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# Optimizing Housing and Service Locations to Provide Mobility to Meet the Mandated Obligations for Former Offenders to Improve Community Health and Safety

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# OPTIMIZING HOUSING AND SERVICE LOCATIONS TO PROVIDE MOBILITY TO MEET THE MANDATED OBLIGATIONS FOR FORMER OFFENDERS TO IMPROVE COMMUNITY HEALTH AND SAFETY

## Final Report

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16. Abstract

Roughly 2,000 inmates return to communities each day in the U.S. Unsuccessful reentry jeopardizes community safety, promotes re-incarceration, and increases costs to taxpayers to support the criminal justice apparatus. Research indicates that strong networks of support reduce recidivism, but most communities remain ill-equipped to successfully support former offenders. Our community partner, Unlocking DOORS in Dallas, TX, is a reentry brokerage firm that coordinates services including housing, mental and physical health services, job retraining, transportation, and parole or probation obligations. This, like most reentry service providers, assists former offenders navigating a patchwork of logistical hurdles including individual offender obligations, scarce offender resources, and critical (often mandated) mental health services. Transportation has been identified as a major barrier to successful reentry and a barrier to all environmental justice (EJ) populations needing to access services. While many EJ populations face mobility challenges and constraints, this particular group faces some of the most significant barriers. The transportation network and transportation services provide the mobility necessary for this population to re-enter society. As a result, housing and/or services must be located with the transportation system in mind. This project developed a facility location problem for both housing and services that seeks to minimize the average travel time while using a maximum travel time as a constraint in the formulation. The mathematical formulation worked with the community partner to determine a reasonable set of constraints and typical travel needs of this population. The majority of this population relies on public transportation services. This framework may be extended to other populations with less severe constraints to optimize the locations of housing and services for the disabled, homeless and public-assisted housing projects.

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# DISCLAIMER



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# EXECUTIVE SUMMARY

This study sought to develop a facility location solution for both housing and services for former offenders (aka returning citizens) to minimize the average travel time. The aims were to fill a gap in the transportation literature; to optimize the local mobility network critical for successful reentry after incarceration; and to create a tool that might be adapted for other organizations and transportation-disadvantaged populations. This study used qualitative interviews with key stakeholders (returning citizens and service providers) and our community partner's database of clients and services to inform the problem. We used a mixed-methods, sequential exploratory design that employed an initial phase of qualitative data collection and analysis followed by a phase of quantitative formulations. A community advisory board helped guide the project.

First, interviews were conducted among 17 reentry service providers with questions focused on transportation among their clients. A conventional content analysis revealed five themes: 1. Returning citizens face a complex network of obligations; 2. Transportation is critical for successful reentry; 3. Returning citizens rely primarily on public transit; 4. Access to cars is rare and complicated, but advantageous; and 5. Transportation support lays a road to successful reentry. The findings were consistent with previous literature and expressed the fundamental needs of returning citizen clients including housing, employment, access to mandated appointments, and the pivotal role that transportation plays to meet needs and obligations. We added to the literature by noting that mobility depends on moorings or immobility, and that many of the service providers seemed blind to the transportation issues faced by their clients. Also, we focused on transportation in our conceptualization, something that is rarely done in social science research with this population. Finally, we conceptualized a complex web of needs and obligations as an assemblage, which helps to shift transportation from a variable of interest to the thread that weaves together the complex web.

Next, interviews were conducted among 15 returning citizens and participants were asked about the role of transportation in their lives. Three themes emerged from the analysis: 1. Returning citizens experience transportation disadvantage; 2. Transportation as an extension of freedom; and 3. Transportation is pivotal to reentry success. We used these findings to build a hierarchy of transportation disadvantage among returning citizens that may overlap with other transportation-disadvantaged populations (such as people experiencing homelessness) that share similar challenges.

The three models developed for this project use much of the same data. The research team developed the automobile network using information from the Texas Department of Transportation (TxDOT) roadway data from 2017. The research team also used North Central Texas Council of Governments (NCTCOG) data and Google Open Street Map to verify the current road network. The network approximated peak-hour conditions by including only arterials and no freeways; the research team also assumed a 30-second delay at every node in the network to account for traffic signal delay. The research team developed the transit network using the Dallas Area Rapid Transit

(DART) General Transit Feed Specification (GTFS) data for February 2020. The GTFS data provided the network/route structure, and the headways and hours of operation for the routes. The study used U.S. Census block groups as geographic units for the analysis, and Census data from 2018 to characterize the population within Dallas County. The researchers created two travel time matrices for the U.S. Census block groups using the automobile network for one travel time matrix, and the transit network for another travel time matrix.

The housing and employment prioritization model represents a practical tool that service providers in Dallas County can implement immediately; however, it will benefit from many of the recommended improvements. The additional constraint to serve Parkland Hospital (the county public hospital accessed by returning citizens in Dallas County) from all housing locations develops a significant modification to the p-median problem where each housing location must have reasonable access to the hospital. This results in a solution that moves the optimal housing locations closer to Parkland Hospital and the central business district for both the automobile and transit-using returning citizens. The requirements problem used to select service locations clearly demonstrates the challenge of using the transit network to reach services. The solutions indicate that Dallas County only requires two service locations to serve over 70% of its population within 30 minutes when using the automobile network. However, when travelers use the transit system, Dallas County requires 10 service locations to serve 70% of the returning citizen population within a two-hour, one-way trip. This disparity between the two systems demonstrates that the fixed route transit system cannot provide a reasonable travel time for all served county residents, regardless of the number of facilities the county or other service providers supply. Reduced headways may improve travel times, but given a fixed budget for public transit operations, the access to the transit system would necessarily decrease.

Public transportation serves an important purpose because it provides a safety net for many returning citizens and a minimum level of mobility. But its cost and design represent a significant burden for most returning citizens. This appears manifestly in the differences in travel times using the automobile network instead of the transit network. The significant increase in travel times represents a challenge that may overwhelm a returning citizen, even if mobility counseling was provided for the returning citizen population. And from the qualitative interviews, we discerned that without public transportation some returning citizens would have no way to access employment or services and, therefore, no way to meet court-mandated obligations.

Service providers must engage with transit agencies and other mobility providers to develop better solutions to the mobility needs of returning citizens. If these needs cannot be met, the likelihood of successful reentry decreases. As a result, the service providers may want to explore car shares and other mobility alternatives rather than expecting all clients to successfully navigate reentry using public transportation. While these challenges appear extremely acute for this population, other populations may experience similar challenges. Transportation represents another resource that non-profit agencies assisting returning citizens must incorporate into service plans because,

without adequate transportation, the returning citizens will not be able to access the other required and needed services. While service providers can strengthen their assistance strategies, the models developed associated with this project can be improved to strengthen their utility as an advocacy tool and increase their utility for practitioners.

# 1.0 BACKGROUND

Six and a half million persons are under correctional control in the U.S., or one out of every 40 adults (*1*). As the number of persons on probation and incarcerated have decreased over the last decade, the number of persons on parole have increased (*1*). After decades of excessive sentencing policy, we are releasing more people from prisons than ever before. In fact, over 600,000 individuals return to their communities from prison (returning citizens) each year in the United States (*2*).

Returning citizens face numerous challenges transitioning to community life. While many ways to assess the success or failure of reentry exist, academics, politicians, and policymakers often consider rates of recidivism. The Bureau of Justice statistics show five of every six (83%) released state prisoners are rearrested in the nine years following release (*3*). Further, more than 40% of those released return to prison within three years, a phenomenon known as the "revolving door" (*4*). These recidivism numbers include those who have been arrested or incarcerated due to violating their conditions of living in the community. National data counting the number of individuals in jail because of probation or parole violations is non-existent, but evidence indicates that remands for violations of conditions of community supervision may exceed one-third of some jail populations and one in four people in state prisons are incarcerated as a result of supervision violations (*6*). Statistics like these are discouraging and further spur the conversation to identify "what works" and how all those involved in criminal justice can help improve recidivism outcomes.

Based on recidivism research, communities remain ill-equipped to successfully support returning citizens who face a variety of court-mandated and personal obstacles. The most cited barriers include access to safe and affordable housing, securing stable employment, overcoming a criminal record, and explaining employment history (for example see *6, 7*). The role of transportation in reentry success has increasingly been included among these barriers (*8, 9, 10, 7, 11*). Transportation is vital to finding, securing, and maintaining employment and accessing housing markets (*8*).

Furthermore, transportation is an important resource for service engagement (*12*). Returning citizens may face challenges getting treatment for mental health disorders and substance abuse disorders due to unreliable, inconsistent, and fragmented transportation (*13, 14*). Meeting the challenge of accessing mandated and personal services requires dependable access to a car, reliable public transportation, or housing that is near both service providers and supervision offices (*15*).

In recognition of these identified issues, the purpose of this project was to increase access to opportunities for former offenders as they reenter society. A model was developed to optimize community services with housing to reduce the burden of mobility that many former offenders struggle to overcome. This project lays the groundwork for urban planning and criminal justice reform projects that seek to minimize recidivism and optimize use of community-based resources. This project is scalable to many

communities across the U.S., both in terms of serving the needs of returning citizens and in regional planning for the placement of halfway houses, mental health services locations, and transportation alternatives. This project used returning citizen data provided by a reentry services brokerage and interviews of returning citizens and returning citizen-friendly employers.

The metropolitan area utilized for this project exceeds 8,500 square miles and is home to over 7.5 million people. Estimated travel time to work averages 30 minutes and most (80%) workers drive alone to their place of employment, with a combined total of 10% of those carpooling, using public transit, walking, or bicycling to work (*16*). The state Department of Corrections for the study site reports most returning citizens are male (86%) and identify as Black, Indigenous, People of Color (BIPOC) (44% were identified as non-Hispanic Black and 24% were identified as Hispanic), while a third (32%) were identified as non-Hispanic White (*17*). Compared with non-criminal justice-involved residents, returning citizens are more than twice as likely to be non-Hispanic Black (55% versus 20%); less likely to be non-Hispanic White (26% versus 44%); and less likely to be Hispanic (17% versus 31%) (*5*). The median age at release is 34. The greatest share (39%) of returning citizens had been incarcerated for drug offenses; 33% for property offenses and 17% for violent offenses (*17*). A quarter of the returning citizens violated parole or mandatory supervision either by committing a new offense or a technical violation (*17*). In 2018, 368,000 people were on probation in the study state (*5*). The second largest share (15%) of returning citizens returned to the primary county of this study site (*5*).

The following objectives guided this study:

1. Given existing transportation networks, reentry obligations, and service provider locations, identify optimal housing locations (existing or proposed) for individuals returning to Dallas, TX, from incarceration.

2. Given existing residential clusters of individuals returning from incarceration, transportation networks, and reentry obligations, identify optimal service provider locations (existing or proposed).

3. Given existing residential clusters of individuals returning from incarceration, service provider locations, and reentry obligations, identify optimal residential assignments both overall and for individual clients.

We partnered with Unlocking DOORS, a reentry brokerage firm in Dallas County, TX. They, like most reentry service providers, assist former offenders navigating a patchwork of logistical hurdles including individual offender obligations, scarce offender resources, and critical (often mandated) mental health services. They serve approximately 1,000 returning citizens and each case manager individualizes their service to match a client's needs. They partner with dozens of other community agencies to coordinate existing services. They also have a digital database of housing options, potential employers, health and mental health service locations, and clothing distributors. Using demographic and legal characteristics of clients, case managers

access the database to create a holistic reentry plan. For use in this study, these client data were de-identified and delivered to the research team to inform the models. Further, the staff at Unlocking DOORS were instrumental in our understanding of the barriers facing returning citizens, including the complexity of the housing, employment and transportation triad that became the basis for the qualitative interviews with service providers.

# 2.0 METHODOLOGY

This study used a facility location problem structure to formulate a strategy for siting housing for returning citizens, and to minimize travel time between mandated obligations and basic needs. To accomplish this, we designed a sequential mixed-methods study that included qualitative interviews with key stakeholders followed by the facility location formulation. We began with the qualitative interviews with returning citizens, service providers who work directly with returning citizens, and employers who hire returning citizens. We used two separate approaches. Among returning citizens, we used a phenomenological approach that focused on returning-citizen experiences with transportation. Among service providers and employers, we asked about issues faced by clients/employees who were returning citizens and how those issues impacted both returning citizens and respondents. We utilized the data from these interviews and the data transferred from Unlocking DOORS to inform the constraints of the models. We had also planned to use service providers' practice knowledge to prioritize constraints. However, each service provider had different prioritization practices. From the interviews we did glean the critical importance of public transit and the economic hardship of returning citizens. It became clear, for example, that returning citizens cannot rely in a sustainable fashion on ride share. In fact, most struggle to afford public transit. Thus, our models were focused on automobiles (which returning citizens may access and rarely own) and public transportation. Institutional Review Board (IRB) approval was received from the University of Texas at Arlington's regulatory services, and all approved protocols were followed during the study process.

## 2.1 QUALITATIVE

First, the research team consulted key stakeholders including the community partner's data manager and director of operations. Also, we assembled a Community Advisory Board that included our community partner; representatives from Parkland Hospital (that serves most Dallas returning citizens); Dallas Area Rapid Transit (DART); The Bridge Homeless Recovery Center in Dallas; Goodwill; and local government planning departments. We consulted them before embarking on the qualitative data collection phase of the project, once again as we were preparing to begin the quantitative phase, and we circled back to them at the end of the project with results. By that time, the COVID-19 pandemic limited their availability so we produced a webinar to communicate results with them.

The qualitative research design included individual interviews with two sets of stakeholders: 1) returning citizens, and 2) service providers who had returning citizens as clients or who employed returning citizens.

Among returning citizens, interviews were conducted during the summer of 2019. These interviews were intended to inform the research team of the pressing issues with transportation as experienced by the impacted population themselves. A purposive sample of returning citizens was recruited during a job fair hosted by a large reentry service provider. A semi-structured interview schedule was employed with open interview questions and probing questions focused on the transportation needs as identified by the interviewees. Questions included: “Please tell me about transportation in your life,” “How has transportation impacted your reentry?” and “What are some of the transportation barriers you are facing today? And since you have been released?” Probing questions included: “Can you offer an example of that?”, “Please tell me more,” “Such as?” and “In what way?” All interviews concluded with “What do you think is the most important thing we should know about transportation for you?” (see Appendix D for full approved interview schedules). Consent and interviews were conducted in both face-to-face and telephone modalities (see Appendix B for approved informed consent documents). Participants received a $20 Walmart gift card for their participation. Interviews were recorded and later transcribed for analysis. Sixteen interviews were conducted, however, the recording of one interview failed. Interviews ranged from 10 minutes to 28 minutes in duration, with an average duration of 17 minutes.

Rapid and rigorous qualitative data analysis (RADaR technique) was applied to the data (*18*). This technique allows data to be organized and targeted to the specific areas of interest and involves a series of steps. First, we created an Excel table with columns including participant identifier, question asked, participant response, and notes (*18*). After review of the table and participant responses, additional columns were added including transportation mode, positive response, negative response, theme, and codes. Themes were identified through condensing of tables consistent with the RADaR technique. Themes were finalized when consensus among researchers was attained (*18*). In the final steps of the RADaR technique, exemplar quotes to illustrate themes were derived from the analysis (*18*). RADaR data tables went through five iterations to identify themes, subthemes, and exemplar quotes for the current study.

The second set of interviews was conducted with service providers and returning citizens during the summer of 2019. Because little is known about the transportation needs among returning citizens and because of the dearth of studies on this topic from a provider perspective, this study was designed as a conventional content analytic (CCA) study (*19)*. We designed a separate study for service providers as an attempt to document priorities and best practices among service providers most knowledgeable with returning-citizen challenges. Participants were recruited purposively, beginning with major service providers in Dallas County. We worked closely with our community partner to identify and recruit interested individuals employed in community agencies, including within our community partner’s organization. We also attended local events

that focused on supporting and employing returning citizens to recruit employers open to RC employees and additional community service organizations.

Consistent with CCA and the constructivist approach, we utilized a semi-structured interview schedule with open-ended interview questions and probing questions focused on transportation needs among returning citizens. For example, we asked participants "Please describe the needs of your clients" and "What role does transportation play in the lives of your clients?" Also, we collected basic demographic data. Interviews were conducted during the summer of 2019 with 17 participants whose professional positions served returning citizens in some capacity. Three interviews were conducted in person and the remainder were conducted by phone. All interviews were audio-recorded, professionally transcribed, and uploaded to atlas.ti (version 8) for analysis. All the transcripts were read through, then initial meaning units were coded. We then abstracted and organized almost 250 quotes into five themes.

## 2.2 QUANTITATIVE

### 2.2.1 Data

The three models developed for this project use much of the same data. The research team developed the automobile network using information from the Texas Department of Transportation (TxDOT) roadways data from 2017. The research team further used North Central Texas Council of Governments (NCTCOG) data and Google Open Street Map to verify the current road network. The network approximated peak-hour conditions by including only arterials and no freeways; the research team also assumed a 30-second delay at every node in the network to account for traffic signal delay. The research team developed the transit network using the Dallas Area Rapid Transit (DART) General Transit Feed Specification (GTFS) data for February 2020. The GTFS data provided the network/route structure, and the headways and hours of operation for the routes. The study used U.S. Census block groups as geographic units for the analysis and Census data from 2018 to characterize the population within Dallas County. The researchers created two travel time matrices for the U.S. Census block groups using the automobile network for one travel time matrix and the transit network for another travel time matrix.

The travel time matrices determined the shortest travel time between block groups using inbuilt Dijkstra's algorithm (20) in ArcGIS for automobile travel times. While the automobile travel times may be easily calculated after adding the intersection delay and assuming an average travel speed (35 mph) for the arterials, the transit network required additional assumptions and some modifications to the original network structure. The transit network must consider waiting time as part of overall travel time. The study assumed a waiting time equal to half the headway of the route for the origin bus stop and all transfer locations. This approach did not capture the reduction in average waiting time that might occur from improved information provided to DART customers and DART efforts to coordinate bus arrivals at transfer nodes. While the transit travel times may decrease if these factors were included, the approach currently

used more accurately reflects limited customer information and the risk posed by bus delays that fail to coordinate bus arrivals. The need to capture transfers required the team to respecify the transit network so that a stop on a transit route must be directly connected to all other transit stops on the same route. Research time used Python-based Dijkstra's algorithm for developing the transit travel time matrix. The travel time matrices for the shortest paths between all block groups provide the foundation for the travel costs of all three models.

