

# Understanding Public Transportation Abroad: A Qualitative Inquiry Using Semi-Structured Interviews

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## ABSTRACT

In addressing urban mobility challenges, mitigating environmental impacts, and participating in daily life activities, public transport (PT) systems play a critical role. This qualitative study examines the key factors influencing PT experiences abroad and explores potential implications for improving PT in Germany. Through semi-structured interviews with PT users who have lived or spent time abroad, the study examines various aspects of PT use, including accessibility, reliability, ticketing, control, and their commuting experiences. Findings reveal common themes such as the importance of flexible fare structures and reliable information dissemination to enable seamless travel. Participants emphasize the need for user-centered approaches and innovative solutions to improve the usability and effectiveness of public transport. Recommendations include the adoption of contactless payment methods, the introduction of express services, and the expansion of PT coverage in underserved areas with alternative PT modes. Further research is recommended to explore additional or more specific modal shift strategies and user experiences with alternative PT to evaluate their impact on PT use and environmental sustainability.

## 1 Introduction

As part of my final year project in HCI Methods, I conducted semi-structured interviews with people who use public transportation outside of Germany to learn more about their experiences and how they differ from those in Germany. Since sustainable cities and communities and climate change protection are part of the 17 objectives of the European Union, modal shift becomes a necessary target for achieving them. However, what does modal shift mean?

In essence, a 'modal shift' means a change from one form of transportation to another, for example, switching a car trip for a bus ride. This is an important element of the discussion around creating a more sustainable transport system that benefits humanity. Shifting more and more trips taken individually by car to public means of transport or bike or foot.

As transport plays an important role in people's daily lives and their ability to participate in planned and necessary activities, it is unlikely that a reduction in the number of journeys made will be sufficient to achieve the transport emissions target. Transport is the only sector where greenhouse gas emissions have increased in the

past three decades, rising 33.5% between 1990 and 2019 (EP, 2019). CO<sub>2</sub> emissions from passenger transport vary considerably between modes. Passenger cars are a major polluter, accounting for 61% of total CO<sub>2</sub> emissions from road transport in the EU (EP, 2022), highlighting the need to shift to alternative modes such as bus and rail, which produce a fraction of these emissions. The relocation will also free up the space currently taken up by stationary cars in parking lots and multi-lane roads, thus offering opportunities for parks, cycle paths and much more. With these advantages, a modal shift seems plausible, but the flexibility and self-determination of using their own car is greater and more desirable for many. As a result, there is a need to improve public transport (PT) and its user experience.

This year's European Championship in Germany promises to be the most environmentally sustainable ever. To achieve this, car journeys are to be minimized. This will be made possible by a free 36-hour public transportation pass that will be offered at every game. Additionally, the UEFA does not want to offer public parking spaces for fans at half of the stadiums and only a fraction at the other half (cf. Zeck, 2024). Success depends on several factors. Can the public transport manage to transport 80% of the fans and how are they informed about the conditions? Based on the achievement of motivating most of the visitors not to use a car to visit the city and the stadium, this project can be seen as the biggest stress test for public transport and a model for modal shift for other events in the future.

While there are huge differences between the demands and space available in each city around the world. Nevertheless, it seems plausible and desirable to compare transport authorities' strategies, to learn what works well elsewhere and to adapt certain methods.

Coming from the field of human-computer interaction, it seems that one way to learn about the user experience in different countries is to interview users directly and learn firsthand about their user experience what frustrates them and what they like. The findings from this qualitative research could help to improve PT on the basis of existing concepts from various countries, and thus accelerate modal shift and contribute to climate change mitigation.

In order to analyse similar projects and progress already made on this topic, the next section examines the available literature to provide food for thought for interview planning.

## 2 Related Work

This chapter is structured as follows: Initially the attributes and factors involved in seamless travel are explored. With this information at hand the next part focuses on studies which contributed to this knowledge and understanding for the different factors recognized.

### 2.1 Seamless Travel

*“Seamless travel may generally be defined as the product of a well-integrated PT service as experienced by users”* (Alhassan et al., 2022). Central to the requirement of a seamless PT journey, is the need to reduce the costs associated with interchange, both perceived and actual, and to promote integration.

*“The main objective of PT integration is to provide users with a broad set of destination and mode choices in a convenient, accessible, comfortable, safe, fast, and affordable manner”* (Ibrahim, 2003). Interchange within mode influences the demand for that mode through the effect it has on time spent waiting, time spent transferring between vehicles and the inconvenience and risks involved (cf. Hine et al., 2018). Among the factors identified for seamless travel are coverage, waiting time, transfers, and delays that result in missed connections.

*“Interchange between modes – which is covered by the term integration has additional implications in terms of information provision, through ticketing and co-ordination”* (Hine et al., 2018). Especially when multiple operators are involved, the experience is heavily influenced by the number of different tickets and platforms that need to be used and the amount of information that needs to be gathered about possible routes. In addition, non-optimized travel times can lead to longer waiting times.

A seamless PT journey where the underlying requirement is to make public transport more attractive and user friendly in terms of improved services, reliability, travel information and safety will be also the key to make the EM 2024 an enjoyable experience for the attending fans.

### 2.2 Related Studies

There are several studies available on the specified areas of seamless travel, contributing to a better understanding of each topic. Although not all of them use interviews, the topics they investigate are closely linked to the user experience and provide opportunities for different approaches by local transportation authorities. For this reason, they are of interest for the development of the interview guide in order to cover more relevant areas during the user interview.

Hine and Scott utilize semi structured interviews as well as focus groups in their study: Seamless, accessible travel: users' views of the public transport journey and interchange. The interviews were conducted to obtain more information about every aspect of the usual journey, from planning to reaching the destination. Interviewers sought to determine the time and cost of the trip and the comparable costs of alternative travel options (cf. Hine & Scott, 2000). Their findings point to a sense of powerlessness on the part of users in the face of delays and a lack of information

available to them, as well as a lack of personal security at certain times of the day, especially in terms of transfers. Making this a relevant area to target in the interview guide.

Ticket payment and inspection are the two main dimensions of public transport (PT) ticketing for users (cf. Alhassan et al., 2022). Seamless public transport ticket inspection: Exploring users' reaction to next-generation ticket inspection by Alhassan, Matthews, Toner and Susilo explores users' preferences for ticket inspection options and identifies some factors that influenced their likelihood of accepting “seamless ticket inspection” in their surveys. Occasional and continuous fare inspection are necessary to provide and further develop the service. However, users generally lack the opportunity to choose how they want their tickets to be inspected. Even if users were given the opportunity to choose their preferred ticket inspection approach, the choice set currently would most probably be limited to on-board and/or off-board ticket inspection by staff and/or turnstiles (cf. Alhassan, et al., 2022). The results of the surveys show that users generally prefer automated ticket inspection to staff inspection, and digitally automated ticket inspection to mechanical (turnstile) inspection. Key PT user groups such as women and young people have a high tendency to accept seamless ticket inspection, and people in the high-income bracket are more likely to choose ticket inspection by staff, showing that while PT users generally already have the freedom to choose how they purchase their tickets, most will also welcome the freedom to choose how their tickets are inspected. (cf. Alhassan et al., 2022).

Through the integration of ticketing systems, the other dimension of PT ticketing transactions can achieve seamless usage. Some of the key benefits of PT ticketing integration for users, service providers and society include: increased PT usage, improved passenger satisfaction, modal shift, increased revenue, reduced transaction and administrative costs, social benefits, reduced fraud, contribution to city life and identity, improved data collection, reduced boarding and dwell times, and improved access to services (cf. White, 2009; PTEG, 2009). Alhassan, Matthews, Toner and Susilo examined in a case study the Movingo integrated season project in Sweden. Movingo is a smartcard and mobile phone based multiple-county commuting ticket that applies to both intercity and intracity bus and train services within the Mälardalen region. It is implemented by the six adjoining PTAs in the region and a commercial rail service provider (the Swedish Railways, SJ) (cf. Alhassan et al., 2020). It being a success by increasing the overall rail usage about 24% and having high satisfaction along the users except for the mobile application making it another example for the success of ticket integration.

With this in mind learning about different ticket inspection methods as well as integration of tickets can be seen as another aim for the planned qualitative study and could provide an other area of improvement for the German “ÖPNV”.

Another study treating the major topic of information finding revolves around a system developed to combine information provided by travellers with data from public transport operators. The result is a rich model of the transportation network that

enables the distribution of information in a personalized way and in real-time: the Seamless Mobility solution (cf. Costa et al., 2016). By employing a collaborative strategy as seen with collaborative school travel in for example walking busses (parents escort a group of children by foot to the school building) the researchers want to target a collaborative information exchange made possible via smartphones. The platform integrates three main components: route planner, mobile payments, and information networks (cf. Costa et al., 2016). By combining these functionalities in a single application, while also providing opportunities for collaborative information sharing as a community, reduces the user effort in interchange between modes. It is therefore interesting to learn whether such platforms as “OneRide” presented by Costa et al. are already widely used and how users describe their experiences. This is another topic to be addressed in the interview guide.

