ACCESS TO TRANSPORTATION AND OUTCOMES FOR WOMEN ON PROBATION
AND PAROLE

By

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ABSTRACT

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The current study focuses attention on a previously understudied topic – transportation

deprivation in women offenders. This is a timely and important endeavor given the scale of mass

incarceration, number of women on probation and parole, and the numerous barriers women with

a criminal record face. The study utilizes a mixed-methods sequential explanatory design of

transportation access and its causes and effects on recidivism for 402 women on probation and

parole.

The study has two phases. The quantitative, first phase, of this project combines multiple

indicators of transportation access (e.g., time, cost, stress related to travel) into one composite

access score; tests hypotheses linking resources to transportation access; and tests for direct and

moderating effects of transportation access on probation/parole violations and recidivism.

Quantitative analyses are able to identify associations between transportation resources,

transportation access, criminogenic needs, and recidivism; however, the analyses raised

questions about why or why not associations were present. To address these questions, a second

phase, a qualitative component, undertook analyses to increase understanding of (1) women's

experiences and feelings (e.g., any stress, ease) about getting around while under supervision, (2)

their strategies for increasing transportation resources and access, (3)the role of transportation

access in attending, or missing, required/needed programming and supervision appointments,

and (4) whether and how supervision violations or new offenses resulted from lack of

transportation access. The follow-up sample included 75 women.

The findings of the quantitative analysis found, first, the scope of transportation deprivation was found to be quite extensive; women reported low levels of individual and community level resources. Second, an instrument (a composite score) was found to adequately capture women's level of transportation access. Third, several resources were found to predict transportation access: owning or leasing a vehicle, having a valid driver's license, having difficulty walking, having poor vision, having friends who could help with transportation needs, and living in an area with a low community accessibility score. Fourth, transportation access was found to lower the odds of experiencing recidivism events and the time until these events occurred. Fifth, the findings indicate that transportation access is especially important for women with certain criminogenic needs – those with antisocial friends, histories of child maltreatment, greater family support and greater self-efficacy.

The findings of the qualitative analysis found that, first, women experience one to ten types of transportation problems such as difficulty arranging rides, using inadequate bus services and relying on unreliable people for transportation help. Second, women were found to utilize several resources not previously known such as using agency-provided bus tokens or benefitting from having an understanding and non-punitive supervision agent. Third, nine previously unrecognized strategies were identified such as planning in advance for appointments, building extensive support networks and making use of several modes of transportation. Fourth, the relationship between transportation access and recidivism was found to be moderately strong.

Overall, the findings indicate that training parole and probation agents to recognize and respond to women's transportation needs will be beneficial. Similarly, transit authorities can benefit from understanding the limitations of their services for women offenders.

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CHAPTER 1: INTRODUCTION

Statement of the Problem

As a result of the "war on drugs" and the resulting policing and sentencing policies, the decades prior to 2009 saw a substantial increase in the number of women in prison and under community supervision (for a comprehensive review, see Belknap, 2007). In recent years, the number of women entering the criminal justice system has declined slightly. However, the number of women on probation or parole nationally, and their recidivism rates, remain quite high. For example, in a sample of 15 states, approximately 60% of paroled women were rearrested and 30% returned to prison within three years (Deschenes, Owen, & Crow, 2007). These findings signal the need for additional research on women who are supervised in the community (i.e., on probation and parole); better understanding of the barriers they face can lead to programming that more effectively reduces their rates of recidivism.

Efforts aimed at reducing women's recidivism must target several known criminogenic needs: poverty and unemployment, unsafe housing, current depression and anxiety symptoms, psychosis symptoms, anger/hostility, adult victimization, parental stress, and relationship dysfunction (Belknap, 1996; Bloom, Owen, & Covington, 2003; Covington & Bloom, 2003; O'Brien, 2006; Owen & Bloom, 1995; Richie, 2001); and must also ensure that high-risk offenders receive appropriately intensive services (Andrews, Bonta, & Hoge, 1990; Andrews & Bonta, 2010). Schram, Koons-Witt, Williams, and McShane, (2006) have found that accurate needs/risks assessment for women on parole are important in placing women into appropriate programming and preventing women from recidivating. The authors found that unmet needs do negatively impact offenders' reintegration into the community. Obtaining these necessary services may be prevented by a risk factor that is not currently considered in needs/risk

assessments – lack of access to adequate transportation. Almost no research has focused on transportation deprivation (i.e., lack of access) in offender populations. Transportation deprivation may interact with other risk factors, for instance, by making it difficult for women to attend programming to address anger/hostility or to increase educational assets. Transportation deprivation also may influence illegal behavior <u>directly</u> (e.g., driving without a license) or <u>indirectly</u> through noncompliance with supervision requirements (e.g., failure to report to a scheduled supervision meeting).

Just a few prior studies have identified transportation as a challenge that women parolees face after release (Baer et al., 2006; Edin & Lein, 1997; Hattery & Smith, 2010; Richie, 2001; Scroggins & Malley, 2010). Scroggins & Malley (2010) examined 155 reentry programs meant to address women offenders' needs in ten large metropolitan areas. The authors performed a content analysis of the programs' websites to discover the number and types of services were being offered to women. They found that services were lacking in five key areas: childcare and parenting services; healthcare and substance abuse counseling; education, employment and job training; social support, and; housing and transportation. The authors explain that, although public transportation may be available to women in metro areas, it is not suitable for many. The authors point out that it may require in excess of four hours of travel per day (Richie, 2001, p. 380), it may not be safe depending on the neighborhoods women must travel through, and the unreliability of the service decreases women's ability to meet their needs on a regular basis. When women's needs are unmet, which may occur when they lack transportation, they are more likely to recidivate (Schram et al., 2006).

Apart from the correctional literature, research shows that for a greater proportion of women than men, transportation deprivation has important consequences for several precursors

of recidivism. These precursors include unemployment, stress, and lack of medical care (Atkinson & Rostad, 2003; Dupuis, Weiss, & Wolfson, 2007; McNiel & Binder, 2007; van Dam, De Bruyn, & Janssens, 2007). 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 (Pendall et al., 2014, p. 2); in large part because of the inefficiency of public modes of transportation. Access to a car is key to obtaining and maintaining employment (Blumenberg, 2004; Sandoval, Cervero, & Landis, 2011). For low-income single mothers, car ownership is an even stronger predictor of gaining and maintaining employment than education or work experience (Lichtenwalter, Koeske, & Sales, 2006), in part because access to a reliable car translates to fewer days of missed work (Lambert, 1998). Further, transportation problems can lead to increased levels of stress (Cox, Griffiths, & Rial-Gonzalez, 2000; Gottholmseder, Nowotny, Pruckner, & Theurl, 2009; Jacobson et al., 1996) which may contribute to mental health problems, reduced labor productivity, lower employee performance, and absenteeism. On the other hand, high transportation access can minimize social isolation, increase access to health and social programs, and improve access to medical services (Cvitkovich & Wister, 2001). Although overlooked in correctional research, transportation is likely to be an important influence in the lives of women on probation and parole.

Significance of the Study

The study addresses four gaps in existing research. First, it focuses on women offenders, a group that has not received adequate research attention. Second, it uses available survey data to discover actual levels of transportation deprivation, which is currently unknown. Third, it investigates the strategies women with transportation deprivation use to increase their level of

transportation access. Fourth, and finally, it assesses how transportation deprivation is related to

recidivism.

CHAPTER 2: REVIEW OF THE LITERATURE

Women Offenders' Pathways to Crime

Research indicates that women offenders are different than men in the pathways they take to crime (Akers & Sellers, 2009; Chesney-Lind & Pasko, 2004; Steffensmeier & Allan, 1996). For example, women differ in the types of crimes they commit, the reasons they commit crimes, and in their treatment by the criminal justice system after they have committed crimes. Researchers using the feminist pathways model unmask these gender differences by asking girls and women to discuss their lives and the milestone events that shaped the trajectory of their lives; it usually involves retrospective, quasi-longitudinal research strategies. This type of research is consistent with, and largely grew out of, life course and cycle of violence theories (Widom, 2000). Research utilizing this approach consistently suggests the need to understand the role of victimization, such as childhood and adulthood traumas, as precursors to women's offending (Belknap, 2007, p. 79; Chesney-Lind & Pasko, 2004; Richie, 2001; Salisbury, Van Voorhis, & Spiropoulis, 2009; Widom, 2000). Widom (2000) reports that abused and neglected girls are nearly twice as likely to be arrested as juveniles, twice as likely to be arrested as adults, and 2.4 times as likely to be arrested for a violent crime (Widom, 2000, pp. 29–33) than males. Other studies have found that girls with histories of abuse and family problems are more likely to drink and use drugs, run away from home, and drop out of school (Chesney-Lind & Pasko, 2004, pp. 107–111) than males. Collectively, research on women's unique pathways to crime has found the following needs lead to criminal behavior: low self-esteem and self-efficacy, parental stress, victimization and abuse, relationship dysfunction, mental health problems (especially depression), poverty and homelessness, and substance abuse (Van Voorhis, 2012). Women offenders' pathways to crime may indicate transportation is particularly important to their

recovery, for example, by bridging their needs for substance abuse treatment and receipt of those services. Further, whether women's use of transportation may present a unique pathway into crime via increased rates of transportation-related offenses, compared to male offenders.

Risk Assessment Tools for Women Offenders

The dominant tool for risk and needs assessment among female offenders, the Level of Service Inventory – Revised (LSI-R), was developed by Don Andrews and James Bonta based on research on male offenders (Andrews et al., 1990; Andrews & Bonta, 2010). Risk assessments are used to predict the likelihood an offender will recidivate (i.e., be arrested or convicted of additional crimes) and usually rely extensively on criminal history profiles. Needs instruments, on the other hand, assess individuals' educational level, employment skills, and physical and mental health and are used to refer offenders to correctional and supervision services. In developing their instrument, Andrews and Bonta found that, in order to reduce recidivism, treatment programs must be appropriately matched to offenders in terms of level of programming (intensive programming for high-risk offenders) and type of need (most serious criminogenic needs must be addressed).

Andrews and Bonta discovered that, for men, there were four main 'risk factors' that should be addressed in correctional programming: antisocial attitudes, peers, personality, and criminal history. Subsequent studies, however, have found that these are not the dominant risk factors for women (Van Voorhis, 2012; Wright, Salisbury, & Van Voorhis, 2007). Because the guiding principle of the Risk-Need-Responsivity model of corrections and the related use of the LSI-R, is that services should be matched to offender's needs, the LSI-R is not well suited for use with women.

Yet, currently, most states administer the LSI-R to women offenders even though they have not taken the proper steps (e.g., validation) to ensure it can be effectively used on a sample of women (Wright et al., 2007). Research examining this practice has found that the LSI-R overclassifies women (Wright et al., 2007); specifically, it suggests placement for women into higher levels of custody than their behavior warrants. This violates the risk principle outlined by the creators of the LSI-R. Recall this principle states that, in order to reduce future criminal behavior, offenders must receive appropriate levels of treatment (i.e., intensive treatment if administered to low-risk women could actually do harm). Further, this research has found that the LSI-R ignores needs specific to women such as relationships, mental health problems, parenting and childcare issues, abuse and victimization, self-esteem and self-efficacy (Presser & Van Voorhis, 2002).

Pat Van Voorhis and colleagues recognized that the standard method of evaluating women's risk levels and corresponding needs required improvement (Hardyman & Van Voorhis, 2004; Presser & Van Voorhis, 2002; Salisbury et al., 2009; Van Voorhis, Salisbury, Wright, & Baumann, 2008; Van Voorhis, 2012; Wright et al., 2007). In response, Wright, Van Voorhis, Bauman and Salisbury (2007) spent several years addressing the limitations of the LSI-R and creating a new, women-specific, gender-responsive, needs assessment: the Women's Risks and Needs Assessment (WRNA). They first validated the LSI-R among women offenders, then developed an add-on instrument to the LSI-R that included scales relevant to parenting, abuse, relationship issues, self-esteem and self-efficacy. Finally, as part of the NIC Gender-Responsive Assessment Project, they carried out a national study designed to develop risks/needs assessments specifically for women offenders. The result of these efforts is a gender appropriate instrument designed to target women's special needs. The authors have found that the predictors

of women's recidivism include these criminogenic needs: poverty and unemployment, unsafe housing, current depression and anxiety symptoms, psychosis symptoms, anger/hostility, adult victimization, parental stress, and relationship dysfunction. However, one need not yet examined in these assessment tools is transportation access.

Agency & Structure

Similar to the necessity for a risk/needs assessment tool tailored to women's specific needs, research techniques aimed at understanding women offenders must also be appropriately designed to consider women's agency. Quantitative methods that employ closed-ended responses can often mask women's agency. Agency is nicely summarized as, 'The capacity to act in a self-directed and purposeful way" (Morash, 2010, p. 4). Women offenders are often portrayed as passive victims who have had things happen <u>to</u> them: they were abused as children; they lacked economic resources to obtain job skills and, as a result, turned to drug use or criminal behavior. This characterization masks women's agency and conceals that women not only have things happen <u>to</u> them but also have capacity to make decisions that shape their lives. Although it is true that women's agency and choices are constrained by structures and forces beyond their control, such as patriarchal gender roles and capitalism, research shows that women still exercise a considerable amount of agency. For example, research on substance-abusing women on probation and parole found that, despite "biological, personal and social experiences associated with addiction and dependence" women still exercised agency by choosing to stay away from people who break the law or do drugs (Morash, 2010, pp. 31, 111). In the context of transportation, women exercise agency when they innovate strategies to increase their level of access, despite the structural constraints of poor public transportation services they experience.

Qualitative methods have the ability to reveal women's agency. For instance, Susan Batchelor (2005) conducted in-depth oral-history interviews with 21 young women convicted of violent offenses. The women spoke of constraints on their agency such as being mistreated by friends or family (Batchelor, 2005, p. 366). However, what emerges from the interviews are the examples of agentic women who are empowered, in charge of their lives, in control of their fate, and deserving of respect. One woman says, "You can't rely on other people. You've only got [yourself] (2005, p. 369)." Another young woman explains the importance of being seen as powerful and in charge, stating that "If you let people walk all over you, people will and people do…If you hit them back, then they usually stop (2005, p. 369)." Batchelor recommends that positive change in women's lives may be optimized when correctional practitioners maximize women's agency by increasing their involvement in programming so they feel that they are valued and respected partners in their own treatment.

Qualitative methodologies are appropriately suited to exploring women's strategies for coping with transportation deprivation and the agency they exercise. For example, the research may reveal that women use effective strategies for making transportation arrangements, despite not having access to automobiles or money to pay for public transit.

Purposes, Goals & Objectives

The broad purpose of this study – to explore transportation deprivation in a sample of women offenders – grew out of work being performed as a research assistant on a three-wave NSF-funded study of 402 women on probation and parole (referred to as the *NSF Women Offenders Study* hereafter). Arranging face-to-face interviews for women in this study provided early indications that transportation access was a problem for these women. The initial research plan involved scheduling interviews to coincide with women's parole/probation reporting days;

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the assumption being that these would be the best days for women because they would already have made transportation arrangements to get to parole or probation offices and presumably had openings in their schedules. However, it became apparent that even getting to agents' offices was challenging for women. Several women reported that their rides would not wait the two hours needed to complete the interview. One agent in a rural area required that her financially-stressed clients, who lacked transportation, receive vouchers for the on-call bus service to avoid additional hardship in getting to the interview. These experiences led to scheduling interviews near women's homes or offering transportation funds to decrease no-shows and increase the participation rate.

Other interactions with supervision agents (parole or probation officers) revealed that many may be unaware of the transportation problems facing women and, as a result, could be penalizing women for transportation deficits. For example, preliminary data analysis conducted on a partial data set before the dissertation research began, suggested that agents' lack of awareness may be problematic for women. One woman in the study was required to attend AA meetings but, at the time, did not have car insurance and her probation agent simply advised her to, "Go to find a way." Without help or understanding from the supervision agent, they women knew that she must attend AA and that the penalty for failure would likely be a supervision violation. Another woman in the study explained that, "it's discouraging when [agents] tell you, 'You have to get there regardless, or you're gonna to end up back in prison.'"

A corrections practitioner who develops programs and policies for corrections agencies explained that, in response to callous responses of agents, she recently "conducted a client sensitivity training that required staff to travel using public transit to make appointments…and complete the day's schedule of a client. Staff persons reported errors in scheduling of the

buses…missing transfers and enduring long wait times" (Personal Correspondence with Lusanne Green, International Community Corrections Association). This comment indicates that probation and parole agents may be unaware of the issues women face with regards to transportation and suggests a transportation access assessment tool may assist them to address women's needs. The lack of awareness and understanding about transportation deprivation may also result in the imposition of violations or other sanctions when women's transportation arrangements are unreliable. Adequate training for agents and assessment of women's transportation needs, however, may improve women's transportation situations. As a result of this new knowledge, the key transportation-related predictors for the dissertation were developed and collected as part of the wave three interview.

The specific design and goals of the research project were developed. The research project was a mixed-methods study of transportation deprivation and its effects on recidivism using existing quantitative data for a sample of 402 women on probation and parole. The goals for the quantitative analysis of available wave three data were to **(1)** describe the extent and distribution of transportation access of women offenders, **(2)** examine the reliability of selected measures of transportation access and the feasibility of creating a composite access score, **(3)** show how well resources (e.g., family support, individual mobility) predict transportation access, **(4)** show whether transportation access moderates the association of criminogenic needs with recidivism, and **(5)** show the degree to which transportation access adds to the prediction of recidivism outcomes. The outcomes of interest were supervision violations, new arrests and convictions (i.e., rearrest and reconviction data), and transportation-related illegal activity (e.g., driving without a valid license).

The quantitative data allowed for identification of statistical associations involving

transportation resources and access, but were limited in their ability to explain the presence, or absence, of associations. For example, the available quantitative data did not explain why a woman without her own car and no alternative transportation (i.e., she had low resources) reports no difficulty getting to necessary appointments (i.e., she reported that she had high access).

