DISABILITY AND DISADVANTAGE IN OHIO: A CROSS-COUNTY COMPARISON OF LIVELIHOOD BARRIERS AMONG WHEELCHAIR USERS

THESIS

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Abstract

In this study I examine whether the spatial distribution of specific disabled populations has implication for their relative degree of disadvantage. Social disadvantages in work, physical mobility, and local government support can vary based upon disability type and regional situation of the population. These disadvantages offer indicators of livelihood barriers faced by the disabled that can be compared within a particular disabled population across different regions. Combining population considerations with county-level indicators of employment opportunity, mobility, and institutional support, I analyze livelihood barriers and disability by focusing on wheelchair users and county service providers in rural and urban environments.

Theoretically, I draw from two distinct perspectives. Sociology's structural perspective treats disability in a manner similar to other statuses such as race, ethnicity, gender and class. That is, sociologists tend to see disability as conferring disadvantage along valued resources and as inherently diminishing opportunities for employment, daily mobility, and support from the state. This perspective is developed largely at the macro-level and as structural perspective, having a tendency to emphasize structure over agency. Sociologists studying structural disadvantages have given increasing attention to geographic space in research on spatial inequality and this can be extended to explain rural-urban difference in the relationship between disability and livelihood barriers.

By contrast, geographers have developed a sub-field known as "disability geography" which stresses agency of disabled populations. From this view, disability is not inherently related to other disadvantages pertaining to valued resources or to diminished opportunities for employment, daily mobility, and support from the state. That is, the disabled are not a homogenous population; they make use of a range of strategies to overcome barriers, including pressing for claims from the state for support. However, disability geography has tended to be framed mostly at the micro-level of daily interactions and thus geographers studying disability have neglected rural-urban differences in the relationship between disability and livelihood barriers.

I collect primary data from wheelchair users and county level service providers, using these in combination with secondary data from the 2000 U.S. Census, Bureau of Labor Statistics, and County Business Patterns to compare obstacles to livelihoods across locations. I find that both physical mobility and employment opportunities are less constrained in urban environments, as transportation infrastructure, assistive services, diversity in job types, and less physically demanding work environments are more prevalent in those areas. In contrast, the relatively lower population density and terrain of rural environments leave some transportation provisions infeasible. There are also fewer job opportunities, with work duties often involving less accessible physical components for wheelchair users.

Demonstrating differences in employment and physical mobility between locations, I provide new applications for both social science perspectives. I recognize that place-based determinants, previously examined only at the individual scale, can play

a large role in explaining disadvantages described in sociology and disability geography. Moreover, my synthesis of approaches also identifies that a particular disability does not result in uniform disadvantage. Instead, aspects of county composition can play a role in describing degrees of disadvantage experienced by the disabled.

Dedication

This document is dedicated to Barbara Gordon and Freddy Freeman.

Acknowledgements

I would like to express my gratitude to all of the people that made this project possible. While the thesis lists a single author, it is actually the product of discussions, lectures, direct advice, workshops, and personal experiences that I've had over the past decade. First and foremost, I would like to thank Mike Blake, Jan Glenn, Patti Ruble, and all of the other residents of Creative Living that I befriended over the years. I don't study disability and accessibility as an abstract concept. The people and experiences I had ten years ago, whether a casual conversation or a game of chess, fundamentally shaped how I understood disability and social theory.

I'm also grateful for my family and friends that have supported me through my academic career. Even when my enthusiasm for articles and theories was not reciprocated, they've tolerated me as I've hijacked dinner conversations and turned quiet evenings at home into lectures on research design. I would apologize to my family, but growing up among teachers is what fueled my excitement for learning in the first place.

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and policy, my own research has undoubtedly been influenced by her teaching. Randy Hodson and Kendra McSweeney played very important roles in shaping the design of my research. I couldn't have conceived of this approach without them. And I should also thank my fellow graduate students for their candid feedback and, more importantly, their friendship.

