

# **Mobility Within Educational Institutions and of Saint-Germain-en-Laye**

## **Executive Summary**

In short, this report outlines strategies to increase transport and integrate micro mobility, encouraging carpooling in order to tackle problems related to traffic congestion and the proliferation of single-occupancy vehicles. Public transport is currently facing a number of challenges, e.g. negative perception and unreliable frequencies, in spite of the well connected road network. Implementation of a Real Time Information Dashboard, Education Workshops and the development of an app to integrate Navigo cards are proposed solutions. These initiatives shall be launched, closely monitored their effectiveness and adapted as feedback is received. In terms of micro-mobility integration on promoting micro mobility for campus commuting in Saint Germain en Laye, emphasizing bicycles and electric scooters to reduce carbon footprint. Insights from a survey highlight safety concerns and transportation preferences. Challenges include restrictions on rental services and safety issues at crowded intersections. Short-term proposals include forming a biking community, bike rentals, IDFM bike subsidies, self-repair stations, underground bike parking, and parking rails. Long-term proposals involve a dedicated RER V for bicycles and implementing a Dutch biking exam for road safety. The implementation plan addresses costs for charging stations and parking spaces, suggesting potential government subsidies. Carpooling efforts focus on improving carpooling by enhancing visibility through the integration of IDF Mobilité with popular carpooling apps, along with an institutional support program involving the appointment of ambassadors, offering rewards, and promoting carpooling. In order to ensure the maintenance of an ideal carpooling situation in Saint Germain, this sustainability and maintenance plan stresses that they should continue to promote its benefits through constant promotion as well as continuous monitoring.

## **Introduction**

As the worldwide focus on sustainability and lowering carbon emissions grows, organizations and educational institutions are searching for methods to encourage environmentally friendly practices. This study examines current initiatives to strategically reduce automobile emissions.

Thereafter we will study potential opportunities to reduce this through the usage of micro-mobility, reduction of single car use and public transport.

This research seeks to provide useful insights into the existing commuting patterns through secondary data sources and an in-depth survey performed among students and employees at the IX Blue Campus in Saint-Germain-en-Laye. We attempt to identify significant insights and provide a comprehensive picture of the variables impacting commuting behavior.

This research is the basis for developing focused solutions that speak to the needs of companies and educational institutions.

The importance of sustainable transportation practices cannot be over said in today's world. We strive to propose an implementable blueprint to achieve carbon neutrality. Saint-Germain-en-Laye has the opportunity to lead by example, where hopefully over time, we can inspire environmentally friendly commutes on a larger scale.

## **Micromobility**

### **Objectives of the Research:**

The primary focus of our project centers on the use and enhancement of micro-mobility utilization for commuting to the campuses within Saint Germain en Laye. Micromobility encompasses a spectrum of compact, lightweight vehicles, typically operating at speeds below 25 km/h and driven by individual users. Within this category, our project specifically targets bicycles and electric scooters, while also considering walking as a viable mode of transportation.

### **Our objective:**

The overarching objective of this initiative is to foster a cultural shift among employees and students at the campus, encouraging them to prioritize micro-mobility vehicles over conventional cars and other environmentally detrimental transportation modes. By promoting the adoption of bicycles and electric scooters as primary means of transportation, we aim to contribute significantly to the reduction of the carbon footprint associated with commuting to and from these institutions.

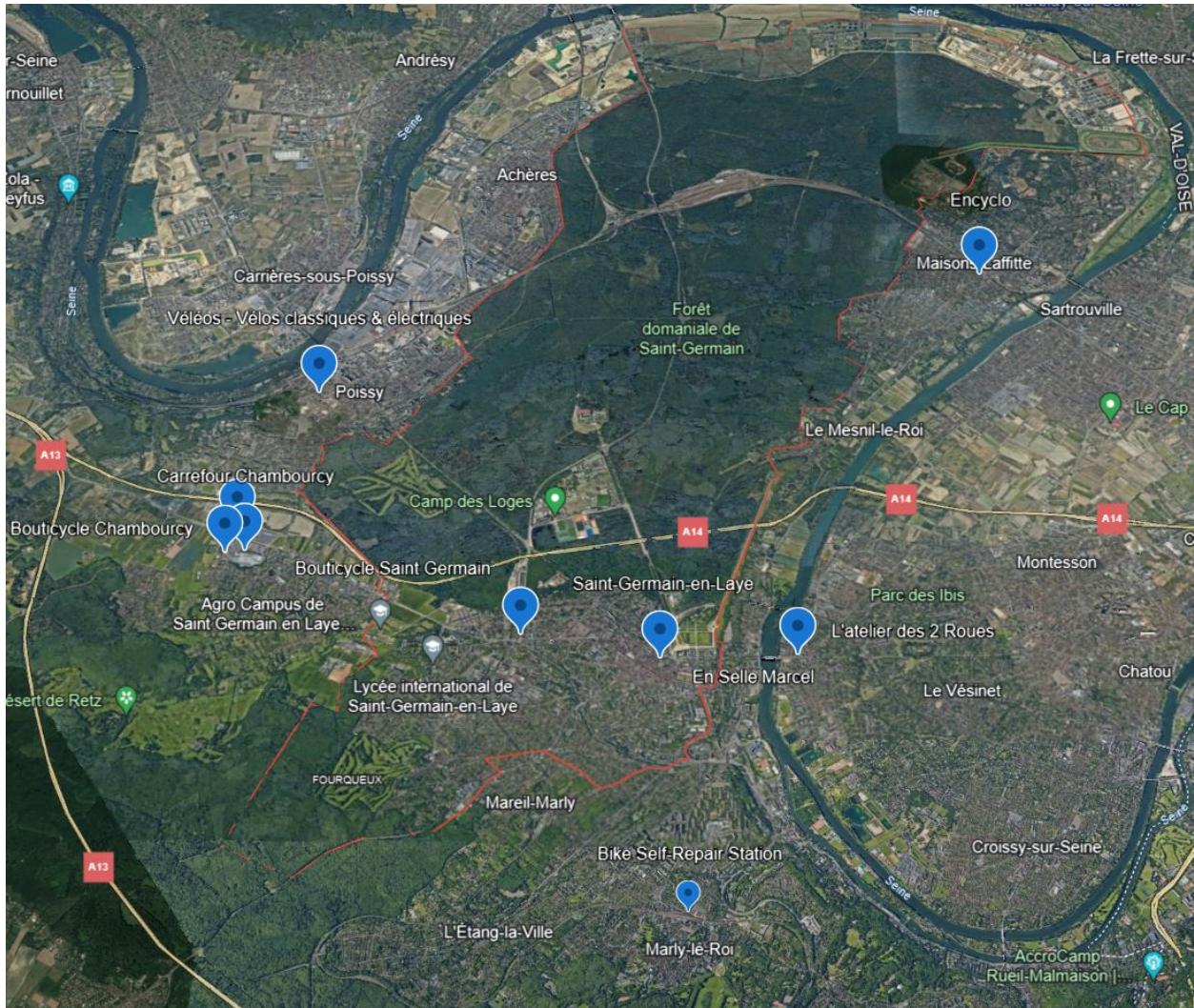
### **Data Analysis**

To promote the adoption of micro-mobility vehicles among campus members, it was imperative to gain insights into their existing transportation preferences. To achieve this, we designed a

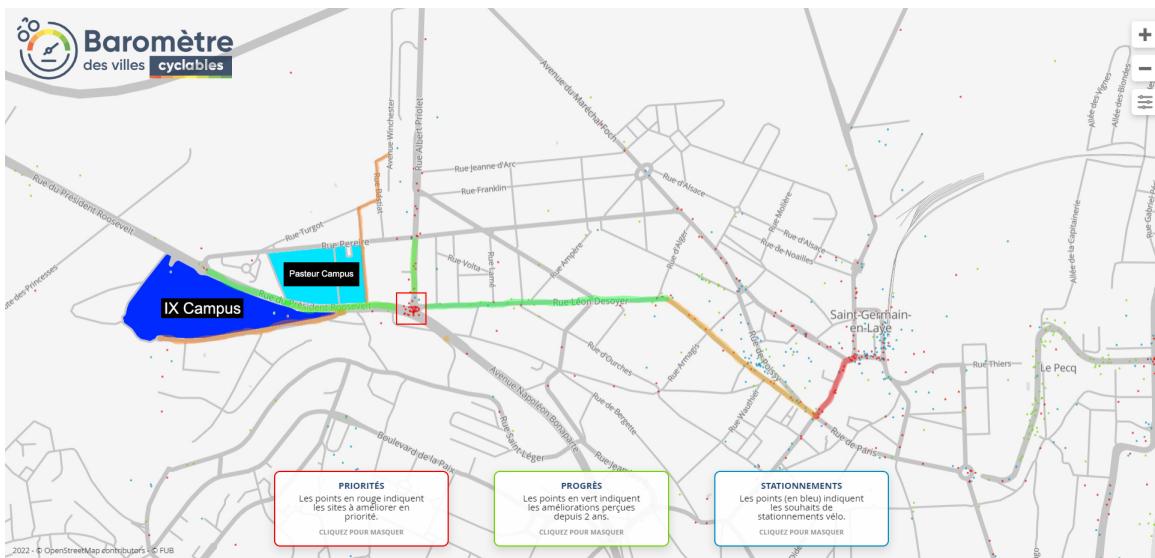
comprehensive survey using Google Forms, which was subsequently distributed to both students and professionals affiliated with the campus.