The study used the Unlocking DOORS' community network and Dallas County parole offices and other county facilities as the set of activities to consider for the returning citizens. The study also uses the Unlocking DOORS' network of housing providers in model 1 to prioritize housing options for the returning citizens. The solutions to all of the models may change with any adjustments in the community network membership or county facility locations; however, the methods and algorithms developed in this report will work for any transportation network structures and community partners. In all cases, the addresses of all service, employment, housing, and government locations must be relabeled for belonging to a U.S. Census block group. The models developed in this study seek to address challenges faced by service providers, returning citizens and governmental authorities when selecting locations.

### 2.2.2 Model 1 – Housing/Employment Prioritization

The model generates a rank-ordered list of the total travel times to access all of the destinations (employment and services) from a housing location. For both model types, car ownership determines the transportation network the procedure uses to determine total travel time; car owners use the automobile network and those without a car use the transit network. For the housing model, the procedure determines the total travel time for each housing location in the alternative database. The procedure allows the services to be accessed either from the employment location or housing location based on the minimum travel time. When a returning citizen does not have a job yet, the travel time to all employment locations may be used to determine the preferred location; however, the services can only be served from the household location in this case. For the employment model, the returning citizen must have a household location and a likely set of required/needed services. This procedure determines the total travel time for each employment location in the alternative database. The employer database can be updated by adding the name of the employer, geoid, and block group to the model Excel sheet. The services database and housing database may be updated in the same way, but for the services the type of service provided should be added, too.

### 2.2.3 Model 2 – Optimal Travel Time Housing Location

Service providers and governmental agencies should aim to locate their facilities or warehouses to minimize the average distance or travel time. These facility location problems become p-median problems when $p$ facilities can be used. For this project, the housing locations needed by returning citizens may be placed in such a way that the total travel time is reduced from all the nodes to the facility locations. Each node is

served by the facility which is nearest. The study uses a heuristic algorithm to solve the problem using the Python programming language.

The objective function is to minimize the total time to travel from nodes to facilities

$$\textbf{(minimize } \sum_i \sum_j \boldsymbol{d_{ij}\, y_{ij}}\textbf{)} \qquad \textbf{2-1}$$

subject to the following constraints:

$$\sum_j \boldsymbol{y_{ij}} = \mathbf{1}, \forall \boldsymbol{i \;\; except \; i} = \mathbf{3000003}(\boldsymbol{Parkland\; Hospital}) \qquad \textbf{2-2}$$

$$\boldsymbol{For\; i} = \mathbf{3000003}, \sum_j \boldsymbol{y_{ij}} = \boldsymbol{p} \qquad \textbf{2-3}$$

$$\sum_j \boldsymbol{x_j} = \boldsymbol{p} \qquad \textbf{2-4}$$

The objective function uses $y_{ij}$ as the decision variable indicating if a trip is made between node *i* to facility *j* and the travel time is considered using $d_{ij}$. The first constraint makes sure that each node is covered by only one facility, that which is nearest. The second constraint requires that all housing complexes include Parkland Hospital as a required destination. The summation of $x_j$ stops the algorithm once the required number of housing locations reaches *p*.

**Heuristic Algorithm:**

Step 1: Let total number of nodes $N = \{k\}$. Once the travel time matrix is obtained for all the nodes, calculate the sum of all the nodes in each row. The node that corresponds to the row with minimum sum is the location for 1-median. Let the 1-median be at node *i*. Set $S = \{i\}$, $m = 1$

Step 2: (Facility addition): Add a new facility to the current set *S* by choosing a location among the nodes, which shows maximum improvement in the objective function as the number of medians increases by 1.

Step 3: (Solution improvement): Try to improve the objective function by replacing one of the nodes in *S* with a node in $N - S$ one at a time in a systematic way. Use the new solution as a temporary solution every time a better solution is achieved and repeat step 3. When all the potential single-node substitutions for a set *S* have been tried without improving the objective function, go to step 4.

Step 4: If $m = p$, stop; otherwise, return to step 2.

A heuristic must be used because once the number of nodes *n* and number of facility locations required *p*, reach a significant size (i.e., most real-world applications), the combinations and corresponding comparisons in step 1 become too many to handle with a computer. The heuristic approach saves a significant amount of computational power and processes even when the number of housing locations required reach a moderate size.

### 2.2.4 Model 3 - Service Location

Service providers and governmental agencies should aim to locate facilities so that they serve the maximum population within a certain travel time threshold. The service location model uses an objective function that seeks to maximize this coverage (population in this application). For this project, the services needed by returning citizens may be placed to maximize coverage using a constrained number of facilities or the total number of facilities to achieve maximum coverage may be used. The study uses an algorithm formulated by Church and ReVelle (21) to solve the problem using the Python programming language.

The objective function is to maximize the total population coverage

$$\textbf{(Maximize } \sum_i^n Y_i h_i\textbf{)} \qquad \textbf{2-5}$$

subjected to the following constraints:

$$\sum_0^n a_{ij} X_j \geq Y_i \,, \ \forall i \qquad \textbf{2-6}$$

$$\sum X_j \leq p \qquad \textbf{2-7}$$

$$Y_i = \begin{cases} 1 \,, if\ node\ i\ is\ covered\ by\ a\ facility \\ 0, otherwise \end{cases} \qquad \textbf{2-8}$$

$$a_{ij} = \begin{cases} 1, if\ t_{ij} \leq T \\ 0, if\ t_{ij} \geq T \end{cases} \qquad \textbf{2-9}$$

$$X_j = \begin{cases} 1, if\ a\ facility\ is\ located\ at\ node\ j, \forall\ j \\ 0, otherwise \end{cases} \qquad \textbf{2-10}$$

The objective function uses $X_j$ as the decision variable to locate a facility at node *j*. The objective function uses $h_i$ to represent the population in each block group or node. When a facility appears at node *j*, the value of $X_j$ will be 1. Coverage is determined using a membership function $Y_i$ where $Y_i$ is equal to one if the travel time ($t_{ij}$) from node *i* to facility location *j* is less than maximum allowed travel time, *T*, for any facility *j* (see $a_{ij}$) where all travel times use the same units. When the number of facilities is limited, *p* denotes the maximum number of facilities allowed. The summation of total nodes covered by the facilities should always be greater than or equal to the total number of covered nodes since each node may cover multiple facilities.

**Heuristic Algorithm:**

Step 1: Let number of nodes $N = \{k\}$. Find the facility with the maximum number of nodes covered (*j*) within a pre-specified distance. Let the facility be at node *i*. Set $S = \{i\}$ and $N_{new} = \{k - j\}$.

Step 2: (Facility addition): Add a new facility to the current optimum set *S* by choosing the location with the maximum number of nodes covered (*l*) from set $N_{new}$. This produces the

maximum possible improvement in the objective function as the total coverage increases. $N_{new} = \{N_{new} - l\}$

Step 3: (Solution improvement): $N_{new} = \{k - l\}$. Attempt to improve the objective function by substituting, one at a time, one of the nodes in *S* with a node that is in N-S. Every time an improved solution is obtained, use this as a temporary solution *S* and repeat step 3. When all possible single-node substitutions for a set *S* have been attempted without improving the objective function, go to step 4.

Step 4: If maximum coverage = *N* or number of facilities in *S* = *p*, stop: otherwise return to step 2.

The heuristic approach supports maximizing coverage in the minimum number of facilities required to serve all the locations. When the budget constraint is in consideration, the algorithm stops adding new facilities once it reaches the maximum number of facilities.

# 3.0 FINDINGS

## 3.1 QUALITATIVE FINDINGS

### 3.1.1 Returning Citizens' Transportation Experiences

Participants included returning citizens attending a job fair hosted by the community partner on this project. Eleven of 15 participants were male, 11 identified as Black or African American, three as White, and one as biracial. Participants ranged in age from 26 to 63, with an average of 45 years. The highest reported level of education achieved ranged from sixth grade to a master's degree. At the time of the interviews, eight had been in the community fewer than 90 days, but time since release from prison ranged from a couple of weeks to a couple of decades. Nine participants were not employed at the time of the interview. We did not explicitly ask participants about their housing status.

Analysis of interviews with returning citizens about how transportation impacts reentry resulted in three primary themes. First, interviewees reinforced existing knowledge of the issues with transportation disadvantage. Second, transportation is an extension of freedom. Finally, transportation is directly connected to reentry success.

***Theme 1: Returning citizens experience transportation disadvantage***
Returning citizens identified many logistical issues related to relying on public transportation including cost, time, dependability, schedules, and ability to navigate the system. Although public transportation is viewed as the less expensive alternative to owning and maintaining a private vehicle, and the only option for many, it can still be cost prohibitive.

"Nobody's providing transportation. But, my family ended up sending me enough money so I could get a bus pass for the month to have a chance to get myself together. It really helped me a lot because I didn't have to worry about scraping up $6.00 every day, which I never have, and wouldn't have if it wasn't for them, to get-get back and forth to work."

Often, existing public transportation routes do not connect riders to their final destination. Ride sharing has expanded access to transportation for many, but it can be costly as a primary source of transportation for returning citizens.

"People who don't have cars, their only option right now is Uber (laughs), or Lyft. At that point, you know, you're paying $30 one way to get to work. It's almost like you're going to work but not even making any money."

Time, dependability, and available schedules were intertwined complaints of returning citizens who relied on public transportation. One participant described their route to work on a typical day.

“I get up at around about 4:30 in the mornin'. I take a shower, I get ready, I get dressed. At about 5:20, I catch the first bus of the day, and uh, I take it to the train station. Then I take a train to another station where I catch another bus, and that bus takes me to where I'm going. Depending on what I have to do for that day, if it's going to work then I catch a bus, a train, and another bus to get to work, and even though the job is only a couple of miles down the street, it may take me an hour to get there.”

While it is not uncommon for public transportation routes to be inefficient for the rider, it can be a great frustration when the schedules are not followed. For example, one participant relayed,

“You know, we’re on a four-day schedule, and like the schedules we have in our community, and like most of the schedules is wrong, they ain't updated. And some of the times when they do be updated, they don't abide by the schedule. I don't know what be going on.”

And in many places, the schedule for the weekend is different from the weekday schedule. This can cause hardship for weekend employees, those trying to access religious services, or utilize weekends to maintain relationships. For example, one participant said,

“I was going to a church that was a little ways away and I met a lot of really nice people but, on Sunday that bus does not run. That makes it difficult to get there, I was tryna figure out a way to get there without making people think that I'm trying to sponge off of them, because you need a ride.”

Changes in schedule and lack of options during certain times can be difficult, but returning citizens often do not have the experience, or recent experience, of navigating the system.

While clear frustrations with public transportation existed, private transportation has its own challenges. These challenges primarily focused on the resources required for transportation self-reliance and relying on others. As with public transportation, the cost of private transportation can also be prohibitive when returning citizens are struggling with obligations and employment.

Many returning citizens rely on their personal network to assist in transportation. This can include getting rides from friends and family or borrowing a vehicle. In addition to the cost associated with gas and maintenance for private transportation, returning citizens point to the strain relying on others can have on relationships. For example, one participant said,

> “You have some people to pick you up [but] you can't depend on them because they don't want to be late because they got to make another detour to come get you. If you say you coming, you need to come. Since I been out, I don't have a lot of friends… I'm on my own.”

***Theme 2: Transportation as an extension of freedom***

Transportation disadvantage is a limitation on freedom for the returning citizens of this study who may find themselves geographically bound. Access to transportation provides freedom to get a job, get a better job, nurture relationships, access housing markets, and support oneself. Many respondents discussed the importance of having private transportation to access a greater number of employment opportunities. One participant described how transportation impacted employment and said,

“My job wouldn't have been possible without being able to commute to interviews. It would have limited me to the area with which I landed in, which was a very low-income district. The ability to commute gave me the ability to find higher-paying, higher-skilled jobs. The jobs in the area that I would've been stuck in were like $8.50 an hour and where I was able to commute to were $13 to $18 an hour.”

Transportation affords freedom to be able to make a livable wage and be successfully employed. Further, some employers understand the challenges posed to those relying on public transportation and are less likely to employ returning citizens if that is their only option. One participant said,

“I think the lack of reliable transportation has definitely impacted the success I could have had, or maybe obtained, because I don't have a really reliable system, and some employers don't wanna hire you, if you're on the bus and the train. That makes a difference between making $9 and making maybe $16 an hour.”

Many returning citizens rely on their support network for transportation. However, relying on others impacts self-esteem. Not being able to exercise personal independence takes a toll on the individual and the support network. One participant explained,

“I don't have any income, so gas and like getting insurance paid off and things of that nature, is coming from other people. If I didn't have that, I would really be limited. I'm kinda in a push to try and hurry up and try to find something, to be just self-sufficient, to be independent, to be able to do good for myself and not have to rely on other people.”

Freedom to expand a job search is not the only freedom restricted by transportation disadvantage. Transportation can expand access to people and places important to improving quality of life. Returning citizens with support networks outside of metropolitan areas find it difficult to connect with these networks for short- or long-term assistance. As one participant said,

“Well, if I had transportation, I can move around a whole lot better. And get to a place I need to go to, like, I want to go see my daughter or my grandchildren. They stay way on the other side of [city]. I'm in [suburban city]. Well, I have to call them, because I ain't got no other way to go see them. Yeah, cause the buses don't run on the weekend where I'm at.”

Lack of transportation for returning citizens creates a hardship to meet basic needs of emotional and financial support. However, even when basic needs are met, to truly take advantage of freedom, returning citizens must be transportation independent. One participant explained,

“Uh, inability to socialize on, on a far different level without transportation. Right now I'm able to commute and, uh, take people shopping and to eat and to visit, uh, whereas I wouldn't have been able to do that. You know, you meet people in your local sphere and my sphere was expanded when I was able to be able to be transported farther out. For, uh, meet co-workers, for example, and their, their localities.”

***Theme 3: Transportation is pivotal to reentry success***

Transportation is clearly and intricately linked to reentry success. Transportation disadvantage makes navigating the barriers of re-establishing community life more difficult. Housing, employment, relationships, justice obligations, and physical and mental healthcare are linked by the ability to move within this new community. Access to transportation likely will not ensure success for a returning citizen. However, transportation disadvantage can be the tipping point from regaining independence and making it outside of prison walls or succumbing to the demons waiting on the other side. One participant said he received three bus passes from a reentry service provider every two weeks. With those bus passes, he attempted to schedule his appointments back to back to use the passes and reserve one pass to return to the reentry service provider to receive an additional three passes. He said,

“It's taken me almost two weeks to be able to make it to my appointment for my first security card, my birth certificate, and my food stamps. All because of right transportation. Not only that, there's been, the day that's been wasted, is all for that. Like say, what's a ten-minute drive, is an hour walk and you have to invest the whole day in it, and they're like come back at this time and this... it's bad. I don't know. If there was just something better.”

This participant was, at the time of the interview, staying in a shelter that offers spots on a first-come-first-served basis so the line to get into the shelter begins at 3:00 p.m. and the shelter will not allow anyone in after 5:00 p.m. This time constraint limited his ability to rely on public transportation to make his appointments and look for employment. He commented that he would be in a better situation if he lived in a tent because he would have more time to navigate transportation routes. He walks so much that his feet are deteriorating. We asked him about the most important thing we should know about transportation in his life, and he responded,

“For me or for felons in general? The transportation makes a big impact. Transportation is really a vital resource that we really don't have much access to. And when we do have access to it, it's very limited. And with it being limited, and prolong situations that you really don't, that you really shouldn't be in. I know that, uh, if there was something more readily available that, I don't know, I really believe that people would be able to get on their feet and get on with their lives a whole lot quicker. Yeah... I'm not very good with words, but transportation is like, the second biggest thing. The first biggest thing is housing.”

***Hierarchy of Transportation Disadvantage***

Transportation access for returning citizens was also dependent on support networks. Most returning citizens face integrating into their communities with little ability to be self-reliant. Social capital has been found to be vital to successful reentry. Social networks, on which social capital is built, provide access to necessities such as housing, food, and transportation when an emergency arises or during the first days of reentry. Social capital provides access to jobs and loans for long-term success (Walker et al., 2014). However, many returning citizens do not have support networks for transportation. Those who are fortunate to maintain social networks often cannot rely on these networks as a long-term solution for some of the reasons discussed by interview participants. Finally, relying on social supports places an unfair burden on families that are often already facing disadvantage.

From the findings detailed above, we have conceptualized a tiered structure of freedom for returning citizens. As transportation independence increases so too does freedom, while stress decreases. Thus, we propose a model of considering transportation disadvantage among returning citizens as a hierarchy with five tiers (Figure 3.1). Tier One has the highest transportation disadvantage and Tier Five has the greatest transportation independence.

For Tier One returning citizens, access to transportation is limited. This group faced the greatest challenges with public transportation because they had fewer support structures (i.e., homeless, jobless, no accessible family). Scarce resources meant finding employment and permanent housing was secondary to survival. They were largely cut out of transportation unless social services provided access, which was limited. Tier One returning citizens relied on limited bus passes and their ability to walk to surrounding locations. Weather and physical health directly impact mobility.

Tier Two returning citizens found transportation a daily struggle but had more resources than Tier One. These returning citizens could purchase day passes to get by but were unable to purchase unlimited monthly passes, which would mean more freedom. They often relied on support networks for rides to job interviews or employment shifts. If their access to transportation was unavailable (late bus or cancelled ride), they rarely had a back-up option. Tier Two was almost totally dependent on their existing social networks.

Tier Three returning citizens had unlimited access to public transportation but might struggle with the last mile or off-transit options. This group had monthly unlimited bus and train passes and could get to a station fairly easily either through walking or reliable

support networks. However, if their destination was a decent distance from the public transit stops, they would struggle to maintain employment or keep appointments. They were limited to goods and services that could be accessed from the public transportation stops.

Tier Four returning citizens had unlimited access to public transportation and resources for the last mile or off-transit routes. This group could generally get to any place they needed within public transit routes. They may have private transportation and the ability to afford gas and maintenance. However, private transportation may be shared, not in their name, or they may not have the resources to fix the vehicle in an emergency.

Tier Five returning citizens enjoyed the most freedom. This is considered transportation independence. This group took public transit out of choice and when it worked for them. They had access to private transportation and could afford gas, maintenance, and emergencies. They were free to choose transportation alternatives and any activity (regardless of the distance), and did not rely on public transportation schedules or social support.

