

## TASK 4: DEMOGRAPHICS OF THE ABC RAMPS

This research aims to identify the user base for the ABC Ramps through the analysis of the demographic background, transportation habits, and attitudes and motivations of current and potential ABC Ramps customers. By understanding the demographics and behavior patterns of current and potential ABC Ramps users, this research provides insights into innovative strategies to expand the user base of the ABC Ramps and to increase the relevance of the ABC Ramps as a multimodal transportation facility in the Twin Cities region.

This research draws on a number of data sources, including the 2010-2011 Metropolitan Council Travel Behavior Inventory, the 2011-2015 American Community Survey, the U.S. Census 2014 Longitudinal Employer Household Dynamics (LEHD), the 2015 vehicular traffic data from INRIX, and original data collected in 2017 through survey research.

The first portion of this report summarizes the data collection framework. A second section—the core of the report—identifies the key findings from analyses of the various data sources. The third section draws conclusions based upon analysis findings and makes recommendations as to where to focus efforts of ramp engagement, as well as considerations ramp staff could take to meet the concerns of existing users.

Work on this report was led by University of Minnesota Humphrey School of Public Affairs Professor Yingling Fan supported by Humphrey School graduate research assistants.

### IDENTIFICATION OF AREAS OF CURRENT AND POTENTIAL CUSTOMERS

As part of the analysis of who uses and could potentially use the ABC Ramps, two different datasets were analyzed: INRIX and LEHD. The characteristics of the two datasets are described below. According to their characteristics, both INRIX and LEHD are appropriate data sources for examining the demographics of current and potential ABC Ramps users. They can be used in complementary ways for our analysis.

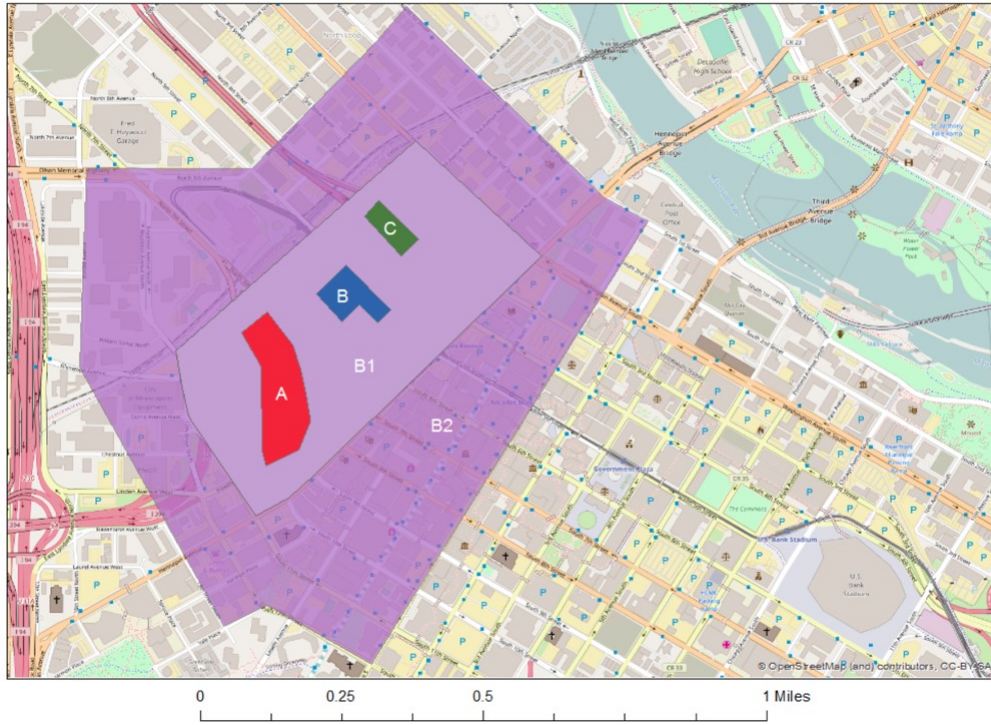
- INRIX provides a sample of GPS points from vehicle trips. This data was collected over a period of three months in 2015 from vehicles equipped with GPS units that were turned on. While this leaves some room for sample bias towards newer vehicles and drivers taking certain kinds of trips, INRIX has the advantage of a large sample size. Over the course of the study period, over 6 million GPS points from vehicle trips were recorded. The origin and destination data for these points were especially important for this study. These points sought to answer the question: What proportion of overall trips ending at the ABC Ramps and surrounding areas came from a given zip code? Throughout the report this is referred to as the population unadjusted measurement of an identified customer area. The population adjusted measurement asks,

“What proportion of trips originating in a given zip code landed at a given boundary of the ABC Ramps and surrounding areas?”

- The LEHD data matches employee IDs with tax information of local employers, thereby providing information on the pairs of home and work zip codes of all individuals employed at any firm located in the Twin Cities metropolitan area. In this case, an unadjusted measurement of the potential customer population in a specific zip code is the proportion of commuters who live in the specific zip code and work in an ABC Ramps study area out of the total commuters who work in the ABC Ramps study area. In other words, the measurement is calculated by dividing the number of census-identified workers who live in a particular zip code and work in one of the ABC Ramps study areas by the total number of workers work in that study area. The adjusted measurement would be dividing the number of workers who live in a particular zip code and work in one of the ABC Ramps study area by the number of total workers who live in the particular zip code.

To identify the best destination boundaries associated with current and potential ABC Ramps customers, we defined three different ABC Ramps study areas, encompassing anywhere from the ramps themselves to one to four blocks around the ramps. The three different study area boundaries, named as ABC, B1, and B2 below are illustrated in Figure 1.

- ABC is drawn around the price boundary of the ramp;
- B1 is drawn within one to two blocks from the ramp, with Hennepin Avenue as its eastern boundary; and
- B2 is drawn within two to four blocks from the ramp, with Marquette Avenue as its eastern boundary.



**Figure 1: ABC Ramps Study Area Boundaries**

Table 1 summarizes the total number of trips ending in each ABC Ramps study area using the INRIX data and the total number of workers ending in each study area using the LEHD data. Based upon the numbers, using Zone ABC might be too restrictive to capture current and potential customers of the Ramps. Using Zone B2 appears to be too expansive for capturing current users, but might be appropriate for estimating potential users.

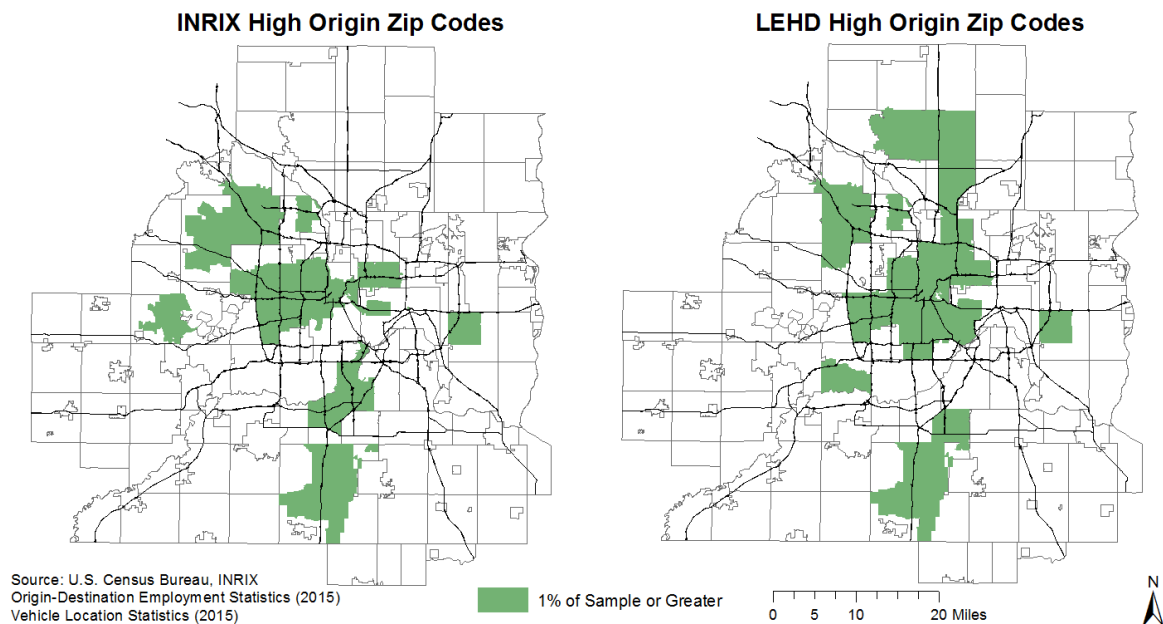
**Table 1: Sample Size by ABC Ramps Study Area Boundaries**

	<b>ABC</b>	<b>B1</b>	<b>B2</b>
<b>INRIX</b>	4,800 trips	28,000 trips	107,000 trips
<b>LEHD</b>	1,559 jobs	8,227 jobs	56,870 jobs

Using INRIX and LEHD, three versions of study area boundaries, and unadjusted and adjusted measurements, a total of twelve different calculations (12 = 2 data sources \* 3 boundaries \* 2 measurements) can be generated to illustrate where the current and potential customers of ABC Ramps live. Based upon the twelve calculation versions, we selected two versions that are most representative of the residential geography of current and potential customers as below:

- **INRIX geography:** This calculation used INRIX data and study area Zone B1 to catch the breadth of drivers parking within the spatial error zone of the ramps. In addition, the population adjusted and unadjusted origin measurements for Zone B1 were combined. By taking both measurements, smaller population communities were better represented.
- **LEHD geography:** This calculation used LEHD data and both the Zone B1 and B2 study areas because most downtown workers using the ABC Ramps do not work right next to the ramps. LEHD data does not contain information on where workers park but where workers work. The workers often using the downtown skyway system to get to their workplaces. In addition, the population adjusted and unadjusted origin measurements for Zone B1 and B2 study areas were combined. By taking both measurements, smaller population communities were better represented.

Figure 2 shows the final results using the two calculation methods above. The green color areas in Figure 2 (left) are zip codes with more than 1% of drivers who originated in the zip codes and had driving trips ended in Zone B1, and zip codes that contained more than 1% of all drivers who had driving trip ended in Zone B1. The green color areas in Figure 2 (right) are zip codes with more than 1% of commuters who originated in the zip codes and had workplaces in Zones B1 and B2, and zip codes that contained more than 1% of the workers who had workplaces in Zones B1 and B2.



**Figure 2: INRIX and LEHD Origin Distribution**

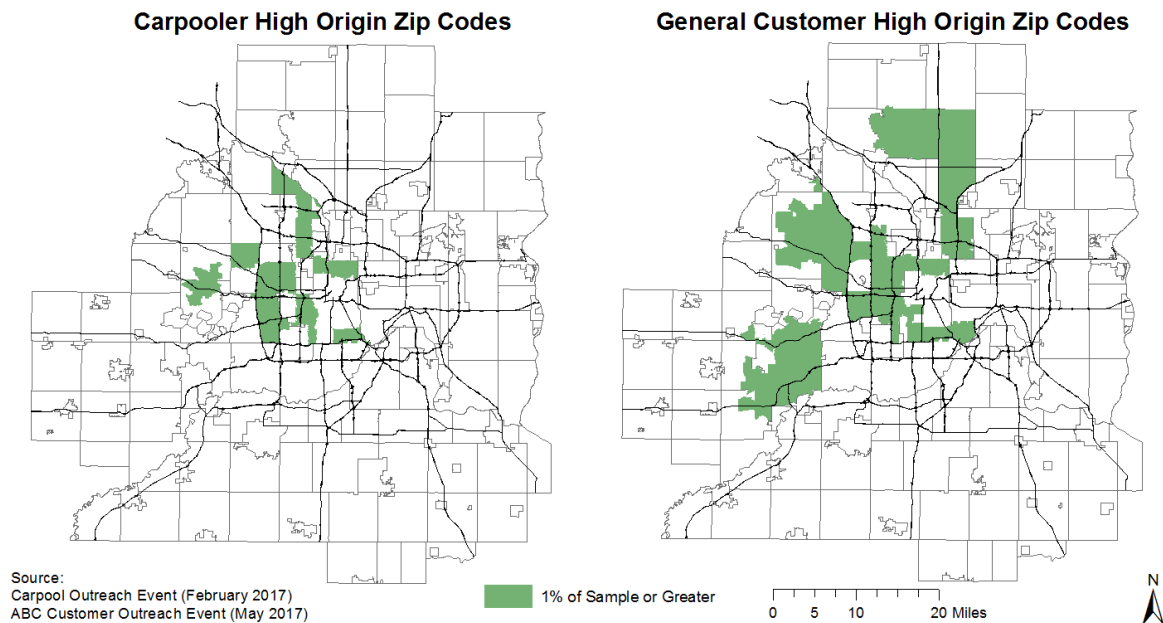
In addition to INRIX and LEHD data, identification of current ABC Ramps customers was complemented by survey efforts and contract data. For most of its operational history, the ABC Ramps have engaged

consumers through various market research efforts. Most recent efforts have involved intercept surveys given to people arriving at the ramps either via carpooling or SOV.

