Special Needs Transportation in South King County

A Needs Assessment

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Executive Summary

This is an assessment of transportation needs and constraints in South King County, Washington. The report is specifically concerned with special needs residents, including: people with disabilities, older adults, lower-income individuals and families, youth, immigrants and refugees, and veterans.

The goal of the project is to help inform priorities for the newly-forming South King County Mobility Management Coalition. Mobility management refers to strategies of coordinating an array of services to help effectively tailor services to meet many different users’ transportation needs.

Methods

This study uses a combination of several methods to better understand transportation needs. These include:

- Quantitative and GIS analysis of American Community Survey data
- A literature review
- Interviews and focus groups with key informants

Results

Residents in South King County own and use private vehicles to get around disproportionately compared to residents in more urbanized areas. Nonetheless, many residents do rely on public transportation and other community-provided transportation options, especially those who belong to special needs populations.

Key barriers to transportation include:

- Cost, either for owning and maintaining a vehicle or paying for rides
- Travel time
- Logistics and convenience, such as the timing or location of transfers, or having to carry things onto a bus
- Limited service hours
- Confusing or challenging eligibility standards for range of different services
- Language and cultural barriers
- Availability of information
- Safety and security
- Limited service in specific corridors

Conclusions

Cost is a major constraint facing transportation providers and citizens. Controlling costs will require finding innovative and often community-based solutions. My assessment found a variety of different agencies groups finding ways to help special needs residents get around, but these groups would benefit from increased coordination and communication to make the system easier to understand and use.
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Introduction

This study is an assessment of transportation needs in South King County and provides background information for the South King County Mobility Management Coalition. Hopelink, a Community Action Agency working throughout King County, provides staffing for the Coalition, and requested an analysis of transportation needs in South King County through the Public Service Clinics program at the Evans School of Public Affairs at the University of Washington.

As a Community Action Agency, Hopelink provides programs to support self-sufficiency for low-income individuals and families. Hopelink provides these programs both through direct service and through efforts to coordinate programs in King County. Hopelink currently provides a variety of services—including food, housing, adult education, and transportation—in North and East King County, and has active mobility management coalitions in those areas. In South King County, Hopelink provides transportation for medical needs for Medicaid recipients and Dial-A-Ride flexible transportation services (DART). The South King County Mobility Management Coalition began formation over the course of this project, funded by a grant from the Puget Sound Regional Council (PSRC).

The purpose of this report is to provide background information to help guide the Coalition’s future work to enhance and coordinate transportation for special needs residents of South King County.

Research Question
The questions this study seeks to answer are:

- What are commonly expressed transportation challenges and barriers facing special-needs residents in South King County?
- How can community members and providers work to address these special needs transportation challenges using mobility management principles?

Special Needs Populations
Federal and state agencies include these groups as having special transportation needs:

- People with disabilities
- Older adults
- People with lower incomes

In working to tailor services to the communities in South King County, particularly those for whom transportation presents challenges, this project also includes:
Recent immigrants and refugees
Youth
Veterans

Frameworks: Mobility Management and Civic Capacity

To understand how communities can work to address transportation problems, I rely on two general frameworks. These are mobility management, an approach to addressing a variety of transportation needs, and civic capacity, a framework for understanding the ability of communities to work together to address public policy challenges generally.

Mobility Management

This project uses mobility management as a framework for understanding and meeting diverse transportation needs. United We Ride, a federal interagency initiative that works to improve service delivery for special-needs populations, defines mobility management:

“Mobility Management is an innovative approach for managing and delivering coordinated transportation services to customers, including older adults, people with disabilities, and individuals with lower incomes...Mobility management focuses on meeting individual customer needs through a wide range of transportation options and service providers.”

In contrast to traditional transit planning, which is often designed to concentrate demand around a few corridors, mobility management-based planning focuses on providing an array of products to meet the specific needs of a wide variety of customers. Mobility management also aims to coordinate providers and educate the public about these services.¹

Figure 1 depicts the public transportation services available for special-needs residents. The fixed route transit network—services that operate along specific routes and on a fixed schedule—represent the backbone of public transportation services but do not meet all needs. Other services are specialized and designed to meet needs that fixed-route public transit does not meet.

Civic Capacity

Civic capacity refers to the ability of communities to collaborate to address policy challenges. I use this concept to answer this report’s second question related to how to address transportation challenges in South King County. Stone (2001)\(^3\) defines civic capacity:

“Civic capacity concerns the extent to which different sectors of the community—business,...state and local officeholders, non-profits, and others—act in concert around a matter of community-wide import. It involves mobilization—that is, bringing different sectors together but also developing a shared plan of action.”

Understanding strengths and weaknesses of civic capacity, and finding ways to capitalize on the strengths, underscores how I analyze South King County and develop recommendations for further action.

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\(^2\) See [http://psrc.org/assets/1732/STUnitedWeRide07.pdf](http://psrc.org/assets/1732/STUnitedWeRide07.pdf) for full report.

\(^3\) Full essay available at [http://uar.sagepub.com/cgi/content/abstract/36/5/595](http://uar.sagepub.com/cgi/content/abstract/36/5/595).
Background

Why Focus on Transportation?

Access to basic transportation is of critical importance for promoting self-sufficiency and reducing isolation. Transportation forms the links among all of the activities people need to access. The purpose of this project is to find out from people in South King County what they identify their needs to be, but we can also evaluate transportation services according to the extent to which they afford residents some degree of basic access. In *Evaluating Transportation Equity*, Todd Litman proposes evaluating the transportation projects according to the extent to which they provide access to basic goods, services, and activities, including:

- Emergency services (police, fire, ambulance, etc.)
- Public services and utilities
- Health care (medical clinics, rehabilitation services, pharmacies)
- Basic food and clothing
- Education and employment
- Some social and recreational activities
- Mail and package distribution

The need for some form of transportation, to access all or many of the above goods and services, is essentially universal. For some people, accessing basic necessities and using transportation modes of their choosing is not a problem. However, others have difficulty accessing basic necessities because they lack access to necessary modes of travel, or lack knowledge of available transportation services.

A range of literature exists regarding transportation needs and strategies for planning for serving those needs. The general consensus is that access to transportation provides access to a number of other critical services, but the best policies for increasing access can be contentious. Transportation policies for special needs communities entail balancing a variety of competing objectives. Many members of these populations have settled in areas like South King County because housing is affordable, but in such areas low population densities, public transit service can be ineffective and costly to run. Many residents therefore rely on private vehicles to get around, but for special needs communities driving may be impossible or financially difficult.

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In this report I generally focus on improving public and community-based services, but some literature has advocated for policies that make car ownership or use more affordable. Clark and Wang (2008), focused on the Los Angeles metropolitan area, assert that low-wage workers do not or cannot always depend on public transit, and perhaps policy decisions should facilitate car ownership. Other studies point to focusing planning on promoting accessibility and active transportation, by improving access to walking, bus, and bicycle facilities and promoting land use patterns that support efficient public transportation.\(^6\)

The level of obligation to provide service and what type of service to provide—and thus what even constitutes a valid “need”—is not universally agreed upon. Given current budget constraints and the inefficiency in running traditional public transit services in suburban and rural areas, the mission of King County Metro—the principal fixed-route transit provider in the area\(^7\)—is restricted to bus service, or whether other options are feasible. Metro's efforts are part of an alternative service delivery model, which considers a variety of options for meeting South King County’s transportation needs. Some ideas have included:

- Converting some fixed-route bus service to dial-a-ride transit (DART) service with variable routing components\(^8\)
- Expanding Community Access Transit (CAT) services
- Expanding vanpool programs
- Taxi scrip programs
- Volunteer drivers
- Bike sharing, car sharing, and flexible carpool programs\(^9\)

While many of the above ideas have not traditionally been provided by government agencies, governments generally do have an obligation to provide some transportation services—at a minimum, roads. Efforts to make transportation accessible and available for all communities require work from government, other agencies, and community members (i.e. civic capacity).

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\(^7\) Sound Transit is also provides transportation services in the area. However, their bus services are operated by Metro. Sound Transit’s mission is focused on regional express service and capital projects, and has not significantly proposed.

\(^8\) Two routes in South King County were converted or partially converted to DART service in February 2012. These are Routes 907 (Enumclaw, Black Diamond, Renton) and Route 915 (Auburn, Enumclaw).

\(^9\) From Alternative Service Delivery stakeholder meeting, Kent, WA, February 29, 2012. Also see http://metro.kingcounty.gov/have-a-say/projects/alternative-service/
Literature Review: Common Transportation Constraints

In this analysis I describe individuals as belonging to specific populations that are considered to have special needs. This includes people with lower incomes, people with disabilities, older adults, youth, veterans, and immigrants and refugees. Below I summarize some of the constraints faced by people in each particular population as represented across existing literature. Many people belong to more than one group simultaneously.

Low-income individuals may face a variety of constraints to accessing transportation. First, transportation costs money, whether through paying bus fares or for outlays on purchasing, insuring, fueling, and maintaining a vehicle. Secondly, affordable housing options are limited for low-income individuals. With limited resources, low-income individuals may choose affordable housing over ease of access to jobs and other services. In South King County, average incomes are lower than the rest of Puget Sound, as are average home values. Many residents commute long distances to work, often with limited options for what modes to use. In addition, many work non-standard shifts and thus have fewer options for public transportation service, which serves peak travel times and directions most. In this case, these routes bring commuters from South King County to Seattle in the mornings and the reverse in the evenings.

People with disabilities face constraints because they may lack physical access to available transportation infrastructure. They may be unable to drive themselves (or walk or bike), and thus depend on public transit, paratransit services, or social-service provided transportation. The term people with disabilities includes people with a wide range of abilities and impairments. For example, a person with a vision impairment will likely have different needs from a person who uses a mobility aid such as a wheelchair, who will have different needs from people with cognitive disabilities. This diversity underscores the need for a variety of services and strategies to meet as many customer needs as possible.

Older adults may face a variety of aging-related transportation constraints. They may no longer be able to drive themselves or have limited their driving. Income becomes a constraint for many older adults, as they work in lower-paying jobs, work part-time, or retire from the workforce. Older adults also often have medical conditions or disabilities that make getting around difficult. Many older adults, especially those who live in rural or other low-density areas, do not plan for mobility after they stop driving. Adequate

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transportation is key to meeting health and safety needs (such as accessing medical appointments and shopping), as well as emotional needs (such as visiting a spouse in a nursing home and participating in recreation opportunities), and allowing older adults to age in place. Like other groups, older adults have a variety of abilities and constraints and would benefit from a variety of service options.12

Youth are often too young to drive themselves. Younger youth may need transportation between school and after-school programs. Older youth may also need transportation work. As with other populations, youth need access to basic services and opportunities for positive recreation and engagement to support academic and personal growth and achievement.13 They may need transportation at off-peak times, such as late in the evening or immediately after school. Many youth are too young to drive themselves, and may not be able to afford a vehicle even if they are over 16 years old.