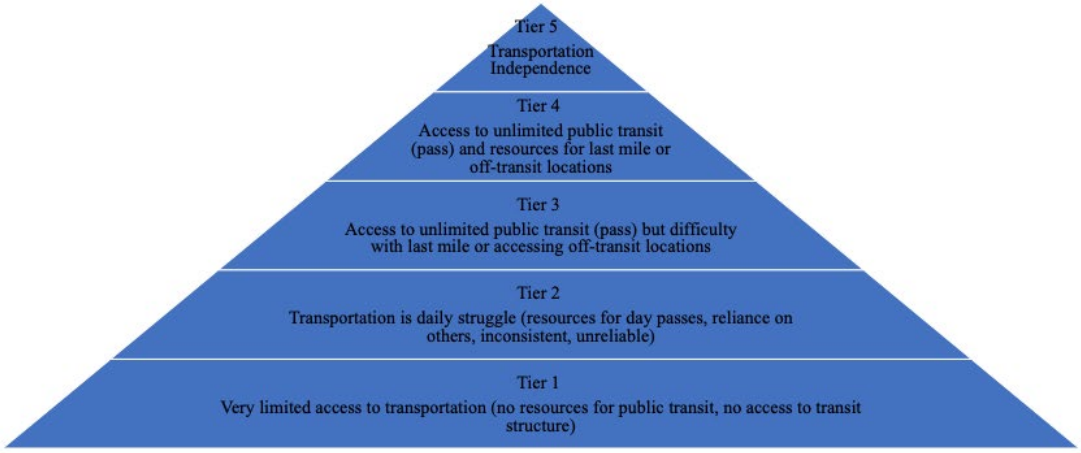


Figure 3.1: Hierarchy of Transportation Disadvantage

### 3.1.2 Service Providers' Views of Transportation Issues Among Returning Citizens (RCs)

Participants included 16 people who identified themselves as service providers who had RCs among their clients and one person who employed RCs. Eight of 17 participants were male, seven identified as Black or African American, six as White, three as Hispanic, and one did not respond. Participants ranged in years working directly with RCs from one to 25 years, with an average of 7.9 years. The highest reported level of education achieved ranged from a high school diploma to a master's degree.

Analysis of these interviews using a conventional content analysis approach revealed five themes: 1) Returning citizens face a complex network of obligations; 2) Transportation is critical for successful reentry; 3) Returning citizens rely primarily on public transit; 4) Access to cars is rare and complicated, but advantageous; and 5) Transportation support lays a road to successful reentry.

***Theme 1: Returning citizens face a complex network of obligations***

Participants described a web of obligations that face RCs in various ways. One case manager prioritized a list of needs for a RC client experiencing homelessness. Transportation was not an essential first-service requirement in this account, but rather a secondary need, after employment and housing. The interconnected nature of needs *was* evident, but his narrative was linear and prescriptive, thereby lacking the complexity of needs and how transportation factors into them. Another case manager offered a more nuanced assemblage of needs faced by RCs following housing. When asked about the next priority after housing, she said,

"Then we go to employment. What job is it that's gonna get you self-sustaining so you can get where you need to go to, from that point A to point B? What's gonna be a safe area that you can go live at while you keep your job? Where are we gonna get that food? Are you on SNAP [Supplemental Nutrition Assistance Program]? Are you registered at TWC [Texas Workforce Commission]? Do you have good medical care? Have you been down to [the local hospital], have you signed up for the [hospital] card? It's based on the individual needs, so it varies."

Her glimpse at client needs emphasizes the ways that service providers characterize clients as unique and, therefore, their approach is specialized and sometimes complicated depending on their offense category, as in the case of sex offenders.

Returning citizens must navigate, in addition to housing, employment, parole officer meetings, social service policies and registrations to meet other basic needs like food. Healthcare access and administration are also important considerations. Missing from her account are important relations like family connections and court-mandated obligations and restrictions. All these needs are linked by transportation. However, most other needs in this assemblage are theoretically fixed in space like shelter, employment, parole officer meetings, hospital visits, and food acquisition. Transportation is the thread woven between these fixed places that can either facilitate or foreclose accessing them efficiently enough to be successful at reentry. The stability of the fixity and flows that are featured in this assemblage is further discussed below in the Conclusions section.

There were also expressions of futility by eight of 17 participants who endorsed the extreme challenges of meeting those obligations. For example, one participant succinctly expressed the interconnectedness and the circularity of these reentry assemblages. She said,

“It is kind of is a big catch-22, right? Like, you have to get a job to be able to pay for transportation, but you need the transportation to get a job.”

This and other similar accounts differ markedly from the linear approach described earlier.

The impact of the aforementioned complexity and futility was described as causing anxiety, stress, discouragement, and hopelessness among RCs. The impact on RCs and the role played by transportation was summed up by one participant. She said,

“Because if you don't have a ride or the finances to get on the bus ...to achieve that goal. To get food stamps or go to that housing appointment or go to that job interview, they'll get discouraged and become hopeless and either go back to what they know or just say, forget it.”

***Theme 2: Transportation is critical for successful reentry***

Participants recognized that without adequate transportation, reentry success remains very unlikely. Thus, this theme reflects both positive and negative valences of the central importance of transportation for RCs to be successful. Some participants insisted that transportation was a necessity for their clients. One service provider described her clients’ transportation needs as a “lifeline to food, education, employment, just to better themselves.” When asked about the role of transportation in the lives of her clients, another service provider said,

“It is a very big one. Because if you are seeking employment and don't have the transportation, either the money for the bus or gas money to get you somewhere, that's going to be one of the main things that you're having to deal with. You can have a job lead but can't get to it. You can get the job and can't get to work. So, it is major.”

The stakes for not reaching destinations are very high for RCs and the consequences might even include new criminal charges and return to jail. The critical nature of transportation for successful reentry hinges on reliance on public transit or access to a reliable car, which form the substance of the next two themes.

***Theme 3: Returning citizens rely primarily on public transit***

One participant estimated that “85%, 90% or more” of their RC clients relied on public transit, an observation consistent with data from the Unlocking DOORS database. While a clear lifeline among transportation options for RCs, the local system has barriers. Housing is often available in the poorest parts of the city like South Dallas, which is not well served by the transit network that only operates around the periphery of most

neighborhoods at very infrequent headways or frequencies. South Dallas residents, and especially RCs, cannot afford shared mobility options like Lyft or Uber even if those drivers will enter that part of the city. Many employers who are open to hiring RCs are located in suburban or exurban locations (see quantitative results below) where the land remains inexpensive, while services like healthcare and mental health care remain centrally located near the central business district . Public transit fails to serve most of these outlying areas, which makes the journey from home to employment complicated and time consuming for returning citizens.

Many service providers recognize the importance of public transit and give bus tickets to their clients, but these are often given in small numbers. For example, one participant explained,

“A lot of them will take those bus passes and sell them. So, they give them just enough to get to their appointments and nothing more. Because we can't trust them to use those bus passes for what they need. 'Cause a lot of them, or I would say some of them, either they're gonna sell it for food or sell it for gas to get in the car and go somewhere or for drugs. Or give them to someone else and not even try to reach their goal.”

Some participants claimed that RCs did not wish to use the transit system because it was “beneath them.” But for others it seems a recognition of the limiting employment prospects should lack of transportation come to light. One employer of RCs said,

“They don't want to tell people that they are in the system, but they may put on their application that they have a record, but they know better than to say anything about the fact that they don't have a vehicle. They may say something, even if it's not being honest, [like], ‘Okay, I don't have a car. My car's broken down right now, or I don't have my car with me but I'm gonna have it in a couple of weeks’.”

The participant said he knew employers who would not hire someone who did not own a car, and he had himself experienced discrimination because of his choice to live without a car.

***Theme 4: Access to cars is rare and complicated, but advantageous***

It was unsurprising that 16 of 17 participants said cars were the most effective transportation mode for reentry success among clients. Specifically, employment referrals increased for clients with auto access while emotional stress was thought to be reduced.  Because the local transit system limits or stops late at night, RCs may struggle to reach or return from some employment opportunities without a car. For example, one participant said,

“We have a partner out in Irving [city in the DFW metroplex] that I would like to refer more people to, but the way their shift works, the second shift that, the bus and train is running when they get up, they start work, but when they get off at 12:30, there is no bus or train running, and so they can't accept that position. Or if they do, it's gonna be hard time getting to and from [without a car].”

Also, transit limitations may, in turn, impact client safety, especially for women.

Some participants offered estimates about the percentage of their clients who had automobility and it was less than 15%. However, even for a RC with access to a vehicle, licensure, shared access, and the myriad of possible other costs (repairs, insurance, parking) merge to make automobility both a potentially efficient mode of transportation and one that is fraught with risk for many. For example, many RCs with access to a vehicle may have unpaid fines that preclude them from obtaining a driver's license. One participant said,

"And many times either they do have a vehicle or they're driving their family's vehicle, or mom or dad or whomever. They don't have a license. And so that's a whole other issue. Why don't you have a license? Oh, because it was suspended or I never had one. I've got tickets. And so they're gonna be unable to obtain their license. But yet, you're putting yourself in this predicament by getting back in the car. To, you know, get arrested."

The risks of driving without a license are high because if caught they can receive a citation, violate the conditions of parole, and go back to jail. There are also risks of sharing a vehicle compared with owning your own car. One participant explained,

"Cause if they don't have a car then they have to depend on other people and if they depend on other people, some nine times out of ten, that person's not really so reliable."

Relying on someone else for car access often comes with shared costs. One agency recognized this and offered gas cards to clients to help offset the shared costs of automobility. Relying on friends, family, and/or neighbors for mobility needs is one of many forms of support that returning citizens receive.

***Theme 5: Transportation support lays a road to successful reentry***

Unsurprisingly, RCs endorsed strong, consistent, and appropriate assistance from family, friends, parole officers, and reentry case workers as keys to success. Providers also recognized that support from friends, family, and others might be problematic for their clients, a point found in the above themes. Support discussed by participants came in two main forms related to transportation: material and knowledge. A reentry case manager described her job (as many of our participants did) as integral to the support network for clients. Material support endorsed by participants, as detailed in the previous themes, included gas cards, bus tickets, shared rides, many of the duties of case managers such as connecting clients with specific service providers, and identification papers (related to transportation and beyond), among others.

One participant, a transit user himself, is exemplary of participants who supported clients with knowledge. He explained,

“Most of them [RCs] because they're from other places, they’re unfamiliar with it [DFW’s transit system]. So, I help them as much as I possibly can. You know, show them how they can look at the Dallas area rapid transit (DART) website, how they can use google maps for surfing, for finding out whether the trains are available. So, I do everything I can to educate them to the DART system so that they don't have any problems with transportation.”

This education may be necessary because many RCs are from other places, but it is also needed for other reasons. RCs may have either served longer sentences during which the city and transportation possibilities have changed, they are unfamiliar with and have poor access to the internet, or they have never previously relied on transit systems.

While imagining their roles as important nodes in support networks for RCs, we noted 32 instances where participants spoke negatively about their clients. For example, when describing restrictions on the number of bus passes distributed per client, one participant explained that among RCs there is “always a hustle.” Transportation support is clearly essential, but this may be undermined by the stereotypes held among helping professionals employed to serve RCs.

## 3.2 QUANTITATIVE

### 3.2.1 Model 1 - Housing/Employment Prioritization

Model 1 provides a prioritized rank order of housing or employment alternatives. When a RC already has housing, the model provides a prioritized list of employment locations based on current services and the RC’s residence. When a RC does not have housing, the model provides a prioritized list of housing alternatives based on current services. The prioritized list of employment and housing alternatives are based on the employment and housing providers in the Unlocking DOORS service provider network. For the case where housing is being prioritized and the RC does not have a job, the model considers all employment alternatives to minimize the total cost to all required services and all employment alternatives.

The example (Figure 3.2) in this section demonstrates the output for selecting a housing location for a RC who owns an automobile. The same example may be repeated for the captive rider case, which may change the recommended rank order or make a solution infeasible for some locations if transit cannot serve a housing location or all locations if transit cannot serve an activity. The figure shows the possible housing locations as red flags and the activities the RC needs to access as orange flags. Table 3.1 shows the output from the model with the rank order of housing locations denoted by their block group number. All housing locations within the recommended block group may be treated with an identical priority. The housing facilities located in block group 452 should be the preferred locations for this returning citizen, but if no housing can be identified in this block group, the services broker should try block group 884. Car users

can access these five service locations relatively quickly from all candidate housing locations.

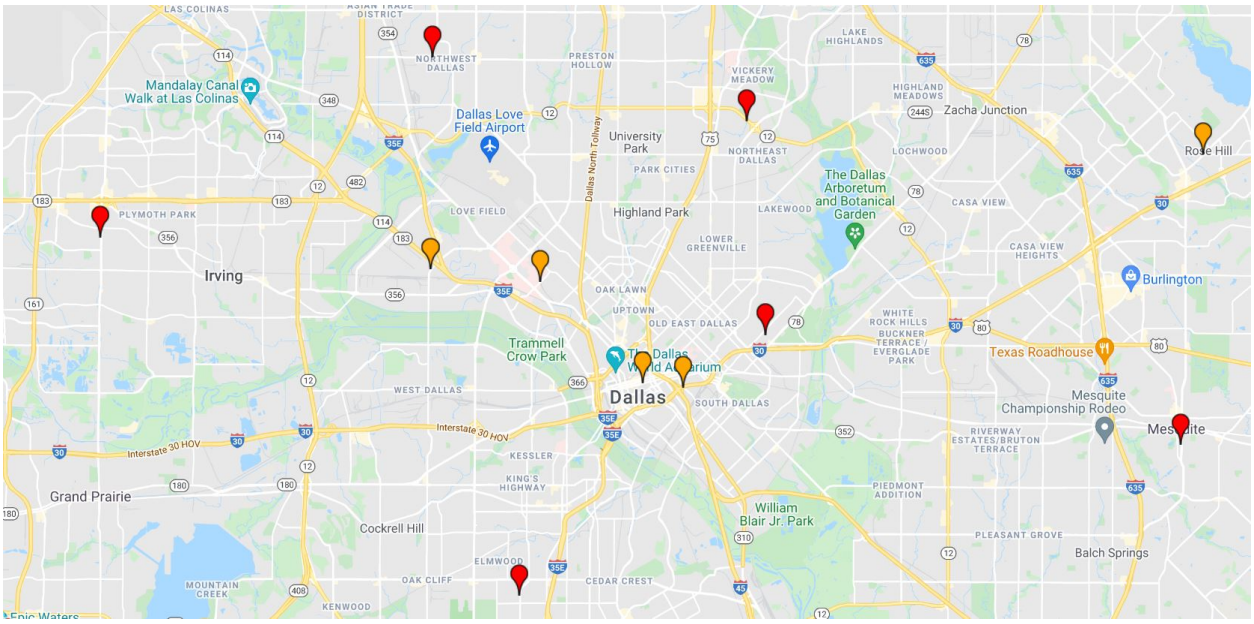


Figure 3.2: Housing Prioritization Model Example

**Table 3.1: Housing Prioritization Model Example Output**

| Housing Location (block group #) | Total Cost (minutes) |
|---|---|
| 452 | 102 |
| 884 | 120 |
| 1465 | 145 |
| 754 | 150 |
| 632 | 185 |
| 142 | 205 |

## 3.2.3 Model 2 - Optimal Travel Time Housing Location

Model 2 identifies optimal housing locations to select for new housing projects or housing partners based on the primary Unlocking DOORS' community network partner locations and Dallas County parole offices and other county facilities. This model minimizes total system travel costs to select the optimal locations to minimize travel costs to all community network partner locations and Dallas County parole offices and

other county facilities. However, only Parkland Hospital must be used by or connected to every housing location. The algorithm developed in this study can be used with any set of service providers and employers and for any number of optimal housing locations; however, as the total number of housing locations increases, the recommended locations will serve fewer and fewer services. When the number of housing locations matches the number of partner and county locations, each housing location will serve Parkland Hospital plus one, and only one, other partner or county location.

The study shows four example cases which demonstrate the challenges of selecting too many housing locations for the number of partner and county locations. Two examples select three and two select five housing locations, but differences between the automobile network (Figures 3.3 and 3.4) and public transit network (Figures 3.5 and 3.6) impact the solutions. The lower travel time accessing Parkland Hospital allows the automobile-recommended to locate further from the central business district and closer to employment opportunities. For the transit network, the first three housing locations appear in block groups with commuter or light rail stations, which connect well to many services like the county hospital; the housing locations in South and East Dallas appear when adding the two additional locations. The recommended location also appears at a light rail station while the location in East Dallas represents the only location not connected to rail. Some allocation of affordable housing associated with any transit-oriented development, or a standalone complex tied to the rail system appears to be the most desirable locations for obtaining new housing partners or constructing affordable housing. Numerous improvements and modifications to the algorithm can be made; Section 5 presents these in detail. The results indicate the flexibility of automobile travel to support housing locations further from the central business district and closer to employment opportunities while still supporting travel to Parkland Hospital. The constrained network and long travel times on public transit shift the recommended housing locations towards the rail system, which has lower headways than the bus system.

