

Customer Loyalty in Two Sided Markets : Rider Multihoming in the United States Rideshare Market

Daniel X. Valderrama, Bruce G. Cameron

ABSTRACT

Ridesharing services experience substantial multihoming on both sides of the platform (drivers and riders). With many riders checking multiple services, the services appear to suffer from a combination of a lack of differentiation as well as low multihoming costs. What factors drive satisfaction and customer loyalty in these markets, specifically the likelihood of singlehoming, has not yet been well established. Through a survey of 430 riders, we examine which demographics and use frequency are most closely associated with multihoming. Using a categorization of potential incentives for singlehoming, we show that that network bridging strategies (such as American Express and Lyft) may have an impact in reducing the prevalence of multihoming among riders. In-App Promotions and Incentive-based strategies, meanwhile, have shown to have the opposite results, showing an increased tendency to multihome in riders that utilize them.

1 INTRODUCTION

Since Lyft and UberX entered into the US market with their transportation platforms, they have significantly altered the way many in the US fulfill their transportation needs, and increasingly, how cities plan their development and transportation networks (Hasselwander et al., 2022). As both companies have expanded, they have successfully spurred the rapid growth of the ridesharing market from their Silicon Valley roots in 2012. In 2015, 15% of American adults used ridesharing as a means of transportation. By 2018, the percentage more than doubled, rising to 36% (Statista, 2020). US rideshare rides, now totaling around 2 billion rides per year, has increased at a compounding annual rate of 150% since 2013. Along with this, average ride distance has also increased, growing an average of 3-5% annually (Baltic, Troy et al., 2019).

In the case of both Uber and Lyft, network effects from their two-sided markets are central to the transportation value they provide. The more riders participate, the greater the incentive for new drivers to join the platform, and in turn, the greater the availability of rides (Lygnerud & Nilsson, 2021). There are clear limits to network effects, including congestion and market saturation, but in a duopoly structure, both players see market share as a proxy for later profitability.

Five of the six most valuable companies by market capitalization in the world revolve around their industry platform businesses (Yoffie et al., 2019). Microsoft, Alphabet, Apple, Amazon, Facebook, Alibaba, etc. all are businesses that rely (to varying degrees) on a two sided platform strategy. Between 60 and 70 percent of the current and former ‘unicorns’ (companies valued at \$1 billion or more) relied on a platform business model for a large portion of their business (Cusumano et al., 2019).

Rideshare companies have sought to follow these models as pathways to profitability. Despite such a large and quickly growing market with massive user demand, Uber and Lyft struggle with profitability. Uber recorded a \$1.1 billion loss in its 2019 Q4 earnings, adding to a total loss of \$8.5 billion for the year (Kerr, 2020). There are many reasons for these losses: management decisions to prioritize national or global growth over profit, diversification in side verticals (self-driving technology, food delivery, Uber Elevate, etc.), and a non-streamlined administrative structure. But, their core business of rideshare has several factors that play into these losses as well, including scaling costs with driver acquisitions, core platform insurance, marketing efforts, regulations, and others.

One major factor – exasperated by the previous costs – is the tight competition to attract and retain drivers and riders on the platforms. With multihoming (users using multiple comparable services) being so prevalent on both sides (riders and drivers) of Uber’s and Lyft’s platforms, it becomes difficult for them to achieve profitability from their main businesses (Zhu & Iansiti, 2019). Often, drivers drive for both services, and riders also easily have access to multiple services. Both companies are competing on every ride and driving down revenues collected to incentivize drivers and riders to stay on their service. This leaves little room for Uber or Lyft to raise prices on riders, or increase take rates on drivers (Knowledge at Wharton, 2019). Any company that attempts to extract more revenue from either side of the platform risks losing market share to its rival. Lyft experienced this in 2015, when it refused to lower its prices after Uber did so, and subsequently lost market share (Solomon, 2016).

In light of the rideshare industry’s difficulty in reducing multihoming between services on both sides of their platforms, this paper sought to better understand and focus in on the rider side of the

platform. As shown in several of the reviewed literatures, buyers more so than sellers are normally the side that gets locked in on successful platforms, as sellers are more likely to seek out buyers wherever they are. As such, focusing in on the motivations of riders to prefer a service, to multihome, and also to not multihome, are extremely valuable in understanding what strategies should be taken to reduce their multihoming. We posed the following research questions to gain insights on rider preferences and habits with regards to multihoming, and which strategies might be effective to reduce rider multihoming.

*Q1: Which factors play a role in determining the rideshare service of preference amongst riders?
Q2: Which attributes contribute to riders multihoming between ridesharing services? Which attributes contribute to riders singlehoming?*

We first present a literature review that delves into previous studies around platform strategy, two-sided markets, multihoming, and rideshare competition. Through the foundational interviews and an in-depth qualitative survey, this paper then seeks to describe the reasons why riders multihome or singlehome, what preferences lead them to prefer one service over another, and which attributes motivate them to switch between services when looking for a ride.

2 LITERATURE REVIEW

2.1 Industry Platforms

Industry Platforms provide “a foundation that connects individuals and organizations for a common purpose or to share a common resource” (Cusumano et al., 2019). Most platforms must accomplish three core elements. Platforms are often characterized as having ‘network effects’ which serve to provide greater value to user sets as the size of the network grows as well as greater barriers to entry to competitors. Platforms must connect or bring together multiple sides of users, whether it’s a two-sided (such as Amazon.com), or a multi-sided market (such as Facebook). And finally, in order to achieve the network effects, the platform must solve the ‘chicken and egg problem’ (Cusumano et al., 2019).

2.1.1 Network Effects

Network effects generally come in two forms: direct (or same-side) network effects occur where the actions of users on one side of a platform impacts the value of platform to the rest of the users on the same side of the platform (Solheim & Tovsen, 2017); indirect (or cross-side) network effects occur when one set of users obtains more value in a platform by the increased presence of a separate set of users (Caillaud & Jullien, 2003; Eisenmann et al., 2006; Evans & Schmalensee, 2010). Rideshare services benefit from indirect network effects. Additional riders do not directly benefit other riders, nor do additional drivers directly benefit other drivers. A prospective rider gains increased value in a service when there is an increase in the number of drivers on the other side of the platform, as they're likely to get a ride quicker. Vice versa, drivers gain value in the platform as more riders join the on the other side of the platform, as they get more opportunities to get paid. More riders on the service attracts more drivers, and the increase in drivers attracts more riders, in a reinforcing loop.

2.2 Strategies for winning a platform war

Many platform markets lead to winner-take-all or winner-take-most outcomes, as network effects tend to provide one clear winner over time once it achieves critical mass (Eisenmann et al., 2006; Solheim & Tovsen, 2017). Platforms that can capitalize on the positive network effects by attracting and retaining the best users, can often feed a positive cycle of increased users and value. As more users flock to that platform, competing platforms may lose users, thereby, quickly diminishing the value of the competing service and causing more users to leave. Over time, a clear leader emerges that continues to further grow from its success (Eisenmann et al., 2006). Platform leaders can eventually leverage higher margins, invest more heavily in R&D, and provide increasingly superior service than its competitors at scale (Eisenmann et al., 2006). In these situations, platforms seek to become the clear platform leader and 'tip' the market in their direction. Examples of platforms that have successfully tipped their markets in the past are: Facebook in social, Google in online search, and Android in smartphone operating systems. Once the market is tipped, the existing network effects stand as a strong barrier to entry (Solheim & Tovsen, 2017).

Tipping is when a firm wins a platform war by building and maximizing market momentum (Eisenmann et al., 2006; Gawer & Cusumano, 2008). There are multiple strategies towards tipping

a market, which include: providing more incentives to complementors (developers that create complementary products for a platform) than competitors, creating a coalition of competitors, using pricing or subsidy mechanisms to overwhelmingly bring a set of users the platform, or courting ‘marquee’ users (Eisenmann et al., 2006; Gawer & Cusumano, 2008).

In multi-sided markets, this often presents a “chicken and the egg” problem, whereby the platform intermediary needs both a larger number of suppliers to attract buyers, and a large base of buyers to attract sellers at the same time (Caillaud & Jullien, 2003; Jia et al., 2019). Usually the goal is to attract one side of the market through incentives or subsidies, that will achieve a critical mass to bring along the second (or third) side of the market – and then charge those sides (Caillaud & Jullien, 2003; Jia et al., 2019). Understanding which side (or sides) to focus on first is a vital decision for a company seeking to seed and tip the platform.

Finally, just because a platform achieves momentum in gaining users, does not mean that the users have a high cost to reverse their platform decision (switching cost), and move to another (Evans & Schmalensee, 2010). Evans and Schmalensee discuss that success or failure depends on “both the value that the platform brings to participants as well as the steps that platform entrepreneurs take early on to push adoption past the critical mass frontier.” Friendster was a popular social media network, until its users fled after dissatisfaction, and flocked to Myspace (Evans & Schmalensee, 2010). Myspace, which had 75.9 million users in 2008, would quickly lose those users to Facebook within a short couple of years (Gillette, 2011). In 2019, Myspace had 8 million monthly active users compared to Facebooks 2.5 billion (Armstrong, Martin, 2019; Statista, 2019).