Veterans need to access essential services (shopping, recreation, employment). However, veterans are significantly more likely than their non-veteran peers to experience psychological and physical health problems.14 Many are eligible for comprehensive health care, but must use Department of Veterans Affairs (VA) medical facilities. The VA provides some transportation benefits for medical care, but does not provide transportation for all veterans.15 Eligibility for VA transportation generally depends on service-connected disabilities and the extent to which a medical need is service-connected.16 For the purposes of this study, the term veterans refers to anyone who has been a member of U.S. armed forces.

Immigrants and refugees often face cultural and language barriers to accessing transportation services because schedules and other information are not available in languages and formats they can understand. A service itself may not be culturally competent, or might require training beyond just written information to understand how to actually use it.17

South King County Profile

Figure 2 below depicts the area of urban, suburban, and rural South King County under consideration for this study, defined by Census Tract boundaries.

![Map of South King County Study Area](image)

Figure 2: Map of South King County Study Area

South King County is defined in a variety of ways. King County’s transportation area includes essentially everything south of Seattle city limits, and extends a boundary at that latitude all the way to the county’s eastern border. For purposes of this study, South King County includes areas that are within and near the Seattle-area urban growth boundary or are defined as urbanized by the Washington State Department of Transportation. This area includes 16 incorporated cities and several unincorporated areas. The cities included in the study are:

- Algona
- Auburn*
- Black Diamond
- Burien
- Covington
- Des Moines
- Enumclaw
- Federal Way
- Kent
- Maple Valley
- Milton*
- Normandy Park
- Pacific*
- Renton
- SeaTac
- Tukwila

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*Auburn, Milton, and Pacific all have portions in Pierce County.*

South King County has historically lacked a central governance system. A number of coalitions provide some centralized leadership, coordination, and support. These organizations provide a basis for increasing civic capacity to meet residents’ needs.

- The **South King County Mobility Coalition** held its first meetings during the course of my work on this report, and provides a forum for social service and transportation providers to coordinate and collectively advocate on behalf of South King County at the county and state levels.
- The **South King Council on Human Services** (SKCHS) coordinates human services providers and works to ensure that South King County residents have access to health care, housing, and human services. SKCHS has existed for about 25 years.19
- The **South County Area Transportation Board** (SCATBd) “serves as a South King County forum for information sharing, consensus building, and coordinating in order to resolve transportation issues and promote transportation programs that benefit the South King County area.”20 SCATBd also initially formed in the late 1980s with four cities participating, and expanded in 1992 to include fourteen cities and King County representatives.

The large number of jurisdictions and the diversity of communities present challenges to building civic capacity, and present limitations for analysis as there is no single, generally accepted administrative unit to evaluate.

Figure 3 shows in greater detail the cities and surrounding areas that I considered for this study. The map also shows public transportation routes, including Dial-A-Ride (DART), and medical facilities (as an example of locations residents need to access). New DART routes have been added in Enumclaw and Maple Valley. This map does not depict levels of service on each of the bus routes; some of these lines run frequently all day, while many run much less frequently, such as only during peak commute times.

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20 See SCATBd website, [http://www.kingcounty.gov/transportation/kcdot/PlanningAndPolicy/RegionalTransportationPlanning/Subareas/South_County_Area_Transportation_Board.aspx](http://www.kingcounty.gov/transportation/kcdot/PlanningAndPolicy/RegionalTransportationPlanning/Subareas/South_County_Area_Transportation_Board.aspx)
Figure 3: South King County Cities
South King County has seen population growth in the last 20 years. From 1990 to 2000, the population residing in cities in South King County grew 40%, not including the addition of Covington and Maple Valley as incorporated cities during that time. From 2000 to 2010, the city population in South King County grew about 10%, not including major annexations in Auburn and Kent. Now, according to the South King Council of Human Services, the area includes about 40% of King County's population, or about 688,000 residents.

**Racial and Ethnic Diversity**

The population of South King County is known for a great deal of diversity, and the diversity continues to increase. According the Puget Sound Regional Council (PSRC), the population of the Puget Sound region grew by about 13% between 2000 and 2010, and minorities made up 92% of the population growth in the Puget Sound region.

South King County shows greater racial diversity than the rest of the Puget Sound region. In South King County, 67% of residents identify as white, while 77% do so in the rest of the region. South King County shows higher percentages of all other race categories compared to the rest of the region. South King County saw some of the largest increases in minority population in the region between 2000 and 2010.

![Figure 4: Race Categories by Subregion](http://psrc.org/assets/6085/d9may11.pdf)

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23 Includes people who identify as any race other than white, or identify as Hispanic, on the US Census.

**Nationality and Language**

A lower percentage of South King County residents were born in the United States than in the region overall. Over 20% of South King County residents were born outside the U.S.; 13% of the residents of the rest of the Puget Sound region were.\(^{25}\) A significantly higher percentage of South King County residents speak a language other than English at home (27%) than do residents of the region as a whole (17%).\(^{26}\)

In South King County’s eight school districts, students in English Language Learning classes speak over 100 different languages.\(^{27}\) Many immigrant and refugee groups have settled in South King County, especially on the East Hill of Kent, in Tukwila and in SeaTac.\(^{28}\)

![Population Born in the U.S. vs. Other Countries](image)

**Figure 5: Population and Nationality Comparison**

**Income**

The mean household annual income in South King County ($79,787) is significantly lower than that of the rest Central Puget Sound region (including King, Pierce, Snohomish, and Kitsap counties) ($96,292).\(^{29}\) Figure 6 displays average income in South King County compared to average income in the rest of the four-county Central Puget Sound region. Figure 7 displays median income by Census tract in all of King County; this map illustrates the lower incomes seen in the South King County study area. Neighborhoods in the area span the economic spectrum and range from urban to rural.

\(^{25}\) Two-sample t-test, equal variances assumed. t=13.86, significant at 99% level.

\(^{26}\) Two-sample t-test, equal variances assumed. t= -17.38, significant at 99% level.


\(^{29}\) Two-sample t-test, equal variances assumed. t=14.9, significant at 99% level.
Disabilities

12.2% of the population of South King County identified having a disability on the American Community Survey, including physical, cognitive, hearing, vision, and self-care difficulties. In the rest of the Puget Sound region, 11.1% of the population identified as having a disability.\textsuperscript{30}

Veteran status

11.6% of the South King County population had served or was currently a member of the United States Armed Forces. This is actually statistically significantly lower than the rest of the region (13.9%), probably because of the large military bases in Kitsap and Pierce Counties.

Age

The average age in South King County in the 2010 ACS was 38.19 years, compared to 38.62 for the rest of the region. This was not a statistically significant difference. The survey showed a slightly higher proportion of youth in South King County—24.4% of the population was under 18 compared to 23.3% in the rest of the region, but the difference was not statistically significant. The proportion of the population over the age of 65 was 13.1% in South King County, compared to 12.8% in the rest of the region; these results were also not statistically significant.

\textsuperscript{30} Statistically significant at the 95% level. (Two-sample t-test, equal variances, t=-2.22).
Figure 7: Map of Median Income by Census Tract

The Jenks classification method statistically identifies “natural breaks” in the available data points. The method groups data into classes such that the variation within each class is minimized and the variation between classes is maximized. This page provides more information: http://en.wikipedia.org/wiki/Jenks_natural_breaks_optimization
Methods

This project employs a variety of methods to better understand the transportation needs of special-needs South King County residents. These include a detailed literature review, quantitative and geographic analysis, interviews with key informants, participating in community meetings, focus groups, and a survey. Each method has strengths and weaknesses and reveal particular pieces of the story of transportation needs in South King County. Combined they generate a comprehensive picture of transportation needs in South King County.

Common Needs Assessment Methodologies

Needs assessments can serve a variety of purposes and their methodology should be tailored to those purposes. The purpose of needs assessments may be described as broadly learning more about an area and the needs of residents there, or may be more focused a link to planning and providing services. The most robust needs assessments use a variety of types of data collection, where the different avenues to describe conditions complement and reinforce each other. A report commissioned by Pinellas County Human Services in Florida, entitled “Social Services Needs Assessments: A National Review” describes commonly used methods in social-service needs assessments. These include:

- Surveys, through mail, over the phone, or on the web
- Review of existing reports and data
- Face-to-face interviews
- Focus groups
- Community forums, workshops, or town meetings

I reviewed several recent needs assessments from King County to help evaluate feasibility of these methods locally. I summarize my findings below. All of the area needs assessments used several methods to derive their findings.

The Immigrant and Refugee Elders Transportation Project (2011) evaluation primarily used focus groups with community partner organizations. This method was apt for the project because each focus group was facilitated in the language or languages spoken by clients served by the host organization. Participants and
service also completed a survey at the end of the focus group conversation, which generated summary results. The survey garnered 121 responses.\(^{32}\)

The North King County Mobility Coalition Needs Assessment (2011) used 7,000 mail surveys, 3,000 surveys distributed via social services providers, and a web link on Hopelink’s site. The survey garnered a 6% response rate overall; this was lower than anticipated and a result of time constraints.\(^{33}\)

The Seattle Homelessness Needs Assessment (2009) used an in-person survey conducted by a large group of volunteers during Seattle’s annual one-night count of homeless populations. This method requires a considerable investment of resources, and is limited to reaching the people who were found to be residing outside on the night of the count.\(^{34}\)

The Seattle-King County HIV-AIDS Care Services Needs Assessment (2003) employed a large number of methods. These included a mail survey of people living with HIV, a survey of service providers, focus groups of specific sub-populations of people living with AIDS, and key informant interviews with service providers. This approach, while resource-intensive, generated a substantial breadth and depth of findings and pointed to opportunities for service provision and service gaps.\(^{35}\)

My conclusions from reviewing these assessments point to using key stakeholders as informants and to assist with distributing a survey, the importance of using multiple methods of data collection to generate a nuanced understanding of the issues in South King County transportation, and the need to complete as many forms of data collection as possible given time and resource constraints. Needs assessments, even when conducted in short time frames and with limited resources, can still be useful for informing service delivery.


Literature Review

To understand transportation challenges facing the populations of interest, I have reviewed sources focused on transportation needs for special-needs populations generally. The summary of this review is in the previous section.

Secondly, I reviewed human services and transportation plans from the cities and communities in South King County. I reviewed these sources to understand and synthesize what is already known about special-needs transportation in South King County and to understand what work jurisdictions are already doing to meet those needs. The major limitation of this analysis is that not all jurisdictions have reports available, especially smaller cities and unincorporated areas, and many of the available documents are several years old. I reviewed transportation or human services plans for several jurisdictions. The following cities and reports had information particularly relevant to special needs transportation:

- Auburn: Consolidated Plan for Years 2010-2014

I also reviewed the following reports that have elements related to special needs transportation in South King County:

- Puget Sound Regional Council: Coordinated Transit-Human Services Transportation Plan (Fiscal Years 2011-2014)
- Public Health – Seattle & King County: Communities Count 2008: A Report on The Strength of King County’s Communities
- Sound Transit: United We Ride Puget Sound (2006)
- South County Area Transportation Board 2010 Annual Report

Quantitative analysis

The quantitative portion of this report provides background information and can help to identify potential barriers.