The next chapter will introduce the specific research question and the study design as well as focus on the methods used.

### 3 Study Design

Given the challenges of climate change and the need of incorporating modal shift strategies, to reduce greenhouse gas emissions from car traffic, for future concepts for PT, the main research question driving this qualitative study is:

- What are the key factors that contribute to a positive public transportation experience abroad, and how can these findings inform potential improvements to public transportation in Germany?

For the collection of responses and data, the study used semi-structured interviews with PT users. However, a more specific target group of people who have used or are using public transport outside of Germany for an extended period and who have experienced German PT is required. The reason for this specific target group is that the questions also depend on previous experiences and the comparison of experiences. This specific requirement meant a bit of a struggle to recruit and find the right interviewees. Before the interview could take place volunteers were asked if they are confident and familiar with their PT at home as well as in Germany. The recruitment strategy consisted of using personal contacts to acquire participants from a circle of acquaintances who fit the description of the target group by posting a request on social media and word of mouth.

In the end it was possible to recruit five participants and gathering knowledge from different places in Europe and north America. The participants were all using the PT to a high degree because they did not own a car and were using it for a number of different trips on a daily basis. All the locations offered multiple PTs and can be classified as big cities some even being major cities in their respective country. For example, to get to work or to university and grocery shopping. Most of the participants described their experiences from an Erasmus stay or their previous residence before coming to Germany. Most of the experiences described here have occurred within the past year. The age of the participants ranged from 20 to 30 years. Two different setups were used in the

study. The first was to rely on a handwritten interview guide while recording the responses on the smartphone with the permission of the participants in a personal meeting. The other required setting up a meeting in Zoom or Discord due to the greater distances and therefore recording the conversation with the tool itself, while keeping the questions open in a separate window to control the completion of the different topics targeted in the interview. While recruiting, the participants were informed about the need to record the conversation and then asked again to give a verbal agreement as soon as the recording started.

In both cases, participants answered questions about their daily patterns of using PT at their current or former location. How they navigated and utilized transfers, coverage, waiting times, ticketing, and the overall user experience. In addition, the interviewee was asked to describe their methods of learning about transit options. Later, questions asked the participant to draw comparisons and describe negative or positive experiences while interacting with the local PT. There were no specific questions about related infrastructure such as waiting and public areas, but some participants still decided to talk about it when describing interchange or waiting times.

This also marks a benefit of the chosen method of semi structured interviews giving the interviewee the opportunity to talk about the experiences and differences they noticed instead of strictly answering pre-defined questions. Another advantage of the semi-structured interview is that it allows the interviews to be focused while still giving the researcher the autonomy to explore pertinent ideas that may come up during the interview, which can further enhance understanding (cf. Adeoye-Olatunde & Olenik, 2021). By using open-ended questions, the interviewee was able to talk freely about any aspects that came to mind, and it was only sometimes necessary to interject a topic by request or to ask for clarification to better understand the argument being made. Interviews were preferred to methods such as questionnaires or diary studies because this direct approach allows the researcher to ask clarifying questions and to evoke certain memories by digging deeper with certain questions to a desired topic.

The study was organized as follows: After recruitment and scheduling an appointment. The interviewee was met in person or invited to an online meeting. The interview lasted 15-25 minutes and ended with thanking the participant for their participation and offering to update them on the results if they wished. In one case the participant was struggling heavily with remembering and answering the questions in the given setting. So, after finishing the rather short interview, the participant offered to think outside of the interview of the questions again and add to his answers in a written style which was gladly accepted.

The next process was to go through the answers and create the transcripts and tidy up the spelling. The result was then used to code statements and answers into categories to later define the results for different factors recognized in the approach of the study. The coding and analysis of the transcripts resulted in a number of common threads across the interviews. Even though the participants came from different backgrounds and used PT in different countries, there were some common themes. Most noticeable convenience, reliability, and ticketing systems which

are further explained in the findings chapter. The coding process was a mixture of emergent coding and structured coding since already for the questions and the related work part, themes were identified which were then targeted in the interview. Afterwards the smaller sample sizes were grouped together resulting into already known categories but also bringing up new ones like reliance on technology and alternative PT's. In the next chapter the participants responses are used to show the similarities and differences in their experiences as well as compare PT in different areas on the globe.

#### 4 Findings

In the interviews information was sought about every aspect of the most regular journey from the planning and information stage through to reaching the final destination. The interview also explored issues relating to the time and costs involved in the journey as well as positive and negative experiences compared to German PT.

The structure of this section reflects the patterns, issues and perceptions of those individuals, interviewed as part of this study, as they relate to PT and their commutes.

The respondents described their daily commute, which involved different types of PT, namely the subway and buses for everyone, and a few alternatives such as ferries, trams, trolleybuses, and vans also called combis.

All respondents knew the location of the closest PT stop to their home and most of them described the distance to the nearest public transport in terms of the time it takes to get there rather than the actual distance. The time taken to reach the stop was identified as an early factor in the decision making process and also as a determinant of whether the mode of transport was used.

Making a common feature the decision to choose the most convenient option to get to a destination. A key factor in their decision is how close their home is to the services, as well as the walking distance from the stop to their destination. One respondent (R2 female aged 21) mentions: "I usually used the subway to move around, since I lived near the station and I could use the subway to get to the place I needed." Another interviewee (R4 female aged 28) adds: "I live like one block away from the subway station, so I would walk there." Moreover, the number of transfers required, and the overall travel time are crucial as well. A 26-year-old woman (R1) describes the process of choosing a mode of transport, such as deciding between the tram to go to university, as it is faster without transfers, and the metro to go to the city for other activities. There was a case where the participant spontaneously decided to take the bus depending on rain and the situation if it would soon arrive or would be standing at the stop. The participant (R3 female aged 24) says: "Sometimes I took the bus depending on, I don't know, what time it arrived. This route however took me longer." This was the only case of spontaneous trip altering mentioned, which was done changing the routine. In the mentioned scenario, accepting a longer total travel time felt in that moment more convenient than a longer walk to the subway station but shorter total travel time. However, in most cases the shorter overall

travel time would outweigh the shorter walking distance, making the subway one of the preferred modes covering the long distances effectively.

Other aspects mentioned by participants making the subway to a dominant choice include its reliability and the fast travel times. "It allows you to go up and down the coast very quickly. It is very fast compared to the bus and very reliable as well." "Both tram and subway were very reliable with punctual departure and arrival times." Are exemplary statements from the participants.

Respondent R2 also mentions an adjusted rhythm for subway arrivals: "During rush hour, subway trains arrived every 15-30 seconds, at normal times about 3-5 minutes." This makes this a particular example of fast and convenient PT, the rhythm of which, as described by the other respondents, was usually around 5 minutes per arrival.

Only in the example of Mexico City the reliability is criticized by the respondent (R4). She mentions that she should always allow 15 minutes for a buffer, as the subway may not be on time. This contributes to her overall experience, which she describes as "chaos" due to lack of reliability and unpunctual arrivals of PT in general.

Contributing to this chaos is the fact of missing information in form of timetables available, live updates in the station and on the wagons and planned schedules. She talks about the lack of information about arrival times while in transit, or especially for the so-called combis, which are small vans used as buses that don't really have a schedule in place, which she describes as: "You have to wait 5 minutes, maybe it's already there or you wait longer." Furthermore, only at some stations on the subway route the information for approximately arrival times can be found which might be even wrong not factoring in delays.

Similar lack of information is described by R2 inside the subways in Minsk. However, there are printed and electronic timetables at the bus and trolleybus stops. They both were positively surprised by the regular and accurate updates found in the wagons and at the stations in Germany. There is also another option mentioned in Google Maps which is frequently used by the participants to inform themselves about arrival times. Additionally, this tool provides them an easy way to plan out trips beforehand and inform themselves which lines leave at which station and what the fastest way to go to their destination is. The participant (R3) staying in Malaga mentions: "I relied very heavily on Google Maps. Just checking the times that the bus would arrive, and it told me which line to take, when it would come, and what time to start walking from my home." Similar to this description, others are using the application for information and planning. The respondent staying in Toronto (R5, male, aged 26) mentions initially using Google Maps daily until he became familiar with the routes and interchange options. Later, he would walk to the subway station without the need to check arrival information because the subway arrives in four-minute intervals. So, with a higher rhythm in PT, time-related information becomes less important as the user can be sure the next PT is soon to arrive. He went on to say that the TTC, which oversees PT in Toronto, actively advertises using Google Maps for trip planning and information finding.