2.3 Threats to platform market dominance

Although a leading platform would benefit greatly from tipping a market, there are some factors that go against a platform’s ability to experience a winner-take-all market. According to Cusumano (2019), the major threats to platform market dominance are multihoming tendencies (in what way or how often users choose to multihome), ability to have differentiation in services and rapid technological advancement (Cusumano et al., 2019). Solheim and Tovsen share a similar perspective arguing that the three components that determine whether a market will tip and produce

a winner-take-all, or winner-take-most scenario are: (1) high multihoming or switching costs, (2) a lack of ability to differentiate, and (3) economies of scale (Solheim & Tovsen, 2017).

For ridesharing platforms, past research has suggested that it is difficult for a service to differentiate outside of price or the liquidity of drivers on the platform (Thompson, 2014). Since the primary need is relatively simple – getting from point A to point B – being able to create a differentiated service to satisfy a segment is difficult. Additionally, economies of scale are present in the industry. As a company grows, its administrative costs consolidate and increased buying power allows it to negotiate better rates, becoming more cost competitive. Both of these factors point toward an eventual winner-take-all outcome. Critically missing from the rideshare industry, however, are high multihoming costs on either side of the platform, so far preventing a true winner-take-all scenario from materializing.

2.4 Multihoming

Multihoming is the decision of a user in a network to utilize more than one platform or source to receive the same product or service (Jia et al., 2019). Multihoming could occur on one side of the platform, or it could occur on both sides of the platform. The opposite of multihoming is ‘Single-homing,’ where an agent in a network only utilizes a single platform or source for a service. Some viewers could decide to subscribe to only Netflix, while content providers provide their shows on Netflix, Amazon Prime, and Hulu.

One factor that leads to multihoming is the benefit of multihoming to a particular user set or multiple user sets. This can be defined by the amount of benefit or user-value gained by using multiple services. The benefits differ from platform to platform, and can be a mix of benefits ranging from monetary, expanded choice, availability (reduced interaction failure), or time. Buyers could find that they can achieve increased excess consumer surplus by choosing to multihome (Belleflamme & Peitz, 2019).

2.4.1 Costs of Multihoming

Multihoming costs are the costs associated with using multiple similar platforms or services (Solheim & Tovsen, 2017). These costs could be monetary (such as paying multiple subscription fees for streaming services, or purchasing multiple gaming consoles) time and effort (downloading multiple apps and checking prices between all services), or psychological (having multiple apps cluttering your phone, increasing frustration or anxiety from more decision-making). When the perceived benefits of multihoming outweigh the perceived costs, platform users are more motivated to multihome. Similarly, if the perceived multihoming costs are greater than the total perceived benefit of multihoming, participants will choose to singlehome (Eisenmann et al., 2006). These costs can be different to the groups on each side of the platform, and can lead to different decisions on whether or not to multihome or singlehome for each side.

Though they share many similarities, multihoming costs are distinct from switching costs. Switching costs are the costs associated with leaving one platform or service, and completely switching to another (Solheim & Tovsen, 2017). These costs can also be characterized as monetary (paying a fee to break a mobile phone contract to switch carriers), time and effort (transferring all of your data from one cloud service to another rival service), and psychological (losing your photos and memories from several years changing social media platforms). If the benefit to switch services or a platform is higher than the perceived switching costs, it is likely that a user will switch to the other service or platform. If the switching costs are higher than the benefit of switching, users will tend to stay with their current service or platform (Hagiu, 2014).

2.4.2 Methods to reduce Multihoming

Successful strategies against multihoming have been used in several industries over time (Choi & Jeon, 2018; Zhu & Iansiti, 2019). The console game industry utilizes contracts of exclusivity to lock in marquee suppliers to increase differentiation, in conjunction with higher-priced consoles (higher multihoming costs) to reduce the chances of customers multihoming. Airlines differentiate their flights through onboard amenities and service, as well as loyalty incentive programs to reduce the value for flyers to take other airlines. Amazon combines a loyalty program (Prime), with network bridging (free delivery, streaming, music, Kindle, Alexa, etc.) to increase the perceived

value of making that site the first place to shop online. The key to these companies and industries have been in finding a way to differentiate, or to construct higher costs to multihoming (or both).

The ridesharing industry has so far, found it difficult to do either. Its service, transportation, is simple and currently difficult to differentiate outside of price and supply of drivers (De Miguel Molina et al., 2021). Second, the cost to multihome is not necessarily very high, as instead of a console one has to purchase, riders can download an app for free. The combination of the two, both reduces the unique value of a service to a specific rider, and also fails to disincentivize that rider from seeking rides elsewhere – leading to an undifferentiated and commoditized industry.

2.5 Multihoming and Network Effects in Ridesharing Platforms

Ridesharing firms such as Uber and Lyft are two-sided platforms that serve as matchmaking intermediaries between two user groups: riders and drivers. This match-making service provides value to both sides and attracts users to join with the use of pricing and liquidity. Riders generally tend to value an affordably priced ride with a low wait time – i.e. drivers available to pick them up quickly (Akbari et al., 2021). Drivers also find value in having a large supply of riders available to have less downtime between rides, maximizing their time to make revenue (Bryan & Gans, 2019).

A study comparing taxi drivers in NYC and San Francisco with Uber and Lyft drivers, found that taxi drivers had a median idle time of 10 minutes between rides, while Uber and Lyft had a median idle time of about 1 minute (Jiang et al., 2018). This lower idle time and higher utilization rates of drivers in ridesharing over that of taxi drivers, can be attributed to the following factors. First, the technological efficiency of Uber's and Lyft's matchmaking applications allow for drivers to find in-demand riders quicker than a radio-supported taxi – sometimes even getting assigned their next ride before finishing their existing ride. Second, the scale of the driver networks of Uber and Lyft, allow for more drivers to be closer to all rider demand, and more of their signs visible to stimulate demand. Third, inefficient taxi regulations that limit the number of medallions available, or specify required service in all areas – even those that might not have high demand. Finally, dynamic

pricing allows the ridesharing platforms to better manage supply and demand (Cramer & Krueger, 2016).

2.5.1 Multihoming Tendencies

In the ridesharing market, multihoming is seen to occur on both sides of the platform. Riders will often switch between multiple services before choosing a ride, or hit a threshold that compels them to look away from their first source of rideshare. The benefits riders can achieve from multihoming are the ability to find the cheapest fare, the quickest pick up time, or the quickest overall time to get to their destination (Harvard Business School, 2015). These benefits generally increase if the supply of drivers is less stable across platforms. The monetary costs for these riders are zero, as it costs nothing to download and use multiple apps (Harvard Business School, 2015). Other less measurable multihoming costs are time and effort to check between applications, as well as psychological burden involved with having a clutter of apps on a phone and extra decision making.

Brand loyalty has been shown to be relevant to singlehoming (Handayani, 2016), showing specifically that brand community social media (such as Twitter and Facebook) can influence behavioral loyalty (the likely of repurchasing services out of loyalty) in Indonesia. However, the authors have not examined specific tactics in the use of social media, nor do they examine what other attributes or tactics outside social media most strongly drive loyalty. In the Indonesian ridesharing market, brand image and service quality were shown to influence customer loyalty in a survey of 120 riders (Hasby et al., 2018). However, other potential contributors to customer loyalty such as rewards programs or third party partnerships were not evaluated. Further, the questions used to measure of loyalty are not specifically discussed, leaving open the question of whether the loyalty questions are representative of behavior. None of the existing studies in ridesharing multihoming examine what drives users to multihome.

Two studies looked into how multihoming tendencies on the rider side of the ridesharing platform affect the overall welfare of both riders and drivers. In a duopoly, multihoming riders can have a positive welfare effect on drivers, as they helped reduce idleness when they switched services in search for lower wait times (Bryan & Gans, 2019). Surprisingly, multihoming riders also can have a positive effect on singlehoming riders, as they are quicker to leave the system either once served

or if they opted for the competing service, reducing the wait times for the singlehoming rider (Loginova et al., 2022).

2.5.2 Strategies Employed to Reduce Multihoming

One of the best methods of reducing multihoming among users is to make the perceived *benefit* of multihoming be less than the perceived *cost* of multihoming (Eisenmann et al., 2006; Gawer & Cusumano, 2008). A clear strategy that is being taken up by Uber and Lyft is to try to create a benefit of singlehoming and thereby reduce the benefit of multihoming (Table 1). On the rider side of the platform, this can be seen in some of the incentives and partnerships that they have rolled out in the past couple of years. For Uber, a partnership with American Express has created a program that gives all American Express Platinum cardholders a credit of \$15 per month, and \$20 of credit in December (Uber, 2020). Lyft has partnered with Chase, to provide all cardholders with 5% rewards on all rides, and for the Chase Sapphire Reserve cardholders, 15% discount and 10x points on all rides taken with Lyft as part of a free year-long subscription to LyftPink (Lyft, 2020). Additionally, Lyft has struck a partnership with Delta Airlines, that provides all Delta Skymiles members with a matched Skymile for every dollar spent on Lyft (Lyft, 2020). These incentives and partnerships seek to make it become more beneficial for riders to continue to prioritize using their services, in order to receive the full benefits provided by these third-party vendors – thereby reducing the perceived value of multihoming, and enhancing the value of their network.