This background research includes statistical analysis using American Community Survey (ACS) Public Use Microdata Sample (PUMS)\(^\text{36}\) to compare characteristics of South King County residents to characteristics of residents of the Central Puget Sound region. Relevant information in this dataset includes

commuting mode choice, vehicle ownership, and various demographic characteristics.

I derived six categories for mode choice from the variables “means of transportation to work” and “vehicle occupancy.” Categories are:

- **Single-Occupant Vehicle (SOV):** includes car, truck, or van; drove alone
- **Carpool:** Includes car, truck, or van; in 2- or more person carpool
- **Transit:** Includes bus or trolley bus, streetcar or trolley car, subway or elevated, railroad, or ferryboat
- **Bicycle:** Includes bicycle
- **Walking:** Includes walked
- **Work at home:** Includes worked at home
- **Other:** Includes motorcycle, taxicab, and other

To derive vehicle ownership I used the variable “vehicles available” for the household.

I used the demographic information available on the survey. Race categories include: White, Black, Asian, American Indian/Alaska Native, Native Hawaiian/Pacific Islander, and Other/Two or more races. Hispanic origin is recorded separately from race categories and is not mutually exclusive from any of the above categories. I used one variable to include all people with disabilities. This includes people with: self-care difficulty, hearing difficulty, vision difficulty, independent living difficulty, or an ambulatory difficulty. I use the “military service” variable to derive a proxy for veteran status. For purposes of analysis I included people who are now or have ever been on active duty or are now or have ever been in military reserves or National Guard in one category, which I label “Veteran” in my results.

Because this dataset only includes information on commute-related travel, it provides an incomplete understanding of the full range of transportation needs and behavior, but can still provide several key insights. I generally compare individuals from South King County with the rest of the four-county (King, Snohomish, Pierce, and Kitsap) Central Puget Sound region (“the region”).

This analysis includes several multivariate models with statistical controls, which help separate the effects of explanatory variables on key outcome variables. I developed four models to help explain mode choice:
**Multinomial logit model to explain commute mode choice.** This type of model allows me to identify which characteristics are relevant for predicting the probability that someone chooses a given mode to get to work, compared to the probability that they drive alone (SOV). The model I use for this project is based on previous work with data from the entire Central Puget Sound region, but includes a variable to compare South King County to the rest of the region.

The multinomial logit model produces a separate equation for each possible mode choice, comparing the probability that someone chooses a given mode. In general form, the equations for this model are below. The x’s in the model represent explanatory variables, such as **race**, **income**, **gender**, the **number of children** the **household**, and whether or not a person was **born in the United States**. β’s represent the coefficient on each of those variables, or an estimate of the effect size and significance of each variable. ε refers to the error in the model’s estimate.

\[
\ln \left( \frac{p(\text{carpool})}{p(\text{sov})} \right) = \beta_0 + \beta_1 x_1 + \cdots + \beta_n x_n + \epsilon \\
\ln \left( \frac{p(\text{transit})}{p(\text{sov})} \right) = \beta_0 + \beta_1 x_1 + \cdots + \beta_n x_n + \epsilon \\
\ln \left( \frac{p(\text{bicycle})}{p(\text{sov})} \right) = \beta_0 + \beta_1 x_1 + \cdots + \beta_n x_n + \epsilon \\
\ln \left( \frac{p(\text{walk})}{p(\text{sov})} \right) = \beta_0 + \beta_1 x_1 + \cdots + \beta_n x_n + \epsilon \\
\ln \left( \frac{p(\text{work at home})}{p(\text{sov})} \right) = \beta_0 + \beta_1 x_1 + \cdots + \beta_n x_n + \epsilon \\
\ln \left( \frac{p(\text{other mode})}{p(\text{sov})} \right) = \beta_0 + \beta_1 x_1 + \cdots + \beta_n x_n + \epsilon
\]

The major weakness of this method is that it focuses exclusively on travel for work or school, and does not track mode choice for other types of trips. Secondly, the choices people make about what mode they use to commute are complicated and often not well-captured by the available demographic data in the survey. (That is, even with a large number of explanatory variables, the pseudo R^2 value has been under 0.10—the model only explains about 10% of the variation in mode choice.)

After finding that South King County residents were more likely to rely on privately-owned vehicles than other residents of the Puget Sound region, used an **ordinary least squares (OLS) model** to explain the number of vehicles per household. This model assumes number of vehicles per household is essentially a continuous number (so a particular demographic trait may be associated with 0.22 fewer vehicles in a household, for example). The general form of this equation is:
To understand more about what different average numbers of vehicles per household meant in practical terms, I developed a *multinomial logit model* to explain the number of vehicles per household as a discrete outcome (to predict, for example, who would be likely to have three vehicles per household as opposed to two). This model uses two vehicles per household—the most common number—as the base outcome and compares other possible numbers of vehicles per household to two.

The general form of this set of equation is as follows:

\[
\begin{align*}
\ln \left( \frac{p(0)}{p(2)} \right) &= \beta_0 + \beta_1 x_1 + \cdots + \beta_n x_n + \epsilon \\
\ln \left( \frac{p(1)}{p(2)} \right) &= \beta_0 + \beta_1 x_1 + \cdots + \beta_n x_n + \epsilon \\
\ln \left( \frac{p(3)}{p(2)} \right) &= \beta_0 + \beta_1 x_1 + \cdots + \beta_n x_n + \epsilon \\
\ln \left( \frac{p(4)}{p(2)} \right) &= \beta_0 + \beta_1 x_1 + \cdots + \beta_n x_n + \epsilon \\
\ln \left( \frac{p(5)}{p(2)} \right) &= \beta_0 + \beta_1 x_1 + \cdots + \beta_n x_n + \epsilon \\
\ln \left( \frac{p(6)}{p(2)} \right) &= \beta_0 + \beta_1 x_1 + \cdots + \beta_n x_n + \epsilon
\end{align*}
\]

I created three versions of this model:

1. A model using including all residents of the central Puget Sound region, including a variable for South King County to compare with the rest of the region.
2. A second model including all central Puget Sound residents, including additional variables for Seattle, Bellevue, and Tacoma (the area’s largest cities) to gain a more nuanced understanding of the effect of place on vehicle ownership. This model also helps measure the extent to which the difference between South King County and the rest of the region is actually driven by the large populations of the large cities in the area.
3. A model using only low-income South King County residents. I included people whose income was at or below 150 percent of the federal poverty level in 2010.\(^{37}\) This model is useful because the way people at lower incomes make decisions about vehicle ownership may be different from how higher-income people make those decisions, and the

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\(^{37}\) Various programs use different percentages of the federal poverty threshold to designate households or individuals as low-income. The U.S. Department of Housing and Human Services provides information here: [http://aspe.hhs.gov/poverty/11poverty.shtml](http://aspe.hhs.gov/poverty/11poverty.shtml)
prior models may not be well-fitted to lower income individuals and households.

Finally, I created a logit model with a binary outcome of whether or not a household had at least one vehicle per adult in the household. This model includes low-income South King County residents, and helps answer the question of to what extent residents are able to rely on their own vehicles for transportation. The general form of that equation is:

$$\ln(p(\text{at least one vehicle per adult})) = \beta_0 + \beta_1 x_1 + \cdots + \beta_n x_n + \epsilon$$

The outcome variable for the logit model was developed by determining the number of adults in the household by taking people in the household and subtracting the number of “related children.” Thus, the measure of number of adults can be imprecise, depending on household composition.

I developed ordinal logit model to describe the number of vehicles per household, but the model violated the proportional odds assumption (essentially, that one equation describes the relationship between each successive outcome). The multinomial logit, by contrast, produces a model for each possible outcome and is a good fit for understanding both mode choice and number of vehicles in a household.

GIS analysis

I used Geographic Information Systems software to identify high-need areas lacking access to public transit routes. This based on US Census and American Community Survey data, particularly related to income, bus route data from King County’s GIS Center, and schedule data available from King County Metro’s website. This analysis can build on general statistical understanding of the area by including relevant spatial information.

GIS analysis is limited in several ways. Like other forms of quantitative analysis of administrative data, it cannot capture the nuance of lived experiences. Secondly, at small geographic scales—at the Census tract level and smaller, often—ACS data can have significant error in its estimates, making results challenging to interpret and apply. Lastly, there is a time lag between data collection or system changes and when data are publically available. The data I use regarding bus routes was current as of February 2012 but do not reflect all current service changes. This is especially relevant as Metro is, at the time of this writing, in the midst of major service revisions over the next several revision cycles.

Nonetheless, many academic and applied articles have used GIS-based methods for understanding transportation needs. The most relevant of these use
combinations of administrative and observation-based data. In a study conducted in Quebec City, McCray and Brais use data from focus groups with women at social-service centers, which included self-mapping exercises, to map “activity areas” to understand the travel needs the participants. Another study, in New York,\(^{38}\) compared administrative data that classified neighborhoods as “walkable” with on-street observation of the area to gauge actual hospitality for pedestrians. While many urban areas have neighborhoods with characteristics such as short block lengths and access to transit, that make them seem walkable, on-the-ground observation often conflicts. The GIS analysis in this report does not address perceived barriers. I cover this qualitative data through information I gathered from interviews and meetings with key stakeholders.

**Key Informant Interviews**

I have conducted a number of interviews with key informants in South King County. Hopelink staff identified several key stakeholders, I identified some, and I connected with some at the advice of prior interviewees. Most interviews were conducted over the phone, due to the broad geographic area covered. These informants fall into four broad categories:

- Direct social service providers
- Human services planners at city governments
- Elected officials with transportation interests
- Transportation providers and planners

Key informant interviews, and social service providers in particular, are a common component of many rigorous social service needs assessments.\(^{39}\) These interviews provide rich qualitative data, at the heart of this assessment. These interviews focus on observed transportation challenges in a variety of communities, as well as provide insight into potential strengths and weaknesses for engaging community members around transportation issues. For providers with whom I am unable to schedule in-depth interviews, I have collected a few responses via email and via an online survey. This has provided some information, although in less depth than the interviews.


The limitation of interviews is that the people chosen speak only from their own experiences. While this format can also contribute a detailed, nuanced understanding of transportation needs, I had limited contact with end users of transportation services.\footnote{See Appendix 6 for a list of providers I interviewed.}

**Focus groups/Community meetings**

I have had additional contact with key informants through community meetings. These mostly served to help me understand the special needs transportation landscape and the key opportunities for future community engagement. I conducted focus group-style meetings. These allowed for in-depth discussion and idea-sharing among multiple people to generate a detailed and in-depth understanding. I attended one meeting of King County Housing Authority staff, who work with older adults, and one meeting of refugees at World Relief. The meetings I attended included:

- King County Metro’s Alternative Service Delivery stakeholder meeting in Kent on February 29, 2012

  The Alternative Service Delivery meeting included representatives from various jurisdictions and community groups and was focused on public transportation service delivery in areas—typically rural in nature—that do not have ridership or population density to support traditional fixed-route bus service. This includes many areas in the South King County region. While this meeting was primarily focused on the process for finding solutions to transportation problems in rural areas, the stakeholders at the table brought concerns that offered insight into some of the needs in the area.