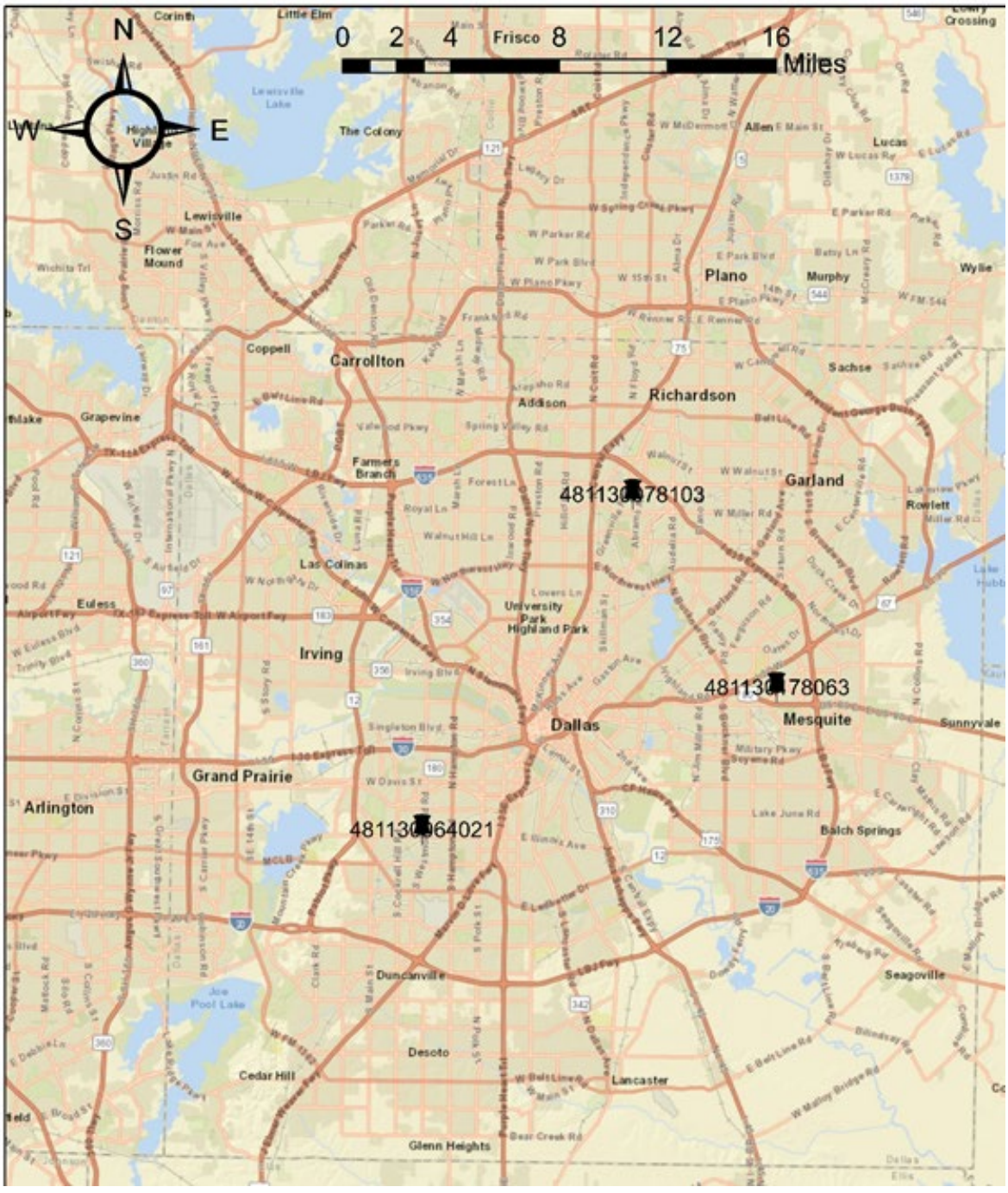


Figure 3.3 Housing Locations for Automobile Network Map with Three Locations

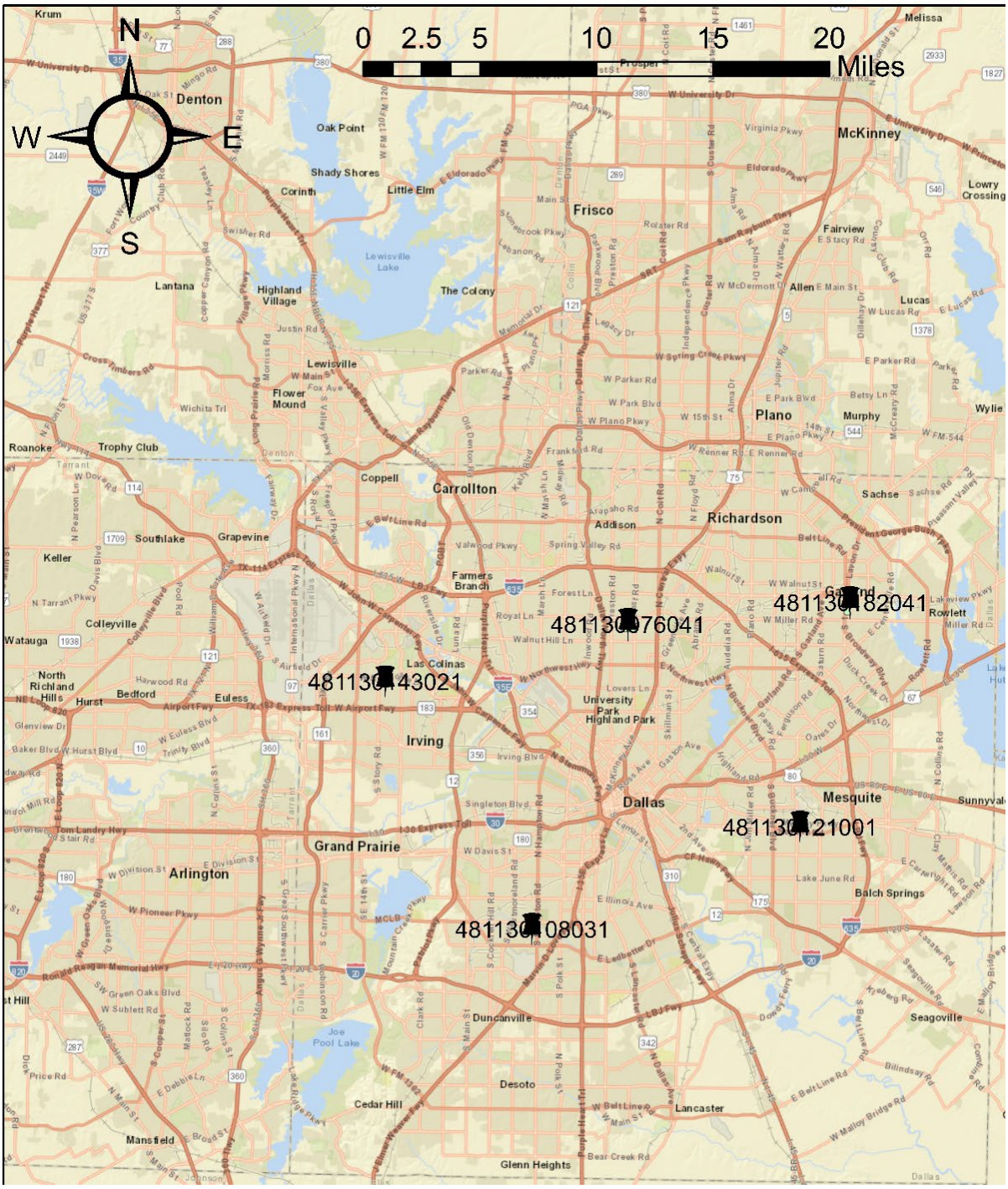

Figure 3.4: Housing Locations for Automobile Network Map with Five Locations

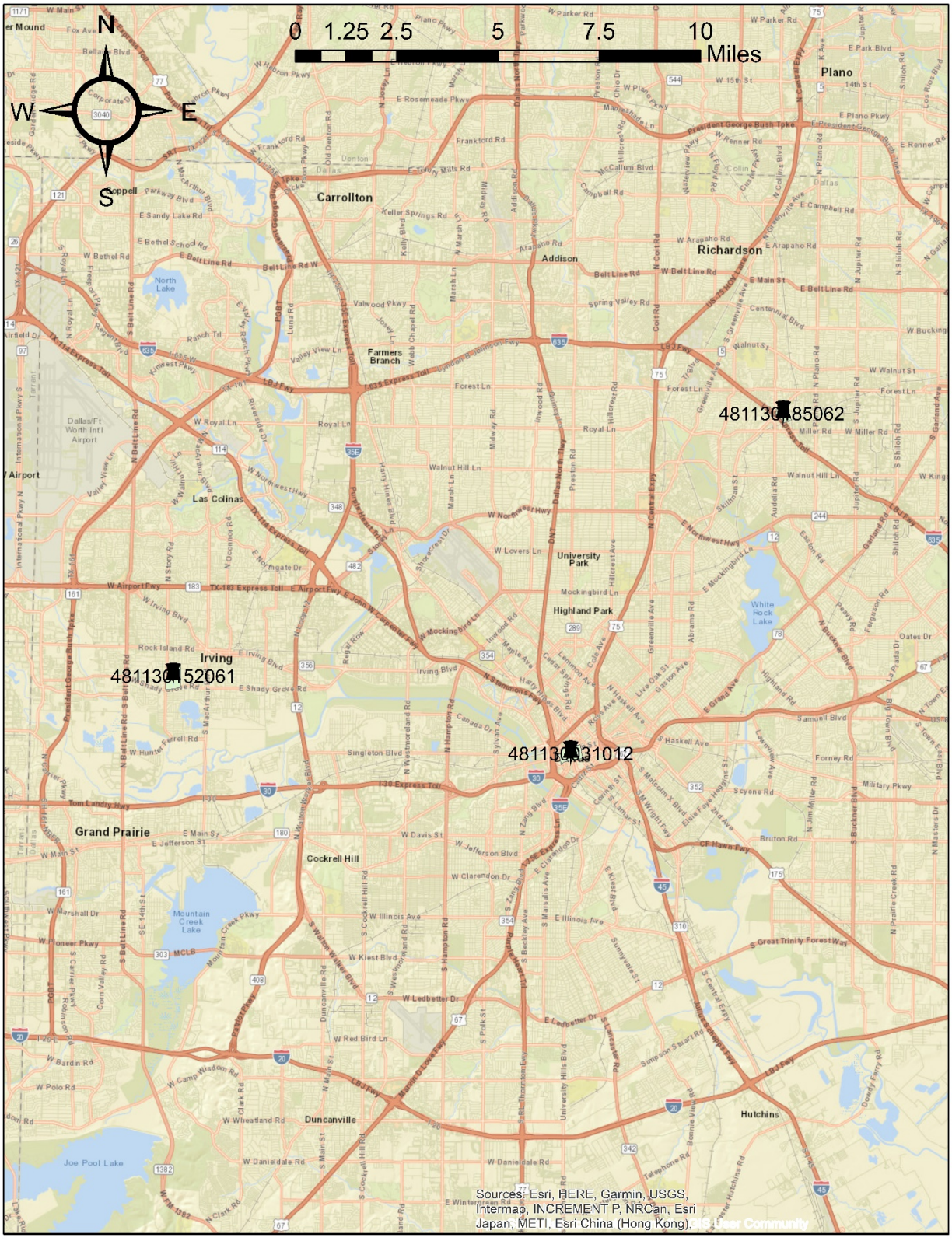


Figure 3.5: Housing Locations for Transit Network Map with Three Locations

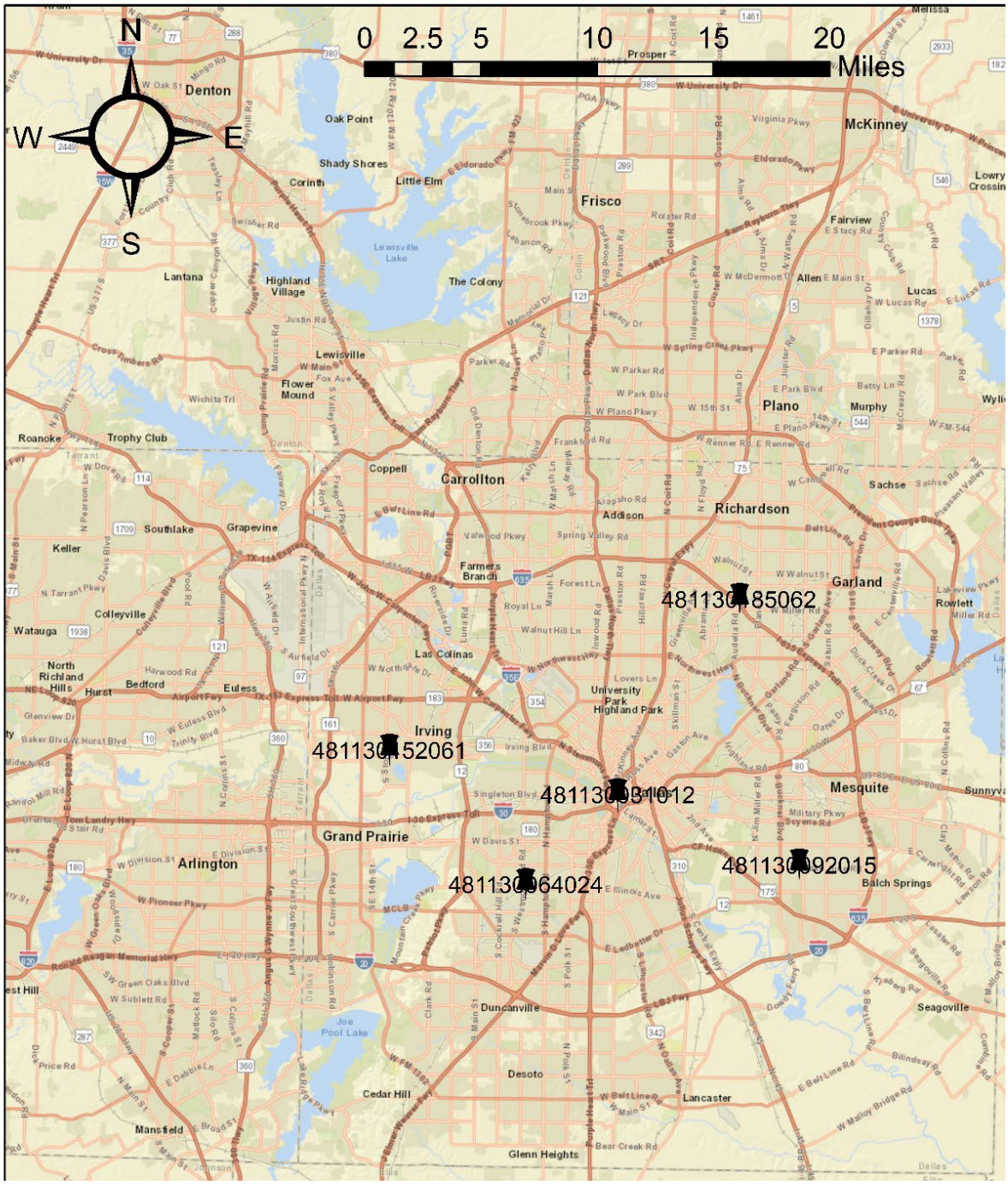


Figure 3.6 Housing Locations for Transit Network Map with Five Locations

### 3.2.4 Model 3 - Service Location

Model 3 identifies optimal service locations to meet a maximum travel time constraint for all (as many as possible) Dallas County residents. Agencies need to target serving as much of the population as possible so that they do not assume that

RCs must be concentrated in a few areas of the city (although this may be the current situation) because future housing options for returning citizens should be located in areas of high opportunity, too. This modeling provides a comparison of the number of service facilities (e.g., healthcare, education, parole offices, libraries, and community centers) required to achieve equitable travel times using transit and automobile networks, and it provides guidance to government agencies and nonprofit service providers on locations to target to maximize access for clients using the transit and automobile networks. This model seeks to minimize the number of locations required to serve the largest population possible within the travel time constraint. The algorithm developed in this study can be used for any service provider (including education and healthcare), employers, or housing providers to maximize the population with access to the targeted locations for any travel time constraint using either the transit or automobile network.

Even during congested conditions, the automobile network can provide reasonable access to over three-fourths of the population of Dallas County with, at most, three locations. Figure 3.7 shows the full coverage solution for a maximum travel time of 30 minutes on the automobile network with seven facilities. Figure 3.8 shows the full coverage solution for a maximum travel time of 50 minutes on the automobile network with three facilities. Table 3.2 uses a budget constraint to limit the number of facilities and indicates that three facilities can serve over 77% of the population within 30 minutes, and two facilities can serve almost 92% of the population within 50 minutes under congested conditions. Three facilities can serve the entire population of Dallas County in 50 minutes or less using an automobile during congested conditions. The automobile network does an excellent job of providing access to the population of Dallas County, and the highly redundant network supports many pathways to network locations.

