

Swedish Cherry Hill

# Directional Capacity Analysis



commute seattle

February 2019

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## Introduction

In September 2018, Commute Seattle was contracted to complete continued work of a directional capacity analysis (DCA) for the Swedish Cherry Hill medical campus. The DCA is part of a requirement listed within the campus's Major Institution Master Plan (MIMP). This requirement states that Swedish Cherry Hill is to "conduct a biennial survey of [Transportation Master Plan] TMP effectiveness in a form and manner established by [Seattle Department of Construction and Inspections] SDCI and [Seattle Department of Transportation] SDOT. The survey shall include a directional capacity analysis of employees to determine whether those who do not use transit have access to the transit they would need to travel to and from the campus" (Cherry 85). Mark Melnyk, former Employee Transportation Coordinator (ETC) for Swedish Medical Center, Swedish Medical Group and author of the previous directional capacity analysis established a baseline transit access determination with the following statement:

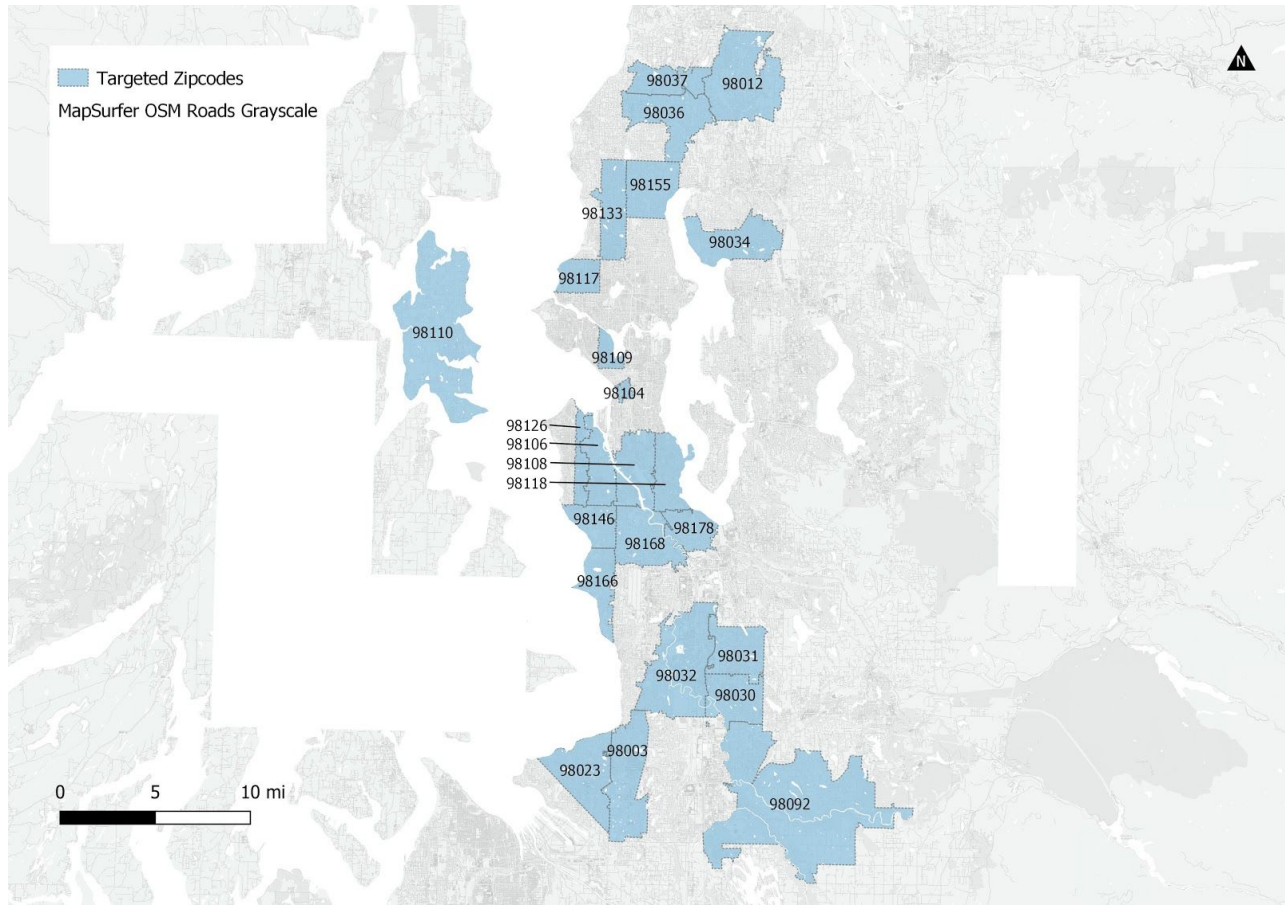
Zip codes that averaged at least one trip per person are considered areas that have transit service that meets the needs of the campus employee population. Conversely, the zip codes that average less than one transit trip per person will be deemed to be having less than sufficient service. By evaluating service level through the lens of commute activity captured on CTR survey, we have a clear connection to the campus's SOV goal by using the data sets. Further we are able to move the discussion away from an academic determination of adequate service to a more substantive determination tied to actual activity.