The survey encompassed both quantitative and qualitative questions aimed at capturing essential details. These included information about the respondents' proximity to the campus, their current modes of transportation, the timing of their departures from both home and the campus, and as well as considerations regarding safety during their commutes. The data collected serves as an important resource during our study and understanding the safety concerns and preferences is integral to our planning efforts. Through data analysis, we can tailor our micro-mobility initiative comprehensively, addressing specific needs and patterns while prioritizing the safety of individuals during their daily commutes.

## Current Situation Analysis



\*Map of all bike stores/repair shops around Saint Germain



\*The dots on this map show the areas in Saint Germain where people desire bike parking (blue), where work has been done to improve micro-mobility (green), and where work needs to be done (red).

The lines represent where there are bike lanes(green), 1-way roads (yellow), and where the sidewalk is shared with pedestrians (red).

## Barriers and Challenges

When creating our initial proposal, we immediately thought of rental services such as Lime, Veligo, and Tier. As they are very convenient for people making short to medium-distance commutes. Unfortunately, we discovered that the city of Saint Germain doesn't allow for the operation of the rental companies above. In a [2022 interview](#) with actu.fr, the governor of Saint Germain Arnaud Péricard spoke about his reasons for not allowing the operation of such rental companies within Saint Germain en Laye, stating:

## Why Saint-Germain-en-Laye does not participate

When we look at the list of municipalities involved, we see that Saint-Germain-en-Laye did not wish to be included in this project. A refusal which surprises, but which the mayor of the city, Arnaud Péricard, justifies with several arguments.

"To date, I have not been reassured about the environmental insertion of the system. I have the chance to work at Place de la Concorde as a lawyer and I see how these systems are poorly managed and we find ourselves in front of heritage elements with bicycles and scooters in all directions, thrown on the ground, etc... I am not going to distort the heritage and the place of the castle with devices which risk, for the moment, degrading my city more than improving it. I don't want that in Saint-Germain and I have no guarantees about who will take care of it, is it going to be extra work for my municipal services..."

Besides the aesthetic aspect and heritage, the Saint-Germanois councilor also highlights the rate of equipment in his city. "We have a rate of individual equipment with electric bikes and scooters which is very high due to our geography which is particular with 2 hills and the number of schoolchildren. We don't need a new device on this. »

The feedback from when we interviewed CY Tech students has provided key information about their preferences regarding the utilization of micromobility within Saint-Germain-en-Laye. Notably, the students clearly expressed reservations about employing micromobility in certain urban scenarios. Firstly, crowded intersections were identified as locations where micromobility usage is less favored. The concerns likely stem from the potential challenges posed by heavy traffic and intricate pedestrian movements, which may compromise safety and efficiency when commuting with micromobility.

Additionally, students indicated a hesitancy to use micromobility on one-way streets, highlighting a worry about potential collision with vehicles. Which may overall impact the

student's ease and convenience while commuting toward campus or around Saint Germain en Laye.

Furthermore, the absence of dedicated bike lanes on certain roads emerged as a key player in discouraging micromobility use. Students expressed a preference for roadways equipped with designated bike lanes since these provide a heightened sense of safety and facilitate smoother micro-mobility travel.

Currently, Saint Germain has no self-repair station for bikes. In a similar study conducted by [Campus de la Transition](#), they found that many people had bikes that they didn't anymore because they either didn't know how to repair them or couldn't afford to. With the only options for self-repair being well outside Saint Germain, it is inconvenient for people to maintain their bikes within the city.

## **Proposals:**

Short Term:

**Community:** During our survey of the IX Campus, we discovered that some people do not feel that it is safe to travel using micro-mobility in certain parts of Saint Germain En Laye. Using the map obtained from [Barometre](#) we can see where people don't feel safe (red dots).

These markers are generally put in crowded streets and intersections. There isn't much that can be done to remedy this. So we propose that Saint Germain encourage the formation of a biking community similar to [MIEUX SE DÉPLACER À BICYCLETTE](#). A community such as this can educate new bikers on how to safely navigate these areas, thus improving the safety and perception of micro-mobility in Saint Germain en Laye. Additionally, those within a community can share information on how to repair and care for bikes.

**Bike Rentals:** Although Saint Germain has 2 bike stores, neither of them offer rentals. The only store that rents bikes (Cyclou) isn't currently open and only has trail bikes, which would be inconvenient for commutes, it is also in an inconvenient position. As stated before there aren't services such as Velib and Lime in Saint Germain. However, IDF has a collaboration with Veligo called "[Veligo Location](#)", where people can rent eBikes from designated stations outside of Saint Germain en Laye. The rental period for these bikes is 6 months, meaning that commuters do not have to worry about covering large distances every day to return their bikes. The monthly cost for this subscription is 40 euros per month, or 20 euros with an employer subsidy.

## **Île-de-France Mobilités bike subsidies (IDFM):**

IDFM offers subsidies of up to 50% based on income for the purchase of new or certified used bikes, encompassing both mechanical and electric bikes. This initiative is particularly advantageous for students and professional workers commuting in Saint-Germain-en-Laye and to the campus. This is because making sustainable transportation options financially accessible, motivates individuals to embrace environmentally friendly ways of commuting rather than using cars and public transport which is already being heavily relied on. This proposal by IDFM is also very practical as it caters to a diverse range of users, accommodating those who want to use traditional bikes or even electric bikes as an alternative.

Moreover, this subsidy offered by IDFM allows users to alleviate their transportation costs, which encourages them more in the investment of a bike for daily commutes. Looking further, micromobility in general promotes a healthy and active lifestyle, which is beneficial for the well-being of professional workers and students. This also includes the benefits of being more eco-friendly along with the ability to decrease traffic decongestion during daily commutes as it reduces people's reliance on traditional vehicles.

### **Bike Repairs:**

To make it more appealing to use bicycles in Saint Germain en Laye we suggest proposing the implementation of a few self-repair bike stations and strategically addressing parking infrastructure. To facilitate an efficient experience with users commuting to the campus and all around Saint Germain En Laye, we recommend the establishment of self-repair bike stations at key locations throughout the area. These stations would provide cyclists and new users trying bikes with the necessary tools and resources for minor repairs, promoting self-sufficiency and minimizing the inconvenience of mechanical issues during commutes.

### **Underground bike parking:**

Furthermore, to encourage secure and organized bicycle parking, we propose the creation of an underground bike parking facility near the RER A station in Saint-Germain-en-Laye. This facility would offer a dedicated and sheltered space for cyclists and the citizens of Saint Germain en Laye to store their bikes conveniently, ensuring protection from adverse weather conditions and potential theft. Moreover, the underground bike parking can be managed in two ways. Firstly, it can be fully automated where users scan a barcode or input in a device to collect their bikes stored in a locker underground. This may be useful as it ensures that bike theft is much more difficult as the bike is safely stored and avoids the possibility of users taking the wrong bike. However, it must be said that this is most likely more costly and could have technical issues. The second way would be the store it normally underground for users to pick up. Which is much more cost-effective and still relatively secure from bad weather and theft.

### **Installation of parking rails:**

Additionally, we suggest the installation of parking rails at locations marked by blue dots on the Barometre map. These strategically placed rails would serve as designated parking areas, contributing to the systematic organization of bicycles and ensuring cleanliness in Saint Germain En Laye with no personal vehicles messily spread out on the streets of Saint Germain En Laye; one of the biggest factors for the city not implementing rental services such as Lime or Tier throughout the city. Implementing such infrastructure not only enhances the visual orderliness of parked bicycles but also ensures efficient use of available space. Additionally, it would fulfill the needs of people commuting in Saint Germain En Laye as the blue dots represent where the community of Saint Germain En Laye demands and requires a new parking rail.

Long Term:

### **RER V:**

The RER V, similar to the widely used RER lines for metro transportation, represents a dedicated RER line designed specifically for bicycles. It is a project that has been going on since March 2019, this initiative introduced a specialized bike line going through all the significant RER stops such as A, B, C, D, E, S, M, PC, PG, etc. Unlike conventional RER lines primarily catering to traditional commuting methods, the RER V serves as a specialized infrastructure tailored to motivate all cyclists and new people to cycle to use greener forms of transport.