- March 2016 Carpooler Survey: Drivers entering each of the ABC Ramps through the carpool lanes were given bags with promotional items with an online survey. Slightly over 130 carpoolers responded.
- April 2016 General User Survey: Nearly 1,500 bags were distributed to commuters at a tabling event in the lobbies of the ABC Ramps during the morning peak period. 20 commuters responded. During that same time, boards were placed in each of the three Ramp lobbies asking how respondents had traveled to the ramps and how they would have ideally traveled to the ramps. The boards themselves received over 1,000 responses and represent the largest survey sample in the study. This event was accompanied by a longer form, online survey which received fewer than 40 responses.
- February 2017 Carpooler Survey: another iteration of this survey was handed to drivers entering each of the ramps through the carpool lanes. These drivers were given a flyer inside a prize bag. The flyer included a link to register to receive a free Go-To card. Recipients of the Go To card were required to complete the survey. Slightly over 50 carpoolers responded.
- May 2017 General User Survey: Promotional bags were distributed to commuters at a tabling event in the lobbies of the ABC Ramps during the morning peak period. Over 110 people responded.

Figure 3 takes an alternative look at the question of from where ramp visitors originate, taking the top 1% of zip codes that respondents to two separate surveys indicated that they live. The left graphic represents respondents to a survey given to carpool contract holders in February of 2017 (n=36). The right graphic (n=116) represents respondents to a survey given to all vehicles entering the three ramps in May of 2017.

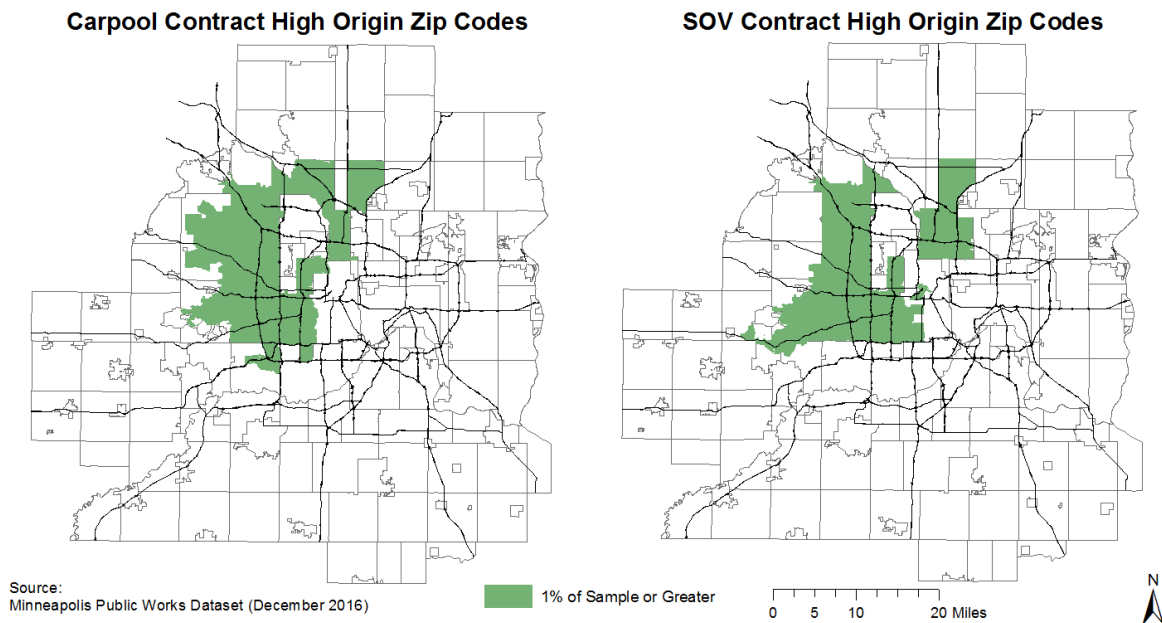
When comparing Figure 3 (right) with Figure 2 (left), it is clear that INRIX data failed to pick up workers from the northern suburban areas in the Twin Cities region.



**Figure 3: Carpool & Customer Survey Distribution**

In December 2016, zip code data for both carpool contract holders and regular ramp contract holders were obtained from the City of Minneapolis Parking Department. Figure 4 examines the distribution of the zip codes where ramp contract holders reported to live. The left graphic depicts the zip codes containing more than 1% of all carpool contract holders. The green zip codes in the left graphic include 490 of the 595 carpool contract holders reported in late 2016. The right graphic depicts the zip codes containing more than 1% of regular contract holders. The green zip codes in the right graphic include 888 of the 1,516 contract holders reported in late 2016.

Figures 3 and 4 have more similar geographic patterns than Figure 2. Because Figures 3 and 4 are more representative of the actual users of the ABC Ramps, it is possible that travelers who live in the southern areas of the Twin Cities region illustrated in Figure 2 may not use the ABC Ramps despite commuting to Zone B1. Travelers from southern areas of the region tend to use I-35W and then enter downtown areas from the south side using State Highway 65. It is less convenient for them to use the ABC Ramps compared to travelers from the western areas of the region.



**Figure 4: (Carpool/SOV) Contract Distribution**

As shown by the six maps in Figures 2-4, there are a total of six different definitions of customer areas, dependent upon the different data source we use. In the next section, we use various demographic data to summarize the characteristics of the residents living in each of the identified customer areas.

## DEMOGRAPHIC PROFILES OF THE IDENTIFIED CUSTOMER AREAS

Table 2 is a product of a using a combination of Travel Behavior Inventory (TBI) household survey and the 5-year American Community Survey (ACS) “Journey to Work” data to delineate differences in survey boundaries from Figures 2 through 4. The TBI household survey included approximately 13,000 households in the greater region (the seven-county area plus the twelve adjacent counties) who kept a travel diary in the fall of 2010 through March 2012. The 5-year ACS data was pulled from the U.S. Census Bureau website and include data from the ACS between 2011 and 2015.

As shown in Table 2, demographic differences between the respective geographies were modest. The average household size of the identified areas range between 2 and 2.1, as compared to the regional rate of 2.2. The percentage of households with children under 10 in the identified areas ranges from 7.6% to 8.8%, as compared to the regional percentage of 8.3%. The income levels are quite consistent across the identified areas, except the LEHD B1+B2 areas. This is reasonable because the LEHD B1+B2 area illustrated in Figure 2 (right) is the most expansive.

The percentage of commuters who carpool is highest when using the carpooler survey respondents to

identify customer areas, which is not surprising. An interesting finding is that the percentage of commuters who carpool is higher in the identified areas using the INRIX B1 and LEHD B1+B2 calculation methods than the identified areas using the regular customer and contract holder data. This indicates that carpool usage can be potentially increased by targeting the geographic areas shown in Figure 2 but not in Figure 3 or Figure 4, i.e., the southern areas.

In addition, the percentage of commuters who use transit is much higher in the identified areas using the INRIX B1 and LEHD B1+B2 calculation methods (8.5% and 8.6% respectively) than the identified areas using the regular customer and contract holder data. This indicates that the ABC Ramps have potential to become more multi-modal in their functions if its user base can extend into the southern areas shown in Figure 2 but not in Figure 3 or Figure 4.

**Table 2: Origin Demographics**

	<b>INRIX B1</b> (Figure 2)	<b>LEHD B1 + B2</b> (Figure 2)	<b>Carpool</b> (Figure 3)	<b>Customer</b> (Figure 3)	<b>Contract</b> (Figure 4)	<b>Metro</b>
<b>Household size (TBI)</b>	2	2.1	2	2.1	2	2.2
<b>% with young children (TBI)</b>	7.7%	8.6%	8%	8.8%	7.6%	8.3%
<b>Income (TBI)</b>	75-100k	60-75k	75-100k	75-100k	75-100k	75-100k
<b>Avg. vehicles (TBI)</b>	1.7	1.7	2.2	1.8	1.7	1.9
<b>% Peak Trips (TBI)</b>	53%	54%	54%	54%	53%	53%
<b>Average trip length (TBI)</b>	34 minutes	35 minutes	35 minutes	33 minutes	35 minutes	36 minutes
<b>Work Related Trips (TBI)</b>	13.7%	14.5%	13.8%	14%	13.6%	15.3%
<b>Vehicle Occupancy (TBI)</b>	1.3	1.3	1.3	1.3	1.3	1.3
<b>% Drove Alone (ACS 2015, Tracts)</b>	71.8%	71.0%	76.5%	76.2%	76.2%	76.2%
<b>% Carpooled (ACS 2015, Tracts)</b>	8.2%	8.4%	8.7%	7.4%	7.4%	7.4%
<b>% Transit (ACS 2015, Tracts)</b>	8.5%	8.6%	6.5%	5.4%	5.5%	5.4%
<b>% Non-White (ACS 2015, Tracts)</b>	28.3%	26.2%	25.4%	20.5%	18.2%	15.5%
<b>% Pay for Parking (ACS 2015, Tracts)</b>	12.9%	12.5%	13.3%	13%	21.3%	13.3%



## RESULTS FROM THE GENERAL CUSTOMER SURVEY

This section presents results from the 2017 general customer survey (n=116). Note that some of the 2016 general customer survey data are presented for the purpose of comparison. As shown in Figure 5, the majority of respondents arriving during the customer appreciation event in April of 2017 drove alone to the ramps (52%), but far fewer indicated driving alone as their ideal mode. Transit saw the biggest disparity between those currently using the mode and who wished to use that mode. Overall, 66% indicated that they are not using their ideal modes, a sentiment matched in 2016.

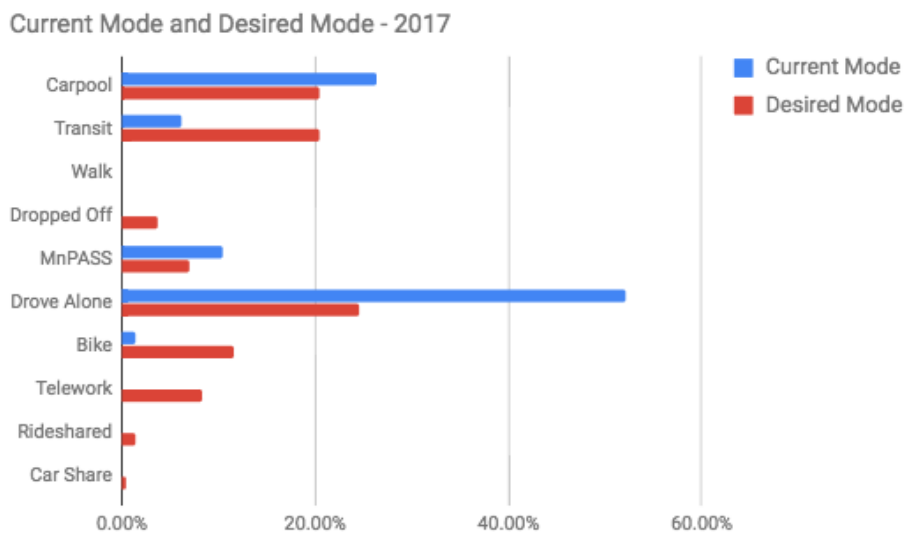


Figure 5: 2017 Customer Mode Split

### Current Mode and Desired Mode - Customer Survey 2016

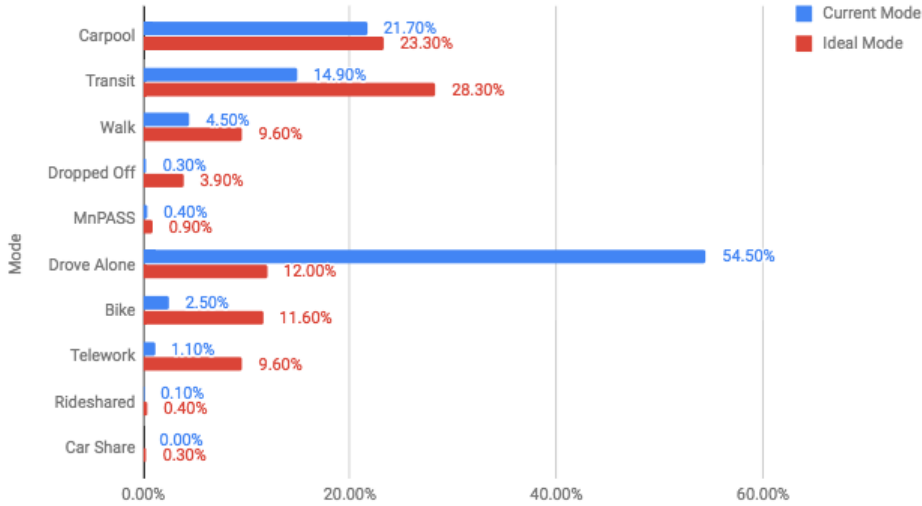


Figure 6: 2016 Customer Mode Split

Figure 7 shows the reported barriers to mode change if the respondent’s ideal mode is different from their current mode. The most common answers were their work or social schedule (16%), time constraints (10.3%), poor transit availability (7.7%), or the need for a car during the middle of the day (7.1%).