Uber and Lyft have also taken to expanding into selling ride credits to companies to provide as benefits to their employees. Each company involved negotiates a certain value of credit that they would like to provide to each of their employees. As their employees use the service, the rideshare service charges the company instead of the employee (Lawler, 2014). This encourages the employees of those targeted companies to use only that specific service, as their marginal cost to use rides with that service is near-zero until they spend over their company-provided credit limit (Lawler, 2014). This type of employee benefit has been used by other transportation industries in various cities, with some companies offering their employees discounts or credit for the city public transportation program. These have especially been used as parking space is limited or expensive to provide in cities (Manning, 2019). Offering rideshare credit can serve as a way for a company to cut costs or deal with parking constraints, while providing an increased employee experience.

Table 1. Uber's and Lyft's use of network-bridging, incentives, and exclusivity strategies to reduce rider multihoming

Uber & Lyft Strategies to Reduce Multihoming						
Companies	Network Bridging Strategies		Incentive-based Strategies			Exclusivity Strategy
	Third Party Partnerships	Company-provided Credits	Pricing	In-App Promotions	Loyalty Programs	Exclusive Contracts
Uber	AMEX Platinum monthly credits, Starwood Hotels, etc.	The Uber for Business program has sought to strike deals with various businesses to provide credits to their employees.	Both have sought to compete via price. Price fluctuations have shown ability to capture market share if rival does not follow.	Both offer discounts and deals - often based on frequency of use, rating, etc. Discounts are generally not continuous, and occur over time.	Uber Rewards: Each dollar spent earns you points, which allow you to upgrade your Rewards Class (blue, gold, platinum, diamond) which give increasing number of perks.	Not being utilized
Lyft	Chase Cards, Chase Sapphire Reserve, Delta Skymiles, Hilton Honors, etc.	The Lyft Business program has sought to strike deals with various businesses to provide credits to their employees.			Lyft Pink: Offers 15% off rides, ride priority, and other discounts over time.	

Although several strategies to reduce multihoming have been presented throughout the research (Choi & Jeon, 2018; Zhu & Iansiti, 2019), they have generally been successfully applied in industries that have room for differentiation, higher multihoming costs, or higher barriers to entry. Missing in much of the literature is how they have been effectively and sustainably used in undifferentiated markets with low multihoming costs – much like ridesharing.

The literature review reveals while the choice to multihome or singlehome can be organized as benefits and costs, but the set of factors that influence those benefits and costs are not yet complete as the theory is relatively thin. Further, whether this multihoming behavior is consistent across markets by an individual, or inconsistent, is not know. These gaps motivate an exploration of the factors that influence multihoming.

3 RESEARCH QUESTIONS AND METHODS

3.1 Rider surveys

Given the exploratory nature of the research question, the research method chosen was a exploratory survey. Surveys are appropriate for exploratory research (Kerlinger 1964), given that they can reveal important factors and can help prioritize future hypothesis testing (Dubin, 1978).

The framing for the survey was first examined through a set of rider semi-structured interviews (Valderamma, 2020) to inform survey design. Nine interviews were conducted, where an attempt was made to drive variation across income, gender, and geographic location within the US. Questions drawn from a questionnaire (Valderamma, 2020) probed the thought process that various riders use to determine whether to use a service, under which conditions to multihome, and what they prioritized the most in ridesharing services. As a result of the semi-structured interviews, questions on access to public transportation were added as were additional behavioral choices for multihoming reasoning.

The survey then dug in on an expansive set of segmented rider preferences and habits. Some topics that were tested included: frequency of use, number of services used, frequency of switching between services, what factors persuaded riders to singlehome vs multihome, tendencies to multihome with other applications outside of ridesharing, and more.

Each survey participant was asked a set of demographic questions, and then questions about their uses and preferences in ridesharing services. Over the course of one month, survey results were collected from 495 participants. 44% were paid respondents through the Qualtrics XM online panel. Participants were routed through the survey and segmented into two major segments of riders: singlehoming users and multihoming users. Multihoming users were further segmented into whether they always check between multiple services, and users that had a preferred service, but multihomed occasionally for various reasons.

The survey data was screened for completeness, failed criteria (e.g. not being a rideshare user), or quality issues (illogical responses: such as selecting multiple services but also claiming to use only one). After screening and data cleaning, 430 responses were accepted and analyzed.

The choice of including paid participants has an important limitations, in that it may skew the sampling of the respondent population behaviors, potentially towards lower income sampling. The resulting population is described in detail in the next section. It may also introduce quality issues, as in participants providing less-than-honest or less thought out responses, although some studies suggest survey incentives can improve data quality (Cole, 2015). To mitigate this effect, we

implement quality checks on the survey data as described above. In the authors' judgment, this tradeoff between sample size and biases introduced from paid respondents was worth the limitations that it introduces.

3.2 Respondent Population

The distribution of participants was nearly even among male and female participants (Figure 1). Income distribution was also fairly evenly spread, with the exception of a smaller representation from those that made \$135,000 - \$149,999. Out of the 20% of the sample that reported earning less than \$30,000 a year, nearly half were students. The income distribution skewed higher than the national average. The median salary from the survey, was between \$50,000-\$75,000 compared to the 2018 US median salary of \$33,706 (Federal Reserve Bank of St. Louis, 2018). Age group participation skewed more heavily than the US average towards younger age brackets, which is consistent within users of ridersharing services broadly. This is also apparent in the primary modes of transportation reported by survey takers, where private vehicles are seen to be used less than the national average (Figure 2). Those earning less than \$30,000 walked and took the bus in greater proportion than those of higher incomes (Figure 3). Those earning between \$30,000 and \$75,000 had the highest proportion using rideshare as their primary mode of transportation. Participants between the ages of 25 and 35 drove the least out of all other age groups, and used light-rail as a primary transportation source more so than other groups.

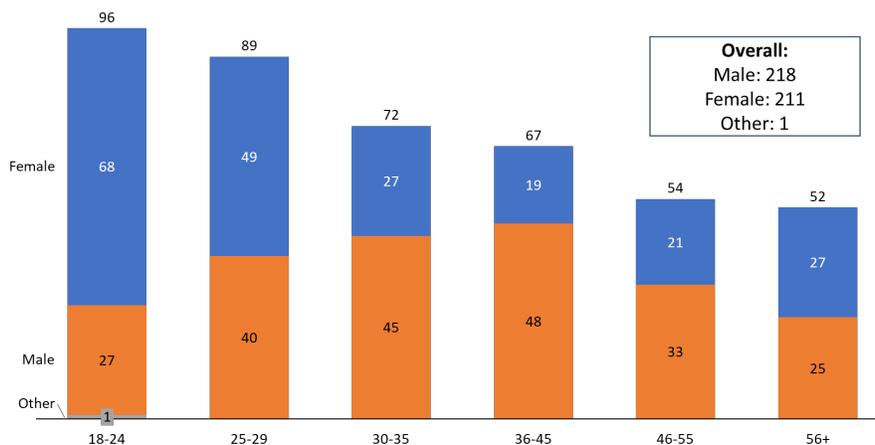


Figure 1. Distribution of gender across age groups

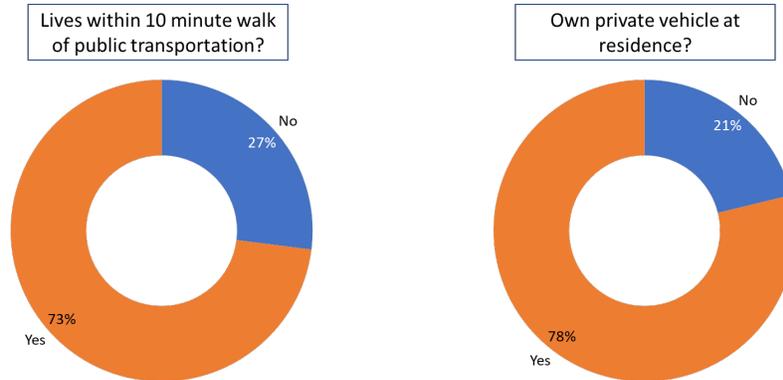


Figure 2. Proximity to public transportation and private vehicle ownership

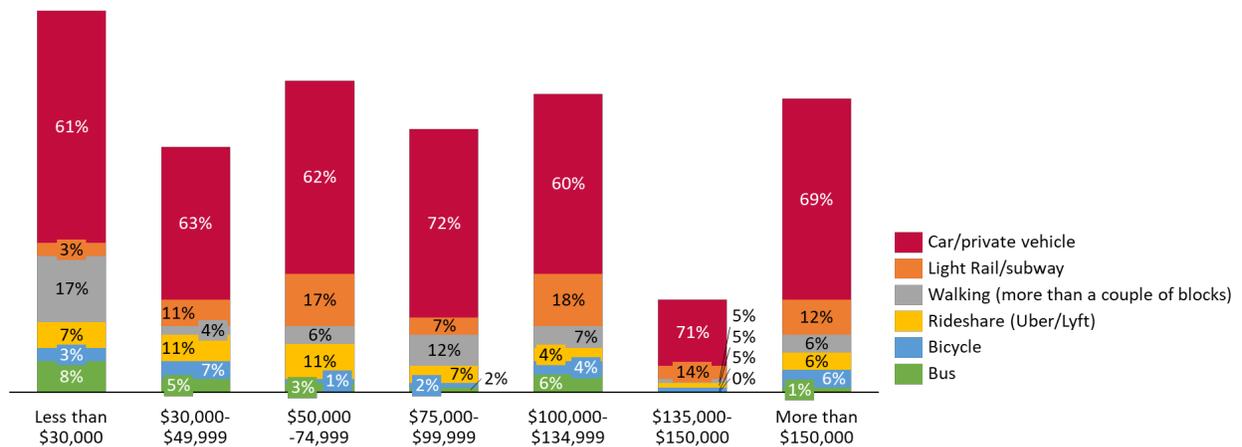


Figure 3. Primary mode of transportation across income brackets

4 FINDINGS

4.1 Insights from survey

Out of the 430 accepted responses in the survey, 68% claimed to multihome between multiple ridesharing services (Figure 4). These responses showed a larger disparity between Uber and Lyft for singlehoming users (Figure 5), but a smaller difference between services when comparing multihoming users, with 22% claiming to have no preference among the ridesharing services (Figure 6). The proportion of singlehoming users that use Uber (80%) was higher than their national market share of 69% (Gessner, 2020).