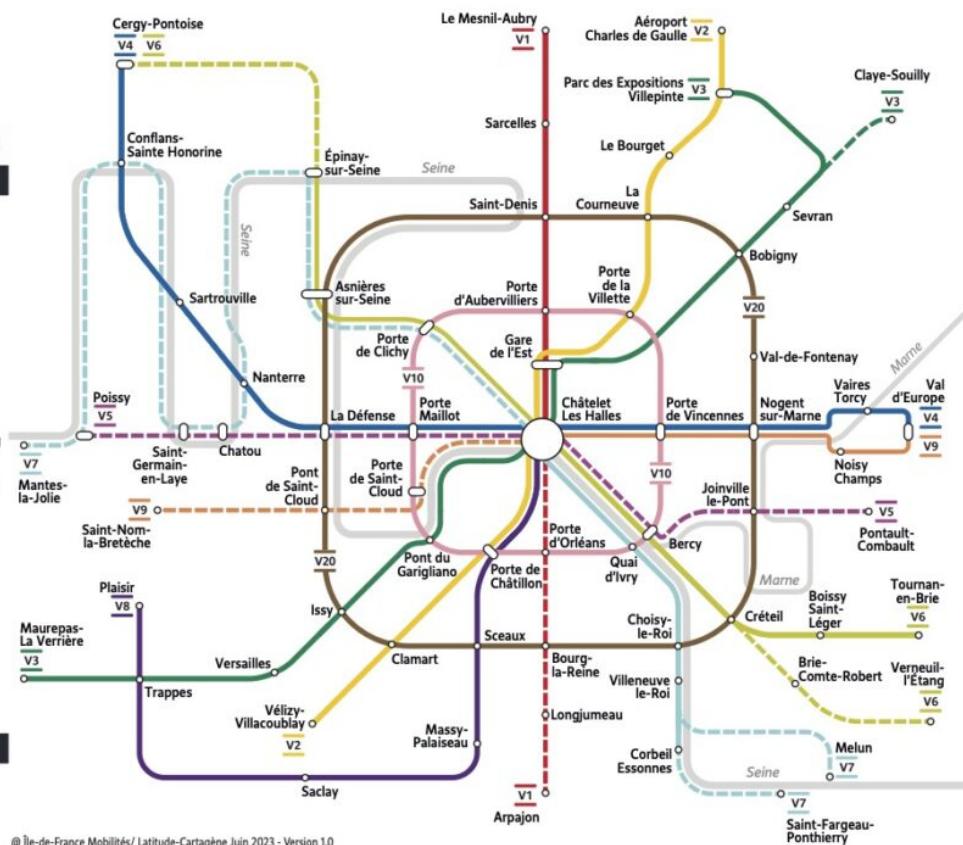
Île-de-France mobilités Région Île-de-France

### Pistes cyclables aménagées

- V1 Le Mesnil-Aubry  
Arpajon
- V2 Aéroport Charles-de-Gaulle  
Vélizy-Villacoublay
- V3 Parc des Expositions Villepinte/  
Claye-Souilly  
Maurepas - La Verrière
- V4 Val d'Europe  
Cergy-Pontoise
- V5 Pontault-Combault  
Poissy
- V6 Tourrain-en-Brie/Verneuil-l'Etang  
Cergy-Pontoise
- V7 Saint-Fargeau-Ponthierry/Melun  
Mantes-la-Jolie
- V8 Plaisir  
Paris
- V9 Val d'Europe  
Saint-Nom-la-Bretèche
- V10 Petite ceinture
- V20 Grande ceinture

### Légende

- Légende
- Phase 1
- Phase 2



This strategic project, expected to start and unfold around 2025 to 2030, aims to enhance the accessibility and integration of bicycle commuting within the region. By aligning with popular RER stops, the RER V enables seamless and efficient cycling across cities, connecting communities and various locales within the region and fostering a more interconnected transportation network. This development is poised to benefit Saint-Germain-en-Laye by providing residents and visitors with an enhanced and dedicated cycling infrastructure, promoting sustainable and eco-friendly modes of commuting.

The RER V not only acknowledges the growing popularity of cycling as a viable means of transportation but also underscores a commitment to a greener and healthier urban environment. As this project unfolds over the coming years, it is anticipated to contribute significantly to the overall commute to Saint Germain En Laye which has been one of the issues for users trying to commute to the city from long distances. Thus making it a sustainable solution.

### Verkeersexamen - Netherlands biking exam:

The Verkeersexamen, originating from the Netherlands, is a biking exam designed to educate individuals especially children on the essential traffic rules, road safety, and proper cycling

etiquette.

### **Why Implement the Verkeersexamen in Saint Germain En Laye?:**

It offers valuable benefits for students and professional workers in Saint-Germain-en-Laye and even across France. This is because the biking exam not only imparts crucial knowledge on traffic rules and road safety but also fosters a culture of responsible cycling behavior. By normalizing understanding and skills, it can contribute to safer commutes, and harmonious road interactions, and promote cycling as a viable and sustainable mode of transportation.

Extending the implementation of the Verkeersexamen throughout France addresses nationwide challenges related to road safety and congestion. The exam's proven success in promoting safe cycling practices provides a structured framework for education and evaluation, contributing to a more uniform and secure cycling environment across the country. This initiative aligns with broader goals of reducing carbon emissions, improving public health, and fostering a culture of sustainable and responsible transportation.

## **Implementation Plan**

### **Cost of implementing eBike/eScooter charging on the campus':**

The price of implementing bike charging stations varies depending on the type of stand used. This station can charge 4 bikes at a time and requires little effort to install. While a secure charging dock will generally charge one bike at a time and is more costly (up to 1800 euros per unit) both to purchase and install. Although the initial cost of investment may be high, these stations can pay for themselves in due time. Depending on the size of the battery, an eBike can cost between .20-.40 euros to fully charge. If the campuses imposed an additional fee for using the chargers, the campus could receive a return on their investment within a few years. We believe that the government of Saint Germain can give subsidies to schools and campuses to get the ball rolling.

### **Cost of location for parking spaces/type of parking space depending on the area:**

The cost of parking spaces depends on the type, so we can not calculate the exact price for the parking space but we think that if the parking space is only for parking and without charging port it will cost around 800 - 1000 euros. But based on the previous idea we can also implement the charging station in the parking space.

## **Public Transport**

## Objectives of the Research

This study aims to investigate the viability of public transport as an alternative means of transportation for workers and students in Saint Germain en Laye. It starts by using data collected via a survey made on IX Campus, complemented with some secondary source data provided by the INSPE and a public sourced mobility project and giving a diagnosis of the current situation regarding public transport and its usage on campus. With this information, we will be able to pin down the current issues people have with the service and generate initiatives and solutions to make it more attractive.

## Current Situation Analysis

To study the current situation we conducted a survey under a google form in order to get a deep insight into how people use public transport at IX Campus. We also gathered some secondary source data through a mobility study done to the city of Saint Germain en Laye by thee company Transitec, and we also granted access to a mobility study performed at the INSPE.

Overall, Saint-Germain-en-Laye is a very well-connected city. There is a bus stop in a 200-meter radius almost at any point in the city, and the internal transport network of the commune is constituted by 5 bus lines. Additionally, there is an RER A station connecting the city with Paris, 14 inter-city bus lines, and the T13 tram in its first phase connecting Saint-Cyr. The overall frequency of the buses inside the city is high, especially during peak hours.

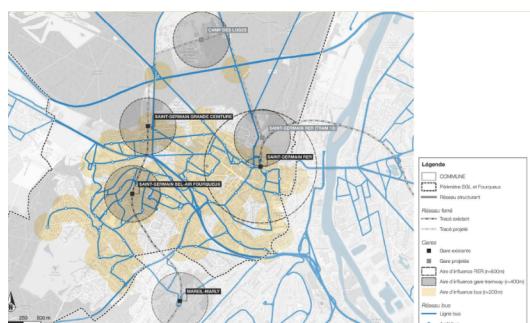


Image showing influence areas of bus stops and stations in Saint Germain en Laye.

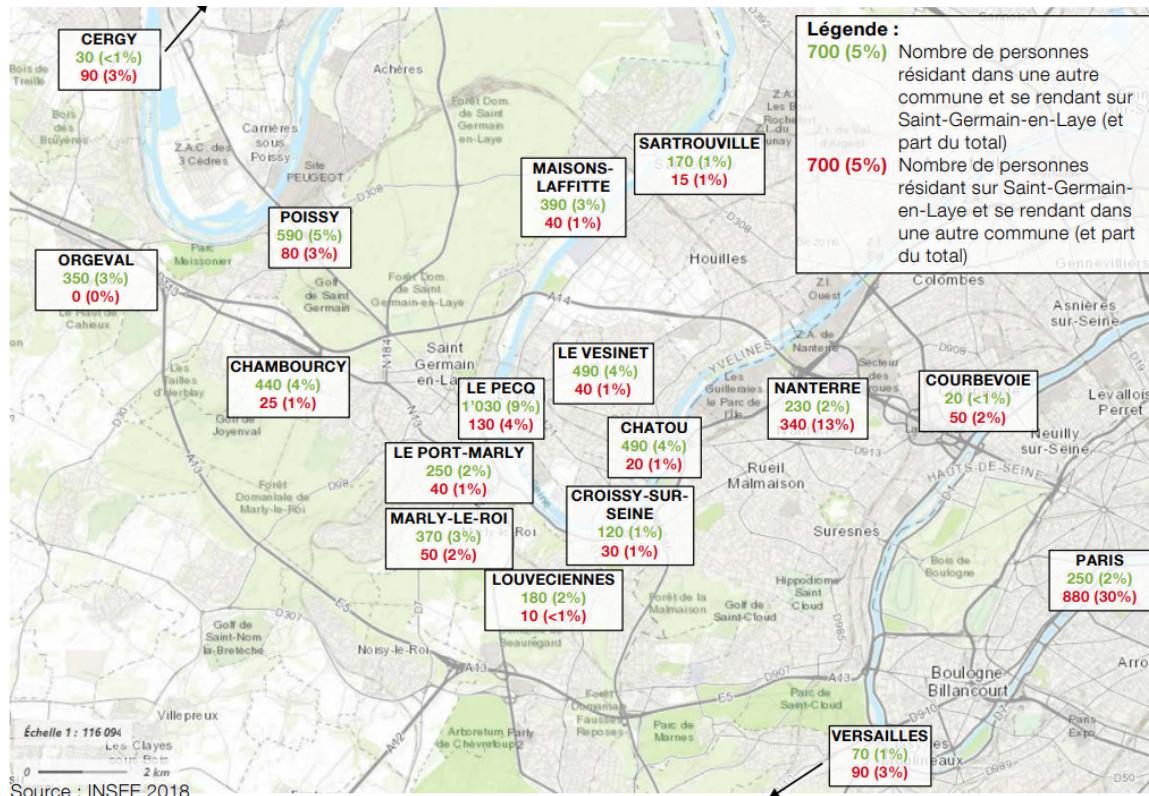
Image taken from transitec: Schéma directeur de la circulation et du stationnement

	Amplitude horaire en semaine	Fréquence période de pointe (6h30-9h30 / 15h30-19h30)	Fréquence heure creuse
R1	5h35 à 22h20	6 à 10 minutes	15 minutes
R2	5h20 à 22h20	6 à 10 minutes	20 minutes
R3	6h00 à 21h10	20 à 25 minutes	40 minutes
R4	6h00 à 21h40	10 à 12 minutes	20 à 30 minutes
R5	6h55 à 21h00	25 à 30 minutes	60 minutes

Bus frequency table for the internal lines in Saint Germain en Laye.