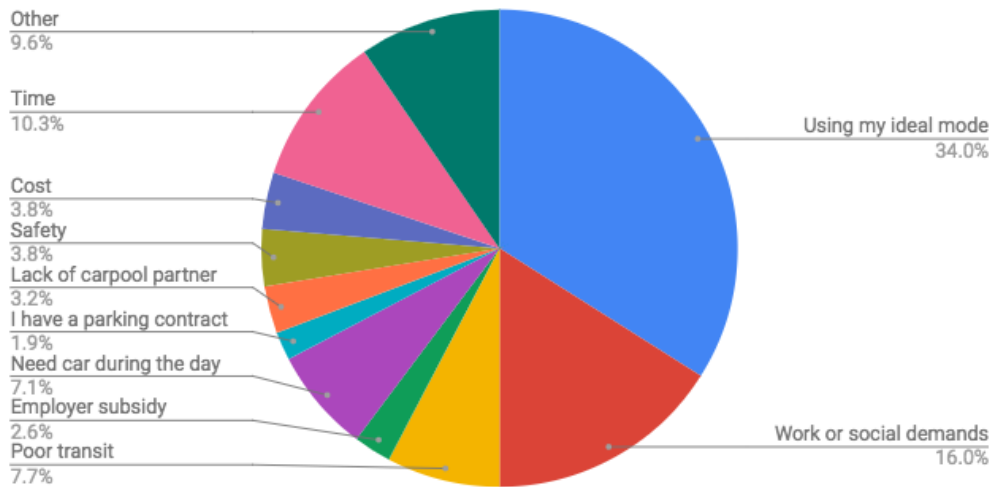
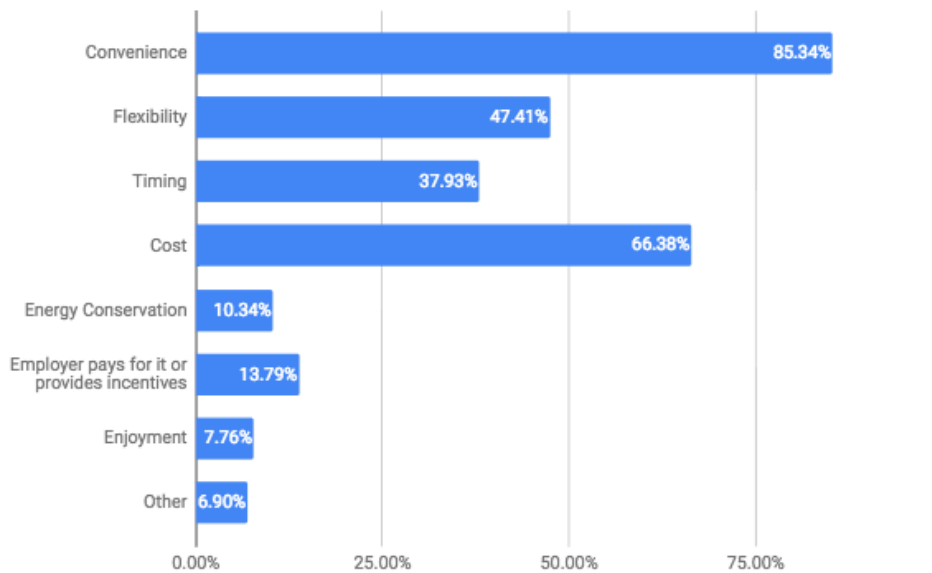


Figure 7: Barriers to Mode Change

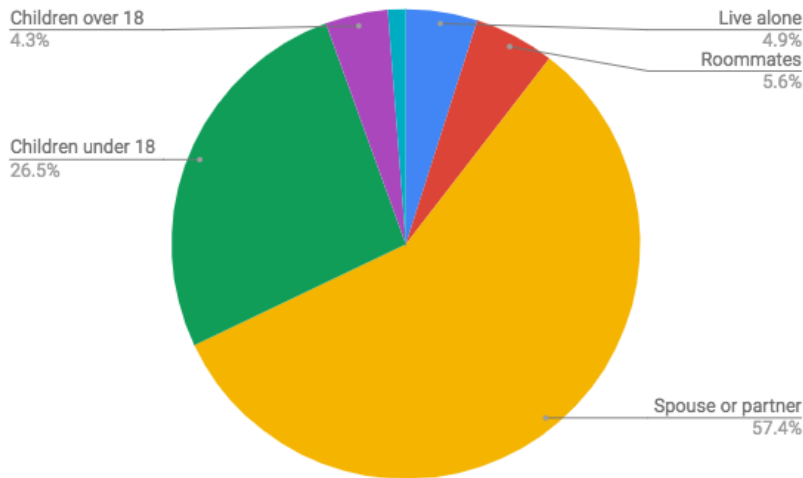
Despite that two out of three respondents indicated a mismatch between their ideal modes and current modes, the vast majority (80%) indicated that they were not planning to change their commuting habits. This was more or less supported by the question of what most influenced their choice in transportation (Figure 8).

As shown in Figure 8, about 85% of the respondents indicated that they chose their current modes due to convenience factors. About two third of the respondents indicated that they chose their current modes due to cost factors. Slightly less than half of the respondents (47%) indicated that they chose their current modes due to flexibility. And more than one third of the respondents (37%) suggested that timing of their schedules influenced their current mode choices. Respondents to this survey were allowed to select more than one motivation.



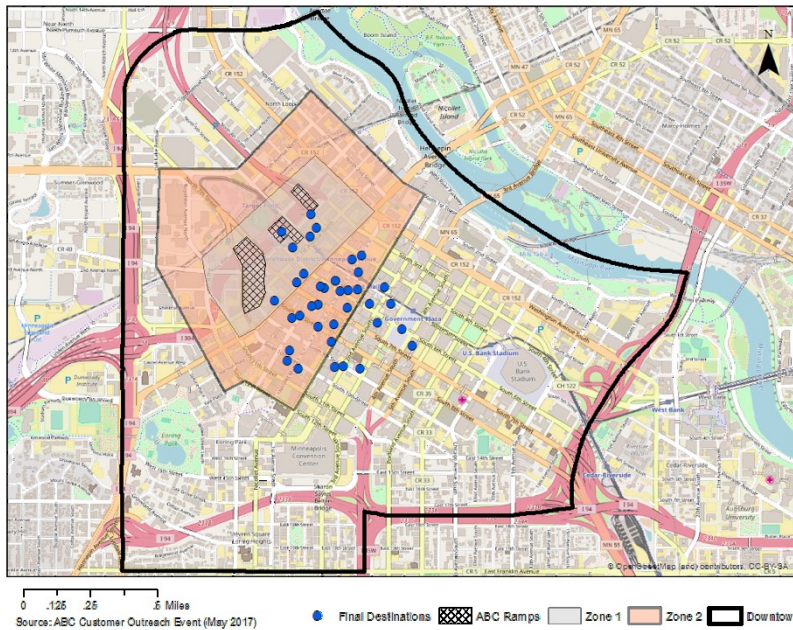
**Figure 8: Motivations for Transportation Choice**

When it comes to the demographics of the survey participants, the largest age cohort was 26 to 35 years old, with slightly more men (56%) completing the survey than women (44%). Respondents were almost all Caucasian (94%). Of the households that responded, 72% had incomes above \$100,000. About 57.4% of respondents were married and living with a spouse while a 26.5% had children under 18. Figure 9 shows household structure of the survey participants.



**Figure 9: Household Structure**

Nearly 63% of respondents reported usually using the skyway system to get to their final destination; 34% reported walking at street level. Common destinations included US Bank Plaza, the Target headquarters, Ameriprise, Butler Square, IDS Tower and Nicollet Mall. Figure 10 illustrates locations of the final destinations of the survey respondents. As shown in Figure 10, the majority of the survey respondents reported that their workplaces (i.e., final destinations) was located in Zone B2. Still, a significant number of survey respondents reported that their workplace was outside of Zone B2. This indicates that using Zone B2 may underestimate the population size of the current and potential users of ABC Ramps.

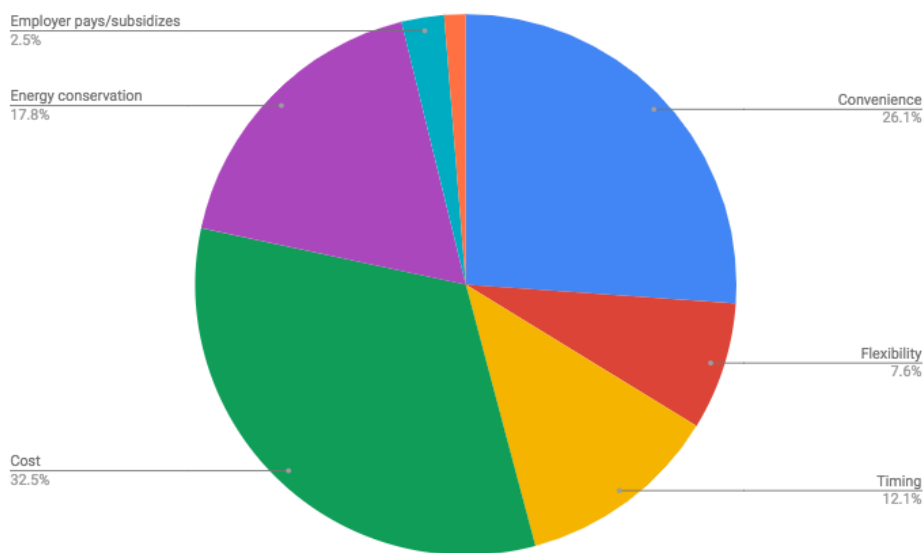


**Figure 10: Ramp Customer Final Destinations**

## RESULTS FROM THE CARPOOLER SURVEY

This section presents results from the 2017 carpooler survey (N=53). The majority of respondents in the 2017 carpool appreciation survey reported to carpool with their spouse (54%), while a smaller number reported commuting with their coworkers (26%) and friends (17%). About two out of three respondents reported that they switch driving with their carpool partner (63%). Three-quarters of respondents only carpooled with one other person.

The vast majority (83%) of respondents reported carpooling to the ABC Ramps five days a week. Being able to use the HOV lanes seemed to be a draw for convenience, with 60% of carpoolers reporting to use the HOV lanes. Besides the opportunities to use HOV lanes, Figure 11 indicates that cost and convenience are additional common factors for carpooling. About one third of the carpool respondents (32.5%) indicated that cost is a factor for choosing to carpool and about one out of four respondents (26.1%) indicated that convenience is a factor for choosing to carpool.



