

I. Introduction

Transportation planning is an ever expanding field that encompasses the movement of humans all over the world. In order to make sure that we can continue to grow ridership with limited resources on transit systems all over the world, an attention to design and User Experience (UX) is needed. These networks are on the frontlines of interacting with many types of people and thought must be put into their use in order for the overall system to function well.

For this paper, I will be focusing on the UX aspects of Bus Transit and how those elements can be changed in order to promote increased ridership and more efficiency. For the purpose of this paper, a trip has been divided into four parts. The first is the pre-trip communication and station design. Followed by the fare payment and boarding procedure onto the bus. Then we will look at factors facing riders while they are on the trip. Finally, the continuation of a commute after leaving the bus will be discussed. Well executed examples of some aspects will be presented throughout each section.

As background, there are three types of riders that utilize bus transit: Experienced, Occasional, and the Tourist. The transportation planner must account for all three when designing aspects of the system in order to provide high accessibility. This high accessibility limits the barrier of entry for people and will lead to increased ridership. So in this regard, there is not a singular perspective to analyze the UX of a bus transit component against, but three or more.

II. Pre-Boarding Experience

Before a rider boards a bus, there are many interactions they encounter. The first of which is knowing when the bus will arrive and where. Scheduling is a major thing for Transit

Agencies to figure out. They must ask questions such as how frequently will a certain number of buses be able to service a station along a particular route? What time will bus service begin during the week versus on the weekends? Once these schedules are in place, how they are communicated to the public and how accurate they are are key UX elements. Dependability is a huge characteristic to have for a bus transit system and can alleviate the stressors that come from late buses. For users to be able to accurately time their travel to the bus stop and when their bus will reach their destination is paramount to their trip planning. If this is accurate, then it can influence a riders decision for a bus trip versus taking their car. The user is giving up almost all of their control when embarking on public transit so being able to give them some control and knowledge back through accurate and on-time schedules will grow ridership.

Communication of these schedules can occur in two main ways. The first of which being through signage at bus stations or terminals (Liu, 2011). The second, and currently a growing norm, is through a rider's cell phone. Whether that is through an app that is meant to track a bus and estimate time-to-stop, or simply accessing the basic timetable schedule through a web browser, use of the mobile device should be something that Transit Agencies should focus on. Through the use of GPS trackers on buses, and the common GTFS feed system, countless apps have been built to provide transit data in various forms. Being able to actively track buses along the route and understand when you need to leave in order to meet its arrival is one of the best ways to provide confidence in a riders journey and their ability to use public transit, especially buses. For other forms of transportation such as trains, the schedules are usually very accurate so there is less need for this GPS tracking feature.

The design and functionality at the individual bus stop is another huge factor in the

experience for riders (Fitzpatrick, 1997). In a perfect world, the scheduling would be accurate so wait times would be limited, but in the event that a bus system falls behind or cannot perfect the schedule, waiting for the bus should not be an uncomfortable or confusing experience.

III. Boarding Experience

Once the bus arrives at the station, the boarding and fare collection system is a major bottleneck to the overall time it takes for a bus to complete a route. The clear communication of the price of fare and what forms of payment that are accepted is key for a smooth fare payment process. This is one of the most important pieces of the system that impacts the different types of riders. For the Tourist and Occasional riders, this is one of the most stressful points and can cause the most hold-up in the boarding of the bus. Understanding how much a ride costs and the types of payment accepted are extremely important for these riders so communicating it well before they board and providing options can make for an efficient fare payment experience (Tirachini, 2011).

For the City of Seattle's bus transit system, RFID cards are used as the payment type and allow for a quick swipe for a passenger to board. There is also the option for exact change cash payment but the majority of passengers take advantage of the speed for the RFID card. This card is also used on their light rail system which makes it great for patrons to use.