In the process of writing this thesis, I've received support from outside of my academic program. I've become very impressed with the supportive atmosphere created by scholars in the field that were pleased to see more attention being given to rural disability and issues of inequality. I specifically want to mention both Michael Schulman and Lisa Schur, whose suggestions have formed the basis for entire chapters of this thesis. It was reassuring to receive encouragement from such accomplished scholars that I had never met before. While their insights informed my own work, the International Poverty Solutions Collaborative (IPSC) provided needed financial support to actually conduct this research. The IPSC was instrumental in allowing me to leave urban Ohio and spend time with Appalachian wheelchair users and county service providers. I'm thankful for their support.

I mentioned that this thesis was supported by a number of groups and individuals. Evie, my wife and dearest friend, has been with me through it all. I began this thesis as a newlywed. Traveling throughout Ohio, spending nights at the office, and converting our dining room into a chalkboard-covered research hub are not activities that best exemplify the intimacy and partnership of a new marriage. Yet she's met all of this with patience and words of encouragement. I'm so lucky to have had her as a partner through it all.

Lastly, I'd like to thank you, the reader. In researching rurality, disability, and inequality, I know how difficult it can be to find literature on this topic. I thank you for taking the time to read my own research on the subject.

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Table of Contents

List of Figures

List of Tables

CHAPTER ONE

INTRODUCTION

The disabled in the United States account for approximately one fifth of the civilian noninstitutionalized population (Brault 2012: 72). This is a diverse group whose conditions can be inherited or inflicted, mental or physical, and with varying implications for mobility (Barnes 1999; Brault 2012; Francis 2000; Schiller 2012). Economic distress (Baumle 2005; Jenkins 1991), physical exclusion (Barnes 1999), and low levels of political participation (Burkhauser 1997; Schur 2002; Withers 2012) have repeatedly been studied as social disadvantages encountered by the disabled. Most research on these disadvantages focuses on comparing disabled with non-disabled populations. These studies often take an aspatial approach to the disabled in the aggregate, without identifying unique trends of particular disability types in place and without looking at differences within populations with the same disability.

The purpose of this study is to examine whether the spatial distribution of specific disabled populations has implication for their relative degree of disadvantage. Social disadvantages in work, physical mobility, and local government support can vary based upon disability type and regional situation of the population. These disadvantages offer indicators of the livelihood barriers faced by the disabled that can be compared within a particular disabled population across different regions. Combining population

considerations with county-level indicators of employment opportunity, mobility, and institutional support, I look at this question (of livelihood barriers and disability) by focusing on rural and urban places—and through the eyes of two distinct populations---the disabled themselves, in this study defined as wheelchair-users, and from the view of local officials who administer programs for the disabled.

Theoretically, I draw from two distinct perspectives. Sociology's structural perspective treats disability in a manner similar to other statuses such as race, ethnicity, gender and class. That is, sociologists tend to see disability as conferring disadvantage along valued resources and as inherently diminishing opportunities for employment, for daily mobility, and for support from the state. This perspective is developed largely at the macro-level, having a tendency to emphasize structure over agency. Sociologists studying structural disadvantages have given increasing attention to geographic space in research on spatial inequality and this can be extended to explain urban-rural difference in the relationship between disability and livelihood barriers.

By contrast, geographers have developed a sub-field known as "disability geography" which stresses agency of the disabled population. From this view, disability is not inherently related to other disadvantages pertaining to valued resources or to diminished opportunities for employment, for daily mobility, and for support from the state. That is, the disabled are not a homogenous population; they make use of a range of strategies to overcome barriers, including pressing for claims from the state for support. However, disability geography has tended to be framed mostly at the micro-level of daily

interactions and thus geographers studying disability have neglected urban-rural differences in the relationship between disability and livelihood barriers.

This study is also unique in looking within a disabled population for difference in social disadvantage. In describing inequality, researchers typically compare disabled and non-disabled populations in the aggregate. Given the variety of disability types, such an approach has difficulty explaining whether all disabilities are inherently disadvantaging. Moreover, it does not identify whether persons with a similar disability are similarly disadvantaged. In isolating wheelchair users, this research provides needed empirical work within a particular disability type.