The coverage by subway and buses and other PT was described as largely different. R5 mentions a poor coverage in Toronto having only two main subway lines, one that connects Toronto from east to west and one that connects Toronto from north to south and a third and fourth line, which only cover four stations. Buses and streetcars like Lyft are more used towards the center of the city. He states: “Basically, the people from Toronto are not happy about their transport system. Most of them consider it being too slow and it doesn't really have a good reputation since.” He ends with remarking the infrastructure being car centric and that most destinations could be reached by car in shorter time. For the place of Malaga due to its size, one subway line and lots of buses cover the city efficiently as mentioned by R3. Wien in Austria is praised by R1 for its versatile transport services with many lines resulting in a high coverage of the city. Even at night she pointed out she could find a transport directly to her dorms. R2 is also pleased with the coverage in Minsk. For Mexico City, coverage seems to be problematic at some point. According to the explanations of the participant R4, she has to transfer many times and when she goes further away from the center, she has to use special transport services that are privately operated, such as the vans, to reach a destination or a connection with the subway, or she has to rely on the company to pick her up with a shuttle service. This points to a problem of coverage, as there are no continuous connections, requiring many transfers to reach destinations in the outskirts of this gigantic city. In her explanation, she mentions that she first had to use a van to get to the train station. Then, after reaching the last stop, she had no direct connection to the subway, so she had to walk to the nearest station. From there, she would have to transfer between several subway lines to get home. This daily commute relied heavily on making connections on time, which resulted in frustration due to lack of information and existing delays. For the other participants, interchange played a minor role in their daily commute. They simply used a single PT either the subway, tram or bus to get to their destination. In the case of R5, this also meant that he had to walk a long distance to the subway station and transfer once from the east-west line to the south-north line to get to the university in the northern suburbs of Toronto. However, the transfer took place at the same station, which meant he could easily get underground to the second subway line in a short amount of time.

Another aspect closely linked with the interchange is the travel times. While R4 always pointed out how many stations she would go for until a change of the transport, she did not talk about specific times to get there. Still, her detailed description with three different transportation modes gives the impression of an extensive travel time. The other participant inside Europe needed less than 30 minutes to arrive at their destination with footpaths factored in. For R5 in Toronto, the commute meant at least an hour drive with the subway system combined with rather long walks.

He specifically mentioned his boredom at first while commuting until he realized how to utilize his trip time and be productive. “I was starting to download some papers for a university, to read them. Additionally, I was downloading some podcasts or buying

some books to read and hear while on the subway, to somehow spend my time in a fulfilling way.” His statement unveils another possible convenient point about the subway and continuous PT. It is possible to dive into some work and spend time productively. The other interviewees did not point out any activities while being on the ride.

Additionally, the respondents talked about their use of buses in addition to subway lines and made comments about public transportation. The participant from Minsk R2 mentioned rarely using buses and trolleybuses due to the long travel time for a similar distance to the city center, which can take up to 45 minutes. Also, R3 usually does not use the bus for daily commuting due to the longer travel time and it being less reliable because of traffic congestion. She remarks while talking about the experience that the buses can get very crowded with no seating available and the air conditions get hot and uncomfortable. For R5, taking buses meant waiting longer at the stop if there was one close by his starting point. Due to the aforementioned lack of coverage, he often reverted back to walking or cycling to get to the next subway station instead of walking the shorter distance to the closest bus stop. While talking about buses, he said, “Even though there are priority bus lines called Express, they don't stop at all the stops on the route to cover distances faster. It is still slow compared to the subway.” Two additional experiences were described by the respondents from Spain and Canada. “In Malaga or Spain, if you're waiting at the bus station and you're alone or in general, you have to wave at the bus driver otherwise they won't stop.” This is done to limit stops and optimize travel times. In Toronto as mentioned by R5 you can take your bike on every PT for free. Therefore, the buses are equipped with a bike rack in the front which allows for seamless transport of bikes. He described this experience as very positive as it enabled him to optimize travel times or go by bus when the weather conditions changed. R4 instead talked about something she was surprised about regarding the German buses. “If you don't have a card or something, you have to buy the ticket and it takes time. So, you literally stop the bus while you're doing that.” Remarking an area which could be improved to possibly shorten travel times. There were no further comments about the typical experience with buses from the other participants.

As mentioned in the parts of information finding and trip planning, all the participants rely on tech to enable them to use the public transportation services. On the one hand, this includes Google Maps, or in the case of R2, the Russian equivalent, Yandex Maps. Most of them talked about checking when the next PT arrives. This is a recurring theme emphasizing the importance of recognizing that users now rely on technology and phones instead of printed timetables, making this an area that needs to be acknowledged and improved by the PTA. On the other hand, tickets and their purchase, as well as abos, rely on technology and applications. In most cases, it is described as contactless. In the case of Wien, there is even an app that manages, for example, weekly ticket purchases and administration. R2 would like a similar feature to be available in Minsk mentioning: “It would be nice to have a digital version of the travel card and the train schedule in the subway.” In Toronto another kind of application is used, which gives passengers the

opportunity to report molesting or drugs. When this happens personal of the TTC will enter the PT at an upcoming station and will take care of it.

Multiple kinds of ticket forms and systems are mentioned and explained in the interviews. From a semester ticket in Wien, which costs about 80 Euros for the PT during the semester, to monthly or weekly tickets around 15 Euros and single rides with different conditions.

One common thing mentioned is the rechargeable card for paying subway fees and buses. It can be made out of plastic or, in the case of Malaga and the Presto card in Toronto, paper with an RFID chip or some other tech included. It is then used to pay fees when entering the subway stations at the turnstiles or the bus entrance. While R1, R2, and R5 can use all public transportation services with this purchased ticket, R3 and R4 need to buy multiple tickets to access all the PT services. In Minsk, there are passes for four, three, and two types of transportation, making it less comprehensive but more flexible for the user what to pay for. In Mexico City, additional tickets for trains and vans/combis are necessary. These combis also require payment in cash. The payment method with a rechargeable card seems to be already outdated as numerous participants mention a new and even easier payment method for single trips. R2 said: "The terminal itself accepts payment by card for one-time use, the user can simply attach their phone or the bank card itself". In similar fashion it is described and possible in Toronto and Malaga where the same method can be used when entering a bus to pay for the ride. In Toronto there is a particularly interesting and customer friendly system in place, where after scanning once users can enter for 120 minutes every subway station or take any bus without additional payment. This contributes to making PT more affordable and increases the usage for daily activities like grocery shopping or doctor visits. Furthermore, there is the possibility to pay lower fees when using the practise of tapping on when entering a TTC transport and tapping off on a scanner at the destination to just get charged for the travelled distance. A fact which was commented by R5: "So I think this tap on tap off thing is quite convenient, and you can even do it with credit card, that's perfect." The cost of these various tickets in different locations is difficult to compare, but some participants mentioned that they were surprised by the low prices, which could be an advantage of being an active student.

Closely related to the issue of tickets and fares is the issue of fare collection, which differs from one location to another. A dominant solution of the PTAs is the installation of turnstiles that deny access to people without payment. To enforce this, R2 describes having a guard nearby to supervise. In Toronto, Malaga and Mexico similar measures are taken. R5 describes the checks on buses in Toronto: There are areas where you tap your card to pay for the bus fare, if you do not do so, the control personnel with a special machine that checks all passengers' cards could catch you. He goes on to say that he himself has never seen one of these inspectors. In Malaga, the bus driver must see your ticket, or you tap and pay in front of his eyes to make sure no fare evaders succeed. This as mentioned by R3, R4 is different from German

"ÖPNV" and trains where they often trust you to have a valid ticket and let you on trains and buses without checking first. This is also the case in Wien, where most people already use the app for the management of their ticket, which must be shown in case of a regular check. R4 notes that such a system would not work in Mexico City, where regular fare evaders manage to jump the gates.

There are also some soft factors that may be relevant to users' decision making. The look and feel, as characterized by R3, gives the impression that she likes to use the subway also because it is "new and shiny" as well as "modern". It gives her a feeling of safety and trustworthiness. Another mention of specific characteristics of a mode of transport is when R5 mentions that the subway is like in the American movies, "a huge metal subway". His experience with it and with other passengers was a particular focus of his interview. He mentions having encounters with people being unsound of mind, molesting, shouting, crying in the subway as well as urinating on the seats. Therefore, his experience with the subway, apart from being reliable and necessary for his commute, is quite negative, raising the question of how PTAs can manage to reduce such incidents.

Another thing the interview concentrated on was learning about alternative PT in these foreign countries. Some PT were mentioned that are not so common in Germany. The combis mentioned by R4, and the minibus mentioned by R2, are interesting as well as trolleybuses. The so called combis are part of the public transport, but according to R4 they are controlled and organized by themselves. R4 states: "It's somehow regulated or allowed by the government. Many have no official route or schedule information, and some allow riders to get on and off wherever they want. As a result, using this transportation is only possible with a deep knowledge of the area and the city. In Minsk, R2 reports on the use of minibuses to transport people from the outskirts of the city to the center, which are much faster than traditional buses and trolleys because they only stop when passengers request them. Another PT mentioned price in Toronto and Malaga are ferries used to reach islands close by for an affordable price in a short time. Furthermore, cable cars are used in Mexico City which pose an interesting solution for urban transportation.