After identifying whether or not there is sufficient transit capacity, the next step will be to identify areas that can increase the use of transit if necessary and come up with clear, actionable recommendations.

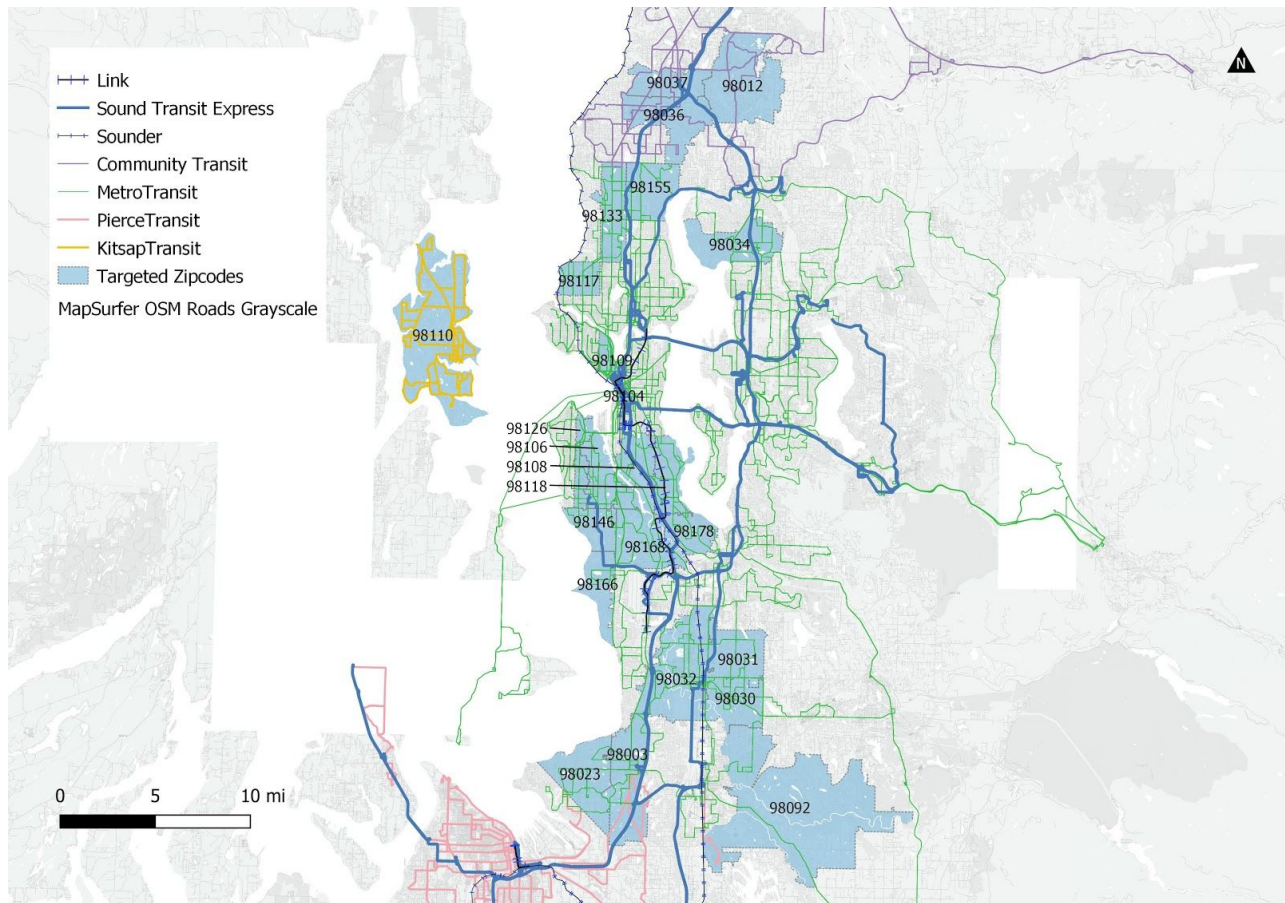
As of August 2018 the final area of work related to the directional capacity analysis left to complete was to "take a closer look at the transit routes that serve the [Swedish Cherry Hill] campus and see which routes could have small changes made to have higher ridership" (Directional 18).