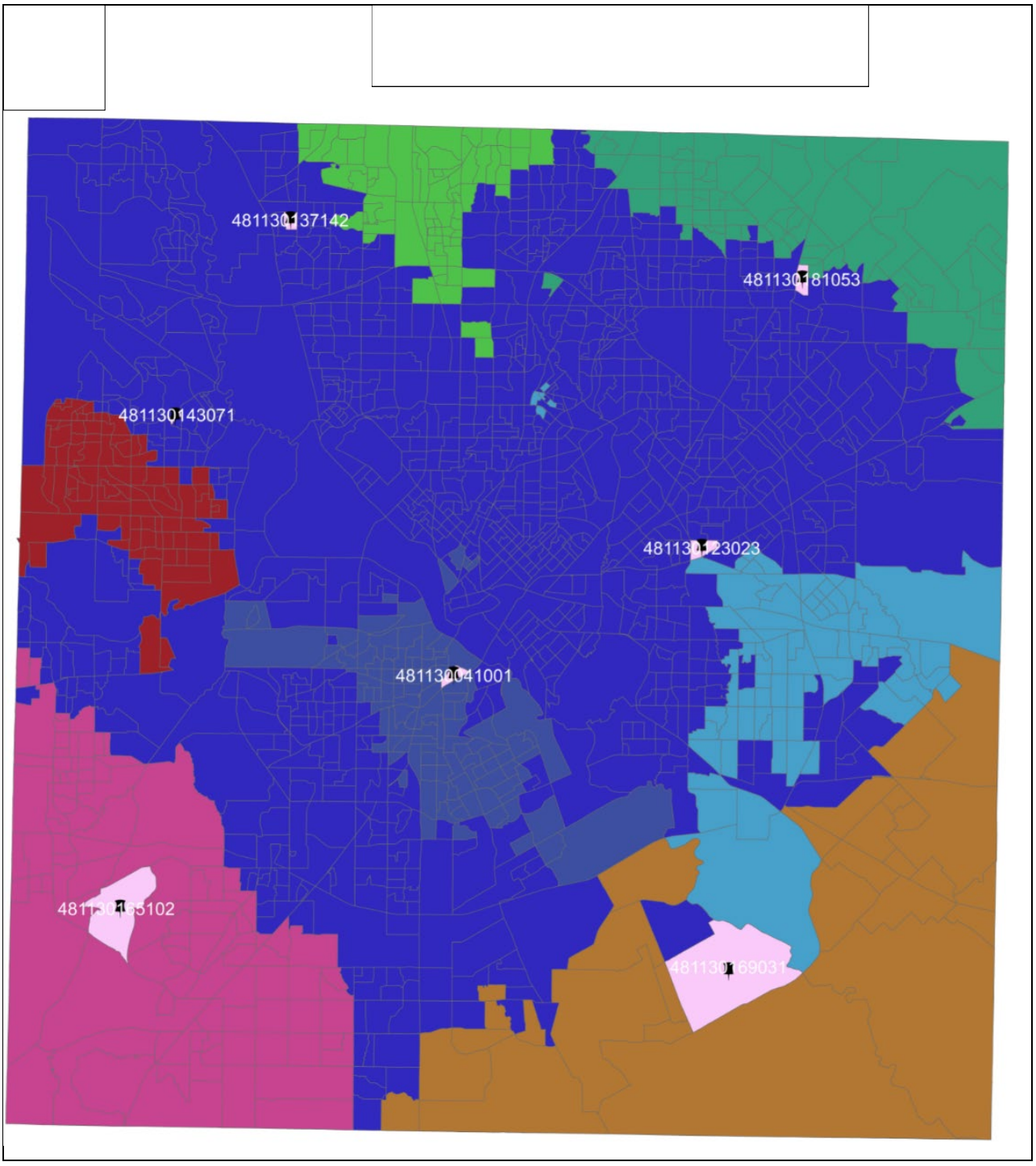


Figure 3.7: Automobile Network Map with Maximum Travel Time of 30 Minutes

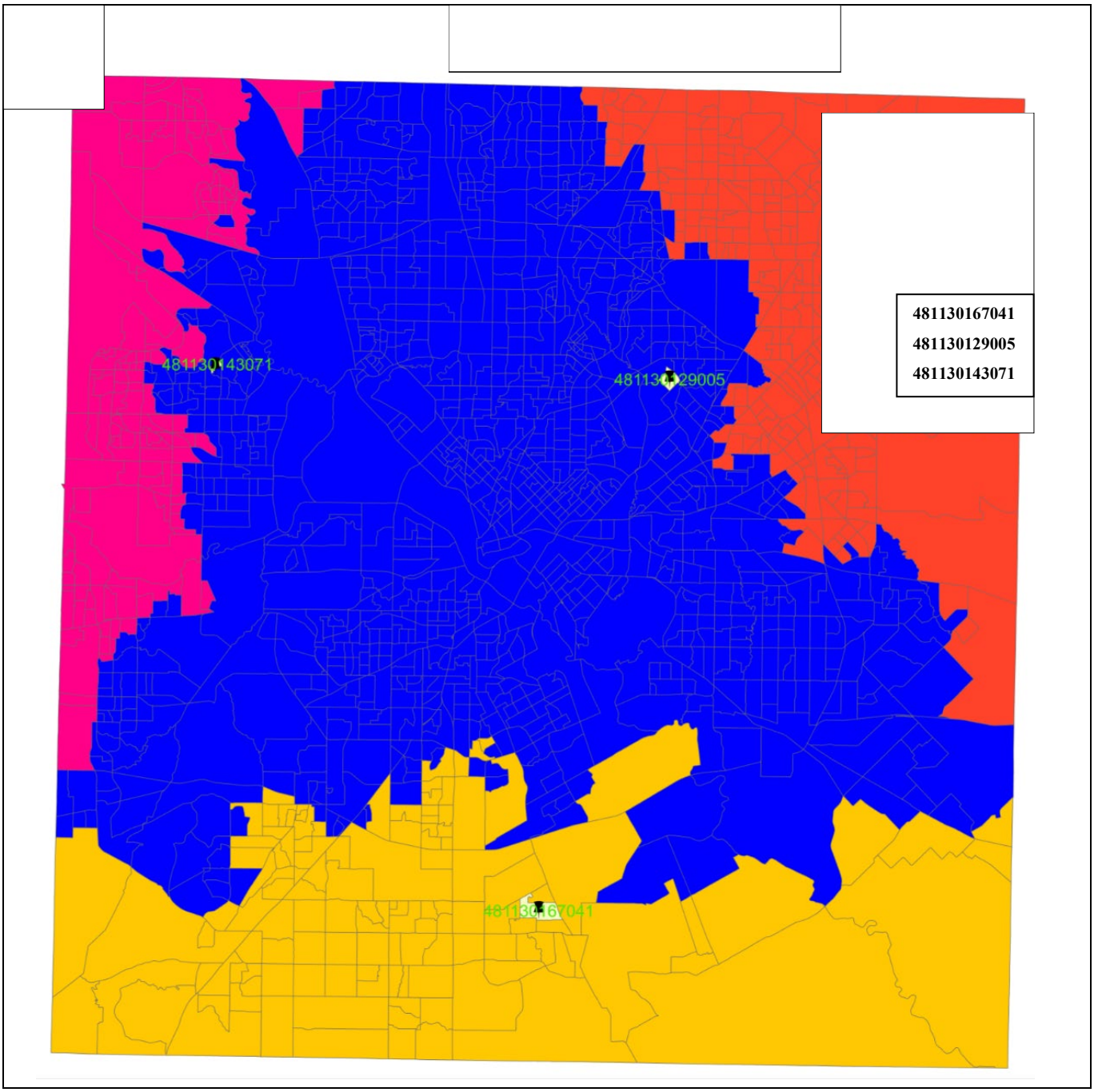


Figure 3.8: Automobile Network Map with Maximum Travel Time of 50 Minutes

**Table 3.2: Comparison of Facility Requirements for Different Automobile Travel Time Thresholds**

| Maximum Travel Time | Budget constraint | Population Covered |
|---|---|---|
| 30 minutes | 3 facilities | 2,006,077 (77.6%) |
| 50 minutes | 2 facilities | 2,373,022 (91.8%) |

The transit network provides a sharp contrast in performance with the automobile network. The large headways in the transit system make a comparison of equitable travel times impossible because the solutions for the 30- and 50-minute transit network travel time thresholds represent completely unrealistic solutions with facilities at almost every transit stop. The full coverage cases for the transit system only serve about 75% of the county's population due to network coverage limitations based on communities unserved by the transit system because they do not contribute to fund its operating costs through a 1% sales tax. Figure 3.9 shows that the full coverage solution with a transit travel time threshold of two hours requires eight locations. Figure 3.10 shows that increasing the travel time threshold to 150 minutes allows the required number of facilities to drop to four for the full coverage solution, which is still more than the amount required for the automobile network to serve the entire county population in a third of the time. Table 3.3 uses a budget constraint to limit the number facilities. Five facilities can serve about 64% of the county's population within 90 minutes on transit. The three-facility budget constraint only serves 70% of the population within two hours, which is four times the amount of time required for the automobile network. The two-facility budget constraint serves 75% of the county's population within 150 minutes, but the transit system requires three times as much time to serve almost 16% less of the county population. The poor coverage provided by an unreasonably large number of facilities illustrates the significant burden for returning citizens who rely on transit to access services, employment, and other opportunities. Access to an automobile or other point-to-point mobility (e.g., ride hailing or ride sharing) may be essential for achieving self-sufficiency and successfully reentering society. However, the cost of this mobility and the unbanked status of most RCs make these solutions unlikely without private or public subsidies.

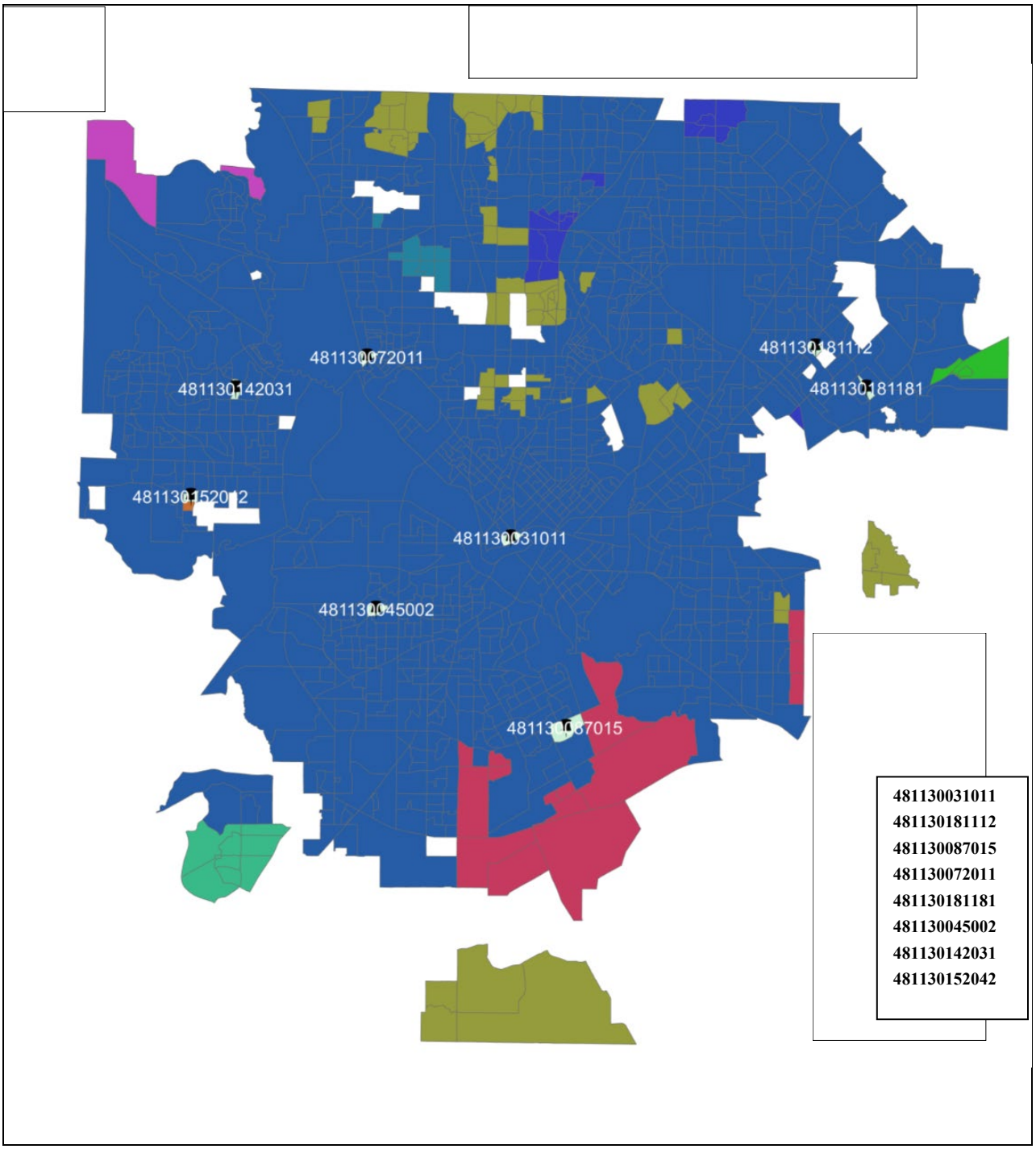


Figure 3.9: Transit Network Map with Maximum Travel Time of 120 Minutes

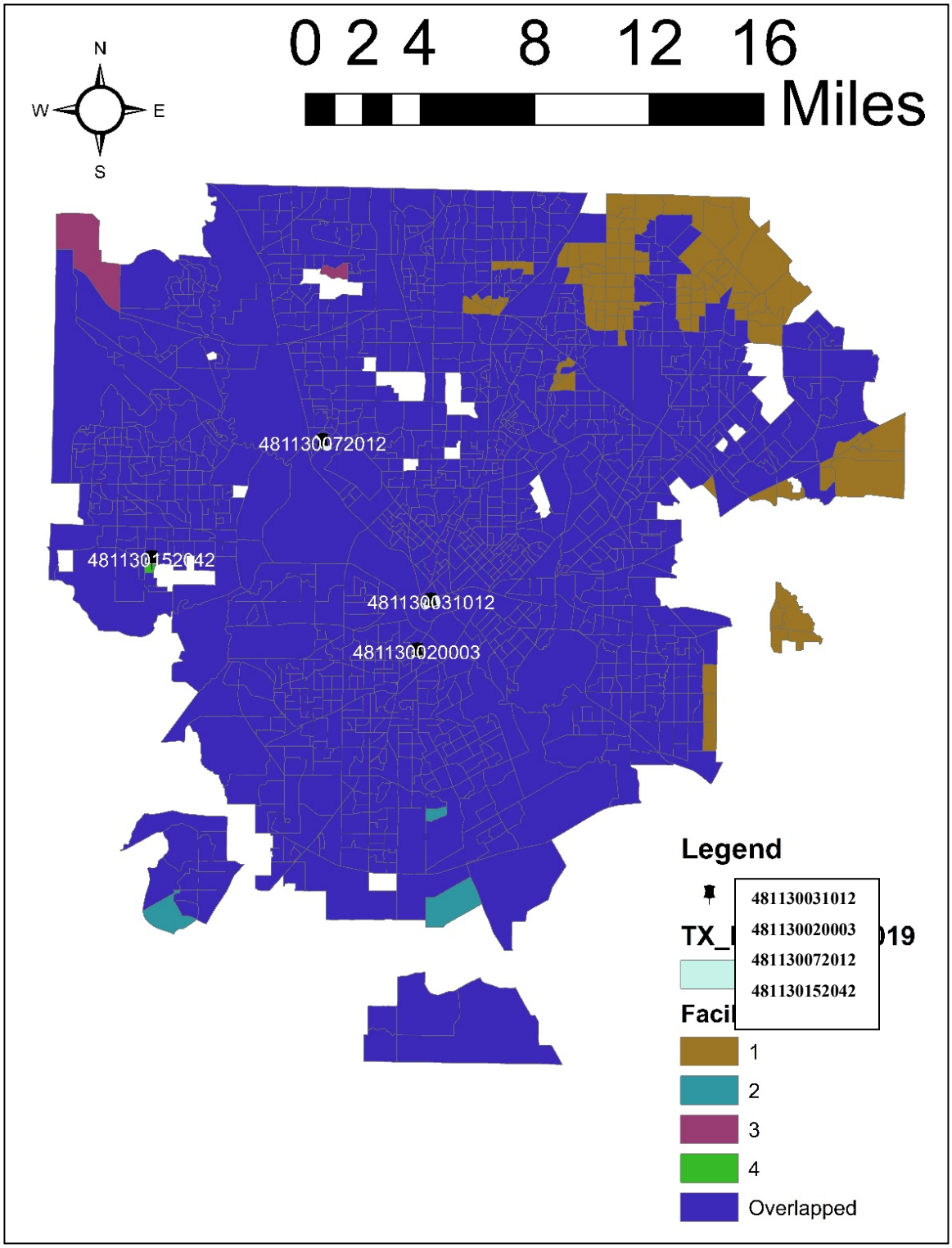


Figure 3.10: Transit Network Map with Maximum Travel Time of 150 Minutes

**Table 3.3: Comparison of Facility Requirements for Different Transit Travel Time Thresholds**

| Maximum Travel Time | Budget constraint | Population Covered |
|---|---|---|
| 90 minutes | 5 facilities | 1,660,206 (64.2%) |
| 120 minutes | 3 facilities | 1,821,202 (70.4%) |
| 150 minutes | 2 facilities | 1,951,954 (75.46%) |

# 4.0 CONCLUSIONS

Mobility represents freedom and access to opportunities. The ability to be employed, change employment, find safe and affordable housing, access goods and services, visit friends and family, and establish relationships is often taken for granted. For returning citizens, transportation disadvantage is an extension of the denial of liberty.
Public transportation serves an important purpose because it provides a safety net for many returning citizens. Without it, some returning citizens would have no way to access employment or services.

While the transit system provides a safety net and a minimum level of mobility, its cost and design represent a significant burden for most returning citizens. This appears manifestly in the differences in travel times using the automobile network instead of the transit network. The significant increase in travel times represents a challenge that may overwhelm a returning citizen even if mobility counseling was provided for the returning citizen population. Large portions of Dallas County, where many jobs suitable for returning citizens are located, remain unserved by DART because they do not belong to DART. More importantly, most services, employment, and other opportunities in Dallas County require excessive travel times when returning citizens must complete one or more transfers between routes. The structure of the transit network may often fail to directly serve the needs of this population because many of the DART routes have been developed to reduce congestion rather than provide mobility, and affordable housing is often not located near much of the best employment opportunities. The GoLink service, a new personalized, on-demand, curb-to-curb service, that DART has introduced shows some promise for meeting the needs of this population more effectively, but transit cost may still pose a challenge for returning citizens.

Transportation access for returning citizens was also dependent on support networks. Most returning citizens face integrating into their communities with little ability to be self-reliant. The average returning citizen does not have a high bank balance (some are unbanked), their own home, or a car in their name. Social capital has been found to be vital to successful reentry (*7*). Social networks, on which social capital is built, provide

access to necessities such as housing, food, and transportation when an emergency arises or during the first days of reentry (*7*). Further, recent research utilizing data from the Department of Housing and Urban Development found that low-income individuals with cars lived in higher-opportunity neighborhoods characterized by lower poverty rates, higher social status, stronger housing markets, and lower health risks than those without cars (*22*). Thus, returning citizens must rely on the kindness and resources of others – family, friends, or social services.

This research adds to the literature about transportation as a barrier to reentry success faced by returning citizens. We hope that by providing a hierarchy of transportation disadvantage, future researchers and policymakers may consider how to better resource returning citizens to maximize their freedom, access to opportunities, and ultimate success. However, this research relies on the responses of a small group of returning citizens in one large metropolitan area, and does not represent the totality of challenges faced by the hundreds of thousands of men and women returning to our communities every year. With this limitation in mind, we hope that researchers will continue to gather data from those most impacted by reentry policies and practices.

Much of the focus of successful reentry is reducing recidivism. Using recidivism to measure success and failure is fraught with issues of reliability and relatability. Further, recidivism is the lowest bar set by a punitive society. However, desisting from crime is just one outcome of successful reintegration. Another determinant of whether returning citizens are able to successfully establish a positive lifestyle is the ability to meet basic needs. Few individuals leave incarceration with access to private vehicles ready to carry them to waiting jobs. We argue preferable variables to measure successful reentry are indexes of quality of life. In relation to accessible housing, job markets, and transportation, equity is “just and fair inclusion into a society in which all can participate, prosper, and reach their full potential” (*23*).

Findings among service providers with returning citizen clients are consistent with both local and national studies in that the complex web of obligations faced by returning citizens is well known. However, in these studies, transportation is one variable or one barrier to success. Here we have detailed the centrality of transportation as the link between obligations that must be met to successfully reenter (i.e., court-mandated obligations). Transportation has been identified in research and lay knowledge among front-line workers to be of critical importance for successful reentry. Chief among our findings was the near centrality of transportation to reentry success endorsed by service providers exacerbated by the region’s automobile dependence, the costly and patchwork nature of the local transit system, and the urban and suburban sprawl of this area that requires extensive travel between employment opportunities, housing, and other (sometimes court-mandated) services. However, it is important to note that some providers lacked understanding of the complexity of returnees’ needs and the disconnection from the realities faced by returning citizens may negatively impact re-entry.

Deeply materialist needs for returning citizens are in tension with the critical importance of transportation, the reported “impossibility” of the reentry task set to returning citizens, and negative stereotypes that emerged in our data collection. The new mobilities paradigm (*24*) may help deepen our conclusions and form a theoretical bridge between transportation experts and social science-oriented disciplines like social work and criminology.