Therefore, the research project also integrated qualitative follow-up interview data from a subsample of the women (n=75). The goal for the qualitative component of the research was to capture women's insights, experiences, and strategies regarding transportation resources and access and to show whether transportation deprivation contributed to failure to attend needed or required programs (e.g., substance abuse treatment). Specifically, the qualitative analysis increased understanding of (1) the types and intensity of transportation problems women experienced while under supervision, (2) their use of additional resources, not captured by quantitative measures, that increased their transportation access, (3) strategies women used to increase transportation access and whether these strategies brought women into conflict with the law (e.g., driving without a license or riding with a friend who has a felony conviction) and (4) the contribution of transportation problems to any violations or new offenses.

Findings of this research are expected to inform the development of a useful measure of transportation access that combines knowledge gained from both quantitative and qualitative methodologies.

CHAPTER 3: RESEARCH METHODOLOGY

Research Design

The project used a mixed-methods sequential explanatory design (Creswell, 2008; Ivankova, Creswell, & Stick, 2006). Consistent with this design, in **Phase I**, the quantitative data from the *NSF Women Offenders Study*, an available dataset, was analyzed first. This analysis addressed several research questions, raised several others, and provided the basis for selecting potential participants for the **Phase II** qualitative data collection. The responses provided by women interviewed in **Phase II** were analyzed to allow for interpretation of, explanation of, and additions to the quantitative results.

Phase I: Available Data and Sample Design for Quantitative Analysis

The sample for the quantitative data analysis included 402 drug-involved women on probation or parole who were convicted of a felony offense. The rationale was to study drug-involved women because they account for the most common subgroup of women offenders (Harer & Langan, 2001; Morash, 2010; Peters, Strozier, Murrin, & Kearns, 1997), and, as such represent the typical female offender. The sample was recruited beginning in fall 2011 by first selecting 16 counties located within a ninety-minute drive from the research office. These counties encompass 68.5 percent of the 2011 state population, all major population centers (e.g., Detroit, Grand Rapids), and a mix of rural and suburban areas.

In these 16 counties, 73 parole and probation agents were recruited. Michigan is innovative in that it is already taking strides to address the unique needs of women offenders by offering women-only supervision caseloads for agents. Of the 73 recruited, 71 were female and two were male. Parole agents were oversampled in relation to probation agents, to increase parolees to 25 percent of the total sample. Then, approximately eight clients were recruited from

each agent's caseload. The plan was to interview women after two, five and eight months of supervision had passed. At the fifth month, 97% (390) were reinterviewed, and at the eighth month, 94.3% (379) were reinterviewed; these are remarkably high response rates for a social science sample. Although 379 women participated in the wave three interview, 12 of them were institutionalized (i.e., in jail, prison or inpatient substance abuse treatment) and one woman was too physically ill to leave her home. As a result, the sample for this study is restricted to the 366 women from wave three who could appropriately answer questions about transportation access. Table 1 shows the means for both the full sample (n =402) and the reduced sample (n=366). Independent sample t-tests examining differences between the means revealed there were no significant differences between the two samples.

Table 1. Risk Factors & Criminal History for Women on Probation & Parole

	n = 402	**n=366**
Criminal History		
Prior Felony Sentences	37.3%	36.6%
Prior Misdemeanor Sentences	60.2%	59.8%
Risk Assessment Tool Items		
Has Educational Needs	17.9%	17.8%
Lives in Unsafe Housing	9.2%	9.8%
Has Low Levels of Family Support	55.5%	55.5%
Has Low Parental Involvement	22.1% (n=208)	23.3% (n=189)
Experiences Parental Stress	32.7% (n=208)	33.3% (n=189)
Low Self Efficacy	29.9%	29.0%
Has Problems with Anger/Hostility	17.9%	18.6%
Has Experienced Depression/Anxiety, Ever	74.4%	73.5%
Has Experienced Psychosis, Ever	33.6%	33.1%
Overall WRNA Score	mean = 19.9	mean = 19.8
Low Risk (0-12 pts)	21.9%	23.0%
Medium Risk (13-24 pts)	48.8%	47.8%
High Risk (25 + pts)	29.4%	29.2%

Women in the *NSF Women Offenders Study* have extensive criminal histories and exhibit a constellation of needs (See Table 1). Indicating risk for recidivism, for the reduced sample at wave one, more than a third of the sample (36.6%) reported they were sentenced for a felony

conviction besides the one for which they were currently on probation or parole and 59.8% of the sample had been sentenced for misdemeanor crimes. The gender-specific needs assessment tool, Women's Risk/Needs Assessment: Probation/Parole Interview (Van Voorhis et al., 2008), administered in wave one indicates that sizeable proportions of women should receive assistance in the areas of education (17.8%), housing safety (9.8%), family support (55.5%), parenting skills (23.3%), self efficacy (29.0%), anger/hostility (18.6%), depression and anxiety (73.5%), and clinical psychosis (33.1%). Prior research shows that these needs predict recidivism (Hardyman & Van Voorhis, 2004; Salisbury et al., 2009; Van Voorhis et al., 2008). The risk instrument also indicates women's overall level of need. A substantial portion of women are high risk (23.0%) and the mean score (19.8) indicates that a considerable number of women are very close to the cut-off value for being high risk (25).

Addressing and treating criminogenic needs often requires that women travel to receive treatment or services. Yet, the majority of the women earn less than $10,000 per year (80.9%). An income of $10,000 per year breaks down to $192 per week. Experts predict expenditures in excess of 15-20% of one's income present financial hardship (Litman, 2011). This translates to $28.80 - $38 per week which may cover gas or bus fare but is unlikely to pay for car insurance, vehicle registration, a driver's license, and car repairs. Thus, there was a reasonable expectation that women offenders lacked resources needed to get to and from treatment or services.

Quantitative measures. Figure 1 depicts the **Phase I** quantitative data used for the dissertation research. Those data contained quantitative measures of (1) individual, family/friends, and community levels of resources for getting from place to place, (2) transportation access, (3) supervision agents' reports and official records of compliance with supervision requirements and of rearrests and reconvictions, and (4) criminogenic needs known

to predict women's recidivism. Measures of transportation resources and access were added to the third wave of the study specifically for the dissertation and the criminogenic needs and recidivism measures were already available in the *NSF Women Offenders Study*. The hypothesized relationships between these measures, and examples of each measure, are illustrated in Figure 1. It is hypothesized that transportation resources influence women's access to transportation. Transportation access is believed to impact recidivism events. And, the relationship between criminogenic needs and recidivism is hypothesized to be moderated by access to transportation such that the impact of criminogenic needs on recidivism may be attenuated, or amplified, by variation in access to transportation.

Figure 1. Conceptual Framework for Relationship between Transportation Resources, Access and Recidivism Outcomes, and Sample Measures

CRIMINOGENIC NEEDS

*Educational Needs
*Unsafe Housing
*Self Efficacy
*Depression

(Interaction)

RECIDIVISM (12 mo.)

*Rearrest
*Reconviction
*Supervision violation

TRANSPORTATION RESOURCES

Individual-Level Factors
*Access to Automobile
*Physical Health

Family/Friends Factors
*Transportation-Related Support

Community-Level Factors
*Neighborhood Accessibility

TRANSPORTATION ACCESS

*Ease & Stress of Travel
*Cost & Time of Travel
*Safety of Travel
*Self-rating of dependable transportation

Resources hypothesized to predict transportation access. The resources hypothesized to

impact transportation access can be grouped into three levels: <u>individual</u>, <u>family or friends</u>, and

<u>community</u>. Figure 1 depicts the relationship between the variables; the complete list of variables

and questionnaire items can be found in Appendix A. At the <u>individual level</u>, *access to an*

automobile is determined from responses to questions about owning/leasing or borrowing a car,

registration/insurance, and having a valid driver's license. Following measures used by Dupuis et

al. (2007), *physical health* questions focus on ability to walk, see, and on overall health. At the

<u>family and friends</u> level, the number of people providing *transportation-related support* was

available from **(1)** add-on item to the Social Network Inventory (Estroff & Zimmer, 1994) that

elicited information about who would provide help to a woman (e.g., give a ride or bus money),

and **(2)** women's ratings of agreement that they could count on family and friends to (a) help

them get to places, (b) help their children get to places, or (c) give them money to get to places.

At <u>the community level</u>, four measures were available for *accessibility and safety of*

neighborhoods. Women's residential addresses were collected at each interview. The address

women provided at the third interview was linked to two sources of publicly available data on

"accessibility" that rate neighborhoods by availability of goods and services as well as

neighborhood safety, cost of living, education, employment, housing and weather. First, Walk

Scores range from 0 to 100 and measure the walkability of a given address utilizing a variety of

data sources (e.g., Google, Open Street Map); the higher the score, the better the location.

Second, Livability scores provide a measure of overall accessibility of a community in terms of

amenities, cost of living, crime rates, education, employment, housing, and weather. Scores

range from 0 to 100; the higher the score, the better the location. Sub scores were also available

for each Livability dimension and two were utilized; the (1) proximity of amenities and (2) crime

dimensions. For proximity of amenities, the distance from the address to places such as grocery stores, pharmacies, and schools were used to generate this score. The crime dimension was derived from Uniform Crime Report data on two main categories of crime: violent crime (murder, rape, robbery, and assault) and property crime (burglary, theft, and vehicle theft). The Livability website calculates the total crime index based on all crimes; higher weights are given to violent crimes, and the score is based on comparisons to both state and national averages.

Transportation deprivation. The literature on transportation deprivation, which focuses primarily on city planning efforts and the needs of elderly people, was the basis for identifying measures appropriate for assessing women offenders' access to transportation. Litman (2011) wrote that transportation deprivation is indicated by expenditures greater than 20 percent of annual income and by greater than 90 minutes of travel time per day. Following Litman's (2011) measurement approach, available data included women's reports of travel time and costs in a typical week. Other researchers have noted the importance of considering safety, ease (Solomon & Titheridge, 2006) and stress related to travel (Gottholmseder et al., 2009). Thus for each trip in a typical week, women rated safety, ease, and stress of traveling (see Appendix A for list of variables). Finally, women provided an overall rating of their agreement that they had access to dependable transportation (specifically, they had money for bus fare, gas for a car, a dependable car when they need it). These measures were combined into a composite score indicating overall level of access in the quantitative analysis.

Criminogenic needs. Measures developed and validated by Van Voorhis and colleagues (Hardyman & Van Voorhis, 2004; Salisbury et al., 2009; Van Voorhis et al., 2008) for use with women offenders assess the following needs which have been found to predict recidivism events: poverty and unemployment, education, unsafe housing, family support, parental involvement,

parental stress, adult victimization, relationship dysfunction, self efficacy, anger/hostility, and depression/anxiety and psychosis symptoms. Reliabilities for scales (e.g., self-efficacy, child abuse) are ≥0.75.

$\qquad$ ***Recidivism.*** Recidivism is operationalized as an arrest or conviction for a new offense (i.e., a rearrest or reconviction) or a formal violation of probation or parole (i.e., a supervision violation). Data on rearrests and reconvictions were obtained electronically from the Michigan State Police (MSP) criminal history database. The main limitation with using these data was that they measured only arrests and convictions that occurred in Michigan. Because neither source included arrests or convictions occurring in other states, the findings likely underestimate the true recidivism rates (i.e., rearrests and reconvictions). This limitation is considered relatively minor because most women, while on probation and parole, must reside in Michigan and must ask permission before traveling outside the state greatly reducing the likelihood of being arrested or convicted in other states. Another limitation of these data were that incarceration information was not available. To accurately measure the amount of time that offenders are actually at risk to recidivate, for survival analyses, researchers should account for, and adjust "at-risk periods" for time spent in jail/prison and or the time after death by deducting the amount of time spent in jail/prison or deceased from a person's total at-risk period. Failure to deduct time spent away from the community artificially increases the length of the at-risk period for these offenders.

$\qquad$ For rearrest and reconviction only, the recidivism period was calculated as number of months between the wave three interview, when transportation access, the main predictor of recidivism, was assessed, and the date the recidivism data were obtained from MSP, December 3, 2013. Since the wave three interviews were conducted from May 2012 to May 2013, the follow-up period was 7 to 18 months with a mean of 7.16 months and standard deviation of 2.49

months. In this time period, 66 (18%) women experienced rearrests and 60 (16.4%) experienced new convictions. Most studies of recidivism attempt to utilize a three-year follow-up period. However, because transportation resources and access are fluid, that is, they could greatly change over a three-year time period, the shorter window of recidivism is appropriate for use in this study, to examine whether a woman's wave three transportation description is linked to subsequent recidivism events.

Finally, for the third type of recidivism event, supervision violations, data were obtained from reading supervision agents' case notes which were obtained from the Michigan Department of Corrections. These notes were coded to reflect supervision violations for up to 6 months following the wave three interview. Data were further coded to reflect "any" supervision violation and "transportation-related" supervision violations. Case notes were requested for the full sample of 379 women. However, 79 of the 379 women (or 21.6% of the full sample) were not on supervision at any time during this six-month period and, as a result, did not have case note data for any part of the observation period. These 79 women were excluded from the supervision violation analyses (but remained in the rearrest and reconviction analyses) because they were not on supervision at any time during this six-month period. This was most often the case because they had been discharged from probation or parole before the third interview. This means they were never "at risk" for this type of recidivism event and should not be included in supervision violation analyses. This reduced the original sample of 366 to 287 women for the supervision violation analysis.

Further, there were an additional 104 women who were absent during part of the observation period, meaning they had less than 6 months of data for various reasons (i.e., they were discharged, went to jail/prison, died, or data were not available). As a result, their "at risk"

period was adjusted appropriately. For these women, their "time at risk" was calculated as the time from their wave three interview until the end of the risk period occurs when they are discharged (n=60), abscond (n=6), die (n=2), go to jail or prison (n=1), or to the point at which notes are not available (n=36). The remaining women (n=183) had the complete six months of case notes available. Using this method, the average follow-up period, or "at risk period" for women in the supervision analyses (n = 287) is 125.92 days or approximately 4 months. During that time period, 72 (19.7%) women experienced at least one supervision violation and 10 of those were for transportation-related supervision violations (e.g., driving without a license or failure to report due to car troubles). Alternatively, 216 (59%) women did not experience a supervision violation. The range of supervision violations was one to five; just one women experienced five supervision violations.

It is worth noting that for women who are right-censored from the supervision violation analyses due to incomplete case notes, their notes can be considered missing at random. There is no logical reason that women who were recruited into the sample later (and therefore did not have case notes available because not enough time had passed) would be any different than women who were recruited earlier. All women were interviewed within 12 months of each other so it is unlikely that anything happened during that short window of time; for example, no new legislation was passed in that year that would impact the hazard of recidivism. There is no requirement in survival analysis that everyone be followed for the same period of time, so the varying follow-up periods, or at-risk periods, do not violate any assumptions of survival analysis (DeMaris, 2004).

Quantitative data analysis strategy. For quantitative analysis, first, the extent and distribution of women offenders' transportation deprivation was established using descriptive

statistics and bivariate correlations. Second, data analysis was used to explore the reliability of extant measures of transportation access and the feasibility of creating a composite transportation access score. Conceptualizations of transportation deprivation in the literature (Gottholmseder et al., 2009; Litman, 2011; Solomon & Titheridge, 2006) suggested that multiple indicators could be used to create a composite score. Confirmatory factor analysis was used to verify whether the multiple indicators collectively represent the underlying concept of transportation deprivation suggested by the literature. Based on the findings, a composite score was created to indicate level of transportation access.

A multivariate linear regression was used to address the third research question, how well do resources (e.g., proximity to community goods and services, family support, individual mobility) predict access? The composite transportation access score was the dependent variable and was regressed on the independent variables representing resources hypothesized to influence access. Fourth, criminogenic needs were hypothesized to have an indirect impact on recidivism, dependent on whether women had transportation to get to the services needed to address their needs. Logistic regression was used to determine whether the relationship between criminogenic needs and recidivism (rearrest, reconviction, supervision violation) was moderated by women's level of transportation access.

In the logistic regression models, an interaction term, or a cross-product term of the continuous variables transportation access scale with the total need scale, was utilized, along with the main effect variables for each scales. This was to test the significance of the focus variable, criminogenic needs, at particular levels of the moderator variable, transportation access. The interaction term is not grand mean centered, as is common practice, because an interpretation of each scale, at its zero level, is preferred given the skewed nature of the sample

toward high levels of transportation. That is, the sample is skewed such that it is comprised of women with high levels of both need and transportation access, so using a mean-comparison interpretation, when the mean is skewed, in place of a zero-level interpretation was not desirable.

Fifth, the degree to which transportation access adds to the prediction of recidivism outcomes (rearrest, reconviction, and supervision violations) was examined. Logistic regression was used to predict whether the transportation access score can predict the occurrence of recidivism events. Because many women offenders eventually recidivate, it becomes important to incorporate the amount of time until a woman recidivates into the analysis. To this end, survival analysis models (Cox proportional hazards model) were employed to predict the time until recidivism events occurred.

Missing data. For any given variable, less than 3% of the sample had missing data, most often due to the respondent having skipping a question during the interview. Missing data were set to the mean value for the variable and are not expected to significantly alter outcomes.

Phase II: Data Collection and Sample Design for Qualitative Analysis

A purposive subsample of 75 women were recruited from the *NSF Women Offender Study* participants who completed the wave three interview (n=379). Three subgroups, of 25 women each, were assembled based on women's responses to **Phase I** quantitative indicators of transportation resources, access and recidivism using the six months of recidivism data available at that time. A preliminary analysis of the quantitative data suggested that the correlation between resources and access was not as robust as expected and six-month recidivism figures did not appear to be highly correlated with either resources or access. Research questions were developed, and groups of women who could speak to the unexpected findings, were sampled.

To place women into the three groups, based on available quantitative data, women were

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first rated as low or medium/high in each of three areas: resources, access, and recidivism,. Women characterized by certain combinations of resources, access and recidivism were believed to be better able to address the emergent research questions are listed below as well as the subgroup name and the main research question for that subgroup. All but 14% of the wave three sample fit into these three groups.

Transportation Troubled

Characteristics: Low Resources, Low Access, Med-High Recidivism (n=70)

Main RQ: Did transportation problems lead to recidivism? How?

