Milestone Three: TransitGO Ticketing Recommendations

Mobility Innovation Center: Event Attendees

Streamlining Public Transportation for Event Attendees

Team 20
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In Partnership with

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King County METRO

Seattle Department of Transportation

Executive Summary[1]

This document signifies the end of our work on TransitGO. We present design and marketing recommendations for TransitGO -- which improve the mobile ticketing experience in the short-term -- and discuss why we will not be pursuing further action with the app.

Design recommendations for TransitGO have been prioritized on the basis of impact-to-work ratio. We find comprehensive redesign of TransitGO to be inappropriate, given King County Metro's minimal commitment to the application and the cost of the changes necessary to meet the needs of our users. These recommendations aim to improve user experience in the short-term at low cost.

Marketing recommendations for TransitGO are based on interview data collected during our research phase. While our mockups are created in the context of TransitGO, some of the principles we discuss may also apply to an advertising model for next gen ORCA. TransitGO and next gen ORCA share the classification of a Seattle transit application, and as such have a similar audience and market strategy.

With the support of our sponsors, our group has decided to focus our efforts on long-term goals of King County Metro regarding the implementation of the next generation of ORCA. This decision is also supported by our research and evaluation findings, which suggest that mobile ticketing does not adequately meet the needs of event attendees. "next gen ORCA," as next-generation ORCA is henceforth referred, shows great promise in delivering utility and desirable features identified by our research and evaluation participants.

[1] Disclaimer: Parts of this document were adapted from projects that the team has conducted in previous coursework.

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Justification for Modification to Milestones 3 and 4

We have come to an agreement with our sponsors to shift our attention from the redesign of TransitGO to the more promising technology of next gen ORCA. With this ambitious pivot, we will be revising Milestone 3 to consist of design recommendations for the current TransitGO system. We will prioritize recommendations based on difficulty of implementation and potential impact. We are currently working on Milestone 4 and are intent on spending the majority of our time from here on out envisioning the next generation of ORCA.

In Milestone 4, we will use our research findings in combination with the next gen ORCA Plan provided to us to design and prototype an next gen ORCA companion application in Milestone 4. We will begin by creating design recommendations, then moving on to creating high fidelity mockups and prototypes to aid in the future development of the next gen ORCA app.

Argument Against Redesign of TransitGO

In the interest of our user group of event attendees, we have decided not to pursue a comprehensive redesign of TransitGO as was originally planned. This decision is supported by our research and evaluation results and the business goals of King County Metro.

Research and Evaluation Support

Our research and evaluation results support the theory that TransitGO is fundamentally problematic for our user group of event attendees. Below we summarize the evidence for this finding.

Limited Advantages over Cash Payments

TransitGO is marketed in physical advertisements on buses and at Light Rail stations as a way to skip kiosk lines. In discussing the utility of the app, it became apparent that event attendees have insufficient use cases beyond this.

ORCA		Next gen ORCA	
Pros	Cons	Pros	Cons
Skip kiosk lines Don't need to buy individual tickets All transit types Easy transfers	24-28 hour refill $5 card fee Mail or kiosk to get card	Instantaneous transactions Digital and physical artifacts NFC integration Less to Carry Cloud-based account system All transit types	Download app $5 card fee
TransitGO		**Cash**	
Pros	Cons	Pros	Cons
Multiple/reduced fare tickets Less to carry No refill wait Skip kiosk lines	Download app Time to purchase ticket Transit system segmentation problems	No download or buying card No learning curve All transit types	Managing physical money Wait in lines

Figure 1.1: Comparing Utility of Different Payment Methods

Figure 1.1 details the benefits and drawbacks of different payment methods. Highlighted are the benefits over cash payments as identified by our research participants. Next gen ORCA has significant UX advantages over TransitGO and features integrations that were frequently requested during user interviews. The ability of TransitGO to process multiple and/or reduced fare tickets stands out against next gen ORCA, but the network of transit accounts enabled by cloud integration can provide similar benefits to families or other groups. We believe the

advanced capabilities of next gen ORCA can reduce the number of cash users more efficiently than a redesign of TransitGO.

Poor Desirability

Event attendees are a subgroup of infrequent riders in the hierarchy identified by our sponsors. Our interview data suggests that infrequent riders are less interested in mobile ticketing than frequent riders.

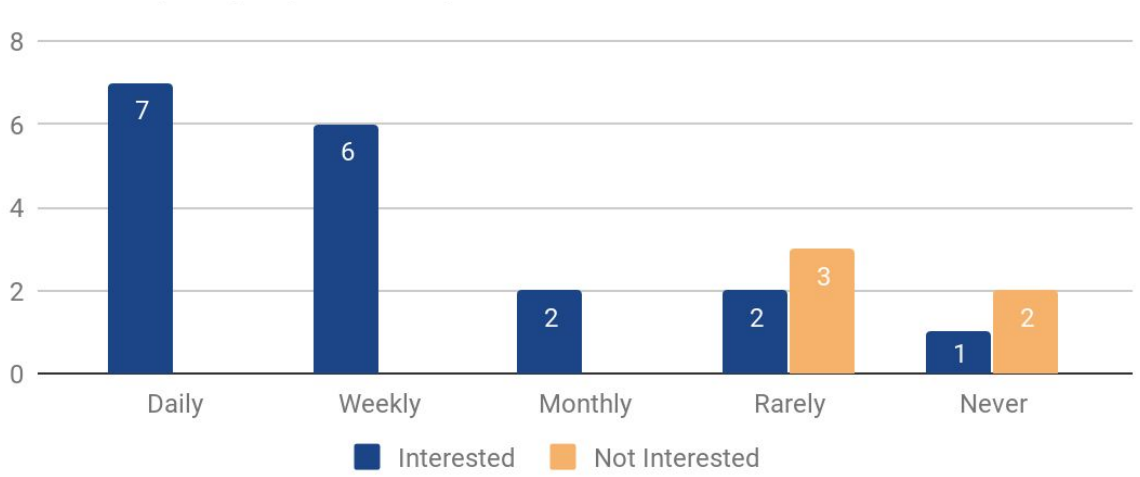


Figure 1.2: Interest in Mobile Ticketing Application based on frequency of public transportation use

Figure 1.2 graphs participants' frequency of public transit use and responses to the question, "Would you find a mobile ticketing application such as [TransitGO] to be useful." Infrequent riders appear to be disproportionately uninterested in mobile ticketing. Since infrequent riders -- the majority of cash users -- do not desire mobile ticketing, we do not feel that TransitGO could significantly reduce cash payments even if it were optimized.

Business Goal Support

TransitGO has lost support from King County Metro decision-makers steadily since its launch. The mobile ticketing application has poor adoption and significant UX problems, which may be expensive and time-consuming. With next gen ORCA right around the corner, King County metro has communicated their intent to discontinue support of the app by 2022. Our sponsors recognize a potential for our work to aid in the development of a mobile component of this next generation of ORCA. This new direction also aligns with King County Metro's goal to rise above the

60% ORCA adoption rate that has remained static for years. As a final justification for this change, we discussed the work of the tourist-focused capstone group with our sponsors and agreed that our group's desire to look the future of ORCA is preferable to creating work that overlaps significantly with the other group.

Effect on Quality of Deliverables

Our project has shifted focus fairly late in the process, but it is justified by an increased potential impact on future designs. However, the timing of the shift is appropriate, as we are able to dedicate the better part of milestone 4 to creating design recommendations and mockups for a next gen ORCA mobile application. Instead of employing an iterative design process including testing and graduating fidelity, we will likely have time only to create visionary high-fidelity prototypes. However, these are minimum requirements and we may produce additional artifacts to aid in storytelling of the next gen ORCA user experience.

Introduction

This document concludes our relationship with TransitGO for aforementioned reasons (see Justification for Modification of Milestones 3 & 4). In Milestone 2, we proposed a set of design recommendations for TransitGO and intended to follow through with a comprehensive redesign of the mobile application. Given our new perspective, however, we adhered to the following course of action: 1) present those design recommendations for TransitGO that aim to improve user experience in the short-term at low cost, 2) advise marketing strategy for TransitGO, and 3) shift our focus to envisioning a mobile component to next gen ORCA. While our work on the next gen ORCA mobile application has already broken ground, this document is composed of priority design and marketing recommendations for TransitGO. The primary design recommendations seek to improve iconography, taxonomy, and copy revision. Our marketing recommendations discuss integrating TransitGO into 3rd party systems, discounts as incentives and rethinking the placement of physical advertisements. We argue that these changes will improve usability and adoption of the app, aligning with short- and long-term goals of King County Metro.

Design Recommendations

Design recommendations for TransitGO are described, along with visual examples of each recommendation as if it was implemented into the application. These are all relatively simple fixes that we believe will provide a significant improvement to the user experience without a high cost of resources. These recommendations are all based on previous results from our research and evaluation.

Taxonomy Changes

We recommend several taxonomy changes to TransitGO that will improve user's understanding of the application. These changes are supported by results of our usability testing in which participants were confused about the nomenclature and leading to the failure to complete tasks without moderator intervention. The taxonomy changes are detailed further below.

Make Light Rail a "Mode of Travel"