All in all, the interviews paint a picture of a multifaceted PT with some individual advantages and adjustments to make the travel time as short as possible. Controlling and ticketing had many similarities, while the information provided to the customer was found to be lacking in some places. The reliance on technology in ticketing, as well as in information gathering and planning, is reflected in the interviewees' statements. By focusing on the positive aspects highlighted by respondents, it is clear that flexible, reliable and affordable travel is in the interest of the user. Free transportation of bicycles in any PT, fast and contactless payment for tickets, and access to PT without additional fees for a certain period of time can improve the user experience. It is also clear that independent PT such as subways and trams are more popular than buses. This leads to the discussion part, where the issues and areas for improvement for "ÖPNV" based on the current situation and recent strategies observed are discussed.

## 5 Discussion

Depending on the size and demographics of the city, there are many different requirements for PT. Therefore, this qualitative study must be seen as an open approach, not specifying certain cities in which these strategies could be applied, but trying to give thought-provoking impulses to strengthen the object of modal shift in this country.

It gets further complicated by the fact that every transport association in the federal states utilises different methods and strategies to accomplish the task of providing everyday mobility. They are bound to what infrastructure is available and how much money is invested in the further development. This might also be similar in the locations the interviewees stayed or lived in.

Several themes emerged from the interviews, expressed directly or indirectly by the participants. Based on these findings, ideas and adaptations are discussed and related to existing measures in an attempt to answer the second part of the research question.

With the EM on the horizon, helpful changes to make travel to the venues seamless with PT are desirable. Starting with the sometimes lengthy ticket purchase process, especially for the bus. A contactless payment method with a credit card or bank card, as described by the participants, could significantly reduce the waiting time. The process of buying tickets at a ticket machine can also be replaced, and passengers would not have to make a cognitive effort to choose the fitting tariff for their trip. In addition, no cards could get stuck or coins rejected by the machine, reducing stressful situations in conjunction with PT. Queues in front of the bus driver would be shorter, as would boarding times, allowing for more punctual and faster PT.

In addition to these changes, a more flexible use of single ride tickets would be desirable. An option to use the PT for a certain amount of time without additional payment could increase usage and would be beneficial for people who plan to go shopping or have other appointments that require them to travel around the city. Following Toronto's example, this would mean that a user would initially scan their credit card or other form of payment. If they then enter another PT, they would scan it again to verify their continuous trip. If they are outside of their free transfer window, a second booking would be made and the time window is reset. Moreover, an option that allows PT users to pay for the actual distance they travel may encourage ridership because this seems to be a more equitable pricing method.

Most of these remarks are somewhat resolved with the introduction of the 49 euro ticket, which is the follow-up to the 9 euro ticket offered during Covid19. The combination of being able to buy and maintain this ticket over the phone, use any PT and normal trains, and travel as often as needed in a month would mean, according to Andreas Krämer, 17 million ticket holders. This is a much smaller number of subscribers than before, but it will still have an impact on the modal shift, because it is the beginning of a simplified fare portfolio for all relevant customer groups, such as occasional users, which must be created in order to enable easy, hassle-free and affordable access to the public transport system even for people who do not have a "Deutschlandticket" (cf. Krämer, 2023).

However, the ticket is still an abo, i.e. it is less attractive for occasional users, and the introduction of a simple digital ticket

(km-based and with a daily price cap of EUR 4.90) as well as a day ticket at a price of EUR 4.90 to maintain the familiar number line (cf. Krämer, 2023) would still be useful.

Another aspect that needs improvement is the reliability and punctuality of buses and other public transport. As mentioned above, the process of buying tickets from the bus driver is the action that significantly slows down the departure after stopping and picking up passengers. This needs improvement with providing contactless payment methods. In addition to infrastructure projects where the PT should be more isolated from the general traffic, express buses, which navigate only a fraction of the stops, but the most important ones, can be used to provide faster travel times to the higher probability of reaching the connecting PT. For other PT, the introduction of more flexible timetables covering rush hours with a faster rhythm of arrivals and departures makes sense and should be more closely analyzed. This could additionally prevent overcrowding and lead to a more comfortable PT experience.

The aforementioned minibuses in Minsk and the combis from Mexico City have the potential to connect smaller communities further away from the city with irregular and on-demand trips. As some of these measures are already in place, a next step would be to improve them and adapt them to individual needs. In order to be able to compare and analyze their use, a further study could be carried out focusing on the use and experiences with the specific PT. An example for improving the express buses and adaptive timetable is the analysis of Zhang et al. It aims for flexible express bus line planning and operating based on passenger flow with the help of smart card fare collection systems' data and GPS tracing systems' data (cf. Zhang, 2018). It aims for adjusting the arrivals and departures of buses based on demand and that in real time to benefit efficiency and improving overall service quality.

Trolleybuses were mentioned in a sidenote however as the PTAs are looking for environmentally friendly transport options trolleybuses could make a return. Trolleybuses are typically powered by electricity sourced from cleaner energy sources, thus contributing to reduced emissions and environmental sustainability.

Other measures that provide incentives for modal shift are the installation of bicycle racks in the PT as well as no additional cost for bike transportation. These bike racks would allow users to be more flexible in their approach to commuting and less dependent on good weather conditions. Instead of switching to the car, they could take their bike with them and use it later for shorter trips or the commute back. With a greater focus on bicycles and similar modes of transportation, a next step could be to think about charging and repair stations that are closely linked to PT stations to enable seamless trips in this flexible model.

Isolating PT from car and truck traffic was the preferred choice of participants for travel. There is the option of ferries, which can provide a short and direct route to a point of interest but rely on bodies of water to make this transportation possible. Cable cars, as known and used in ski resorts, also provide an aerial line of travel to sometimes inaccessible terrain. However, as shown in Mexico City, this mode of transportation can also be an opportunity for fast and direct access in the outskirts of a city. Flesser and Friedrich

therefore discuss its potential use and the steps that need to be taken to introduce cable cars as a mode of transportation into the repertoire of transportation planners. Cable cars offer a sustainable urban air mobility option by efficiently transporting passengers above traffic congestion, reducing commute times, and minimizing environmental impact. However, their widespread adoption is hindered by high initial infrastructure costs, limited route flexibility, and challenges in integrating with existing urban transportation networks (cf. Flessler, Friedrich, 2022).

This can also be seen as an anticipation of urban air mobility, which has been a hype topic since 2019 (cf. Flessler, Friedrich, 2022).

Urban air mobility (UAM) refers to the transportation of passengers and goods in urban environments through aerial means, often utilizing electric vertical takeoff and landing (eVTOL) aircraft or drones to alleviate congestion and improve efficiency in urban transportation networks. UAM could quickly and independently provide an additional mode of transportation. However, there are still many questions to be answered, and even then, after its introduction, it might offer travel time savings, but these time savings might come at the expense of energy consumption, which is less in the interest of sustainable transportation (cf. Straubinger et al., 2020). All in all, there are several types of PT and alternative PT that could provide more commuting options in the future and support further modal shift.

In order to deepen the understanding and possible improvements of PT, interviews or some other qualitative study method with citizens preferably from Berlin, Munich or Hamburg to have a good comparison and as a next step people from the respective PTA's like drivers, controllers and operators could be taken.

## 6 Conclusion

In summary, the findings from the qualitative study shed light on the multifaceted nature of PT systems and the diverse experiences of commuters in different cities. Through in-depth interviews, participants revealed various factors that influence their use of PT, including accessibility, convenience, reliability, affordability, as well as look and feel.

One of the key findings is the importance of user-centered approaches to PT planning and policy-making. Participants emphasized the need for seamless and convenient PT experiences, from easy ticketing processes to reliable and on-time service delivery. The integration of contactless payment methods, flexible fare structures and improved information dissemination emerged as potential strategies to improve PT and encourage modal shift. In addition, the provision of bicycle transport facilities will encourage car-free commuting.

The study also highlights the importance of continuous improvement and innovation in PT systems. Recommendations such as the introduction of express buses, adaptive schedules, and improved coverage through alternative PT in underserved areas have the potential to address existing challenges and improve overall PT efficiency and effectiveness. Moreover, investing time and money in newer types of PT separated from the road holds promise for a successful modal shift.

## 7 Reflection

This study provided some interesting insights into PT in foreign locations. However, due to the number of PTs and the different infrastructures in each country, it was a challenge to cover all these experiences in the interviews. Without a specific focus on one PT or one place in Germany, the study seems partially unfocused and without a real direction. In order to compare and answer the research question, a well founded knowledge of German PT is required, which in this case was only based on personal experience and a few literature sources, which means that the results of this study are thought-provoking, but do not provide a comprehensive picture. Only a few places on the globe were covered, while the far east and south were completely left out. For future research, it would be helpful to identify more specific areas of challenges or single out a means of transport, and then venture out to promising and similar environments in other parts of the world to find solutions. In addition, interviewing more people from different areas and outside of Europe would greatly improve the findings and add to a less western biased result. It might be helpful to revise some of the questions so that the interviewees are not asked to compare their experiences in Germany with those in their home country. Instead, the researcher could describe situations from his or her everyday life and then ask the participant how a similar scenario plays out in his or her place. This opens up a larger pool of possible respondents and makes recruiting easier.