Image taken from transitecSchéma directeur de la circulation et du stationnement.

According to the study performed by Transitec in 2018 and with data collected by INSEE the same year the city has a large student population of around 21,000 students, of which 55% come from outside Saint Germain en Laye.

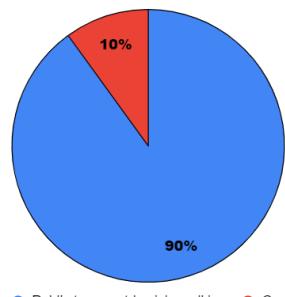


Principal origins/destinations of students moving back and for Saint Germain en Laye.

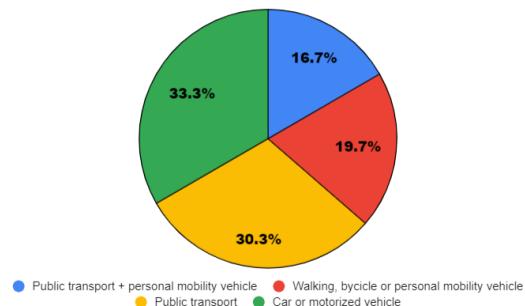
Image taken from transitecSchéma directeur de la circulation et du stationnement.

From the data gathered from IX Campus and INSHEA, we can see that most students tend to favor the use of public transport and other sustainable means of transportation.

INSHEA students transport preferences

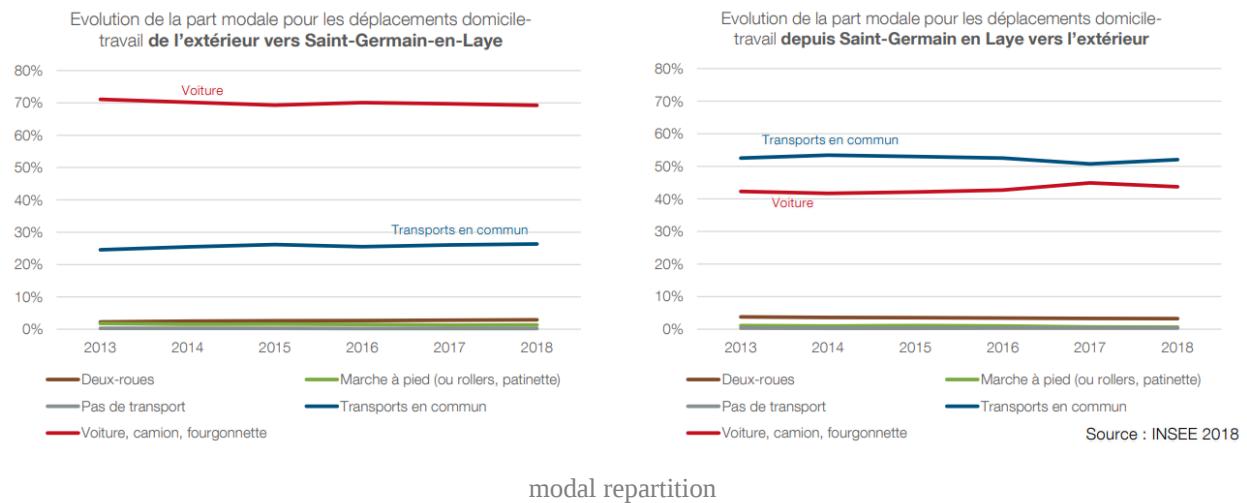


IX campus students transportation preferences

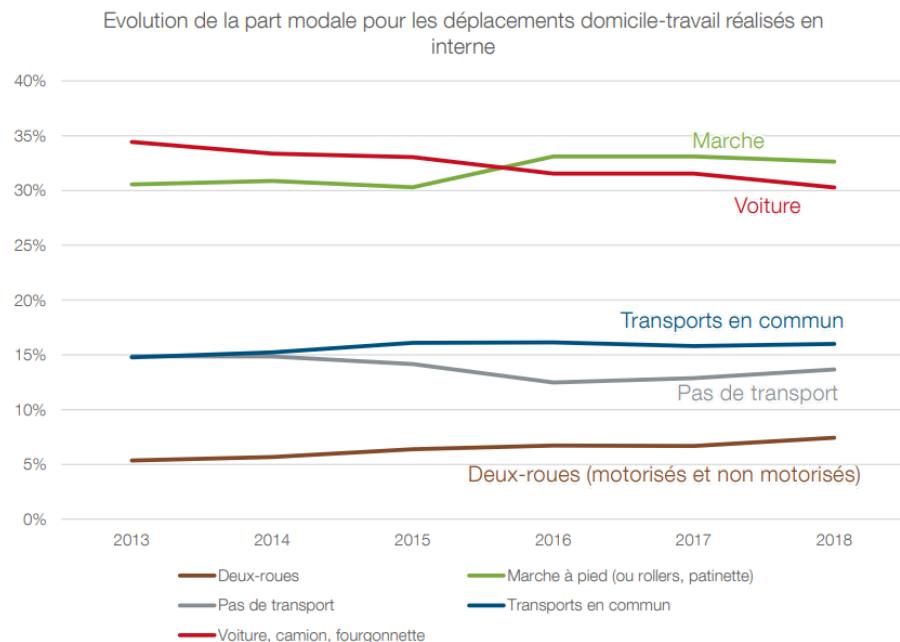


On the other hand, the professional population in the city favors overall the use of cars, with around 70% of professionals that come to work in Saint Germain en Laye using their personal car, according to data from the INSEE in the study performed by Transitec in 2018.

### Répartition modale des flux domicile-travail en échange avec Saint-Germain-en-Laye

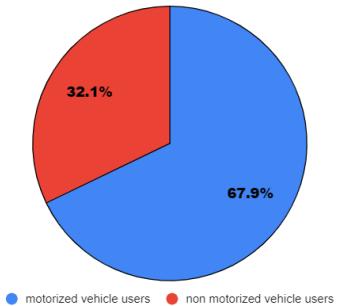


### Répartition modale des flux internes à Saint-Germain-en-Laye



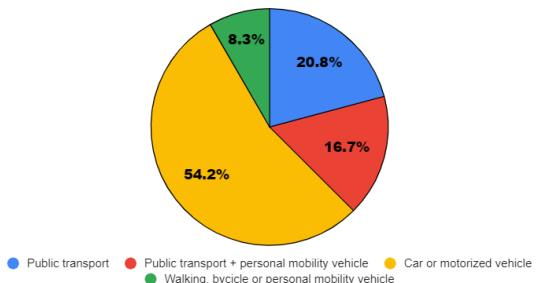
This trend also translates to campuses according to the data we've collected and analyzed from the INSPE and IX campus.

Individual usage of motorized vehicles by IX Campus employees



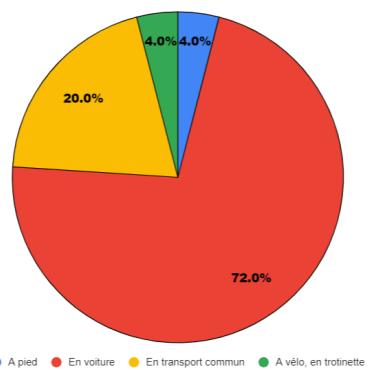
In the presented pie chart, it is discernible that approximately two-thirds of the employees at the IX Campus opt for motorized vehicles as their mode of transportation.

IX campus CY lecturers and employees transportation preferences



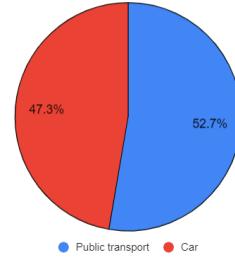
In the provided pie chart, it is evident that a majority of the lecturers and employees at CY express a preference for cars or motorized vehicles as their primary mode of transportation. Following this preference, the utilization of public transport ranks second, followed by a combination of public transport and personal mobility vehicles; the rate of walking, cycling, or personal mobility vehicles is quite low.

INSPE personnel transport preferences



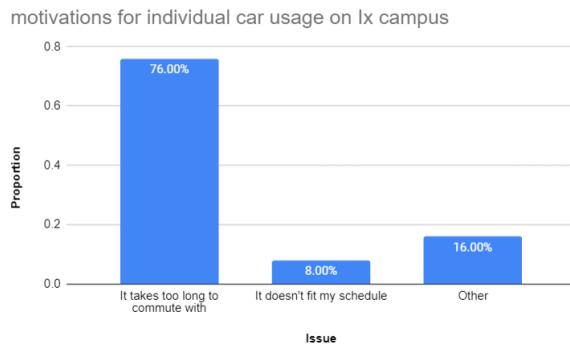
Concerning personal transport preferences at INSPE, it is notable that the predominant choice among individuals is the preference for cars, surpassing other modes of transportation.