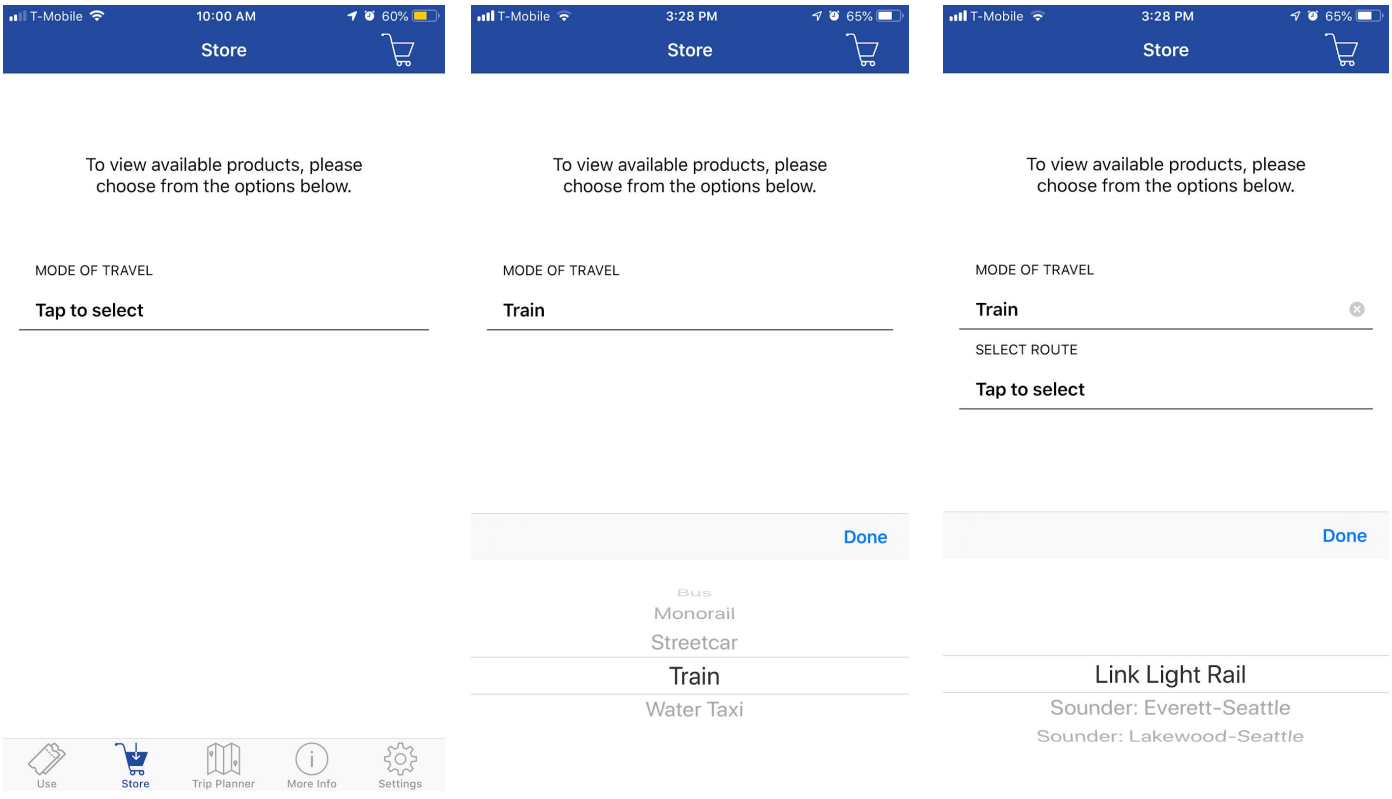


Figure 2.1: Current User Flow to find Link Light Rail in TransitGO

In the TransitGO application the Link Light Rail is currently listed as a route under the mode of travel of Train (demonstrated in Figure 2.1). To purchase a Link Light Rail ticket in the TransitGO application the user must go to the “Train” category before selecting the Link Light Rail. In our heuristic evaluation we listed this as a failure of match between system and the real world at a severity level of 2 (the problem would not stop the user from completing the task but adds additional confusion and time to it’s completion).

In our usability study, participants were often unable to find the Link Light Rail option when buying tickets, leading some to buy the wrong tickets or not buy a ticket at all. The process of buying a Link Light Rail ticket was unintuitive to participants, leading many of them to express frustration or confusion. This finding is supported by data from 9 out of 15 participants who purchased a Link Light Rail ticket in our usability testing. Some key quotes from participants include:

Moderator shows participant that Light Rail is under Train, “Oh, it's a train?”
(Participant 1, Task 3)

“Train? Which one is Light Rail? Train? Nope, it's not a train.”
(Participant 22, Task 3)

“Wait, it just says train, where’s Link? I don’t think of them as the same thing at all.”
(Participant 38, Task 3)

“No option for light rail.” The participant buys bus ticket instead.
(Participant 43, Task 6)

While the Light Rail is technically a train, most people do not think of it in the same category of trains like the Sounder, and its location causes difficulty locating Light Rail tickets. To resolve this we recommend that the Link Light Rail be moved up from a being a “route” in the train category to being a “Mode of Travel”, like the Streetcar and Monorail are. This change is demonstrated in Figure 2.2.

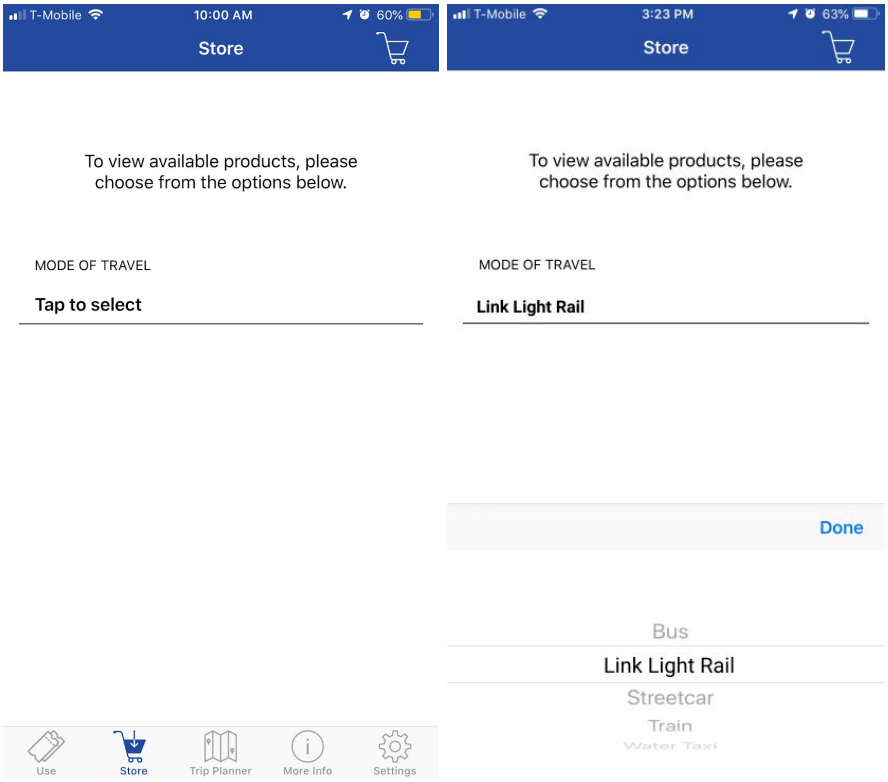


Figure 2.2: Recommended User Flow to find Link Light Rail in TransitGO

Rename "Store"

Participants experienced difficulty navigating to the page that allows them to purchase tickets. These participants did not associate the term "Store" with the function to buy tickets. This taxonomy confusion was experienced by 13 out of 22 participants in our usability testing. A quote that demonstrated this confusion was:

"Not seeing anything obvious for buying a bus ticket."
Moderator guides participant to store, "It should say Buy Tickets."
(Participant 24, Task 1)

To resolve this confusion, we recommend that the store be renamed to 'Purchase Tickets' or 'Buy Tickets' within the TransitGO app.

Reformat the Unclear Green Button (Android)

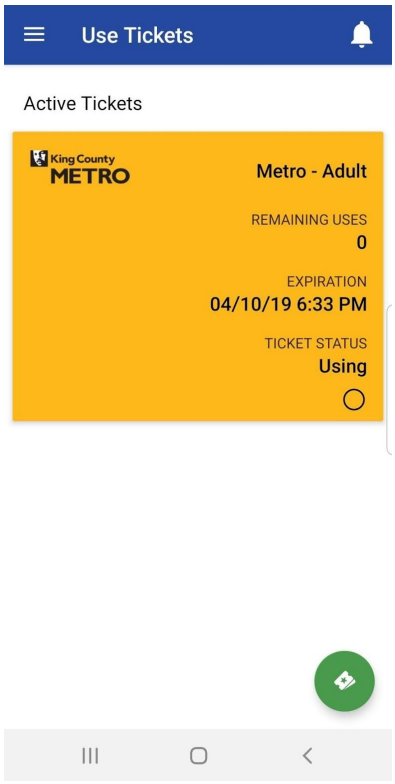


Figure 2.3: Current Green Button (in lower right corner) on Android Platform

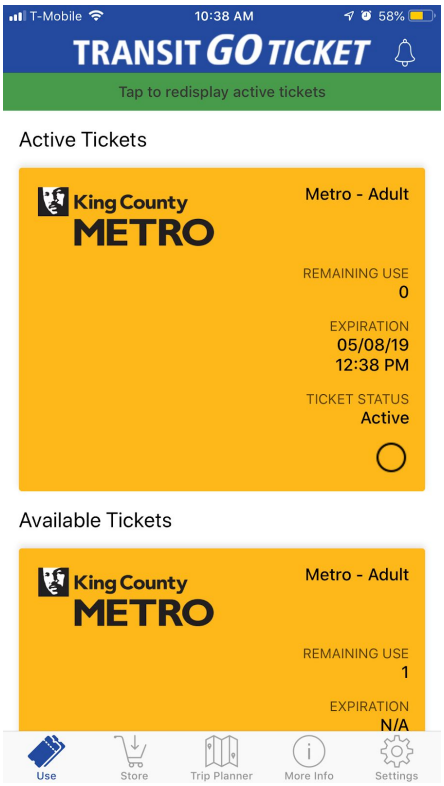


Figure 2.4: Equivalent functionality of the Green Button on iOS system (Green bar under the header bar)

The Green Button icon in the bottom right of the Android version of TransitGO brings a user to their most recent active ticket. It's appearance is misleading as it looks like a conventional “buy ticket” button. In our heuristic evaluation the Green Button failed recognition rather than recall with a severity rating of 1 (the failure of the heuristic would impede the user from completing the task and should be addressed as soon as possible). Backing up the initial findings, participants in the usability study associated the green ticket icon that appears in the lower right corner of the Android platform with purchasing a ticket. (The button does not appear on the iOS version of the TransitGO application.) In reality, the button brings up the most recently viewed ticket. Participants used this button expecting it to take them to a screen where they could buy more tickets, often selecting it more than once while trying to complete a ticket purchasing task. When asked why participants made this association they cited the placement in the lower right and the natural connection between the color green and money led them to the

assumption. This finding was supported by 11 out of 14 participants who tested on the Android platform. Some key quotes from participants include:

While trying to buy a bus ticket, “I thought that green button with the money symbol was buy.”
(Participant 1, Task 1)

“To [the] ticket button … [participant selects the green icon] .. no that’s not right.”
(Participant 45, Task 6)

“Green equals money equals buy a ticket.”
(Participant 22, Task 1)

Alternatively, none of our usability test participants misused the iOS implementation of "the green button."