In the interest of providing a more thorough analysis, the project scope expanded to include a review of transit options beyond immediately campus adjacent routes. A route analysis was conducted for each zip code where employee trip origins were previously deemed to meet the needs of the campus.

## Zip Codes Targeted for Analysis



## Zip Codes Targeted for Analysis With Transit Overlay



Maps displaying each of the zipcodes to undergo route analysis: Commute Seattle

## **Methodology**

In order to increase transit ridership to Swedish Cherry Hill, analysis was conducted on possible transit commutes from all zip codes previously deemed “transit viable” (with the exception of 98110<sup>1</sup>). The intended goal of this analysis is to provide recommendations that will have positive impacts for potential transit commuters originating in the identified transit viable zip codes.

### *Route Analysis*

In the interest of providing a more thorough analysis, the project scope expanded to include a review of transit options beyond immediately campus adjacent routes. A route analysis was conducted for each zip code where employee trip origins were previously deemed to meet the needs of the campus. The indicators sought during route testing were one-way trip duration (in minutes) and number of transfers to Swedish Cherry Hill. Models used to analyze trips from each test point use a representative transit trip assuming an arrival time at Swedish Cherry Hill of 8:00 am on a Wednesday in order to simulate realistic transit route availability from the selected zip codes and to account for congestion delay.

Test point locations were determined with two considerations in order to extrapolate averages. Test points were distributed directly on transit routes in order to limit observations to only the transit portion of a trip. Test points are spread across the transit network to take samples from routes that may be affected by congestion delay.