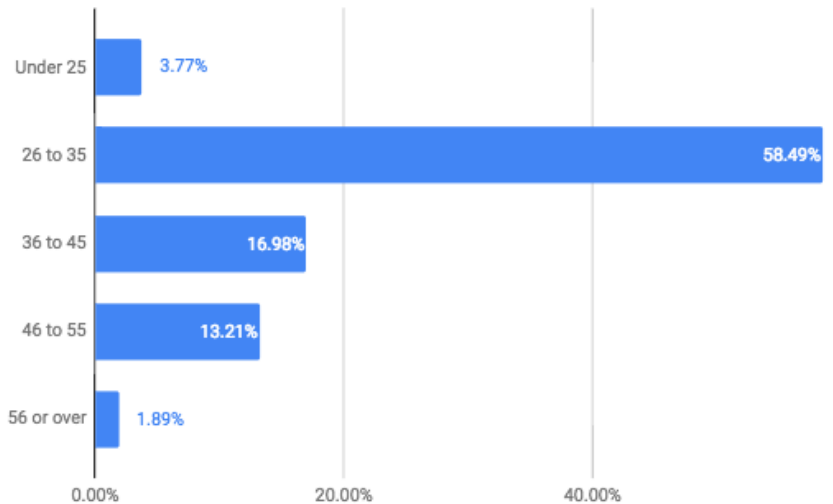
**Figure 11: Motivations for Transportation Choice**

For the 17% of respondents that reported taking another mode at least one day a week, driving alone to the ramps was the most common alternative choice (37%), while others opted to use transit (27%). Consistent with the regular use of carpooling, the vast majority (92%) of the carpoolers noted that it was their ideal form of commuting. In the 2016 survey 100% of carpool respondents reported that they were “extremely satisfied” or “satisfied” with their experience parking at the ramps. For the 8% that indicated an ideal mode other than carpooling, most chose driving alone (50%) or teleworking (33.3%) as their ideal mode. For the six respondents who cited a desire to switch, the most common barriers to

carpooling were work and social demands. One respondent noted that she was hesitant to take her young child by any other mode than by car.

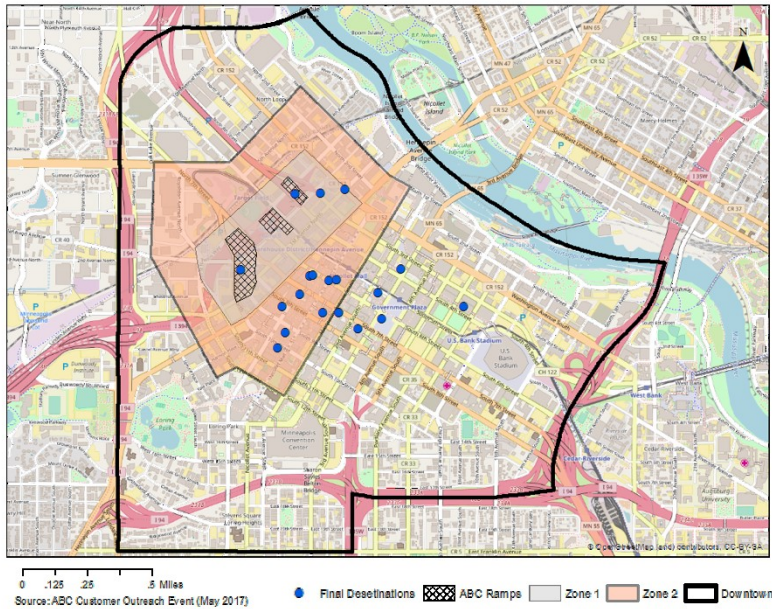
Respondents were mostly Caucasian (78%) with the second largest group reporting to be Asian (20%). Of the households that responded, 63% had incomes above \$100,000. In the 2016 survey, most carpoolers had either been in the program for five years or longer (34%) or for less than a year. There was an approximately even mix of men (52%) and women (48%).

Figure 12 illustrates the age split of the carpool survey respondents. The largest age group is young adults who are 26 to 35 year old, which is similar to the finding of the regular ramp user survey. Less than 2% of the carpoolers are older than 55. It could be an indication of lower carpooling acceptance rate among older workers or lower awareness of the carpooling options among older workers. In either case, strategies to expand carpooling may focus on older workers.



**Figure 12: Age Split of Carpool Respondents**

About 80% of respondents reported using the skyway system to reach their final destination, with 20% reporting walking at ground level. Figure 13 illustrates locations of the final destinations of the carpooler survey respondents. Similar to Figure 10, the majority of the survey participants had their workplaces (i.e., final destinations) located in Zone B2. Still, a significant number of survey participants had their workplaces outside of Zone B2. This indicate that using Zone B2 may underestimate the population size of the current and potential carpool users of ABC Ramps.



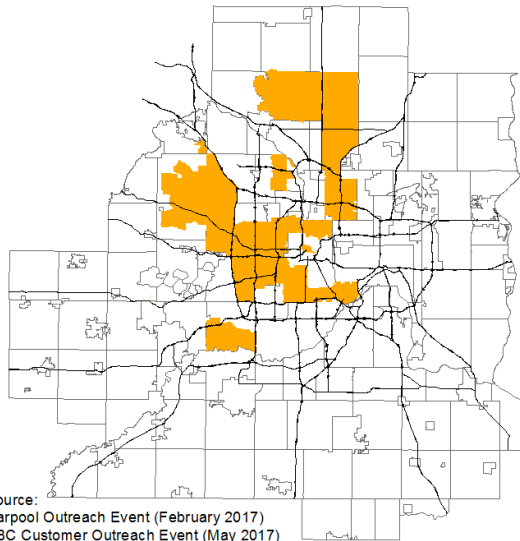
**Figure 13: Ramp Carpooler Final Destinations**

## DISCUSSION AND RECOMMENDATIONS

While the demographic analysis of current and potential ABC Ramps users employed many data sources, by combining the data sources we can arrive at a more informed discussion. Figure 14 displays zip codes across the region where there was overlap among the identified user areas using various data sources, as well as where there was no overlap. The left graphic depicts zip codes where carpool and customer surveys overlapped with both INRIX and LEHD origins. These can be interpreted as zip codes where there is confirmed high usage of the ABC Ramps from the four distinct data sources. The right graphic depicts where there was no overlap between the combined INRIX/LEHD data and the two surveys. The area illustrated in Figure 14 (right) shows potential areas where both employment and GPS data indicated potential usage of the ABC Ramps but little evidence that trips from those areas are using the ramps. These areas could be targeted for ramp marketing and outreach about the services that the ramps offer.



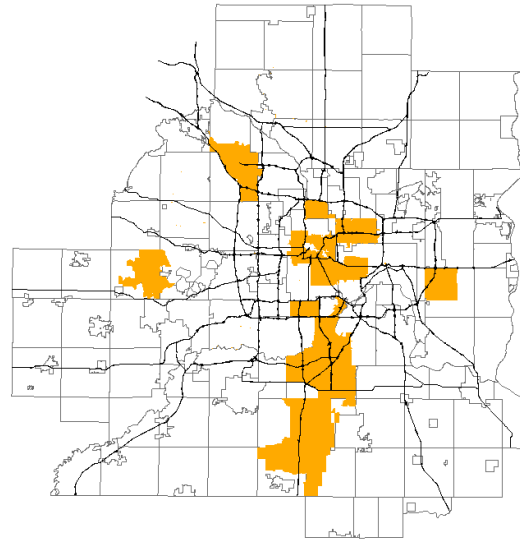
**Zip Code Overlap - LEHD/INRIX/User Surveys**



Source:  
Carpool Outreach Event (February 2017)  
ABC Customer Outreach Event (May 2017)  
Origin-Destination Employment Statistics (2015)  
INRIX Vehicle Location Statistics (2015)

1% of Sample or Greater

**Unique Zip Codes - LEHD/INRIX/User Surveys**



0 5 10 20 Miles



**Figure 14: Common & Distinct Origins: INRIX/LEHD/Surveys**

Following the results in Table 2, commuters in the areas illustrated in Figure 14 (left) already have higher carpooling rates and transit usage rates than commuters in the areas illustrated in Figure 14 (right). This indicates that the ABC Ramps have potential to increase their carpooling users and become more multi-modal in their functions if their user base can extend into the areas shown in Figure 14 (right).

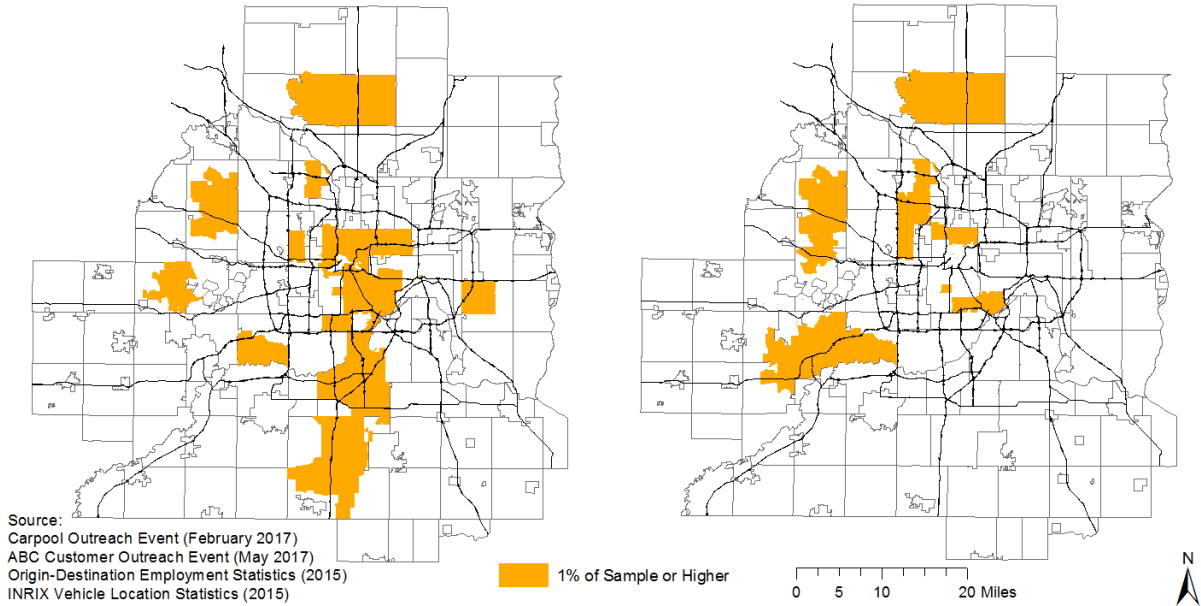
Specifically, the area orientation in Figure 14 (left) shows a spread to the west, northwest and north. In effect, Figure 14 can be viewed as an affirmation of the success of the ABC Ramps, attracting drivers who would have already been traveling downtown near the ramps. When looking at Figure 14 (right), we see commuters who currently do not use the ramps, but are ending their trips near the ramps. The orientation is most clearly defined as the direct south metro along I-35W and to a lesser extent St. Paul and the East Metro suburb of Woodbury. These areas can be viewed as areas of potential expansion for an increased user base of the ABC Ramps. Incentives encouraging carpooling targeting these areas could raise the average vehicle occupancy. The potential risk of targeting these areas would be incentivizing traffic from corridors that involve cutting through downtown, which may increase downtown traffic and contradict the initial mission of the ABC Ramps.

Figure 15 represents areas where there is no overlap between zip codes in the sources cited in Figures 2 and 3 and the contract holder data represented in the two maps in Figure 4. Similar to Figure 14, the difference between INRIX/LEHD, the customer survey results and these areas of high SOV or carpool contracts indicate potential parts of the region that may make sense to market the use of ABC Ramps. Some of the areas fall within the existing carpool eligibility zone, particularly zip codes in Eden Prairie,



Plymouth, Brooklyn Park, Fridley and Blaine. Others, such as in Woodbury, Roseville, Burnsville and Lakeville, would require adjustment to the eligibility boundary to include the southern and eastern suburbs.