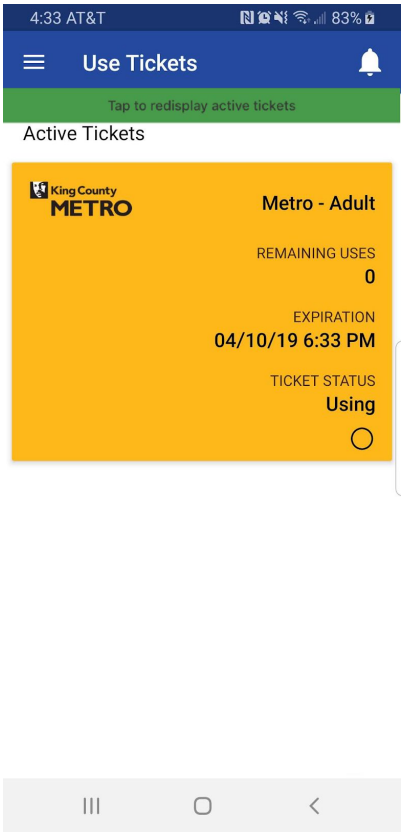


Figure 2.5: Recommended Implementation of Green Button functionality on Android Platform

Figure 2.5 depicts a green bar that appears above all of the tickets and performs the same function as the green circle on the Android platform. We recommend the creation of a more descriptive, possibly more verbose call-to-action for the function of viewing tickets.

Expand Payment Options

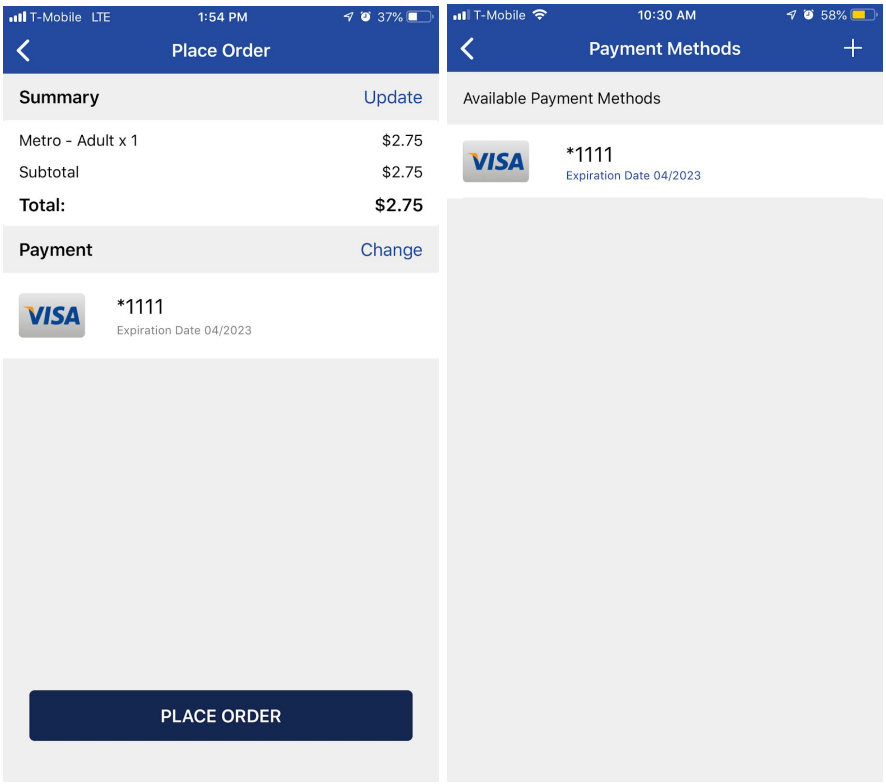


Figure 2.6: Current Checkout Options

Currently, users must enter a credit or debit card to purchase tickets in TransitGo. This is the only payment option available to users (see Figure 2.6). The integration of other payment options was mentioned by 7 out of 33 participants in our user interviews, with Apple Pay being explicitly mentioned by 2 participants. Participants cited that they did not want to get their credit card out and would like secondary payment options.

This is recommendation is also supported by our competitive analysis. MuniMobile, the mobile ticketing application for the San Francisco Municipal Transportation Agency, integrates PayPal has a payment option for their users.

We recommend that TransitGo expands their payment options, prioritizing Apple Pay, Samsung Pay, and Google Pay (as the major carriers for most smartphones). At a lower priority, we also recommend the integration of Paypal. These changes are demonstrated in Figure 2.7.

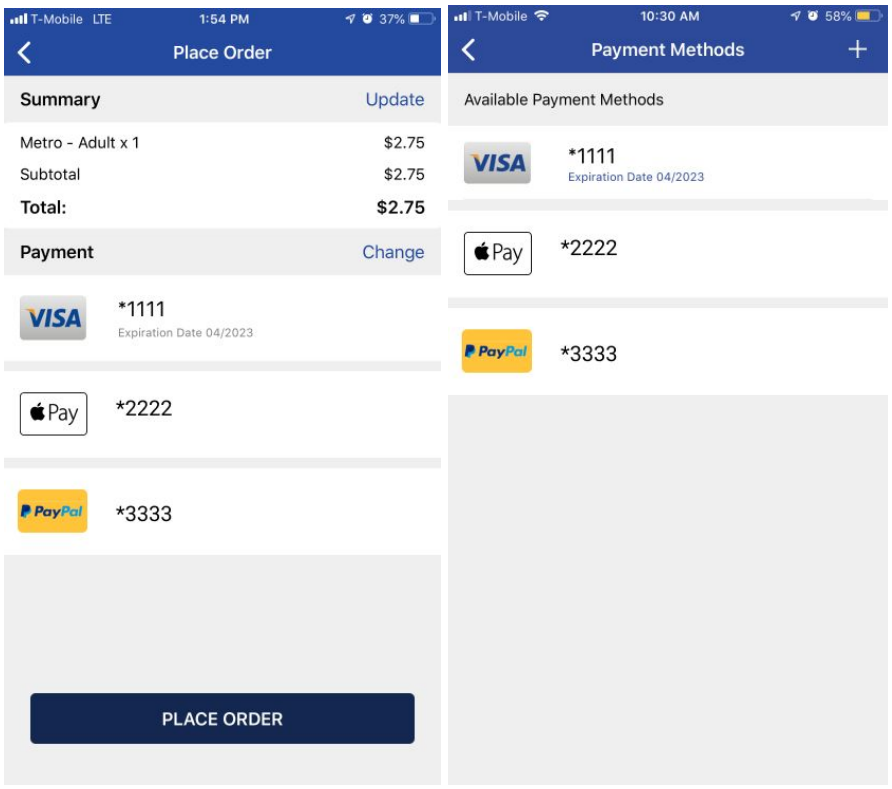


Figure 2.7: Suggestions for integrating other payment options

Standardization of Ticketing Information

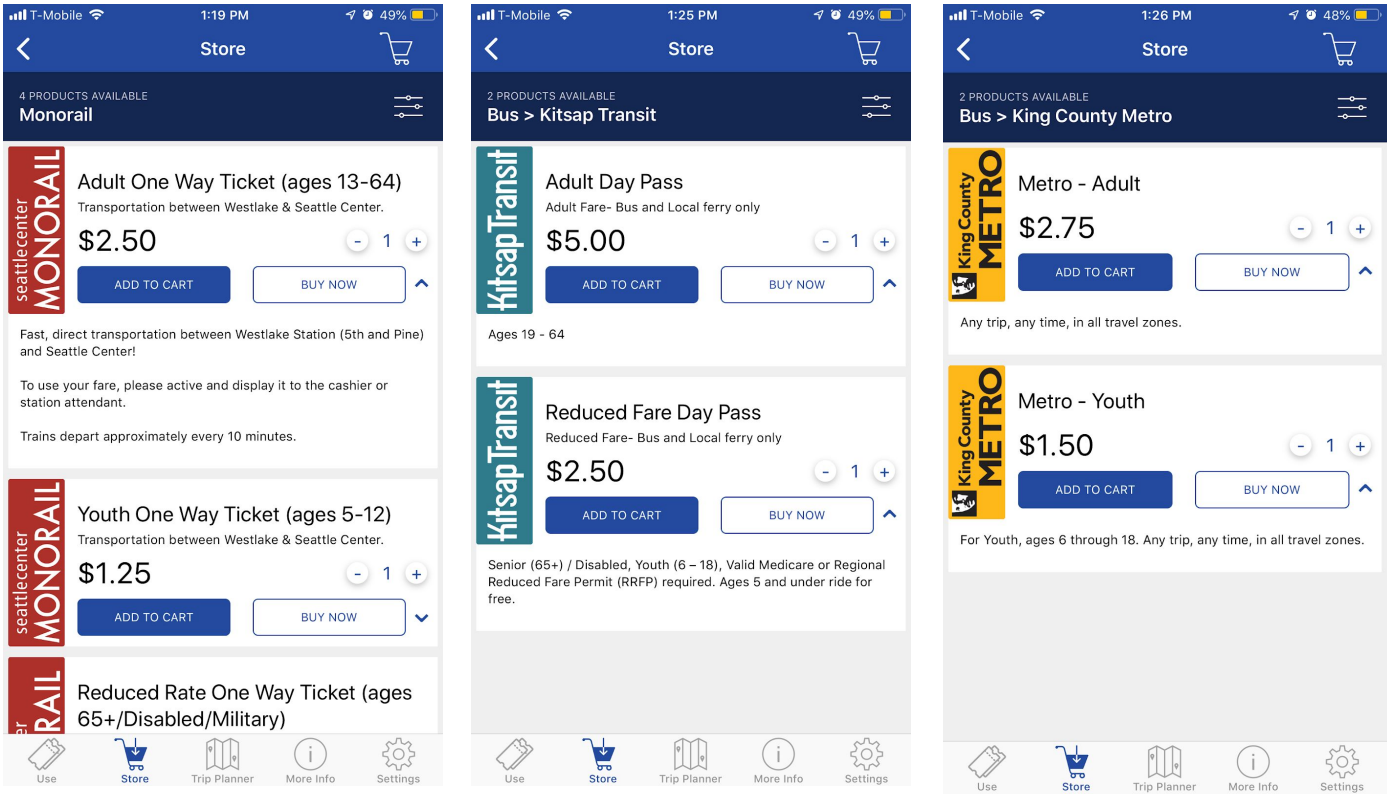


Figure 2.8: Current Variety of Ticket Information

During both the heuristic evaluation and the user evaluation we saw an inconsistency in the information provided about different types of transit tickets. As seen in Figure 2.8 and 2.9, there is a wide variety in the amount and type of information given for each ticket. There is also a range in how that information is presented. For example the King County Metro bus tickets say:

"Metro - Adult
Any trip, any time, in all travel zones."

while the Monorail ticket says:

"Adult One Way Ticket (ages 13 - 64)
Transportation between Westlake and Seattle Center
Fast, direct transportation between Westlake Station (5th and Pine) and Seattle Center! To use your fare, please active and display it to the cashier or station attendant. Trains depart approximately every 10 minutes."

For example, the age range for youth, adult and senior tickets is shown in a way on almost every different type of transit ticket. Some show it in the ticket title, some show it in the subtitle (that not all ticket options have), some show it at the right at the beginning of the description, some have it in the middle of the description, and others don't have that information at all.