The Americans with Disabilities Act (ADA), representing the model governmental policy intervention to address this disadvantage, presents a puzzle that current approaches struggle to explain. As the landmark policy to address poverty and unemployment among the disabled, the ADA provided legal protections against discriminatory hiring and firing practices, provided accommodations to public infrastructure, and required private accessibility from businesses. This policy addressed structural conditions and barriers to individual capabilities in a manner consistent with social science research. Yet after two decades of this policy intervention, poverty and employment rates among the disabled have worsened (Nazarov and Lee 2012).

Comparisons between disabled and non-disabled populations in these measures demonstrate that the poverty and employment gaps have not diminished (Nazarov and Lee 2012). In terms of employment and poverty, both measures find the disabled facing their worst rates in the past 25 years. Research has demonstrated increased

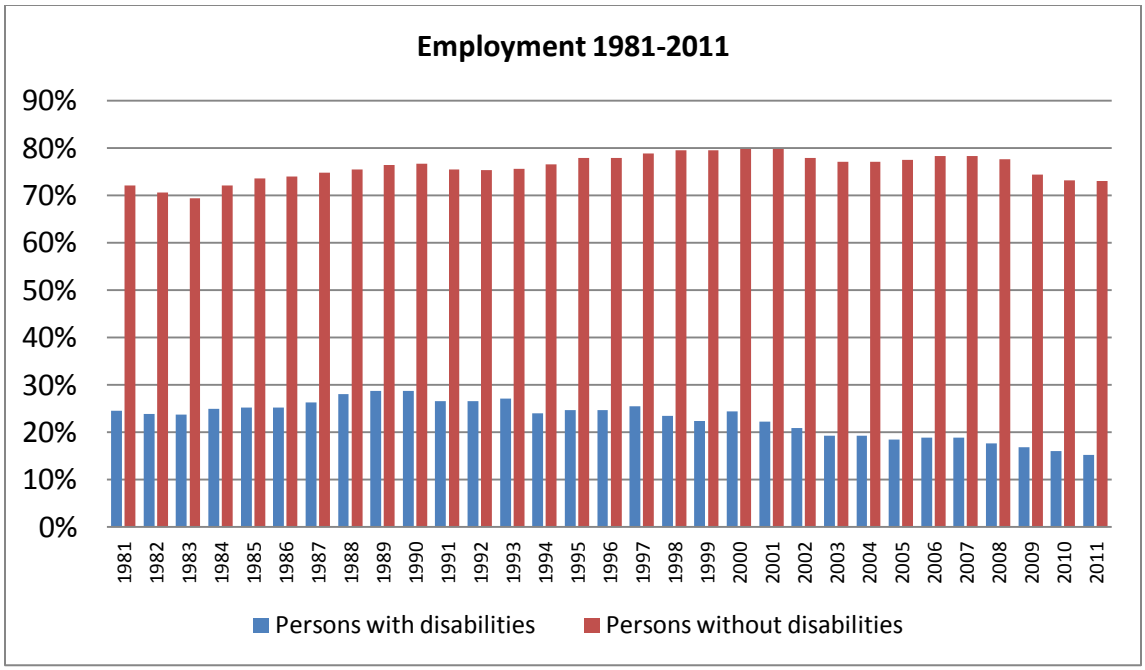

Figure 1.1 Employment rates among disabled and non-disabled populations, 1981-2011. Current Population Survey (CPS) data is used to depict individual employment statistics among civilian non-institutionalized adults between the ages of 18-64. Adapted from *Disability Statistics from the Current Population Survey* by Z. Nazarov and C.G. Lee, 2012.