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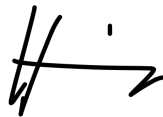
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## APPENDIX

“I hereby declare that my report is the result of my own work and has been written only with the help of the indicated sources and aids. All materials used (this includes text, graphics, tables, etc.) from published as well as unpublished sources, whether directly quoted or paraphrased, are marked as such. Furthermore, I declare that this report, or any abridgment of it, was not used for any other degree seeking purpose.”

Christoph Hein



31.03.2024

Interview: R1 Austria (Minsk), R2 Belarus (Minsk), R3 Spain (Malaga), R4 Mexico (Mexico City), R5 Canada (Toronto...)

Could you please describe your typical experience using public transportation in ...

R1
My typical experience was that I checked on Google maps where I wanted to go and how to get there.
I would use either tram or subway to get where I needed to go.
There was no issue finding seats on both tram and subway which was nice.

R2
I usually used the subway to move around, since I lived near the station and I could use the subway to get to the place I needed.
Usually I got to the city centre which took about 15 minutes from the terminal station to the centre.

I rarely used trolleys or buses as this significantly increased travel time and about the same distance from the terminal to the city centre could take 45 minutes.
During rush hour, metro trains arrived every 15-30 seconds at normal times about 3-5 minutes in the evening 10-15 minutes.
There is a scoreboard at the stations that shows the arrival time of the train, so this data is taken from my observations.

There are also minibuses in Minsk that are much faster than buses and trolleybuses because they stop at the request of the passenger, but they are most often used to get from distant areas to the city centre.

R3
So when I was in Malaga I went to university I usually took the metro line and so every morning I walked there, it took me about 20 minutes to walk there from my house and then I took the metro.
And I got off right at the university and just had to walk like 2 minutes to my classes.

And that cost me \$0.30 every ride I had like a ticket, a paper ticket, but I could put money on it. And then every time I used the metro, I held it against the scanner and it took \$0.30 of the amount.

I usually used that when I went to the university, sometimes I also took the bus where I had a monthly subscription which cost me \$15.50. For a student it was pretty cheap in my opinion for a student per month and that allowed me to take the bus.
As often as I wanted to, sometimes I took the bus depending on, I don't know the time that it arrived.

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Reliance on tech
Antworsten

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Seating
Surprised
Subway
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Convenience
Subway
Antworsten

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Travel time
Antworsten

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Buses
Trolleybus
Too slow
Antworsten

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Bus commute
Antworsten

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Subway
Adaptation of time table
Rhythm
Antworsten

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Adaptation time table
Antworsten

This route took me longer overall. I would have had to walk like 10-12 minutes, but the bus ride took longer.

R4
I would describe this as a hassle.
I use it almost every day.
In Mexico City, it's easier to move in the public transportation because.

There is always traffic and there's also this problem of parking. So yeah, it's easier. And it's also cheaper. So I describe it as chaos because.
Usually you have to really plan lots of time for it. It maybe takes you 30 minutes to get to a place you should go like 15 minutes earlier because you don't know if the subway is in time.
It's not reliable.
So yeah, the buses sometimes are not that reliable.

R5
So I live in Toronto for half a year.
In terms of public transportation, I think there is, like in Toronto, the TTC is the company behind the public transportation system.
Basically there are two main subway lines, one that connects Toronto from east to west and one that connects Toronto from north to south.

There are, I think, four main lines, but they're small, with only four stations.
There's also a third and fourth line, but they're small, with only four stations.
There are, I think, four millions of people there and a really huge area that is inhabited.

So basically it was quite a distance from my home to the university.
So if I were to take the subway, I would have to take the subway line first from the east end where I lived to the city centre.
And then from downtown to the North End, where the university was.

About an hour drive.
Whether with a stop over, I could also go by bike - it was also an hour drive, or I could drive, which would have been 30 minutes without traffic, but I didn't have a car, so that kind of describes how well or how poorly Toronto is connected.

So there is public transportation, but it's really slow.
It's usually more convenient and faster to take a car, and for me it was okay.
It was double, but overall it's still pretty slow so I took the subway to the university every day.
That was basically my normal commute.

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Bus longer travel times
Less walking = overall faster
Antworsten

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PT - Chaos
Antworsten

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Some PT is faster - no dog traffic
Antworsten

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Argument for PT
christoph.petehein
Easier and cheaper
Antworsten

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Planning
Long travel times to expect
Antworsten

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Too slower
Not reliable
Antworsten

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Subway
Routes and coverage
Antworsten

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Subway
Covering long distances
Antworsten

christoph.petehein
Antworsten

Or there was an intermediary called the Presto card and the Presto card is like a normal check card with a certain NFC or RFID chip in it, and you can load money onto it. Then you just need to tap it to go pay for a ride.
Since last summer, it's also possible to just use your credit card or your debit card and the amount of your ride will be charged from that card.
It is controlled depending on the way of transport you take.
So for subway, there are gates on every subway station.
You need to tap there to open the gate that you get into it.

For buses and street cars, there are no gates, so you could basically also just go in and sit down, but there are also some tapping areas where you can tap your where you should tap your cards.
This somehow gets and forced by people who are sometimes controlling all the passengers by checking their cards with a special machine but I've never experienced this since I am in Toronto,
but I've heard that it is happening if you go by train that is connecting Toronto with the near neighbouring cities.

There is a system that you tap on and tap off, so that is just amount gets spoke from your card for the distance you travelled.
So if you only drive one station, you tap off and then you pay.
I don't know less \$ and if you go for seven stations, then you tap off and then it pays for more, because due to the longer travel.
So that's basically the system here in Toronto.

For two hours after you tap your card is valid for 120 minutes.
Two hours and within the two hours you can re-enter the subway for free all the time you take buses.
So basically I could go to a station and that way leave the station buy something. Go back to the station and leave the other way as long as everything is within the two hours I can.

Alright, so speaking of these stopovers, I would say my maximum waiting time usually between two and five minutes or something.
So that was quite a bit longer sometimes.

If you're really offside somewhere at the airport or somewhere in the north near the subway station, you wait usually a little bit longer than it, I would say 10 minutes for the subway.
And since I live quite close to the subway station, it was maximum 5 minutes, I would say.

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Ticket
Chargeable plastic card
Scan to pay
Antworsten

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Ticket
Can be paid on directly with credit card
Antworsten

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Centralizing
Turnstiles
Antworsten

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Buses
Also contactless - scan card
Centralizing personal occasionally
Antworsten

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Ticket
System for train distance
Price charges
Antworsten

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Ticket
Valid for 120 minutes
Can take multiple PTs in same time
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Subway
Rhythm
Antworsten

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Buses
Slower rhythm
Antworsten

How did you find out about the possible means of transportation?

R1
Google maps

R2
About the transport itself, rather just visually, but about the directions either through the maps application or from my friends.

R3
For special routes like going to the airport, I looked up online what people would recommend me to do, what would be the cheapest option. And I think that's Google Maps and just looking on Google what kind of options there are if there's any.

R4
Lately I've been using Google Maps. I think they are getting a bit better on telling you how long it will take you and like.
I don't know how, but sometimes they even tell you when a bus is coming or it's close.
I would say maybe they are because they are tracking the phones are in there. I don't know, to be honest.
I only use Google Maps to know how to go or which buses to take.

R5
I just used Google Maps.
At first I would say to someone get familiar to the system and then after a couple of weeks when I knew which station is where.
I didn't even look it up the routes that I already knew.

So for my daily commute to university, I was just going to the subway station.
I know that every approximately every 8 minutes, the subway will run.
So I wasn't really in need of looking up some schedules or something.

If I was somewhere off site where it didn't know the surroundings? How to get there or how to get away from there?
I was using Google Maps and this worked quite well.
I think even the TTC is advertising that you should use Google Maps for any similar service to plan your trips.

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Information
Observations made
Antworsten

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Information
Tech
Mouth to mouth
Antworsten

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Information
Online Research
Public opinion
Antworsten

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Information, Planning
Using Tech
Google Maps
Antworsten

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Information
Relies on tech
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Real time updates
Arrival times
Antworsten

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Information gathering over a period
Using PT to learn about schedule etc.
Antworsten

Yeah, it was pretty long at first, I thought it was going to be pretty boring, but I got used to it.

I was starting to download some papers for university, to read them. Additionally, I was downloading some podcasts or buying some books to read and hear while on the subway, to somehow spend my time in a fulfilling way.

Alternatively, there are also buses and streetcars in Toronto, especially in downtown Toronto.

So basically, you can go everywhere you want by public transport, but it's usually a little bit slower than going by car.

I don't know if it also counts as public transport - Toronto has many Ubers and Lyft cars.

I have also used this service a couple of times when public transport was shut down or unavailable.

Basically, the people from Toronto are not really happy about their transport system.

They all consider or most of them consider it being too slow and it doesn't really have a good reputation since.

Yeah, usually like Corona has a huge problem with homeless people and even in the especially in the winter.

Months when it's getting cold, a lot of people are in the subway that have no shelter.

What you can tell by their appearance is that there are also a lot of people on drugs in the subway and stuff.

Yeah, weird things happen on the subway that you usually wouldn't expect.