For the heuristic evaluation we rated this as a failure of consistency and standards at a severity rating of 3 (the least severe, and means that the problem is noticeable, but minor in impeding the user)

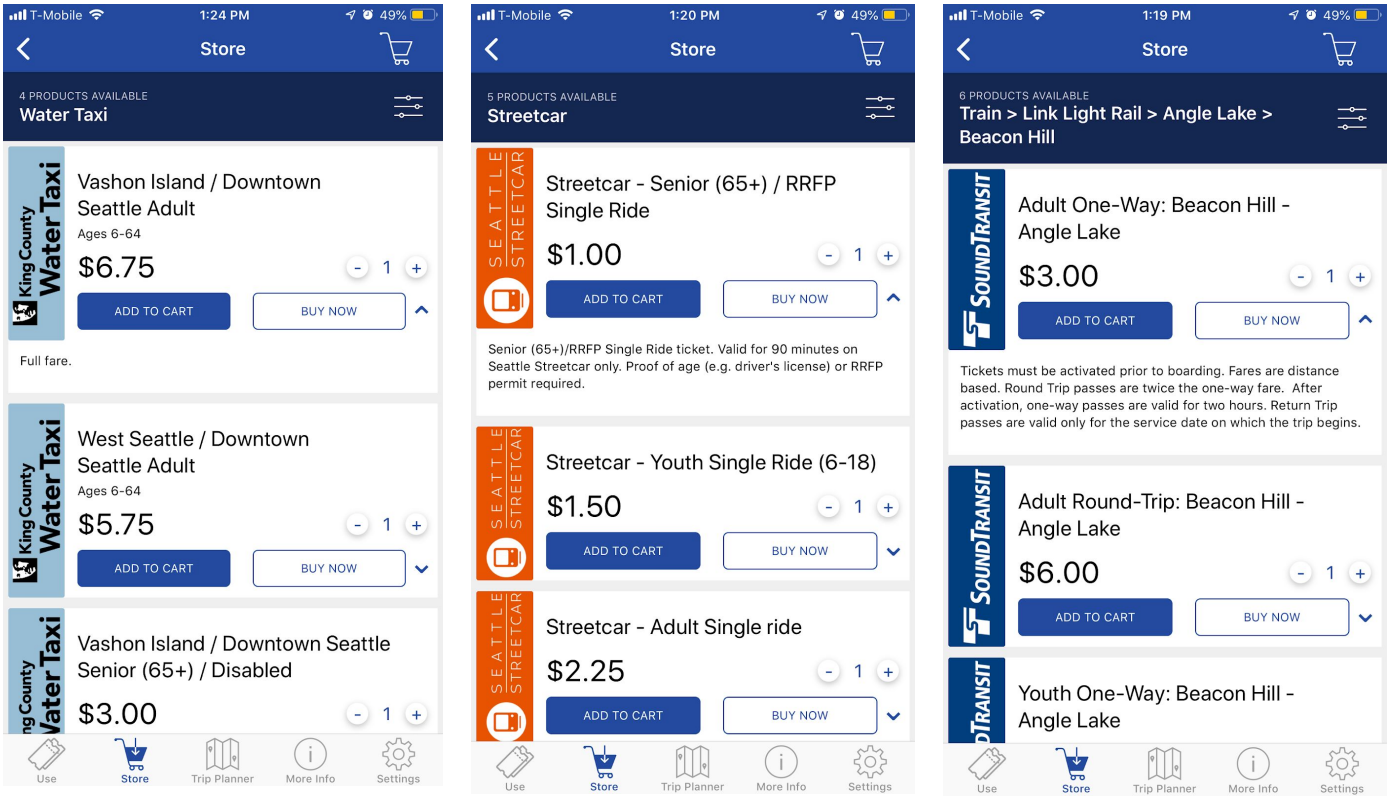


Figure 2.9: Current Variety of Ticket Information

In the user evaluation, a few participants noted the lack of information about the various ticket types that were purchasable through the TransitGO application (e.g. Youth and Reduced fares). There was also confusion over how the TransitGO application would allow users to transfer between transportation systems. This confusion was expressed by 2 of the 22 participants. Some key quotes from them include:

"What are the qualifications for reduced [fare]? I'm going to buy it."
(Participant 38, Task 3)

"It doesn't explain what a youth is."
(Participant 38, Post-Test)

"If I transfer, do I just need one ticket?"
(Participant 41, Task 6)

We recognize that the difference in these descriptions is likely due to the tickets coming from different vendors, but we think that editing to have a standardized format and information would improve the user experience. Some key things that would be beneficial to be included in the ticket descriptions would be age range or other qualifications, expiration time and transfer information and activation or use information.

Marketing Recommendations

Of the 36 participants that we interviewed, only 7 people had heard of the TransitGO application and only 1 had ever used it. Those who had heard of the TransitGO application did so first by mainly word of mouth and observing others use of it (4 out of 6 participants), while only 1 participant cited the advertisements for the application as how they knew of TransitGO. Of the participants who purchased light rail tickets at the station kiosks (the main location(s) that we observed TransitGO advertisements) none of them had heard of the application.

Physical Advertisement Placement

We found that TransitGO advertisements were placed almost exclusively in transient spaces. Figure 3.1 depicts one such space, above a light rail kiosk.

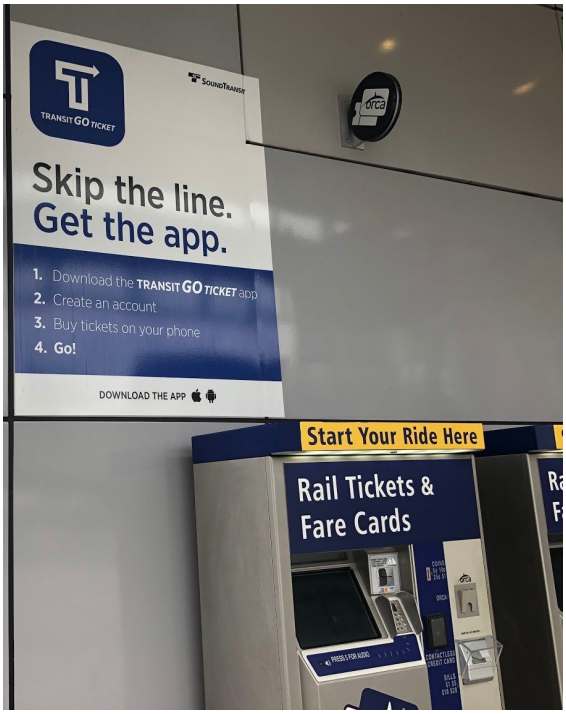


Figure 3.1: An example of a TransitGO advertisement

Some of our research participants recalled an interest in downloading TransitGO after seeing an advertisement but they were never reminded of it in an appropriate location. When one participant saw the advertisement for the app, she thought about downloading the app, but decided against it because it was “faster to use a kiosk than download [and set up] an app” (Participant 34). Another participant said he was interested in the application and thought about downloading when he was at bus stations but forgot about the app when he was in a more sedentary setting.

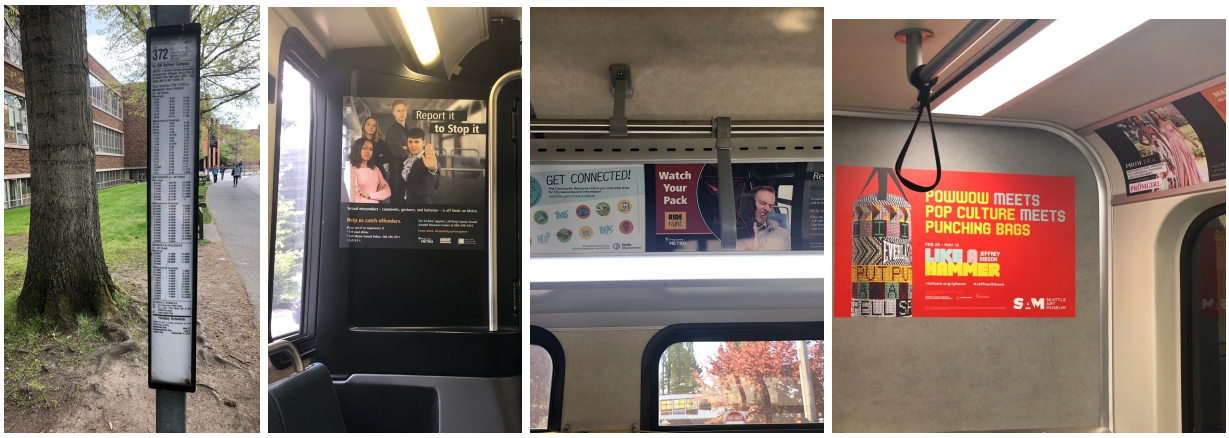


Figure 3.2: Potential Locations for TransitGO advertising

We recognize potential for more effective advertising through the placement of physical advertisements in more sedentary locations than a kiosk or transit station. Figure 3.2 includes a few of these locations we have identified.

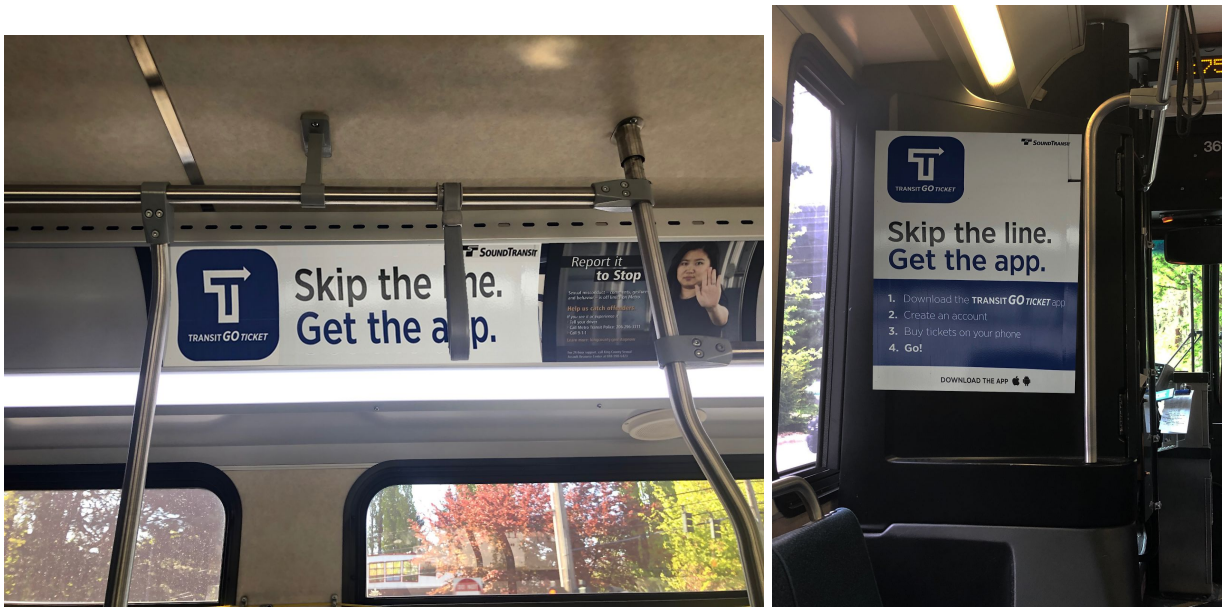


Figure 3.3: TransitGO Ad Mockups in Bus and Light Rail Advertising Space

TransitGO has advertisements that could be easily adapted to the interiors of trains and buses, where riders are at rest and may both be reminded of the app and have the attention capacity to complete download and setup. Figure 3.3 imagines the current TransitGO advertisements in these spaces.