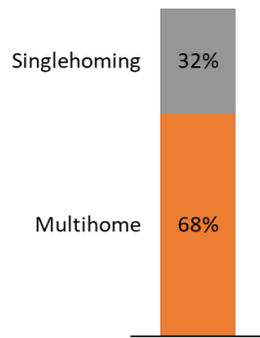


Figure 4. Proportion of multihoming and singlehoming responses

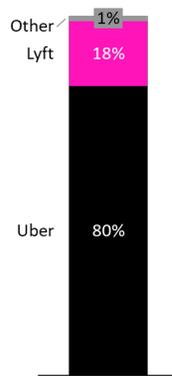


Figure 5. Services used by singlehoming responses

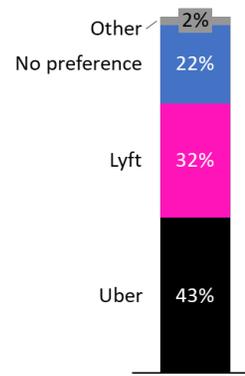


Figure 6. Preferred services of multihoming responses

A review of demographic and psychographic trends revealed a few interesting results. From the surveyed participants, it was found that the percentage of multihoming users within an income bracket generally increased as income levels increased (Figure 8). There were also some general trends that showed an increased level of singlehoming behavior the older the participants were (Figure 7). There was a slightly higher prevalence of multihoming by male riders compared to female riders (Figure 9), as well as riders who live a ten-minute walk from public transit (Figure 11). Another revealing trend found was a clear increase in the prevalence of multihoming with increased frequency of use of rideshare. For participants that used rideshare services less than monthly, 52% of them multihomed while 90% of participants multihomed that used rideshare services daily (Figure 10). A possible reason for this is that these riders, having used the services more, are more aware of fluctuations in pricing between the two. It could also be due to them being more sensitive to price, as the increased number of rides raises the total amount saved by multihoming. As rideshare companies try to increase the frequency of use within their current customer bases, it will be interesting to see if their struggle with multihoming riders increases as well.

Proximity to public transit was used as a proxy for living in a more urban area. A trend showed increased frequency of usage from those that lived within a 10-minute walk from public transit

(Table 2). As expected, a trend in the data shows that those who earn higher incomes tend to utilize ridesharing services at a higher frequency, while those younger also used rideshare in a higher frequency – especially those 18-35 .

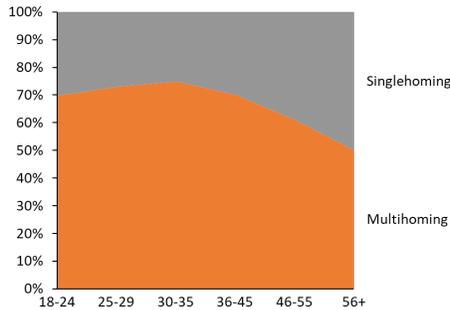


Figure 7. Multihoming by age

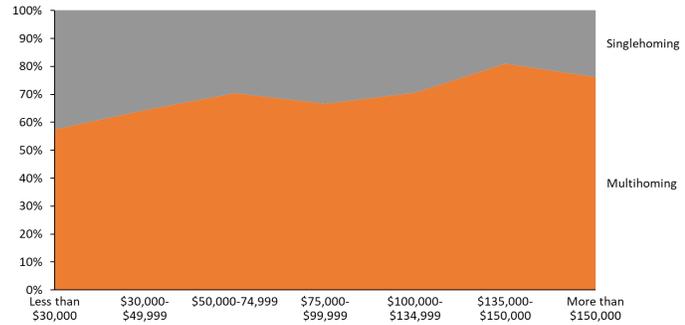


Figure 8. Multihoming by income

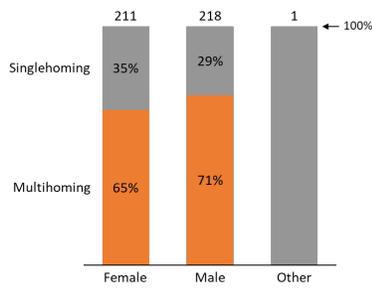


Figure 9. Multihoming by gender

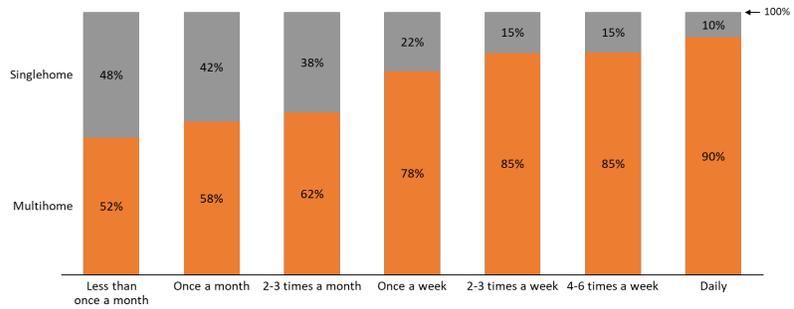


Figure 10. Multihoming by frequency of rideshare use

Table 2. Frequency of usage by proximity to public transit

	Frequency of usage - Proximity to Public Transit	
	No, I do not live within 10 minutes from public transportation	Yes, I live within 10 minutes from public transportation
Daily	3%	5%
4-6 times a week	6%	10%
2-3 times a week	9%	19%
Once a week	9%	12%
2-3 times a month	21%	20%
Once a month	12%	11%
Less than once a month	39%	21%

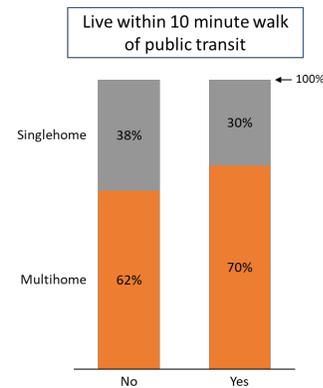


Figure 11. Multihoming by proximity to public transit

Results for Singlehoming and Multihoming riders

In identifying the attributes that impacted singlehoming service preferences, our surveyed participants were asked how much of an impact certain factors had on their decision to prefer a specific service over rivals (A great deal, a moderate amount, a little, not at all).

Table 3. Singlehoming and multihoming differences in factors impacting company preference

Factors influencing decision to prefer company	Singlehoming Riders	Multihoming Riders
Company Reputation	66%	65%
In-App Promotions	31%	58%
3rd Party Partnerships	27%	42%
Company-provided credit	27%	44%
Price being cheaper than rival	39%	74%
Wait time lower than rival	45%	67%
User Interface/App features	47%	42%
Safety Features	48%	47%

As seen in Table 3, for the surveyed singlehoming riders, Company Reputation had the greatest impact in their decisions to use a particular service. 61% of singlehoming Uber riders and 88% of Lyft riders claimed Company Reputation as having a moderate amount of impact or greater on their company decision. In-App promotions had a strong pull from Lyft users. The factor least claimed as having a great deal of impact were 3rd Party Partnerships and Company-provided Credits. This could be indicative of how few riders as a whole are being affected by these partnerships currently. Another possible cause could be a lack of searching for deals from those that only utilize one service.

Highlighting the lack of service differentiation seen by many multihoming riders, the most common important factor for service preference revolved around which they believed held the lowest Price and Wait Time. The least common important factors for multihoming users appeared to be User Interface/App Features and Safety Features, likely due to the similarities of both company's applications and features, and these multihoming users more regularly being immersed in both applications. Company Reputation still had a large amount of importance – especially for

Lyft users. For the Lyft riders this likely highlights the continued impact that Uber’s 2017 string of missteps has had on pushing customers to choose their rival, and perhaps not utilize their service at all.

A decomposition into the singlehoming and multihoming samples follows.

4.2 Singlehoming Sample

Q1: Which factors play a role in determining the rideshare service of preference amongst riders?