**Unique Zip Codes - LEHD/INRIX/Ramp Contracts      Unique Zip Codes - User Surveys/Ramp Contracts**



**Figure 15: Distinct Origins INRIX/LEHD & Survey/Contract**

Detailed behavior, perceptions, and preferences data from the carpooler and general user surveys conducted in 2017 provide a sound basis for more in-depth market research. The recommendations based upon the survey results include:

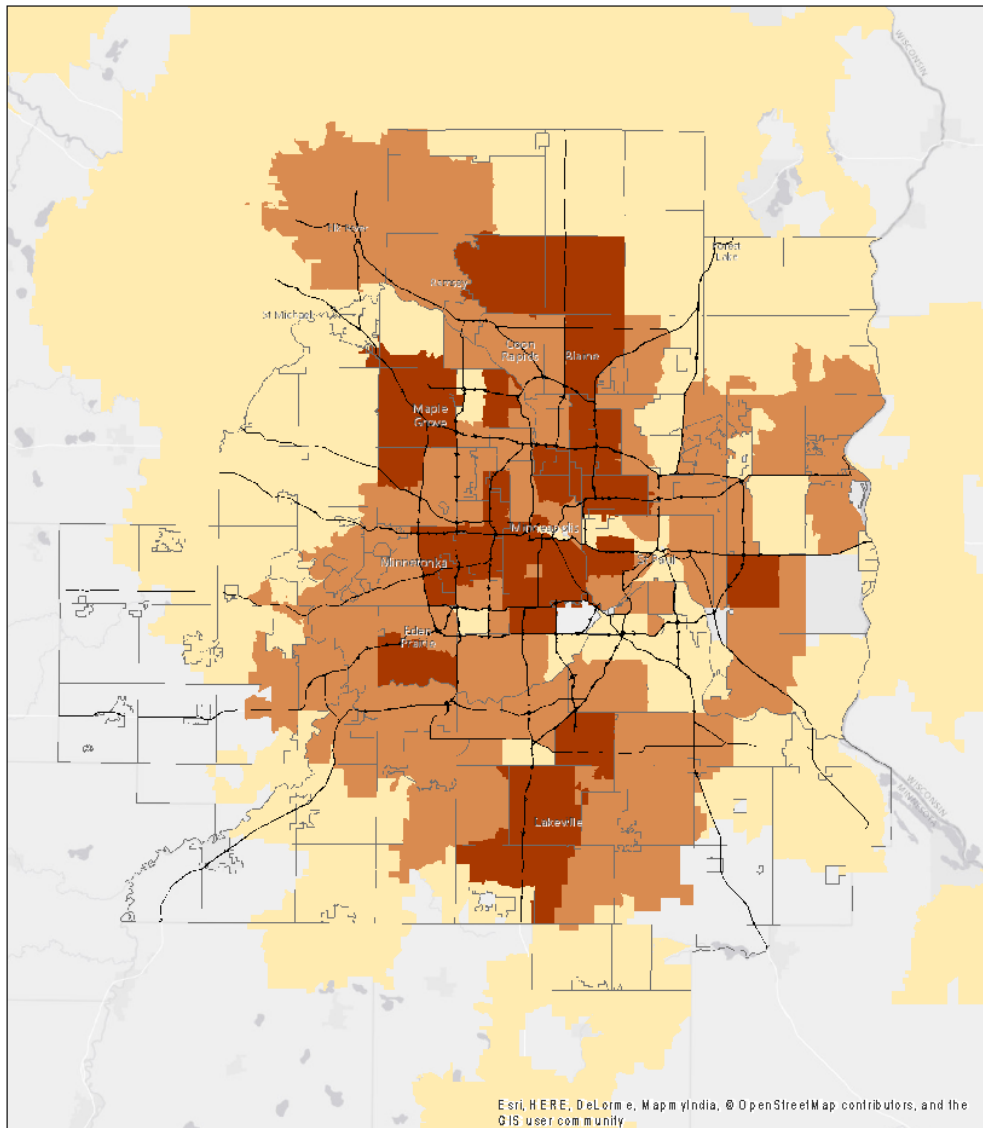
- A large portion of SOV drivers are dissatisfied with their mode of transportation and are interested in switching to another mode. The ABC Ramps can actively work with transportation management organizations (TMOs) and public transportation providers to encourage flexible parking contracts in combination with other mode uses.
- The majority of carpoolers carpoled with their spouse. The ABC Ramps may work with downtown business organizations to create innovative joint hiring programs to increase the incidence of carpooling behavior.
- Social marketing programs to promote carpooling behavior among co-workers and friends are important as well, given that people typically only carpool with people they know.
- ABC Ramps users are overwhelmingly White, high-income, and young adults (aged 26-35). There is great potential for expanding the user base to low-income, older, and minority workers. These users may be more sensitive to pricing and costs. The ABC Ramps may consider offering discounts to make the facilities more accessible to low-income commuters. The ABC Ramps may

also considering making its inexpensive (\$20 per month) carpool contracts available to people in lower income zip codes, as opposed to only zip codes along I-394 and I-94.

**APPENDIX – TRAVEL BEHAVIOR MAPS AND TABLES**

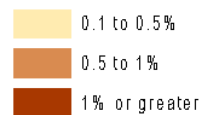
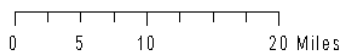
**Map A1: B2 Area Commute Origins by Zip Code - Proportion of LEHD Total Commuters to B2 Area**

Map A1, utilizing LEHD data, shows that commuters to the B2 area originated from throughout the metropolitan area, particularly from areas directly west and south of downtown Minneapolis, but also from northern and southern suburbs. Some, albeit a lower proportion, originated from the East Metro.



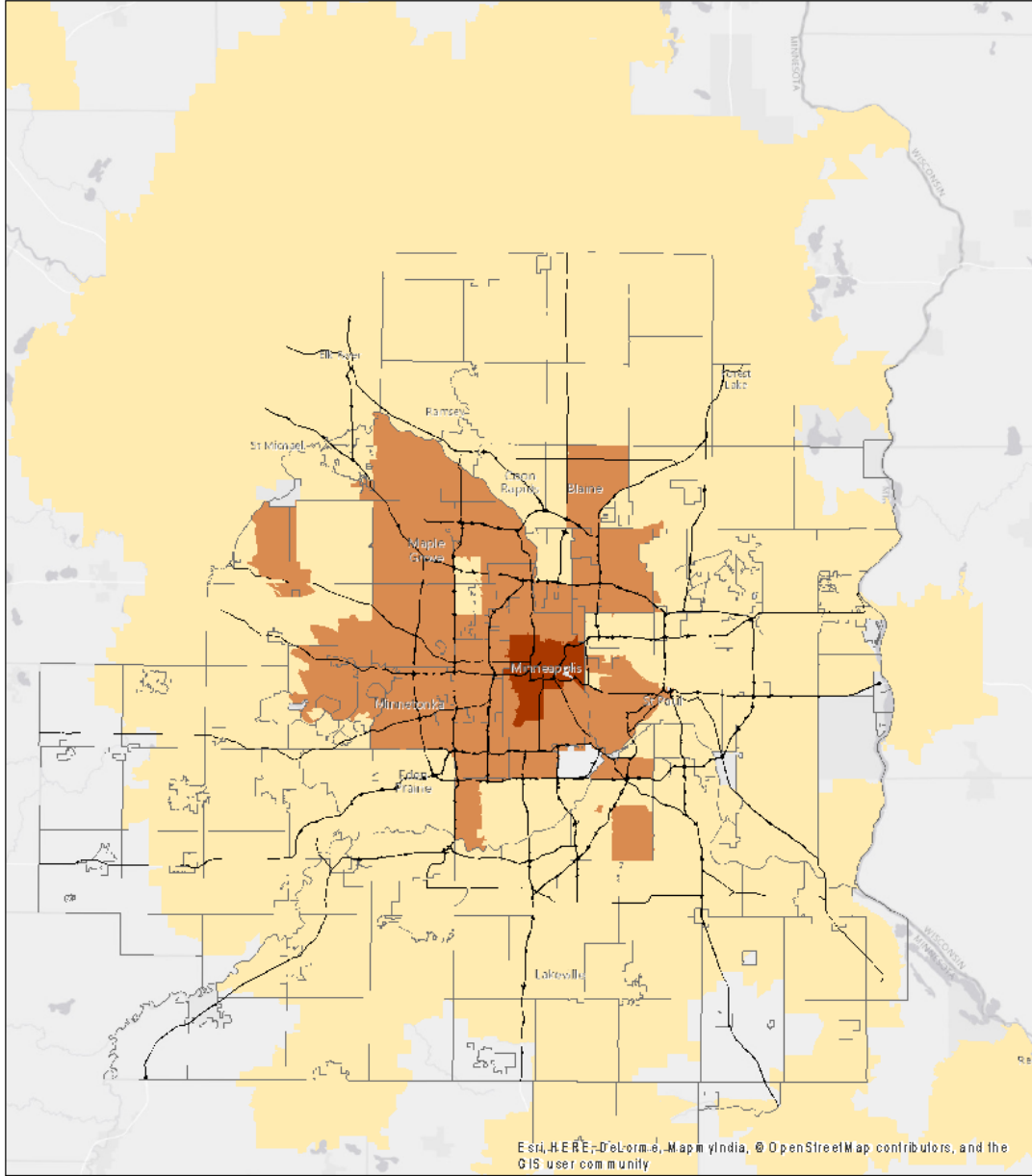
**B2 Area Commute Origins by Zip Code**  
**Proportion of LEHD Total Commuters to B2 Area**

Top Five Zip Codes:  
 55403, 55408, 55416  
 55407, 55418



**Map A2: B2 Area Trip Origins by Zip Code - Proportion of Total INRIX Trips**

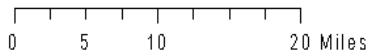
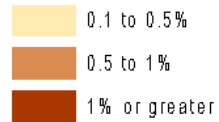
Map A2 considers all trips, not just commute trips. It shows that the highest proportion of trips to the B2 area originate in or near downtown Minneapolis. Trips to the B2 area originating in the suburbs are more common in western and northwestern suburbs than eastern suburbs.



**B2 Area Trip Origins by Zip Code  
Proportion of Total INRIX Trips**

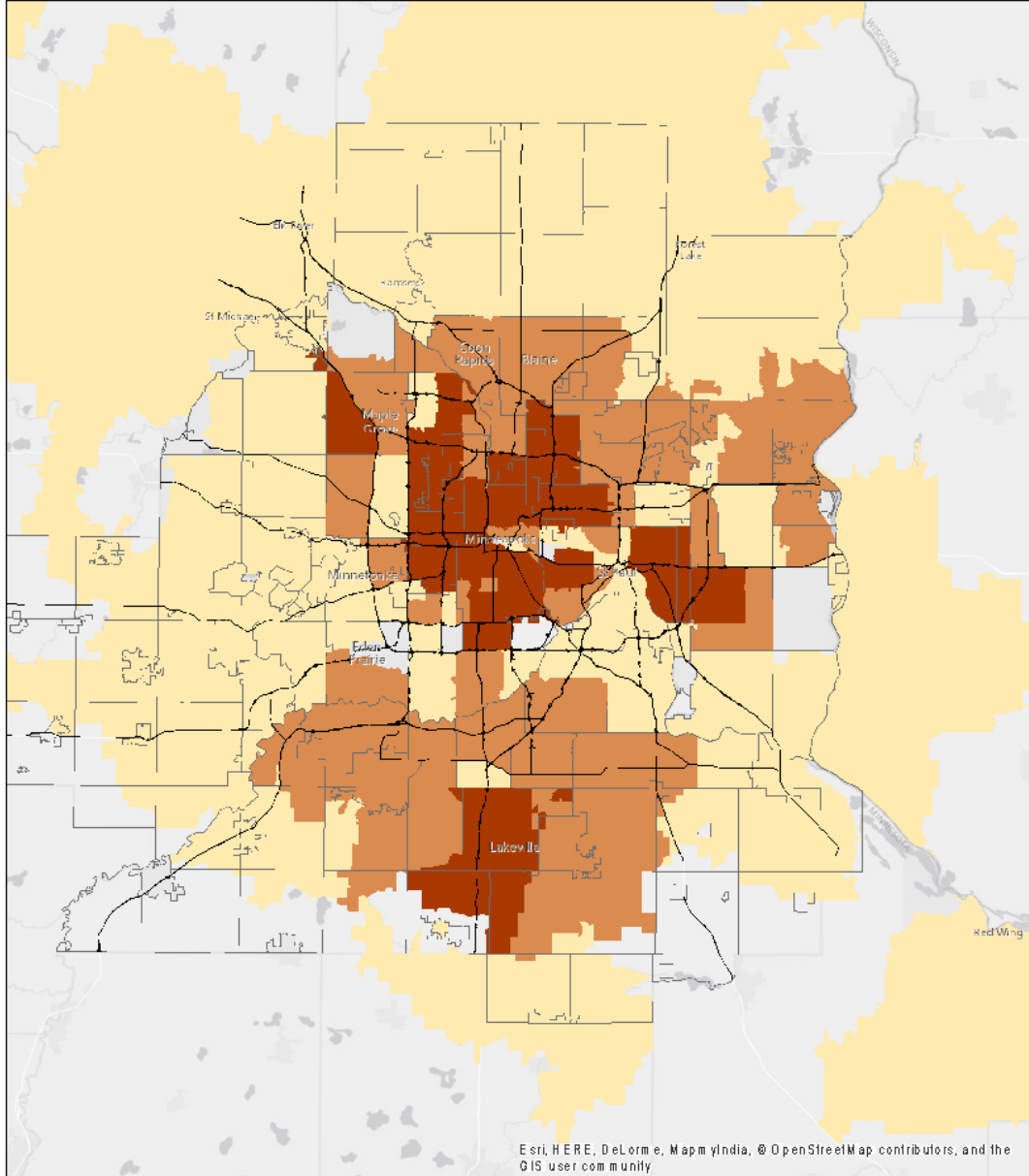
**Top Five Zip Codes:**

**55402, 55403, 55401  
55415, 55404**



**Map A3: ABC Ramp Area Trip Origins by Zip Code - Proportion of Total INRIX Trips**

Map A3 displays trips to the ABC Ramp area, a smaller area than the B2 area. It shows the highest concentration of trips originating in Minneapolis and its near-in western suburbs. Substantial concentrations of trips are also shown in and around Saint Paul, and in the southern suburbs.