- South King County Human Services Transportation Planning Workshop on March 19, 2012

  The Human Services Transportation Planning Workshop served as a “mini strategic planning session” and kick-off for the South King County Mobility Management Coalition. Social service providers attended and discussed their clients’ transportation needs and brainstormed potential solutions. The meeting was facilitated by Caren Adams from Public Health—Seattle & King County.

- South King County Mobility Coalition meeting, April 27, 2012

  The South King County Mobility Coalition meeting followed the March 19 meeting and allowed participants—service providers and other key stakeholders—
to formulate a one-year plan for building a coalition, and to further discuss transportation needs in the region.

- Focus group with of King County Housing Authority Resident Services Coordinators, April 11, 2012

I attended a staff meeting of King County Housing Authority resident services coordinators from senior public housing after requesting an interview with staff there. The attendees represented communities from around the county, with several from South King County.

- Focus group with clients at World Relief (refugees from various countries), May 22, 2012

I arranged to meet with a group of clients at World Relief after interviewing program staff there. The participants at the meeting were from several countries, including Iraq, Burma, and Bhutan, and had been living in the United States from just a few weeks to four years. They all live in Kent and use services at World Relief’s Kent office.\(^{41}\)

**Survey**

I developed a survey with the intention of distributing it to clients via social service providers. The survey was available on the internet. I forwarded the link to several stakeholders, but got a low response rate (7 responses total). I chose not to pursue the survey further for two reasons:

- The survey would have been nonrandom, given the plan to distribute it via service providers and given that we had no way to compel responses, and thus difficult to generalize from.
- Gathering a useful number of responses requires a broad public outreach effort that was outside the scope and available time for this project, and likely printing, translating, and distributing surveys widely.

I use analysis of relevant American Community Survey data as a substitute for my own survey. The ACS is randomly selected and reaches a broad range of households. It minimizes response bias, as participation is required by law.

I do recommend pursuing gathering responses directly from end users in the future, either through a large survey effort or through focus groups, to determine how well mobility management efforts are working once they are underway.

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\(^{41}\) For more information about World Relief, see their website: [http://worldreliefseattle.org/](http://worldreliefseattle.org/).
Findings

Where People Travel

After reviewing both area reports and interviews with social service and transportation providers, the following are the common sites to which people need to travel:

- Medical and facilities
- Employment
- Grocery stores or food banks
- Other shopping needs
- Social and recreational opportunities
- Childcare
- Human services
- Libraries
- Banks
- Laundry
- Places of worship
- Educational institutions (usually community colleges)

Many of these services are available within South King County, although residents of some of the smaller cities, they may have to travel to neighboring cities. Several interviewees also noted that some services are available only in Seattle or in Eastside cities. Generally, more specialized services are less often available in close proximity to where people live. Difficult-to-access locations are summarized below:

- Specialized medical services, including VA medical facilities are only available in certain locations (depending on the particular service needed), many of which are far away.
- Many employment opportunities are far away from residents’ homes. Seattle and the Eastside are major hubs. SeaTac airport was also noted as a hub for employment, especially for recent immigrants.
- Eligibility certification for Access paratransit and certification as disabled to obtain a Regional Reduced Fare Permit for transit can only be done in Seattle.
- Reloading ORCA (transit pass cards) with cash, which can only be done at a few grocery stores in South King County and at Metro Customer

42 The larger cities in the region have human services and/or transportation plans. The documents with the most in-depth information were the City of Kent’s Human Services Master Plan (2007-2012), the City of Federal Way’s Housing and Human Services Consolidated Plan (2006), and a 2007 Sound Transit report entitled United We Ride Puget Sound.
Service locations in Seattle. Many special needs users are unable to reload their card online because they lack internet access or a credit or debit card with which to pay.

**Modes of Transportation**

**Commute Mode Choice**

A higher percentage of commuters in South King County travel by single-occupant vehicle (74%) than they do in the rest of the region (69%). A higher percentage of South King County residents carpool (11.3% to 10.3% for the rest of the region), and a lower percentage use transit (8.1% for the rest of the region to 6.75% for South King County). This is likely to be the result of the relatively low population densities in some areas of South King County, which is also associated with lower availability of public transit options. South King County residents are also less likely to bicycle or walk to work than the rest of the region, even when controlling for other demographic variables. Other significant factors in predicting commute mode choice are:

- **Household Income**: As incomes rise, the likelihood of both carpooling and transit use increases, and then begins to decline at higher incomes.
- **Number of Vehicles Available in Household**: More vehicles per household was associated with a lower likelihood of carpooling, transit, walking, bicycling, working at home, and other modes (includes motorcycles, taxis, and others).
- **Nationality**: People who were born outside the United States were more likely to carpool than were U.S. natives.
- **Race**: People who identified as Asian were more likely to carpool and less likely to work at home than were others. People who identified as Black were more likely to carpool and less likely to commute by bicycle or to work at home.
- **Ethnicity (Hispanic Origin)**: People who identified as Hispanic were more likely to carpool.

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44 Two-sample t-test, equal variances assumed. t=-4.69, significant at 99% level.

45 Each of these points describes the variable’s independent effect—i.e., when controlling for other variables, income has an effect on mode choice.

46 The rise and then decline of certain mode choices is predicted using a squared term in the model. The income point at which use begins to decline varies according to other included variables.

47 Complete multinomial logit results are displayed in Appendix 1.
Household Vehicles

Despite lower incomes, the average number of vehicles per household in South King County is 2.2, higher than in the rest of the region, where the average is 2.15.\(^4\) However, this difference seems to be driven by people with access to a relatively large number of vehicles. Figure 8 below shows the percentage of the population in with access to each possible number of vehicles in their household. A higher percentage of the South King County population had no vehicles than in the rest of the Puget Sound region, but South King County residents were also more likely to have access to 4 or more vehicles in their household than were residents of the rest of the region (13% in South King County versus 10% in the rest of the region. The modal number of vehicles per household was two in both areas.

![Figure 8: Vehicles per Household](image)

A variety of other factors are significant in predicting access to vehicles per household. The following were associated with lower numbers of vehicles in a household:

- Lower numbers of people in the household
- Lower household incomes
- Not being born in the United States
- Having a disability
- Identifying as Asian
- Identifying as American Indian or Alaska Native

\(^4\) Two-sample t-test, equal variances assumed. \(t=-2.48\), significant at 99% level.
• Identifying as Native Hawaiian or other Pacific Islander
• Identifying as Black
• Being a veteran or on active military duty
• Lower and higher ages (That is, as age increases, the number of vehicles per household increases and then declines.)

These results were consistent throughout the different models. Complete results are in Appendix 1.

Modes: Qualitative Results

Results from interviews with social service providers and planners, and feedback from residents included the following. This does not represent a comprehensive list of services available.

Private Vehicle Use

Many South King County residents drive themselves, if they are able and can afford to have a car. This is especially common in areas with limited public transit service, which includes the rural areas and small cities of Southeast King County, as well as well as lower-population areas of larger cities.

Many residents rely on friends, relatives, and neighbors to drive them.

Public Transit

Many residents rely on King County Metro and Sound Transit buses to navigate locally, around South King County, and to travel between their community and downtown Seattle or the Eastside. Link Light Rail was mentioned, although more in the cities where stations are located (SeaTac and Tukwila). Residents of other areas more commonly used a bus to get to downtown Seattle.

Dial-A-Ride (DART) variable route service is available in several communities. This service is available to the general public but some interviewees and coalition members mentioned that not all residents know this; they think it is a more specialized service.

Bicycling and Walking

Although survey data has indicated that South King County residents are less likely to bicycle or walk to work, some respondents did report that they or their clients got around on foot or by bicycle. One person mentioned that people use bicycles or walk to get home from main bus stops after local buses closer to their neighborhoods have stopped running. One mentioned that clients used bicycles to get around for short errands that were nearby where they lived.
**Specialized Services**

In contrast to general-use public transit, some services are only available to residents who meet certain qualifications, or are available within specific geographic areas.

Those who are eligible and complete the application process use Access paratransit. Access provides service comparable to fixed-route transit service for people who are physically or cognitively unable to ride transit all or some of the time. Some people are fully eligible and use Access for all trips, while others are conditionally eligible and use fixed route transit some of the time and Access some of the time.

Older adults and people with disabilities use **Hyde Shuttles** to get around in areas where they are available:

- Burien
- Des Moines and Normandy Park
- Renton

SeaTac and Tukwila do not currently have Hyde Shuttle service, but staff in those communities mentioned that they were interested in establishing a shuttle in their areas. Federal Way will begin Hyde Shuttle service on May 21, 2012.

Residents age 13 and older in Covington, Maple Valley, Black Diamond, and nearby rural communities use the **Southeast Regional Shuttle** operated by the Greater Maple Valley Community Center. Rides on this service cost 50 cents and are available by reservation on variable routes within the service area.49

Older adults can use **Volunteer Transportation** to get to medical appointments. Cindy Zwart, the Volunteer Transportation program director, noted that South King County is the most difficult area in which to find volunteer drivers.

Those who qualify by having a Provider One card may use **Hopelink Medicaid Transportation**.

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**Barriers to Access**

**Geographic data analysis**

This analysis estimates how many residents of South King County, especially those with lower incomes or who lack access to vehicles, also lack access to bus service.

My GIS analysis has focused on availability of and proximity to fixed-route transit service as well as by Dial-A-Ride (DART) service. These routes form the backbone of the public transit system, as they do not have eligibility requirements, other than paying the fare. This analysis does not include more specialized services. Also note that bus routes are subject to change, and that Metro has planned major service changes in the coming months.

First I identified routes that serve South King County, and then categorized them by service hours (i.e. peak period only, or all day, or something between) and frequency (how often a bus comes). The results of this exercise are shown in Figure 9. Significant areas of South King County are unserved by bus service, particularly the rural areas surrounded by Auburn, Covington, Black Diamond, and Enumclaw. In this map the routes with approximately all-day service are shown in maroon on this map; the area not served by some kind of all-day bus service includes all of the southeastern most parts of the area.
Figure 9: Bus Service in South King County by Hours of Operation and Frequency
I next calculated a percentage of each Census tract not within one-half mile of a stop with all-day bus service. From this percentage, I estimated the total number of people who are not served. This includes 169,020 people, or about 30% of the population of South King County overall. These gaps in service likely include relatively sparsely populated areas, so, in that sense, the unserved population is overestimated; on the other hand, the area I defined as accessible to bus stops included more area than is likely to include people who can really access transit—so in that sense, the estimate of unserved population is underestimated. It is difficult to understand actual barriers to access through this analysis alone; the results of my interviews follow this section.

Figure 10: South King County All-Day Bus Service depicts areas with access to bus stops serving all-day routes in 0.10-mile increments, as many residents, due to ability or geography, are unable to travel a full half-mile to bus service. This map also provides context by showing city boundaries and major highways in the region. All-day service is most noticeably missing in Southeast King County communities (Black Diamond and Maple Valley in particular), but there are areas throughout the region without all day bus service.