Transportation Untroubled

Characteristics: Low Resources, Low Access, Low Recidivism (n = 140)

Main RQ: Why didn't transportation problems lead to recidivism?

Transportation Strategizers

Characteristics: Low Resources, Med-High Access, Low Recidivism (n=140)

Main RQ: How did women gain access in the absence of resources? Did strategies used contribute to a positive outcomes? How?

The first group of women, Transportation Troubled, were chosen because they represented the expected finding, that women who had low resources would also have low access which would lead to recidivism problems. The main research question for these women was whether, and how, limited transportation resources and/or access led to recidivism events. Interestingly, this group had the smallest number of women, only 70 of the 379 women who completed the wave three interview, whereas the second and third groups each had 140 women, which underscores that preliminary data analysis which informed the dissertation research design did not support the main hypothesis.

The second and third groups of women, and the questions they were asked, were chosen because these women did not demonstrate a link between transportation problems and recidivism, the expectation of the main hypothesis. The second group of women, Transportation UnTroubled, were those for whom transportation did not appear to be related to recidivism at all; that is, despite low levels of both access and resources, recidivism rates remained low. This group behaved in a way that was opposite the main hypothesis. The main question here was, why didn't transportation problems lead to recidivism events? The third group of women, Transportation Strategizers, were chosen because, for them, transportation resources did not appear to be linked to transportation access. They had achieved medium to high levels of access despite low levels of resources. For these women, the questions were related to how they were able to gain greater access and whether the strategies they used resulted in positive outcomes.

The decision to recruit only 25 women from each group was based on an effort to balance the practical issue of keeping the sample to a size feasible for in-depth, in-person interviewing but large enough to provide useful information. To recruit only 25 women from each of these three groups, women's primary contact numbers were called, but not the numbers for their collaterals (i.e., friends or family members for whom they provided contact information in previous waves). For the second and third groups, those with low recidivism, this strategy was sufficient to garner 25 women in each group. In these groups, about 70% of eligible women were called and the first to return the calls were scheduled for interviews. However, for the first group of women, this strategy was enhanced by also sending letters to women's home addresses. Again, no collaterals were contacted but enough women responded that 25 women were scheduled for interviews. None of the women, in any of the three groups, who were contacted declined an interview. The main challenge in scheduling was overcoming outdated contact

information.

This recruitment protocol yielded 75 women from 14 of the 16 counties originally sampled and therefore provided a statewide sample. Each woman identified for recruitment, when called, was given an explanation of the Phase II study, the consent process was again explained, and if there was consent, a face-to-face interview was scheduled at either women's homes, if the interviewer knew the woman well, or at a public location close to the women's home (e.g., a coffee shop, restaurant or public library), contingent on the woman's preference.

A monetary incentive, of similar size as the ones utilized and found to be very important in recruiting women for the *NSF Women Offenders Study* ($50), was offered as well as small amounts of cash to offset bus fare or to give gas money to people who provided rides. At the time of the interviews, most women were on probation or parole for 12 to 24 months. Interviews were audio-recorded and transcribed.

Qualitative measures. A semi-structured interview format (see Appendix B), which allowed for considerable probing, was used to provide women wide latitude in describing their perceptions of transportation access. To place transportation in context with women's other needs, women were asked over the past five years: whether they could recall three significant events that had occurred; during which months they were institutionalized (times during which transportation was not relevant); during which months they received help from family, friends or social services for transportation, and also for things other than transportation such as food, money, or housing. The use of the life history calendar (Roberts & Horney, 2010) helped women recall events with more accurate timing and allowed the researcher to see whether transportation problems coincided with recidivism or other problems (e.g., lack of food).

To develop and refine the interview template, five pilot interviews were conducted with

women who were not placed into one the three subgroups of interest. This process ensured that the question wording was clear and that the ordering of questions was appropriate. The initial and final instruments were approved by the MSU IRB.

Women from all three groups were asked the same series of open-ended questions to engage them in sharing their insights, examples, and reports on the nature of transportation challenges, any strategies or resources used for overcoming them, and the result, especially as it related to recidivism. However, certain areas of the interview required probing depending on women's group membership, for example, if there was a recidivism event, women were asked to explain it and probes were used to see if transportation was also related. To alert the interviewer to when probes should be used, interview questions incorporated data provided by women in earlier waves. For example, if in the wave three quantitative data collection a woman reported she had little family support, lived in a rural area where buses did not travel, but did <u>not</u> indicate problems getting to needed services, the interviewer would explicitly mention the gap between these resources and her apparent level of access and ask her to describe her strategies and resources for getting where she needs to go. To increase validity, self-reported recidivism data was triangulated with official data (e.g., rearrest and reconviction data obtained from the Michigan State Police and case notes from supervision agents).

Qualitative data analysis strategy. Interviews were transcribed and formatted into specialized templates that could be read into the qualitative data analysis software, NVivo. The software was primarily used to organize, code, establish inter-coder reliability for, and analyze all Phase II data. Once the data were in NVivo, the data were segmented into sections that corresponded with the four research questions. These research questions include: (1) the types and intensity of transportation <u>problems</u> that women described since supervision began; (2)

resources for transportation, including those not tapped by quantitative measures; (3) strategies used by women to increase transportation access and ways that strategies brought women into conflict with the law (e.g., trading drugs for a ride, riding with a friend who has a felony conviction), and (4) the different ways that transportation problems contributed to recidivism.

To segment the data, all the responses in the interview related to a given research question, for example, questions related to types of transportation problems women experienced, were grouped together such that each woman's responses to the series of questions were listed together in a "node." Next, all 75 women's responses to these groups of questions were read to determine which types of transportation problems women were experiencing. A list of these problems, or themes, was compiled and an initial codebook was created that directed the coder what types of problems should be coded under that theme. For example, reports that women's family and friends were always late to pick them up should be coded under the problem, or theme of, "Unreliable Help."

With the help of an additional coder, an iterative process of establishing intercoder reliability began (Hruschka et al., 2004; Weston et al., 2001) to ensure that codes were developed and applied in a reasonable manner. A random sample of transportation problems was selected for both the student and additional coder to independently code. The pair compared the codes they had applied, discussed the adequacy of the initial codebook, and refined it where needed. Once agreement was reached, the pair independently coded a larger number of, for example, transportation problems (approximately 30) and used SPSS software to calculate a Cohen's Kappa statistic (Hruschka et al., 2004). Once an acceptable kappa level was obtained, the author continued coding the remainder of the data. Intercoder reliability was established, in this manner for several sections of the dissertation.

After data are coded, NVivo is able to provide a count of the number of women (i.e., cases) and the number of passages that reflect, for example, each type of transportation resource women report using. From these data, the student can describe and provide examples of the distribution of the transportation resources, or themes. For example, one part of the analysis could determine whether women provided examples of transportation resources that were not reflected by their quantitative scores. If this is the case, the findings would inform future development of better concept measurements of resources. Qualitative data has an advantage over a chi-square table in SPSS, for example, because it is able to contextualize information by clicking on each box in a query and immediately linking to the full text detailing the new resource discussed.

CHAPTER 4: RESULTS FOR QUANTITATVE ANALYSIS

Descriptive Statistics

Transportation resources. Table 2 presents the descriptive statistics for the transportation resource variables and bivariate correlations between those variables and the transportation access measure (the composite transportation access score). This table addresses the first research question regarding the extent of transportation deprivation among women offenders. Table 2 shows that significant numbers of women have limited individual level resources for gaining transportation access.

Table 2. Descriptive Statistics for Transportation Resources Indicators, Wave 3 (n = 366)

	Mean/Percent	Min/Max	Coding
Individual Level			
Do not own/lease vehicle	68.0%*		
Do not have access to registered and insured vehicle	37.0%**		
Do not have a valid driver's license	58.0%		
Poor or very poor physical well being	13.1%**		
Difficulty walking one block in summer	23.0%		
Poor vision, even with contacts/glasses	29.0%		
Family and Friends Level - Transportation-Related Support			
Number of friends/family who can help	3.05*	0 to 13	
Have help from friends/family for self	3.14**	1 to 4	1(SD) to 4(SA)
Have help from friends/family for children (n=228)	3.37*	1 to 4	1(SD) to 4(SA)
Money from friends/family	2.85**	1 to 4	1(SD) to 4(SA)
Community Level Accessibility Scores			
WalkScore - Overall	41.5	0 to 91	High Score =
Livability Score - Overall	69.5	53 to 84	More Accessible
Livability Score - Proximity of Amenities	6.1	1 to 9	
Livability Score - Safety	3.3	1 to 9	

Note: Asterisks indicate significant correlation with Composite Access Score
***p<.001, **p<.01, *p<.05

Sixty-eight percent of women do not own or lease their own vehicle, 37% do not have access to someone else's vehicle and 58% of the sample does not have a valid driver's license. In short, access to a personal vehicle is quite limited for these women. Further, significant numbers of

women report physical health limitations, such as difficulties walking or seeing, or being in poor health (23%, 29%, and 13%, respectively), that could present problems with utilizing alternate forms of transportation such as walking or biking. At the bivariate level, three resources are significantly related to access: owning/leasing a vehicle (+), having access to a vehicle (+), and poor physical health (-).

At the friends and family level, women on average report they can rely on 3.05 friends or family members to help them with transportation-related needs. The other three indicators are Likert scale items ranging from strongly disagree (0) to strongly agree (4) indicating that, in general, women can rely on their family and friends for transportation-related support for themselves or their children. Women, on average strongly agree that friends or family will help them (3.14) or their children (3.37) with transportation needs. Although, women showed less agreement (2.85) that family and friends would provide them money for transportation, women across all three measures agree that they can rely on others for help (scores of greater than 2 indicate agreement). Further, all four measures of family and friend level resources are statistically significant at the bivariate level, meaning they all impact transportation access at the zero-order level.

At the community level, women are living in areas in which grocery stores may not be close, they may not have sidewalks, or buses may not come frequently or at all. The average WalkScore for women in the sample was 41.5 points which is very low. The actual values ranged from 0 to 91 in the sample but there are 100 points possible on this scale. Similarly, Livability scores indicated that overall accessibility was 69.5 out of a possible 100 points with actual scores ranging from 53 to 84. The overall Livability score (69.5) and Livability score for proximity of amenities (6.1) indicate that women are living in areas that are less desirable. In other words,

they are living in places in which grocery stores, restaurants, bars, shopping, coffee shops, schools, parks, libraries, book stores, entertainment, public transportation and fitness facilities are far away from their homes.

Also important to note is the low rating for neighborhood safety (3.3 out of 9). This indicator of crime examines both violent and property crime, applying a higher weight to violent crimes. This subscore is based on comparisons to both state and national averages. In other words, women in this sample, compared to women living elsewhere in the state and in country, live in areas of high crime which further suggest that it may not be safe for women to walk or take buses to and from their homes. None of these four measures was significantly related to transportation access at the bivariate level. Taken together, these results suggest that women in this sample have significant transportation deficits in the areas of individual and community resources but receive substantial levels of support from family and friends.

Transportation access. Table 3 shows the descriptive statistics for the individual transportation access measures that comprise the composite transportation access score. The first item in the table, overall access to dependable transportation, was developed for this study. A score of one would indicate that women do not have dependable transportation whereas four indicates strong agreement that women do have dependable transportation. The average score of 3.2 means that most women agree that they have dependable transportation, on average, despite the low level of resources reported in Table 2.

The next five items in Table 3 were derived from transportation and gerontology research as well as research focused on low-income individuals. To obtain these items, in the third interview, women were asked about all the places they traveled in the past seven days. The number of trips ranged from one to seven trips, per week, per woman. The averages in this table

represent the average stress/ease/cost for all trips – so, for example, the cost of an individual trip, on average, is $5.10. Table 3 shows that, on average, most women report that it is easy to get from place to place (4.3 out of 5). Most disagree that their travel is stressful (2.1 out of 4).

Table 3. Descriptive Statistics for Transportation Access Indicators, Wave 3 (n = 366)

	Mean/Percent	Min/Max
Overall, has dependable transportation	3.2	1 (SD) to 4 (SA)
Ease of travel, average	4.3	1 (Not) to 5 (Very)
Stress of travel, average	2.1	1 (Not) to 4 (Very)
Time spent in travel, average (in minutes)	17.9	2.5 to 120
Cost of travel, average (in dollars)	5.1	0 to 51
Safety of travel, average	0.9	0 (Unsafe) to 1 (Safe)

The average trip time is 17.9 minutes which is reasonable but the wide range is more problematic; at least one woman reported an average trip time of 2 hours. The average cost of travel is reasonable ($5.10) and, surprisingly, even though the community accessibility measures show that women live in unsafe neighborhoods, a score of .9 indicates that women said they almost always felt safe when they traveled. Of course, it is quite possible that when women would not feel safe traveling, they do not, and so those avoided trips would not appear on their travel inventories. Collectively, despite the low resource levels reported in Table 2, the accessibility indicators in Table 3 show that women report they have moderate to excellent access to dependable transportation.

Confirmatory Factor Analysis

Analysis to address the second research question explores the reliability of measures of transportation access in Table 3 and the feasibility of creating a composite transportation access score from those measures. The first step in this process is to explore, using confirmatory factor analysis, the reliability of the six items presented in Tables 4 and 5 to see if they, together, represent the underlying latent concept of transportation access.

Confirmatory factor analysis is a theory-testing model as opposed to a theory-generating model (Stapleton, 1997). It is utilized when a researcher begins with a hypothesis, for example, based on measures used in prior research, that represent the researcher's understanding of a given construct, in this case, transportation access. The objective of the confirmatory factor analysis is to test whether the data collected fit the researcher's hypothesized model, in this case, the five variables identified based on a review of the extant literature and the one new item created for this study.

The data were evaluated using the AMOS extension in SPSS. Model fit was evaluated and sufficient fit was determined using cutoff values outlined by Hu & Bentler (1998). The Chi-Square test of exact fit (10.649, df=9, p=0.301) tests whether a residual fit index is statistically different from zero. A non-significant Chi-Square value is desirable. The Comparative Fit Index was also examined (CFI = .991) and found to be at a suitable level; values higher than 0.9 are indicative of sufficient fit. Also, the Root Mean Square Error of Approximation (RMSEA) point estimate (in which values lower than 0.1 are indicative of sufficient) also showed good fit at 0.023. Upon achieving sufficient fit, these six latent factors were then combined together in a scale (described in next section).

Creation of Composite Transportation Access Score

To combine the six items into a composite score, first, the most common method of standardizing the items was investigated. This involved generating z-scores for each item and then averaging them together because the scales for each variable are different. For example, as shown in Table 4, the first and third items have values ranging from one to four whereas the second item ranges from one to five. The ranges for the fourth through sixth items have even greater variation.

The creation of the composite score using standardized variables (z-scores) presented two problems, one related to interpretability and one related to the skewed nature of the items. First, the interpretation of having a standardized score did not make sense with this sample because the sample means for each item do not provide useful comparison points.

Table 4. Composite Access Score Measures

	Mean	Min/Max	Skewness	Kurtosis	Shapiro-Wilk
Overall, has dependable transportation	3.2	1 to 4	-1.004	0.293	0.000
Ease of travel, average	4.3	1 to 5	-1.4	2.6	0.000
Stress of travel, average	2.1	1 to 4	0.389	0.944	0.000
Time spent in travel, average (in minutes)	17.9	2.5 to 120	3.2	14.9	0.000
Cost of travel, average (in dollars)	5.1	0 to 51	2.5	14.0	0.000
Safety of travel, average	0.9	0 to 1	-5.5	30.1	0.000

As shown by the lack of transportation resources women reported in Table 2, the whole sample is transportation deprived, so the average level of deprivation for the sample is not a useful metric for which to compare other women in the sample. That is, to say that a given independent variable results in a change in transportation access of about one standard deviation higher than mean transportation deprivation does not make sense if the mean level is skewed toward deprivation already. By contrast, for example, if one were comparing test scores for a group of local high school students a national sample of high school students, a z-score interpretation would be advantageous. It would indicate whether local students score higher or lower, in terms of standard deviations, than the national average. But, because average levels of transportation access in this study's sample do not have the same interpretability, an alternate strategy was explored.

The second reason z-scores were not optimal is because many of the composite scale items were not normally distributed. Table 4 shows the skew, kurtosis and Shapiro-Wilk values for each indicator. The Shapiro-Wilk values of zero indicate that all six variables are not from a

normally distributed population. Skewness captures the degree of symmetry, or the extent to which values on a variable are symmetrically arranged around the mean (Walker, 2013). A skewness value of zero indicates the variable has a symmetric distribution and there is no skew in the data. A distribution is considered skewed if the skewness is outside the range of -1 to 1. In this case, efforts should be made to bring the distribution closer to normal. Kurtosis is a measure of peakedness or flatness of a distribution; a kurtosis value of 0 means the distribution is close to normal shaped whereas extreme positive values mean the sample is distributed around the tails instead of around the mean (flat) and extreme negative values indicate the distribution is more peaked than normal (Walker, 2013). Similar to skewness, kurtosis values between -1 and 1, ideally as close to 0 as possible, indicate a more normal distribution. In Table 4, the four non-normal, or problematic, variables are highlighted in grey. Efforts should be taken to move these variables closer to a normal distribution.

A technique for creating a composite access score, for non-normally distributed items, is to examine the distribution for each item and place women in categories based on where they stand on the items. For each item, women were given a score out of three (1 = low access, 2 = average access, 3 = high access). For example, for the average safety item (originally coded 1= safe, 0 = unsafe), the average safety values of .75 to 1 were assigned a value of 3, indicating high access; values of .25 to .75 were assigned a value of 2; and values of 0 to .25 were assigned a 1 indicating low access. In this manner, all items were coded into three point scales and then all six items were summed together. The resulting scale could theoretically range from 6 to 18 but has actual values ranging from 9 to 18. It has a mean of 15.4 and a standard deviation of 1.87.

One strength of creating a composite score based on the distributions of the individual items is that, similar to z-score coding, it solves the problem of each variable having a different

range of values (a different scale). That is, once summed together, each item has the same weight in the composite score. However, one limitation is that this method assumes each individual item matters the same amount to the underlying construct of transportation access (which the loadings on the CFA would not completely support). The two methods were triangulated to ensure that the composite score based on distributions was not dramatically different from the composite score derived from z-scores; both scores were regressed on the same set of independent variables and they performed similarly. Therefore, the more interpretable summed composite access score that adjusts for non-normally distributed data is retained for use in the analyses.