So, I think in the first week, I was out with a couple of friends and my girlfriend. She was sitting next to one of these guys and then he started talking. Then he began to touch her on the leg and shoulder.

And then she just said sorry, can you please not touch me?

And then he stood up and started shouting at her.

You're such an a\*\*hole.

So that's pretty weird and I've also had experiences with people running, crying or shouting in the subway.

Yeah, people who are, I don't know, defecating or urinating in the subway.

And yeah, that's not so nice.

And I think that's part of the bad reputation of the subway.

Can you walk me through the process of how you navigated and utilized public transport systems in your daily routine?

(Transfers, coverage, waiting times, tickets, user experience)

R1

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Subway  
Being at thought  
Time can be spent productive without

Antwortern

christoph.petehein ...

Bus  
Closer to the city center

Antwortern

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PTT Uber and Lyft

Antwortern

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Railability issues mentioned

Antwortern

christoph.petehein ...

Public opinion  
Reputation low

Antwortern

christoph.petehein ...

Misusage of PT at place to sleep  
Can be uncomfortable in the presence of these offenders

Antwortern

christoph.petehein ...

People who are not allocated  
Security issue in subway

Antwortern

christoph.petehein ...

Risks open  
People behaviour

Antwortern

I would usually use the tram that was right in front of my dorm and get out after 20 min and then walk 5 min to the building where I had most of my classes.

Usually I checked on google maps when the next tram would arrive. To get further into the city for bar nights and other activities I would usually use the subway since it is way faster.

For classes though the tram was faster because with the subway I would need to change lines.

The coverage for both tram and subway was pretty good.

Every 10 min a tram would come, and every 5 min a subway. During the semester I could use my semester ticket which was about 80 Euros for the duration of October to February.

During semester break I bought the weekly tickets for 14 Euros each. I used the Vpn mobile App to get these tickets.

Both tram and subway were very reliable with punctual departure and arrival times.

R2

Since I constantly used the subway, I bought a pass only for this type of transport, but there were passes for 4, 3 and 2 types of transport.

I bought a travel card for a month and it looked like an ordinary plastic card that should be attached to the terminal near the turnstiles.

There was no application in which the travel documents would be stored, and in general, travel documents could only be purchased in physical form.

However, the terminal itself accepted payment by card for one-time use, the user could simply attach a phone or the bank card itself.

If a person wants to go through the turnstiles without paying, they close right in front of them and there is always a guard at the entrance who makes sure that the person does not pass without paying for the fare.

Therefore, the train cars themselves do not include controllers, the payment is checked before entering.

At the moment there are 8 metro lines in Minsk and the transition from one line to another one is carried out inside, person does not need to leave the metro for this.

I would say that the transit is quite simple, the metro lines are painted in different colors and the station designations are marked with the appropriate color, so it is quite easy to navigate.

Usually the station has at least 4 exits and if you do not know the city, you can easily exit from the wrong side, but this mistake is not critical.

Despite the fact that there are no train schedules in the metro, they are available at almost all bus and trolleybus stops. There is both an electronic schedule and a printed one. In most cases, if there are no accidents on the road, then the transport arrives on time.

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Tram  
Convenience  
Travel time

Antwortern

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Reliance on Tech  
Planning right before the trip

Antwortern

christoph.petehein ...

Subway  
Longer distance - to the center  
Faster

Antwortern

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Subway and Tram  
Public coverage

Antwortern

christoph.petehein ...

Bygone

Antwortern

christoph.petehein ...

Ticket  
Cooperation with Uni  
Costs

Antwortern

christoph.petehein ...

Price - digital  
Ticket  
Reliance on Tech - App

Antwortern

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Positiv surprised - get worse?

Antwortern

R3

I relied very heavily on Google Maps.

Just checking the times that the bus would arrive and it told me which line to take when it would come, what time to start walking from my home, so it was very convenient.

Yeah, I mean for the metro, I know that the metro, if I walked there, I knew that within 5 minutes there would be in the next metro because it was very frequent. So I never had to wait long.

I could reach them mostly easily, but there was always some walking involved, usually in the centre in the Old Town the buses didn't reach because it's all, it's all just walking pedestrian zones.

So I usually had to walk like 10-15 minutes if I wanted to take a special bus, but it was, so I think it's a good coverage because it takes you to the beach, it takes you to University, Hospital, wherever you may need to go, the bus is there and then the metro is more for the longer distance, it's like one long metro line along the coast.

So it'll allow you to go up and down the coast very quickly, it was very fast compared to the bus and very, very reliable as well.

I think it was very nice that for the bus, even if you don't have this card, you just get onto the bus and you just hold your card against it and it scans it and you can just walk inside and sit and as well with the metro, you just scan your card, it's all contactless. You can just go and no waiting times for purchasing.

I would describe it as a positive experience, but the bus sometimes it was very crowded, some bus lines are used by a lot of people, and it can be very full. You don't find somewhere to sit. It's hot in the bus. That was a bit annoying sometimes.

R4

So I would get like an example. When I every day when I was going to work, I would only live like one block away from the subway station.

So I would walk there.

Early, like 6:00 AM probably.

Then I'll take the subway, will hop off in the next subway station and I'll change three subway stations later, I would get up, and then there was a bus.

From the company I was working where they were picking us to bring us to the company building.

Home. However, when I was coming back, if I was not coming back with the bus, I would have to first, take a bus that is like a smaller version in Mexico there is this kind of like a van. Vans are also public transportation, so I would have to take one.

It's like a Sprinter type called kombi.

That's really common in Mexico, not only have buses, but also that kind of transport.

christoph.petehein ...

Reliance on Tech  
Planning information finding

Antwortern

christoph.petehein ...

Subway  
Bygone

Antwortern

christoph.petehein ...

Coverage  
Walking involved  
Pedestrian zones

Antwortern

christoph.petehein ...

Subway  
1 Line  
Long distance along coast

Antwortern

christoph.petehein ...

Faster than taking bus  
Faster

Antwortern

christoph.petehein ...

Contactless payment methods  
Positiv surprised. Not standing in line waiting to purchase ticket - car

Antwortern

christoph.petehein ...

Bus  
Negative: Too crowded  
No place to sit

Antwortern

christoph.petehein ...

I had to take one to that would take me to the train station. That was like 15 minutes away from my office and then from there I would have to take the train.

I would say like 30 minutes.

Then I will have to leave the train station. That was the last station. Then walk to the subway station and then there.

Take one line, then like 2 subway stations later change and then I was in the line where I had to walk like six or five subway stations later, I was at home.

Yeah, I mean, it was the shortest route in public transportation.

That's the biggest problem in Mexico's transportation, time schedules.

You will never know. Sometimes I would say the vans you will never know when they arrive. You just have to wait.

You will have to wait 5 minutes, maybe it will be already there or you wait longer.

(Info of arrivals)

Not in the vans, not in the train.

Uh, yeah, it's they give you in the train station, kind of like an approximate arrival time. But it's not like for sure.

So we can arrive at that time or we can arrive later.

Usually I would say the trains were kind of punctual.

And then on the subway, you will never know when they will arrive. There's no nothing. Only in some lines they have a screen where you can see when it is coming at the station, inside the subway station.

(ticketing)

Yeah, like inside the city, inside Mexico City, you have one card that works for almost. We have the subway, the buses.

And also you can rent bikes. So with this one card you can pay everything.

You have to load money on it every time. And then that's only for the subway, the buses, and the bikes.

For the train you have to buy another card and also you have to put money on it.

And for this kind of vans that I was telling you, there's no card you have to pay with cash.

R5

So basically, there are two ticket systems.

I would say the old one and the new one.

The old system is just you go to a counter or a machine and buy a subway ticket, and then you go on the ride.

christoph.petehein ...

Negative: Not reliable for most PTs  
Time table

Antwortern

christoph.petehein ...

Vans  
No information about schedule

Antwortern

christoph.petehein ...

Information  
Arrival times at station

Antwortern

christoph.petehein ...

Trains  
Punctual more or less

Antwortern

christoph.petehein ...

Subway  
Information missing on arrival times

Antwortern

christoph.petehein ...

Ticket  
Physical rechargeable  
Contactless payment

Antwortern

christoph.petehein ...

Ticket combination

Antwortern

christoph.petehein ...

Separate ticket for train  
Also chargeable

Antwortern

christoph.petehein ...

Or there was an intermediary called the Presto card and the Presto card is like a normal check card with a certain NFC or RFID chip in it, and you can load money onto it. Then you just need to tap it to go pay for a ride.

Since last summer, it's also possible to just tap your credit card or your debit card and the amount of your ride will be charged from that card.

It is controlled depending on the way of transport you take.

For subway, there are gates on every subway station.

You need to tap there to open the gate that you get into it.

For buses and street cars, there are no gates, so you could basically also just go in and sit down, but there are also some tapping areas where you can tap your where you should tap your cards.

This somehow gets and forced by people who are sometimes controlling all the passengers by checking their cards with a special machine but I've never experienced this since I am in Toronto.

but I've heard that it is happening if you go by train that is connecting Toronto with the near neighbouring cities.