Table 4 summarizes the impacts that each factor had in influencing singlehoming riders to choose one service over the other. The percentages show those who chose each factor as having ‘a moderate amount’ or higher of impact. For Lyft riders, company reputation, by far, had the greatest impact for the vast majority of riders (88%). For Uber, company reputation had the highest number of riders claiming impact (61%), followed by user interface (52%). Company reputation remained the highest reported factor amongst all age groups and incomes of singlehoming riders. The \$135,000-\$150,000 income group, among singlehoming individuals, had too few participants to gather sufficient insights as to their preferences.

Table 4. Summary of impact each factor had in influencing decision to use each company

Singlehoming Population			
Factors influencing decision to prefer company	Total	Uber	Lyft
Company Reputation	66%	61%	88%
In-App Promotions	31%	28%	50%
3rd Party Partnerships	27%	29%	17%
Company-provided credit	27%	27%	33%
Price being cheaper than rival	39%	38%	48%
Wait time lower than rival	45%	45%	42%
User Interface/App features	47%	52%	25%
Safety Features	48%	50%	38%

Company Reputation had a large impact on preference. This level of importance in Uber may be linked to a variety of perceived factors, such as its disruptive technology reputation or it being a pioneer company, but the discrepancy between them and Lyft riders is stark. This could likely be due to the previous string of scandals and legal actions that Uber had experienced in 2017, as the #DeleteUber hashtag encouraged many riders to switch services.

In-App promotions (ride discounts) also had a large claimed impact on how many singlehoming riders selected their preferred service, with 52% of Uber riders reporting it as having a ‘A great deal’ of influence on their selection, along with 42% of Lyft riders surveyed.

Third party partnerships had a surprisingly very limited influence on singlehoming riders, as only 9% of Uber and 4% of Lyft riders reported it as having a ‘great deal of influence.’ The values including ‘A moderate amount’ fair somewhat better. This lower prevalence of importance on 3rd party partnerships (such as AMEX, Chase, Delta Airlines, etc), could be an indicator of how niche these targeted groups are that are being locked in through partnerships, and although they may be effective in changing behavior, they so far only reach a small percentage of the potential customer base.

Company-provided credits had a slightly larger impact than third party partnerships, but also remained low compared to Company Reputation, and In-app Promotions. This also likely experiences the similar niche group benefits of 3rd party partnerships, as users’ employers individually would need to determine whether or not to offer the benefit. This is especially more likely to be taken up by urban-based companies as less of their employees would drive to commute, and parking is more expensive.

Price showed a larger contributing factor to Lyft riders than Uber riders, with nearly a third of all singlehoming Lyft riders claiming it has having a great deal of impact on their decision to choose Lyft over rivals. In other research of reported pricing, evidence has not shown that Lyft is consistently cheaper than Uber. In fact, the cheaper service tends to vary from city to city, with Uber being cheaper, in general, in some cities, and Lyft in others. To add to the price variability by city, dynamic pricing is slightly different between services, and prices will fluctuate differently based off of the supply of drivers compared to rider demand (market thickness). This makes it increasingly difficult to identify a consistently cheaper option.

Wait Time was balanced between Uber and Lyft users in its impact on their decision to choose their current service. Lyft had 21% claiming it had a great deal of impact on their decision to

choose their service, compared to 18% for Uber users that participated. Less than half of respondents claimed wait time as having a moderate amount of impact or greater.

Q2: Which attributes contribute to riders multihoming between ridesharing services? Which attributes contribute to riders singlehoming?

To identify the attributes that encouraged singlehoming behavior, our surveyed participants were asked how much of an impact certain attributes had on their decision to only use one service (A great deal, a moderate amount, a little, not at all). Table 5 shows the percentage of total riders, as well as Uber and Lyft riders that found each factor to have a moderate amount or greater impact on their decision to singlehome. As a whole, the time and hassle to download and setup another service, as well as checking between multiple services had the highest proportion of riders claiming they impacted their decision to singlehome. Following these, the psychological cost factors (clutter of apps and stress of dealing with multiple apps) played the next largest amounts of impact on riders’ decisions to singlehome. The factor with the most impact on why Lyft users chose to singlehome was disliking the rival company, which is a sign that Uber’s reputation may have had a long-lasting impact on some riders’ decision to exclude them from their ridesharing usage.

Table 5. Summary of factor impacts on contributing to riders’ decision to singlehome

Factors Contributing to Singlehoming	Total	Uber	Lyft
Time and Hassle to download and set up another service	58%	61%	52%
Time and Hassle to check between multiple services	59%	63%	48%
Clutter of Apps on phone	52%	54%	48%
Stress of dealing with multiple apps	50%	51%	44%
Loyalty to a service	42%	40%	52%
Disliking the rival company	29%	18%	76%
Disliking the rival product/service provided	21%	17%	36%

When looking at singlehoming rates across age groups, those 56 and older showed the highest rate than any other group, with half choosing to singlehome. Looking at their most important factors for choosing to singlehome (Table 6), the time and hassle to download and set up the service, as well as to check between the multiple services were the highest reported factors. Disliking the rival company as well as the rival company’s product/service were the least mentioned factors

influencing this segment to multihome. Although not tested in this paper, technological fluency could be a potential cause for this.

Table 6. Proportion of each age group singlehoming

Proportion Singlehoming					
18-24	25-29	30-35	36-45	46-55	56+
30%	27%	25%	30%	39%	50%

Observing singlehoming rates by income (Table 7) showed those making less than \$30,000 having the highest proportion of singlehoming participants (43%). Their most prominently claimed factor for influencing their decision to multihome was also the time and hassle related to download and set up an additional service, as well as to switch between multiple services. This finding was surprising, as it was expected that this demographic would be substantially more price-sensitive, and therefore more likely to choose to have the option to multihome and compare prices of rides.

Table 7. Proportion of each income group singlehoming

Proportion Singlehoming						
Less than \$30,000	\$30,000-\$49,999	\$50,000-\$74,999	\$75,000-\$99,999	\$100,000-\$134,999	\$135,000-\$150,000	More than \$150,000
43%	36%	30%	33%	29%	19%	24%

4.3 Multihoming Samples

Q1: Which factors play a role in determining the rideshare service of preference amongst riders?

For the ‘Sometimes Multihoming population we also looked into what factors swayed decisions to prefer one service over another. Although these users had multiple options on their phone, there were some factors that convinced them to check one service first, and sometimes not check the rival service. The same eight questions used for the singlehoming riders were used for the multihoming rider population.

Table 8 shows the percentage of Uber and Lyft riders that found each factor to have a moderate amount or greater impact on their decision to choose their preferred service. For Lyft riders, company reputation was found to have impact the most with 81% claiming it. Following reputation, price and wait time were the most important to them. For Uber riders there was an even amount of claimed impact between company reputation, price and wait time.

Table 8. Summary of factor impacts on contributing to riders' decision to choose a preferred service

Multihoming Riders			
Factors influencing decision to prefer company	Total	Uber	Lyft
Company Reputation	65%	62%	81%
In-App Promotions	58%	59%	55%
3rd Party Partnerships	42%	52%	34%
Company-provided credit	44%	50%	35%
Price being cheaper than rival	74%	68%	74%
Wait time lower than rival	67%	64%	63%
User Interface/App features	42%	50%	37%
Safety Features	47%	50%	47%

Across age groups (and income), price and wait time had the largest impact across age groups by far, however, underscoring the commoditization of the market. Despite this, company reputation remained high for those younger than 25 and older than 35, as well as those earning between \$135,000 and \$150,000. In-app promotions were claimed to have impact by the majority, except for those over the age of 56. 3rd party partnerships were claimed to have impact most between the ages of 25-35 and 46-55, and company-provided credits were claimed the most by those 18-24 and 46-55. Out of the three differentiation strategies, in-app promotions had the widest spread claimed impact for multihoming riders to have chosen their preferred service.

Q2: Which attributes contribute to riders multihoming between ridesharing services? Which attributes contribute to riders singlehoming?

In the survey, multihoming users were categorized by those that claimed to check between multiple services before every ride (Always Multihoming), and those that claimed to multihome in any amount (Sometimes Multihoming). The Always Multihoming group are users that generally will always compare multiple services to get the best deal in either price, time or another attribute

(driver, rating, etc.). The Sometimes Multihoming group might not necessarily consistently check multiple services each time, and a variety of reasons may make them decide to check a rival service, or accept the initial ride offer from their preferred service.

To hone in on the actual frequency of multihoming, all multihoming riders were asked to recall their last five rideshare rides. They then reported how many of those they checked multiple services before selecting a ride. The results for this question were largely evenly spread (Figure 12), with an average of users multihoming 2.9 rides out of 5 rides (median: 3/5). When segmenting by the type of multihoming individuals, a divide presents itself.