“Liquid modernity” is characterized by the speedy flow of people, money, images, and information and shifting conceptually from a modernity characterized by stasis (*25*). Following this, the new mobilities paradigm attempts, in part, to parse patterns of social exclusion and voicelessness as they accelerate connectivity, generativity, and mobility (*26*). While the Dallas area is a highly automobility-dependent metroplex, transportation disadvantage is intersectional with race, class, and gender.

Mobilities necessitate specific and embedded immobile infrastructures or moorings to enable liquid modernity such as fixed rail systems and cellular phone infrastructure (*26, 27*). For the most part, returning citizens (and other transportation-disadvantaged populations) operate outside the topographies of these moorings due to economic marginalization, less desirable housing locations, and low-paying employment opportunities. The fixed moorings and rapid flow of people and materials of liquid modernity further exclude returning citizens. Indeed, “idealization of movement...depends upon the exclusion of others who are already positioned as not free in the same way" (*28*). Findings from interviews with returning citizens illustrate that returning citizens understand very well the stakes of (im)mobility.

Several examples of the interactions of mobilities and immobilities (*29*) were found in our study as, for example, the problems that arise for returning citizens when their temporary housing changes after release. One participant described difficulties faced by returning citizen employees when they were forced to relocate after a few months of post-release housing, thus exacerbating their transportation disadvantage to such a degree that employment was lost. In this example, we see how a mandatory housing change negatively impacts mobility and, indeed, how mobility is expressly moored to the reality of fixed nodes (like housing).

Power is implicated in mobility and control over mobility in the new mobilities paradigm (*30*) and we saw this reflected in our findings. For example, some service providers restricted access to bus passes, and for some, interpersonal dynamics when negotiating automobility were challenging and could approach coercion in some instances. Some service providers did not understand the limited and expensive nature of the local transit system and harbored unrealistic ideas about the efficiency of the local system. This blind neutrality discursively refocuses attention on individuals, it effectively blames returning citizens for their mobility woes as due to disorganization, shiftiness, or their lack of time management skills. It deflects responsibility from providers, their organizations, and the broader community in an effectively de-politicized presentation of returning citizen struggles that entrenches disconnection and immobility.

For the web of needs and obligations of returning citizens to be assembled successfully, some points *must* be fixed. Housing that is stable is important for the employment-transportation dyad to function. If housing depends on employment, and employment depends on transportation, then, ergo, housing depends on transportation. Mobility and immobility must be balanced. If a returning citizen shifts from a halfway house or shelter to an apartment (that will rent to a former offender) but it is not located near his initial housing arrangement, access to transportation may shift and disrupt that balance. For returning citizens, the mobility-immobility balance is a fulcrum that can easily tip a person into homelessness and/or recidivism. We contend that the mobility-immobility balance may be one of the most crucial theoretical and materialist foci to consider for this population using a new mobilities paradigmatic lens.

While this study does not include further complicating factors/constraints for housing location like NIMBYism, the location of housing that provides access to employment and necessary services still appears significantly challenging. This study identifies the best locations for housing based on the needs of the returning citizens rather than catering to existing political power structures that push returning citizens into the margins of society. As discussed in the next section, additional improvements to the housing location model can make it more practical and still maintain its focus on returning citizen needs.

# 5.0 RECOMMENDATIONS

Service providers must engage with transit agencies and other mobility providers to develop better solutions to the mobility needs of returning citizens. If these needs cannot be met, the likelihood of successful reentry decreases. As a result, the service providers may want to explore car shares and other mobility alternatives rather than expecting all clients to successfully navigate reentry using public transportation. While these challenges appear extremely acute for this population, other populations may experience similar challenges. Transportation represents another resource that non-profit agencies assisting returning citizens must incorporate into service plans because without adequate transportation returning citizens will not be able to access the other mandated and basic services. While service providers can strengthen their assistance strategies, the models developed associated with this project can be improved to strengthen their utility as an advocacy tool and increase their utility for practitioners.

The prioritization and location models could benefit from additional input from returning citizens at different temporal stages of their return as well as citizens that may have failed in their efforts to reenter. Insights from these two groups could provide opportunities to introduce new constraints and add additional elements to the objective functions for all models. Some of the potential elements to add to the housing priority model include travel time to friends and family and travel time to a preferred place of

worship. The housing location model and housing priority model may also include elements like access to quality schools. While the models may never be able to address all possible constraints and priorities, the models can greatly benefit from the insights of returning citizens that succeeded and those that failed in their reentry efforts to align the models with successful reentry trajectories.

The housing and employment prioritization model could have an improved graphical user interface (GUI). The model would also benefit from a tool that provided the block group number based on the address of a service, employer, or residential location within the study area. The block group converter could be part of a more streamlined GUI for changes to the service, employment, and housing locations in the database. The travel time required to access the required services and employment location should be checked for feasibility, especially for transit captive users. Feasibility should be based on the hours of employment, operating schedule of transit, transit travel times during the citizen's actual travel periods (including off-peak periods, which can easily be identified in the GTFS database), and housing/service locations. All infeasible housing or employment locations should be removed from the list since they will not meet the client's needs. The travel times for the trips may be weighted based on their monthly or weekly frequency or their importance. The solution and interface could be modified to support selecting a service provider when many providers supply the same services. Also, when multiple service providers supply the same service, the algorithm may be enhanced to select the best location for each housing or employment alternative. Finally, the prioritization models could add additional screening criteria like job experience/training, education, or residential restrictions to eliminate additional alternatives from the list of possible choices before starting the analysis. Other than the GUI, the enhancements to the housing and employment prioritization model appear to be moderate or easy to implement.

The housing and service location models can both benefit from similar improvements that could increase their impact in the study area. Both of these models will benefit from expanding the transit and automobile networks throughout the region. Similarly, both models could add a land value constraint to only consider block groups with affordable parcels of land. The models could also add rent/land cost as a second objective; in this case, the system-level total travel time must be converted into a value to compare with the rent/land cost. An alternative approach to introducing a new object is adding a budget constraint. The need for returning citizens to use the transit network during all periods of the day makes assessing the impact of off-peak transit travel times, which often have longer headways, on the models' solutions. Both models should be subjected to a sensitivity analysis to determine if the transit network solutions change significantly during off-peak travel times including mid-day and evening. While most of the improvements for the two location models can benefit both of them, some improvements will work best for only one of them.

The housing location model could be converted to an employment location model that determines the optimal locations to target employment partners based on a set of existing housing locations. Additional required employment and service constraints

could be added, similar to the Parkland Hospital constraint. These constraints would force each proposed housing location to include the travel time to at least one employer, a parole office, and/or each type of service. The last enhancement could use the existing database of housing partners as fixed locations and optimize the selection of new locations. Expanding the database of service and employment partners will result in a more robust solution; the generalized solution would include all employment and services as required destinations, but this will result in a solution similar to model 3.

The service location model can capture the impact of changes in DART service or operations on the recommended solution. This model could also investigate a joint location solution using both the automobile and transit network combined; however, a change in the solution from the transit case appears unlikely because the transit travel times will dominate the solution in most cases. For specific services, the targeted population to serve may be based on the socioeconomic or other characteristics of their typical clients. This approach may be good for a location that can move and be flexible for changing residential patterns, but it will not work as well for permanent locations. The problem could be transformed to look at the amount of employment or other opportunities to identify desirable locations for housing.

The same structure may be used to select optimal locations for social and health services for the population under investigation and other environmental justice populations based on the overall distribution of the population or where the clients needing the services live. Finally, the same overall structure may be used to select the optimal location to house a single client; however, the optimal allocation of all clients to housing facilities will require a separate formulation.

While the housing/employment prioritization model provides a valuable resource to Unlocking DOORS in its current format, an improved GUI will improve its user friendliness. The other enhancements and other improvements should be implemented in consultation with Unlocking DOORS and other service providers to identify the most important features. At the conclusion of the project, we prepared a webinar for the community advisory board that provides a strong foundation for attracting additional partners for tech transfer. These types of tools could be helpful for service providers in urban areas throughout the United States.

Public transportation systems are too expensive for the poorest people, such as returning citizens. This work may inform fare reduction policy reconsiderations at transit authorities and the necessity of providing transportation access by service providers. It may also provide evidence to employers willing to hire returning citizens, but whose businesses are located outside the reach of public transportation, to consider bridging the distance between end-of-the-line stops and the employment site to assist workers.

The importance of transportation in maintaining employment to reduce poverty has potential policy implications for the U.S. Department of Housing and Urban Development (HUD). Coordinating with departments of transportation to locate housing near public transportation routes might also help achieve independence more often or more quickly.

Many service providers and parole and probation officers are trained as social work and criminal justice practitioners. This project may also have implications for practitioner training. As a discipline, social work focuses on vulnerable populations and large social problems (such as poverty, racism, interpersonal violence, etc.). Criminal justicians work with the same vulnerable populations with a focus on public safety. Transportation currently plays a peripheral role, at best, in our accredited schools of social work and criminal justice, but there is room for disciplinary shifts to more fully train social workers and criminal justicians about the importance of transportation to many client populations and in the perpetuation and exacerbation of inequities that they face.

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# 7.0 APPENDICES

# APPENDIX A

December 4, 2018

Dr. Anne Nordberg
School of Social Work
The University of Texas at Arlington
Box 19129

**EXPEDITED APPROVAL OF HUMAN SUBJECT RESEARCH**

**IRB No.:** 2018-0691
**Study Title:** *Optimizing housing and service locations to provide mobility to meet the mandated obligations for former offenders to improve community health and safety*

**Approval Date:** December 1, 2018
**Expiration Date:** **December 1, 2019**

**Federal Funding Source**: DOT
**Mentis Bluesheet Number**: 2018-593

The University of Texas Arlington Institutional Review Board (UTA IRB) has made the determination that this research protocol involving human subjects is eligible for expedited review in accordance with Title 45 CFR 46.110(a)-(b)(1), 63 FR 60364 and 63 FR 60353, categories(5)(6)(7). The IRB Chairperson (or designee) approved this protocol effective **December 1, 2018.** IRB approval for the research shall continue until **December 1, 2019**.

**As Principal Investigator of this IRB approved study, the following items are your responsibility throughout the life of the study:**

**UNANTICIPATED ADVERSE EVENTS:**
Please be advised that as the Principal Investigator, you are required to report local adverse (unanticipated) events to The UT Arlington Office of Research Administration; Regulatory Services within 24 hours of the occurrence or upon acknowledgement of the occurrence.

**INFORMED CONSENT DOCUMENT:**
The IRB approved version of the informed consent document (ICD) must be used when prospectively enrolling volunteer participants into the study. Unless otherwise determined by the IRB, all signed consent forms must be securely maintained on the UT Arlington campus for the duration of the study plus a minimum of three years after the completion of all study procedures (including data analysis). The complete study record is subject to inspection and/or audit during this time period by entities including but not limited to the UT Arlington IRB, Regulatory Services staff, OHRP, FDA, and by study sponsors.

**MODIFICATIONS TO THE APPROVED PROTOCOL:**
All proposed changes must be submitted via the electronic submission system and approved by the IRB prior to implementation. Pursuant to Title 45 CFR 46.103(b)(4)(iii), investigators are required to, "promptly report to the IRB ***any*** proposed changes in the research activity, and to ensure that such changes in approved research, during the period for which IRB approval has already been given, are **not initiated without prior IRB review and approval** except when necessary to eliminate apparent immediate hazards to the subject." Modifications include but are not limited to: Changes in protocol personnel, changes in proposed study procedures, and/or updates to data collection instruments. Failure to obtain prior approval for modifications is considered an issue of non-compliance and will be subject to review and deliberation by the IRB which could result in the suspension/termination of the protocol.

**ANNUAL CONTINUING REVIEW:**
In order for the research to continue beyond the first year, the Principal Investigator must submit a Continuing Review for approval via the online submission system within 30 days preceding the date of expiration indicated above. Failure to obtain approval for a continuing review will result in automatic ***expiration of the protocol*** and all activities involving human subjects and work with identifiable subject data must **cease immediately**. The research activities including work with identifiable data will not be allowed to commence by any protocol personnel until approval to resume the research has been explicitly granted by the IRB. The continuation of study procedures after the expiration of a protocol is considered to be an issue of non-compliance and a violation of federal regulations. Such violations could result in termination of external and University funding and/or disciplinary action.

**HUMAN SUBJECTS TRAINING AND CONFLICTS OF INTEREST DISCLOSURES:**
All investigators and personnel identified in the protocol must have documented Human Subjects Protection (HSP) training on file and must have filed a current Conflict of Interest Disclosure (COI) with The UT Arlington Office of Research Administration; Regulatory Services. HSP completion certificates are valid for 3 years from completion date.

**COLLABORATION:**
If applicable, approval by the appropriate authority at a collaborating facility is required prior to subject enrollment. If the collaborating facility is *engaged in the research*, an OHRP approved Federalwide Assurance (FWA) may be required for the facility (prior to their participation in research-related activities). To determine whether the collaborating facility is engaged in research, go to: https://www.hhs.gov/ohrp/regulations-and-policy/guidance/guidance-on-engagement-of-institutions/index.html

**CONTACT FOR QUESTIONS:**
The UT Arlington Office of Research Administration; Regulatory Services appreciates your continuing commitment to the protection of human research subjects. Should you have questions or require further assistance, please contact Regulatory Services at regulatoryservices@uta.edu or 817-272-3723.

Sincerely,

Deborah Behan PhD, RN-BC

Digitally signed by Deborah Behan PhD, RN-BC
DN: cn=Deborah Behan PhD, RN-BC, o=UTA, ou=IRB Chair, email=dgreen@uta.edu, c=US
Date: 2018.12.04 21:17:27 -06'00'

Deborah Behan, PhD
Associate Clinical Professor, Nursing
UT Arlington IRB Chair

# APPENDIX B

# UT Arlington
# Informed Consent Document – Electronic or Online Version

**PRINCIPAL INVESTIGATOR**
Anne Nordberg, School of Social Work, (817) 408-6786, annenordberg@uta.edu

**TITLE OF PROJECT**
Optimizing housing and service locations to provide mobility to meet the mandated obligations for former offenders to improve community health and safety

**INTRODUCTION**
You are being asked to take part in a research study about transportation needs among returning citizens and community agencies and employers who work with them. If you are over the age of 18 years, speak English, and have reentered the community following detention, you can take part in this study if you wish. Your participation is voluntary. Not participating or stopping your participation at any time will involve no penalty or loss of benefits that you would normally have. Please ask questions if there is anything you do not understand.

**PURPOSE**
The purpose of this research study is build a model to help minimize the transportation time between where returning citizens live and other places they need to be such as work. To build this model we are seeking information from returning citizens, employers, and community service providers. You are being asked to participate because you are a returning citizen.

**DURATION**
You will be asked to take part in 1 interview that will last up to 60 minutes.

**NUMBER OF SUBJECTS**
The number of people who will be interviewed in this research study is 150.

**PROCEDURES**
The procedures which will involve you as a research subject are as follows:

1) Complete a series of questions that will include age, race, gender, level of education, etc.
2) 1 interview in a private and mutually agreed upon location with 1 or 2 interviewers OR 1 phone call at a mutually convenient time. The interview will be tape recorded. The recording will be transcribed which means it will be typed exactly as it was recorded, word-for-word. Recordings and transcriptions will all be stored in a secure, password protected UT Arlington online file storage system (UTABox). The tape will be kept with the transcription for potential future research involving transportation research among returning citizens or other groups of people.

**POSSIBLE BENEFITS**



**IRB Expiration Date: 12/01/2019**
**v. 2018-0691.2**

There are no direct benefits to you if you choose to participate. This research may indirectly contribute to knowledge that may have positive impact in communities across the country and among other groups of people. Participation will not bring you additional help from DOORS staff.

**POSSIBLE RISKS/DISCOMFORTS**
There are no expected risks or discomforts for taking part in this research study. If you feel uncomfortable please tell the researcher. You have the right to stop the interview at any time at no penalty. If you choose not to take part, DOORS staff will not be told and this will not negatively impact your relationship with DOORS staff.

**COMPENSATION**
You will be given a $20.00 Walmart e-gift card for your time. At the end of the interview, you will be asked to give us an email address and the $20 Walmart e-gift card will be sent to you within 48 hours of the interview.

**ALTERNATIVE PROCEDURES**
There are no alternative procedures for this study. But, you can choose not to participate in the study or quit at any time with no penalty.

**VOLUNTARY PARTICIPATION**
Taking part in this research study is your choice. You have the right to not participate in the interview or quit at any time at no penalty. If you choose not to finish the interview you will still receive the $20.00 Walmart e-gift card.

**CONFIDENTIALITY**
We will do our best to keep your study results confidential. A copy of this signed consent form will be kept in a locked file cabinet in the office of Dr. Nordberg in the UT Arlington School of Social Work. All data collected [including transcriptions and recordings] from this study will be stored in UTABox, a secure, password protected, online file storage system, for at least three (3) years after the end of this research. The results of this study may be published and/or presented at meetings without naming you as a subject. Unlocking DOORS will not be told whether or not you have participated and they will not be told what you said during the interview. No information that identifies you will be shared with Unlocking DOORS or any other agency / service provider. Additional research studies could come about from the information you have provided, but your information will not be linked to you in anyway; it will be anonymous. Although your rights and privacy will be maintained, the Secretary of the Department of Health and Human Services, the UTA Institutional Review Board (IRB), and people particular to this research have access to the study records. Your records will be kept completely confidential according to current laws. They will not be revealed unless required by law, or as noted above. The Institutional Review Board at UTA has reviewed and approved this study and the information within this consent form. If in the

unlikely event it becomes necessary for the Institutional Review Board to review your research records, the University of Texas at Arlington will protect the confidentiality of those records to the extent permitted by law.

**CONTACT FOR QUESTIONS**

If you have questions please contact Dr. Anne Nordberg at (817) 408-6786 or annenordberg@uta.edu. Any questions you may have about your rights as a research subject or a research-related injury may be directed to the Office of Research Administration; Regulatory Services at 817-272-3723 or regulatoryservices@uta.edu.

**CONSENT**

You are indicating your voluntary agreement to participate by beginning this phone interview. By beginning the interview you confirm that you are 18 years of age or older and have read or had this document read to you. You have been informed about this study's purpose, procedures, possible benefits and risks, and you may request an email copy of this form. You have been given the opportunity to ask questions before you make a decision regarding your participation, and you have been told that you can ask other questions at any time.