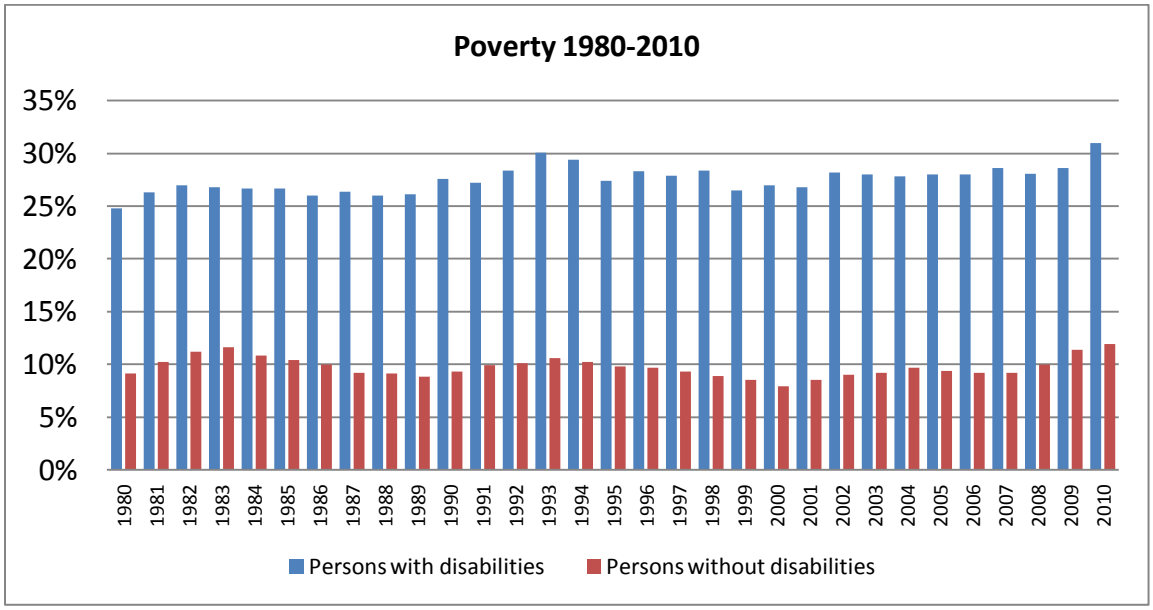

Figure 1.2 Poverty rates among disabled and non-disabled populations, 1980-2010. CPS data is used to depict poverty rates according to family incomes among civilian non-institutionalized adults between the ages of 18-64. Adapted from Disability Statistics from the Current Population Survey by Z. Nazarov and C.G. Lee, 2012.

accommodations for the disabled within firms and employment within occupations previously not held by the disabled (Balser 2007), increasingly favorable attitudes toward the disabled among employers (Levy 1992), and varying accounts of earnings and hours worked (Donahue and Stein 2011). Despite these gains, employment and poverty rates now demonstrate wider disparities between the two populations (see Figure 1.1 and 1.2). The failure of the ADA's sweeping intervention suggests that the relationship between disadvantage and disability is more complicated than existing literatures assume. Are all persons with a particular disability type encountering the same barriers? Do government interventions work to address inequality for the entire population? Do neglected factors involving place and rurality explain differences in mobility or employment? Who is helped by government interventions that provide transportation or requirements for accessibility of building design? This qualitative study of wheelchair users across Ohio examines the disabled in place to see whether, how, and where disadvantage relates to disabled status.

Using six months of interviews with wheelchair users and social service providers, and combining this with secondary data of county level economic activity and governance, I examine employment, accessibility of public spaces, and transportation accommodations to find the degree to which livelihood barriers exist within a particular disabled population across Ohio regions. My approach addresses structural attributes of socioeconomic conditions across counties, while also gathering direct information from wheelchair users to find whether disadvantaged status is affected by place.

CHAPTER TWO

THEORETICAL AND EMPIRICAL FOUNDATIONS

Disability studies represents the overarching field that analyzes conditions of power, perception, and social interaction pertaining to the disabled. Its emergence as a field was born of social activism, seeking to challenge static notions of inequality and push for the continuous evolution of the concept of disability (Valle 2011). As a result, various models for disability and explanations of related disadvantages have entered the field. However, in analyzing inequality researchers have demonstrated little consistency in providing explanatory mechanisms or in generating empirical standards of measure (Withers 2012). Outside of disability studies, sociology and geography have developed their own means of addressing disadvantage experienced by disabled populations. Sociology's use of structural perspective and geography's considerations of individual constraint offer competing explanations of social disadvantage accompanying disability.