INSHEA projection of transport preferences for personnel (2025)

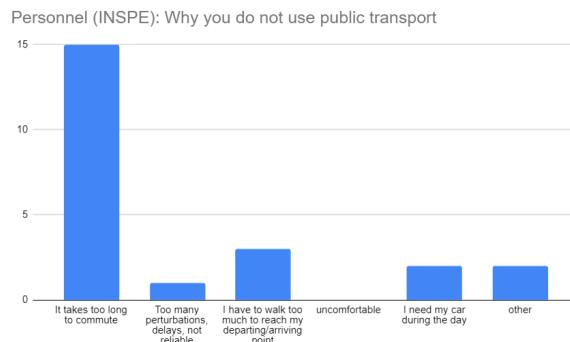


This chart represents the projected transport preferences of personnel from INSHEA once the campus in Saint Germain is done in 2025.

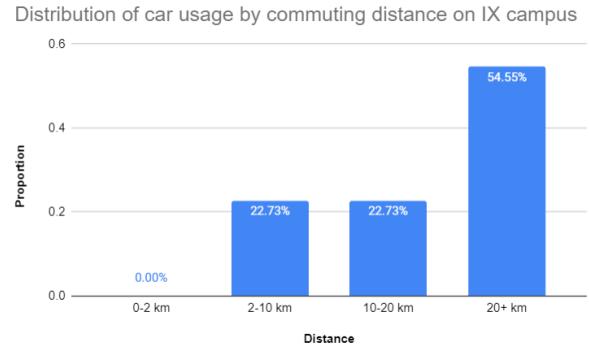
From the data gathered, we also obtained information about the perceptions of people from INSPE and IX Campus regarding public transport in Saint Germain en Laye and the motivations of some of them for using their cars.



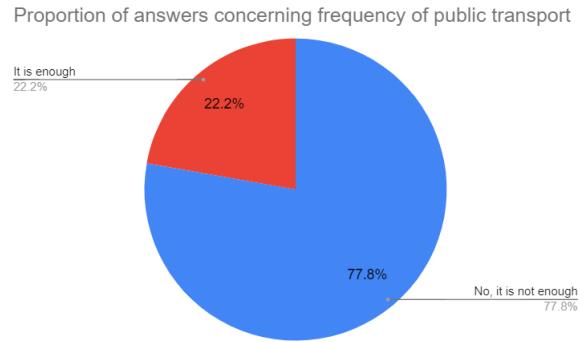
The main reason individuals opt for cars is that they find commuting with public transport to be too time-consuming. This choice is easily understandable, as it reflects a common preference for a more time-efficient mode of transportation.



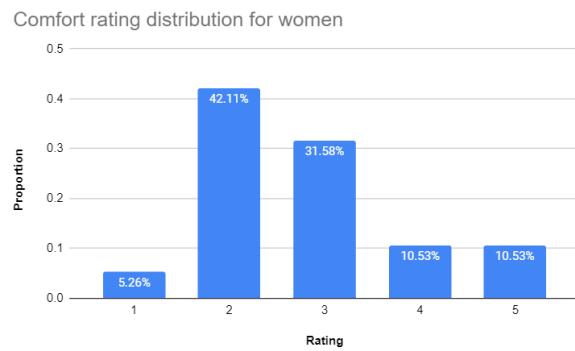
Most people at INSPE choose not to use public transport because they feel it takes too much time for their daily commute. This reason is the most commonly mentioned, showing that many people prioritize faster transportation options.



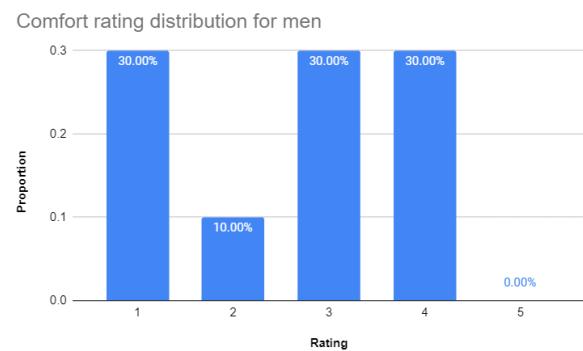
In this bar chart, approximately half of the car users are situated at a distance of 20km or more from the campus, while the remaining half is equally divided between those residing within the distances of 2–10 km and 10–20 km.



Most people feel there aren't enough buses for them. This could be because buses arrive late or it's difficult to find one, especially during late-night hours.



Inquiries about women's comfort rating on public transport revealed that a significant majority provided responses categorized as either bad or neutral. This trend is less than ideal and highlights a noteworthy concern.



In contrast, when posed with the same question, men exhibited an equal distribution of responses among very bad, neutral, and good. This suggests that the comfort rating for men varies widely, potentially influenced by individual feelings.

## Data Analysis

So even though Saint Germain en Laye has a very well established and connected network of public transport, the perception of the studied population is rather on the negative, with issues regarding the comfort and frequency of the service. One possible explanation regarding the public perception of not enough frequency is the traffic congestion at peak hours in Saint Germain en Laye. While interviewing a bus driver from the line 4 he explained that heavy traffic jams occur across the city between 7:30 am-9:30 am and 5:30-7:30 pm causing delays in the service, these heavy traffic hours coincide with the time where both students, lecturers and personnel from campus commute towards and out of it.

Another that the study highlights is that many people who live outside Saint Germain en Laye refrain from using public transport because commuting times are too long, this is specially the case for people living in the departments of Val d'Oise and Hauts de Seine where most of the cities do not have a direct transport line connection with Saint Germain en Laye, thus easily doubling their commuting time and thus encouraging them to use their cars.

In this regard many projects are already taking place like the Loi d'orientation de mobilités which has the objective of improving the overall transport system in France, making it more efficient, cheaper and cleaner; another important project is the T-13 line which in its 1rst and

current phase is connecting Saint Germain en Laye with Saint Cyr, and by 2027 will connect gare de Saint Germain en Laye with Achères ville.

## **Barriers and Challenges**

The main barrier and challenge we had has been the shortage on data, when we started the project, was to use the data gathered in order to be able to make a suitable proposal for the transport authority in order to help improve the service itself, but we were not able to gather enough data for this. Because of this we had the challenge of having to come up with effective solutions which did not involve any major changes to the service itself.

## **Proposal**

Low Budget

### **Transport Corner - Dashboard:**

In addition to the aforementioned initiatives, we advocate for the establishment of a dedicated "Transport Corner" featuring a comprehensive dashboard consolidating pertinent information concerning public transport within the locality. This dashboard is envisioned to furnish real-time updates on routes, schedules, and any service disruptions. By centralizing this information, commuters can make judicious decisions regarding their travel plans, engendering a sense of convenience and reliability associated with public transport. The proposed Transport Corner aims to serve as a singular resource to enhance the overall commuting experience, further propelling the usage of public transportation within the community.

### **Flexible School and Company Schedules:**

To mitigate peak-hour congestion and render public transport a more appealing option, we advocate for collaborative discussions with educational institutions and businesses to explore the viability of flexible starting and ending times. By staggered scheduling, we aim to optimize the efficiency of public transport, reduce overall travel time, and alleviate congestion during peak hours. This collaborative endeavor is anticipated to significantly contribute to a more seamless and attractive public transportation experience for daily commuters.

Mid budget

### **Educational Workshops:**

Recognizing the imperative to effect behavioral change, we propose the organization of educational workshops. These workshops will concentrate on raising awareness about the environmental and personal advantages of selecting public transport over private vehicles. By

disseminating factual information and accentuating the positive outcomes associated with public transportation, we aspire to influence individual decision-making and foster a paradigm shift towards more sustainable commuting practices. These workshops are poised to play an instrumental role in cultivating a heightened understanding of the broader impact of transportation choices on both the environment and personal well-being.

### **Improved Visibility of Bus Stops:**

Acknowledging the pivotal role of bus stops within the public transport infrastructure, we propose a targeted initiative to enhance their visibility. Some existing bus stops feature diminutive standing poles with inconspicuous signage, posing challenges in recognition. To address this, we advocate for an enhancement in the design and dimensions of bus stop signage to ensure prominence and user-friendliness. This strategic improvement in visibility is poised to contribute to a more streamlined and accessible public transport experience, thereby encouraging individuals to readily identify and utilize bus stops in their daily commutes.

High budget

### **Navigo Card Integration App/Website:**

We propose the development of a dedicated application or website designed to seamlessly integrate with the Navigo card system, thereby fostering increased utilization of public transport. Commuters would accrue reward points upon each successful validation of their passes, with the accrued points redeemable for various incentives, including monetary rewards, vouchers for local businesses, or exclusive dining experiences at esteemed establishments such as L'Orangerie. This proposed system not only encourages consistent use of public transport but also establishes mutually beneficial partnerships with local businesses, thereby promoting community engagement and support.

### **Navette Car Service**

As our community expands, anticipating a surge in students and employees, we propose a tailored Navette Car Service to meet the escalating demand for public transport. This service will be specifically designed for distinct groups such as students, teachers, and employees, ensuring a comfortable and uncrowded commute to key destinations. By addressing the unique transportation needs of these groups, our aim is to provide an efficient and targeted solution that enhances overall mobility within the growing community.

## **Implementation Plan**

## **1. Navigo Card Integration App/Website:**

- Plan, research, and develop the app/website integrating with Navigo cards.
- Put QR codes on each bus so the users can scan them on the bus.
- Launch a promotional campaign targeting the user base.
- Monitor and optimize based on user feedback.