By your voluntary agreement to participate, you are not waiving any of your legal rights. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may discontinue participation at any time without penalty or loss of benefits to which you are otherwise entitled.

# UT Arlington
## Informed Consent Document – Electronic or Online Version

**PRINCIPAL INVESTIGATOR**
Anne Nordberg, School of Social Work, (817) 408-6786, annenordberg@uta.edu

**TITLE OF PROJECT**
Optimizing housing and service locations to provide mobility to meet the mandated obligations for former offenders to improve community health and safety

**INTRODUCTION**
You are being asked to take part in a research study about transportation needs among returning citizens and community agencies and employers who work with them. If you are over the age of 18 years, speak English, and have reentered the community following detention, you can take part in this study if you wish. Your participation is voluntary. Not participating or stopping your participation at any time will involve no penalty or loss of benefits that you would normally have. Please ask questions if there is anything you do not understand.

**PURPOSE**
The purpose of this research study is build a model to help minimize the transportation time between where returning citizens live and other places they need to be such as work. To build this model we are seeking information from returning citizens, employers, and community service providers. You are being asked to participate because you are a returning citizen.

**DURATION**
You will be asked to take part in 1 interview that will last up to 60 minutes.

**NUMBER OF SUBJECTS**
The number of people who will be interviewed in this research study is 150.

**PROCEDURES**
The procedures which will involve you as a research subject are as follows:

1) Complete a series of questions that will include age, race, gender, level of education, etc.
2) 1 interview in a private and mutually agreed upon location with 1 or 2 interviewers OR 1 phone call at a mutually convenient time. The interview will be tape recorded. The recording will be transcribed which means it will be typed exactly as it was recorded, word-for-word. Recordings and transcriptions will all be stored in a secure, password protected UT Arlington online file storage system (UTABox). The tape will be kept with the transcription for potential future research involving transportation research among returning citizens or other groups of people.

**POSSIBLE BENEFITS**



**IRB Expiration Date: 12/01/2019**
**v. 2018-0691.2**

There are no direct benefits to you if you choose to participate. This research may indirectly contribute to knowledge that may have positive impact in communities across the country and among other groups of people.

**POSSIBLE RISKS/DISCOMFORTS**

There are no expected risks or discomforts for taking part in this research study. If you feel uncomfortable please tell the researcher. You have the right to stop the interview at any time at no penalty.

**COMPENSATION**

You will be given a $20.00 Walmart gift card for your time. At the end of the interview, if you receive an e-gift card, you will be asked to give us an email address and the $20 Walmart e-gift card will be sent to you within 48 hours of the interview.

**ALTERNATIVE PROCEDURES**

There are no alternative procedures for this study. But, you can choose not to participate in the study or quit at any time with no penalty.

**VOLUNTARY PARTICIPATION**

Taking part in this research study is your choice. You have the right to not participate in the interview or quit at any time at no penalty. If you choose not to finish the interview you will still receive the $20.00 Walmart e-gift card or gift card.

**CONFIDENTIALITY**

We will do our best to keep your study results confidential. A copy of this signed consent form will be kept in a locked file cabinet in the office of Dr. Nordberg in the UT Arlington School of Social Work. All data collected [including transcriptions and recordings] from this study will be stored in UTABox, a secure, password protected, online file storage system, for at least three (3) years after the end of this research. The results of this study may be published and/or presented at meetings without naming you as a subject. Additional research studies could come about from the information you have provided, but your information will not be linked to you in anyway; it will be anonymous. Although your rights and privacy will be maintained, the Secretary of the Department of Health and Human Services, the UTA Institutional Review Board (IRB), and people particular to this research have access to the study records. Your records will be kept completely confidential according to current laws. They will not be revealed unless required by law, or as noted above. The Institutional Review Board at UTA has reviewed and approved this study and the information within this consent form. If in the unlikely event it becomes necessary for the Institutional Review Board to review your research records, the University of Texas at Arlington will protect the confidentiality of those records to the extent permitted by law.

**CONTACT FOR QUESTIONS**

If you have questions please contact Dr. Anne Nordberg at (817) 408-6786 or annenordberg@uta.edu. Any questions you may have about your rights as a research

subject or a research-related injury may be directed to the Office of Research Administration; Regulatory Services at 817-272-3723 or regulatoryservices@uta.edu.

**CONSENT**

You are indicating your voluntary agreement to participate by beginning this phone interview. By beginning the interview you confirm that you are 18 years of age or older and have read or had this document read to you. You have been informed about this study's purpose, procedures, possible benefits and risks, and you may request an email copy of this form. You have been given the opportunity to ask questions before you make a decision regarding your participation, and you have been told that you can ask other questions at any time.

By your voluntary agreement to participate, you are not waiving any of your legal rights. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may discontinue participation at any time without penalty or loss of benefits to which you are otherwise entitled.

## UT Arlington
## Informed Consent Document – Written Version

**PRINCIPAL INVESTIGATOR**
Anne Nordberg, School of Social Work, (817) 408-6786, annenordberg@uta.edu

**TITLE OF PROJECT**
Optimizing housing and service locations to provide mobility to meet the mandated obligations for former offenders to improve community health and safety

**INTRODUCTION**
You are being asked to take part in a research study about transportation needs among returning citizens and community agencies and employers who work with them. If you are over the age of 18 years, speak English, and have reentered the community following detention, you can take part in this study if you wish. Your participation is voluntary. Not participating or stopping your participation at any time will involve no penalty or loss of benefits that you would normally have. Please ask questions if there is anything you do not understand.

**PURPOSE**
The purpose of this research study is build a model to help minimize the transportation time between where returning citizens live and other places they need to be such as work. To build this model we are seeking information from returning citizens, employers, and community service providers. You are being asked to participate because you are a returning citizen.

**DURATION**
You will be asked to take part in 1 interview that will last up to 60 minutes.

**NUMBER OF SUBJECTS**
The number of people who will be interviewed in this research study is 150.

**PROCEDURES**
The procedures which will involve you as a research subject are as follows:

1) Complete a series of questions that will include age, race, gender, level of education, etc.
2) 1 interview in a private and mutually agreed upon location with 1 or 2 interviewers OR 1 phone call at a mutually convenient time. The interview will be tape recorded. The recording will be transcribed which means it will be typed exactly as it was recorded, word-for-word. Recordings and transcriptions will all be stored in a secure, password protected UT Arlington online file storage system (UTABox). The tape will be kept with the transcription for potential future



**IRB Expiration Date: 12/01/2019**
**v. 2018-0691.2**

research involving transportation research among returning citizens or other groups of people.

**POSSIBLE BENEFITS**
There are no direct benefits to you if you choose to participate. This research may indirectly contribute to knowledge that may have positive impact in communities across the country and among other groups of people. Participation will not bring you additional help from DOORS staff.

**POSSIBLE RISKS/DISCOMFORTS**
There are no expected risks or discomforts for taking part in this research study. If you feel uncomfortable please tell the researcher. You have the right to stop the interview at any time at no penalty. If you choose not to take part, DOORS staff will not be told and this will not negatively impact your relationship with DOORS staff.

**COMPENSATION**
You will be given a $20.00 Walmart gift card for your time. If you are receiving a $20.00 Walmart e-gift card, at the end of the interview, you will be asked to give us an email address and the $20 Walmart e-gift card will be sent to you within 48 hours of the interview.

**ALTERNATIVE PROCEDURES**
There are no alternative procedures for this study. But, you can choose not to participate in the study or quit at any time with no penalty.

**VOLUNTARY PARTICIPATION**
Taking part in this research study is your choice. You have the right to not participate in the interview or quit at any time at no penalty. If you choose not to finish the interview you will still receive the $20.00 Walmart e-gift card or gift card.

**CONFIDENTIALITY**
We will do our best to keep your study results confidential. A copy of this signed consent form will be kept in a locked file cabinet in the office of Dr. Nordberg in the UT Arlington School of Social Work. All data collected [including transcriptions and recordings] from this study will be stored in UTABox, a secure, password protected, online file storage system, for at least three (3) years after the end of this research. The results of this study may be published and/or presented at meetings without naming you as a subject. Unlocking DOORS will not be told whether or not you have participated and they will not be told what you said during the interview. No information that identifies you will be shared with Unlocking DOORS or any other agency / service provider. Additional research studies could come about from the information you have



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provided, but your information will not be linked to you in anyway; it will be anonymous. Although your rights and privacy will be maintained, the Secretary of the Department of Health and Human Services, the UTA Institutional Review Board (IRB), and people particular to this research have access to the study records. Your records will be kept completely confidential according to current laws. They will not be revealed unless required by law, or as noted above. The Institutional Review Board at UTA has reviewed and approved this study and the information within this consent form. If in the unlikely event it becomes necessary for the Institutional Review Board to review your research records, the University of Texas at Arlington will protect the confidentiality of those records to the extent permitted by law.

**CONTACT FOR QUESTIONS**
If you have questions please contact Dr. Anne Nordberg at (817) 408-6786 or annenordberg@uta.edu. Any questions you may have about your rights as a research subject or a research-related injury may be directed to the Office of Research Administration; Regulatory Services at 817-272-3723 or regulatoryservices@uta.edu.

**As a representative of this study, I have explained the purpose, the procedures, the benefits, and the risks that are involved in this research study:**

_____
**Signature and printed name of principal investigator or person obtaining consent** **Date**

**CONSENT**
By signing below, you confirm that you are 18 years of age or older and have read or had this document read to you. You have been told about this study's purpose, procedures, possible benefits and risks, and you have received a copy of this form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time.

You voluntarily agree to participate in this study. By signing this form, you are not waiving any of your legal rights. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may discontinue participation at any time without penalty or loss of benefits, to which you are otherwise entitled.

_____
**SIGNATURE OF VOLUNTEER** **DATE**



**IRB Expiration Date: 12/01/2019**
**v. 2018-0691.2**

# UT Arlington
## Informed Consent Document – Written Version

**PRINCIPAL INVESTIGATOR**
Anne Nordberg, School of Social Work, (817) 408-6786, annenordberg@uta.edu

**TITLE OF PROJECT**
Optimizing housing and service locations to provide mobility to meet the mandated obligations for former offenders to improve community health and safety

**INTRODUCTION**
You are being asked to take part in a research study about transportation needs among returning citizens and community agencies and employers who work with them. If you are over the age of 18 years, speak English, and have reentered the community following detention, you can take part in this study if you wish. Your participation is voluntary. Not participating or stopping your participation at any time will involve no penalty or loss of benefits that you would normally have. Please ask questions if there is anything you do not understand.

**PURPOSE**
The purpose of this research study is build a model to help minimize the transportation time between where returning citizens live and other places they need to be such as work. To build this model we are seeking information from returning citizens, employers, and community service providers. You are being asked to participate because you are a returning citizen.

**DURATION**
You will be asked to take part in 1 interview that will last up to 60 minutes.

**NUMBER OF SUBJECTS**
The number of people who will be interviewed in this research study is 150.

**PROCEDURES**
The procedures which will involve you as a research subject are as follows:

1) Complete a series of questions that will include age, race, gender, level of education, etc.
2) 1 interview in a private and mutually agreed upon location with 1 or 2 interviewers OR 1 phone call at a mutually convenient time. The interview will be tape recorded. The recording will be transcribed which means it will be typed exactly as it was recorded, word-for-word. Recordings and transcriptions will all be stored in a secure, password protected UT Arlington online file storage system (UTABox). The tape will be kept with the transcription for potential future



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**v. 2018-0691.2**

research involving transportation research among returning citizens or other groups of people.

**POSSIBLE BENEFITS**
There are no direct benefits to you if you choose to participate. This research may indirectly contribute to knowledge that may have positive impact in communities across the country and among other groups of people.

**POSSIBLE RISKS/DISCOMFORTS**
There are no expected risks or discomforts for taking part in this research study. If you feel uncomfortable please tell the researcher. You have the right to stop the interview at any time at no penalty.

**COMPENSATION**
You will be given a $20.00 Walmart gift card for your time. If you are participating by phone, at the end of the interview, you will be asked to give us an email address and the $20 Walmart e-gift card will be sent to you within 48 hours of the interview.

**ALTERNATIVE PROCEDURES**
There are no alternative procedures for this study. But, you can choose not to participate in the study or quit at any time with no penalty.

**VOLUNTARY PARTICIPATION**
Taking part in this research study is your choice. You have the right to not participate in the interview or quit at any time at no penalty. If you choose not to finish the interview you will still receive the $20.00 Walmart e-gift card or gift card.

**CONFIDENTIALITY**
We will do our best to keep your study results confidential. A copy of this signed consent form will be kept in a locked file cabinet in the office of Dr. Nordberg in the UT Arlington School of Social Work. All data collected [including transcriptions and recordings] from this study will be stored in UTABox, a secure, password protected, online file storage system, for at least three (3) years after the end of this research. The results of this study may be published and/or presented at meetings without naming you as a subject. Additional research studies could come about from the information you have provided, but your information will not be linked to you in anyway; it will be anonymous. Although your rights and privacy will be maintained, the Secretary of the Department of Health and Human Services, the UTA Institutional Review Board (IRB), and people particular to this research have access to the study records. Your records will be kept completely confidential according to current laws. They will not be revealed unless required by law, or as noted above. The Institutional Review Board at UTA has reviewed and approved this study and the information within this consent form. If in the

unlikely event it becomes necessary for the Institutional Review Board to review your research records, the University of Texas at Arlington will protect the confidentiality of those records to the extent permitted by law.

**CONTACT FOR QUESTIONS**
If you have questions please contact Dr. Anne Nordberg at (817) 408-6786 or annenordberg@uta.edu. Any questions you may have about your rights as a research subject or a research-related injury may be directed to the Office of Research Administration; Regulatory Services at 817-272-3723 or regulatoryservices@uta.edu.

**As a representative of this study, I have explained the purpose, the procedures, the benefits, and the risks that are involved in this research study:**

_____

**Signature and printed name of principal investigator or person obtaining consent** **Date**

**CONSENT**
By signing below, you confirm that you are 18 years of age or older and have read or had this document read to you. You have been told about this study's purpose, procedures, possible benefits and risks, and you have received a copy of this form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time.

You voluntarily agree to participate in this study. By signing this form, you are not waiving any of your legal rights. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may discontinue participation at any time without penalty or loss of benefits, to which you are otherwise entitled.

_____

**SIGNATURE OF VOLUNTEER** **DATE**



**IRB Expiration Date: 12/01/2019**
**v. 2018-0691.2**

## UT Arlington

# Informed Consent Document – Electronic or Online Version

**PRINCIPAL INVESTIGATOR**
Anne Nordberg, School of Social Work, (817) 408-6786, annenordberg@uta.edu

**TITLE OF PROJECT**
Optimizing housing and service locations to provide mobility to meet the mandated obligations for former offenders to improve community health and safety

**INTRODUCTION**
You are being asked to take part in a research study about transportation needs among returning citizens and community service providers and employers who work with them. If you are over the age of 18 years, speak English, and have worked for at least 6 months in anorganization that serves or employs people who are reentering society, you can take part in this research if you wish to do so. Your participation is voluntary. Not participating or stopping at any time will involve no penalty or loss of benefits that you would otherwise have. Please ask questions if there is anything you do not understand.

**PURPOSE**
The purpose of this study is to create a model to minimize the transportation time between residence and other locations that returning citizens must be such as work. To build this model we are seeking information from returning citizens, employers, and community service providers. You are being asked to participate because you work with returning citizens.

**DURATION**
You will be asked to participate in 1 interview that will last up to 30 minutes.

**NUMBER OF SUBJECTS**
The number of anticipated subjects in this study is 150.

**PROCEDURES**
The procedures that will involve you as a research subject are as follows:

1) Complete a demographic questionnaire that will include age, race, gender, type of professional position, level of education, etc.
2) 1face-to-face interview with 1 or 2 interviewers or 1 phone interview. In-person interviews will take place in a private place that is agreed upon. Phone interviews will occur at a mutually convenient time. The interview will be tape recorded. The recording will be transcribed which means it will be typed exactly as it was recorded, word-for-word. Recordings and transcriptions will all be stored in a secure, password protected UT Arlington online file storage system (UTABox). The tape will be kept with the transcription for potential future research involving transportation research among returning citizens or other groups of people.

**POSSIBLE BENEFITS**



**IRB Expiration Date: 12/01/2019**
**v. 2018-0691.2**

There may be a direct benefit to some participants who are responsible for assisting clients to coordinate their movements between residence and appointments and other obligations. This research may indirectly contribute to knowledge that may have positive impact in communities across the country and among other groups of people.

**POSSIBLE RISKS/DISCOMFORTS**
There are no expected risks or discomforts for participating in this research study. If you feel uncomfortable please inform the researcher. You have the right to stop taking part in the study at any time with no penalty.

**COMPENSATION**
You will be given a $20.00 Walmart e-gift card or gift card for your time. If you are receiving an e-gift card, at the end of the interview, you will be asked to give us an email address and the $20 Walmart e-gift card will be sent to you within 48 hours of the interview.

**ALTERNATIVE PROCEDURES**
There are no alternative procedures offered for this study. But, you can choose not to participate in the study or quit at any time with no penalty.

**VOLUNTARY PARTICIPATION**
Taking part in this research study is your choice. You have the right to not participate in the interview or stop at any time with no penalty.

**CONFIDENTIALITY**
We will do our best to see that your study results are kept confidential. A copy of this signed consent form will be kept in a locked file cabinet in the office of Dr. Nordberg located in the UT Arlington School of Social Work. All data collected [including transcriptions and recordings] from this study will be stored in UTABox, a secure, password protected, online file storage system, for at least three (3) years after the end of this research. Unlocking DOORS or any other agency will not be told whether or not you have taken part. No information that identifies you will be shared with Unlocking DOORS or any other agency / service provider / organization. The results of this study may be published and/or presented at meetings without naming you as a subject. Other research studies could evolve from the information you have provided, but your information will not be linked to you in anyway; it will be anonymous. Although your rights and privacy will be maintained, the Secretary of the Department of Health and Human Services, the UTA Institutional Review Board (IRB), and personnel particular to this research have access to the study records. Your records will be kept completely confidential according to current laws. They will not be revealed unless required by law, or as noted above. The IRB at UTA has reviewed and approved this study and the information within this consent form. If in the unlikely event it becomes necessary for the

Institutional Review Board to review your research records, the University of Texas at Arlington will protect the confidentiality of those records to the extent permitted by law.