Sociology

Sociologist Richard Jenkins (1991) published "Disability and Social Stratification," documenting income and employment disparities among the disabled. Jenkins (1991) identified how perceived hiring risks acted as a disincentive for employment of the disabled, resulting in disproportionately higher unemployment of this population. The disabled were understood as another disadvantaged group that was left out of the cumulative advantages of economic gains (Jenkins 1991; Willson 2007). This

contributed to continued marginalization on economic fronts and created reinforcing behaviors, as expectations of unemployment were assumed by policymakers, employers, and disabled populations alike (McRae 1997). Perceptions of the disabled concentrated on this inability to contribute to society through work, and both their economic and social standings suffered. Sociology would continue to examine the study of livelihoods among the disabled with a primary focus on economic capabilities of this population. Sociological research has tended to follow this approach of structural disadvantage at the macro-scale, without examining spatial implications for the formation of disability and environmental conditions across place.

Explanations of Disability: Spatial Patterning and Rural Trends

Approaches used by sociologists to examine the distribution and changes of disadvantaged populations are difficult to apply to disabled populations. The demographic tradition in sociology typically understands the growth and decline of populations in terms of fertility and mortality (Heer 1968). Demographers have examined clusters of disadvantaged populations in particular locations by citing some intergenerational component involved in passing down a particular trait. Racial and ethnic divisions separate neighborhoods from generation to generation (Keels 2005; Watson 2006) just as impoverished populations tend to cluster in particular places (Albrecht 1991). Both the genetic component of race and material resources of class are passed from one generation to the next. This allows fertility and mortality considerations to be used in predicting distributions of these populations. But whereas entire neighborhoods might be homogenous with regard to race and class, disabled persons may have a distinct status even within their own household. Because disabilities can have

prenatal causes, midlife emergence, or can be overcome via rehabilitative therapy, the distribution of the disabled cannot be predicted through fertility and mortality considerations. Nevertheless, spatial patterns of disability demonstrate a prevalence of disability in rural areas.

Location should matter when studying the disabled, as rurality contributes to disabling conditions in a number of ways. First, rural environments are rife with hazards associated with extractive and agricultural industries that dominate those settings (Deboy 2008; Henderson 1998; Schulmann 2004). These industries are worse than national averages in terms of fatalities and rates of injury reductions (Schulmann 2004). But environmental conditions related to rurality also influence prenatal health. Food insecurity and poor dietary practices are more prevalent in rural environments (Wright Morton 2004), as are high risk behaviors of smoking and drinking while pregnant (Snyder 2004). The diminished availability of health coverage and higher poverty rates act as additional barriers to proper prenatal care (Hummer 2004). Research on pesticide use (Hodne 2004) shows that rural environments provide unique risks to prenatal complications that can result in birth defects and disabilities.

Although older age can produce physical conditions that create disabilities, the greater prevalence of rural disability in Ohio does not appear to be the result of an aging demographic. Rural-Urban Continuum (RUC) codes are used by the USDA to designate a county's degree of rurality from 1-9, where a higher RUC indicates a greater degree of rurality (see Table 2.1). This coding scheme recognizes any county with an RUC of four or greater as rural. In Ohio, the ten counties with the highest percentage of disabled

	Metropolitan			Nonmetropolitan/Rural					
RUC	1	2	3	4	5	6	7	8	9
Population Size	>1,000,000	250,000-1,000,000	<250,000	>20,000	>20,000	2,500-19,999	2,500-19,999	<2,500	<2,500
Proximity to Metropolitan Areas	Contains metropolitan areas	Contains metropolitan areas	Contains metropolitan areas	Metro adjacent	Not metro adjacent	Metro adjacent	Not metro adjacent	Metro adjacent	Not metro adjacent

Table 2.1 2012 Rural-Urban Continuum (RUC) coding scheme. The USDA considers both a county's population and proximity to metropolitan areas in assigning RUCs, where higher RUCs indicate lower populations and more remoteness.