Integration Into Other Websites & Applications

During our user interviews we asked participants, “How do you plan your [public transit] trip?” and “What mobile applications or websites do you use to support your trip [on public transportation?”, the results of which are shown below in Figure 3.4 and Figure 3.5. As seen below, most of the participants who responded to this question (10 in total) used some sort of app in their trip planning process. In Figure 3.5 the break down of which apps people mentioned using is shown, some participants mentioned multiple apps and each was counted separately.

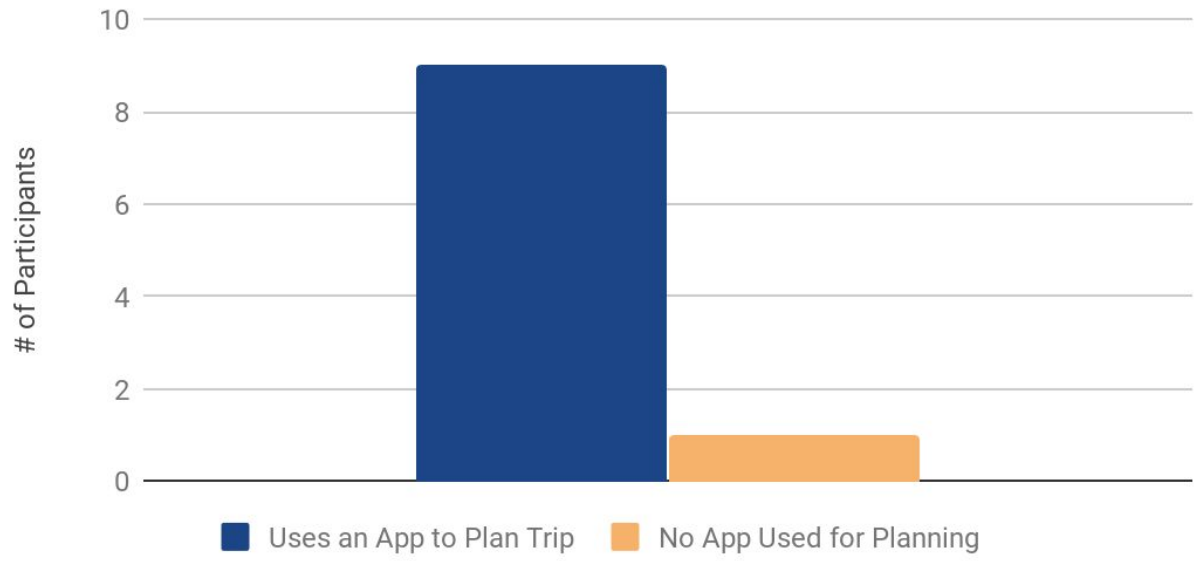


Figure 3.4: How do you plan your [public transit] trip? (Categorized between if they mentioned using an app)

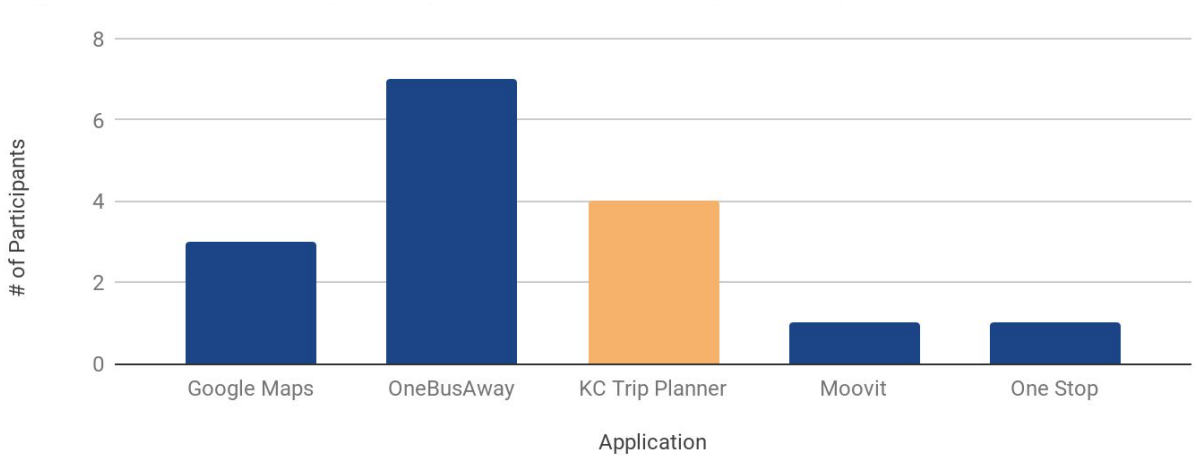


Figure 3.5: What apps do you use to plan trips with public transportation?

Due to this high level of app usage in transit trip planning, we thought that the most popular third party apps would be an ideal location for advertising the TransitGO application. The people using these apps are planning to use the transit system, and may be infrequent users and thus more likely to take advantage of the application.

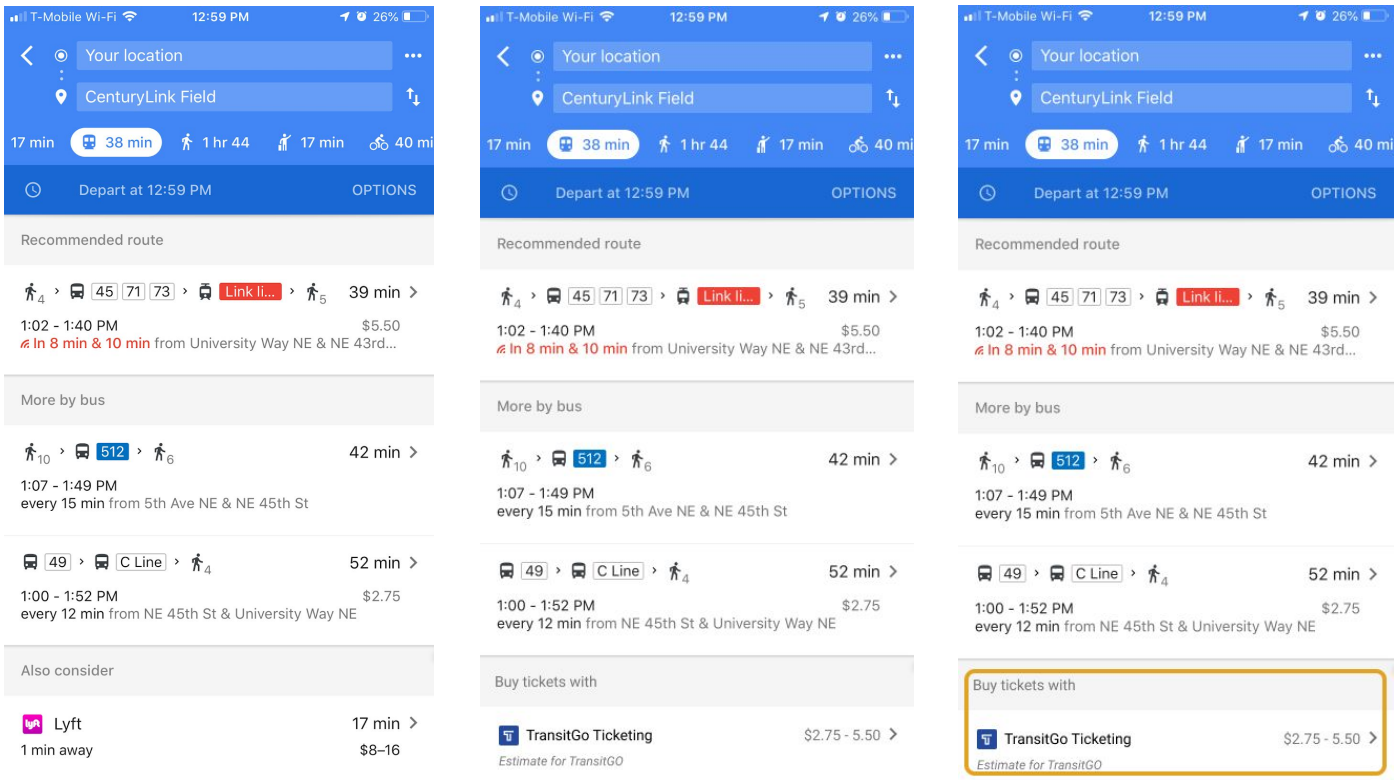


Figure 3.6: Google Maps Integration

As seen in the view of the current Google Maps in Figure 3.6, there is a precedent for this type of integration with Lyft and Uber connections. Cultivating a similar link between Google Maps and TransitGO would greatly help increase awareness and usage of the mobile ticketing system. It may even drive more people to use public transportation if they had previously avoided it due to not having an ORCA card or carrying cash.

OneBusAway is also a popular tool for trip planning for public transportation and we believe that this would also be a valuable partnership to include. This system does currently link to the TransitGO Application, but only on the Android version. However, the link between the applications not in location frequently encountered in the daily use of OneBusAway, meaning many users remain unaware of TransitGO. Additionally, on the iOS system this integration is nowhere to be seen. Working on this integration would likely be more feasible than integration with Google Maps as it already exists in some versions of the app and the app was originally developed locally in the Pacific Northwest.