Another aspect of the boarding experience that is important to consider is the built environment and bus technology. This comes down to the height of the bus in relation to the street or sidewalk surface. Either the station can be designed in such a way that the door of the bus aligns for a seamless entrance or the bus can be outfitted with hydraulics that can raise and lower the height of the front of the bus. Extendable wheelchair ramps are another way to provide

accessibility to disabled patrons that depend on public transportation as their main form of mobility.

IV. On Route

Within the bus, access to seating and the types of seating available will help create a more comforting ride for all passengers. Individual seating, group seating, handicap accessible seating and which directions those seats face are questions that need to be addressed when transit agencies procure a bus to service their routes. Hand holds and the placement of poles for passengers choosing to stand when the bus is at high capacity is also a big consideration. If the passengers are not given the chance to be stable while they ride, then the driver is forced to take turns slower and allow for more braking distance. This will influence the trip time and speed of the bus.

In terms of information that is displayed within the bus, there are different ways for the next stop announcements to be displayed. Whether they are audio or visual cues, it is critical for riders that don't know the route or

city to know when their stop is approaching. Missed stops can create very agitated passengers because their overall commute can be delayed. For the Milwaukee County Transit System, their system features both audio and visual cues. An

example of their next stop announcement system can be seen above (Milwaukee County Transit

Stop Announcement System Display

A display screen similar to the one below will be at the front of the bus. Some buses will have a second lighted sign in the middle of the bus attached to the ceiling. Each sign will have two lines of information as pictured below.

A checkmark will appear here if the upcoming stop has been requested.

Next Stop Name



Current time

System, 2016).

To further promote ridership in more daily tasks. I think that more attention to stowage of items would be greatly appreciated by passengers. For someone to go grocery shopping via the bus then they might struggle with managing all of the loose bags in a crowded bus. Underseat storage or specialty containers or bags that could incorporate seamlessly with the bus would be a great addition to promote more frequent use of the bus in day-to-day errands.

V. Departure/Transfer

Once the rider knows that their stop is approaching, making it simple for people to signal a request to stop at the next station should be seamless and within easy reach of the rider's position. This has been a widely adopted element and is available in most buses. In the time before these signals, it might have been tough for riders to audibly tell the driver that they would like the next stop. This seamless integration of buttons or pull cords is a great aspect of the riding experience and even allows for more data points to be collected.

As the bus comes to the stop, a passenger's exit of the bus should be seamless and require minimal effort. Adequate space in the main bus area for riders to maneuver around one another and a specified "Exit Only" door in the rear of the bus eases a rider's exit. A similar approach to the ride height and distance to curb needs to be taken into account as stated before.

Any transfer to another bus or form of public transit is another aspect that can aid a rider's experience on the bus. If they are met with confusion as they step into the new stop then the bus has not fully completed its job of getting a rider to its destination. Proper wayfinding information and a welcoming infrastructure are great ways to aid in this transportation transfer or navigation to their final destination. Trips from origin to their destination are taken into account

holistically, so the experience of riding the bus does not once they depart the bus. The travel to and from the bus stop must be taken into account and can be limiting factors for people that want to ride the bus. The choice to ride the car will become more attractive if their “last mile” experience requires a .5 mile walk uphill on a poorly maintained sidewalk (Stradling, 2007). Having adequate station placement close to popular points of interest and with welcoming infrastructure that makes for a pleasant experience is a great way to complement a fleet of buses.

VI. Conclusion

Interactions		Phases of Trip			
		Pre-Boarding	Boarding	On Route	Departure/ Transfer
Rider	Rider	✓	✓	✓	✓
	Bus Operator		✓	✓	✓
	Fare Payment Device		✓		
	Station	✓	✓		✓
	Bus		✓	✓	✓
	Passing Citizens	✓	✓	✓	✓

The table above summarizes the interactions and actors at play for many parts of a bus trip. The aspects of a simple bus trip might seem overwhelming when you begin to look closely at the experiences of a rider. But not all need to be addressed or improved at once to help a bus network. Each are very influential than they might make out to be. So by transit agencies implementing changes a few at a time that is within their budget, they can make great strides in creating a better system for all patrons.

Works Cited

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