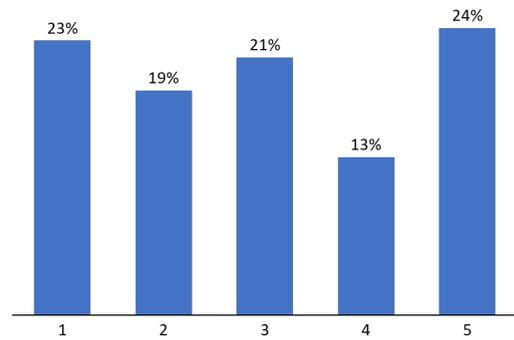


Figure 12. Frequency of multihoming out of last 5 rides taken by participants

When multihoming users were asked which was the most important factor when deciding whether to check a rival’s service, Price followed by Wait Time were at the top (Figure 13). This confirms riders are primarily price and time sensitive, however, estimated time of arrival to destination was not selected by many (8%). ‘Cannot connect to a ride’ may suggest that 14% of multihoming riders primarily have multiple services as backups in case their first source has a connection failure and they cannot get matched with a ride.

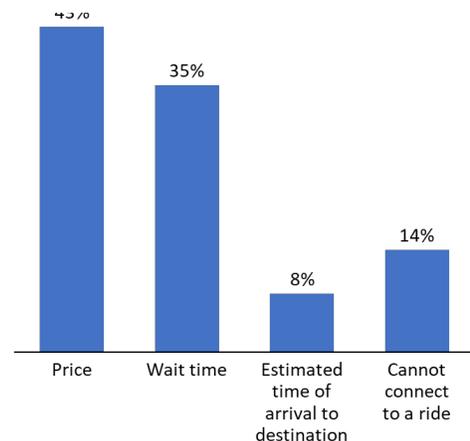


Figure 13. Most important factor leading to checking a rival service

Although these are the most important factors that drive riders to decide to check another service, how effective are the factors that determined service preference in *reducing* the desire to multihome? When looking at the ride preference factor responses, we compared those who claimed a certain factor had ‘a great deal’ of impact in them preferring a service over another, to the frequency that they multihomed over their last five rides (Figure 14). In this comparison, it was found that for those that found 3rd Party Partnerships having a great deal of impact in their decision, they proportionally multihomed significantly fewer times than those that chose other factors. In

contrast, In App promotions had the highest instance of multihoming. 3rd party partnerships show a statistically significant difference at a 95% confidence interval from the price and in app promotions factors, but the differences to the remaining factors are not statistically significant at a 95% level.

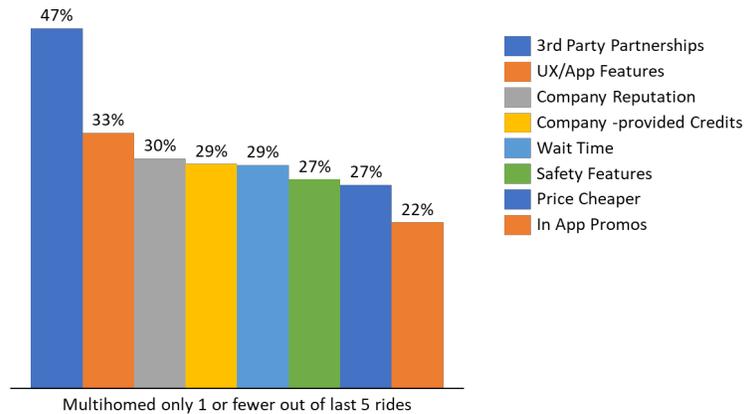
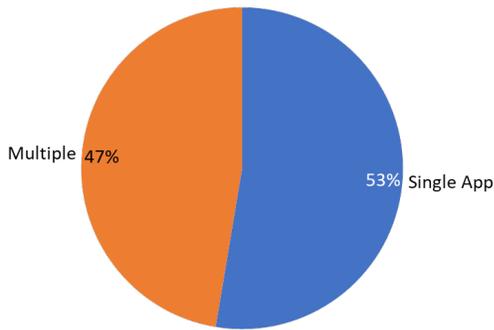


Figure 14. Percentage of riders of each factor that displayed low multihoming tendencies, specifically those selecting 'a great deal' survey response for the incentive in relation to their choice to multihome 1 or 0 times in last 5 rides (61 riders total)

4.4 Additional habits between multihoming and singlehoming users

To identify whether or not an individual that multihomes with rideshare services would be more prone to multihoming in other similar phone applications, two questions asked about the number of travel apps and food delivery apps each respondent had downloaded on their phones. The findings showed that users that multihomed with rideshare services, also multihomed more often with both food delivery apps (Figure 15) and travel apps (Figure 16). The correlation between singlehoming and multihoming rideshare populations and those on other apps are positive. Rideshare user multihoming tendencies have relation with how they multihome in other apps, although the correlations are weak (0.14 for Food Delivery, and 0.25 for Travel Apps).

Food Delivery apps on phone:
RS Singlehoming Users



Food Delivery apps on phone:
RS Multihoming Users

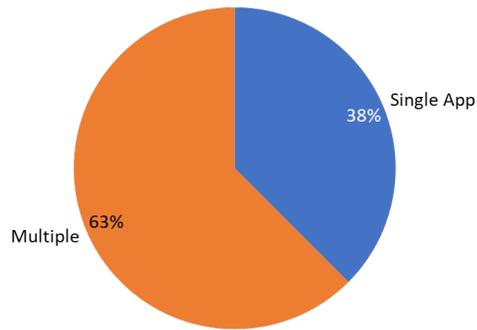
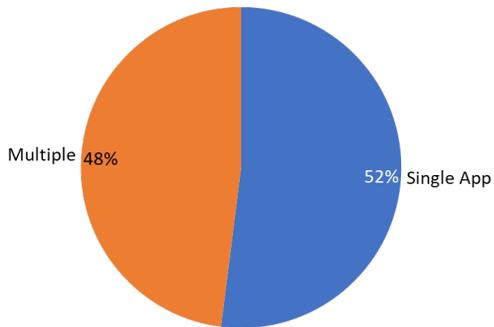


Figure 15. Comparing participant rideshare multihoming with their multihoming with food delivery services

Travel apps on phone: RS
Singlehoming Users



Travel apps on phone: RS
Multihoming Users

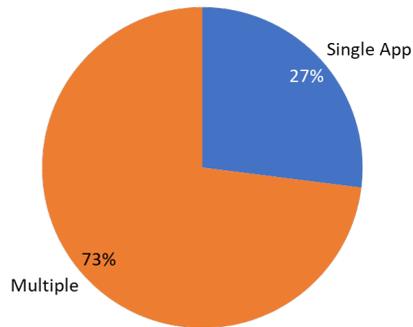


Figure 16. Comparing participant rideshare multihoming with their multihoming with travel applications

5 DISCUSSION AND CONCLUSION

This paper sought to better understand the factors that inform the decisions riders make around their use of ridesharing platforms including: the choice to use one service or multiple, the costs and benefits of switching between multiple services, and factors that reduce multihoming behavior.

Rideshare services will have to continue to contend with competitors across two important dimensions:

1. Acquiring new singlehoming users

2. Attracting multihoming users, then *reducing* their multihoming behavior to the point of low-multihoming or complete singlehoming use

Singlehoming

Riders who chose to use a single service for ridesharing, tended to do so out of a) brand loyalty and/or brand repulsion (Nyamekye et al., 2022), b) a feeling of stress associated with managing multiple services or having a clutter of apps, or c) a perception of excessive time and hassle associated with downloading or managing multiple services. For these riders, the perceived multihoming costs associated with the above, are not worth the perceived benefits they would receive to use multiple rideshare services. These users elect to only use one service.

Company reputation and brand image had a substantial impact on singlehoming Lyft riders in particular. Reputation helps build trust in a brand, which Nyamekye et al. determined strongly predicts whether a rider uses a ride-share service (Mas-Machuca et al., 2021; Nyamekye et al., 2022). Our finding signals that Uber still has a way to go in repairing their brand reputation for many riders. Despite this, Uber's reputation for many of its singlehoming riders is overall positive. Continued work to keep free of scandal may eventually allow the brand premium on Lyft to dissipate over time.

Stress and anxiety, was found to have a large impact on roughly half of the singlehoming population. The presence of many applications on their phone, and the perceived clutter it would create, was stressful enough to establish a psychological cost that reduced their inclination to multihome. Similarly, half of the singlehoming population cited stress from managing and deciding between multiple services as a reason to avoid using multiple services. These two psychological factors suggest that perceived burden caused by additional decision-making may be an innate barrier to multihoming. Regardless of how easy it may be for someone to download and switch between two apps for free, for many individuals the anxiety or stress of simply *having* the extra service or *deciding* between the services, is enough of a barrier to choose only one.

This, coupled with users that find the time and hassle to either download or switch between apps to be too much, should highlight to Uber and Lyft that there is a substantial pool of potential future customers that they have to only win over *once*, and likely would not have to necessarily provide repeated incentives once they've begun using the service. Because of this, rideshare services should emphasize new rideshare-user acquisition for marketing, to be the first to acquire them – otherwise risk losing them for good to their rival. This investment should continue as rideshare usage increases across the American population, and taper off once the remaining market is saturated.

Ridesharing companies may benefit from targeting segments that are most likely to singlehome. Approximately half of riders above the age of 56 identified as singlehoming users, as well as 39% of those aged 46-55 and 43% of riders earning less than \$30,000 . As ridesharing becomes more widely used across the US population, focusing marketing outreach on promoting a positive brand image , on these demographics may help lock in riders early that will be less likely to multihome.