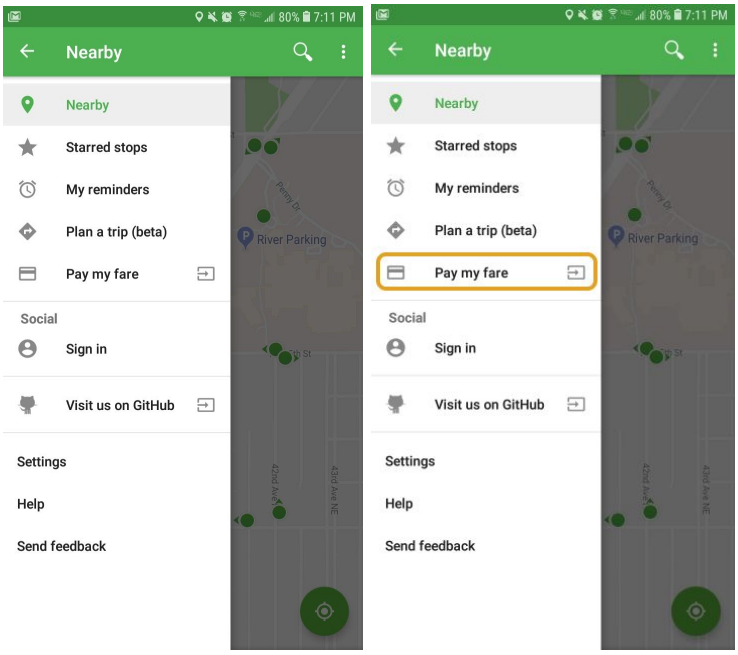
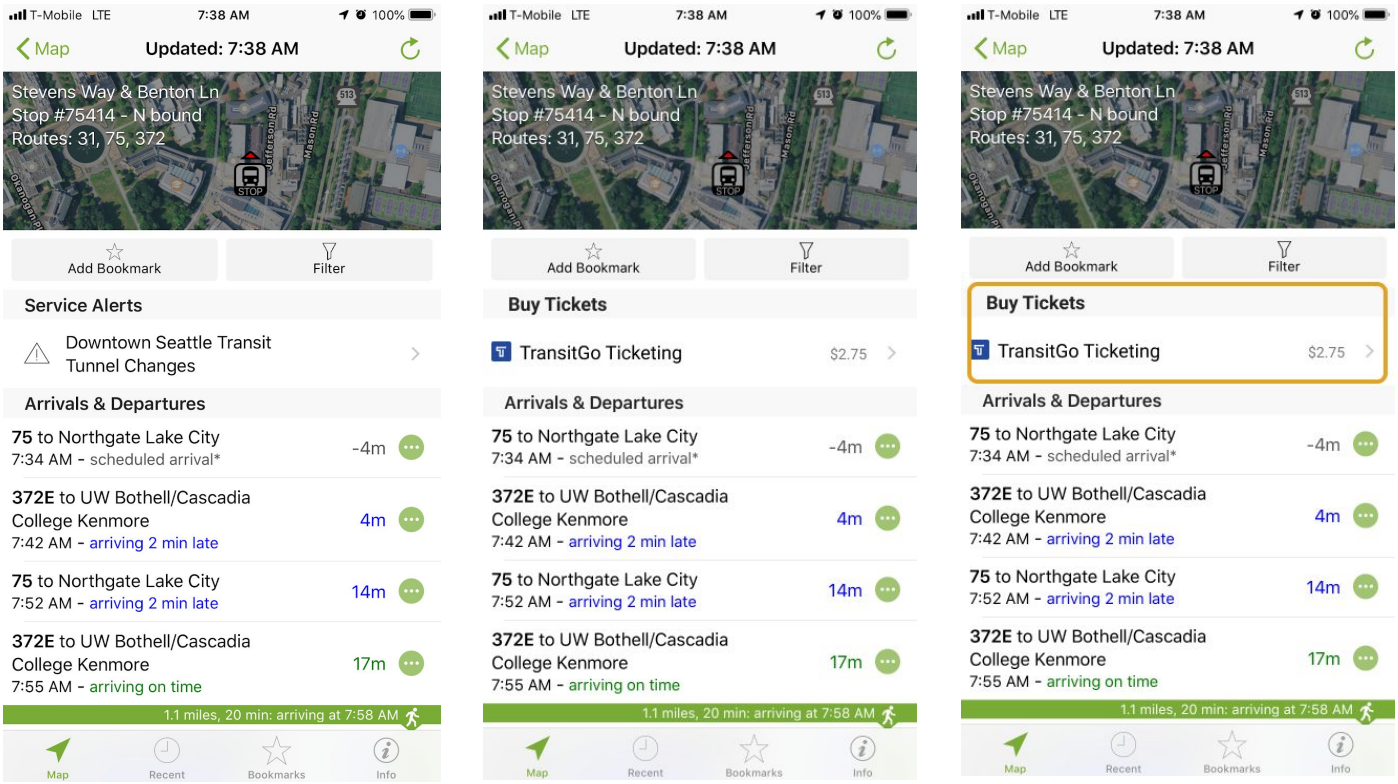


Figure 3.7: Current OneBusAway (Android) with link to TransitGO highlighted



Current OneBusAway (iOS)

Recommended Change (iOS)

Highlighted Recommendation (iOS)

Figure 3.8: OneBusAway Integration Recommendation

We would recommend that TransitGO continue to pursue connections with other applications that people use in their use of the transit system, and working with them to have the link to the application consistently and clearly visible. These in app links provide a great way to inform current and potential users of public transportation about the TransitGO ticketing application, while they are already using a smartphone.

Discounts

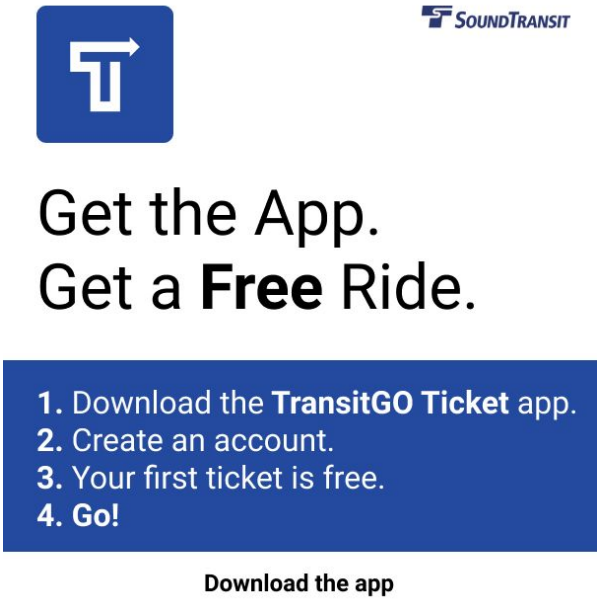


Figure 3.9: Draft advertisement for app discounts

When asked about what could incentivize users to switch to using the TransitGO app users' #1 response was integration of the functionality in OneBusAway and Google Maps. This would require a large overhaul of the app. The #2 response was some kind of financial incentive such as a free ticket for downloading the app, large order discounts or consistently cheaper fare. These are largely policy decisions and so veer out of the realm of User Interaction design but in terms of the full user journey our research indicates that this could be a valuable tool in initially convincing users to use the app. The same premise extends to the next gen ORCA app. Figure 3.9 shows a potential advertisement for a free ticket download incentive.

Event Integration

This team has spent their time largely researching in the context of events such as Mariners and Sounders games. We have found that realistically the only point of a user journey where we could incentivize a user to transition to an app (either Transit GO or next gen ORCA) would be at the point of sale of a ticket to the relevant event. We understand working with sports teams in the past has been difficult as they have other agendas but as far as marketing in the scope of event attendees, the only effective way we have found to convert our target cash users is to target them at the point of sale for the event they were already planning to attend.