ABC Ramp Area Commute Origins by Zip Code  
Proportion of Total Commuters to ABC Ramps

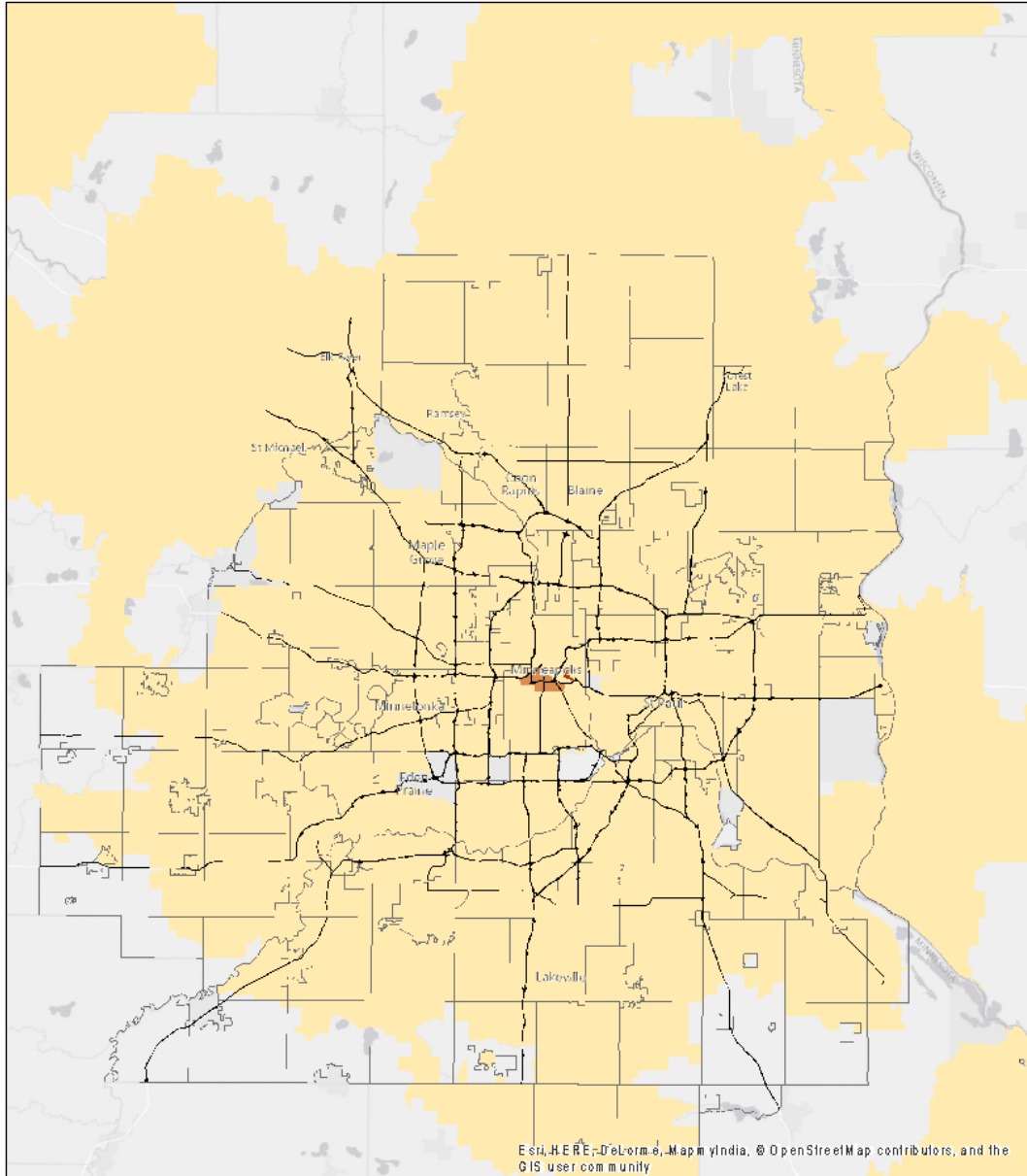
0 5 10 20 Miles

Top Five Zip Codes:  
55404, 55403, 55411  
55418, 55408

- 0.1 to 0.5%
- 0.5 to 1%
- 1% or higher

**Map A4: ABC Ramp Area Trip Origins by Zip Code – Proportion of Total Estimated Workers**

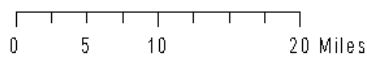
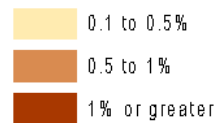
Map A4 shows that the highest proportion workers traveling to the ABC Ramp area come from downtown Minneapolis and surrounding neighborhoods. Elsewhere in the metropolitan area, generally between 0.1% and 0.5% of workers travel to the ABC Ramp area.



ABC Ramp Area Trip Origins by Zip Code  
Proportion of Total Estimated Workers

Top Five Zip Codes:

55455, 55950, 55403  
55404, 55415



**Table A1: Top Five Origin Zip Codes - LEHD**

Table A1 shows the five top origin zip codes, according to LEHD data, of travelers to the ABC Ramp area, the B1 area and the B2 area.

Buffer 2 – Unadjusted (53,663 commuters)	55403	55416	55408	55418	55407
Buffer 2 – Adjusted	55403	55408	55416	55407	55418
Buffer 1 – Unadjusted (7,703 commuters)	55403	55408	55404	55407	55406
Buffer 1 - Adjusted	55402	55403	55401	55415	55404
ABC Ramps – Unadjusted (1,559 commuters)	55405	55403	55411	55418	55406
ABC Ramps – Adjusted	55404	55403	55411	55418	55496

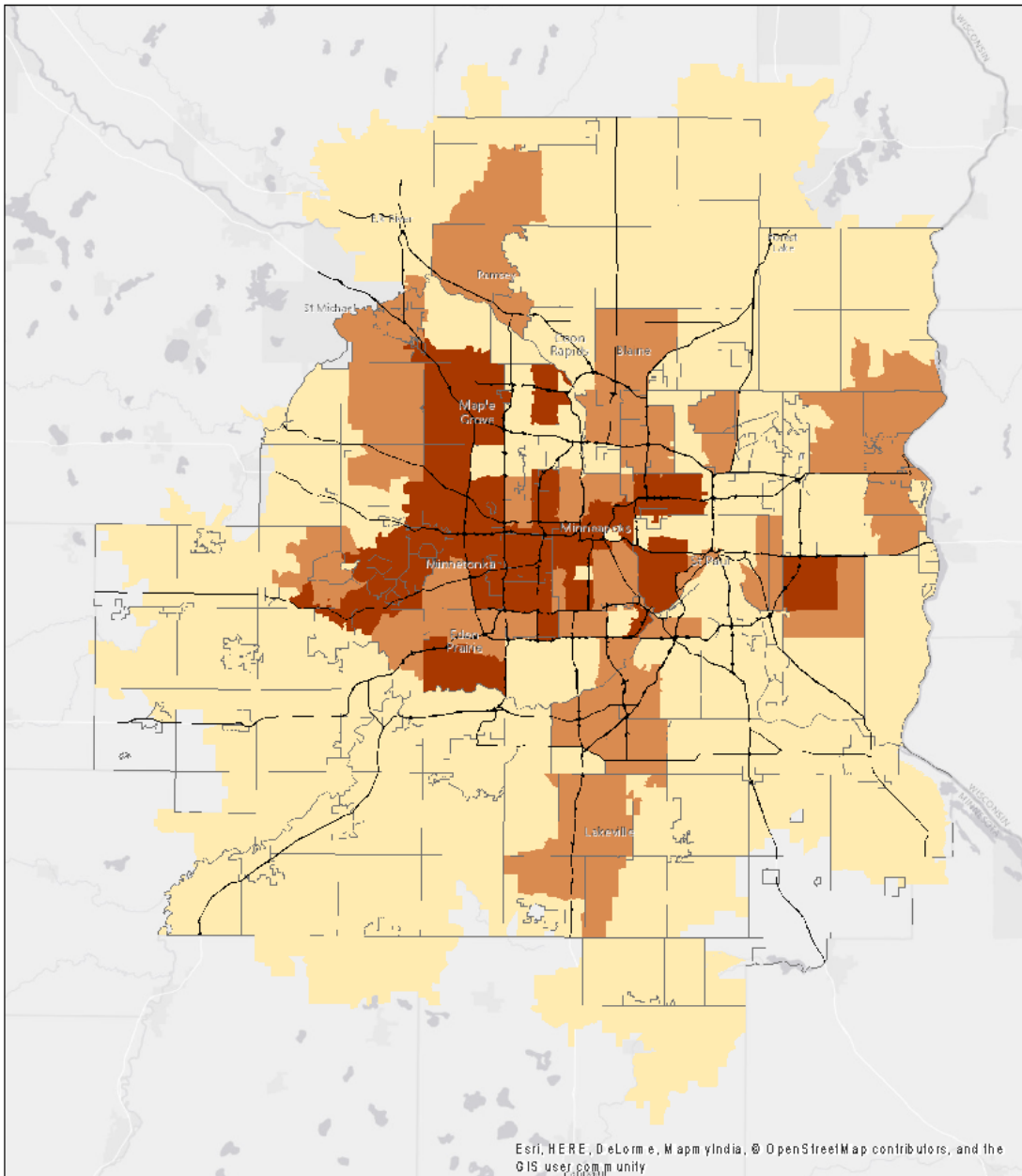
**Table A2: Top Five Origin Zip Codes - INRIX**

Table A2 shows the five top origin zip codes, according to INRIX data, of travelers to the ABC Ramp area, the B1 area and the B2 area.

Buffer 2 - Unadjusted (126,493 daily trips)	55401	55402	55403	55416	55414
Buffer 2 - Adjusted	55401	55402	55403	55155	55415
Buffer 1 - Unadjusted (38,553 daily trips)	55402	55401	55403	55414	55416
Buffer 1 - Adjusted	55401	55155	55403	55402	55415
ABC Ramps - Unadjusted (7,047 daily trips)	55443	55113	55104	55447	55441
ABC Ramps - Adjusted	55155	55443	55447	56071	55401

**Map A5: B2 Area Trip Origins by Zip Code – Proportion of Total INRIX Trips**

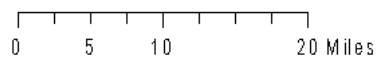
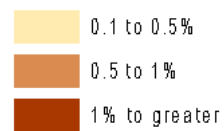
Map A5, using INRIX data, shows a distinct trend of trips to the B2 area originating in downtown Minneapolis and suburban areas directly west and northwest.



