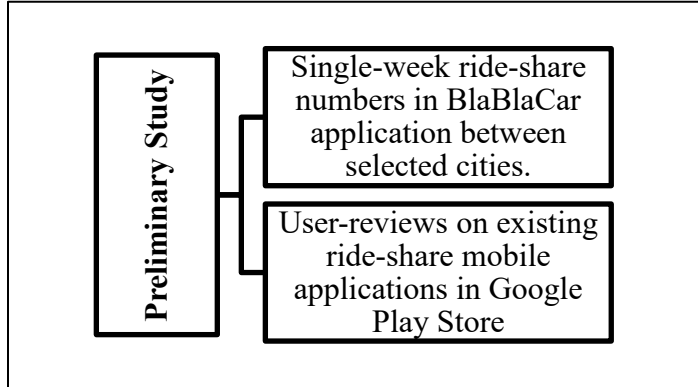


Figure 1 Preliminary Study

on a selected week and the second part was about screening user posted reviews on Google Play Store to identify the consumer thoughts and concerns on the existing applications.

1. BlaBlaCar	6. ToGo (Together We Go)
2. sRide	7. Quickride
3. UberPool	8. ZIFY
4. Ola Share	9. Ryde by Ibibo
5. Rapido	10. Carpool by Meru

Table 1 Ten Existing Prominent Ride-sharing/Car-pooling apps

From the web searches and going through user reviews in internet, it was found that BlaBlaCar was the prominent application people used for ride-sharing. So, BlaBlaCar mobile application was selected to get a sense of existing ride-sharing patterns of people. Other reason why we selected BlaBlaCar was because, this application has resemblance of the application that we have envisioned. The concept of both BlaBlaCar and our “Travel 4 LiFE” converges at multiple points, “Travel 4 LiFE” has its unique selling point which will be elaborated further.

It was evident from after a week’s monitoring in February 2023 of *BlaBlaCar’s* mobile application by inputting two main cities (Kochi and Thiruvananthapuram) in south of Kerala as source and destination. The reason why we chose to monitor rides between Kochi and Thiruvananthapuram is that, the latter city is the capital of the state with the secretariat, ministry offices and other important government offices and the former is the seat of High Court of the state. It was found that only 5 rides in total between the cities were found during the range of the particular week. On the other hand, on the same week range, rides between the Karnataka’s capital city of Bangalore and Mysore observed a mean of 5 rides and a median of 3 rides with a maximum value of up to 10 rides on a day (observed as Friday).

It is evident from the above preliminary observation that in a city like ‘Bangalore’, people were far more aware of the existing ride-share apps, but not enough to help in reducing significant carbon emissions. The day on which maximum rides between Bangalore and Mysore were observed to be a Friday which could possibly mean that, on a weekend, people used it more compared to a working day.

The second point of the preliminary study was to screen the user-reviews publically posted on existing mobile applications in Google Play Store as listed out in Table 2.

No.	User-review	No.	User-review	Solution envisioned by “Travel 4 LiFE app”
1	<b>Fake posting of Rides:</b> offering rides and denying requests to join	6	<b>Trust Issues:</b> people don’t trust offered rides in remote places.	<ul style="list-style-type: none"> <li>• Strict KYC upload (Aadhar + Driving License Authentication)</li> <li>• Blocking of accounts for repeated fake postings</li> <li>• Woman only journeys: Option to offer rides to women by women</li> <li>• Strict code of conduct</li> <li>• People can offer free-rides to others</li> <li>• Offers both drive and hire option through single account</li> <li>• All India coverage</li> <li>• No fees at all</li> </ul>
2	<b>Offline negotiations:</b> Asking for higher than agreed amount	7	<b>No free ride options:</b> There is no option to offer free of cost rides	
3	<b>Demanding extra fare:</b> Asking for extra charges after journey	8	<b>Either Drive or Hire:</b> some applications allows users to register either as a person who offers ride or who wants a ride.	
4	<b>Posting rides with unfair amount:</b> amount posted for the trip is higher than alternate transport means.	9	<b>Geographically limited:</b> Some applications are geographically limited in offering and choosing rides.	
5	<b>Misbehaviour to Women:</b> disrespecting woman who joins the ride.	10	<b>Subscription Fees:</b> Some apps charge subscription fees to maintain the account	