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**CONSENT**

You are indicating your voluntary agreement to participate by beginning this phone interview. By beginning the interview you confirm that you are 18 years of age or older and have read or had this document read to you. You have been informed about this study's purpose, procedures, possible benefits and risks, and you may request an email copy of this form. You have been given the opportunity to ask questions before you make a decision regarding your participation, and you have been told that you can ask other questions at any time.

By your voluntary agreement to participate, you are not waiving any of your legal rights. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may discontinue participation at any time without penalty or loss of benefits to which you are otherwise entitled.

## UT Arlington
## Informed Consent Document – Written Version

**PRINCIPAL INVESTIGATOR**
Anne Nordberg, School of Social Work, (817) 408-6786, annenordberg@uta.edu

**TITLE OF PROJECT**
Optimizing housing and service locations to provide mobility to meet the mandated obligations for former offenders to improve community health and safety

**INTRODUCTION**
You are being asked to take part in a research study about transportation needs among returning citizens and community service providers and employers who work with them. If you are over the age of 18 years, speak English, and have worked for at least 6 months in a community organization that serves or employs people who are reentering society, you can take part in this research if you wish to do so. Your participation is voluntary. Not participating or stopping at any time will involve no penalty or loss of benefits that you would otherwise have. Please ask questions if there is anything you do not understand.

**PURPOSE**
The purpose of this study is to create a model to minimize the transportation time between residence and other locations that returning citizens must be such as work. To build this model we are seeking information from returning citizens, employers, and community service providers. You are being asked to participate because you work with returning citizens.

**DURATION**
You will be asked to participate in 1 interview that will last up to 30 minutes.

**NUMBER OF SUBJECTS**
The number of anticipated subjects in this study is 150.

**PROCEDURES**
The procedures that will involve you as a research subject are as follows:

1) Complete a demographic questionnaire that will include age, race, gender, type of professional position, level of education, etc.
2) 1face-to-face interview with 1 or 2 interviewers or 1 phone interview. In-person interviews will take place in a private place that is agreed upon. Phone interviews will occur at a mutually convenient time. The interview will be tape recorded. The recording will be transcribed which means it will be typed exactly as it was recorded, word-for-word. Recordings and transcriptions will all be stored in a secure, password protected UT Arlington online file storage system (UTABox).



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The tape will be kept with the transcription for potential future research involving transportation research among returning citizens or other groups of people.

**POSSIBLE BENEFITS**
There may be a direct benefit to some participants who are responsible for assisting clients to coordinate their movements between residence and appointments and other obligations. This research may indirectly contribute to knowledge that may have positive impact in communities across the country and among other groups of people.

**POSSIBLE RISKS/DISCOMFORTS**
There are no expected risks or discomforts for participating in this research study. If you feel uncomfortable please inform the researcher. You have the right to stop taking part in the study at any time with no penalty.

**COMPENSATION**
You will be given a $20.00 Walmart e-gift card or gift card for your time. If you are receiving an e-gift card, at the end of the interview, you will be asked to give us an email address and the $20 Walmart e-gift card will be sent to you within 48 hours of the interview.

**ALTERNATIVE PROCEDURES**
There are no alternative procedures offered for this study. But, you can choose not to participate in the study or quit at any time with no penalty.

**VOLUNTARY PARTICIPATION**
Taking part in this research study is your choice. You have the right to not participate in the interview or stop at any time with no penalty.

**CONFIDENTIALITY**
We will do our best to see that your study results are kept confidential. A copy of this signed consent form will be kept in a locked file cabinet in the office of Dr. Nordberg located in the UT Arlington School of Social Work. All data collected [including transcriptions and recordings] from this study will be stored in UTABox, a secure, password protected, online file storage system, for at least three (3) years after the end of this research. Unlocking DOORS or any other agency will not be told whether or not you have taken part. No information that identifies you will be shared with Unlocking DOORS or any other agency / service provider /orgnaization. The results of this study may be published and/or presented at meetings without naming you as a subject. Other research studies could evolve from the information you have provided, but your information will not be linked to you in anyway; it will be anonymous. Although your rights and privacy will be maintained, the Secretary of the Department of Health and



**IRB Expiration Date: 12/01/2019**
**v. 2018-0691.2**

Human Services, the UTA Institutional Review Board (IRB), and personnel particular to this research have access to the study records. Your records will be kept completely confidential according to current laws. They will not be revealed unless required by law, or as noted above. The IRB at UTA has reviewed and approved this study and the information within this consent form. If in the unlikely event it becomes necessary for the Institutional Review Board to review your research records, the University of Texas at Arlington will protect the confidentiality of those records to the extent permitted by law.

**CONTACT FOR QUESTIONS**
If you have questions please contact Dr. Anne Nordberg at (817) 408-6786 or annenordberg@uta.edu. Any questions you may have about your rights as a research subject or a research-related injury may be directed to the Office of Research Administration; Regulatory Services at 817-272-3723 or regulatoryservices@uta.edu.

**As a representative of this study, I have explained the purpose, the procedures, the benefits, and the risks that are involved in this research study:**

_____
**Signature and printed name of principal investigator or person obtaining consent** **Date**

**CONSENT**
By signing below, you confirm that you are 18 years of age or older and have read or had this document read to you. You have been told about this study's purpose, procedures, possible benefits and risks, and you have received a copy of this form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time.

You voluntarily agree to participate in this study. By signing this form, you are not waiving any of your legal rights. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may discontinue participation at any time without penalty or loss of benefits, to which you are otherwise entitled.

_____
**SIGNATURE OF VOLUNTEER** **DATE**



**IRB Expiration Date: 12/01/2019**
**v. 2018-0691.2**

# APPENDIX C

**Recruitment Flyer Script:**

Research Study is looking for participants.
The University of Texas at Arlington and Unlocking DOORS are working together to study transportation needs among returning citizens.
We are looking for adults who have worked for an agency that serves returning citizens for at least 6 months and who speak English.
We are conducting 30 minute interviews in person or by phone. We offer a $20 Walmart e-gift card as compensation for your time.
If you are interested in more information and to participate, please email Shaleen Guthrie at shaleen.guthrie@uta.edu.

**Agency Personnel Email Script** – e-introduction (to be sent from Christina Melton Crain, Director of Unlocking DOORS)

Dear_____:

Unlocking DOORS has partnered with researchers at UT Arlington for a project about minimizing travel times for reentry clients. It is entitled "Optimizing housing and service locations to provide mobility to meet the mandated obligations for former offenders to improve community health and safety". The research takes a bottom-up approach and will build a model for use by Unlocking DOORS based on the feedback from returning citizens and key stakeholders, like you.

We are seeking research participants to be interviewed by phone or in person by one of the UT Arlington researchers. We will ask about your professional perspective on the role of transportation among returning citizens served by [insert organization name here]. The interview will last approximately 30 minutes and can be scheduled at a time that is most convenient for you. You will receive a $20 Walmart e-gift card for your time.

Please note that Unlocking DOORS will not know if you participate or not nor will they be told the content of your interview. If you are interested in participating, please contact Shaleen Guthrie at shaleen.guthrie@uta.edu.

Thanks so much for considering participation.

**FO Email Script** – (to be sent from Christina Melton Crain, Director of Unlocking DOORS)

Dear_____:

Unlocking DOORS has teamed with researchers at UT Arlington for a research project about reducing travel times for returning citizens. It is called "Optimizing housing and service locations to provide mobility to meet the mandated obligations for former offenders to improve community health and safety". The research takes a bottom-up approach and will build a model for use by Unlocking DOORS based on the experiences of returning citizens and people who work at agencies with returning citizens as clients.

We are looking for returning citizens to be interviewed by phone or in person by one of the UT Arlington researchers. We will ask about your experiences with transportation during your return. The interview will last take up to 60 minutes and can be set at a time that is best for you. You will get a $20.00 Walmart e-gift card to for your time.

Please note that choosing to take part in the research study or choosing to decline will have no impact or influence over the services that you receive from Unlocking DOORS or any other agency.

If you are interested in taking part, please contact Shaleen Guthrie at shaleen.guthrie@uta.edu.

Thank you,

Christina Melton Crain

# APPENDIX D

## FO Participant Demographic Form

Consent signed by both participant and researcher? Yes □
Consent dated by both participant and researcher? Yes □

Participant number:__O_____
Date of interview:_____
Initials of Interviewer (s):_____

Age: 18-29 □ 30-39 □ 40-49 □ 50-59 □ 60-69 □ over 70 □
Race: _____
Gender:_____
Highest degree obtained:_____
How long since you first came to DOORS as a client?_____
Date of last release from jail/prison:_____
Do you have children? Yes □ No □
If yes, how many? _____Ages?_____
If they are minors, do you have custody of them? Yes □ No □
Are you currently employed? Yes □ No □

## Agency Personnel Participant Demographic Form

Consent signed by both participant and researcher? Yes □
Consent dated by both participant and researcher? Yes □

Participant number:__A_____
Date of interview:_____
Initials of Interviewer (s):_____

Age: 18-29 □ 30-39 □ 40-49 □ 50-59 □ 60-69 □ over 70 □
Race:_____
Gender:_____
Agency Name:_____
Professional Title:_____
Years working with reentry clients in DFW:_____
Highest degree obtained:_____
Do you work directly with reentry clients? Yes □ No □
If yes, what is your current caseload?_____
Please estimate what percentage of your clients are in the process of reentering?_____

## FO Interview Schedule

Please note that descriptive phenomenological designs include semi-structured interviews. This means there are a few broad categories of questions with probing questions.

If participant is currently employed (on demographic form):
“How long does it take you to get to work?”
“how do you get there normally?”

“Please tell me about transportation in your life”
“How has transportation impacted your reentry”
“What are some of the transportation barriers you are facing today? And since you have been released?
“How has transportation made it hard for you?”
“What would better transportation look like to you? What do you need?”

“What impact do you think better/easier transportation would make in your life”
“How does transportation impact your job/job search?”
“How does transportation impact your relationships?”
“How does transportation impact your success on the outside?”
“How does transportation impact your wellbeing?”
“Please walk me through a typical day for you and how to get around”

Probing questions:
“Can you offer an example of that?”
“Please tell me more.”
“Please explain what you mean by_____.”
“Such as?”
“In what way?”

All interviews should conclude by asking:
“What do you think is the most important thing we should know about transportation for you?”

**Agency Personnel Interview Schedule**

Please note that descriptive phenomenological designs include semi-structured interviews. This means there are a few broad categories of questions with probing questions.

1. “Please describe your professional interaction with reentry clients.”
2. “Please tell me about your reentry clients’ needs.”
3. “What role does transportation play in your clients’ lives?”
4. “In what ways is transportation a barrier to success for clients?”
5. “What do you think can be improved or changed to minimize those barriers?”
6. “What feedback about transportation issues do you hear from clients?”
7. “How do transportation issues impact your job and your organization’s goals?”

Probing questions:
“Can you offer an example of that?”
“Please tell me more.”

“Please explain what you mean by_____.”
“Such as?”
“In what way?”

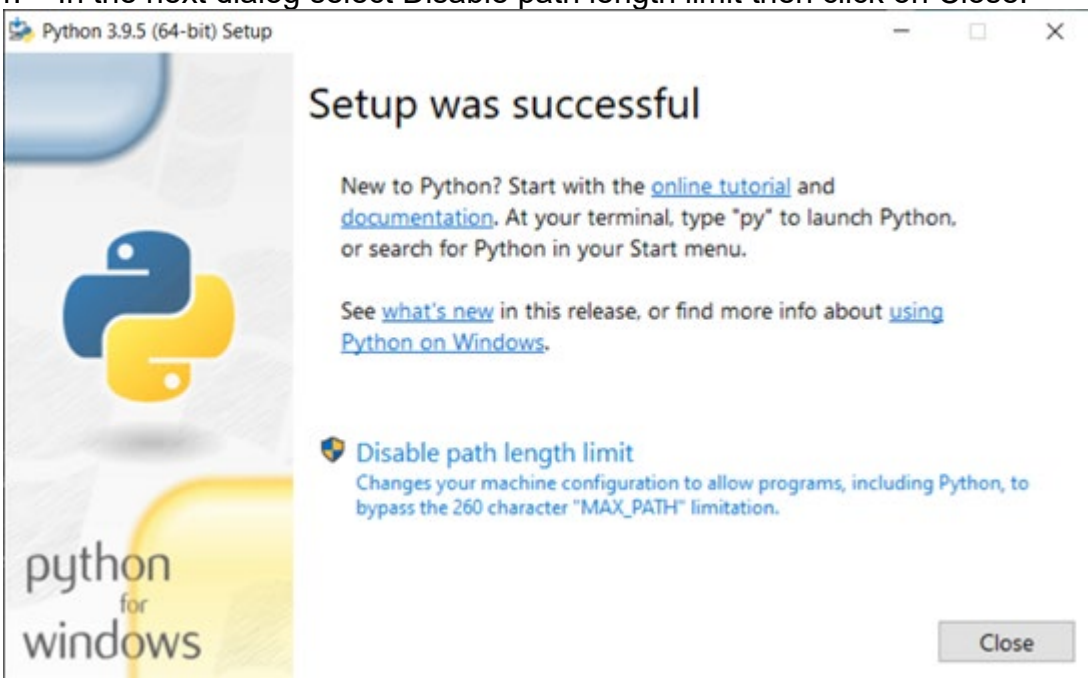
All interviews should conclude by asking:
“What do you think is the most important thing we should know about transportation for your clients?”

# APPENDIX E

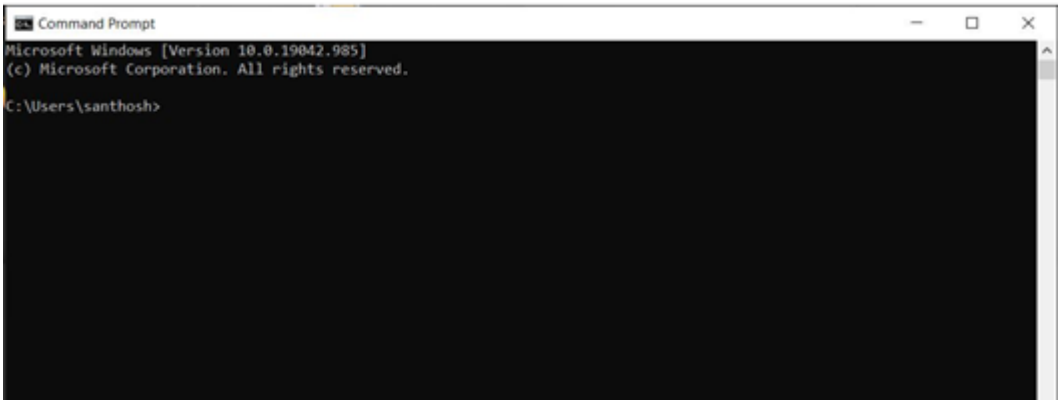
**How to install Python and associated modules on Windows Operating System**

1. Download latest version of Python for Windows from the following link https://www.python.org/downloads/ .
2. Run the Executable Installer file which was downloaded previously.
3. In the following screen select the Install launcher for all users and Add Python 3.9 to PATH checkboxes. Select Install Now.

4. In the next dialog select Disable path length limit then click on Close.




5. Now open the Start and type cmd. Select the Command Prompt application. You should see a similar window.




6. Type “easy_install pip” and hit enter button.
7. After installation is completed, type “pip install --upgrade pip” and hit enter.
8. After successful installation, type “pip install numpy” and hit enter.
9. When the installation is done, type “pip install pandas” and hit enter.

These commands will install the required modules to run the Housing or employment priority model.

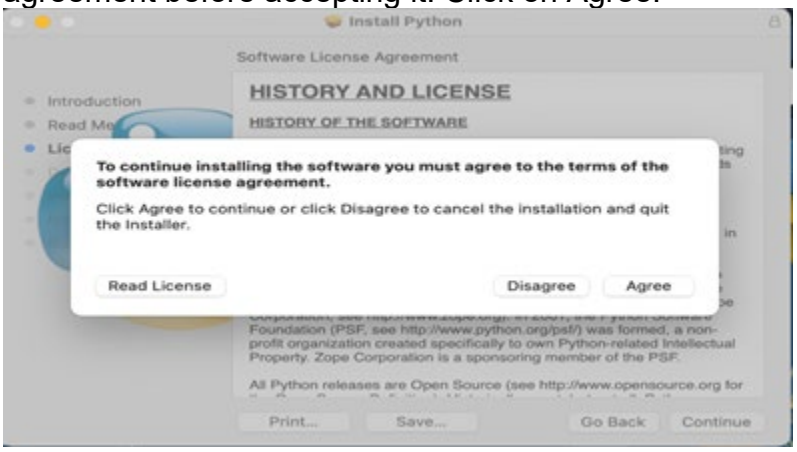
**How to install Python and associated modules in MAC Operation System:**

1. Open the following link https://www.python.org/downloads/ , and click on download to get latest version of Python.
2. Run the package installer file which was downloaded previously.
3. Click on continue when the installation window opens.

4. Read the following important information and click on continue.


5. Then a new panel will appear with history of Python and license details. Click on continue.


6. Then a window pops up with license agreement is presented. Read the license agreement before accepting it. Click on Agree.



7. Now select the destination where you want to install and click on continue.


8. Now click on Install and enter the password when prompted.

9. Another window will appear showing that Python is successfully installed.


10. Open Terminal: On your mac, click on the Launchpad icon in the Dock, type Terminal in the search field, then click Terminal. This will open the terminal window and allows us to install required modules.
11. Type the following command: “pip3 install numpy” in the terminal window and hit enter.

```
saikumargannoju@Saikumars-MacBook-Pro ~ % pip3 install numpy
Collecting numpy
  Downloading numpy-1.20.3-cp39-cp39-macosx_10_9_x86_64.whl (16.1 MB)
     |                                | 3.0 MB 6.2 MB/s eta 0:00:03
```

12. Once the installation is completed. Enter “pip3 install pandas” and hit enter. Wait for the installation to complete.

```
Installing collected packages: numpy
Successfully installed numpy-1.20.3
saikumargannoju@Saikumars-MacBook-Pro ~ % pip3 install pandas
```

**How to run the housing or employment priority model in Windows operating system:**

1. Open the folder which contains the housing or employment priority model file with .py extension.
2. Hold shift and right-click, then click on “Open power shell window here”.
3. Now type “python file-name.py” and hit enter. Here file-name indicates the name of the Python file.

**How to run the housing or employment priority model in mac operating system:**

1. Open the folder and right-click. Click on Get Info and copy the location of file under Where column.


2. Now open terminal window and enter “cd location”. Here location is copied in step 1.
3. Now enter “python3 file-name.py”. Here file-name indicates the name of the Python file.