Multihoming

For multihoming riders, company reputation and brand image still remained influential on users, with increased importance for Lyft riders. Price by far has been the leading factor to encourage users to multihome between services. The results of this analysis showed that the majority of riders had higher sensitivities to price fluctuations compared to time fluctuations. After price, wait time was the next most important attribute when deciding to multihome, followed by estimated time to drop-off, and company.

Table 9. Summary of effectiveness of each strategy to reduce multihoming

Uber & Lyft Strategies to Reduce Multihoming						
	Network Bridging Strategies		Incentive-based Strategies			Exclusivity Strategy
Companies	Third Party Partnerships	Company-provided Credits	Pricing	In-App Promotions	Loyalty Programs	Exclusive Contracts
Uber	Retention seen in ages 25-45, and under \$30,000 in income	Both have shown strength in retention of those earning	Pricing has shown to influence preferred service, but has not shown	In-App Promotions have shown some influence in preference of service, but has shown increased	Not assessed	Not being utilized

Lyft	Retention seen in ages 18-29, and from \$30,000 to \$135,000	\$75,000-\$135,000	reductions in multihoming	multihoming with price increases		
------	--	--------------------	---------------------------	----------------------------------	--	--

Ultimately, with a non-differentiated service and low multihoming costs, it will be more difficult for either Lyft or Uber to achieve profitability. Today, with limited differentiation between platforms the primary factors that compel users to multihome are price and wait time – both costly levers for Uber and Lyft to differentiate on. A lesson from John Connelly of Crown Cork and Seal (Hamermesh et al., 1977) is that even in the worst of commoditized markets, differentiation and profitability is possible. Where Crown Cork and Seal was able to differentiate through focus and expert responsiveness and service to customers, Uber and Lyft can seek to find differentiation by other means.

Though representing a minority of riders in both the survey, riders benefiting from third party partnerships and company-provided credits often displayed substantial decreases in multihoming in response to price increases compared to other riders (Table 9). Rather than price, this population showed an increase in time-sensitivity over other riders, and would multihome more when time levels increased. In contrast, in-app promotions generally did not seem effective in reducing multihoming, despite 63% of riders having access to these in-app benefits. In fact, in-app promotions were often connected with increased price-sensitivity and more multihoming in response to price increases.

Together, these findings suggest that rideshare services may benefit more from reducing reliance on in-app promotions. They could focus their efforts instead on expanding the number of users benefiting from third-party partnerships and company-provided credit, while simultaneously ensuring they have adequate driver promotions to maintain a reasonable level of driver liquidity to keep times low. Generally, wait times should be kept under 6 minutes, as multihoming appears to spike after that threshold.

Further analysis into segments that reduced multihoming behavior due to these benefits, could provide direction on how receptive these segments are to the programs, or to the degree of which these efforts have reached these segments as opposed to others. Deciding which segments are the most desirable to lock in to one's rideshare service should dictate the nature of companies partnered with – taking into account the types of users under their own networks or employment. Rideshare companies should assess through the lens of their own strategic priorities, as to which segments to focus on, however the findings from this research provide some recommendations.

Strategies and Recommendations:

- 1. Rideshare services should expand their company-provided credits to more companies that hire workers with average salaries between \$75,000 and \$135,000 in urban areas.** Both Uber and Lyft displayed increased retention from riders using company-provided credits, earning between \$75,000-\$135,000. The increased retention is a good indication that continued focus on rapidly expanding this outreach to companies that employ workers in this range could increase the number of lower multihoming (and potentially eventual singlehoming) riders that utilize their services. With this in mind, a special focus should be placed on companies in more urban environments – where parking is more expensive and space limited (helping employers). Along with this, urban riders showed a substantially higher frequency of usage of rideshare services, so focusing on companies located in cities will increase the potential revenue from these deals compared to companies outside of an urban area. Although \$75,000 - \$135,000 was the income range that had shown positive retention through these programs in this study, as both Uber and Lyft are competing for these companies, a service could potentially tap into adjacent segments of companies that employ incomes below \$75,000 with less competition for deals on the onset. This would increase the number of riders impacted by these deals overall, and could encourage those that used rideshare less, to increase frequency in usage.
- 2. Rideshare companies should expand third party partnerships to encompass a larger and more diverse userbase.** Third party partnerships have shown to increase retention of riders amidst price increases for both services; however, segments impacted between Uber

and Lyft differ greatly. Lyft, has shown improved retention, with those earning between \$30,000 – and \$135,000 as well as under the age of 29. Uber showed higher retention with only those earning below \$30,000, but across a wider range of ages (25-45). Uber should strive to expand their user base to take advantage of higher-spending riders who may use rideshare services more frequently . In evaluating potential partnerships, ridesharing services should prioritize partners with large user bases and ensure a *diversity* of partnerships to add further benefit to niche demographics. Both companies have gone after travel and credit card companies to lock in users (Delta, Hilton, Starwood, Chase Sapphire Reserve, AMEX Platinum, etc.), but only represent a small, often overlapping, subset of the American population. Ridesharing platforms should build a portfolio of diverse partnerships to capture a variety of niche segments through differentiated services. Examples include activities and industries such as: sports, entertainment, grocery, local dining, retail, e-commerce. A portfolio approach to partnerships will help ridesharing platforms piece together a more loyal coalition of riders based on overlapping strengths of other differentiated brands and services that they already use – or would like to use.

3. **Network-bridging strategies should not be used in pursuit of less price-sensitive demographics.** Multihoming segments that seem to be the least price-sensitive, should be sought after last with network-bridging strategies, as they have shown to be ineffective with these groups. This was seen in riders over the age of 56, or earning over \$135,000 in income. In the survey, these riders singlehomed the most, and had one of the highest proportions of low-multihoming riders.
4. **Time-sensitive riders can be won through queue-skipping incentives.** Riders ages 30-35, or earning over \$135,000 displayed the most time-sensitive behavior, and had the highest rates of multihoming as time levels increased. As retention of these groups could be accomplished by reducing wait time, increasing driver liquidity as a whole would reduce the multihoming of these groups. This *could* be achieved with many of the currently in place discontinuous incentives, or by cutting driver take-rates – but that wouldn't help with profitability. An innovative and potentially more effective way to retain these time-sensitive demographics, is to offer a way for them to be prioritized in the queue of available

(or soon-to-be available) drivers. A ‘jump to the front of the line’ paid option would be a way to both keep these time-sensitive riders (who are as a whole willing to take higher priced rides), and bring in additional revenue per prioritized ride. This queue-skipping option could be made available on a per-ride basis, as well as part of a loyalty-based program. Those that do not want to subscribe to a Lyft or Uber rewards subscription, could occasionally settle quickly for a faster ride by paying a queue-skipping fee. However, those that do sign up for the loyalty programs, would have free access to queue-skipping as part of their monthly subscription. Because of the speed in which queueing is accomplished with rideshare services (usually being paired seconds after request), this benefit would be most useful for airport pickups as well as pickups from shows, concerts, sporting games, and other large events. At these events, a larger queue can build up, and riders can be prioritized. An additional benefit from this pool of riders, is the added lock in that they would experience having already paid for preferential service. Much like Amazon Prime and Costco memberships spur increased loyalty in purchasing, so too could these programs in encouraging subscribed riders to continue to prioritize their service over others.

In conclusion, rideshare is currently a mostly undifferentiated and commoditized industry, where low multihoming costs allow for many riders and drivers to multihome to maximize their own value. This puts downward pressure on rideshare services’ abilities to increase margins and improve overall profitability. Lessons from past commoditized industries suggest that finding a way to differentiate can set a firm apart, create a more loyal customer base, and allow for greater opportunities for reduced direct competition and profitability. For rideshare services, the discussed recommendations should serve to reduce the rider focus on price and time, and increase the overall perceived benefits for riders to use a single particular service in most circumstances. This should lock in more riders, increase rider retention and reduce multihoming. With less multihoming in their rider bases, the rideshare platforms could reduce other major expenditures (driver incentives and marketing), allow drivers to chase demand, and make further progress toward profitability.

As discussed in the research methods, the sampling methods used do not mirror the US population distribution. For instance, the median salary from the survey was between \$50,000-\$75,000 compared to the 2018 US median salary of \$33,706 (Federal Reserve Bank of St. Louis, 2018).

The survey also used proximity to public transit as a proxy for living in an urban environment, where the responses came in 7% and 18% below the 80.7% national urban distribution.

A second source of limitations is the use of paid responses, which can both skew the sampling of the respondent population, as well as potentially introduce quality issues (participant provided less-than-honest or less thought out responses). Finally, the population interviewed and surveyed were only people living within the United States. These studies do not account for business, geographic and cultural preferences that exist in other international rideshare markets.