### *Recommendations*

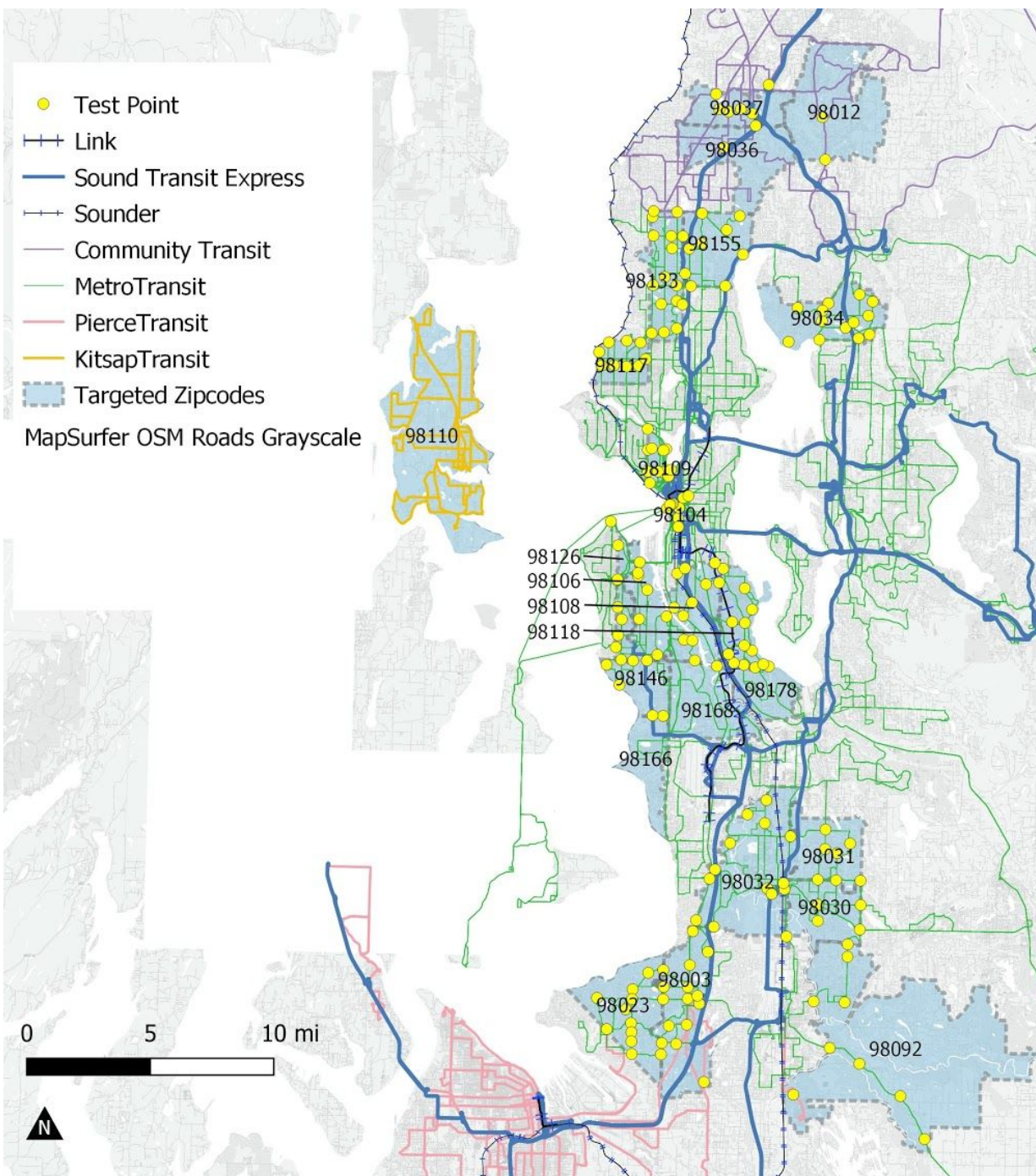
After performing route analysis on a sampling of transit trips from transit viable zip codes to Swedish Cherry Hill, a broad spectrum of transit trip characteristics for potential Swedish Cherry Hill transit commuters became apparent. Observable transit trip similarities were used to direct attention to transit quality for the purpose of targeted investments.

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<sup>1</sup> 98110 / Bainbridge Island transit routes to Swedish Cherry Hill truncate to ferry trips and enter Seattle at Colman Dock. A test point in 98104 at Colman Dock is added to the average of that zip code.



### Trip Origin Test Points



## Findings

The following findings are broken into two categories: *key findings* and *nuanced complexities*. Key findings refer to quantitative information derived from the analysis. Nuanced complexities take a deeper dive to expand the effects of zip codes that are reliant on park and rides.

### *Key Findings*

- Average transit trip to Swedish Cherry Hill from transit viable zip codes: 1 hour 4 minutes
- Average number of transfers from transit viable zip codes to Swedish Cherry Hill: 1
- Direct routes from transit viable zip codes to Swedish Cherry Hill: 303 Express (Shoreline), 193 (Federal Way), 63 (Northgate), 64 (Lake City), 3 (Queen Anne - Madrona), 4 (Queen Anne - Judkins Park)
  - Route 63, 64 are direct but do not feed transit viable zip codes
- All non-direct transit trips arrive to Swedish Cherry Hill via route 3/4
- Park and Ride parking capacity: Federal Way - 1190, Lynnwood Transit Center - 1398, Auburn Station - 520, Northgate - 155

### *Nuanced Complexities*

Each zip code contains unique factors that alter the likelihood of commutes from each test point. For example, some zip codes, while very large in land area (98012 in Mill Creek, or 98092 in Auburn) are served by very few transit routes. Conversely, some small zip codes (98104 in Downtown Seattle, or 98109 in South Lake Union Seattle) have abundant transit options but many of these connections are short enough that they do not provide considerable benefit over walking.