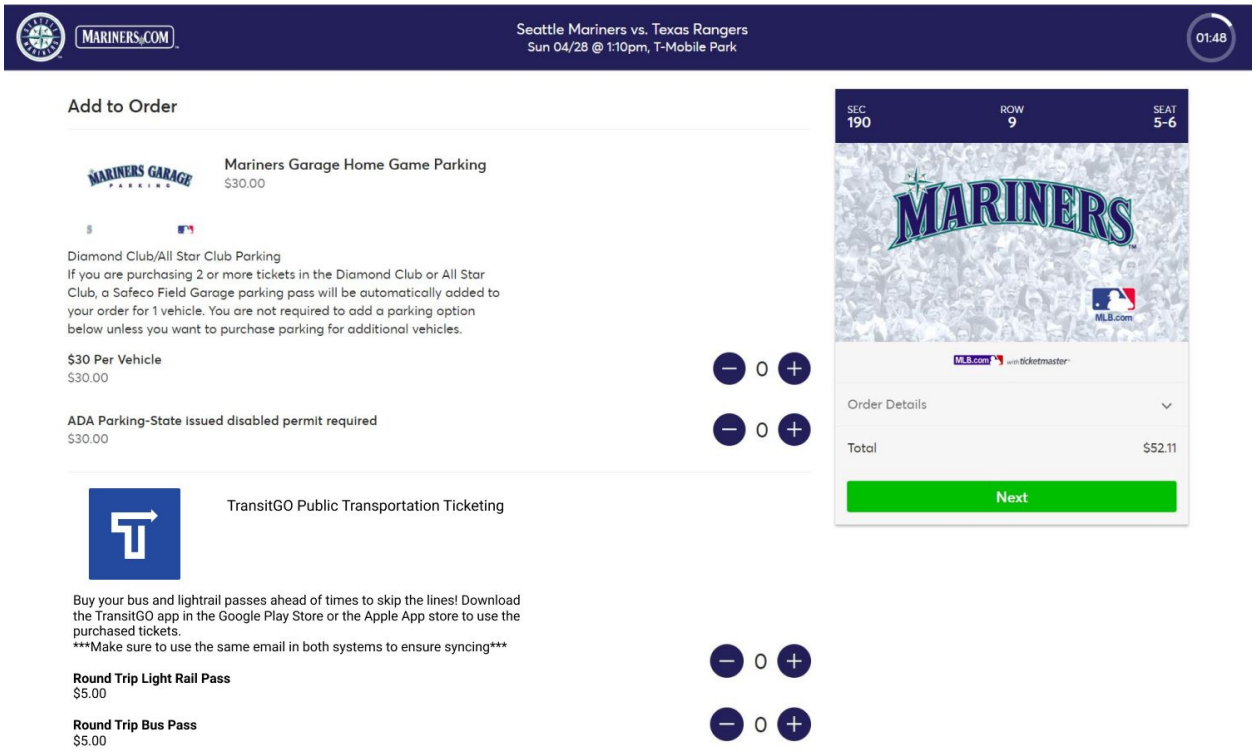


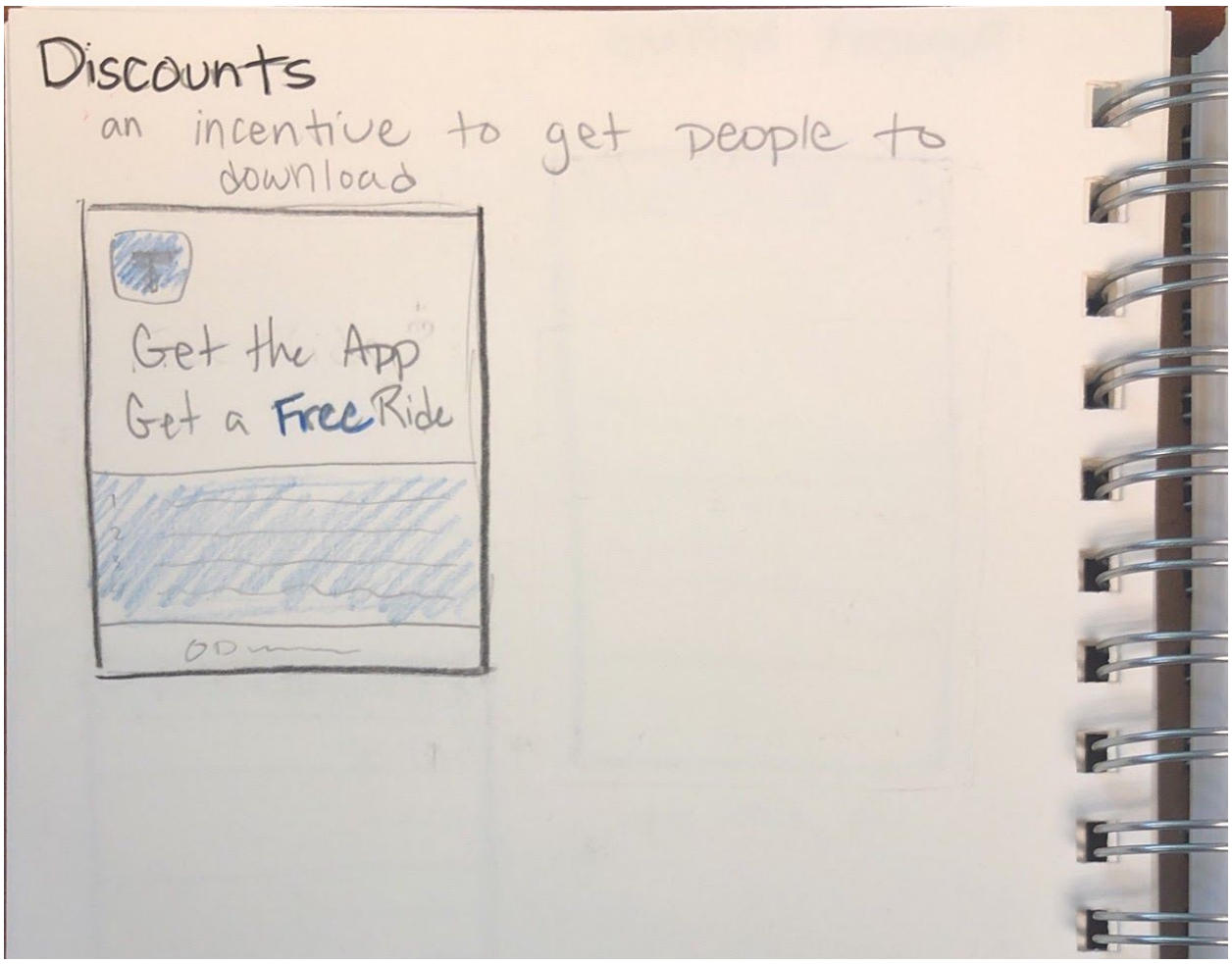
Figure 3.10: Recommended Addition to Mariners Checkout

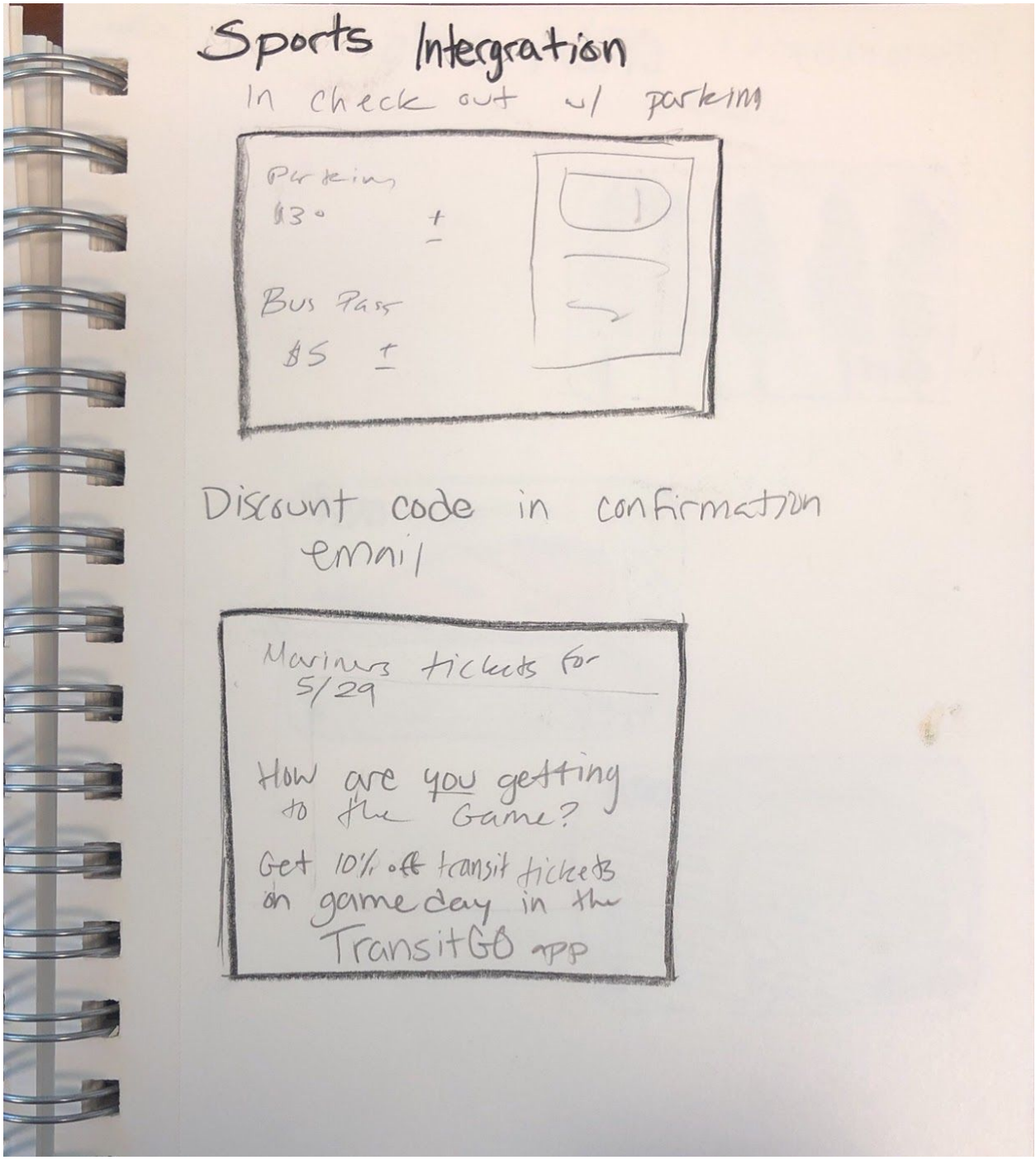
This targeting could be done in a number of different ways. The ability to purchase transit tickets could be added to the 'Add to Order' page of the Mariners check out process. This page currently gives the ability for customers to pre purchase parking, adding transit tickets would get event attendees thinking about taking public transit from the beginning of their event planning. Figure 3.10 shows how TransitGO might be incorporated into the Mariners system.

Conclusion

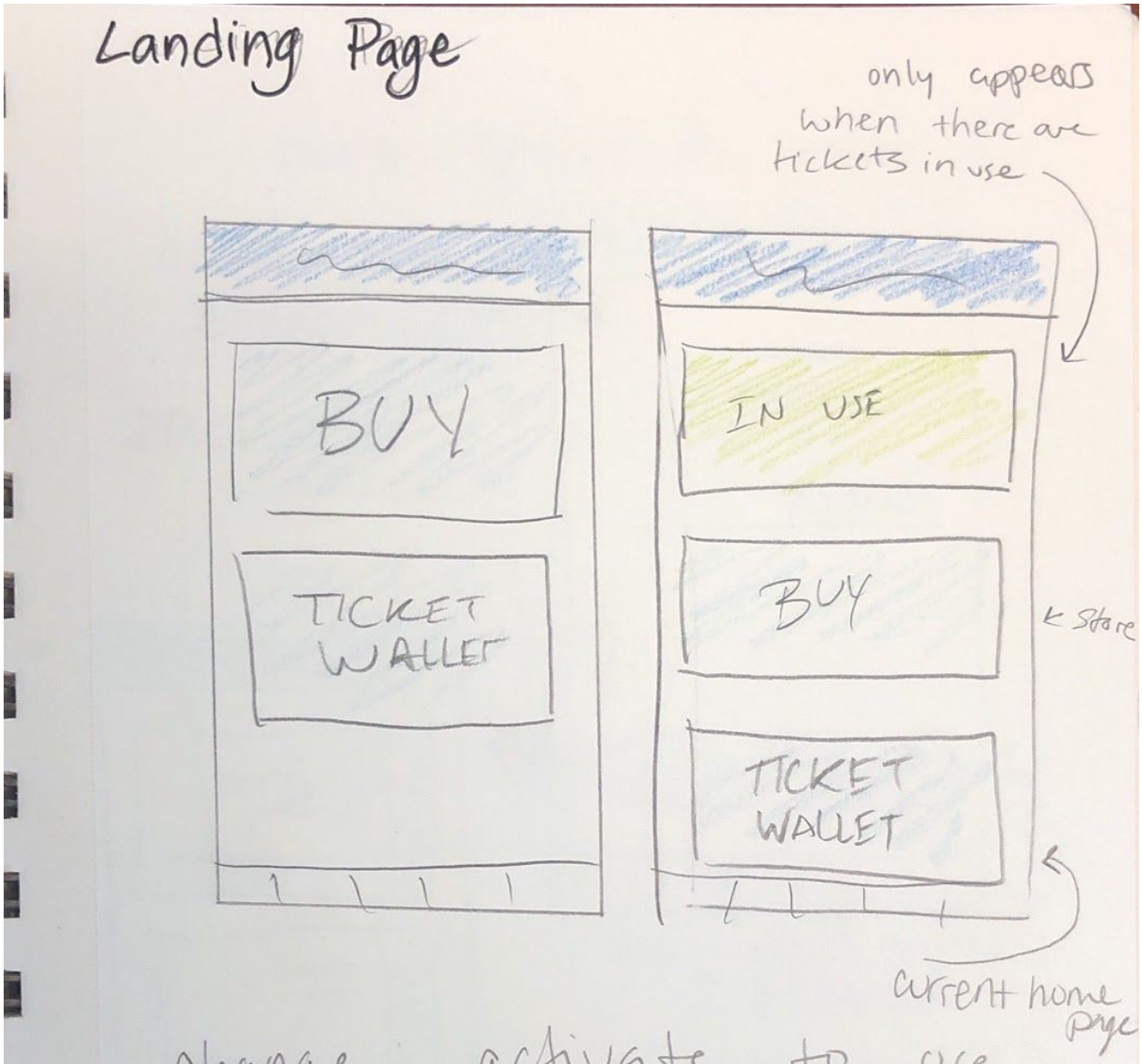
TransitGO has limited potential to serve our user group of event attendees. The design and marketing recommendations proposed in this document aim to increase user experience and adoption in the short term. We consider iconography, taxonomy, and copy revision improvements to be of the highest priority for further development of TransitGO, as they will increase the usability of the app for all users with affordable temporal or financial commitment. Integrating TransitGO into 3rd party systems, offering discounts as incentives, and rethinking positioning of physical advertisements may increase adoption of the app by optimizing the user flow that results in downloading and using the app or web service. As a final note, we see the increased onboarding potential provided by improved usability and marketing strategy to be aligned with the long-term goals of King County Metro. The next generation of ORCA may benefit from a positive public perception of TransitGO by establishing a lasting digital relationship.