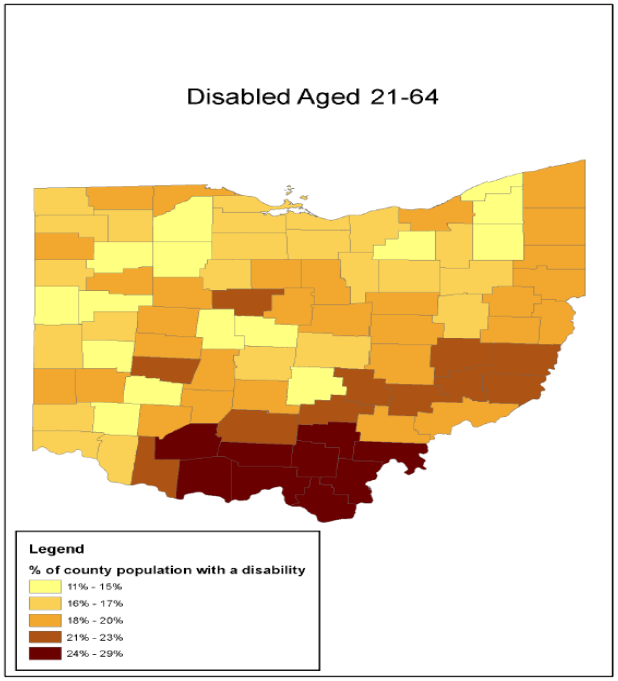

Figure 2.2 Disability in Ohio, county-by-county. 2000 Census data depict higher concentrations of disabled populations in Appalachian counties of Ohio.

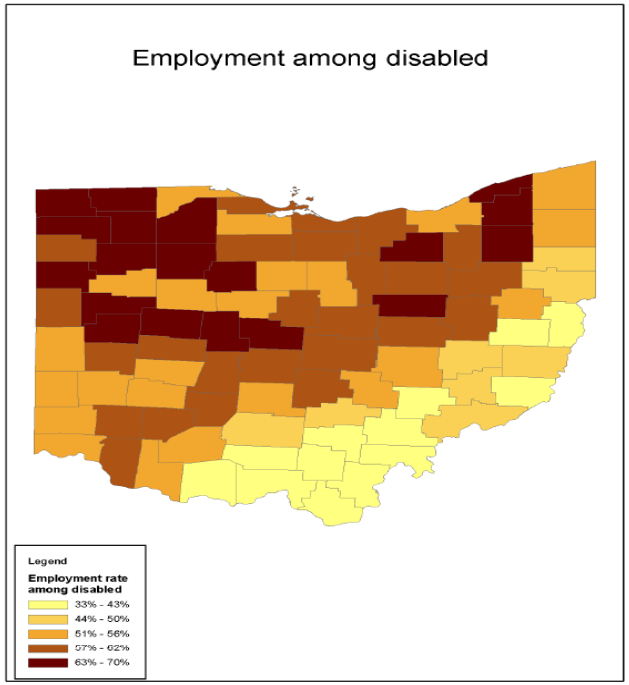

Figure 2.3 Employment rates among disabled in Ohio, county-by-county. 2000 Census data depict lower employment among the disabled in Appalachian counties of Ohio.

individuals between ages 5-20 had a mean RUC of 5.2. With disabled adults between the ages of 20-64, the mean RUC was 5.4. An overwhelming concentration of these disabled populations is located in rural Appalachian counties (Figure 2.2). Structural conditions promote unsafe work environments and poor maternal health conditions that predict disability in rural areas. Given the empirical demonstration of higher rates of disability in these areas, the sociological considerations of structural influence can build upon spatial components to analyze disability in place.

Conditions for Inequality: Structural Disadvantage

Although the previous section describes how place-based characteristics are involved with people becoming disabled, spatial situation is also important in explaining disadvantaged status. Spatial inequality scholars in rural sociology specifically identify conditions for inequality that vary by regional makeup. In terms of economic capability, availability of supportive services, and physical mobility, rural sociology has identified the emergence of livelihood constraints in rural places that have special implications for disabled populations.

Considering cumulative disadvantages involving place, rural sociologists often describe a double handicap that explains how rural places can have a compounding effect on other disadvantages. The challenges faced by racial minorities and women are greater in rural environments, because competition for jobs is greater and availability of social services is more limited. Disabled populations have a similarly disadvantaged status, finding their own unique obstacles in rural environments. Although high rates of unemployment and job competition often find disadvantaged populations as less desirable in labor queues, daily tasks involved in rural work pose unique challenges to the disabled.