Zip codes reliant on park and ride facilities or transit hubs tend to have a large trip time differential among transit lines. One example of this is transit trips feeding Federal Way Transit Center. Trips leaving directly from Federal Way Transit Center arrive at Swedish Cherry Hill within 1 hour, 15 minutes. Transit trips that begin further west in the neighboring zip code 98023 (while considered transit viable) require a transit rider to transfer at Federal Way Transit Center and take, on average, an additional 45 minutes to arrive at the destination. Similar scenarios occur around Kent Station and Lynnwood Transit Center (with the exception of selected Community Transit routes traveling directly to Downtown Seattle).

## **Recommendations**

After analyzing possible transit trips from transit viable zip codes, Commute Seattle developed a series of recommendations for Swedish Cherry Hill. Recommendations are based on findings shown in the appendix.

Final recommendations were evaluated on three key metrics:

1. Cost (\$, \$\$, \$\$\$)
2. Feasibility to implement (Difficult, Feasible, Very Feasible)
3. Potential to decrease DAR (Low, Med, High)

It is reasonable to assume that appealing policies and programs will also contribute to improved recruitment and retention for tenants of Swedish Cherry Hill, and that decreasing DAR will both reduce the environmental impact of commuters and help the campus meet its MIMP and CTR obligations.



## **Recommendation 1: Passive advertising campaign**

Feasibility to implement: Very Feasible

Cost: \$

Potential to decrease DAR: Med

A passive advertising campaign carried out by Sabey will present transit opportunities that current drive alone commuters may not have considered. This recommendation is derived from the findings:

- Average number of transfers to Swedish Cherry Hill: 1
- Direct routes to Swedish Cherry Hill: 303 Express (Shoreline), 193 (Federal Way), 63 (Northgate), 64 (Lake City), 3 (Queen Anne - Madrona), 4 (Queen Anne - Judkins Park)
  - Route 63, 64 do not feed previously identified transit viable zip codes
- All non-direct transit trips arrive to Swedish Cherry Hill via route 3/4

### *A: Highlight direct routes*

Providing options for people who prefer a one seat ride will neutralize concerns related to transferring. Each single seat transit route to campus offers an opportunity to sell the journey as a reliable stress-free commute. There are six King County Metro routes that directly serve both Swedish Cherry Hill and the zip codes targeted for this directional capacity analysis.

Highlighting and capitalizing on the positive points of each route has strong potential to attract riders who are frustrated by their driving commute and are interested in using transit but are concerned about the implications of making this mode switch.

Swedish Cherry Hill is directly served by 6 King County Metro routes. The following is a list of direct King County Metro routes to Swedish Cherry Hill from transit viable zip codes and their estimated trip time during peak morning commutes:

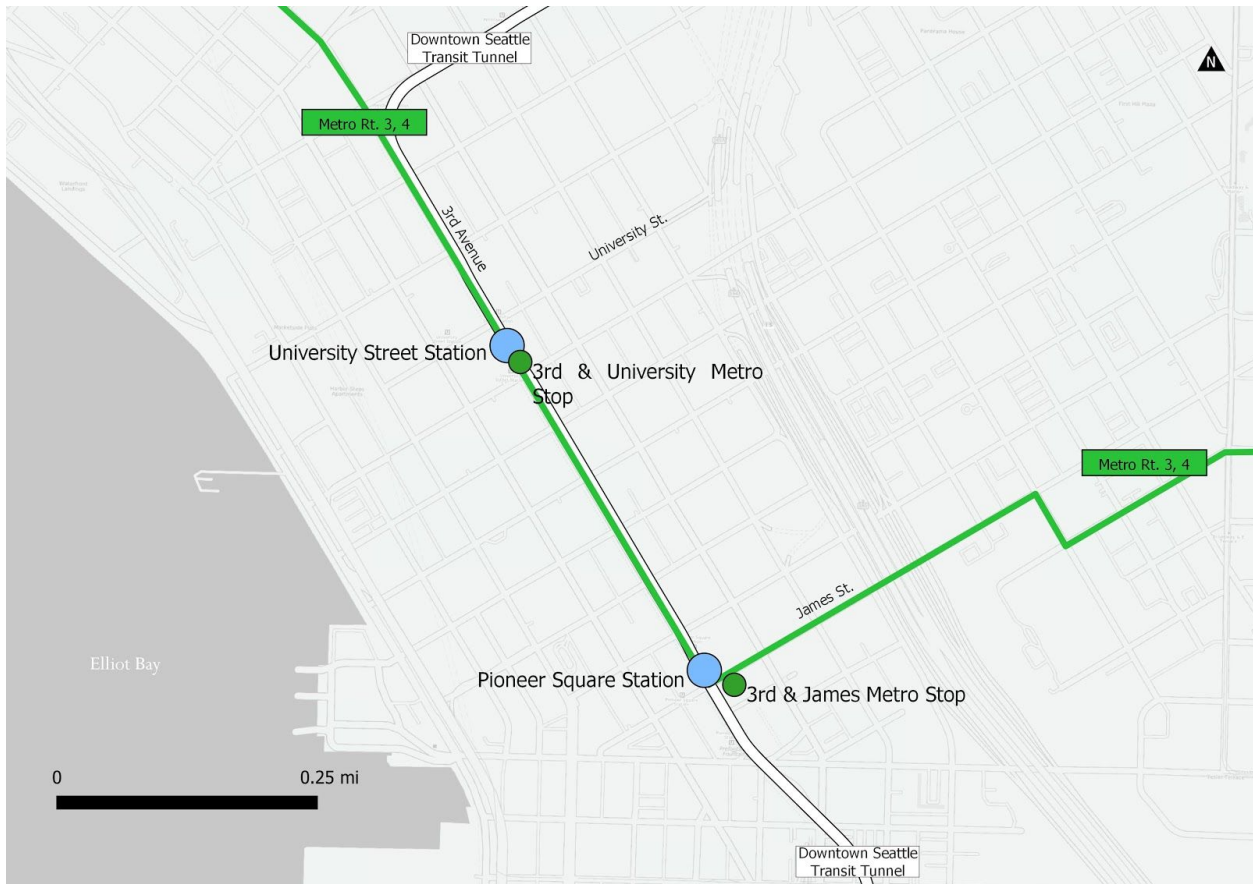
- Route 303 serves Swedish Cherry Hill from Shoreline Park & Ride (via Northgate) in 59 minutes
- Route 193 serves Swedish Cherry Hill from Federal Way Transit Center in 73 minutes
- Route 63 serves Swedish Cherry Hill from Northgate Transit Center in 45 minutes
- Route 64 serves Swedish Cherry Hill from Northgate Transit Center in 53 minutes
- Route 3 serves Swedish Cherry Hill
  - from Queen Anne in 40 minutes
  - From Madrona in 11 minutes
- Route 4 serves Swedish Cherry Hill
  - From Queen Anne in 40 minutes
  - From S Walker St & Rainier Ave S in 20 minutes

### *B: Highlight alternative transfer points*

For those with concerns about finding a seat on transit, or having to stand for the remainder of the transit trip post-downtown transfer, highlighting alternative transfer options will improve the

quality of the final leg of a journey. Transit routes from targeted zip codes that are not listed above involve a transfer to King County Metro route 3/4. Due to a number of factors<sup>2</sup>, eastbound route 3/4 becomes standing room only at 3rd & James. A campaign targeted at people who require a seat will suggest that transferring to route 3/4 at 3rd Avenue & Union Street (University Street Station) will offer similar access to the last leg of the trip with a higher chance of finding a seat.

### Alternative Transfer at 3rd & University



<sup>2</sup> Factors include steep topographical incline from west to east, logical transfer point for transit users arriving via Downtown Seattle Transit Tunnel at Pioneer Square Station.

## **Recommendation 2: Capital improvement**

Feasibility to implement: Difficult

Cost: \$\$

Potential to decrease DAR: Med

Investments in capital improvements will address transfer quality at 3rd & James St. This recommendation is derived from the findings:

- Average number of transfers to Swedish Cherry Hill: 1
- All non-direct transit trips arrive to Swedish Cherry Hill via route 3/4

Currently, transit riders who transfer to 3rd & James St. wait at a transit stop where the demand for rain protection and seating often outpaces supply.

To determine specific upgrades, Sabey will need to conduct additional analysis. Further analysis will include a determination of items that will provide the highest benefit to transit riders transferring at this point.

Off campus improvements will need additional investigation and approval from King County Metro and SDOT.