Multivariate Analysis of Transportation Access on Transportation Resources

The goal of addressing the third research question is to address how well transportation resources predict transportation access. The summed composite transportation access score is the dependent variable and is regressed on the variables representing transportation resources. To avoid multicollinearity problems in the multiple regression model, or high correlations between the independent variables, Variance Inflation Factors (VIFs) were examined for all variables in Table 5. All values were much greater than the cutoff value of .10; in fact, the VIFs ranged from one to two indicating multicollinearity was not a problem. Further, I selected only one of the four community accessibility scores, the Walkscore, which had a higher correlation with the composite access score (Pearson correlation coefficient = .038) than the other three accessibility items (Pearson correlation coefficients=.021, .009, -.009).

Looking at Table 5, the F-statistic, which is the ratio of unexplained variance to explained variance, shows the model has good fit (9.388, p = .000). The R-squared adjusted statistic shows the variables in the model explain about 19% of the variation in transportation access. This is an acceptable score for social science research but falls below a more desirable score (e.g., 0.5).

Table 5. Multivariate Regression of Transportation Access on Transportation Resources (n = 366)

	b	β
Intercept	13.173	0.000
Individual Level		
Do not own/lease vehicle	-0.082	-0.020
Do not have access to registered and insured vehicle	-0.594 **	-0.152
Do not have a valid driver's license	0.149	0.039
Poor or very poor physical well being	-1.038 ***	-0.187
Difficulty walking one block in summer	0.228	0.051
Poor vision, even with contacts/glasses	-0.140	-0.034
Family and Friends Level		
Number of friends/family can help with transportation needs	0.003	0.004
Transportation-related help from friends/family	0.474 **	0.215
Money for transportation from friends/family	0.290 *	0.139
Community Level Accessibility Scores		
WalkScore - Overall	0.006	0.065
F	9.388 ***	
R²	0.209	
R² adjusted	0.187	

***p<.001 **p<.001 *p<.05

Looking at the individual predictors, four items significantly predict transportation access. Women who say they do not have access to a vehicle, on average, score .594 points lower on the transportation access score than women who do have access to a vehicle. Women who report poor physical health also have lower levels of transportation access. Specifically, a one unit increase in poor physical health, or a one-unit decrease in health, lowers the access score by 1.038 points out of 18. Or, looking at the standardized beta, for a one standard deviation increase in poor health, there is a drop of .187 standard deviations on the access score. On the other hand, women who receive transportation-related help from family and friends have higher levels of transportation access as well as women who receive money from family for transportation. The largest impact on transportation access is for women who obtain transportation assistance from friends and family, the standardized beta (.215) indicates that for a one standard deviation increase in help from family, there is a .215 standard deviation increase in

access, which is the largest standardized beta in the model. Standardized betas allow for comparison between independent variables, in the same model, to show which has a greater impact on the dependent variable when independent variables employ different units of measurement.

Several measures were not significant predictors of transportation access: whether a woman owned or leased a vehicle, had a valid driver's license, had difficulty walking, had poor vision, had friends who could help with transportation needs, or lived in an area with a low community accessibility score.

Logistic Regression Analyses of Recidivism, Testing Moderation of Criminogenic Needs by Transportation Access

Analysis to address the fourth research question examines whether the effect of criminogenic needs on recidivism (i.e., rearrest, reconviction, and supervision violations) depends on whether women have transportation to get to the services they need (i.e., varying levels of transportation access). In other words, this hypothesis examines the potential moderation effect of transportation access on the relationship between criminogenic needs and recidivism. To address this question, rearrest is first considered as the dependent variable (Table 6), then reconviction (Table 7), and finally supervision violation (Table 8).

Rearrest. For the rearrest analysis, the dependent variable is whether women were arrested (coded yes/no) within the follow-up period of 7 to 18 months, with a mean of 7.16 months and standard deviation of 2.49 months. The two independent variables of interest are total need score, the WRNA measure of women's risks minus women's strengths, administered at wave one, and the composite transportation access score, measured at wave three.

To address the question of whether the impact of criminogenic needs on rearrest is moderated by level of transportation access, first we must examine whether criminogenic needs,

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as measured by the total need score, has a direct impact on recidivism. Model 1 of Table 6 shows that for every one-unit increase in total need score (for every additional point on the WRNA scale), there is a .037 increase in the log-odds of rearrest, or a 3.7% increase in the odds of rearrest. This effect is statistically significant (p=.015). In other words, as expected, greater levels of criminogenic needs do significantly increase odds of rearrest.

Table 6. Logistic Regression Models Predicting Rearrest

Measure	Model 1		Model 2		Model 3	
	B	Exp(B)	B	Exp(B)	B	Exp(B)
Intercept	-2.285	0.102	-0.461	0.630	3.003	20.137
Total Needs Score (Wave 1)	0.037	1.038 **			-0.166	0.847
Composite Access Score (Wave 3)			-0.069	0.934	-0.343	0.709 *
Total Need*Access Score					0.013	1.013 *
Likelihood ratio (-2 Log L)		339.450		344.471		336.176
R^2		0.027		0.004		0.041
Number of parameters		2		2		4
N		366		366		366

****p<.001   ***p<.01   **p<.05   *p<.10

The intercept, in logistic regression models, can be interpreted as the expected value of the log-odds of rearrest when all of the predictor variables equal zero. However, the value of zero on the criminogenic scale is not a realistic value and so the interpretation of the intercept is not particularly useful here or in the models for reconviction or supervision violations. The likelihood ratio (-2 Log Likelihood ratio) is non-significant indicating the model fit is not significantly better than the intercept-only model.

The next step is to examine the moderation effect to determine whether the relationship between needs and rearrest is dependent on women's levels of transportation access. The justification for expecting these two factors to interact is the hypothesis that the impact of criminogenic needs (total need) on rearrest is exacerbated for women who have lower levels of

transportation access, or mitigated for women who have higher levels of transportation access. The statistically significant regression coefficient for the interaction effect supports the conclusion that transportation access moderates the relationship between criminogenic needs and rearrest. An interaction term, or a cross-product term of transportation access with total need, is introduced in Model 3 of Table 6, along with the addition of the direct effect of transportation access, to test the significance of the focus variable, criminogenic needs, at particular levels of the moderator, transportation access.

The results in Table 6 show that, for women who have <u>high</u> levels of transportation access (a value of 16; the median between 12 and 18 which indicate high levels of access), the effect of criminogenic needs on the log odds of rearrest is $\exp[-.166 + .013(16)] = \exp(.042) = 1.04$. In other words, there is an increase in odds of rearrest of $100[\exp.042) - 1] = 4$, or 4%. Whereas, for women who have <u>low</u> levels of transportation access (a value of 3; the median between 0 and 6 which indicates low levels of access), the effect of criminogenic needs on the log odds of rearrest is $\exp[-.166 + .013(3)] = \exp(-.127) = 0.88$. For these women, there is a decrease in odds of rearrest of $100[\exp(-.127) - 1] = -12$, or 12%.

In other words, the impact of criminogenic needs on rearrest varies significantly by women's levels of transportation access. The hypothesis was that higher levels of transportation access would aid women in addressing their criminogenic needs and thus lower the incidence of rearrest. For example, women who have substance abuse problems and who need to attend treatment, would have lower levels of rearrest if they had greater access to transportation. However, the results presented here suggest the opposite, that women with similar levels of need, who have higher levels of transportation access, have 4% greater odds of rearrest. And women

who have lower levels of transportation access, and similar levels of need, actually have a 12%

lower odds of rearrest. This is considered a disordinal interaction effect.

Reconviction. The relationships between criminogenic need, transportation access score,

and reconviction are examined in the second part of the fourth research question. Again, the two

independent variables of interest are total criminogenic need and the composite access score.

Model 1 of Table 7, shows that for every one-unit increase in total need score (or, for every

additional point on the WRNA scale), there is a .027 increase in the log-odds, or a 2.7% increase

in the odds of reconviction. This effect is statistically significant (p=.015). In other words, as

expected, greater levels of criminogenic needs do significantly increase odds of reconviction.

Table 7. Logistic Regression Models Predicting Reconviction

Measure	Model 1		Model 2		Model 3	
	B	Exp(B)	B	Exp(B)	B	Exp(B)
Intercept	-2.191	0.112 ***	-1.189	0.304	-0.465	0.628
Total Risk Score (Wave 1)	0.027	1.028 *			-0.045	0.956
Composite Access Score (Wave 3)			-0.029	0.972	-0.112	0.894
TotalRisk*AccessScore					0.005	1.005
Likelihood ratio (-2 Log L)		323.569		326.422		323.192
R^2		0.014		0.001		0.016
Number of parameters		2		2		4
N		366		366		366

****p<.001   ***p<.01   **p<.05   *p<.10

The next step is to examine whether this relationship is dependent on women's levels of

transportation access. An interaction term is introduced in Model 3 of Table 7, along with the

addition of the direct effect of transportation access, to test the significance of the focus variable,

criminogenic needs, at particular levels of the moderator, transportation access.

In contrast to the rearrest analyses, in which there is a disordinal interaction effect, the

interaction effect for the reconviction model (b = .005), although non-significant, is ordinal and

in the hypothesized direction. That is, the effect of criminogenic needs appears to vary across levels of transportation access such that higher levels of transportation access lower odds of reconviction; but, the relationship is not statistically significant. Nonetheless, the interpretation is provided. For women who have low levels of transportation access, there is a small decrease in the odds of reconviction of 3% $(\exp[-.045 + .005(3)] = \exp(-.03) = .970$, or a $100[.970 - 1] = 3\%)$. But, for greater levels of transportation access, the decrease in odds of reconviction is greater, as hypothesized. For women who have high levels of transportation access, there is an decrease in odds of reconviction of $\exp[-.045 + .005(16)] = \exp(-.125) = .882$, or a $100[.882 - 1] = 11.8\%$. This effect is in the opposite direction as in the rearrest analyses (Table 6) but, again, the moderation effect is not statistically significant.

Supervision violation. For the third part of the fourth research question, supervision violations were utilized as the dependent variable. Again, the two independent variables of interest are total need and the composite access score. Model 1 of Table 8 shows that for every additional point on the WRNA scale, there is a .045 increase in the log-odds of supervision violation, or a 4.5% increase in the odds of a supervision violation. This effect is statistically significant (p=.003). In other words, as expected, greater levels of criminogenic needs do significantly increase odds of supervision violation.

The next step is to examine whether this relationship is dependent on women's levels of transportation access. An interaction term is introduced in Model 3 of Table 8, along with the addition of the direct effect of transportation access, to test the significance of the focus variable, criminogenic needs, at particular levels of the moderator, transportation access.

The results of the supervision violation analysis are congruent with those in the rearrest analyses, such that both display a disordinal interaction effect, and in contrast to the results of the

reconviction model in which the interaction effect was ordinal. However the results are not statistically significant. Nonetheless, the interpretation of the interaction term is provided. For women who have low levels of transportation access, there is a increase in odds of supervision violation of exp[.032+ .001(3)] = exp (.035) = 1.035, or a 100[1.035- 1] = 3.5%. But, for greater levels of transportation access, the increase in log odds of supervision violation is greater, which is the opposite of what was hypothesized.

Table 8. Logistic Regression Models Predicting Supervision Violation

Measure	Model 1		Model 2		Model 3	
	B	Exp(B)	B	Exp(B)	B	Exp(B)
Intercept	-2.014	0.134	0.648	1.911	-0.440	0.644
Total Risk Score (Wave 1)	0.045	1.046 ***			0.032	1.033
Composite Access Score (Wave 3)			-0.113	0.893	-0.099	0.906
TotalRisk*AccessScore					0.001	1.001
Likelihood ratio (-2 Log L)		314.367		320.948		313.131
R^2		0.045		0.012		0.052
Number of parameters		2		2		4
N		287		287		287

****p<.001   ***p<.01   **p<.05   *p<.10

For women who have high levels of transportation access, there is an slightly larger increase in log odds of supervision violation of exp[.032+ .001(16)] = exp (.048) = 1.049, or a 100[1.049- 1] = 4.9%. This effect is in the same direction as in the rearrest analyses (Table 6), and the opposite of the reconviction analyses (Table 7) but, again, the moderation effect is not statistically significant.

To summarize, the moderation effect examined in the fourth research question is supported for rearrest analyses but not in the reconviction or supervision violation analyses. The moderation of criminogenic needs on rearrest, by transportation access, is partially supported because the interaction term for the rearrest analysis was significant. The results for the

reconviction analysis were in the opposite direction and, although non-significant, contradict the rearrest finding. And the results of the supervision violation analyses were non-significant but in the same direction as the rearrest analyses. In response to the inconsistent results, additional models were run to tease out the discrepant findings.

Part of the problem may be that the total needs score combines many subscales which could interact with transportation access in different ways. When combined, the subscales could produce confusing effects. The criminogenic needs scale, or total needs scale, is comprised of 25 subscales that measure: antisocial attitudes, criminal history, educational strengths, educational needs, employment/financial, housing safety, antisocial friends, anger/hostility, mental health history (overall, depression/anxiety, and psychosis), current mental health (overall, depression/anxiety, and psychosis), abuse and maltreatment as children and as adults (4 scales), substance abuse history, current substance abuse, relationship stability, parenting involvement, family support, family conflict, self-efficacy and parenting stress.

Table 9. Logistic Regression Models Predicting Rearrest, Significant Moderation Effects Shown

Measure	Model 1		Model 2		Model 3		Model 4	
	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)
Intercept	-3.054	0.047	-5.131	0.006	2.526	12.500	0.822	2.275 *
Composite Access Score (Wave 3)	0.108	1.114 **	0.222	1.249 **	-0.250	0.779 **	-0.159	0.853 *
Antisocial Friends	4.484	88.618 *						
Maltreatment as Child			6.314	552.470 **				
Family Support					-5.342	0.005 **		
Self-Efficacy							-4.031	0.018 *
Antisocial Friends*Access Score	-0.306	0.736 **						
Maltreatment as Child*Access Score			-0.393	0.675 **				
Family Support*Access Score					0.324	1.383 **		
Self-Efficacy*Access Score							0.292	1.339 *
Likelihood ratio (-2 Log L)		339.55		338.50		337.49		339.02
R^2		0.026		0.031		0.035		0.028
Number of parameters		4		4		4		4
N		366		366		366		366

****p<.001   ***p<.01   **p<.05   *p<.10

An interaction term was created for each subscale that was multiplied by the transportation access scale and was used to predict odds of rearrest. Three of these interaction

terms were significant and one other approached significance: antisocial friends (p = .039), maltreatment as a child (p=.040), family support (p=.027), and self-efficacy (p=.053). Table 9 shows that the direct effects for each subscale are in the expected direction – the impact of 'antisocial friends' and 'maltreatment as a child' increase the odds of rearrest whereas family support and self-efficacy both reduce the odds of rearrest.

Women who score highly on the antisocial friends scale (i.e., they have friends who have been in trouble with the law, done prison time, been on community supervision; or they have committed offenses with a friend, spent time with people who abuse drugs/alcohol), compared to women who score lower on the scale, experience a 9,213% increase in their odds of rearrest, [exp(4.484 -.306) = exp(4.534) = 93.13, or 100(93.13-1) = 9,213%]. At specific levels of transportation access the disordinal or ordinal nature of the interaction effect can be explored. Women at low levels of transportation access experience a 3,437% increase in odds of rearrest whereas women at high levels of transportation access experience a 34% decrease in odds of rearrest. This is a disordinal interaction effect, the effect changes in direction (i.e., increase versus decrease) over levels of the moderator variable, but results are in the expected direction. That is, lower levels of transportation access lead to higher levels of rearrest and higher levels of transportation access lower odds of rearrest.

Similarly, women who experienced high levels of maltreatment as a child have 37,178% increase in their odds of rearrest [exp (6.314 -.393) = exp(5.921) = 372.78, or a 100(372.78-1) = 37,178%], compared to women with lower levels of maltreatment as a child. Women at lower levels of transportation access experience a 16,886% increase in the odds of rearrest [(exp (6.314 -.393(3)) = exp(5.135) = 169.86, or a 100(169-1) = 16,886%] whereas women with higher levels

of transportation have a much smaller, 2.6%, increase in their odds of rearrest [(exp (6.314 - .393(16)) = exp(.026) = 1.026, or a 100(1.026-1) = 2.6%].

Women who have high levels of family support and <u>high</u> levels of transportation access experience a 98.74% decrease in odds of rearrest, compared to women with lower levels of family support. Women who have high levels of family support and <u>low</u> levels of transportation access experience only a 15% decrease in odds of rearrest, compared to women with lower levels of family support.

Women who have high levels of self-efficacy and <u>high</u> levels of transportation access experience a 99.96% decrease in odds of rearrest, compared to women with low levels of self efficacy. Women who have high levels of self-efficacy and <u>low</u> levels of transportation access experience a 89% increase in odds of rearrest, compared to women with low levels of self efficacy. This interaction effect is disordinal but in the expected direction.

The models in Table 9 better explain the nature of the disordinal interaction effect for the relationship between overall criminogenic needs and rearrest which is moderated by transportation access. It is clear that the overall moderation effect, when teased out, does *not* show that, for women with similar levels of criminogenic need, those with higher levels of transportation access have *greater* odds of rearrest and those with lower levels of transportation access have *lower* odds of rearrest. In fact, the subscales that comprise the larger criminogenic needs scale, when examined individually, reveal that greater levels of transportation access actually lower odds of rearrest.

Impact of Transportation Access on Recidivism Outcomes

To address the fifth research question, regarding whether transportation access adds to the understanding of recidivism (rearrest, reconviction and supervision violation) both logistic

regression and survival analysis are employed.

Rearrest. Model 2 of Table 6 shows that, for every one-unit increase in composite access score, or for every additional point in access score, a .069 decrease in the log-odds of rearrest is expected. This is in line with the expectation that better transportation access should lower odds of recidivism events. In terms of the odds ratio, each unit increase in the composite access score lowers the odds of rearrest by $100[\exp(-.069) - 1] = - 6.67$, or 6.67%. But this effect is not statistically significant (p=.325).