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50% of tract area that is underserved*total population of tract. Requires assumption of even population distribution. Some of the unserved areas are in areas that are sparsely populated, but may still have facilities people need to access.
Figure 10: South King County All-Day Bus Service
I also computed the percentage of households without access to a vehicle, or with zero or one vehicles. The estimated total number of households who were both unserved by all-day transit and had zero vehicles per household was 6627 people, or about 1.5% of the South King County population. About 45,216 residents live in households with zero or one vehicle, or about 10% of the total South King County population. Figure 11 shows this analysis. The dark areas are those with the highest percentage of households with no vehicles who were also not within one half-mile of all-day transit service.

![Access to Household Vehicles in Areas Underserved by Bus Routes South King County](image)

**Figure 11: South King County Bus Routes and Access to Vehicles**
Qualitative Results and Perceived Barriers

Several key themes have emerged from my interviews with stakeholders. Barriers to effective transportation include:

Cost

Cost came up in almost every conversation, regardless of what particular modes were used. Among social service planners and providers, many said that assistance with transportation costs was one of the most commonly requested services. However, such assistance is often not available due to restrictions in eligibility and budget cuts.

Many residents do rely on private vehicles to get around, but are burdened by all of the costs associated with owning a vehicle, including the vehicle itself, gas, insurance, and maintenance. Reliance on private vehicles was particularly common in the Southeast subregion (the communities of Maple Valley, Covington, Black Diamond, and Enumclaw, and surrounding rural areas). Reliance on vehicles poses a particular challenge when people lose their ability to do so, either due to age, disability, or increased costs (such as higher gasoline prices or vehicle repairs). Many such residents live in or travel to areas where other modes of transportation are not practical.

Several interviewees mentioned that residents get rides from friends, family members, or neighbors. One mentioned that this was often an expensive option as well, as the drivers asked for compensation.

Finally, for those who do use public transportation, the fare can be prohibitive. To qualify for a reduced fare (75 cents for most public transportation), residents must have a documented disability or be over 65 years old. For low-income residents the regular bus fare—up to $3.00 one-way during peak periods—is cost prohibitive. Additionally, bus passes themselves cost money; the Regional Reduced Fare Permit costs $3.00 up front and a regular ORCA (the general regional transit pass) costs $5.00. For people with limited incomes these up-front costs are unaffordable.

Round-trip service can especially burdensome. Transit service offers transfer tickets which last for two hours before the rider has to pay for a return trip. Focus group participants said:
“If you want to go shopping, the two hour transfer is not enough. It is easy to get there, but paying twice is too much money. I go to Renton (from Kent) for cheap groceries and to get food like the food in my country.”

“I have gone to Highline and Green River (community colleges) to study. I try to leave class early so I do not have to pay for the bus ride home.”

**Time**

Time represents another cost of transportation that many informants reported. Trips often take multiple transfers, with significant waiting time between trips. A focus group participant said:

“It takes me three hours to get home from work at 9 pm. I take one bus for an hour, wait for another hour, and take another bus for an hour.”

Several interviewees noted the time cost of traveling to Seattle or the Eastside for specialized medical care. The round trip, plus the appointment can take all day. Those who were able to obtain medical care in their communities were less burdened by the trip time for appointments. Nonetheless, trips with multiple destinations—for example, to work, for groceries, and to childcare—are particularly time-consuming and burdensome.

For some, the time transportation takes can present health issues, besides just being inconvenient. One provider noted that clients were concerned about having to use the restroom while waiting for a bus or for Access paratransit vans.

**Logistic Challenges, Convenience, Reliability**

Beyond the time cost of travel via public transportation, many informants also reported that travel was inconvenient. That is, for people trying to juggle several locations on a single outing, coordinating the necessary trips can be challenging. Relying on public transportation may also mean taking care of children and juggling items such as groceries or laundry on the bus, which can be difficult.

Convenience and reliability impacts what items people feel comfortable bringing on public transit. One a social service provider said:

“People don’t want to buy milk or frozen food because they’re worried they won’t be able to get it home. If you have to wait half an hour for the Access van, and then take the trip, you’re worried your food won’t be good when you get home.”
While the above comment specifically related to Access paratransit service, for which riders are given a 30-minute window in which to be ready to meet a van, the same constraint applies across other forms of transit as well. When buses run infrequently—as many routes in South King County do—a few minutes late can mean a missed transfer and significant added waiting time. For some residents this is an inconvenience, but for others this can be confusing and frightening. For people relying on transit for work unreliable schedules can be especially stressful, as missing the bus may mean losing their job.

A focus group participant said:

“If my bus is late, the bus at the station doesn’t stop to wait for me to transfer. Then I have to wait for 35 minutes or an hour at the bus station.”

**Hours of Operation**

Many informants reported that public transportation services were not available at times when people needed them. The highest volume of transit service occurs at peak times and in peak directions—into Seattle in the mornings and back to South King County in the evenings, but many low-income workers work other shifts and in places other than Seattle. Buses often do not run early enough in the morning or late enough at night to make getting to or from work practical. Focus group participants said:

“My shift at the airport ends at midnight but the last bus up to East Hill [in Kent] is at 11:45 pm.”

“It would be better if the 180 [connects Burien, SeaTac, Kent, Auburn] ran until midnight or later. It would help people who work at the airport.”

“When you get a job you have to tell them you are available all the time. If you are not available all the time, you don’t get the job. If you can’t be there because of the bus, you have to leave your job.”

A social service provider said:

“It is hard to get to industrial jobs or industrial areas. Many people work the graveyard shift...stops are few and far between in the evenings. People have to walk a lot.”
Eligibility

Informants often reported that there was an array of services available, but eligibility was confusing or challenging to achieve. For example, most people reported satisfaction with Access paratransit service and with the experience of the in-person evaluation, but being certified for eligibility requires paperwork and a trip to Harborview Medical Center in Seattle. The entire process for eligibility certification can be confusing, time-consuming, and difficult overall. Access applications are not available in languages other than English, although staff do connect with translation services over the phone to assist riders who do not speak English.

In general, there are some misconceptions about what services Access provides. In many ways, Access is the most visible service, but it does not, and is not designed to, meet the needs of all customers; it is designed to meet the needs of those who cannot use regular bus service. In addition, it is designed, per Americans with Disabilities Act (ADA) regulations, to provide service equivalent to regular bus service. Other services may be available that are more tailored to an individual's particular needs, but not everyone is aware of such services.

Staff at Access have made efforts to make the process less confusing, such as issuing a pre-Application packet to help clients answer whether they might be eligible and should continue with the application process. Around 50% of Access applications come through a social service organization, which can also help individuals understand what services they are eligible for. Furthermore, the Transportation Resource Center at Harborview Medical Center operates alongside the eligibility evaluation center for Access, which allows staff to educate individuals about the services they qualify for.

Nonetheless, informants reported that some people were not eligible for certain specialized services but had a very difficult time riding regular transit service—they “fell through the cracks.” Access offers varying levels of eligibility to prevent users from falling through the cracks:

- **Fully eligible** individuals may use Access for all their travel needs
- **Conditionally eligible** individuals use Access for some of their travel needs, but use regular bus service some of the time. They may be able to be trained for a specific trip or route on the bus but use Access the rest of the time, or they may ride the regular bus most of the time except at
night or in cold weather. The level of conditional eligibility is determined individually.

- **Ineligible** individuals are determined to be able to ride regular bus service.

Other services have differing eligibility standards. For Hyde Shuttles, the person requesting a ride must be over the age of 55 or have a disability, but otherwise do not have to complete any other eligibility requirements. However, many residents and providers were not aware of this service, and the capacity is limited by van space.

In general, not all clients or providers understand the full range of services and who is eligible for what. Communication around eligibility standards for different services could be improved to increase understanding. The standards for eligibility could also be streamlined to be more consistent.

**Information and a Confusing Array of Services**

Information about the array of available services is sometimes incomplete. This information is also generally not coordinated—that is, many providers offer services but in isolation from one another, so many residents do not know if they qualify for certain services, or are unaware of the array of options to make transportation easier.

Varying levels of eligibility were not always well understood among social service providers, who often provide a connection between users and the service. A few mentioned that eligibility standards had changed recently, but staff at Access said that the most significant change was that they had relatively recently developed capabilities to enforce conditional eligibility.

In addition, other services may be more effective for users and are more cost-effective. Improving coordination and information about these services would likely ameliorate some confusion and lead to a more satisfying transportation experience. Many service providers I spoke to said that people were not always aware of transportation options, although many of the providers said they work with their clients to supply information. A social service provider said:

“**People with a Provider One [Medicaid identification card] are eligible for Medicaid Transportation from Hopelink, but I just found out about this.**”
Sometimes information exists but it is hard for people to understand because of language or because there are too many options to understand. Basic information such as route maps and schedules was confusing for some people, especially those for whom English language was challenging. A focus group participant said:

“I look at the schedule and it’s a lot of numbers. Sometimes it’s a holiday and we don’t know because it’s printed somewhere at the bottom of the schedule.”

Increasing publicity about resources would be beneficial, but in some cases this seems to be infeasible. Staff resources for administering services are often limited and staff simply do not have the ability to market more resources. Additionally, some resources (such as providing funds for gas or bus passes) are at capacity so advertising them more is not feasible.

Language and Cultural Barriers

South King County has a significant population of people who have emigrated from other countries, who do not always speak or read English fluently. According to data from United Way of King County, which collects information on languages spoken in homes based on English Language Learning students in public schools, there are over 100 different languages spoken in South King County. Just over half of the non-native English speakers there speak Spanish. The social service providers who responded to my online survey listed the following languages as being represented in the communities they serve (the languages in bold were on United Way’s list of the ten most commonly spoken languages among English Language Learners. Tagalog was also included in that list.):

<table>
<thead>
<tr>
<th>Amharic</th>
<th>Farsi</th>
<th>Romanian</th>
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<tbody>
<tr>
<td>Arabic</td>
<td><strong>French</strong></td>
<td><strong>Russian</strong></td>
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<tr>
<td>Bosnian</td>
<td>Karin</td>
<td><strong>Samoan</strong></td>
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<td>Kurdish</td>
<td><strong>Spanish</strong></td>
</tr>
<tr>
<td>Cambodian</td>
<td>Mon</td>
<td>Turkish</td>
</tr>
<tr>
<td>Chin</td>
<td>Nepalese</td>
<td><strong>Ukrainian</strong></td>
</tr>
<tr>
<td>English</td>
<td><strong>Punjabi</strong></td>
<td>Vietnamese</td>
</tr>
</tbody>
</table>

51 United Way of King County. (2010). Community Assessment: Languages. [http://www2.uwk.org/kcca/printver.asp?REF=/kcca/data/Languages/default.asp](http://www2.uwk.org/kcca/printver.asp?REF=/kcca/data/Languages/default.asp). Kent is the most diverse school district by this measure, with 101 different languages represented.
Particularly for these immigrants and refugees, language and culture present a barrier to using transit service. Some recent immigrants are well-versed in Western cultural norms, but for others getting acclimated to cultural norms in the United States generally can be challenging. A focus group participant said:

“[It would be easier to get around] if schedules were printed in our language.”