Appendix I: Sketches

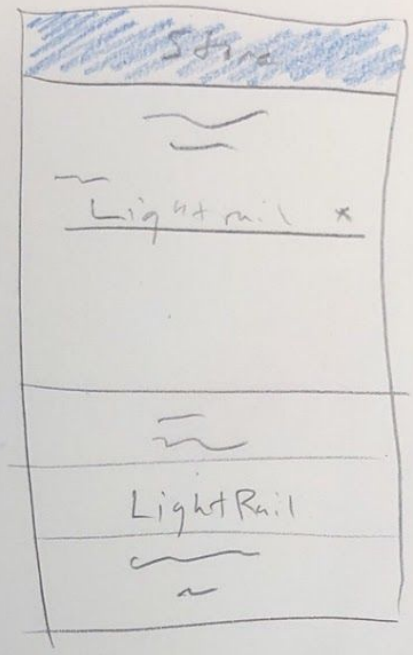


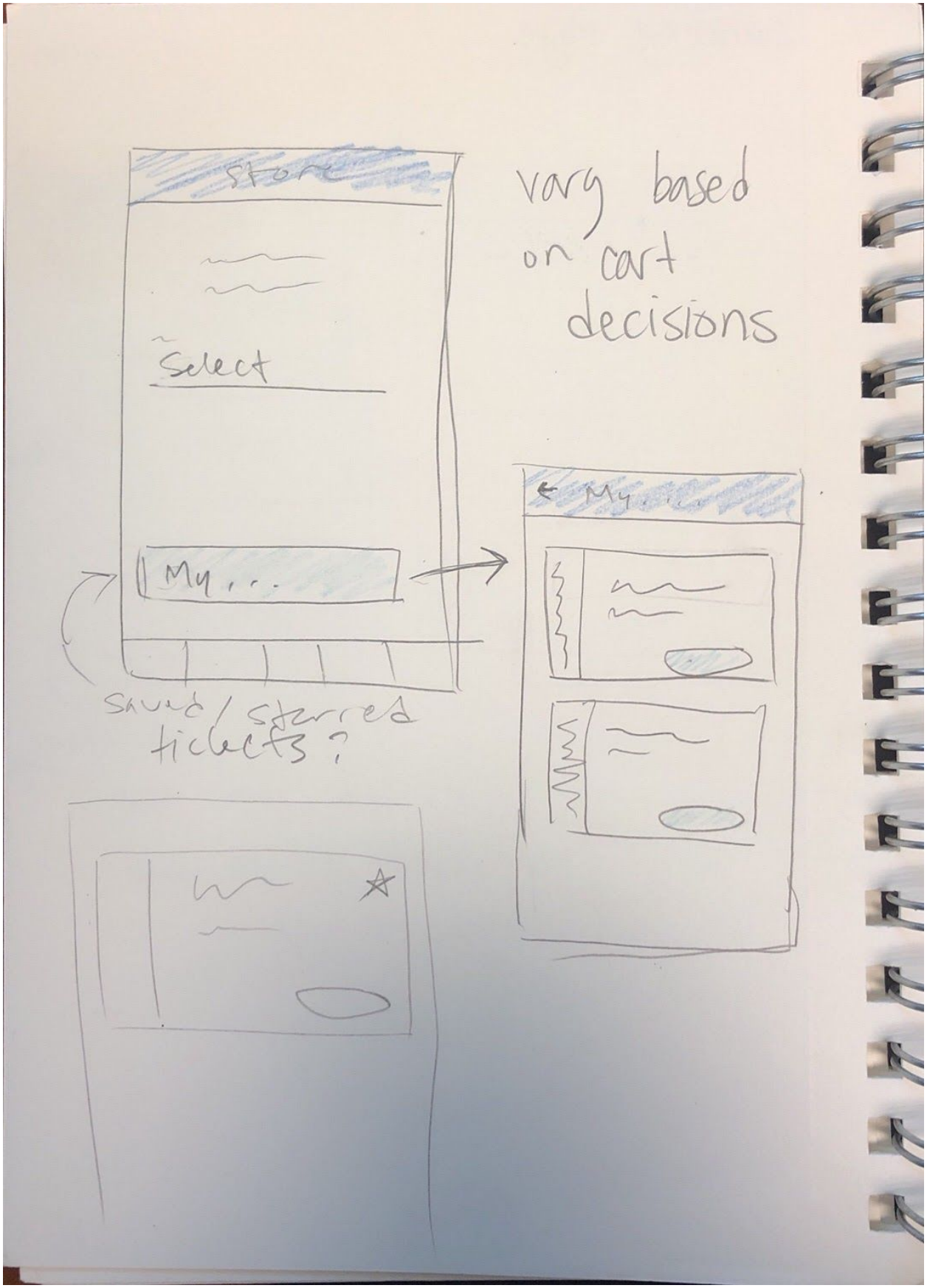

Sports Integration
In check out w/ parking
Parking
$30 +-
Bus Pass
$5 +-
Discount code in confirmation email
Mariners tickets for 5/29
How are you getting to the Game?
Get 10% off transit tickets on game day in the TransitGO app

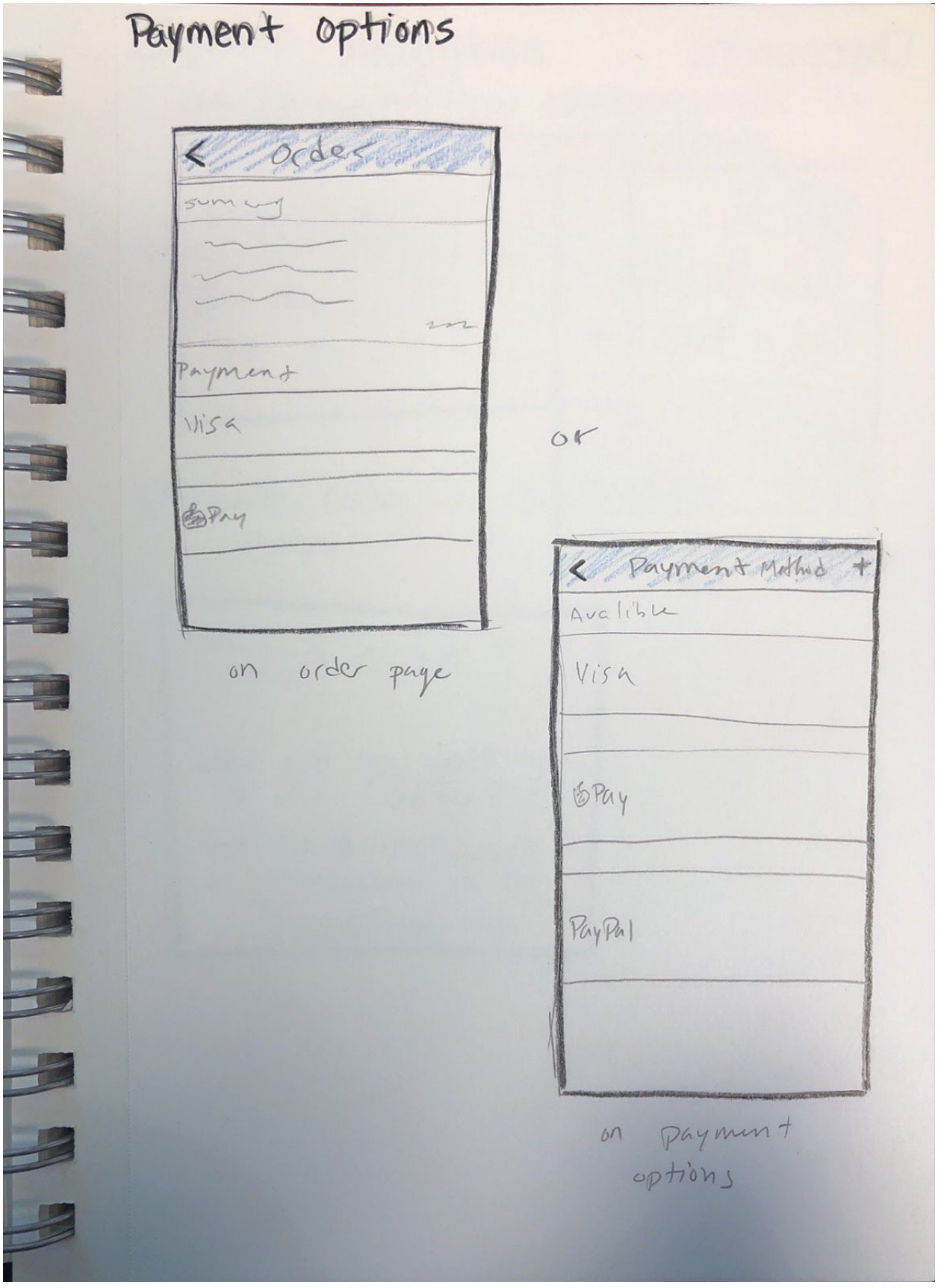

Intergration + Marking Google Maps
your location
Steacum
link ->
74 ->
TransitGo # 2.75
buy tickets in transitGO
Link
23 min


Landing Page
only appears when there are tickets in use
BUY
TICKET WALLET
IN USE
BUY
TICKET WALLET
← Store
current home page
change activate to use and activated to in-use clearer terminology

move lightrail to mode of travel




Store
Select
My...
vary based on cart decisions
saved/starred tickets?


Payment options
Order
summary
Payment
Visa
Pay
on order page
or
Payment Method
Available
Visa
Pay
PayPal
on payment options