There is a system that you tap on and tap off, so that is just amount gets spoken from your card for the distance you travelled.

So if you only drive one station, you tap off and then you pay.

I don't know less \$ and if you go for seven stations, then you tap off and then it pays for more\$, because due to the longer travel.

So that's basically the system here in Toronto.

For fare time after you tap your card is valid for 120 minutes.

Two hours and within the two hours you can re-enter the subway for free all the time you go take buses.

So basically I could go to a station and that way leave the station buy something. Go back to the station and leave the other way as long as everything is within the two hours I can.

Alright, so speaking of these stopovers, I would say my maximum walking time usually between two and five minutes or something.

So that was really convenient.

well for buses, I think I waited a little bit longer sometimes.

If you're really offside somewhere at the airport or somewhere in the north not near the subway station, you wait usually a little bit longer than it's, I would say up to minutes for the subway.

And since I live quite close to the subway station, it was maximum 5 minutes, I would say.

**christoph.petechain** Ticket  
Chargable plastic card  
Scan to pay  
Antwortern

**christoph.petechain** Ticket  
Can be paid on directly with credit card  
Antwortern

**christoph.petechain** Controlling  
Turnstiles  
Antwortern

**christoph.petechain** Buses  
Also contactless - scan card  
Controlling personal occasionally  
Antwortern

**christoph.petechain** Ticket  
System for train distance  
Price changes  
Antwortern

**christoph.petechain** Ticket  
Valid for 120 minutes  
Can take multiple PTs in, take time  
Antwortern

**christoph.petechain** Subway  
Rhythm  
Antwortern

**christoph.petechain** Buses  
Disorder rhythm  
Antwortern

**How did you find out about the possible means of transportation?**

R1  
Google maps

R2  
About the transport itself, rather just visually, but about the directions either through the maps application or from my friends.

R3  
For special routes like going to the airport, I looked up online what people would recommend me to do, what would be the cheapest option. And I think that's Google Maps and just looking on Google what kind of options there are if there's any.

R4  
Lately I've been using Google Maps. I think they are getting a bit better on telling you how long it will take you and like.  
I don't know how, but sometimes they even tell you when a bus is coming or it's close.  
I would say maybe they are because they are tracking the phones are in there, I don't know, to be honest.  
I only use Google Maps to know how to go or which buses to take.

R5  
I just used Google Maps.  
At first I would say to somehow get familiar to the system and then after a couple of weeks when I knew which station is where.  
I didn't even look it up the routes that I already knew.  
So for my daily commute to university, I was just going to the subway station.  
I knew that every approximately every 15 minutes, the subway will run.  
So I wasn't really in need of looking up some schedules or something.  
If it was somewhere off site where it didn't know the surroundings? How to get there or how to get away from there?  
I was using Google Maps and this worked quite well.  
I think even the TTC is advertising that you should use Google Maps for any similar service to plan your trips.

**christoph.petechain** Information  
Observations made  
Antwortern

**christoph.petechain** Information  
Tech  
Mouth to mouth  
Antwortern

**christoph.petechain** Information  
Online Research  
Public opinion  
Antwortern

**christoph.petechain** Information, Planning  
Using Tech Google Maps  
Antwortern

**christoph.petechain** Information  
Relies on tech  
Antwortern

**christoph.petechain** Real time updates  
Arrival times  
Antwortern

**christoph.petechain** Information gathering over a period  
Using PT to learn about schedule etc.  
Antwortern

**How often do you use public transportation during your stay?**

R1  
Nearly everyday, mostly 2-3 times.

R2  
Usually at least 2 times and mostly it was the subway as I mentioned earlier.

R3  
I think during the week I would say every day like at least once to get to university and once to get back. If I had classes every day and then on the weekend, maybe to go to the beach or something. So almost every day I would say multiple times.

R4  
Every day.  
Twice at least.

R5  
Daily commute to university

**Based on your experience, what worked well and what didn't?**

R1  
The PT in Wien was very punctual and reliable.  
Also I noticed that most of the train cars were tidy and clean most of the day.  
The acquiring of tickets with the App were easy to do as long as you are comfortable using smartphones.  
If there was a direct subway line to the building I had classes in I could have saved a lot of time other than that everything was great.  
I could not take a bus to the building as the schedule was not working for me to be in time for classes.  
I had to walk the rest of the way which is ok but when the weather gets bad it meant it's annoying.

R2  
In general, I am satisfied with the transport system in Belarus, it really helps to get to any point of the city without problems and without a lot of transfers.

**christoph.petechain** Rupter  
Time schedule  
Antwortern

**christoph.petechain** Reliance on Tech  
Problem for older generations  
Antwortern

**christoph.petechain** Connections and routes mixing  
Antwortern

**christoph.petechain** Not enough coordination  
Antwortern

**christoph.petechain** Interchange is time consuming and annoying  
Antwortern

The subway runs fast and often, but it would be nice to have a digital version of the travel card and the train schedule in the subway.

R3  
I think what works well is this. The system of contactless cards that they have.  
It's the Presto, is very reliable buses sometimes I mean it's always the case they're they might be a bit late.  
But in general I would say in Malaga it's pretty reliable.  
Well, what didn't work so well? Also is that sometimes, certain lines were always very crowded.  
So I think if they knew that it's always crowded, they could provide more buses. In my experience, it was always at a certain time the certain lines were very full. So you couldn't find anywhere to sit. So that didn't work that well.  
And I guess it would be nice if you didn't have to walk 15 minutes. It could be even more bus stops or even the higher coverage would be nice.

R5  
The biggest argument for German public transport is the quantity, so I always tell people that in Toronto we have four subway lines and in Munich, which is smaller, we have a lot more subway lines and I think even the number somehow speaks for itself. It's just much better connected, and you can basically go anywhere and find a station.  
When you are in Toronto if you're not at the two big lines, then you need to go by bus, Streetcar, which is really, really slow compared to the subway.  
Even if there is this priority bus lines which were called Express. They would not stop at all the stops on the route to cover distances faster.  
However this works not optimal as there are just too many interferences with traffic and traffic lights making it still slow compared to the subway what I like more in Toronto was actually the ticketing system.  
So I think this tap on tap off thing is quite convenient and you can even do it with credit card, that's perfect.  
You don't have like due to these gates on subway stations, you don't really have the need for that much control personnel within the train, which is common practice in Munich.  
So I like this more and I think it would be perfect if they would somehow book your amounts at the end of the month or something and then calculate if you're somehow qualified for the for the monthly fare instead of single rides.

**Was there a particularly positive experience and what made it so memorable?**

**christoph.petechain** Information  
More info Display in stations/train cars  
Ticket - Digital version  
Antwortern

**christoph.petechain** Ticket  
Proble: contactless, low effort  
Antwortern

**christoph.petechain** Subway  
Reliable  
Disconnected from other traffic  
Antwortern

**christoph.petechain** Buses less reliable due to more factors like traffic  
Antwortern

**christoph.petechain** Buses  
Overcrowded  
Uncomfortable  
Antwortern

**christoph.petechain** Direct access  
Less trip time  
Antwortern

**christoph.petechain** Subway  
Less connections  
Long travel times with additional walking  
Antwortern

**christoph.petechain** Ticket  
Price  
Fast system pay for distance  
Antwortern

Or there was an intermediary called the Presto card and the Presto card is like a normal check card with a certain NFC or RFID chip in it, and you can load money onto it. Then you just need to tap it to go pay for a ride.

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Ah, so speaking of these stopovers, I would say my maximum waiting time usually between two and five minutes or something.

So that was really, really good.

well for buses, I think I waited a little bit longer sometimes.

If you're really offside somewhere at the airport or somewhere in the north not near the subway station, you wait usually a little bit longer than it, I would say 10 minutes for the subway.

And since I live quite close to the subway station, it was maximum 5 minutes, I would say.

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**How did you find out about the possible means of transportation?**

R1  
Google maps

R2  
About the transport itself, rather just visually, but about the directions either through the maps application or from my friends.

R3  
For special routes like going to the airport, I looked up online what people would recommend me to do, what would be the cheapest option. And I think that's Google Maps and just looking on Google, what kind of options there are if there's any.

R4  
Lately I've been using Google Maps. I think they are getting a bit better on telling you how long it will take you and like.  
I don't know how, but sometimes they even tell you when a bus is coming or it's close.  
I would say maybe they are because they are tracking the phones are in there. I don't know, to be honest.  
I only use Google Maps to know how to go or which buses to take.

R5  
I just used Google Maps.  
At first I would say to somehow get familiar to the system and then after a couple of weeks when I know which station is where.  
I didn't even load it up the routes that I already knew.  
So for my daily commute to university, I was just going to the subway station.  
So I wasn't really in need of looking up some schedules or something.  
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I think even the TTC is advertising that you should use Google Maps for any similar service to plan your trips.

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R1  
I was very pleasantly surprised by the light buses that had a stop near my dorm. So there was no need to walk a lot at night.

R2  
Not that I can remember.