Other aspects of the transportation system, such as paying for the bus or loading money on to an ORCA pass, were also challenging for recent immigrants and refugees. Focus group participants said:

“[ORCA] Vending machines are difficult to use. I tried...it just took my money.”

“It’s hard to put money on ORCA. I didn’t know how to use it. An American guy couldn’t figure it out either. The machines are hard to use.”

Some immigrants and refugees are not literate in their own language or in English, making getting around challenging. The King County Mobility Coalition has produced a series of videos in seven languages, which have helped many individuals who do not speak English or who cannot read written information. These videos are currently available in English, Amharic, Burmese, Nepali, Russian, Somali, Spanish, and Tigrinya. Several providers noted that they found these videos helpful but wished they were available in more languages.

Some of the people I interviewed who work with older adults reported a similar cultural barrier; they have relied on cars for most of their lives and have trouble transitioning away from it. These cultural barriers contribute to fear related to using transit, especially around getting lost.

**Safety and Security**

Safety was a major concern throughout interviews. This includes both physical challenges, such as having to wait for a long time or climb long hills to bus stops, and unsafe interactions with other people. A focus group participant said:

“It’s really scary waiting at the park and ride at night. People ask for a dollar or ask for my phone. I try to say, ‘No English,’ so people won’t bother me, but they have still tried to grab my bag.”
Limited Service in Specific Corridors

In general, interviewees reported relative ease with navigating to and from downtown Seattle especially at peak hours. However, there were specific limitations in service that presented challenges for South King County.

- East-West connections within South King County are limited. This presents challenges for people who need to access services or jobs throughout the area.
- Connections to Pierce County are limited. Many South King County residents work in Tacoma or Puyallup, or have other needs there, but have trouble getting there.
- Connections to places in Seattle other than downtown can be challenging, such as getting to the VA Medical Center on Beacon Hill.
- Local services within some communities in South King County are limited.
Conclusions and Recommendations

This study has gathered key themes related to travel challenges in South King County. However, the work on building civic capacity to address these challenges and coordinate services is just beginning.

Two key initial steps to improving mobility in South King County are:

- Gathering more data from end users. The major limitation of this work is that I had a limited number of contacts from within special needs communities themselves. Future work should aim to bring a wider variety of community members to the table.
- Gathering and coordinating data about the variety of services available. A number of people I talked to were unaware of the variety of services available, what they did, and who was eligible for what.

The most readily changed piece of the transportation system is to improve the information that is available. I recommend continued efforts to educate customers about the services for which they are eligible. I also recommend making resources available in even more languages, if possible. Current resources do cover several languages but South King County residents speak many others.

Many future improvements to the system will need to come from county and even state levels, so presenting a unified voice from South King County communities is critical. A key improvement for many special needs residents would be to improve access to ORCA cards, including making the cards themselves cheaper, and increasing locations for adding money to the card.

During this study, it was clear that many communities and providers were already invested in helping provide transportation. As Metro, at the county level, looks for alternative ways to deliver service, this involvement from the community to build civic capacity around transportation issues will be critical. Many special needs residents in this region face tradeoffs between affordable housing and affordable transportation. It remains an open question to what level of service government agencies are obligated to provide, but communities should work to understand their local needs and work with residents and the county to offer effective services, and mitigate some of the high transportation costs associated with living in suburban and rural communities.
### Appendix 1: Quantitative Results

Multinomial logit model results: Commute Mode Choice

<table>
<thead>
<tr>
<th>Variable</th>
<th>Carpool</th>
<th>Transit</th>
<th>Bicycle</th>
<th>Walking</th>
<th>Work at Home</th>
<th>Other mode</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient (T-Score)</td>
<td>Coefficient (T-Score)</td>
<td>Coefficient (T-Score)</td>
<td>Coefficient (T-Score)</td>
<td>Coefficient (T-Score)</td>
<td>Coefficient (T-Score)</td>
</tr>
<tr>
<td>Female</td>
<td>-0.0900 (-0.97)</td>
<td>0.147 (1.66)</td>
<td>-0.673** (-2.63)</td>
<td>-0.190 (-1.56)</td>
<td>0.100 (0.79)</td>
<td>-1.056*** (-3.57)</td>
</tr>
<tr>
<td>Married</td>
<td>0.163* (2.01)</td>
<td>-0.149 (-1.61)</td>
<td>0.301 (1.44)</td>
<td>-0.387** (-2.72)</td>
<td>0.224 (1.90)</td>
<td>0.0831 (0.40)</td>
</tr>
<tr>
<td>Married*Female</td>
<td>0.168 (1.51)</td>
<td>0.0171 (0.14)</td>
<td>-0.882* (-2.22)</td>
<td>0.250 (1.28)</td>
<td>0.233 (1.52)</td>
<td>0.160 (0.44)</td>
</tr>
<tr>
<td>Children in HH</td>
<td>-0.00432 (-0.06)</td>
<td>-0.107 (-1.15)</td>
<td>-0.203 (-0.99)</td>
<td>-0.470** (-2.88)</td>
<td>-0.0488 (-0.45)</td>
<td>-0.126 (-0.62)</td>
</tr>
<tr>
<td>Children*Female</td>
<td>0.182 (1.71)</td>
<td>-0.361** (-2.68)</td>
<td>0.0722 (0.17)</td>
<td>0.0924 (0.41)</td>
<td>0.309* (2.14)</td>
<td>0.479 (1.35)</td>
</tr>
<tr>
<td>Household Income</td>
<td>0.00000272*** (2.89)</td>
<td>0.00000467*** (3.97)</td>
<td>0.000000402 (0.20)</td>
<td>-0.00000397*** (-3.43)</td>
<td>0.00000237*** (2.68)</td>
<td>0.00000247 (0.81)</td>
</tr>
<tr>
<td>HH Income ^ 2</td>
<td>-5.39e-12* (-2.34)</td>
<td>-9.88e-12** (-3.12)</td>
<td>-5.16e-14 (-0.01)</td>
<td>4.15e-12** (2.60)</td>
<td>-1.53e-12 (-0.91)</td>
<td>-6.75e-12 (-0.84)</td>
</tr>
<tr>
<td>Household Vehicles</td>
<td>-0.143*** (-5.65)</td>
<td>-0.723*** (-20.21)</td>
<td>-0.728*** (-7.66)</td>
<td>-0.930*** (-15.86)</td>
<td>-0.234*** (-6.60)</td>
<td>-0.302*** (-3.67)</td>
</tr>
<tr>
<td>South King County</td>
<td>-0.0204 (-0.30)</td>
<td>-0.239** (-2.79)</td>
<td>-0.739* (-2.53)</td>
<td>-0.754*** (-4.73)</td>
<td>-0.161 (-1.60)</td>
<td>-0.277 (-1.21)</td>
</tr>
<tr>
<td>Disability</td>
<td>0.268* (2.34)</td>
<td>0.129 (0.95)</td>
<td>-0.00781 (-0.02)</td>
<td>-0.507* (-2.04)</td>
<td>0.616*** (4.64)</td>
<td>0.371 (1.17)</td>
</tr>
<tr>
<td>US Native</td>
<td>-0.326*** (-4.21)</td>
<td>-0.169 (-1.85)</td>
<td>0.521 (1.65)</td>
<td>-0.307* (-2.12)</td>
<td>-0.0926 (-0.76)</td>
<td>-0.228 (-0.95)</td>
</tr>
<tr>
<td>Asian</td>
<td>0.425*** (5.07)</td>
<td>0.499*** (5.15)</td>
<td>-0.0822 (-0.25)</td>
<td>-0.188 (-1.10)</td>
<td>-0.505*** (-3.44)</td>
<td>-0.145 (-0.50)</td>
</tr>
<tr>
<td>Black</td>
<td>0.0888 (0.69)</td>
<td>0.310* (2.40)</td>
<td>-2.111* (-2.10)</td>
<td>-0.404 (-1.72)</td>
<td>-0.511* (-2.38)</td>
<td>0.667* (2.29)</td>
</tr>
<tr>
<td>Am Indian/Alaska Native</td>
<td>0.426* (2.55)</td>
<td>-0.142 (-0.60)</td>
<td>-1.088 (-1.08)</td>
<td>0.0333 (0.10)</td>
<td>-0.234 (-0.81)</td>
<td>-0.505 (-0.70)</td>
</tr>
<tr>
<td>Hawaiian/P.I.</td>
<td>0.500* (2.19)</td>
<td>-0.0446 (-0.14)</td>
<td>-13.42 (-0.02)</td>
<td>-1.551 (-1.53)</td>
<td>-0.842 (-1.43)</td>
<td>1.147* (2.20)</td>
</tr>
<tr>
<td>Other Race</td>
<td>0.00613 (0.03)</td>
<td>-0.410 (-1.60)</td>
<td>-1.141 (-1.08)</td>
<td>0.185 (0.55)</td>
<td>-0.411 (-1.09)</td>
<td>-0.371 (-0.57)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.431*** (3.83)</td>
<td>0.260 (1.88)</td>
<td>0.000672 (0.00)</td>
<td>-0.126 (-0.57)</td>
<td>-0.427* (-2.06)</td>
<td>0.139 (0.38)</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.793*** (-14.92)</td>
<td>-0.924*** (-7.09)</td>
<td>-2.892*** (-7.64)</td>
<td>-0.355* (-1.96)</td>
<td>-2.409*** (-14.12)</td>
<td>-3.281*** (-9.60)</td>
</tr>
</tbody>
</table>

* p<0.05  ** p<0.01  ***p<0.001
chi²(96) = 1759.37
Prob > chi² = 0.0000
Pseudo R² = 0.1008
## Ordinary Least Squares Linear Regression Models

### Model 1
- SKC compared to rest of region

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>T-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of people in household</td>
<td>0.284***</td>
<td>(67.05)</td>
</tr>
<tr>
<td>U.S. Native</td>
<td>0.279***</td>
<td>(13.84)</td>
</tr>
<tr>
<td>Household income in thousands</td>
<td>0.00298***</td>
<td>(35.05)</td>
</tr>
<tr>
<td>Disability</td>
<td>-0.155***</td>
<td>(-7.79)</td>
</tr>
<tr>
<td>Asian</td>
<td>-0.0749***</td>
<td>(-3.33)</td>
</tr>
<tr>
<td>Black</td>
<td>-0.342***</td>
<td>(-11.57)</td>
</tr>
<tr>
<td>Am. Indian/Alaska Native</td>
<td>-0.0282</td>
<td>(-0.68)</td>
</tr>
<tr>
<td>Hawaiian/P.I.</td>
<td>-0.350***</td>
<td>(-5.56)</td>
</tr>
<tr>
<td>Other race</td>
<td>0.0835</td>
<td>(1.65)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.164***</td>
<td>(-5.31)</td>
</tr>
<tr>
<td>Age</td>
<td>0.0166***</td>
<td>(9.42)</td>
</tr>
<tr>
<td>Age squared</td>
<td>-0.000162***</td>
<td>(-9.19)</td>
</tr>
<tr>
<td>Veteran or active military</td>
<td>0.0891***</td>
<td>(4.78)</td>
</tr>
<tr>
<td>South King County</td>
<td>0.0804***</td>
<td>(4.85)</td>
</tr>
<tr>
<td>Seattle</td>
<td>-0.511***</td>
<td>(-29.60)</td>
</tr>
<tr>
<td>Bellevue</td>
<td>-0.344***</td>
<td>(-10.04)</td>
</tr>
<tr>
<td>Tacoma</td>
<td>-0.102***</td>
<td>(-3.85)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.480***</td>
<td>(9.66)</td>
</tr>
<tr>
<td>N</td>
<td>27509</td>
<td>(9.66)</td>
</tr>
<tr>
<td>R²</td>
<td>0.234</td>
<td>(9.66)</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.234</td>
<td>(9.66)</td>
</tr>
</tbody>
</table>