## **2. Flexible School and Company Schedules:**

- Engage with schools and companies for schedule adjustments.
- Formalize agreements and communicate changes to stakeholders.
- Implement adjusted schedules and assess their impact.

## **3. Educational Workshops:**

- Develop informative workshop content with credible sources.
- Plan and conduct workshops, gathering feedback for improvement.
- Analyze effectiveness and develop ongoing educational materials.

## **4. Transport Corner - Dashboard:**

- Engage experts to design and develop a user-friendly dashboard.
- Test for functionality and integrate real-time data sources.
- Launch the Transport Corner, conducting outreach for community awareness.

## **5. Improved Visibility of Bus Stops:**

- Assess and plan improvements for bus stop signage.
- Redesign and install improved signage at selected bus stops.
- Monitor visibility and collect commuter feedback.

## **6. Navette Car Service**

- Evaluate public transport needs and demand.
- Partner with service providers and design user-friendly service.
- Launch pilot on select routes and gather users' feedback.
- Monitor and optimize based on user feedback.

# Carpooling

## Objectives of the Research

This research examines carpooling as a potential means of lowering the number of single occupancy vehicles in Saint-Germain-en-Laye. It examines current initiatives to strategically reduce single car use emissions and whether these initiatives were effective or not. We are interested in the current outlook on carpooling as well. Finally, we propose measures to promote and ease carpooling within the city. The information gathered from our survey, together with secondary data, serves as the basis for the analysis and our proposal.

This research is the basis for developing focused solutions that speak to the needs of employees and students of Saint-Germain-en-Laye to create an atmosphere that supports the adoption of carpooling. Carpooling on a larger scale will significantly reduce carbon emissions as single car use reduces, but will also reduce congestion in the city during peak hours.

## Data Analysis

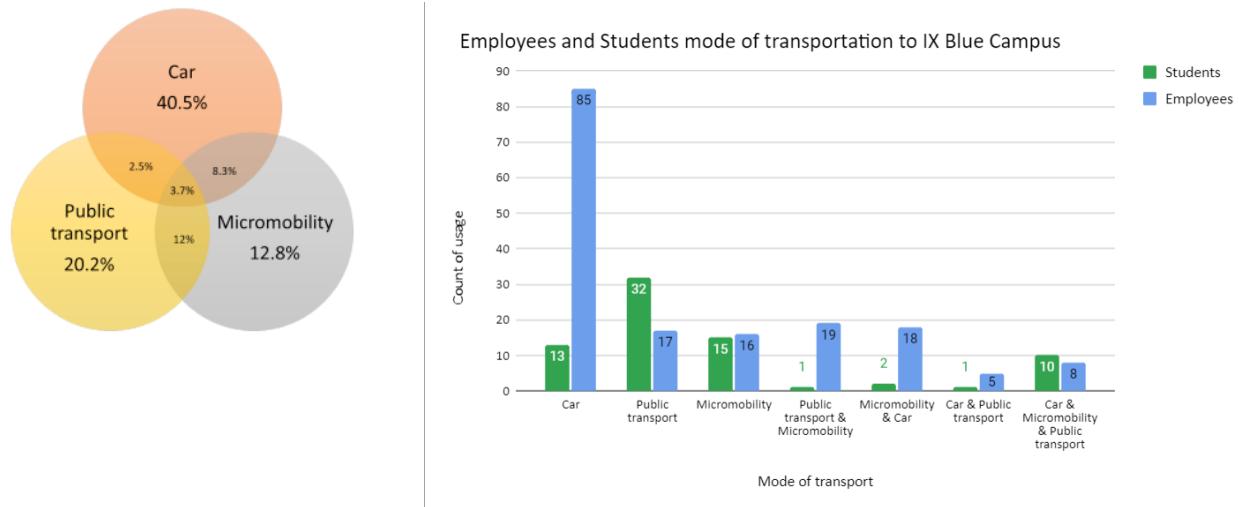
Our focus group is workers and students in Saint-Germain-en-Laye, driving their cars to and from the campus. The main questions we want this survey to answer are the focus group's commuting behavior and their current point of view on carpooling.

### Data from Survey

This Venn Diagram shows the modes of transport of our sample. For ease, we group "Car & public transport", "Car & Micro mobility & Public transport", "Car & Micro mobility" and "Car". This is our target group for whom carpooling is a viable option.

55% of the IX Blue Campus commutes by car. We will not focus on the other segment of 45%, since they already commute in a way that is beneficial for the environment.

The bar plot represents the same variables but separates students and employees for a clearer view of commuting differences. It also highlights that making changes in organizations should be a higher priority compared to educational institutions.



A small group of 11.7% said they already carpooled when asked “Do you do carpooling?”. The “unnecessary” group 17.1% describes the people saying that they already use another mode of transport, so we do not need to take them into account since they already use either public transport, walk or bike to the campus.

The reason as for why people do not like, want, or are not able to carpool, is according to the chart mostly the inconvenience. 65.8% of our sample shares this opinion. The remaining 5.4% says to be unaware of the carpooling possibilities. This concludes in 71.2% of the sample that we could help steer toward more environmentally friendly options instead of daily single car use transportation.

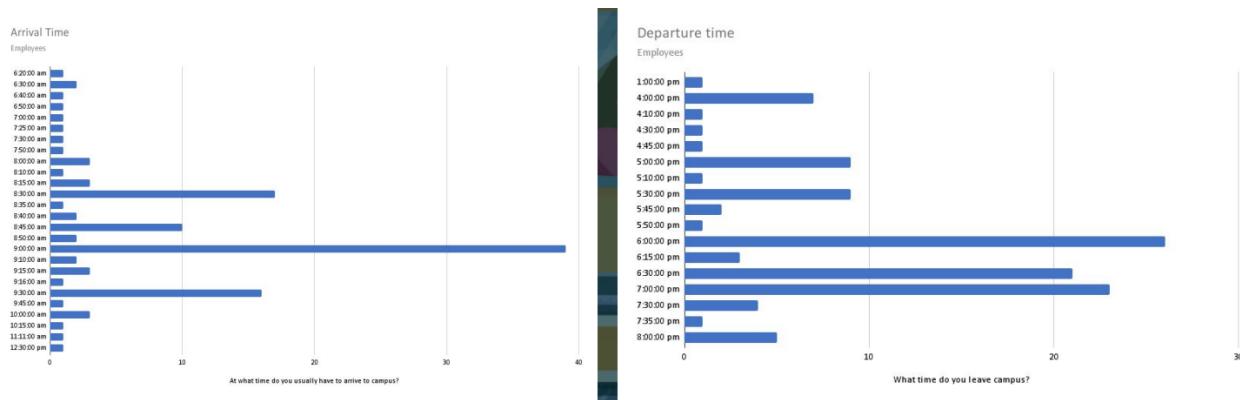
Zooming in on our “inconvenient to carpool” group, we created another pie chart to display the main

issues. The biggest proportion, labeled “schedule”, finds it difficult to carpool due to scheduling issues. This can imply issues such as not being aware of the options, not wanting to drive extra to pick up somebody, or simply not having enough motivation to carpool.

Finding people to carpool with also seems to be an obstacle. We can categorize both issues as stemming from uninformed decision-making.

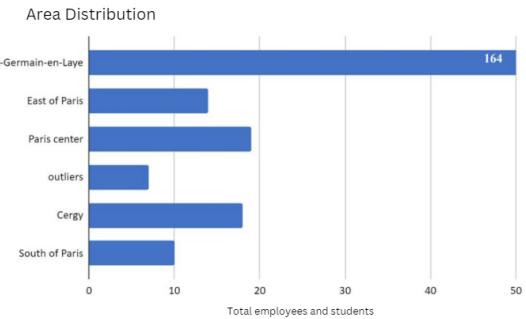
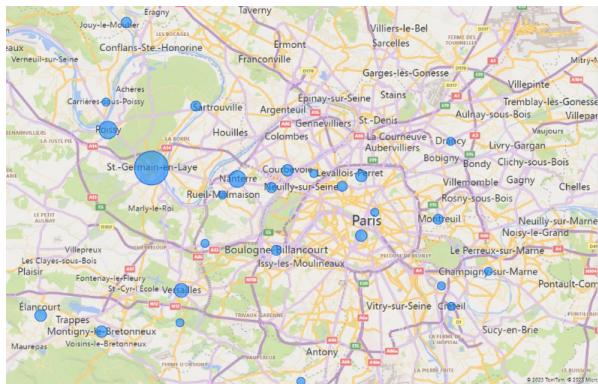


Given that 45% of respondents indicated difficulties with carpooling, due to scheduling issues, we believe it would be interesting to explore the departure and arrival times in depth.



The bar graphs show that the largest group of the employees arrive between 08:30am and 9:30am and depart between 06:00pm and 07:00pm. Among the students, the peak hour seems to be at 08:00am to 9:30am and 05:00pm to 05:30pm. This seems to be inconsistent with the responses provided earlier indicating a scheduling issue.