*Table 2 User Reviews posted in Google Play Store on Existing Ride-share applications*

The user reviews were collected from among the available ten applications from Google Play Store. Over 100 reviews were identified and consolidated them as 10 common issues raised by the users and the solutions to address the issue through Travel 4 LiFE application are also briefly matched against it.

### **Limitations of the Preliminary study**

The number of rides data between the cities was only for a week’s range. As the study’s scope was limited to obtain a slight trend of the rides offered through the existing applications, only single week was selected for screening. Only two pair of cities were

screened, both pairs being in south India which may not reflect the trend of northern parts of India.

The user-reviews posted in Google Play store about the existing apps are un-structured and can't be verified to know if it was actually posted by a person who availed a shared-ride facility. But, we selected those reviews to which the support-staff of the application has given a reply. The reviews selected were from the most recent 100 numbers.

## 6. Idea Detail

Figure 2 portrays the envisioned 'Travel 4 LiFE' mobile application and its functioning.

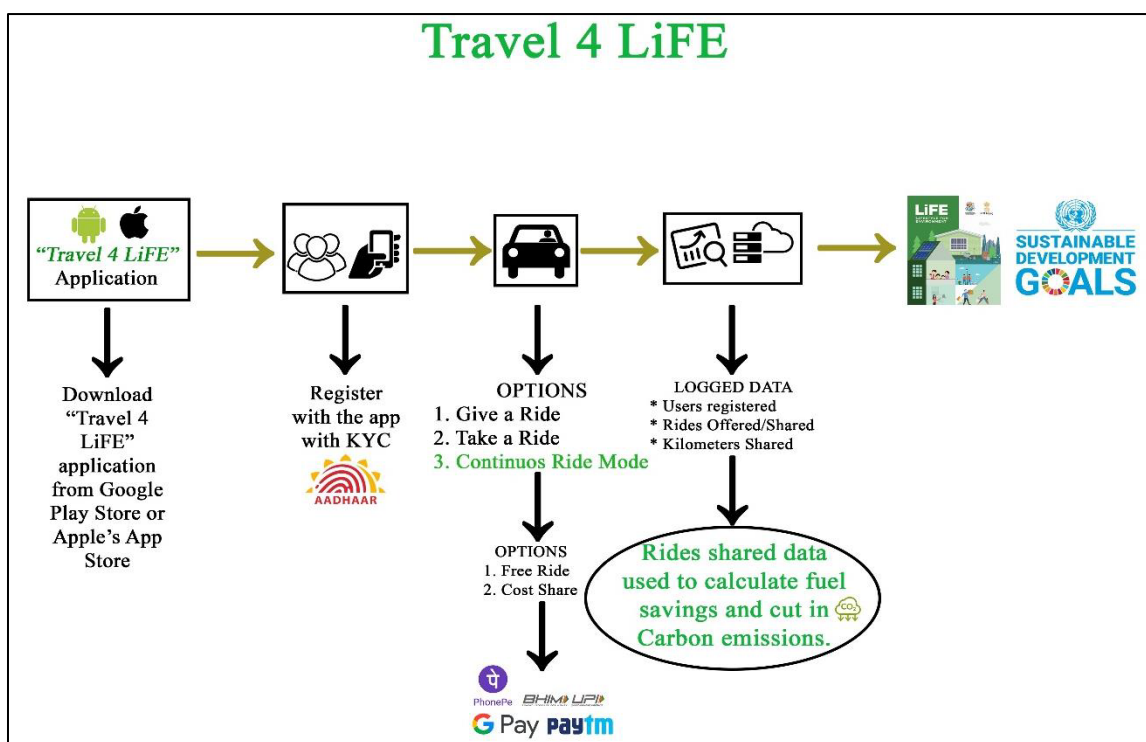


Figure 2 Travel 4 LiFE Conceptualization

The mobile application (android/iOS) as intended to be promoted and backed by the Government of India and Niti Aayog, would encourage the people to share rides (cars, scooters, motorcycles etc.) each other. The application would be available to be downloaded from Google Play Store and from Apple's App store. A user while registering with the app is required to authenticate themselves with Aadhar and Driving License for security and safety purposes. A person who intends to offer rides should do the one time process of mandatorily uploading picture of his vehicle with number plate being visible and ownership of the vehicle explicitly mentioned while registering his vehicle with the app. A person can register multiple vehicles.

Both persons who offers a ride as well as who needs a ride has to undergo the one time authentication process. Mobile number and e-mail id verifications are required but as the

app offers an in-app messaging system for communications regarding the trip, mobile numbers are not revealed until either of them voluntarily decides to share it. Through a single account opened with the application, a user can offer a ride and look for a ride as well.

Once registered, the app offers 3 main options for a person. One is ride offering, second is ride searching and third is a continuous ride mode. A person can post his intended travel date and route along with cost to be paid by the co-passengers. He can mention the number of seats available and as more people enrolls, the seats are shown as filled and there after the app shows the remaining vacant seats. A person is allowed to offer free rides too.

A prospective traveller who intends to travel on a particular date can search for offered rides which matches his source and destination. He can send a request to the ride-giver to add him to the journey. The person who posted the ride details has to either accept or deny the request within a specified time frame. After accepting the request, they can communicate through the in-app messaging system. The app itself doesn't offer a payment portal but the payment is required to be made either in cash or through UPI directly to ride-giver.