### Model 2
- Major cities included, compared to other areas of region

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>T-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of people in household</td>
<td>0.267***</td>
<td>(63.29)</td>
</tr>
<tr>
<td>U.S. Native</td>
<td>0.266***</td>
<td>(13.38)</td>
</tr>
<tr>
<td>Household income in thousands</td>
<td>0.00310***</td>
<td>(36.86)</td>
</tr>
<tr>
<td>Disability</td>
<td>-0.170***</td>
<td>(-8.69)</td>
</tr>
<tr>
<td>Asian</td>
<td>-0.0267</td>
<td>(-1.20)</td>
</tr>
<tr>
<td>Black</td>
<td>-0.285***</td>
<td>(-9.75)</td>
</tr>
<tr>
<td>Am. Indian/Alaska Native</td>
<td>-0.0356</td>
<td>(-0.87)</td>
</tr>
<tr>
<td>Hawaiian/P.I.</td>
<td>-0.372***</td>
<td>(-5.99)</td>
</tr>
<tr>
<td>Other race</td>
<td>0.0722</td>
<td>(1.45)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.148***</td>
<td>(-4.87)</td>
</tr>
<tr>
<td>Age</td>
<td>0.0140***</td>
<td>(8.08)</td>
</tr>
<tr>
<td>Age squared</td>
<td>-0.000142***</td>
<td>(-8.17)</td>
</tr>
<tr>
<td>Veteran or active military</td>
<td>0.0536**</td>
<td>(2.91)</td>
</tr>
<tr>
<td>South King County</td>
<td>-0.0378*</td>
<td>(-2.24)</td>
</tr>
<tr>
<td>Seattle</td>
<td>-0.511***</td>
<td>(-29.60)</td>
</tr>
<tr>
<td>Bellevue</td>
<td>-0.344***</td>
<td>(-10.04)</td>
</tr>
<tr>
<td>Tacoma</td>
<td>-0.102***</td>
<td>(-3.85)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.717***</td>
<td>(14.47)</td>
</tr>
<tr>
<td>N</td>
<td>27509</td>
<td>(14.47)</td>
</tr>
<tr>
<td>R²</td>
<td>0.259</td>
<td>(14.47)</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.256</td>
<td>(14.47)</td>
</tr>
</tbody>
</table>

### Model 3
- Includes only SKC residents below 150% of poverty line

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>T-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of people in household</td>
<td>0.173***</td>
<td>(7.57)</td>
</tr>
<tr>
<td>U.S. Native</td>
<td>0.370***</td>
<td>(3.43)</td>
</tr>
<tr>
<td>Household income in thousands</td>
<td>0.00698***</td>
<td>(5.77)</td>
</tr>
<tr>
<td>Disability</td>
<td>-0.261**</td>
<td>(-2.67)</td>
</tr>
<tr>
<td>Asian</td>
<td>0.476***</td>
<td>(3.69)</td>
</tr>
<tr>
<td>Black</td>
<td>-0.467***</td>
<td>(-3.78)</td>
</tr>
<tr>
<td>Am. Indian/Alaska Native</td>
<td>-0.126</td>
<td>(-0.66)</td>
</tr>
<tr>
<td>Hawaiian/P.I.</td>
<td>-0.973***</td>
<td>(-3.48)</td>
</tr>
<tr>
<td>Other race</td>
<td>0.172</td>
<td>(1.00)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.112</td>
<td>(0.83)</td>
</tr>
<tr>
<td>Age</td>
<td>0.0332***</td>
<td>(3.38)</td>
</tr>
<tr>
<td>Age squared</td>
<td>-0.000373***</td>
<td>(-3.89)</td>
</tr>
<tr>
<td>Veteran or active military</td>
<td>-0.0509</td>
<td>(-0.30)</td>
</tr>
<tr>
<td>South King County</td>
<td>-0.0378*</td>
<td>(-2.24)</td>
</tr>
<tr>
<td>Seattle</td>
<td>-0.116</td>
<td>(0.41)</td>
</tr>
<tr>
<td>Bellevue</td>
<td>-0.256</td>
<td>(0.41)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.116</td>
<td>(0.41)</td>
</tr>
</tbody>
</table>

N: 27509
R²: 0.234
Adjusted R²: 0.234

T statistics in parentheses
* p<0.05      ** p<0.01      *** p<0.001
### Multinomial Logit Model: Vehicles per Household

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient 0</th>
<th>T-Score 0</th>
<th>Coefficient 1</th>
<th>T-Score 1</th>
<th>Coefficient 2</th>
<th>T-Score 2</th>
<th>Coefficient 3</th>
<th>T-Score 3</th>
<th>Coefficient 4</th>
<th>T-Score 4</th>
<th>Coefficient 5</th>
<th>T-Score 5</th>
<th>Coefficient 6</th>
<th>T-Score 6</th>
</tr>
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<tbody>
<tr>
<td>Number of people in household</td>
<td>-0.617***</td>
<td>(-18.90)</td>
<td>-0.608***</td>
<td>(-34.68)</td>
<td>0.230***</td>
<td>(18.81)</td>
<td>0.431***</td>
<td>(27.77)</td>
<td>0.482***</td>
<td>(21.20)</td>
<td>0.575***</td>
<td>(21.29)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S. Native</td>
<td>-0.562***</td>
<td>(-6.12)</td>
<td>-0.327***</td>
<td>(-5.84)</td>
<td>0.447***</td>
<td>(7.66)</td>
<td>0.494***</td>
<td>(5.86)</td>
<td>0.738***</td>
<td>(5.14)</td>
<td>0.561***</td>
<td>(2.91)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household income in thousands</td>
<td>-0.0174***</td>
<td>(-19.50)</td>
<td>-0.0121***</td>
<td>(-30.13)</td>
<td>0.00240***</td>
<td>(11.32)</td>
<td>0.00298***</td>
<td>(10.29)</td>
<td>0.00397***</td>
<td>(9.34)</td>
<td>0.00200***</td>
<td>(2.94)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South King County</td>
<td>-0.137</td>
<td>(-1.66)</td>
<td>-0.0878</td>
<td>(-1.87)</td>
<td>0.0842</td>
<td>(1.86)</td>
<td>0.202***</td>
<td>(3.13)</td>
<td>0.138</td>
<td>(1.28)</td>
<td>0.284*</td>
<td>(2.07)</td>
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<td></td>
</tr>
<tr>
<td>Presence of Disability</td>
<td>1.076***</td>
<td>(13.83)</td>
<td>0.323***</td>
<td>(6.05)</td>
<td>0.0909</td>
<td>(1.53)</td>
<td>0.104</td>
<td>(1.15)</td>
<td>0.304*</td>
<td>(2.12)</td>
<td>0.470**</td>
<td>(2.78)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>0.473***</td>
<td>(4.57)</td>
<td>0.170**</td>
<td>(2.66)</td>
<td>0.0788</td>
<td>(1.26)</td>
<td>-0.0107</td>
<td>(-1.02)</td>
<td>-0.0257</td>
<td>(-0.17)</td>
<td>-0.189</td>
<td>(-0.93)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>1.004***</td>
<td>(8.76)</td>
<td>0.591***</td>
<td>(7.48)</td>
<td>-0.131</td>
<td>(-1.45)</td>
<td>-0.396***</td>
<td>(-2.85)</td>
<td>-0.588*</td>
<td>(-2.35)</td>
<td>-0.789*</td>
<td>(-2.36)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Am. Indian/Alaska Native</td>
<td>0.528**</td>
<td>(3.10)</td>
<td>0.0730</td>
<td>(0.61)</td>
<td>0.122</td>
<td>(1.05)</td>
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<td>0.903***</td>
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<td>(3.11)</td>
<td>0.984***</td>
<td>(5.60)</td>
<td>0.0600</td>
<td>(0.34)</td>
<td>-0.727**</td>
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<td>-0.184</td>
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<td>Other race</td>
<td>-0.258</td>
<td>(-1.01)</td>
<td>-0.227</td>
<td>(-1.61)</td>
<td>0.0708</td>
<td>(0.50)</td>
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<td>(-0.06)</td>
<td>1.008**</td>
<td>(2.59)</td>
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<tr>
<td>Hispanic</td>
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<td>0.388***</td>
<td>(4.61)</td>
<td>-0.0848</td>
<td>(-0.97)</td>
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<td>0.0108</td>
<td>(0.06)</td>
<td>-1.139**</td>
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<tr>
<td>Age</td>
<td>-0.0986***</td>
<td>(-12.41)</td>
<td>-0.0582***</td>
<td>(-11.63)</td>
<td>0.00485</td>
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<td>-0.0258***</td>
<td>(-3.58)</td>
<td>-0.0200</td>
<td>(-1.71)</td>
<td>-0.0305*</td>
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<tr>
<td>Age squared</td>
<td>0.000916***</td>
<td>(12.21)</td>
<td>0.000516***</td>
<td>(10.42)</td>
<td>-0.0000308</td>
<td>(-0.58)</td>
<td>0.000227***</td>
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<td>0.000149</td>
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<td>0.000348*</td>
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<td>Veteran or active military</td>
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<td>-0.336***</td>
<td>(-6.49)</td>
<td>-0.0768</td>
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<tr>
<td>Constant</td>
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<td>(12.59)</td>
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<td>(23.60)</td>
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<td>-3.255***</td>
<td>(-15.90)</td>
<td>-5.019***</td>
<td>(-14.91)</td>
<td>-5.693***</td>
<td>(-13.00)</td>
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N = 27509  
*t statistics in parentheses  
* p<0.05  ** p<0.01  *** p<0.001  
LR chi²(96) = 1844.30  
Prob > chi² = 0.0000  
Pseudo R² = 0.0529
Logit: Likelihood that ratio of available vehicles to adults in household is at least 1

<table>
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<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>T-Statistic</th>
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<td>Number of children in HH</td>
<td>0.0828</td>
<td>(1.26)</td>
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<tr>
<td>Native to U.S.</td>
<td>1.177***</td>
<td>(5.20)</td>
</tr>
<tr>
<td>Household income, in thousands</td>
<td>-0.00598*</td>
<td>(-2.04)</td>
</tr>
<tr>
<td>Disability</td>
<td>-0.926***</td>
<td>(-4.58)</td>
</tr>
<tr>
<td>Asian</td>
<td>0.621*</td>
<td>(2.33)</td>
</tr>
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<td>Black</td>
<td>-0.648*</td>
<td>(-2.54)</td>
</tr>
<tr>
<td>Am. Indian/Alaska Native</td>
<td>-0.203</td>
<td>(-0.52)</td>
</tr>
<tr>
<td>Hawaiian/P.I.</td>
<td>-1.015</td>
<td>(-1.69)</td>
</tr>
<tr>
<td>Other race</td>
<td>-0.0166</td>
<td>(-0.05)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.0537</td>
<td>(-0.19)</td>
</tr>
<tr>
<td>Age</td>
<td>0.113***</td>
<td>(5.53)</td>
</tr>
<tr>
<td>Age squared</td>
<td>-0.00103***</td>
<td>(-5.10)</td>
</tr>
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<td>Veteran or active military</td>
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<tr>
<td>Constant</td>
<td>-2.989***</td>
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</table>

N=770  
Pseudo R²= .089  
t statistics in parentheses  
* p<0.05  ** p<0.01  *** p<0.001
Appendix 2: Interview Protocol

What is your role/job? What kinds of people/clients do you work with?