Reconviction. Looking at Model 2 of Table 7, every one-unit increase in composite access score, or every additional point in access score, translates to a .029 decrease in the log-odds of reconviction. This is in line with the expectation that better transportation access should lower odds of recidivism events. In terms of the odds ratio, each unit increase in the composite access score lowers the odds of rearrest by $100[\exp(-.029) - 1] = - 2.8$, or 2.8%. But this effect is not statistically significant (p=.697).

Supervision violation. The results of the analyses (Table 8) were in the same direction and magnitude as the analyses for rearrest and reconviction. For every one-unit increase in composite access score, or every additional point in access score, translates to a .113 decrease in the log-odds of supervision violation. This is in line with the expectation that better transportation access should lower odds of recidivism events. In terms of the odds ratio, each unit increase in the composite access score lowers the odds of rearrest by $100[\exp(-.113) - 1] = -10.7$, or 10.7%. But this effect is not statistically significant (p=.121).

Survival analysis with Cox Regression. To further address research question 5, Cox regression could be used because the recidivism data contained the specific date when offenders were rearrested or reconvicted for a new offense, or if they experienced a supervision violation.

The coding for the rearrest and reconviction analyses is first discussed, followed by the coding strategy for supervision violations which differed slightly from the rearrest and reconviction analyses.

As a type of survival analysis, Cox regression is preferable to Logistic Regression in that it utilizes time-dependent data, which are important in determining not only *whether* offenders recidivate, but also *when* they recidivate while allowing individuals to have different 'times at risk.' It allows for comparison of women with, for example, 7-month follow-up periods to those with 18-month follow-up periods. To do so, Cox regression utilizes both "time" and "status" variables in estimating the impact of the independent variables on recidivism outcomes. The "time" variable measures the amount of time (days) from the date of the wave three interview until the date of first rearrest or reconviction, or December 3, 2013 for those who did not recidivate. Smaller time units provide more time intervals which reduces ties (e.g., two women with same amount of time until rearrest; which lowers variance to be explained) and increases the statistical power of Cox Proportional Hazard models (Garson, 2013). Therefore, the unit of time was coded as days.

For supervision violations the "at risk period" is calculated differently and the sample size is different. The sample of 366 was reduced for the supervision violation analysis to 287 women. The process for achieving this number is explained in greater depth in the methods section. To summarize, 79 women, or 21.6% of the 366 women, were removed from the analysis because they were not on supervision at any time during this six-month period, most often because they were discharged from probation or parole before the third interview. This means they were never "at risk" for this type of recidivism event and should not be included in a model predicting an event for which they could not experience (supervision violation). For the 104

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women who were absent from part of the observation period, meaning they had less than 6 months of data for various reasons (i.e., they were discharged, went to jail/prison, died, or data were not available), they were included in the analysis and their "at risk" period was adjusted appropriately. Using this method, the average follow-up period, or "at risk period" for women in the sample (n = 287) was 125.92 days or approximately four months. During this time period, 72 of the 287 (25%) women experienced at least one supervision violation and ten of these were for transportation-related supervision violations (e.g., driving without a license or failure to report due to car troubles); 216 (74.9%) women did not experience a supervision violation.

For all three types of recidivism, the "status" variable was a dichotomous variable that measured whether one of the three recidivism events had occurred (i.e., rearrest, reconviction, or supervision violation). Lack of variance in the status variable (i.e., the low number of women who experienced recidivism events) is not a problem for Cox Regression since what is analyzed is the time until an event occurred, not the variance of the event variable itself (Garson, 2013, Chapter 4, Section 2, para.2). Because variance on the time variable is more important than simple event occurrence, Cox Regression is the appropriate model for accounting for varying lengths of follow-up times and overdispersion of data.

The independent variable, or main focus variable, access to transportation, is grand mean centered (i.e., the woman's score minus the mean) to aid in creating more accurate baseline hazard rates, which are the time-only rates when all covariates are zero, that are estimated at the mean instead of at zero. This strategy also allows for interpretation at mean values instead of zero, which is helpful when zero is not a realistic value. As discussed earlier, this is not a primary goal for these analyses, for which mean transportation access is not a useful comparison point.

Table 10. Cox Proportional Hazards Model: Time Until Three Recidivism Events

Measure	Rearrest Hazard ratio (Exp[B])	Reconviction Hazard ratio (Exp[B])	Supervision Violation Hazard ratio (Exp[B])
Transportation Access Score (centered)	0.946	0.981	0.912
Likelihood ratio (-2 Log L)	755.828	689.738	774.861
df	1	1	1
N	366	366	287

****p<.001   ***p<.01   **p<.05   *p<.10

In Table 10, the hazard ratios are presented. It is calculated by exp(b) where b is the Cox regression coefficient (not shown in table). The hazard ratio is an effect size measure used to assess the direction and importance of the effect of the predictor variable on relative risk of the event, controlling for other predictors in the model (Garson, 2013, Chapter 4, Section, 23, para. 1). The role of the predictor variables is better assessed by looking at hazard ratios than looking at Cox regression b coefficients. In short, the hazard ratio reveals the amount of change in the hazard of rearrest occurring for each unit increase in transportation access score. A hazard ratio of greater than 1 would mean that the access score increases the odds that a rearrest will occur and decreases time until the rearrest. On the other hand, as shown in Table 10, the hazard ratio for transportation access (.946) is less than 1 and indicates that, for each unit increase in transportation access, the hazard of rearrest decreases by .946, or the greater the transportation access score, the lower the odds of rearrest and longer the time until rearrest. Further, each unit increase in access lowers rearrest rate by 5.4% (100*(.946-1)). However, the results from the Cox regression models show that the covariate for transportation access did not have a statistically significant impact on the hazard of rearrest (p=.368, not shown). Similarly, in the reconviction and supervision violation models, the impacts of transportation access on

reconviction and supervision violations were non-significant (p = .772 and p = .144, respectively).

The likelihood ratio (755.828), if significant, would indicate the model as a whole is significant. Because only one covariate is in the model for rearrest, this statistic indicates that the model with transportation access, compared to the null model (the time-only model when all covariates are 0), does not contribute significantly to the explanation of rearrest because the p-value is not significant (p=.368). Similarly, transportation access does not contribute to the explanation of reconviction (p=.772) or supervision violations (p=.144).

Despite the non-significant covariates, it is worth examining the survival functions at different levels of transportation access. Women in the sample only reported medium to high levels of transportation access; that is, there were no women in the sample who reported low transportation access. Figure 2 shows that the survival curve is steeper for women with lower levels of transportation access (i.e., at medium levels, the bottom line) than for women with higher levels of transportation access. At the end of the observation period, about 73% of women with medium levels of transportation access had not been rearrested. Yet, at the same time point, about 83% of women with higher levels of access had not been rearrested. Although the covariate for transportation access was non-significant, this finding suggests that higher levels of transportation access do slow time until rearrest. The results were the same for the reconviction and supervision violation analyses (not shown); women with lower levels of transportation access (medium levels), compared with women who had higher levels of transportation access (high levels), had more incidents of recidivism and experienced shorter times until the recidivism event. These results, although non-significant, are in the expected direction. That is, higher levels

of transportation access result in lower levels of recidivism and longer times until recidivism events occur.

Figure 2. Survival Function for Levels of Transportation Access
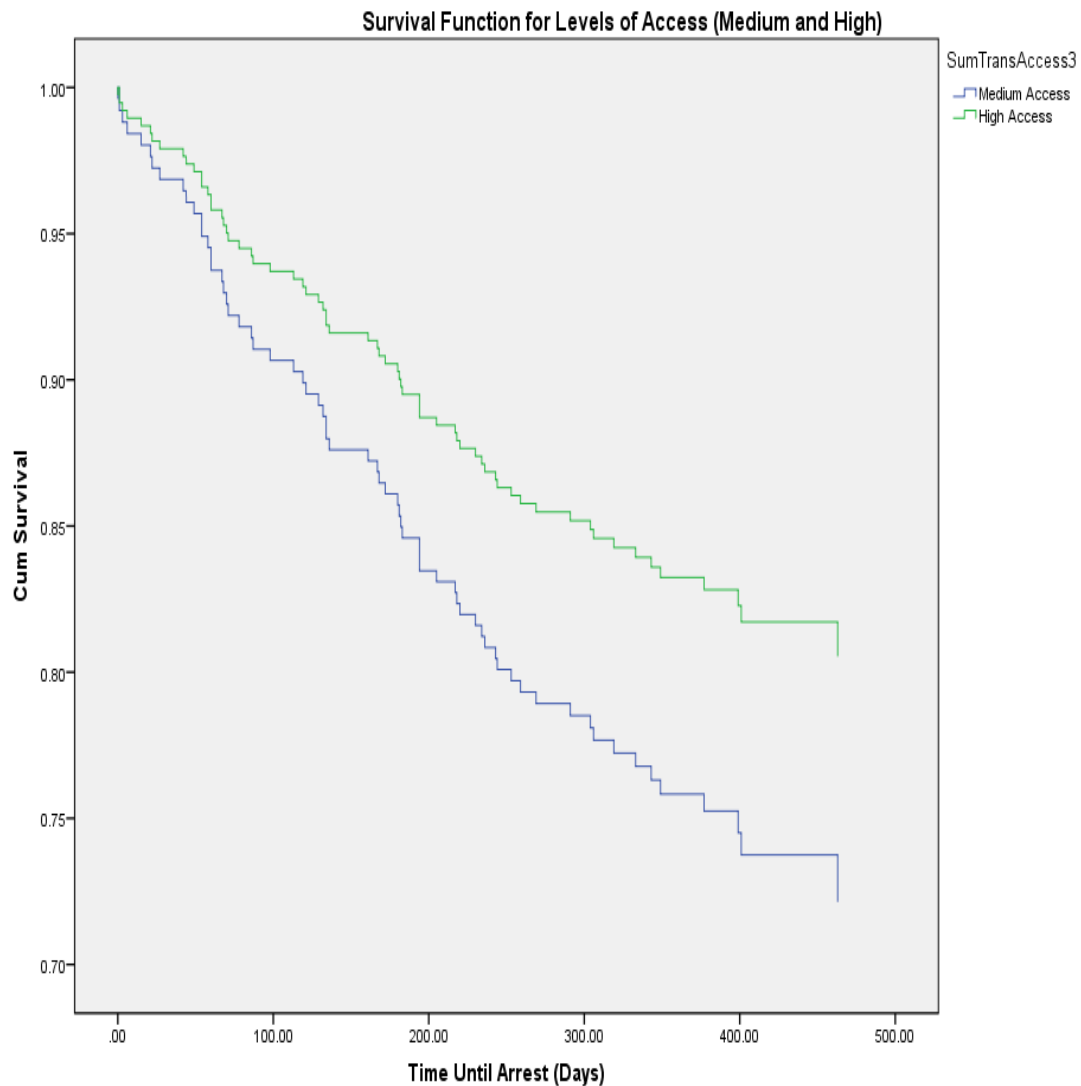
To obtain a more refined measure of recidivism that may be more closely linked to transportation access, survival analyses were also run in which reconvictions were coded as transportation-related (rearrest data do not contain the reason for rearrest) Using this procedure, only 12 women had transportation-related recidivism events (about 10% of all reconvictions) such as driving without a license or while intoxicated. Cox Regression can handle these low

event numbers and was used. The results showed that transportation access was not a significant predictor of transportation-related reconviction (results not shown).

The findings of the quantitative analysis answered four main research questions. First, the scope of transportation deprivation was found to be quite extensive for women who were found to lack many resources needed to get from place to place. Women reported low levels of individual and community level resources. Second, an instrument (a composite score) was found to capture women's level of transportation access. Third, preliminary data analysis suggested that despite the low levels of resources women had at their disposal, they still reported high levels of access to transportation in terms of stress, ease, cost, and time associated with travel. However, the results of multivariate analysis revealed that several resources do significantly predict transportation access. Yet, explanations for the low correlations between resources and access is explored in greater depth in the following chapter. Fourth and fifth, transportation access, and its relationship to criminogenic needs, was found to lower the odds of experiencing recidivism events and the time until these events occurred. Further, the findings indicate that transportation access is especially important for women with certain criminogenic needs – those with antisocial friends, histories of child maltreatment, greater family support and greater self-efficacy.

These analyses raised questions about how women view both resources and access. The next chapter explores women's use of additional resources not captured in the quantitative analysis and also attempts to improve the conceptualization of access. The quantitative data and findings are instrumental in providing the sampling frame for women who can best address questions raised in this section of the dissertation analysis.

CHAPTER 5: RESULTS OF QUALITATVE DATA ANALYSIS

Descriptive Statistics

The goal for the qualitative component of the research was to capture women's insights, experiences, and strategies regarding transportation resources and access and to more fully understand whether lack of access contributed to recidivism. Specifically, four main research questions were examined with the qualitative data: (1) the types and intensity of transportation problems women experience while under supervision, (2) women's use of additional resources, not captured by quantitative measures, that increased transportation access, (3) strategies women used to increase transportation access and whether these strategies brought women into conflict with the law and (4) whether transportation problems contributed to any violations or new offenses.

Table 11. Transportation Indicators, Comparison of Full Wave 3 Sample to Three Subgroups

	Wave 3	Follow-up Interview (n = 25 each)		
	(n = 366)	Transportation Troubled	Transportation Untroubled	Transportation Strategizers
	Mean/Percent	Mean/Percent	Mean/Percent	Mean/Percent
Resources: Individual Level				
Do not own/lease vehicle	68.0%	72.0%	80.0%	68.0%
Do not have access to registered and insured vehicle	37.0%	16.0% **	56.0%	24.0%
Do not have a valid driver's license	58.0%	64.0%	76.0%	52.0%
Poor or very poor physical well being	13.1%	12.0%	13.1%	12.0%
Difficulty walking one block in summer	23.0%	20.0%	26.0%	17.0%
Poor vision, even with contacts/glasses	29.0%	28.0%	21.0%	24.0%
Resources: Family and Friends Level				
Number of friends/family can help with transportation needs	3.1	4.2 **	2.2 **	3.3
Transportation-related help from friends/family	3.1	3.4	3.0	3.3
Transportation-related help from friends/family for children	3.4	3.62	3.25	3.13
	(n=228)	(n=13)	(n=16)	(n=15)
Money for transportation from friends/family	2.9	3.1	2.7	3.3 *
Resources: Community Level				
WalkScore - Overall Accessibility	41.5	40.2	38.8	33.7
Access				
Composite Access Score	15.4	15.2	15.2	16.2 **
Recidivism (Approximately 6 months after Wave 3)				
Rearrest	18.0%	36.0%	8.0%	4.0% *
Reconviction	16.4%	36.0% *	4.0% *	4.0% *
Technical Violation (n = 287)	25.0%	35.0%	17.0%	18.0%

Note: Asterisks indicate significant difference between the subgroup and wave 3 sample (without that subgroup included)
***p<.001, **p<.01, *p<.05

To ensure that sufficient numbers of women were included in the follow-up interview sample to address these four research questions, three purposively sampled groups of women (total n = 75) from the quantitative portion of the study (n=366) were interviewed. Descriptive statistics are presented to illustrate how these subgroups differ from the larger sample from which they were recruited.

The first group of women, Transportation Troubled, was characterized by Low Resources, Low Access, Medium-High Recidivism; 70 women in the group of 366 met these criteria. Women with these characteristics were chosen because they represent the expected finding, that women who have low resources will also have low access which will lead to recidivism problems. Table 11 shows that, overall, the 25 women who were interviewed from this group did have lower transportation resources at the individual and community levels (but had higher resources at the family/friends level), had lower access, and did have much higher rates of recidivism. The main research question for these women is whether and how limited transportation resources and/or access lead to recidivism events.

In the second and third groups, findings counter to the main hypothesis are examined. The second group of women, Transportation Untroubled, are those for whom transportation does not appear to be related to recidivism at all; that is, despite low levels of both access and resources, recidivism remains low. Table 11 shows that, overall, women in this group had greater transportation resources at the individual level but fewer resources at the family/friends and community levels than the full sample of 366 women. Their level of access was slightly lower and their recidivism was much lower than the full sample. This group behaves opposite what would be predicted by the main hypothesis. The main question here is, why don't transportation problems lead to recidivism events?

The third group of women, Transportation Strategizers, were chosen because, for them, transportation resources do not appear to be linked to transportation access. They have achieved medium to high levels of access while still retaining low levels of recidivism, despite low levels of resources. Women had lower levels of individual and community transportation resources, slightly higher family/friends resources, but significantly higher rates of access and significantly lower rates of recidivism. For these women, the questions are related to how they were able to gain greater access and whether the strategies they used resulted in positive outcomes.

Table 11 shows, then, that more or less, the sampling goals were met for each group and, therefore, there are sufficient numbers of women in the sample (n=75) to address each research question. Beyond achieving sampling goals, the group differences are not intended to provide a framework for the qualitative analyses. Each woman in the study, regardless of sampling group, was asked the same series of open-ended questions. As such, women's narratives (i.e., the complete transcripts from the interviews) are most often analyzed together for each research question; that is, group differences are only examined when relevant to a research question.

One final note is that, because these are purposively sampled groups, even though regression analyses are performed as part of the analyses, it is important to interpret those results remembering that these groups are not representative of a larger population. Appropriate interpretations are provided. These results should not be generalized to all women offenders without running appropriate sample selection models (which would not be appropriate because of the extremely small sample sizes of 25 women in each group). The ability to generalize to a larger group of women offenders should be addressed with future research.

