

Factors influencing Tunisian student's intentions to carpool

Fatma TURKI

Department of Economic and Transport Planning
Higher Institute of transport and Logistics - ISTL
University of Sousse, Tunisia
fatmatorki750@gmail.com

Aymen GHÉDIRA

Department of Economic and Transport Planning
Higher Institute of transport and Logistics - ISTL
University of Sousse, Tunisia
a.ghedira@gmail.com

More than a quarter of the greenhouse gas emissions that cause climate change come from transport. According to the World Bank, emissions from Tunisian road traffic account for around 26% of all CO₂ emissions. Currently, private car use accounts for the majority of kilometers traveled, making it one of the biggest causes of air pollution. The promotion of environmentally friendly modes of transport (such as public transport, cycling, walking, or carpooling) is becoming more common. Despite increasing environmental awareness and concerns, many road users still rely on cars, either out of necessity or choice. Due to the growing popularity and the frequent congestion and saturation of the nets, it is imperative at this point to examine individual needs and the nature of their movements. Usage patterns and means of transport vary depending on individual characteristics, so displacement is the answer to a need that depends on one's own accessibility. Carpooling can be a sensible alternative for motorists. It has many advantages.

In particular, this concept will play an important role in preserving the environment, improving the road network and traffic flow, improving the economy, as well as providing an effective solution to various problems and challenges. In this sense, sharing is an aspect of sustainable development that creates a participatory element and also reduces externalities (ecological, economic, and social). Compared to any other type of displacement, it has its own unique economic, social and environmental characteristics. By this logic, carpooling is a type of sharing economy where people share their vehicles with commuters to save on transportation costs.

It has been promoted for the last few decades as a viable alternative to car ownership that has the potential to reduce traffic congestion, parking needs and environmental problems. Certainly, this mode has some advantages, including reduced transportation costs and travel time, elimination of traffic congestion, and more advanced energy efficiency and fuel savings ((Ferguson, 1997) (Chan, et al., (2012)). This training aims to reduce exit costs, driving pressure for vehicle travelers (Jamal et al., 2017) and to reduce intermittent driver fatigue (Maif, 2009.) Additionally, in 2005, the National Energy Agency assessed that this could reduce the number of kilometers driven by 19 percent (2018, IEA). In addition, this mode of transport can benefit commuters' social networks and increase their satisfaction by expanding their social networks. Similarly, carpooling creates barriers and inconveniences that hinder the improvement of the system, such as the inflexibility of commuters' working hours, the lack of Trust between participants and the difficult access to this service.

At this level, cultural exchange activities and mobility patterns in developing countries differ from those in developed countries due to unstable economic conditions, cultural norms, and lack of infrastructure. The rapid growth of shared mobility has transformed travel behavior, necessitating urgent research into commuter travel patterns in megacities in developing countries.

In general, carpooling is a process whereby several people with similar or common schedules and travel itineraries share a private car for a ride. In return, the passengers participate in the driver's expenses during the journey. The term is used by Bulteau et al. (2019) as "the use of a private or community-owned vehicle. The meanings of carpooling differ depending on whether the members carpooling have a seat in a stable carpool or not. If carpools form a fixed group, for example people of the same kind join forces for different excursions, terms such as carpooling, or vehicle sharing are regularly used interchangeably. In the broadest sense, ridesharing refers to the presence of a similar vehicle for at least one trip (Morency, 2007). Carpooling can take many forms, but one can very well imagine sharing a private vehicle with someone else (explorer, understudy) for transportation purposes (travel, study, shopping, leisure...). The rationale behind this idea is that at least two people living in separate families can share the use of a private vehicle for a small fee, provided they follow a comparable movement theme (Ciari, 2012).

In the broadest sense, ridesharing refers to the presence of a similar vehicle for at least one trip (Morency, 2007). Carpooling can take many forms, but one can very well imagine sharing a private vehicle with someone else (explorer, understudy) for transportation purposes (travel, study, shopping, leisure...). The rationale behind this

idea is that at least two people living in separate families can share the use of a private vehicle for a small fee, provided they follow a comparable movement theme (Ciari, 2012).