The third option is a '*continuous ride mode*' where a person who has a private vehicle, who travels on a daily basis in a particular direction can put himself on a continuous ride mode where he/she doesn't need to update his ride details frequently but once he put himself on the mode, people who wants a ride can spot the ride-sharer on the map and can accordingly contact him to join the journey. This method works better for a person who uses his vehicle to travel between two points on a 'to and fro' basis daily. Whenever he starts his journey, he can make himself visible on the map so that the intended persons can give him a request through the option in the application to join him from a point on the road he passes through. This is a unique feature which 'Travel 4 LiFE' mobile application offers compared to other existing applications.

**Emissions cut data:** Finally, the data from the number of offered rides and availed rides along with the kilometres can be used to arrive at cut in emissions as the shared rides directly accounts for the reduced vehicle use which means reduced emissions.

**Targeted Behaviour:** The idea we are putting forward primarily targets to achieve a desired behavioural pattern in the society which we aim to inculcate into them through our conceptualised idea of "*Travel 4 LiFE*" mobile application. In the existing scenario among the society, the concept of sharing a ride with a person who is travelling in the same direction can be observed sparsely but not yet a dominating trend as there needs to be a catalyst to enhance this behaviour. Even though there are a handful of mobile applications available to promote the behaviour, but due to the identified issues and obstacles in the literature review, there needs to be a significant push and overhaul of the concept.



**Target Audience:** Even though our idea primarily targets the people who regularly (daily, weekly etc.) uses their private vehicle to travel and intends to cut her/his fuel costs by sharing the incurred cost and thereby reducing the carbon intensity on the environment, the idea isn't limited to an age group or a specific class of people, like office going. The application can be of use to any person who has a mind and heart to put a step forward as part of their individual initiative to become a part of the larger cause of building a sustainable planet for us and for the future generations.

**Implementation of Idea:** The idea is centred on the envisioned mobile application, *“Travel 4 LiFE”*, developed as an android and iOS application, available to be downloaded at the Google Play Store and Apple's App Store. A dedicated android/iOS application developing team will be constituted to build a required application on both platforms which is to be endorsed by the Government of India on the lines of MyGov, Aarogya Setu, and DigiLocker etc. The existing applications available for ride sharing will be studied and analysed and their drawbacks and limited coverage of them would be overcome along with the other unique features of the *“Travel 4 LiFE”* app.