Types, Intensity, and Comparative Importance of Transportation Problems

The first research goal of the qualitative data analysis was to investigate the types and

intensity of transportation problems impacting women. This question was partitioned into three

subquestions addressed in the follow-up interview. Because so few women reported having

problems with dependable transportation in the third wave of data collection (17.5% of 379

women), but also reported low levels of transportation resources (See Table 2), the primary

question and subquestions were designed to explore the nature of transportation problems in

three important ways. First, to understand why most women reported high levels of access to

transportation at wave three, women were asked to talk about any transportation problems they

had experienced in the past five years. Second, to investigate whether women reported high

levels of access to transportation because they were minimizing the amount of transportation-

related hardship they were experiencing, the intensity of each transportation problem women

reported was rated from minor to severe by coders. Because the intensity was not assessed by

women, but instead by coders, the rating approach should avoid women's attempts to minimize

their problems. Third, to look at whether women were reporting high levels of transportation

access, or low levels of deprivation, because they were situating the level of difficulty their

transportation problems present in relation to other problems they encounter, women were asked

to report their top three concerns, which takes into account women's perspectives on their

problems. Answering these three subquestions illuminates why women seem to be experiencing

hardship (e.g., they are reporting low levels of resources) but do not report experiencing hardship

(i.e., they are reporting high levels of transportation access).

Data used to answer these three subquestions come from responses to several questions

women were asked in the in-depth follow-up interview: "Looking back, over the past five years,

when you did have transportation problems, what were they? Currently, would you say that the

way you get to and from supervision appointments, grocery stores, appointments, etc. is stressful

or complicated – or easy and not worrisome? Currently, do any of your arrangements for getting around place you in danger or in a difficult situation? Overall, thinking about the ways you arrange transportation, now or in the past, what is hard or easy about it?" Intercoder reliability was established for the *types* of problems (Cohen's kappa = .912) women reported and for the *intensity* of each problem reported (kappa = .735). Consistent with Cicchetti (1994), these kappa values represent excellent and good intercoder agreement, respectively (see Hruschka et al. 2004 for a comprehensive analysis of acceptable cutoff values for Cohen's kappa). Responses to two other items were included in the analysis; but, due to the straightforward nature of the responses, intercoder reliability was not established.

Table 12: Transportation Problems, and Intensity Level, Reported at Follow-up Interview

Type of Problem	Intensity of Problem			Row Totals
	Minor	Moderate	Severe	
Weather	8	3	2	13 (2.5%)
Car Problems	27	22	18	67 (13.3%)
Inadequate Buses	22	18	14	54 (10.7%)
Direct Cost of Transportation	18	23	9	50 (9.9%)
Coordinating Help	65	37	23	125 (24.8%)
No Help	4	10	6	20 (3.9%)
Unreliable Help	13	22	13	48 (9.5%)
Legal Problems, Legal Costs	31	21	29	81 (16.0%)
Health Problems	12	2	2	16 (3.2%)
Safety	10	14	7	31 (6.1%)
Column Totals	210 (41.5%)	172 (34.1%)	123 (24.4%)	505

Two other measures of transportation problems were used. Women were asked at wave three and at follow-up interview to indicate the extent to which they agreed that they have access to dependable transportation. This generated two measures of dependable transportation –one from each time period. Finally, women were asked, at the end of the follow-up interview, to

report their top three concerns at that moment. To minimize priming effects, women were reminded that transportation need not be a top concern.

Table 12 was generated using NVivo software; the unit of analysis is transportation problems, not women. The 75 women in the sample collectively reported experiencing 505 transportation problems. The most commonly reported type of problem was coordinating help (24.8% of problems), followed by legal problems/legal costs (16% of problems), and car problems (13% of problems). The most pressing or intense problems were also in the areas of legal problems, coordinating help, and car problems. Types of problems and intensity of problems are discussed separately and in greater detail in the next two sections.

Analysis of types of transportation problems. To address the first subquestion, whether women are experiencing transportation problems, women's responses to the in-depth interview questions were coded to identify the types of transportation problems women reported experiencing. Although women overwhelmingly reported having high levels of access to dependable transportation at wave three (140 agree and 162 strongly agree), at the follow-up interview, 71 of 75 women reported experiencing at least one of ten different types of transportation problems.

For example, one older woman [628] reported she had high access to transportation (she uses a special bus service for older and disabled individuals) at wave three, but her follow-up interview makes clear that she has at least four problems: inadequate bus service, weather, safety, and coordinating help. Specifically, answering a question about whether she ever had any problems with transportation, she says:

> There was a couple bus drivers who were kinda sleazy, but – I eventually got them to stop. [They were] trying to cop a feel…and talking about just like something like, about how good it was to be between my legs and just crap like that…You'd be surprised how many little old lady hunters there are. This one guy,

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I'm not kidding. I know this man is a predator. I thought he was nice at first. I saw – and he helped me carry my groceries in, and he picked up my key to my apartment – my extra key that I have. He's – nobody lives here but me. It was setting over there where I – probably sounds stupid, but I wear them around my neck. I don't wanna lose them. I locked myself out there one time, and since then, I've put them around my neck. But I have a spare key, and I saw him do it, and he left, and I called him, and – you know? "I didn't do that." Yeah, well, I wouldn't – they changed the locks so I know he doesn't have it, but there's – this guy is – this ain't no nice man. He's apparently done something else because he did get fired, but I don't know. That was not a nice guy.

When the interviewer asked for further clarification about problems with transportation, the women further explained that she did not consider her experience a transportation problem, emphasized again that she is grateful for her access to this special bus, but then continued to explain problems with the service:

Yeah, well, it's – no, no problem. That's – I really am grateful. I wouldn't go as far as to say stressful, but it's not entirely easy and uncomplicated. You have a set time that they're coming, but within that, they have 45 minutes to get there. And you have to sit, and watch, and wait, watch – and if you're not there, they will leave you…So, I have to go outside, and if it's raining, or it's whatever, there I am sitting out there.

Although this woman says she has no real transportation problems, in the process of her travels, she was actually verbally assaulted, had her house key stolen and felt fearful the bus driver would return, has had to wait outside in bad weather, and spends a great deal of time waiting for the bus. This women's account illustrates that just because women initially report high levels of transportation access, it remains necessary to dig deeper to discover what they consider high access and whether they still may be experiencing transportation problems.

Many women reported experiencing more than one problem; the range was zero to six types of problems. Four women (5.3%) reported experiencing zero types of problems, 16 (21.3%) reported experiencing one type of problem, 28 (37.3%) reported two types, 17 (22.7%)

reported three types, nine (12%) reported four types and one woman (1.3%) reported six

different types of problems. Women who reported a greater number of types of problems were

significantly more likely to have reported lower levels of transportation access at wave three

(Pearson Correlation Coefficient -.242; p-value = .037). However, recall that women reported

their level of access to dependable transportation at both wave three and the follow-up interview

and the latter measure was not correlated with number of problems.

The results of the analysis of the 75 follow-up interviews showed that, in order from most

to least commonly reported, the ten types of problems women reported were: difficulty arranging

rides (56% of women), experiencing legal problems and related costs (33.3%), having car

problems (32%), bus service is inadequate (22.7%), has help but from unreliable people (22.7%),

direct costs of transportation are prohibitive (20%), safety concerns (12%), not having people to

provide transportation help (8%), and experiencing weather issues (4%) or having health

problems that impede travel (8%).

To evaluate whether women who experienced specific types of transportation problems

were more likely to report lower levels of transportation access (at either wave three or at follow-

up interview), bivariate correlations were calculated for the ten types of transportation problems

women reported (see Table 12 for list). The expectation is that women who report lower levels of

transportation access may also report certain types of problems. This would indicate that certain

types of problems, or combinations of problems, may result in greater transportation deprivation

than other types. Significant and negative correlations are therefore expected.

Several significant findings emerge. Women who reported they had access to dependable

transportation at wave three reported fewer problems with direct costs of transportation (Pearson

Correlation Coefficient = -.236; p = .041) and fewer problems with unreliable help (Pearson

Correlation Coefficient = -.285; p = .013), at the follow-up interview. Women who reported they had access to dependable transportation, at the follow-up interview, reported fewer problems with direct costs of transportation (Pearson Correlation Coefficient = -.304; p = .008) and fewer safety concerns (Pearson Correlation Coefficient = -.257; p = .026); however, they reported greater problems with legal costs or issues (Pearson Correlation Coefficient = .255; p = .027).

Across both time periods then, problems with direct costs of transportation were more highly correlated with reports of access to dependable transportation. For women, having money to pay for bus fare, or to give to rides for gas money, was significantly correlated with whether they reported having access to dependable transportation. At only one of the two interviews, women's ratings of dependable transportation hinge on whether they have reliable help (wave 3) or feel safe while traveling (follow-up interview). The one perplexing finding is that, at the follow-up interview, women who reported they had dependable access also reported greater levels of legal problems such as not having a valid license. This finding warranted closer analysis.

There were 30 instances in which women reported legal problems; in only two instances did women equate legal problems with lack of dependable transportation. For the 28 instances in which women reported both having dependable access and experiencing legal problems with transportation, there were 23 women involved. The responses for these 23 women were read and grouped by type of legal problem into three areas: women does not have a license but does not drive (n=2 women); woman does not have a license but does drive (n=17); and woman has other legal problem such as vehicle not having plates or being street-legal (n=4). Looking at the narrative accounts, then, it appears that the main legal problem women face is that they do not have a valid driver's license. However?, women do not view this as a transportation problem.

These seemingly inconsistent findings explain why women would report they have high levels of access but also high levels of legal problems. One woman with legal problems but who says she has high access to transportation explains her situation is stressful because, "I have a car and have no license." Similarly, another woman admits it is not ideal but a lack of license does not mean lack of transportation, in response to the question, "Was transportation ever a problem for you?"

> "No… Just because I always had a car. No license, but a car… I don't like doing it, but I have three kids, and I have to work. Transit can't do it out here…I have no way to work."

Finally, a third woman explains that, even though her license was not valid, she still needed to drive and:

> "…that was scary because I was still on parole. And I'm thinking, 'Oh my Gosh, if I get stopped. Here goes another year on parole. Here goes a violation.' So that was very worrisome. I was always looking in the rear view mirror. A cop would go by. I sort of had a stroke."

Therefore, the significant bivariate correlation, in the opposite direction as expected, is present because women do not equate legal barriers with lack of access to transportation. This suggests that the current wording of the dependable access question [To what extent, do you agree that, "Most days I have access to dependable transportation?" Dependable transportation means you have money for bus fare, gas for your car, your car will start and run without a problem, and you have access to it when you need it if you share it.] should be revised, in future studies, to include phrasing targeting *legal* ability to drive.

Analysis of intensity of transportation problems. The second subquestion investigates whether women minimize the severity of hardship, or intensity of problems, they experience related to transportation access. To assess this dimension, the coders rated the intensity of each transportation problem women reported. The level of intensity for each transportation problem

was evaluated and categorized as minor (i.e., woman gets where she needs to be but experiences minor annoyance or inconvenience, usually shorter term); moderate (i.e., woman gets where she needs to be but may be quite late, getting there requires high levels of effort and inconvenience), or severe (i.e., woman does not get where she needs to go or must violate the law to get there, often longer term; transportation is a barrier). Because this was not assessed by women, it should not be confounded by their tendency to minimize their problems. In the follow-up interview, 49% of women reported at least one minor transportation problem; 39% of women reported at least one moderate transportation problem; and 29% of women reported at least one severe transportation problem. This indicates that, despite few women reporting overall lack of dependable transportation, significant numbers of women recount transportation problems with high intensity levels.

To tease out whether the intensity of problems women reported was related to women's self-reported ratings of access to dependable transportation (at either wave three or at the follow-up interview), bivariate correlations were calculated to show the connection of ratings of dependable transportation with an ordinal variable reflecting the three levels of problem coder-rated intensity (minor, moderate or severe). The expectation is that women who report that they have access to dependable transportation will report less severe transportation problems than women without dependable transportation.

The results of this analysis support the hypothesis. Intensity of problems was correlated with women's ratings of access at both wave three and the follow-up interview, in the expected directions (results not shown). That is, women with lower levels of access are describing more intense transportation problems than women who describe higher levels of access.

Consider, for example, the problems two women for whom, as access decreases, intensity of problems increases. First, one woman [653] explains the financial problems she encounters arranging transportation:

> It's iffy, it just varies on, you know, if we can come up with the money just to take the bus because my kids are right at that point where you have to pay for them now so it's like my income's only $100.00 a month and I gotta put that to [the electric company] so it's just – and I've been sick so I can't donate [plasma] no more so it's like it's iffy on –

Another woman [673] with lower access than the first woman reports a higher intensity issue; she explains that her transportation problems resulted in her being mugged and suffering a concussion, "Yes. Case in point, I was mugged…It was when I was trying to get on the bus." The findings suggest that the types of problems low-access women report are more intense than those described by higher-access women.

Analysis of comparative importance of transportation problems with other problems. The third subquestion is designed to reveal whether women may be reporting high levels of transportation access, or low levels of deprivation, because they are perceiving that the level of transportation difficulty they face is relatively less severe compared to the severity of other problems they encounter. To assess this question, which takes into account women's perceptions of their problems, women were asked to report their top three concerns. Out of 75 women, 32 (42.6%) reported transportation as one of their top three concerns; in fact, it was the most common area of concern given. This result should be interpreted with some degree of caution due to priming effects, because women had just been asked about transportation concerns earlier in the interview.

From the most commonly reported concerns to the least commonly reported, women's other areas of concern were: finances in general (40%), others' health and wellbeing (32%),

personal health and safety including addiction (29.3%), housing (25.3%), employment (25.3%),

going back to jail or not meeting terms of probation/parole (24%), education (18.7%), repairing

or maintaining personal relationships (16%), and personal improvement (13.3%).

One could expect that women who report transportation as a top concern would also

describe lower levels of access to dependable transportation. Bivariate correlations revealed that

whether women ranked transportation as a top three concern was not significantly correlated

with their own self-reported access to transportation. The expectation that women who reported

less access to dependable transportation at either wave three or the follow-up interview (two

separate variables) would report that transportation as a top concern was not supported.

Resources Used To Increase Transportation Access

The second research goal of the qualitative data analysis was to investigate women's use

of additional resources, not captured in the quantitative measures, to increase their access to

dependable transportation. This goal addresses whether the low correlation between women's

transportation resources and access is due, in part, to omitted variable bias. That is, measures of

transportation resources that were omitted from the list administered in the wave three interview

may contribute to the low correlation between measured resources and measures of access. To

explore this issue, questions in the time 4 in-depth interview were designed to elicit responses

about all the resources women use for getting from place to place. Due to the straightforward

nature of these questions, intercoder reliability was not established.

In the follow-up interview, women were asked which of the original list of transportation

resources, from wave three, they made use of; they also were asked to comment on whether they

rely on "other people" or "other programs" for help with transportation. This direct line of

questioning generated a list of resources not previously included in the wave three closed-ended

data collection instrument. In all, 49 women discussed using at least one resource; 26 women did not report using any resource. The first, and most common, resource women discussed was receiving gas cards/bus tokens given to them by mental health providers (n=16), parole or probation officers (n=10), or job search services (n=11). Women also reported receiving rides from professionals in their lives (n=12) or members of their extended support network (n=14), aside from family and friends previously asked about in wave three. A less common resource, utilized only by women in the sample with physical disabilities was discounted bus passes (n=2). Also, included in Table 13, a major resource for women was having an accommodating supervision agent – one who made notes about women's transportation problems but did not violate them for missing scheduled appointments.

Table 13. Additional Resources Women Use to Increase Access to Transportation (n=75)

Resource	Women N (%)
Receiving gas cards or bus tokens to attend:	
Mental and general health providers (Medicaid)	16 (21.3%)
Parole or probation meetings	10 (13.3%)
Employment or job help services	11 (14.7%)
Receive rides from other professional (caseworker)	12 (16.0%)
Receive help from extended network (co-workers)	14 (18.7%)
Supervision agent is accommodating (reschedules appt)	14 (18.7%)
Receives discounted bus fare (disability status)	2 (2.7%)

Also, in the follow-up interview, a second attempt was made to elicit additional resources women use to augment their access to transportation. Women were asked to look at the complete list of resources from wave three and were directly asked (1) whether other resources were missing from the list and, because all women included in the follow-up interviews reported low resources at the wave three interview, they were asked (2) how they were able to gain access to transportation despite having limited resources. Several women did not understand the question,

but for those that did, useful information was generated; 21 new resources were suggested by 15 women in this section of the interview and were incorporated into Table 13.

Taken together, these findings highlight that there are resources available to women, albeit they are patchwork in nature, for getting to and from some needed services such as employment help, medical care and supervision appointments. However, more comprehensive resources that help women with several needs simultaneously are lacking. Women were quick to identify holes in services such as limited availability of friends or family, or unreliable sources for bus tokens or limited bus routes and travel times. However, that women are making use of these resources suggests they do have utility, even if limited.

Strategies Used to Increase Transportation Access

The goal for this component of the qualitative research was to capture women's insights, experiences regarding strategies they use to increase transportation access and whether these strategies bring women into conflict with the law (e.g., driving without a license or riding with a friend who has a felony conviction). Because so few women reported having problems with dependable transportation in the third wave of data collection (17.5% of 379 women) yet also reported low levels of transportation resources (See Table 2), the primary goal of this research questions is to explore possible strategies women use to increase resources and access that were not measured in the wave three interview.

To engage women in a conversation about their use of strategies, women were asked, "Thinking about the ways you arrange transportation, now or in the past, what is hard or easy about it?" Next, women were asked whether they have missed a required supervision appointment, or another important appointment, and what strategies they use to avoid missing important appointments. This line of inquiry was helpful in highlighting both strategies that work

for women and those that do not— that is, those strategies that resulted in missing scheduled appointments. Women also discussed whether their strategies for arranging transportation were stressful or easy to use and whether they placed women in danger or a difficult situation.