REFERENCES

- Akbari, M., Moradi, A., SeyyedAmiri, N., Zúñiga, M. Á., Rahmani, Z., & Padash, H. (2021). Consumers' intentions to use ridesharing services in Iran. *Research in Transportation Business & Management*, 41, 100616. <https://doi.org/10.1016/j.rtbm.2020.100616>
- Armstrong, Martin. (2019). *Infographic: Myspace Isn't Dead*. Statista Infographics. <https://www.statista.com/chart/17392/myspace-global-traffic/>
- Baltic, Troy, Cappy, Alex, Hensley, Russel, & Pfaff, Nathan. (2019, April 11). *How mobility will shift in the age of US rideshare programs* | McKinsey. <https://www.mckinsey.com/industries/automotive-and-assembly/our-insights/how-sharing-the-road-is-likely-to-transform-american-mobility>
- Belleflamme, P., & Peitz, M. (2019). Platform competition: Who benefits from multihoming? *International Journal of Industrial Organization*, 64, 1–26. <https://doi.org/10.1016/j.ijindorg.2018.03.014>
- Bryan, K. A., & Gans, J. S. (2019). A theory of multihoming in rideshare competition. *Journal of Economics & Management Strategy*, 28(1), 89–96. <https://doi.org/10.1111/jems.12306>

- Caillaud, B. J.-M., & Jullien, B. (2003). Chicken & Egg: Competition among Intermediation Service Providers. *The Rand Journal of Economics*, 34(2), 309–328. <https://doi.org/10.2307/1593720>
- Cole, J. S., Sarraf, S. A., & Wang, X. (2015). Does use of survey incentives degrade data quality?. Association for Institutional Research Annual Forum.
- Choi, J. P., & Jeon, D.-S. (2018). A Leverage Theory of Tying in Two-Sided Markets. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2858809>
- Cramer, J., & Krueger, A. B. (2016). Disruptive Change in the Taxi Business: The Case of Uber. *American Economic Review*, 106(5), 177–182. <https://doi.org/10.1257/aer.p20161002>
- Cusumano, M. A., Gawer, A., & Yoffie, D. B. (2019). *The business of platforms: Strategy in the age of digital competition, innovation, and power* (First edition.). HarperCollins Publishers.
- De Miguel Molina, M., De Miguel Molina, B., Catalá Pérez, D., & Santamarina Campos, V. (2021). Connecting passenger loyalty to preferences in the urban passenger transport: Trends from an empirical study of taxi vs. VTC services in Spain. *Research in Transportation Business & Management*, 41, 100661. <https://doi.org/10.1016/j.rtbm.2021.100661>
- Dubin, R.(1978). *Theory Building*. Free Press.
- Eisenmann, T., Parker, G., & Alstyne, M. W. V. (2006). Strategies for Two-Sided Markets. *Harvard Business Review*, 84(10), 92–101.
- Evans, D. S., & Schmalensee, R. (2010). Failure to Launch: Critical Mass in Platform Businesses. *Review of Network Economics*, 9(4). <https://doi.org/10.2202/1446-9022.1256>

- Federal Reserve Bank of St. Louis. (2018). *Real Median Personal Income in the United States*. FRED. <https://fred.stlouisfed.org/series/MEPAINUSA672N>
- Gawer, A., & Cusumano, M. (2008). How Companies Become Platform Leaders. *MIT Sloan Management Review: MIT's Journal of Management Research and Ideas*, Winter, 28–35.
- Gessner, K. (2020). *Uber vs. Lyft: Who's Tops in the Battle of U.S. Rideshare Companies*. Second Measure. <https://secondmeasure.com/datapoints/rideshare-industry-overview/>
- Gillette, F. (2011). The Rise and Inglorious Fall of Myspace. *Bloomberg Businessweek*, 9.
- Hagiu, A. (2014). Strategic Decisions for Multisided Platforms. *MIT Sloan Management Review*, 55(2), 71–80. ABI/INFORM Collection.
- Hamermesh, R., Mills, K. G., & Reed, J. P. (1977). *Crown Cork & Seal Co., Inc.* (HBS No. 378-024). Harvard Business School Publishing.
- Harvard Business School. (2015, October 5). China's Taxi Wars: Winner-take-all or lose-lose for Uber and its rivals? *Digital Innovation and Transformation*. <https://digital.hbs.edu/platform-digit/submission/chinas-taxi-wars-winner-take-all-or-lose-lose-for-uber-and-its-rivals/>
- Hasby, R., Irawanto, D.W., & Hussein, A.S. (2018). The effect of service quality and brand image on loyalty with perception of value as a mediation variable. *Journal of Applied Management*, 16(4), 705-713. <http://dx.doi.org/10.21776/ub.jam.2018.016.04.17>
- Hasselwander, M., Bigotte, J. F., & Fonseca, M. (2022). Understanding platform internationalisation to predict the diffusion of new mobility services. *Research in Transportation Business & Management*, 43, 100765. <https://doi.org/10.1016/j.rtbm.2021.100765>

- Jamilah, Handayani P. W. (2016). Analysis on effects of brand community on brand loyalty in the social media: A case study of an online transportation (UBER). *2016 International Conference on Advanced Computer Science and Information Systems (ICACSIS)*, 239-244, doi: 10.1109/ICACSIS.2016.7872746.
- Jia, X., Cusumano, M. A., & Chen, J. (2019). An Analysis of Multi-Sided Platform Research Over the Past Three Decades: Framework and Discussion. *MIT Sloan Working Paper 5891-19 Cambridge, MA: MIT Sloan School of Management*, 62.
- Jiang, S., Chen, L., Mislove, A., & Wilson, C. (2018). On Ridesharing Competition and Accessibility: Evidence from Uber, Lyft, and Taxi. *Proceedings of the 2018 World Wide Web Conference on World Wide Web - WWW '18*, 863–872. <https://doi.org/10.1145/3178876.3186134>
- Kerlinger, F. N. (1964). *Foundations of behavioral research*. Holt, Rinehart and Winston
- Kerr, D. (2020). *Uber's fourth-quarter earnings show losses, but they're shrinking*. CNET. <https://www.cnet.com/tech/mobile/ubers-fourth-quarter-earnings-show-losses-but-theyre-slowing/>
- Knowledge at Wharton. (2019, August 20). What Will It Take for Uber to Become Profitable? *Knowledge at Wharton*. <https://knowledge.wharton.upenn.edu/article/uber-profitability/>
- Lawler, R. (2014, November 13). Lyft Becomes An Employee Perk With Launch Of 'Lyft For Work.' *TechCrunch*. <https://social.techcrunch.com/2014/11/13/lyft-for-work/>
- Loginova, O., Wang, X. H., & Liu, Q. (2022). The impact of multi-homing in a ride-sharing market. *The Annals of Regional Science*. <https://doi.org/10.1007/s00168-022-01120-2>

- Lyft. (2020). *Lyft Passenger Perks*. Lyft. <https://help.lyft.com/hc/en-us/sections/115003496947-Passenger-Perks-and-Rewards>
- Lygnerud, K., & Nilsson, A. (2021). Business model components to consider for ridesharing schemes in rural areas – results from four Swedish pilot projects. *Active Travel and Mobility Management*, 40, 100553. <https://doi.org/10.1016/j.rtbm.2020.100553>
- Manning, J. (2019, July 31). *Commuting by Lyft: Adidas will cover the cost in hopes of easing crowding, parking shortage—Oregonlive.com*. The Oregonian/OregonLive. <https://www.oregonlive.com/business/2019/08/commuting-by-lyft-adidas-will-cover-the-cost-in-hopes-of-easing-crowding-parking-shortage.html>
- Mas-Machuca, M., Marimon, F., & Jaca, C. (2021). The unexplored potential of trust to boost customer loyalty for transport platforms. *Research in Transportation Business & Management*, 41, 100618. <https://doi.org/10.1016/j.rtbm.2021.100618>
- Nyamekye, M. B., Kosiba, J. P., Boateng, H., & Agbemabiese, G. C. (2022). Building trust in the sharing economy by signaling trustworthiness, and satisfaction. *Research in Transportation Business & Management*, 43, 100727. <https://doi.org/10.1016/j.rtbm.2021.100727>
- Solheim, M. T., & Tovsen, O. K. S. (2017). *Launching a Two-sided Platform*. https://ntnuopen.ntnu.no/ntnu-xmlui/bitstream/handle/11250/2486259/17760_FULLTEXT.pdf?sequence=1
- Solomon, B. (2016, January 25). *Is Uber Trying To Kill Lyft With A Price War?* Forbes. <https://www.forbes.com/sites/briansolomon/2016/01/25/is-uber-trying-to-kill-lyft-with-a-price-war/>

- Statista. (2019). *Facebook Users Worldwide 2019*. Statista. <https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/>
- Statista. (2020). *Ride Hailing—United States | Statista Market Forecast*. Statista. <https://www.statista.com/outlook/368/109/ride-hailing/united-states>
- Thompson, B. (2014, November 24). *Why Uber Fights*. Stratechery. <https://stratechery.com/2014/uber-fights/>
- Uber. (2020). *Uber AMEX Platinum*. Uber. <https://www.uber.com/us/en/u/amex/>
- Valderrama, D. (2020). *Rider Multihoming in the United States Rideshare Market*. Master's thesis, Massachusetts Institute of Technology.
- Yoffie, D. B., Gawer, A., & Cusumano, M. A. (2019, May 29). *A Study of More Than 250 Platforms Reveals Why Most Fail*. Harvard Business Review. <https://hbr.org/2019/05/a-study-of-more-than-250-platforms-reveals-why-most-fail>
- Zhu, F., & Iansiti, M. (2019). Why Some Platforms Thrive and Others Don't. *Harvard Business Review*, 97(1), 188–125.