## **Geographic distribution of sample**

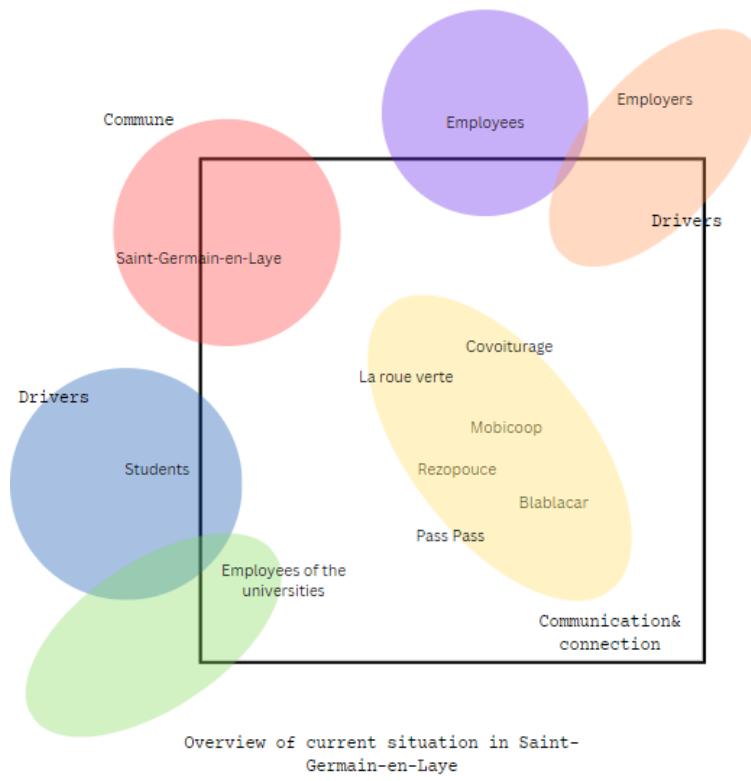


Given that 20% of respondents indicated difficulties with carpooling, because it is difficult to find people to carpool with, we believe it would be interesting to explore the geographic distribution. Using people's postal code, we were able to group the sample in Saint-Germain-en-Laye, east of Paris, Center of Paris, south of Paris, Cergy as well as a few outliers that lives 30+ km from the IX Blue Campus. It seems that, by facilitating connections, it should be possible to find carpooling partners.

### Qualitative Interview

The survey raises uncertainty in terms of the reason why people are not willing to carpool. We conducted four interviews asking what realistically and honestly their motive as to why they choose not to carpool. The result is that there is no objection to carpooling. However, the interviewees are hesitant to share a car with strangers. Also are there not enough frequent rides available or are not aware of carpooling apps.

### Current Situation Analysis



Based on the gathered data, we conclude that the main players we are interested in for this analysis are the following shown in the graph on the left. The further a player is located in the square, the more they are aware of and/or engaged in carpools. Currently, there are too many people commuting by single-use cars. The citizens of Saint-Germain-en-Laye are not informed about the availability of existing carpools.

Through data analysis, we have observed that a majority of individuals prefer commuting using their cars, with only a small percentage engaging in carpools. Among those who do not participate in carpools, 9.5% are not aware of it, while 55.6% find it inconvenient. Further exploring why they find it inconvenient, is because they find it difficult to find suitable carpool partners or it is because of their schedule or not comfortable with sharing rides with strangers. So we thought it better to look into their problem and come up with a solution that can motivate them to carpool.

### Carpooling platforms and apps and rewards



Carpooling operators soon to be listed in the Register



Currently, there are lack of rides available within and to Saint Germain en Laye on the existing carpooling apps.

Various initiatives and incentives have already been implemented to promote carpooling, with a notable example of the 100€ incentive offered to those who register and actively participate in carpooling programs.

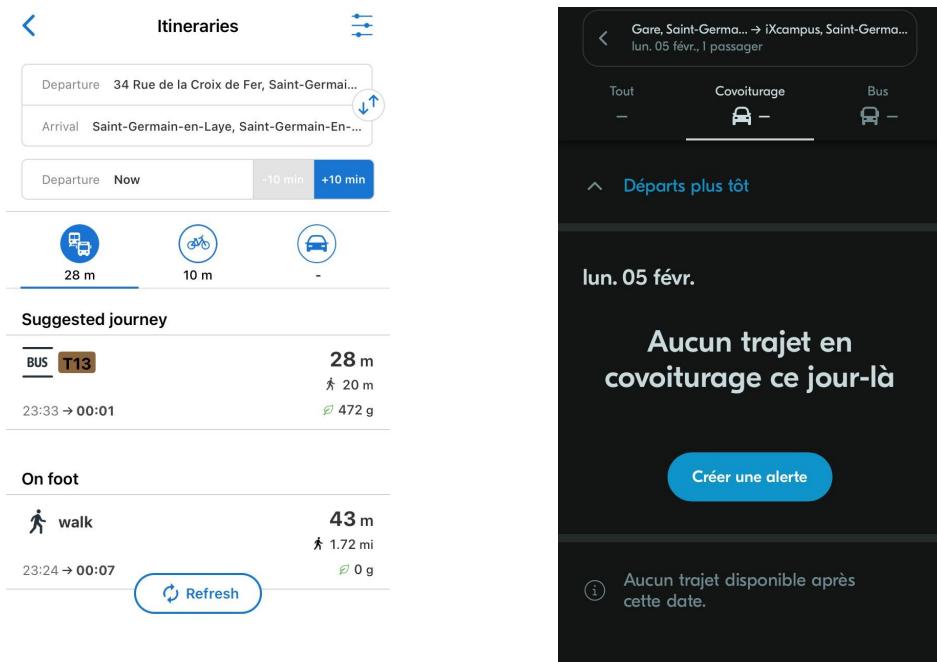
Despite the availability of multiple carpooling apps, even a widely recognized app currently lacks any ride options in Saint Germain en Laye.

Apps that we would like to bring into notice is Mobicoop and Rezopouce, Moobicoop is a free carpooling service, that does not charge any commissions on journeys and thus journeys are cheaper for the carpoolers who share the costs. RezoPouce is a French app that is the successor of Mobicoop, it is a successful modern hitch-hiking service. It avoids the drawbacks of classic hitch-hiking, i.e. a subjective feeling of unsafety and uncertainty, and reinforces the advantages of it that it is a rapid, convenient and extremely cheap means of transport. It is made secure by installing a hitch-hiking spot every 500 m in town to guarantee that people have their spot close to their place.



## Barriers and Challenges

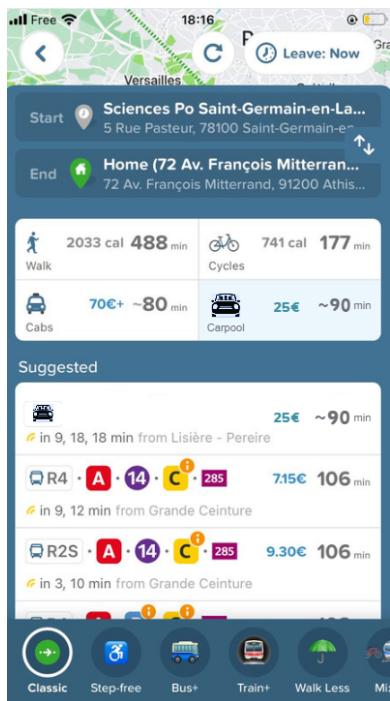
Our survey and secondary data show that it should indeed be feasible to carpool. In doing so, there are also a variety of apps and resources. One problem we encounter is that there are not enough rides available on the already existing apps. Lastly, might there be safety issues when sharing a car with someone unknown. In conclusion, people are tough to motivate to carpool. Our proposal will, mainly attempt to resolve these issues.



We would like to draw attention to the fact that even though there is a carpooling option available in the IDF Mobilité app, we have observed that users opening the app, with the intention of not commuting by car can misinterpret it as a feature for car routes, tend to overlook this feature due to its placement leading users to not discover its availability. Additionally, the lack of frequent rides can be discouraging for the individuals interested in carpooling.

## Proposal

We recommend enhancing the visibility of the carpooling feature such as shown in the picture below and also integrating with many other services, we propose to integrate IDF Mobilité with a non-profit, French carpooling app such as Mobicoop, RezoPouce or Covoiturage. These are free carpooling services, that do not charge any commissions on journeys, which makes commuting by car cheaper for the carpoolers who share their fuel or toll costs.



As many are not aware of carpooling, we have to promote and integrate it in ones daily life. We can modify the transportation/GPS app in such a way that when they search for transport/routes they can also see the carpooling option. The user will have the convenience of exploring and selecting the carpooling options alongside other transportation modes.