R3  
For a memorable experience, I like the metro that I used. It's very new. It was only built like a few months before I arrived in Malaga, so it was very clean. You know, it felt safe and everything was, you knew where you were going. There was a good like signs that told you what stations coming up.

there wasn't enough staffing, electronic tables that always showed you how long it will be to the next stop and arrival.

And so, it's just very modern.

R5  
(positive)  
So in Toronto, you can take your bike with any public transport, so any every bus has a bike rack in front of it.  
Any subway station and Street car, will allow you to take a bike on it.  
And that's just like such a huge advantage.  
I often also just commuted to another station with my bike and then went from there on by bike or once.  
We also did a trip to another town and just racked our bikes in front of the bus.  
That's really good.  
So that's a huge advantage of Toronto public transport.

There are free bike repair kits where you have a bike pump.

You have a couple of tools that are, um, tango to the to the wall, but you can use them and I often use them since I was the longer there and don't have my own tools.  
If I had a problem with my bike, I was often going to public transport stations and repairing my bike with the tools from there.

(negative)

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Basically, they often go together with people on drugs just sitting in the subway or people misbehaving.

I don't know.  
Crying, listening to super loud music and rapping weird stuff.  
Or yes.  
So I would say, but that's not really related to public transport I think that's basically related more to city policy. How to deal with drug addicts.

So there is a safe app where you can report problems about such people with the station and then some people come and look after them.

Based on your experience in Germany, what surprised you about using public transport in (positively/negatively)?

R1  
I was surprised that it was so much more reliable, ppppp and more punctual than German public transport.

R2  
I was surprised that the stop button is used in transport to require a stop.  
Despite the fact that in Belarus there was also such a button in transport, however, it was not used at all and the transport stopped at every stop.  
Also, often, ppppp the electronic timetable says that the transport will arrive in a minute, in fact you wait more than 1 minute.

R3  
I think there are some differences compared to Germany because in Germany you can often use the metro or the buses just based on because they trust you. You don't have to show a ticket.  
Sometimes there's someone who checks. If you have a ticket but not always, and in Malaga you always must have a ticket ppppp to be able to enter the metro. Sometimes there are these doors that only open if you hold it there and in the bus you always have to show it to the bus driver and scan it. So that's the difference.  
And one thing that's surprising that I don't think happens in Germany, in Malaga or in Spain, if you're waiting at the bus station and pass by yourself or just in general, you have to wave at the bus driver for otherwise they don't stop.

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I think in Germany it's not that case, but you really must make it clear. I want to get onto your bus. And I once I didn't get onto the bus because I was on my phone and I thought, well, we'll just stop in front of me.

R4

that you have to. If you don't have a card or something, you have to buy the ticket and it takes time. So you literally stop the bus while you're doing that.

And then, uh, I think that it's a bit slow.

Not only for me, but also for people who visited me is the thing about that you actually have to show your ticket to get in the train in Germany.

I just think like that would never work in Mexico like even though we cannot get into, for example, the subway without.

Putting in your card in front of a scanner.

These even people who actually managed to jump the things that the metal things that there are to yeah and get there. So that is really, really.

Having this.

Technology or yeah, the screens where you actually know when everything is coming. That was also really, really for really good. That was a good impression.

R5

I would say also it's like there was not much surprises, it was pretty much like you see it or from the look and feel it was pretty much like you know it from some American movies like this huge metal subways that have their own look and feel.

Is there anything else you would like to mention? Experiences someone told you about?

R1

No

R2

In Belarus Google maps are not usually used. Instead people use Yandex maps, which is the Russian equivalent of Google maps. This application is more accurate, as it is widely used and updated data is uploaded there, including transport and its movement.

christoph.peterhein ...

Ticket  
Less efficient to buy tickets from the driver  
Waiting queues  
To New York, too

Antworsten

christoph.peterhein ...

Controlling  
No real barriers to enter a train

Antworsten

christoph.peterhein ...

Controlling  
Jumping barriers  
Use without paying

Antworsten

christoph.peterhein ...

Information  
Electronic time tables

Antworsten

christoph.peterhein ...

Subway  
Lock and feel

Antworsten

christoph.peterhein ...

Reliance on Tech  
Alternativ to Google Maps depending on state

Antworsten

There is also a payment application, however, for ground transportation. I have not used this application, but usually buses have a QR code that is used for payment. There is also an option in the application itself to choose the transport you boarded and pay for the ticket.

R3

Well, one time what I was talking about earlier was only like inside of the same city. When you want to go to another city, there are some trains which this time I didn't use, I remember.

UM, maybe that's worth mentioning. It is still more convenient to rent a car for some cases. You know, if you want to go to certain cities that are nearby, it should be possible to go by train, but it's still just so much easier by car.

And then one time we took a bus like it's supposed to a Fix bus. I guess to a nearby city and then on the way back.

We I think they only came like once an hour and there were so many people waiting there, there. Like when you wanted to get onto the bus, bus, people were pushing each other and trying to get onto the bus because nobody wanted.

To wait another hour.

So there was kind of interesting negative experience, you know, for these long distance buses. They do have those some of them have this thing in the middle. You mean the flexibility? But they have a lot of.

And then they have tries to go to cities on the beach side. But I didn't use those.

When my friends and family visited me, they didn't want to buy this monthly ticket for 15, so they just they could use their credit card and they just held it against the sensor and it would book €1.42 for each ride of their credit card, which is very, it's very convenient and easy to do.

However, my friend when she used it, the bus company, they booked €20 of her account. Like UM, they didn't book it, but they reserved it. She was scared about it because it can be, I think I agree as well. It can be scary to just hold your card against something not knowing, not seeing the number that it takes off.

So I guess it might be a bit risky if you have all your money on your card and you just hold it against some scanning device not knowing how much money it takes off.

So I guess that was also a bit negative that it reserves more money than it will actually remove from your bank account.

R4

Definitely using these buses are not like.

Really, it's because I don't know how to explain, but there are buses that are more,

just ruled by themselves, they're still public transportation, but they ruled by themselves so.

It's like a more like a company, it's kind of regulated or allowed by the government.

christoph.peterhein ...

Ticket  
Reliance on Tech  
Payment while sitting already on the bus

Antworsten

christoph.peterhein ...

PT Fines

Antworsten

christoph.peterhein ...

Ticket  
Contactless payment  
Pay with credit card single trip

Antworsten

christoph.peterhein ...

Ticket  
Credit Card  
Unknown amounts - Scanner should show

Antworsten

christoph.peterhein ...

Independent PT with the Van's Combi

Antworsten

Oh, they would. I mean, they are just like a car or something. So you will never know where you are or the station where you are many have no official route or timetable information available.

Some allow riders to get on and off wherever they need to, while others use formal bus stops. Usually they take advantage of them, which is really, really.

But I would say that thing about not knowing where they are or their stop.

R5

Yeah, I've been to New York.

I would say New York is more comparable to Munich.

So in New York, you basically have way more subway lines since it is, in my opinion, way better connected than Toronto.

It's funny when I talked about public transport in Canada with a couple of people, a lot of people are telling me that Toronto is still one with the best public transport within North America,

which was quite surprising because for me it was not that well connected.

I'm not sure if this counts too, so if we talk about public transport between cities, you know here in Canada between cities means that they are large distances.

So basically if you want to go from, let's say Toronto to Ottawa, which is the nearest big city, it's probably a 6 hour drive.

There are some fix busses.

They are quite convenient if you go from east of Toronto.

If you go West of Toronto, there are really big long-distance busses or there are only some that are super expensive where you where it's cheaper to rent a car and go by the car.

There is a train that is connecting Toronto to Vancouver.

I also took this one and but it is also pretty expensive.

So in that case the plane is usually cheaper and also more convenient because it's not that far and not that long or same far but not that long in terms of hours.

So I would say Speaking of North America, yeah, or what I experienced from Canada and a little bit of New York, I experienced.

It is pretty much a car land and the cities are also completely tailored to car detail that from the city structure you see they are not really big zones like we know from European towns, you can go anywhere by car and it's usually the fastest and most convenient way to go by car rather than like public transport.

And I'm not sure if people here want to change it. I have the feeling that a lot of people here like their cars and the way it is and they don't want to have bad effects from maybe expanding public transport and closing down car lanes or something.

christoph.peterhein ...

Van's  
Information

Antworsten

christoph.peterhein ...

Van's  
No information for passengers (foreigners)  
Where are the stops?

Antworsten

christoph.peterhein ...

North America as Car Land  
Not enough PT options, routes

Antworsten

So I don't think that it's in near future an American city like Toronto will become something like Copenhagen or Amsterdam, where you basically can reach everything by public transport. Bike too.

So I knew all of the public transport it is basically bus, street, car and subway.

I know that there is a huge bike rental system in Toronto which is like it was told to me that it's super cheap that you pay something like 50\$ per year to rent these bikes.

And then you can drive as much as you want.

So that's quite cool, but I've never done this.

There's also some ferries in Toronto to get to the islands or to get to the big public airport on a big island, or to connect some islands.

christoph.peterhein ...

PT addition Bikes for rent  
Rentations at a lot of places

Antworsten