B2 Area Trip Origins by Zip Code  
Proportion of Total INRIX Trips

Top Five Zip Codes:

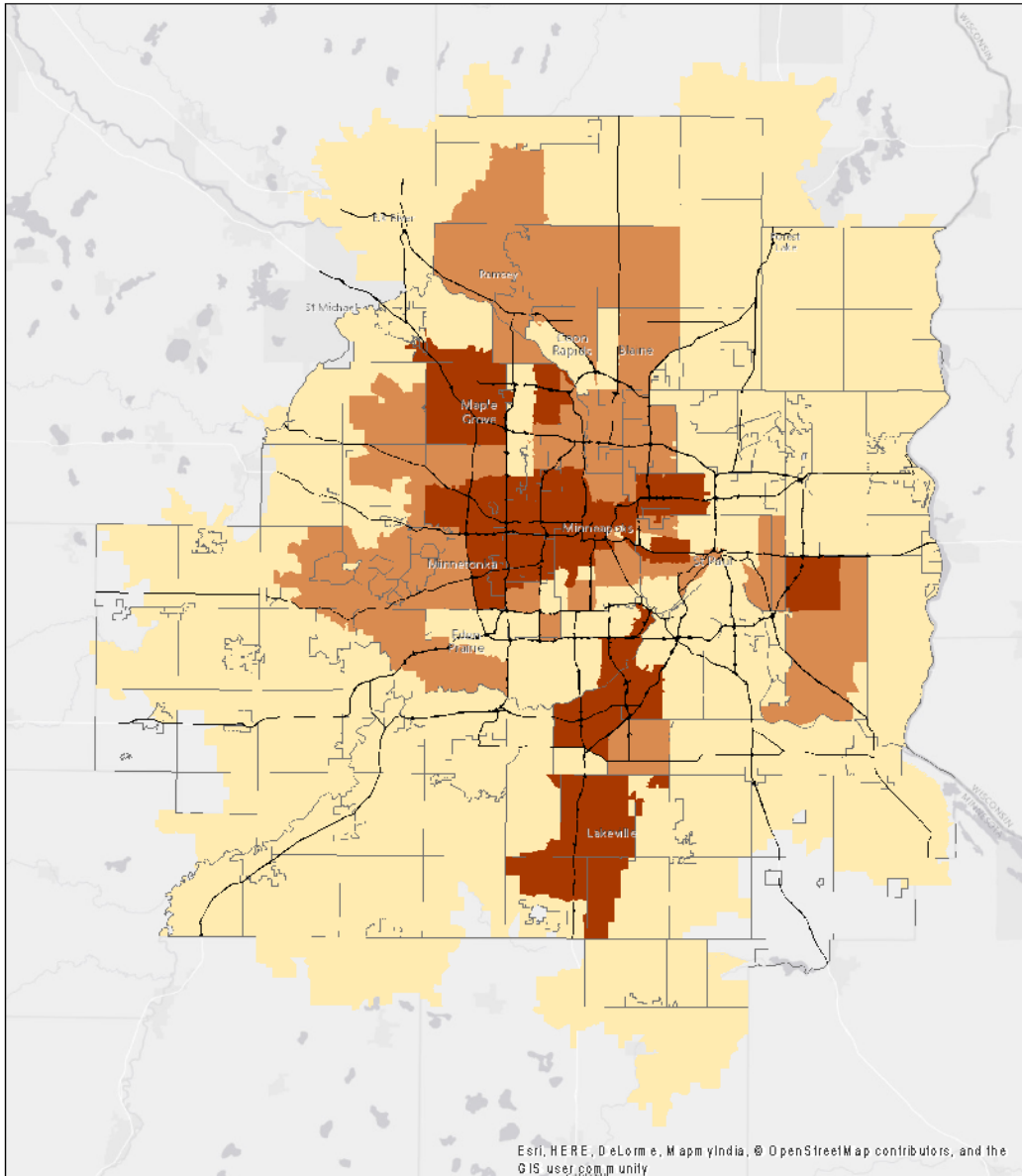
55401, 55402, 55403  
55155, 55415





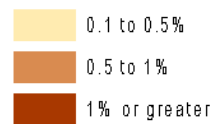
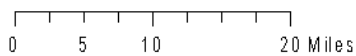
**Map A6: B1 Area Trip Origins by Zip Code – Proportion of Total INRIX Trips**

Map A6 considers trips to the B1 area, which is larger than the ABC Ramp area but smaller than the B2 area. Using INRIX data, it shows a tendency of trips to originate in downtown Minneapolis, in suburbs west and northwest of downtown Minneapolis, and in some suburbs south of Minneapolis.



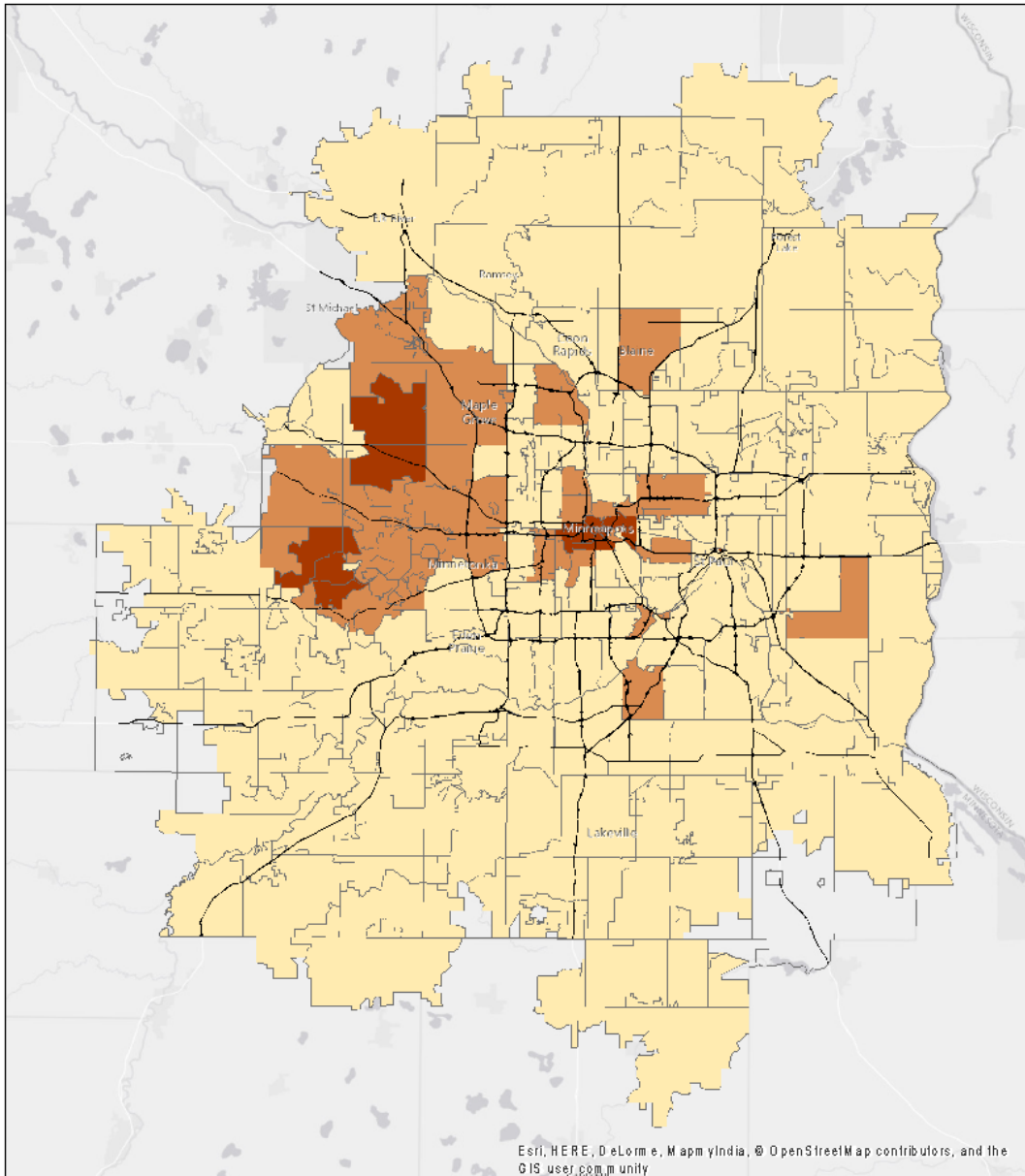
B1 Area Trip Origins by Zip Code  
Proportion of Total INRIX Trips

Top Five Zip Codes:  
55402, 55401, 55403  
55414, 55416



**Map A7: B1 Area Trip Origins by Zip Code – Proportion of Total Originated Trips**

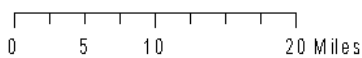
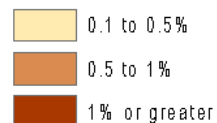
Map A7 shows a tendency for trips to the B1 area to originate in the western suburbs and downtown Minneapolis.



**B1 Area Trip Origins by Zip Code  
Proportion of Total Originated Trips**

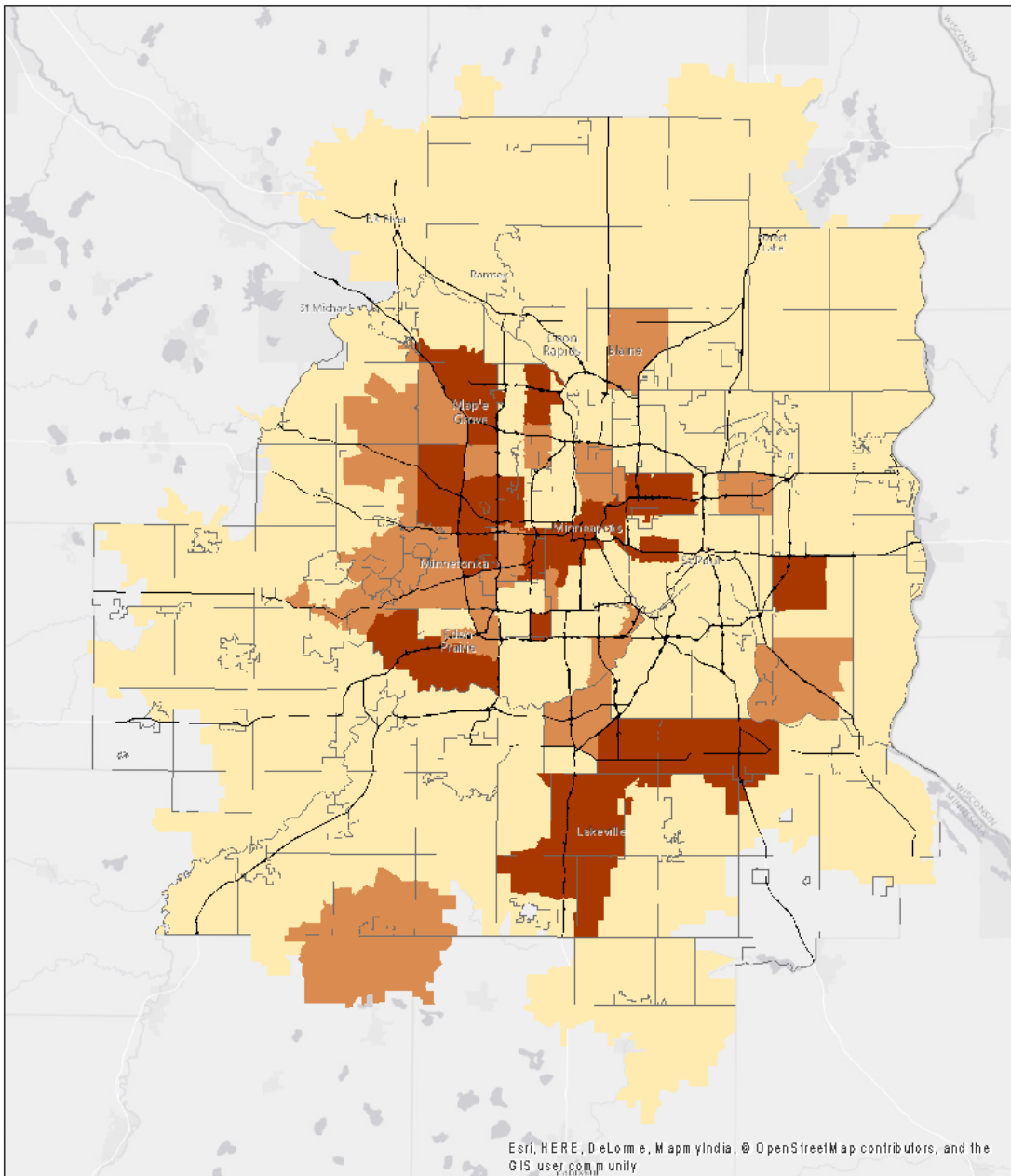
**Top Five Zip Codes:**

55401, 55155, 55403  
55402, 55415



**Map A8: ABC Ramp Trip Origins by Zip Code – Proportion of Total INRIX Trips**

Map A8 shows a distinct pattern of INRIX trips to the ABC Ramp area originating from the west, northwest and southwest of downtown Minneapolis.