**Pre-requisites to the implementation:** A survey is to be conducted among the society mainly to identify the perception of the public on the idea of ride-sharing and their willingness to change to the particular behaviour which we are trying to instil among them. The survey intends to know from the society the following but not limited to this:

- a. Are they aware of the concept of ride-sharing
- b. Are they using any of the existing platforms for ride-sharing
- c. Would they be willing to share-rides
- d. Are there any expectations for a desired feature (application specific)

## 7. Testing Plan

The prospective testing plan architecture is as represented in the figure 3.

The testing plan involves developing a working prototype of the 'Travel 4 LiFE' mobile application. Initially, it would be developed only for an android platform, thereafter undergoing the trial-runs, an application for iOS platform would also be developed. The trial-run here refers to making the app available for download on Google play store for the users. After users have started using the facility of ride-sharing through our application, reviews needs to be collected and screened to identify any drawbacks. Reviews are commonly collected from Google play store. Drawbacks could be related to the application itself or with the experience they've had during the ride.

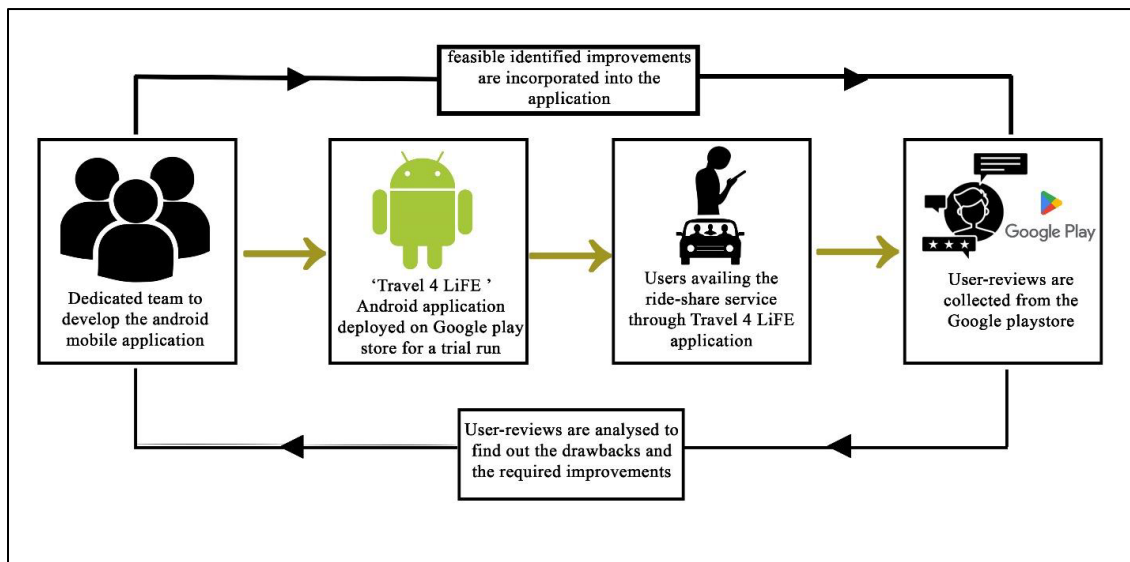


Figure 3 Testing Plan architecture

### Limitations of the testing plan

The limitations may include relying on user-posted Google play-store reviews which can't be authenticated. It is a grey area to forecast the demand side from the data from existing ride-share applications.

### 8. Conclusion

All the nations are equally worried of the damage that has been historically done as well as the ongoing adverse impacts of the unsustainable and aggressive developmental practices on our environment. If the idea 'Travel 4 Life' be implemented and promoted through all means among the public, would be one small step towards a sustainable future but could create a long lasting impact on mind of society in changing their perspective in acting for the environment. Once the society understands the concept of ride sharing and the benefits like cost-cuttings and limiting carbon emissions, it wouldn't be a long time from then to build a society seriously conscious of the environment they live in.

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