Table 14. Strategies Women Use to Increase Access to Transportation

Strategy	Examples of Strategy	Women N (%)
1. Planning in advance	Leaves early for appointment; arranges rides ahead of time with people or agencies; purchases bus passes ahead of time; knows schedule or uses planner to keep organized	39 (52%)
2. Building extended and extensive support networks	Has several people lined up to help as back ups	21 (28%)
3. Utilizing several modes of transportation	Has several modes of transportation available for each errand; Uses bus as back up for car if broken	21 (28%)
4. Living close	Lives close to places she needs to go	20 (26.7%)
5. Exclusively relying on romantic partner	Relies primarily on romantic partner for transportation and not on other people; could indicate involvement in utilitarian romantic partnership	14 (18.7%)
6. Driving illegally	Drives without a license or without a registered or insured vehicle	14 (18.7%)
7. Trading goods & services	Pays people; trades childcare, food stamps, hairstyling; companionship; not really taxable employment	10 (13.3%)
8. Limiting travel	Indicates her strategy is to stay home or otherwise limit range of travel; reduce reliance on others	6 (8.0%)
9. Panhandling & other odd jobs	Includes plasma donation, posting advertisements on Craigslist; can be counted as employment activities	5 (6.7%)

There were only seven women who were unable to recall using any strategy to increase access to transportation. The remaining 68 women reported using one to six strategies. Women commonly reported using nine types of strategies (see Table 14) previously unknown to the researcher to increase their access to transportation. Examples of each strategy are provided in

the table. Intercoder reliability was established for the coding of strategies (Cohen's kappa = .706); this kappa value represents good intercoder agreement (Hruschka et al., 2004).

The most common strategy women utilized was planning in advance for appointments (52%). Other common strategies were building extensive support networks and making use of several modes of transportation, for example, planning for a ride but having a bus pass available, for appointments. More than a quarter of the sample used these two methods (28%). Other strategies women used included living close to where they needed to travel (26.7%), relying exclusively on romantic partners (18.7%), driving illegally (18.7%), trading goods and services (13.3%), limiting travel (8%), and panhandling or working other odd jobs to pay for transportation (6.7%).

Many women used a combination of strategies, often simultaneously. For example, using narratives as the unit of analysis, a common combination of strategies was to live close to necessary destinations (24 narratives) as well as planning ahead (15 of 24 narratives) and using multiple modes of transportation (15 of 24 narratives). It was common for women to say that to ensure they did not miss a required supervision appointment, they, "Just called ahead of time and let, you know, whoever was going to know what time I had to be there. And if not, if that failed, ride the bus." This example illustrates women's use of planning in advance as well as using multiple modes of transportation (i.e., arranging a ride ahead of time and also making sure she could use the bus).

Similarly, women who arranged for several people to be available to take them places (32 narratives) also used multiple modes of transportation (14 of 32 narratives) and planned ahead (24 of 32 narratives). Because women are utilizing several strategies simultaneously, qualitative interview methods are able to capture these various methods and how they complement one

another. By contrast, if women were asked, in a checklist format, for example, whether they use any of these nine strategies, the interplay between the various strategies would likely be lost. Further, women may not recognize that they are using several strategies at once.

Although not quantifiable here, the interviewer used several alternative words for "strategies" to help women see that what they were doing (e.g., calling several people days ahead of an appointment to arrange transit) is considered strategizing. Most women did not appear to understand their behavior as being a purposive and agentic act. Some strategies highlight women's use of agency better than others. For example, planning ahead of time involves leaving early or arranging for multiple people to be available to take the woman to her appointment. Similarly, when plans fall through, calling agencies to notify them of missing appointments and asking about rescheduling all show that women are exercising agency. That is, they are acting within a confined social structural position (lacking transportation) but are not passive victims of their situation. Instead, they take steps to influence the outcome of their situation by utilizing the nine strategies listed in Table 14.

Some strategies suggest that women are operating within the constraints of a male-dominated social structure by capitalizing on the feminized role of being a caretaker and romantic partner. For example, 14 women (almost 19%) indicated that they relied on a male romantic partner as their exclusive means of transportation. Men in these relationships, in return, relied on the women to clean their houses, help them remember appointments, or performed other duties associated with a romantic, caretaking, partner. For example, one woman (1006) explained that she relies on her boyfriend not just for transportation but also for money and housing:

> I would not have anything right now if it wasn't for [my boyfriend]…I live there
> free you know. I don't pay for any utilities. The only thing I do is pay for food and

gas and then I keep the house clean and take care of the dogs and stuff…And he has given me a lot of money for gas because of probation and stuff…because for awhile there I wasn't working. They had me doing so many things that I couldn't work. And so he was supplying everything for me. (1006)

Although the nature of women's relationships was not a focus of the interview, and was somewhat of a surprise to discover, some of these women (609) indicated that their relationships were more utilitarian than romantic.

I never had to ask because [my ex-husband] was always there…But I really did stop loving him. It wasn't there no more. My eyes were opened. Because when I met him I was in my addiction. So yeah, we did trade, as you said, favors for favors. And then after I got clean and I seen, this is not what my life is. This is not who I am. That's when I stopped. Told him I couldn't tell him I loved him anymore. But he still was always there. He was my security.

Future investigations should focus more directly on achieving a better understanding of the roles of agency and constraints on women's strategies.

The use of some strategies was related to women's perceptions of their access to dependable transportation. Women who engage in some type of trading or employment to gain transportation access are more likely to have said, in the follow-up interview, that they did not have access to dependable transportation (50% of women who trade goods or services, and 80% of women who perform odd jobs) than women who used strategies that did not involve trading or working at odd jobs (e.g., planning ahead). This finding could indicate that women who must trade or work at odd jobs to gain transportation access are more keenly aware of the challenges they face when arranging transportation than women who use other strategies. On the other hand, it could indicate that women who must barter or seek odd jobs to gain access to transportation may have smaller social networks. These are both hypotheses that should be investigated in future research.

Not all strategies used by women are prosocial or even legal. The fourth research goal, to determine whether women's strategies to increase transportation access bring them into conflict with the law, was addressed to see whether certain strategies increase women's likelihood of failing supervision or even returning to jail/prison. Women's strategies were coded into categories indicating whether the strategies were in conflict with the law. Although most strategies were found to be prosocial, two strategies were identified as being in conflict with law: driving without a license and trading illegal goods or services (see Table 15). These strategies add to our understanding of women's continuation of illegal behavior.

Table 15. Strategies Women Use to Increase Access that Conflict with the Law

Strategy	Conflicts with Law	
	Yes	**No**
1. Driving illegally	14 (100%)	0
2. Trading goods & services	4 (28.6%)	10 (7%)
3. Panhandling & other odd jobs	0	5 (100%)

Women who traded goods and services traded childcare (n=1), provided free hairstyling (n=1), traded food stamps (n=1), provided companionship (n=1), money (n=4) or didn't want to say (n=2). Women who worked odd jobs or panhandled did not do anything that violates a law or would get them in trouble with supervision requirements; women in this category sold plasma (n = 2), cleaned houses (n = 1), panhandled (n=1) or exchanged childcare for transportation assistance (n = 1). The finding that women were not utilizing strategies that conflicted with the law was in contrast to the expected hypothesis that, women suffering from lack of transportation would resort to illegal methods of obtaining transportation. The finding may explain why transportation issues were not strongly predictive of recidivism in the quantitative data analysis.

There are women for whom the use of the nine strategies did not work as well as for other women. For example, planning ahead of time for a ride did not ensure women were able to get where they needed to go. Sometimes a ride would not show up:

> Yes, there's been a lot of times I've missed going places because it was a change of plan or they couldn't come and take me. Just because those are the only people I have to ask to take me someplace don't mean that they always take me because they don't…Because you don't never know when somebody's gonna change their mind about coming and taking you. You can ask a week or two ahead of time, you know, and those people they done got old now and they forget stuff. They'll say, oh, I forgot that I had to go to a funeral, oh I forgot that I had to go to such and such. [633]

Further, there are women for whom the use of these strategies was not enough to overcome social structural deficits. For example, the scheduling of random drug screens, being random, made it difficult for this woman to plan ahead to arrange a ride, borrow a vehicle, or use the bus (due to the location of the screening center).

> Well, I had to do drunk screens three times a week and it was random so I never knew until the morning of. That morning, I would have to make sure I'd get up and tell my dad hey, I have to drop today. And then it's a different time every day you have to be here.[500]

For this woman and others in a similar situation, the requirements of supervision made many of the possible transportation strategies challenging to employ. In this case, this information could be shared with agents and agencies to help them better assist, or at least make them aware, of the transportation problems they create for their clients.

Relationship Between Transportation Access and Recidivism

The goal for this component of the qualitative research was to investigate whether transportation problems contribute to recidivism. It was expected that women who were transportation deprived would employ strategies that brought them into conflict with the law or

would miss important supervision meetings or other required appointments that could result in being arrested, convicted or receiving supervision violations.

Recall in the quantitative section, transportation access and recidivism were not statistically correlated. The fifth research question, in that section, was answered with an investigation of the impact of transportation access on rearrest and reconviction. Recall hat although the results from the quantitative analysis were non-significant, the effects were in the expected direction. That is, greater transportation access lowered the odds (or hazard, in the survival analysis models) of rearrest, reconviction, and supervision violation and slowed the time until these recidivism events occurred.

First, to investigate the relationship between transportation access and recidivism, using qualitative data, the list of transportation problems (see Table 12) was considered indicative of "lack of access" and correlated with both self-reported and official recidivism measures such as rearrest, reconviction and supervision violation. To ensure that both sources of recidivism data covered the same time period and could, therefore, be compared, the time period used for the official data was calculated to equal the time from women's first interview with the study through December 2013 which is approximately the time of their last interview. This is because women were asked to recount new arrests (rearrests), new convictions (reconvictions) and supervision violations occurring since their first interview until their fourth interview (the follow-up interview). The two sources of data had similar rates of recidivism for the 75 women who completed follow-up interviews. In the official data, 15 women were rearrested, 13 were reconvicted, and 31 had supervision violations between their first interview and December, 2013. In the self-report data, 12 women reported having been rearrested or reconvicted and 17 reported having received a supervision violation.

Table 16 shows the correlations of recidivism indicated by both the self-reports and official records with the ten types of transportation problems. Transportation problems, from the follow-up interview, are used as a proxy for the "lower access," women reported experiencing. Correlations are expected to be positive indicating that greater problems result in greater incidence of recidivism. Only significant correlations are shown in the table. At the bivariate level, women who reported having car problems were significantly less likely to self-report that they had been rearrested or reconvicted since their first interview. This finding is counterintuitive. However, because official data of rearrests is positively, although not significantly correlated with car problems (r=.036, p =.972; not shown), this finding should be interpreted with caution. A related finding is that women who reported that they had unreliable transportation help were more likely to report having had a supervision violation. Again, though, this finding is not supported in the official data. Taken together, the lack of significant correlations indicates that transportation problems women experience are not resulting in official recidivism events such as rearrest, reconviction or supervision violations.

Table 16: Correlations Between Transportation Access & Recidivism Outcomes

Type of Transportation Access Problem	Self-Reported Recidivism (Yes/No)		Official Data Recidivism (Number)		
	New Arrest or Conviction	Supervision Violation	New Arrest(s)	New Conviction(s)	Supervision Violation(s)
Weather			n.s.	n.s.	n.s.
Car Problems	-.221*		n.s.	n.s.	n.s.
Inadequate Buses			n.s.	n.s.	n.s.
Direct Cost of Transportation			n.s.	n.s.	n.s.
Coordinating Help			n.s.	n.s.	n.s.
No Help			n.s.	n.s.	n.s.
Unreliable Help		.239*	n.s.	n.s.	n.s.
Legal Problems, Legal Costs			n.s.	n.s.	n.s.
Health Problems			n.s.	n.s.	n.s.
Safety			n.s.	n.s.	n.s.

Second, women's responses to three questions directly assessing whether they felt their transportation situations led to recidivism events were analyzed. The seventeen women who self-reported experiencing supervision violations and the twelve women who self-reported being rearrested or reconvicted since their first interview were asked directly, "Did lack of transportation have anything to do with any of these violations?' Their responses were grouped as "yes" or "no." Two of the twelve women who were rearrested or reconvicted and two of the women who had supervision violations reported that transportation was related to their offense. The rearrests were for stealing a vehicle and for driving without a license. For one woman, the supervision violations occurred when, during a snowstorm, she was unable to report to supervision. The other woman was arrested for a traffic violation for driving with a suspended license. Because 12% to 16% of women (2 of 17; 2 of 12) who experienced recidivism events described transportation as a contributing factor; this finding does provide strong women evidence of a relationship between transportation problems and recidivism, though the sample size is very small.

Third, all women in the follow-up interview were asked to explain how they ensure their transportation problems do not result in recidivism. They repeat strategies noted in the previous section (see Table 14) such as planning ahead or leaving early for appointments. Additional strategies women identified for avoiding transportation-related offenses were ensuring that they were riding with non-felons, taking alternate routes to avoid police detection, making others aware of their transportation problems, and reducing the amount of trips taken. For example, one woman recounts:

> I did not go in a vehicle with somebody that was at risk. Like I won't ride in a vehicle with somebody that does blow and nodding out thing, holding, you know what I mean, if I know if that person won't stash it and blame it on me.

A second woman explains that, to avoid police detection, she takes alternate routes when she must drive without a license, "I do take a lot of different roads, and I take the long way around, instead of taking the short way. That's about it and just hope to God…" And the third woman finds that making her problems known to others helps ensure she gets where she needs to go. She explained, "Oh you know, you just tell people like, "if I don't get there, I go to prison." So they're going to be like, "Oh!" Finally, the fourth woman reduces the number of appointments she must attend or the places she goes: "I don't go anywhere. Yeah. I don't. I don't go anywhere I'm not supposed to go. I don't go to stores that sell booze. In fact, that's one of the reasons I don't walk down to my store anymore."

CHAPTER 6: DISCUSSION AND CONCLUSION

Transportation deprivation has emerged as a problem among low-income women because of its impact on unemployment, stress and lack of medical care. Prior to this study, access to transportation had not been examined among correctional populations. Yet, there is reason to suspect transportation problems are exacerbated for women offenders, compared to men, because women offenders' pathways to crime are often characterized by victimization, such as childhood and adulthood traumas, which serve as precursors to women's offending. Transportation may be particularly important to their recovery, for example, by bridging their needs for substance abuse treatment and receipt of those services. Further, women's use of transportation may present a unique pathway into crime via increased rates of transportation-related offenses, compared to male offenders. Therefore, transportation deprivation should be studied to discover the extent of transportation problems and whether these problems impact recidivism.

In response to this gap, this study used a mixed-methods sequential explanatory design— both quantitative and qualitative research methodologies— to examine transportation deprivation in a statewide sample of 402 women. The goals for the quantitative analysis were to describe the extent and distribution of transportation deprivation, create a composite transportation access score, examine how well transportation resources predict transportation access, show whether transportation access moderates the association of criminogenic needs with recidivism, and show the degree to which transportation access adds to the prediction of recidivism outcomes. The goals for the qualitative component of the research were to increase understanding of the transportation problems women experienced while under supervision, their use of resources, and strategies to increase their transportation access, and whether these

strategies brought women into conflict with the law as well as the contribution of transportation problems to any violations or new offenses.

In answering the research questions, the study addresses four gaps in existing research. First, it focuses on women offenders, a group that has not received adequate research attention. Second, it uses available data to discover actual levels of transportation deprivation, which is currently unknown. Third, it investigates the strategies women with transportation deprivation use to increase their level of transportation access. Fourth, and finally, it assesses whether transportation deprivation is related to recidivism.

The concluding chapter begins with a summary of research findings and then offers discussion of study limitations and recommendations for future research followed by a brief conclusion and presentation of policy implications.

Summary and Discussion

Quantitative results. The results for the first research question regarding the extent of transportation deprivation among women offenders indicated that women, overall, have relatively high levels of resources in terms of family and friend support but have very low levels of individual and community level resources. Despite low levels of individual and community resources, women report moderate to high levels of transportation access. At the bivariate level, resources significantly correlated with transportation access are: owning/leasing a vehicle, access to a registered and insured vehicle, physical well-being, support from family and friends, and women's agreement that they have help with rides for themselves and their children and can get money for transportation.

The second research question led to exploration of the reliability of various measures of transportation access and the feasibility of combining them into one composite transportation

access score. The results showed that five transportation access items from the transportation literature as well as the one developed for this study are reliable measures of the underlying latent construct of transportation access. Thus, they were combined into a composite measure of transportation access.

The third research question, how well transportation resources predict transportation access, was examined using multivariate linear regression. The results revealed that several resources do significantly predict transportation access: whether a woman owned or leased a vehicle, had a valid driver's license, had difficulty walking, had poor vision, had friends who could help with transportation needs, and lived in an area with a low community accessibility score. Of these, the greatest impact, or the largest effect, was for transportation help from family and friends.

The fourth research question was whether the effect of criminogenic needs on recidivism (i.e., rearrest, reconviction and supervision violation) was moderated by transportation access. In other words, were the effects of criminogenic needs on recidivism made worse by the lack of transportation needed to address criminogenic needs, for example, attending substance abuse treatment? The initial results revealed that criminogenic needs did significantly vary over levels of transportation access, for rearrest, but not in the expected direction. Specifically, women with similar levels of criminogenic needs, who had <u>higher</u> levels of transportation access, had <u>greater</u> odds of rearrest compared to women with lower levels of transportation access. This was counter to expectations that greater access to transportation would help women avoid recidivism events. However, suggesting additional analyses were warranted, this finding was not supported by the results of tests of the reconviction and supervision violation models; this . Additional analyses were undertaken; the overall measure of criminogenic needs was segmented into its 25 subscales

and the interaction effects for each of these subscales with transportation access were examined. The results revealed that the relationship between four criminogenic needs (i.e., antisocial friends, maltreatment as a child, family support, and self-efficacy) did significantly vary over levels of transportation access in their impact on rearrest. For women who had antisocial friends and who had experienced maltreatment as a child, lack of transportation exacerbated their odds of rearrest. Conversely, these same women had significantly reduced odds of rearrest when they had greater access to transportation. For these women, access to transportation made a significant difference in whether their criminogenic needs resulted in rearrest. Similarly, for women who had family support and greater self-efficacy, compared to those who did not, greater transportation access aided them in avoiding rearrest whereas transportation deprivation led to greater odds of rearrest.

The fifth research question was used to investigate the impact of transportation access on rearrest, reconviction, and supervision violation. The results from test of both the logistic regression and survival analysis models indicated that, although the results were non-significant, the effects were in the expected direction. That is, greater transportation access lowered the odds (or hazard, in the survival analysis models) of rearrest, reconviction, and supervision violation and slowed the time until these recidivism events occurred.