## **Recommendation 3: Expedite bus trips with partnerships**

Feasibility to implement: Feasible

Cost: \$

Potential to decrease DAR: High

Expediting bus trips between 3rd Ave. and Swedish Cherry Hill will provide a time advantage that is highly likely to grow transit ridership. Developing partnerships with neighborhood organizations and nearby institutions who stand to benefit will add momentum to a desire to speed transit times in this corridor. This recommendation is derived from the findings:

- Average transit trip to Swedish Cherry Hill: 1 hour 4 minutes
- Average number of transfers to Swedish Cherry Hill: 1
- All non-direct transit trips arrive to Swedish Cherry Hill via route 3/4

The specific actions to accelerate transit between 3rd Ave. and Swedish Cherry Hill are not clear at this time. Stakeholders and regular users of the system will collaborate to determine the specific approach to solving transit delays.

Appendix

Transit Trip Time																	
All Zip Codes																	
TP = Test Point																t=Minutes	
Zip	TP 1	TP 2	TP 3	TP 4	TP 5	TP 6	TP 7	TP 8	TP 9	TP 10	TP 11	TP 12	TP 13	TP 14	TP 15	Average	Average (round)
98003	83	81	74	84	62	89	63	85	79	93						76.5714 2857	77
98012	74	77														75.5	76
98023	103	101	99	84	82	88	78	104	102	101	96					94.2	94
98030	101	100	90	109	94											98.8	99
98031	95	87	113	133	75	101										100.666 6667	101
98032	69	68	75	89	104	88	102	55								89.1476 1905	89
98034	81	76	76	80	80	85	69	80								78.375	78
98036	58															58	58
98037	91	79	74	86	69											79.8	80
98092	86	84	85	83	87	86	90	122								90.375	90
98104	24	20	18	16	19	24	10	9	12	12						16.4	16
98106	48	49	60	52	67	71	64	55	45							56.7777 7778	57
98108	39	41	35	36	47	54	46	57	57	37	32	36	53			43.8461 5385	44
98109	45	38	33	32	37	29	36	37	41	24	24					34.1818 1818	34
98110	0															0	0
98117	62	62	65	55	49	56	56	64	59							58.6666 6667	59
98118	32	33	49	36	55	54	43	44	51	51	46	54	60	65		48.0714 2857	48
98126	53	49	38	35	52	60	56	67	52	52						51.4	51
98133	73	52	54	50	50	46	49	56	56	52	64	54	58	48	66	54.4285 7143	54
98146	75	72	67	67	71	72	71									70.7142 8571	71
98155	58	66	52	56	61	74	57									60.5714 2857	61
Total																63.6425 6405	64

**Number of Transfers**  
All Zip Codes

TP = Test Point																x=transfers	
Zip	TP 1	TP 2	TP 3	TP 4	TP 5	TP 6	TP 7	TP 8	TP 9	TP 10	TP 11	TP 12	TP 13	TP 14	TP 15	Average	Average (round)
98003	2	2	2	2	1	2	1	2	2	2						1.8	2
98012	1	1														1	1
98023	2	1	1	1	1	1	1	1	1	1	1					1.1	1
98030	2	2	2	2	2											2	2
98031	2	2	2	3	2	2										2.16666 6667	2
98032	2	2	2	2	2	2	2	1								2	2
98034	2	2	1	2	1	2	2	2								1.75	2
98036	1															1	1
98037	1	1	2	2	2											1.6	2
98092	2	2	2	2	2	2	2	2								2	2
98104	0	0	0	0	0	1	0	0	0	0						0.1	0
98106	1	1	1	1	1	1	1	1	1							1	1
98108	1	1	1	1	1	1	1	1	1	0	0	1	1			0.84615 38462	1
98109	0	0	1	0	0	0	1	0	1	1	0					0.36363 63636	0
98110	0															0	0
98117	1	1	1	2	1	1	1	1	1							1.11111 1111	1
98118	1	1	1	1	1	2	1	1	2	2	1	1	1	1		1.21428 5714	1
98126	1	1	1	1	1	1	1	1	1	1						1	1
98133	1	0	1	0	1	0	1	1	1	1	2	1	1	1	1	0.66666 66667	1
98146	1	1	1	1	1	2	1									1.14285 7143	1
98155	1	1	0	0	1	1	1									0.71428 57143	1
<b>Total</b>																<b>1.17026 9677</b>	<b>1</b>