According to Tunisian experience, carpooling as a means of transport is not defined. There is currently no legal text that defines or analyzes carpooling as a means of passenger transport. The government is supporting transport restructuring projects in Tunisian cities as part of a long-term, coherent, and demand-driven urban mobility strategy. The aim of this article is to uncover important characteristics that influence students' desire to carpool in Tunisia. Likewise, our study aims to highlight the main motives because people choose carpooling as a mode of transport. With that in mind, we'll endeavor to answer the accompanying questions: Why do students seek carpooling for their trips? For what reasons did the respondents choose this mode of transport over public transport and solo driving?

In this study, a web-based statement-choice experiment was used for data collection. The study is aimed at a wide range of ridesharing opportunities. Sometime between 2020 and 2021, a study was conducted on carpooling in Tunisia, with people spread across 24 governorates. Since this review had a number of topics, we shared it through Facebook groups. Originally released on November 30, 2020, it was used for a test aimed at detecting potential survey errors and determining current error rates in light of the entire study history of a clear sample. From that date, this survey was distributed online via Facebook bundles from December 2020 to February 2021. To gather information about this training, the study should target the member for just ten minutes. A questionnaire was developed that included respondents' socioeconomic demographics, interests in carpooling, and factors that encourage and discourage carpooling. A self-reported approach was used, and 269 usable samples were obtained.

The results showed that 16 percent of the students were interested in carpooling as drivers and 84 percent as passengers. According to the first gap in our study, the ridesharing sample consisted of 269 Tunisian students, 54% of whom were women. The respondents were on average 24.39 years old. The sample was extracted from a larger database that included both drivers and passengers. Almost all students (84 percent) are more likely to be passengers than drivers. Just over 43% of respondents own a car, while the remaining 57% do not own a car but have access to at least one car in their household that they could use occasionally if available. For this reason, possession of a driver's license for the 269 is expected to be optional; They are on average 2 years old. Student carpoolers had an average monthly income of 282.20 DT, while their monthly commuting expenses averaged 118.42 DNT.

Factor analysis identified three factors in students' interest in ridesharing: cost, perception and attitude, and safety. Regardless of the reason for travel, data shows that safety, convenience, time savings and significant cost savings are among the top reasons for carpooling. Environmental motives are classified as secondary, while family perceptions and pressures come first. The recognizable proof of the changeability in the practice of carpooling is inextricably linked to the findings, perspectives, circumstances, and choice of transport of the second occupations in the urban climate. To better understand why students carpool, this study is based on these 1192 observations. The combination of the factors causing the displacement resulted in three combined cluster formations (Table 1).

Reasons	
Attitude	Reliability, security, convenience, comfort, friends and coworkers that use it, poor transportation quality, communication and experience sharing
Accessibility	Availability of transport, difficulties in access to transport, contributes to congestion, contributes to environmental pollution, incompatible working hours, flexibility
Cost	Time savings, prices, and costs

The results show that women are the most concerned about accessibility when it comes to carpooling (61 percent vs. 39 percent for men). In terms of attitudes and perceptions, the results obtained from our data show that 47% of men prefer carpooling to public transport for three simple reasons: reliability, convenience, and poor quality of public transport. In addition, solo driving and public transport are less safe and uncomfortable than this mode. As part of the average distance traveled per trip, the perceptions and attitudes (43%) presented in Table 1 (e.g. safety, reliability, comfort) have a strong impact on roads less than 90 km away. The results indicate that each increase in a unit's travel time translates into a cost reduction. This is illustrated by the fact that for longer distances of more than 150 kilometers, students choose to carpool to reduce their travel costs, gain time and save their time on their trips to a base.

When trying to quit, the results also show that the benefits of carpooling include safety, convenience, time savings, and significant financial savings for study participants. Perception and family pressures come first, with environmental incentives second.