Taken together, the findings pertinent to the fourth and fifth research questions suggest that transportation access does lower the occurrence of recidivism, and the time until recidivism. Further, the findings indicate that transportation access is especially important for women with certain criminogenic needs – those with antisocial friends, histories of child maltreatment, greater family support and greater self-efficacy.

Qualitative results. The first qualitative research question led to examination of three dimensions of transportation problems: types of problems, intensity of problems, and comparative importance of transportation problems to other problems women currently experience. The results showed that women reported experiencing one to ten types of problems: difficulty arranging rides, experiencing legal problems and related costs, having car problems, using inadequate bus services, relying on unreliable people for transportation help, being burdened with the direct costs of transportation, feeling unsafe, lacking a social network of people to provide transportation help, and coping with weather issues or health problems that impeded travel. Both number of types of problems and specific types of problems were related to whether women self-reported transportation deprivation at wave three or the follow-up interview.

Further, it was expected that intensity of problems women reported would be related to women's self-reported ratings of access to dependable transportation. The results of this analysis support the hypothesis. Finally, although 32 women (42.6%) reported transportation as one of their top three concerns; and was, in fact, the most common area of concern given, it was not related to women's self- reported levels of access to dependable transportation at either wave three or the follow-up interview. Therefore, this particular set of questions did not enhance the understanding of how women situate transportation problems among their larger list of concerns.

The results for the second qualitative research question are that women utilize several resources not previously captured in the quantitative interview. Women reported using agency-provided, or discounted, bus tokens and gas cards; receiving help from an extended network of friends, co-workers, and professionals; and benefitting from having an understanding and non-punitive supervision agent.

The goal for the third qualitative research component was to capture the strategies women use to increase transportation access and discover whether these strategies bring women into conflict with the law. Nine previously unrecognized strategies were identified: planning in advance for appointments, building extensive support networks, making use of several modes of transportation, living close to where women needed to travel, relying exclusively on romantic partners, driving illegally, trading goods and services, limiting travel, and panhandling or working other odd jobs.

The findings also showed that many women used a combination of strategies, often simultaneously. Not all strategies used by women are prosocial or even legal; however, far fewer women than hypothesized resorted to illegal methods of obtaining transportation. There were women for whom use of the use of the nine strategies did not work as well as they did for other women. There were women for whom the requirements of supervision made many transportation strategies challenging to employ. In this particular case, this information could be shared with agents and agencies to help them better assist, or at least make them aware, of the transportation problems they create for their clients.

Further, there were women for whom the use of these strategies was not enough to overcome social structural deficits. It was hoped that these findings would also reveal women's use of agency despite their constrained positions in the social structure. Discussions with women did show that despite having limited transportation resources or access, women exercise agency by using what resources they have (phones, friends) to plan ahead of time and arrange for multiple people to be available to help with rides. That is, women indicated that, although confined in a social structural position (lacking transportation), they are not passive victims of their situation. Instead, they take steps to influence the outcome of their situation. Further,

interviews revealed that women operating within the constraints of a male-dominated social structure sometimes obtained transportation by capitalizing on the feminized role of being caretaking/romantic partner. In general, findings from this research question can be shared with parole and probation officers, who, in turn can share these strategies with their clients to help them find ways to cope with limited transportation resources and/or access.

The goal of addressing the fourth qualitative research question was to investigate the relationship between transportation access and recidivism. Although the analyses of the quantitative data suggested that transportation access lowered the odds of rearrest, reconviction and supervision violation, the findings of the qualitative data were somewhat mixed. The findings showed that transportation problems women experienced were <u>not </u>resulting in official recidivism events such as rearrest, reconviction or supervision violations. However, when asked to describe recidivism events, 12% to 16% of women described transportation as a contributing factor lending some support for a relationship between transportation problems and recidivism.

Two potential explanations emerge for the mixed findings. First, the role of agents in minimizing the consequences of missed supervision appointments emerged earlier in the data but is again relevant here. Many women reported that if they notified agents that they are unable to get to an important appointment, they were most often able to reschedule without incurring penalties such as supervision violations. Second, women explain that police do not seem to ticket, or do not seem to catch, women driving without licenses or properly registered vehicles. Therefore, the impact of women's transportation problems are not resulting in recidivism events. Although this finding is not what is expected, it is helpful to women offenders that their transportation problems are not translating into jail time.

Limitations and Recommendations

There are several limitations to this study. First, it is not generalizable to a national population because of its focus on substance-involved female offenders in one state. Laws regarding driving and garnering of licenses, for example, as a penalty for committing a drug-related crime, vary from state to state. Michigan is not a very punitive state in terms of its driving laws. It can be expected that women residing in other states will experience a more dire climate for driving. Studies in these other states will benefit from the measures developed in Michigan; the basis for comparative research has been laid by this study. Additionally, the scope of the study did not examine the experiences of males. It is known from feminist pathways research that understanding the experience of one gender helps illuminate the experience of the other. So, it is hoped that the findings presented here will stimulate research to provide some understanding of men's transportation needs. Future studies should be conducted with women offenders broadly (not just substance-involved females), male offenders, and in states with different sanctions for licensing and with different resources available to women (bus vouchers) and weather (important consideration for bus riders and walkers).

Second, the non-significant relationship between transportation and recidivism can be explained in three ways. The length of recidivism utilized in these analyses is much shorter than the more typical three-year follow-up period for recidivism analyses and does reduce the variability in the recidivism variables that can be explained resulting in a lower likelihood of detecting significant recidivism findings. However, because transportation access is fluid and changes rather quickly, using a longer follow-up period for recidivism may not increase the explained variance. Also, it is worth noting that in the process of coding case notes for the supervision violation analysis, it became apparent that although women were missing required supervision meetings, court appointments and drug/alcohol tests, agents most often responded by

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rescheduling appointments or giving warnings. It was unusual that these types of occurrences would result in a supervision violation. This suggests that transportation problems may not result in supervision violations but may matter more for other outcomes such as ability to attend substance abuse treatment, get to work on time, or keep other important appointments. This could account for why transportation problems did not significantly predict supervision violations.

The non-significant recidivism findings further underscore the importance of the qualitative data which, based on preliminary analyses of these data, indicated that women were in fact breaking the law by driving without a license, that is, they should have rearrests and reconvictions, but they are not getting caught by the police. Therefore, their illegal behavior is not resulting in recidivism events and is therefore not reflected in these analyses. The qualitative data reveal the strategies women use to avoid being detected when breaking the law, and therefore avoiding recidivism events. Finally, future studies would benefit from a longer follow-up period for recidivism outcomes.

Third, there were some limitations with the way questions were asked in the qualitative interview. The questions designed to capture the resources women use to increase transportation access were confusing to many women despite revisions of the questions and re-training of the interviewer. Many women reported being confused by the abstract concepts of resources, access, and strategies and, as a result, limited information was collected. This research found that the best way to measure transportation resources was not to engage women in conversations but rather to ask whether they make use of a list of resources. The limitation is that the list maybe incomplete. However, this research has increased the number of items that should be included in the list and therefore should produce more valid information. The new information women

provided regarding resources that may have been omitted from the wave three interview will be

tremendously beneficial to future investigations of women's resources. Future analyses should

include the new measures of resources (e.g., bus tokens from Medicaid, ride assistance from

caseworkers), in combination with the original list of resources, and utilize bivariate correlations

to investigate whether the combined list of resources is better correlated with levels of access to

dependable transportation.

Conclusion and Policy Implications

Although research on low-income individuals and transportation is plentiful; the same

cannot be said for women offenders. Few studies have examined transportation in correctional

populations and none have examined transportation deprivation among women offenders. The

present study is improves existing research in several important ways. First, the longitudinal

nature of the study, examining transportation access over time and situating it within the broader

concerns in women's lives, lays the initial groundwork for establishing the extent to which

transportation impacts the lives of women offenders. Second, the sample sizes, and high

retention of women in those samples, from the wave one interview through the fourth, follow-up

interview, provide confidence in the external validity of the study – that the women who were

retained represent the larger population from which they were sampled. This ensures that the

study is of great rigor. Third, the diversity of the sample included women living in both rural and

urban areas and can address varying access to public transportation. Fourth, the use of both

quantitative and qualitative methodologies strengthened the study by allowing large numbers of

women (n=366) to be sampled to establish the broad scope of the transportation problem and

made possible the flushing out of complex topics such as agency with in-depth interviews

(n=75). Finally, the use of both self-report recidivism data with official recidivism data provides

greater confidence that recidivism events were captured and allows for greater power in statistical analyses.

The results overall suggest that women do encounter a great variety of transportation problems but do receive substantial amounts of help from family and friends. In the absence of resources such as dependable and reliable public transportation, women exercise agency by employing many successful strategies such as planning in advance or utilizing several modes of transportation. As hypothesized, women who have greater resources do have greater access. And, women with greater access to transportation do better in terms of recidivism outcomes, although results were not significant.

Overall, these findings suggest three major directions for policy. First, supervision agents and agencies should be trained and aware of the significant problems their clients face that complicate, and in some cases, inhibit them from attending supervision appointments, drug or alcohol treatment and obtaining other necessary services. Most of the women in this study seemed to have understanding agents who did not penalize them for transportation problems. However, there were women who did go to jail when a ride fell through. The information provided here, especially with regards to strategies women use to overcome transportation deprivation, could be incorporated into this training and shared with other women to help others surmount their transportation obstacles.

Second, transit authorities should be notified about how their current services, and especially reductions in their services, impact women offenders and other low-income populations. The findings of this study can help these agencies become aware of safety concerns to their services as well.

Third, programs aimed at increasing women's access to affordable vehicles or dependable public transportation should be considered an important component and included in social services such as housing, employment and food aid. This study, and others involving low-income samples, highlight the particular importance of access to an automobile.

Fourth, risk and needs instruments that currently assess women's needs may also consider including items related to transportation. Transportation is a stable enough construct that an instrument administered semi-annually should provide valuable information to supervision agents and other professionals (e.g., healthcare providers) relative to women's needs and abilities to attend necessary appointments.

APPENDICES

Appendix A
Phase I: Transportation-Related Variables and Questionnaire Items for Quantitative Analysis

Transportation-Related Variables and Questionnaire Items for Quantitative Analysis	
Variable:	Description:
TRANSPORTATION ACCESS	
Trip Safety, Ease, Stress, Cost, and Time	*NSF Women Offenders Study*, Wave three: For each place a woman traveled in the past 7 days, or in a typical week: A. How much time did it take to get there? B. What was the cost, round-trip? C. Did you feel safe getting to and from there? 0. No 1. Yes 7. Don't know D. Overall, do you agree it is easy (i.e., not physically challenging) for you to get to this place? 1. Strongly Disagree 2. Disagree 3. Neither Disagree or Agree 4. Agree 5. Strongly Agree E. How do you feel when you arrive at this place? (probe: the trip was challenging or unsafe) 1. Very Relaxed 2. Relaxed 3. Stressed 4. Very Stressed Note: Address of each location, purpose of trip, and mode of travel are also available.
Dependable	*NSF Women Offenders Study*, Wave three:

Transportation	A. To what extent, do you agree that, "Most days I have access to dependable transportation?" Dependable transportation means you have money for bus fare, gas for your car, your car will start and run without a problem, and you have access to it when you need it if you share it. 1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree B. Did you discuss transportation issues with your agent? 0. No 1. Yes 7. Don't know C. Were transportation issues a problem for you? 0. No 1. Yes 7. Don't know D. To what extent did you discuss transportation issues with your agent? 1. Hardly at all 2. -- 3. -- 4. -- 5. As fully as necessary 7. Don't know

TRANSPORTATION RESOURCES

Individual Level	*NSF Women Offenders Study*, Wave three: Access to an automobile A. Do you own or lease an automobile? 0. No 1. Yes 7. Don't know

	B. Do you have access to a car that you know is registered and insured? 0. No 1. Yes 7. Don't know C. Do you have a valid driver's license? 0. No 1. Yes 7. Don't know Physical Health A. How would you rate your current state of health? 1. Excellent 2. Very good 3. Good 4. Fair 5. Poor 6. Very poor 7. Don't know B. Do you have difficulty walking a block (or 150m) in summer? 0. No 1. Yes 7. Don't know C. Is your vision, even with glasses and/or contacts, poor? 0. No 1. Yes 7. Don't know
Family & Friends Level	*NSF Women Offenders Study*, Wave three: Social Network Inventory Now I am going to ask you about the people you socialize with and who you spend time with, and who are adults age 17 and older…who would provide you with help with transportation (ride or money)? *Total number of family and friends who would provide support will be calculated

	Transportation Inventory A. I can rely on friends and family to help <u>me</u> get where I need to go and get things done (for example, they may pick up a prescription for me or bring me to work). 1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree B. I can rely on friends and family to help <u>my children</u> (for example, bring my children to school). 1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree C. I can rely on friends and family to give <u>me</u> money when I need it for travel. 1. Strongly Disagree 2. Disagree 3. Agree 4. Strongly Agree
Community Level	Note: Because women lived at several residences, possibly in different communities, during the 8 months of the study, these measures will be calculated for first, last and average residence. *NSF Women Offenders Study*, Wave three: For the place you are now living: A. Is it a safe neighborhood? 0. No 1. Yes 7. Don't know B. Are there drugs in your neighborhood? 0. No 1. Yes 7. Don't know C. Are there gangs in your neighborhood?

0. No
1. Yes
7. Don't know
D. Do you hear gunshots in your neighborhood?
0. No
1. Yes
7. Don't know
E. Are there break-ins in your neighborhood?
0. No
1. Yes
7. Don't know
F. Is there violence in your neighborhood?
0. No
1. Yes
7. Don't know
G. Have you ever been the victim of crime in your neighborhood (i.e., assaulted, burglarized, robbed)?
0. No
1. Yes
7. Don't know
H. Do the police come into your neighborhood a lot?
0. No
1. Yes
7. Don't know

Publicly Available Data:
A. Walk Scores; each residence will be scored
90-100   Walker's Paradise: Daily Errands do not require a car
70-89 Very Walkable: Most errands can be accomplished on foot
50-69 Somewhat Walkable: Some amenities within walking distance
25-49 Car-Dependent: A few amenities within walking distance
 0 -24 Car-Dependent: Almost all errands require a car
B. Transit Scores; each residence will be scored
90-100   Rider's Paradise: World-class public transportation

	70-89 Excellent Transit: Transit is convenient for most trips
	50-69 Good Transit: Many nearby public transportation options
	25-49 Some Transit: A few nearby public transportation options
	0 -24 Minimal Transit: It is possible to get on a bus
	C. Overall - Livability Scores; each residence will be scored
	100 Very Livable
	…
	0 Not Desirable
	D. Crime - Livability Scores; each residence will be scored
	1. A+
	2. A
	3. A-
	…
	18. F-
	E. Amenities - Livability Scores; each residence will be scored
	1. A+
	2. A
	3. A-
	…
	18. F-

Appendix B
Phase II: Follow-Up Transportation Interview Questions for Qualitative Analysis

Section 2: Transportation Resources & Modes

5. During which periods of time would you say you had help from <u>other people</u> to help you with transportation, for example, a caseworker or co-worker?

      Please explain.

6. During which periods of time would you say you had help from <u>other programs</u> to help you with transportation, for example, bus passes or facility-provided transportation to treatment, job help, etc.?

      Please explain.

Section 4: Social Support

10. Have you ever missed a required supervision appointment because you did not have transportation to or from there?

      a. <u>If so</u>, explain what happened and what the result/consequences were?

      b. <u>If not</u>, how do you ensure this doesn't happen?

11. Have you ever missed another important appointment (e.g., treatment, medical appointment, etc.) because you did not have transportation to or from there?

      a. <u>If so</u>, explain what happened and what the result/consequences were?

      b. <u>If not</u>, how do you ensure you don't miss an appointment?

Section 5: Current Level of Access to Transportation
{Interviewer: Look at Transportation Inventory]
At the last interview, you told us that you <u>did/did not</u> have access to dependable transportation. Remember we defined dependable transportation as: you have money for bus fare, gas for your car or to pay for a ride; your car will start and run without a problem; and you have access to it when you need it if you share it.

1. As of today, would you say strongly agree, agree, disagree, or strongly disagree that you currently have access to dependable transportation?

6. Currently, do any of your current arrangements for getting around place you in danger or in a difficult situation? *[Probe, if needed: For example, driving without a valid license or riding with someone you aren't supposed to be around.]*

If so, please explain.

7. Thinking about the ways you arrange transportation, NOW OR IN THE PAST, what is hard or easy about it? *[Probes: How do you feel about your arrangements? Do they work well or poorly? If you could change your arrangements, how would you change them?]*

Section 7: Recidivism
Thinking back to when you had your first interview with us, on *[Interviewer: Look at calendar for month and year]:*

1. Have you had any arrests or convictions that were for new crimes (crimes that occurred after your first interview)?

 If so, briefly explain them.

2. Have you had any supervision violations?

 2a. If so, did lack of transportation have anything to do with any of these violations? Please explain.

 2b. If not, how you ensure that your transportation problems do not lead to violations/arrests?

Section 8: Link Between Access & Resources
The next questions are about the difference between transportation resources and access. Usually women who say they have high levels of resources also say they have high levels of access. This diagram *[Interviewer: Show diagram on blue laminated paper]* shows different types of resources that might be related to access.

1. What do you think of the diagram?

 a. Is anything listed that seems odd or like it doesn't belong?

2. Are there other resources or arrangements you use to get transportation that aren't listed?
 a. If so, what are the results/consequences of using these other resources or arrangements?

3. Were you able to get access to transportation even though you had few resources?
 a. If so, what other resources or arrangements did you use to get where you needed to go?
 b. What was the result/consequence of using these other resources or strategies?

4. Do you think your lack of resources and/or access led to any recidivism problems (for example, violations)?

      a. If not, how did you ensure that your lack of resources and/or access didn't lead to arrests, violations, etc.?

5. Is there anything else we should know about transportation that I haven't asked?

Wrapping Up:

1. What would you say are your top 3 concerns right now?

      Transportation was a top concern:
      1a. Please show me when on the calendar when it was.
      [Interviewer: highlight time period in yellow. Note that highlighters are erasable.]

      Transportation was NOT a top concern:
      1b. Was there ever a time when transportation was a top concern for you?

      1c. Please explain why or why not.

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