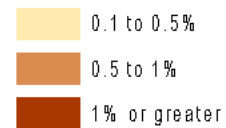


ABC Ramp Trip Origins by Zip Code  
Proportion of Total INRIX Trips

Top Five Zip Codes:

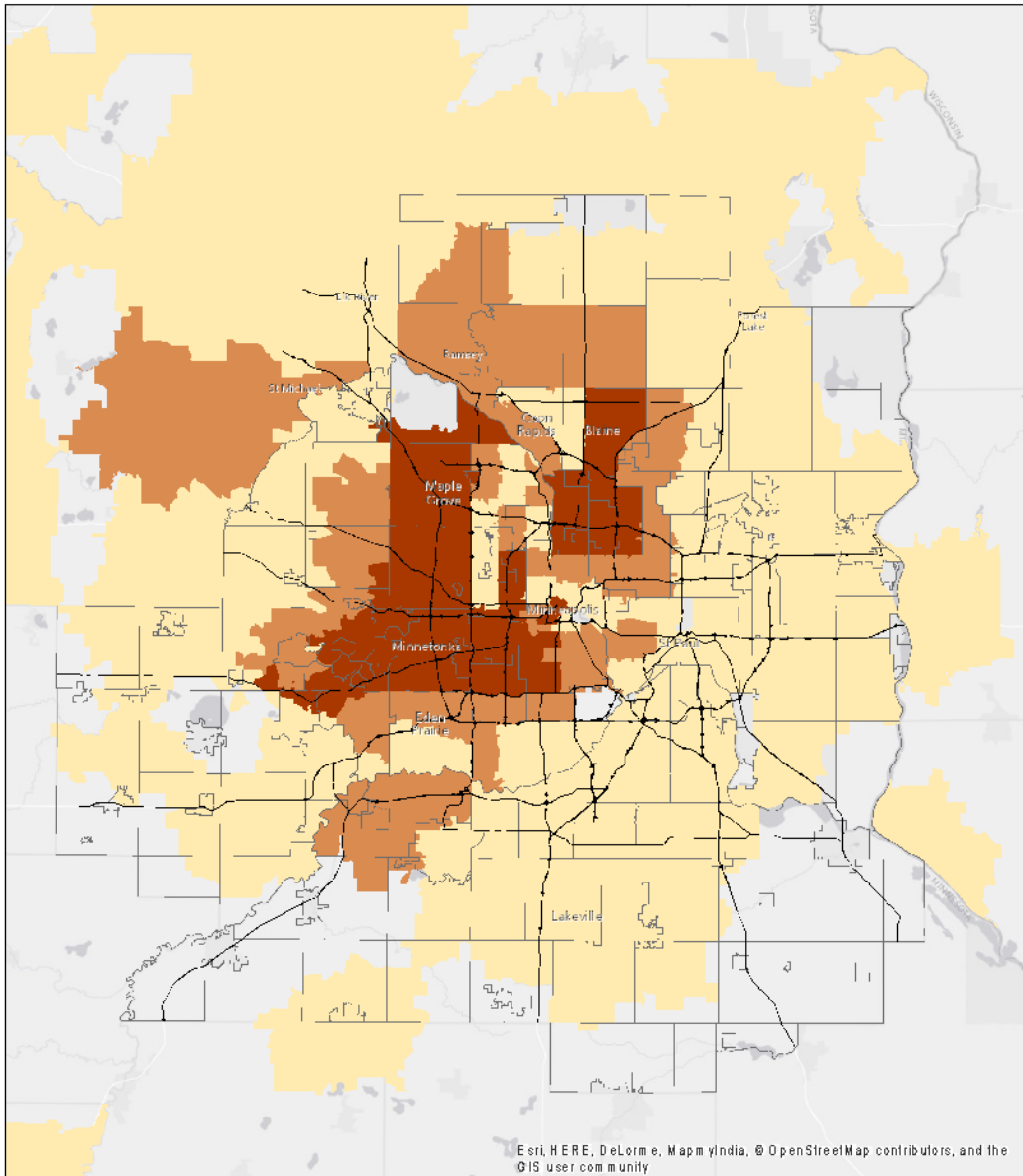
55443, 55113, 55104  
55447, 55441

0 5 10 20 Miles



**Map A9: Number of Respondents by Zip Code - Customer Appreciation Day 2017**

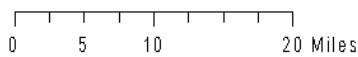
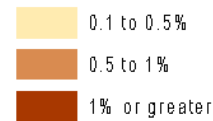
Map A9 displays the distribution of respondents to the 2017 general customer survey at the 2017 customer appreciation event. The greatest concentration of respondents came from the West Metro. A notable concentration also came from suburbs north of downtown Minneapolis.



Number of Respondent by Zip Codes  
Customer Appreciation Day 2017

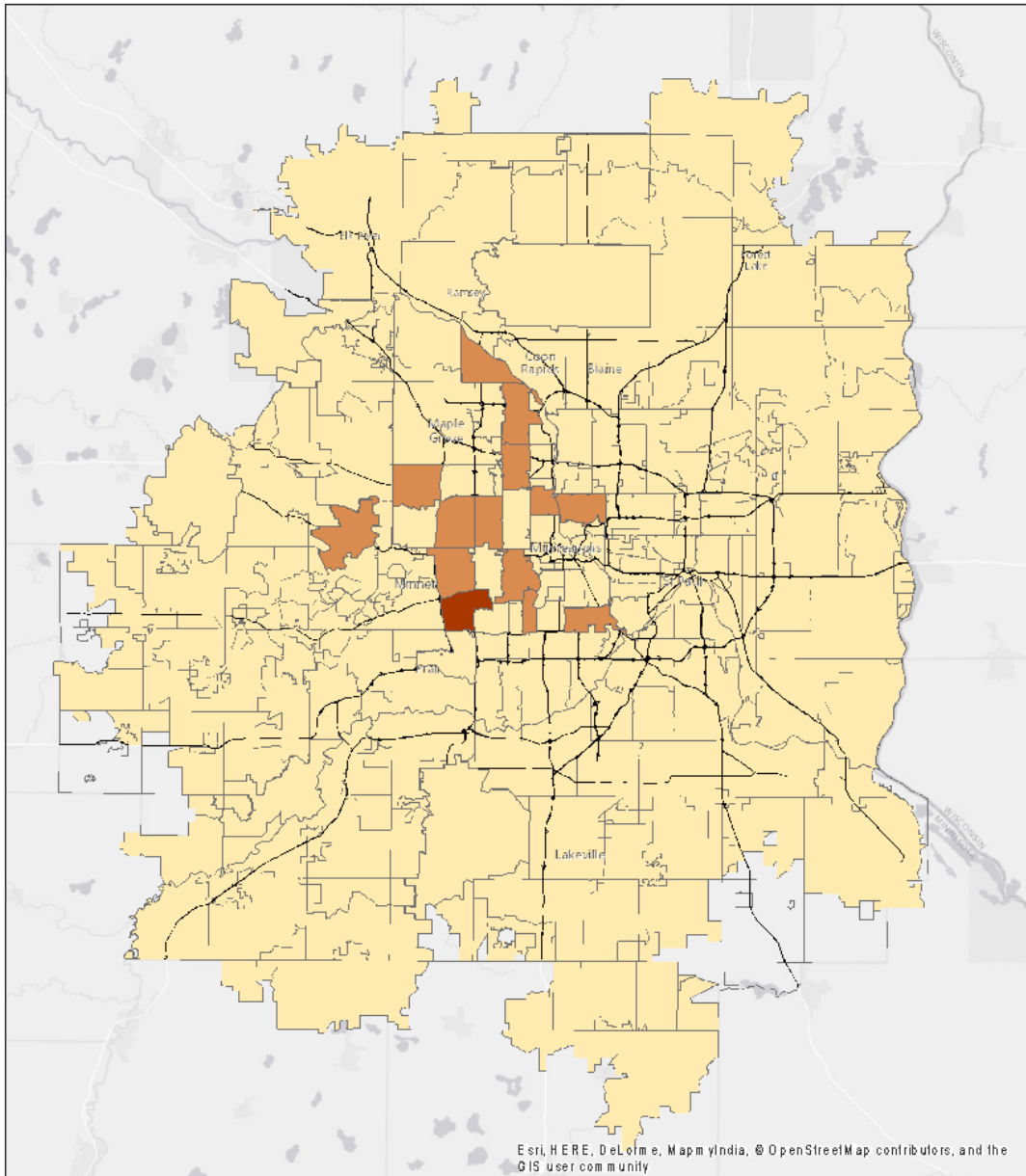
Top Five Zip Codes:

55416, 55343, 55422  
55446, 55401



**Map A10: Number of Respondents by Zip Code - Customer Appreciation Day 2017**

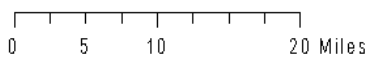
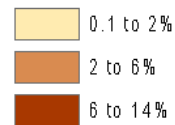
Map A10, like Map A9, shows the bulk of survey respondents from the 2017 customer appreciation event came from west of Minneapolis, while some came from north.



Number of Respondent by Zip Codes  
Customer Appreciation Day 2017

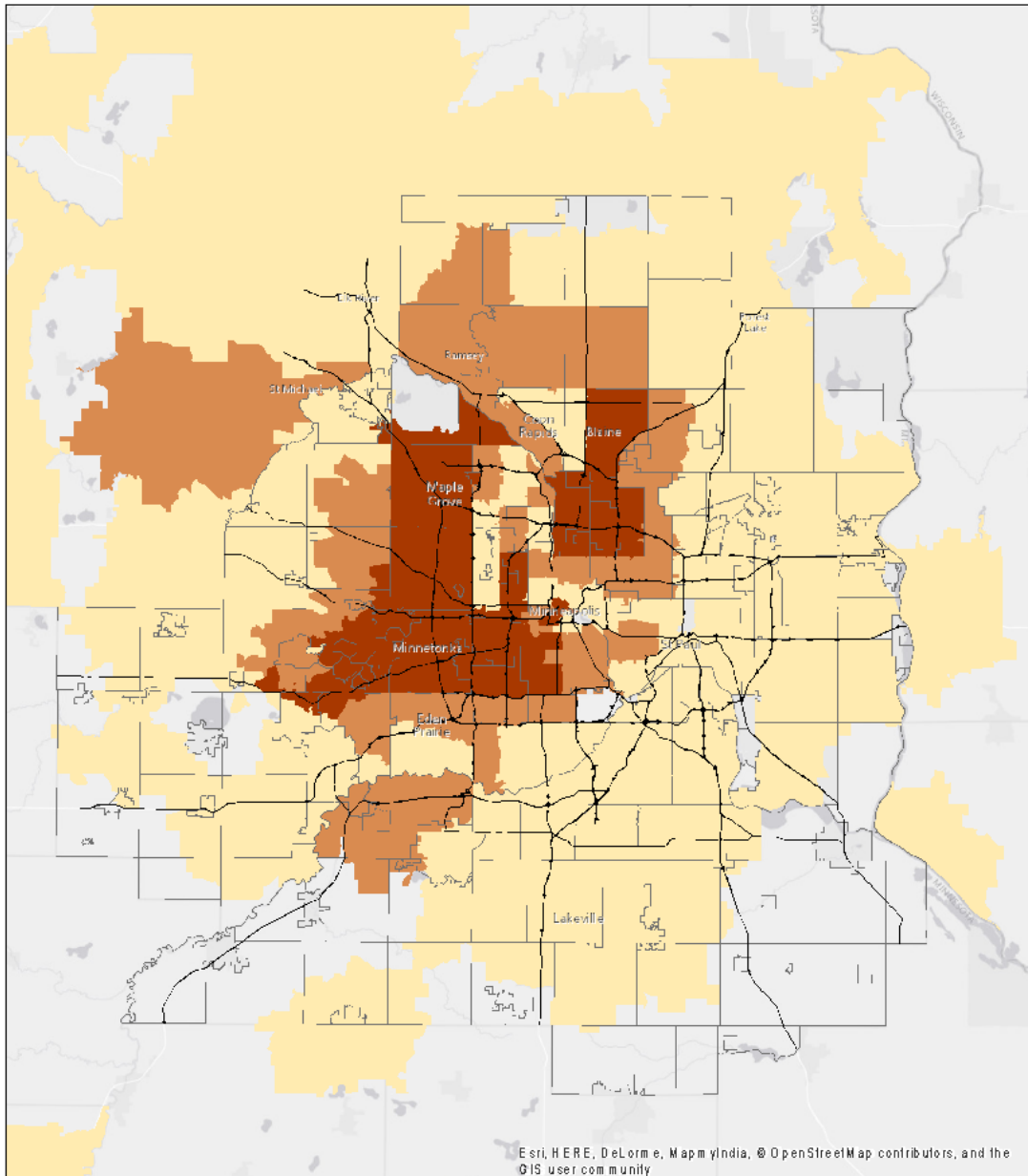
Top Five Zip Codes:

55343, 55441, 55427  
55418, 55316



**Map A11: Carpool and SOV Contract Holders by Zip Code**

Map A11 shows that the greatest concentration of ABC Ramps carpool and SOV contract holders reside in the West Metro. A substantial concentration also exists north of downtown Minneapolis.



Carpool and SOV  
Contract Holders by Zip Codes

Top Five Zip Codes:

55416, 55343, 55422  
55446, 55401