In your estimation, what places (or kinds of places) do your clients need to access on a regular basis?

--How far do they have to travel, is it within the jurisdiction, etc.

What modes do you think your clients use? Bus, DART, etc?

How do your clients find out about transportation options? What’s missing?

**Barriers:**

What prevents your clients from being able to get around in general? What prevents your clients from using specific services?

What prevents them from learning more about services/communication?

What other barriers do they face?

What would make it easier for your clients to get around? To access existing services?

I’m interested in specific populations. [If we haven’t covered these already] Are there specific challenges that:

- Veterans face?
- People with disabilities face?
- Low-income people face?
- Immigrants and/or refugees face?
- Youth face?
- Older adults face?

What else should we know?
Appendix 3: Focus Group Protocol

1. Introductions and ice breakers
   a. Eat food
   b. Introduce by name, other fact?

2. Travelling
   a. What are the places you need to go most often?
   b. Are they in your city or outside your city?
   c. How far do you have to go?
   d. How long does it take?
   e. What modes of transportation do you use to get around?
      i. (Prompt) Examples of modes are walking, taking the bus, taking the train, etc.
   f. What other transportation services are you familiar with, even if you don’t use them?

3. Communication
   a. How do you usually hear about transportation options?
      i. (Prompt) websites, newsletters, community services, agencies
   b. How do people in your community usually communicate about transportation options?

4. Barriers
   a. What prevents you from being able to get around when and where you need to?
   b. What do you think prevents others from learning more about available services?

5. Ideas and recommendations
   a. What would make it easier for you to be able to get around when and where you need to?
      i. (Prompt) Different routes, assistance with using services

6. Conclusions
   a. What else should we know?
   b. Would you like to be involved in this project in the future to provide other guidance?
   c. Do you know others who we should talk to do better understand your community’s transportation needs?
### South King County Transportation Needs Assessment Survey

1. **What city or area do you live in?**
   - Burien
   - White Center
   - Des Moines
   - Tukwila
   - Renton
   - Kent
   - Covington
   - Auburn
   - Seatac
   - Normandy Park
   - Federal Way
   - Enumclaw
   - Black Diamond
   - Covington
   - Other (please specify): [ ]

2. **Through what agency did you receive this survey?**
   
3. **Which category below includes your age?**
   - 17 or younger
   - 18-20
   - 21-29
   - 30-39
   - 40-49
   - 50-59
   - 60 or older

4. **Do you have a disability?**
   - Yes, and it makes it difficult to get around
   - Yes, but it does not make it difficult to get around
   - No

5. **Have you ever served in the military?**
   - Yes
   - No
South King County Transportation Needs Assessment Survey

6. What country are you from?
○ United States
○ Outside the U.S. [Specify]

7. What languages do you speak at home? Select all that apply.
[Checkboxes for English, Spanish, Russian, Ukrainian, Vietnamese, Somali, Punjabi, Russian, Cambodian, Tagalog, Samoan, Korean]

8. How often do you travel for the following reasons?

<table>
<thead>
<tr>
<th>Reason</th>
<th>3 or more round trips per week</th>
<th>1-2 round trips per week</th>
<th>1-2 round trips per month</th>
<th>Rarely or Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>School</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work or Job Search</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical/Dental Appointments</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shopping/Errands</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Other (please specify)</td>
<td></td>
<td></td>
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</table>
### South King County Transportation Needs Assessment Survey

#### 9. How often do you use the following modes of transportation?

<table>
<thead>
<tr>
<th>Service</th>
<th>3 or more round trips a week</th>
<th>1-2round trips a week</th>
<th>1-2 round trips a month</th>
<th>Rarely or Never</th>
<th>Not available to me</th>
<th>Not aware of this service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metro Transit Bus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sound Transit Bus</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Link Light Rail</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taxi Cab</td>
<td></td>
<td></td>
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<tr>
<td>Drive Yourself</td>
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<tr>
<td>Driven by Friend or Family</td>
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<td></td>
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<tr>
<td>Rideshare Carpool</td>
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<td></td>
</tr>
<tr>
<td>Bicycle</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Walk</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Electric Wheelchair or Scooter</td>
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<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

(please specify)

#### 10. How often do you use the following transportation services?

<table>
<thead>
<tr>
<th>Service</th>
<th>3 or more times a week</th>
<th>1-2 times a week</th>
<th>1-2 times a month</th>
<th>Rarely or Never</th>
<th>Not available to me</th>
<th>Not aware of this service</th>
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</thead>
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<tr>
<td>Medicaid Transportation</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Hyde Shuttle</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>King County Access (Paratransit)</td>
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<td></td>
<td></td>
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<tr>
<td>Volunteer Transportation Program</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(please specify)

#### 11. What factors transportation difficult for you?

- I don't know about available services
- My limitations or disabilities make it difficult to use available services
- I cannot afford the services
- Routes or schedules are inconvenient
- I do not feel safe
- I have trouble understanding schedules or other information
- Other (please specify)
12. What other transportation services or assistance would be valuable to you?

- [ ] Assistance with applying for services
- [ ] Someone to show me how to use the services
- [ ] Information about the services
- [ ] Information about the services in another language or format

(please specify other language or format)

13. What comments do you have about your travel needs?
Appendix 5: Provider Survey Instrument

South King County Transportation Needs Assessment PROVIDER Survey

1. What agency do you work for?

2. How would you describe the population your organization serves?

3. What languages do your clients speak? Select all that apply.

- English
- Spanish
- Russian
- Ukrainian
- Vietnamese
- Somali
- Punjabi
- Korean
- Cambodian
- Tagalog
- Samoan
- Korean
- Other (please specify)

4. What services or modes of transportation do your clients use? Select all that apply.

- Metro bus
- Sound transit bus
- Light rail
- Taxi cab
- Drive alone
- Driven by friend/family
- Carpool/Rideshare
- Bicycle
- Walk
- Medicaid Transportation
- Hyde Shuttle
- Access (paratransit)
- Volunteer Transportation Program
- Other (please specify)

5. What factors would you say make it difficult for your clients to use any of the above services or modes of transportation? Check all that apply.

- They don't know about available services
- They cannot afford the services
- They have safety concerns
- Their limitations or disabilities make it difficult to use services
- The route or schedule is inconvenient
- Schedules and information are not available in their language
- Other (please specify)

6. What other comments/suggestions do you have about your clients' travel needs?
## Appendix 6: Interviewees

<table>
<thead>
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<th>Name</th>
<th>Organization</th>
<th>Role</th>
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</thead>
<tbody>
<tr>
<td>Gaby Bell</td>
<td>ADA Paratransit Evaluations, Harborview Medical Center</td>
<td>Manager—oversees in-person evaluations for Access</td>
</tr>
<tr>
<td>Karen Bergsvik</td>
<td>City of Renton</td>
<td>Human Services Manager</td>
</tr>
<tr>
<td>Colleen Brandt-Shluter</td>
<td>City of SeaTac</td>
<td>Human Services Planner</td>
</tr>
<tr>
<td>Jeanne Burbidge</td>
<td>City of Federal Way</td>
<td>City Councilmember, involved in transportation issues</td>
</tr>
<tr>
<td>Robin Corak</td>
<td>Multi-Service Center</td>
<td>CEO</td>
</tr>
<tr>
<td>Spencer Cotton</td>
<td>King County Metro Accessible Services</td>
<td>ADA Certification Administrator</td>
</tr>
<tr>
<td>Shawn Daly</td>
<td>City of Renton Senior Activity Center</td>
<td>Senior Services Coordinator</td>
</tr>
<tr>
<td>Lisa Fabatz</td>
<td>Renton Housing Authority</td>
<td>Resident Services Manager</td>
</tr>
<tr>
<td>Kizzie Funkhouser</td>
<td>Catholic Community Services</td>
<td>Volunteer Chore Services manager</td>
</tr>
<tr>
<td>Stacy Hansen</td>
<td>City of Tukwila</td>
<td>Human Services Coordinator</td>
</tr>
<tr>
<td>Doug Johnson</td>
<td>King County Metro</td>
<td>Transportation Planner—fixed route services in South King County</td>
</tr>
<tr>
<td>Jobyna Nickum</td>
<td>City of Enumclaw, Senior Activity Center</td>
<td>Manager</td>
</tr>
<tr>
<td>Ashlee O’Malley</td>
<td>World Relief</td>
<td>Match Grant coordinator—facilitates refugee resettlement</td>
</tr>
<tr>
<td>Sue Padden</td>
<td>City of Des Moines Senior Activity Center</td>
<td>Director</td>
</tr>
<tr>
<td>Diane Park</td>
<td>YWCA</td>
<td>Family Advocate, Auburn</td>
</tr>
<tr>
<td>Ruben Rivera-Jackman</td>
<td>King County Housing Authority</td>
<td>Senior Resident Services Manager</td>
</tr>
<tr>
<td>John Rochford</td>
<td>King County Metro Accessible Services</td>
<td>Transportation Planner/Access Operations Administrator</td>
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<tr>
<td>Sigurd Sorenson</td>
<td>World Relief</td>
<td>Program Assistant</td>
</tr>
<tr>
<td>Wayne Snoey</td>
<td>City of Covington</td>
<td>Councilmember, involved in transportation issues</td>
</tr>
<tr>
<td>Victoria Throm</td>
<td>City of Covington</td>
<td>Human Services Planner</td>
</tr>
<tr>
<td>Bonnie White</td>
<td>Matt Griffin YMCA</td>
<td>Administrative Assistant</td>
</tr>
<tr>
<td>Dinah Wilson</td>
<td>City of Kent – Housing and Human Services</td>
<td>Community Development Block Grant Coordinator</td>
</tr>
<tr>
<td>Cindy Zwart</td>
<td>Senior Services</td>
<td>Program Director, Volunteer Transportation and Hyde Shuttles</td>
</tr>
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</table>
Appendix 8: Sources


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http://psrc.org/assets/1732/STUnitedWeRide07.pdf

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