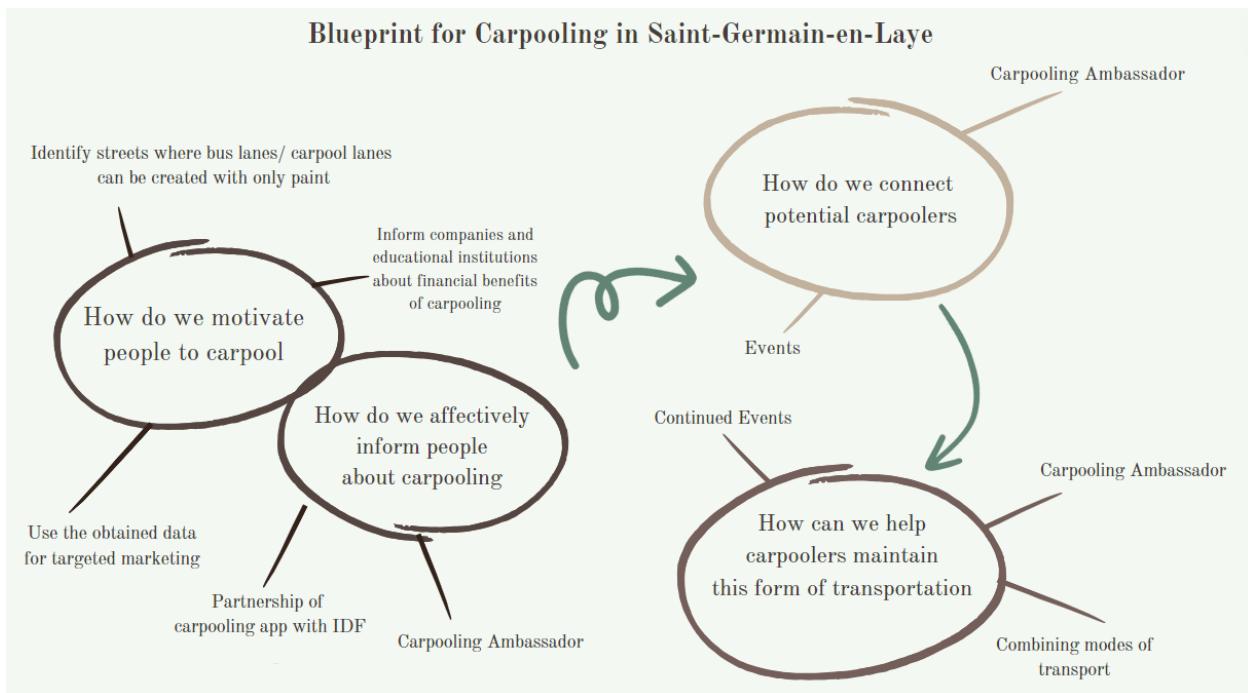
Furthermore, we do propose to implement a system in the institutions and companies. Its key component is to appoint an ambassador to act as carpooler coordinator to organize activities to raise awareness, encourage their colleagues to carpool with each other and connect potential travel partners.

A program should be put in place where the government informs firms and educational institutions about the advantages of motivating students and workers to carpool. Initiatives are often pursued when there is a benefit or incentive for those involved. Say for in a company the employee or employer are more likely to engage in the contribution only when they see advantages which can be in the form of environmental benefits, financial benefits caused by reduction of needed parking spaces, improved efficiency due to teambuilding, personal satisfaction and reduction of monthly fuel reimbursement.

In order to keep the user motivated we can reward the individuals as well. The allocated carpool ambassador could, as an example, set up scoreboards where the employees or students keep track of their carpooling scores. Accordingly, rewards such as gift cards, reserved parking spaces or meal coupons can be won.

The data showed that people expect a safety issue when carpooling with a stranger. In addressing this issue, our approach involves ambassadors promoting carpooling among colleagues. By encouraging carpooling within these familiar circles, we aim to provide a sense of safety. In

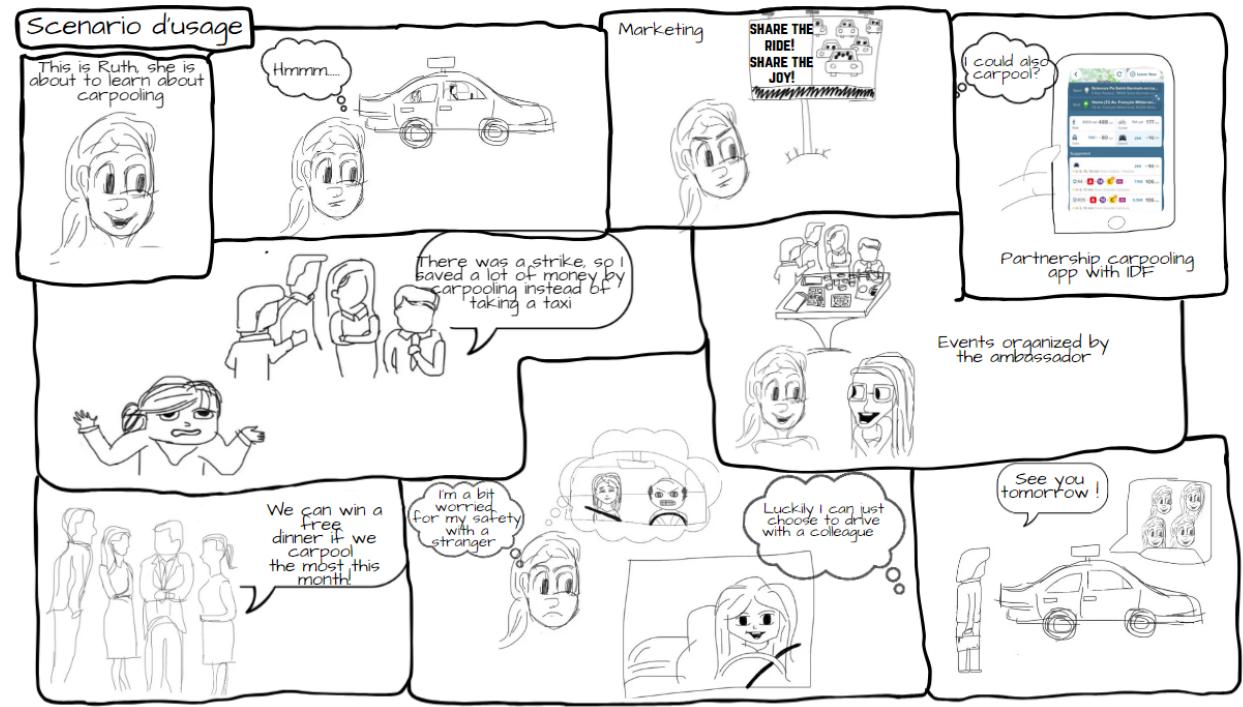
doing so, it is also easier to find suitable partners to drive with because colleagues will most likely have to go to the same location.



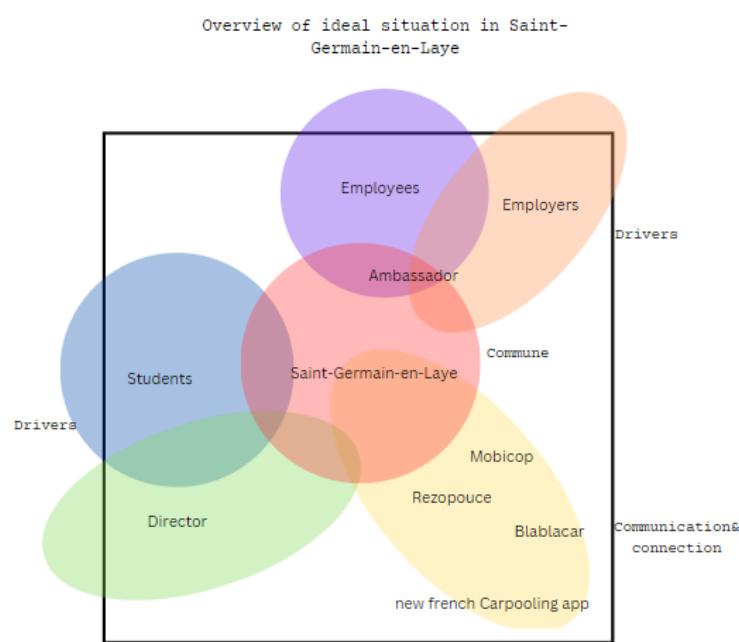
## Implementation Plan

To establish the partnership of an already existing, French, non-profit, carpooling app with the IDF app, the government should highlight the benefits for both parties and subsidize the IT costs related to the implementation. Since Ile-de-France Mobilité is a well-known, frequently used app, there might not need to be a budget allocated to the marketing of the implementation.

Furthermore, there should be a program put in place where the government informs firms and educational institutions. With this program, they should highlight the implied benefits that carpooling comes with. These benefits include i. a. decrease in monthly fuel reimbursement, reduced parking charges, implied team-building activities, etc. They should be made aware that guiding their students or employees is most effective with an allocated a trained and subsidized ‘Carpool Ambassador’ that will coordinate carpooling events and other initiatives.



## Sustainability and Maintenance Plan



After implementing these plans, we find ourselves in the situation of the graph shown on the left. It is key to maintain the ideal situation for carpooling in Saint-Germain-en-Laye. To do so, we must be aware of the sustainability and maintenance plans associated with this ideal situation.

We aim to see employees, employers, and students participating in carpooling for their work or school commute. Additionally, we want to create an environment where users of carpooling

services are not discouraged due to the availability of frequent rides. That way they continue to participate in carpooling by recognizing and experiencing the associated benefits.

The ambassador plays a key role in the maintenance plans as well. They should continue highlighting the benefits of carpooling and monitor the development of the project. This way educational institutions and organizations can continue to enjoy the benefits of carpooling.

## Conclusion

In conclusion, for the shift to using micro-mobility alternatives to be successful, some infrastructural changes have to take place. This is necessary to make the city safer and friendlier for people to commute within. Additionally, it is important to create a micro-mobility culture, not only to increase the number of people using micro-mobility but also to maintain it over time.

Regarding Public transport although many steps in the right direction have been taken, changes must occur for people to continue using public transport when they have the option of using cars. It is important to improve the service to the extent possible, maintain bus stops in good condition, and improve their visibility to facilitate navigation in the city. Making the service simple and attractive is crucial to retaining customers even if they have the means to buy a car.

To reap the benefits of carpooling, it is necessary to start by promoting it in the workplace/learning space, offer better incentives for it, and increase its visibility as a good transportation alternative. This will increase both the number of people offering and using the service.

Overall, some changes must be made to see a shift towards these means of transportation. However, if done, it would not only help institutions and the city lower their carbon footprint but also benefit the community in a positive way. Developing relationships that will further improve working environments, helping improve the public transport system for everyone, and enhancing our health are all potential outcomes.