Studies of rural labor markets find that the work is often limited to single sector industries in agriculture, extractive, and food processing, requiring more rigorous physical tasks than other industries (Fawson 1998; Schulman 2004; Tickamyer and Duncan 1990). These labor markets provide barriers to participation among the physically disabled (Chi 1999) and are also typified by an accompanying lack of health coverage (Renkow 2003; Tickamyer and Duncan 1990). Although this literature does not specifically identify urban/rural difference with respect to exclusion of the disabled, participation in rural employment is often precluded by the physical nature of available work.

Physical livelihoods are also affected due to problems with transportation. Whereas urban areas have high population densities and supportive infrastructure (Freire 2001), the coordination of transportation services and infrastructure development are more difficult in rural areas (Smailes 2002). The lower population densities of rural environments further constrain social services partly due to lower tax revenues (Stren 2001), resulting in shared services between districts (McMahon and Salant 1999). Poor services and infrastructure act to create a shut-in problem (Johnson 2004) that is correlated with diminished civic participation in disabled populations (Schur 2005). The physical constraints to livelihood have further health implications, as lack of revenue creates rural environments that are plagued by hospital closings (McGlaughlin 2007), diminished emergency response networks (Ott 1995), and a general lack of medical services (Daberkow 1977). Given the higher demand for medical services among the

disabled (Vali 1998), this aspect of physical livelihood has potential negative implications for overall well-being.

Limitations of the Field

When considering the contributions of sociologists, Jenkins (1991) was explicit in criticizing both the lack of empirical work being applied to disability and the lack of a framework to explain how disabled status relates to stratification.

> …if ever the safest conclusion to a discussion was the old chestnut that 'more research is needed', this is surely it! It is not just research that is necessary, however. We need a conceptual framework which is adequate to the task of thinking about the relationship between social categories of ability and disability…and social stratification. (p. 573)

Despite this call for further study of inequality among the disabled, and despite the presence of place-based study of inequalities in rural sociology, the intersection of place and disability is rarely a topic of study in the field. There is a gap between literatures, wherein sociologists tend to use aspatial analysis of inequality that neglects place and disability type, while rural sociologists tend to use spatial analysis of disabled populations for work unrelated to research in social stratification.

Sociologists often analyze unemployment and wages aspatially, confirming structural disadvantage without explaining how this disadvantage is manifested across locations. Sociological books addressing disability identify lower levels of employment, wages, and skills between disabled and non-disabled (Barnes 1999; Byrd 1991; Lloyd 2000). These comparisons reinforce the sociological theme of economic inequality between disabled and non-disabled populations, but tend to neglect comparisons within disabled populations or examine the degree to which particular disabled populations experience inequality.

While Jenkins (1991) offered his own assessment of poverty and labor inequality, empirical research suggests a discriminatory process in demand-side considerations of employing the disabled. A 2010 study of 132 Human Resources (HR) managers and line managers in the United States sought to identify demand-side factors related to employment of the disabled (Chan et al 2010). Spanning healthcare, finance, information technology, manufacturing, professional/technical, and other firms, managers were asked to describe how disabled populations were received, whether they were thought of as capable and reliable workers, and to describe potential barriers to their participation in the workforce. Several findings were manifested in the responses. First, managers identified disabled populations as capable and reliable workers that would be able to perform work within the firms that were surveyed. The second finding, however, identified a lack of resources and commitment to recruitment and retention of disabled populations. Although HR managers held generally positive views of the disabled, gatekeepers within firms claimed that the costs of having an accommodating workplace, including training, revisions to diversity plans, and adherence to the ADA meant that this population would continue to be underrepresented in the workforce. This finding, holding that disabled populations are perceived as cost-disadvantageous to employers, supports the claims of Jenkins (1991) and Willson (2007), demonstrating cost considerations that prevent equal employment opportunities.

Disability sociologists offer complementary theoretical explanation for this behavior. Rather than assert costs as being the only inhibiting factor to employment, however, these scholars insist that disabled persons are more generally thought of as

unable to contribute to productive work (Abberly 2002; Barnes and Mercer 2005). This inability to "contribute to the most valued areas of life" (Barnes and Mercer 2005) means that discrimination in employment and social isolation result. Regardless of positive attitudes seen in the aforementioned HR managers, the general sentiments of contribution and value spillover into a conception of disabled populations as less desirable hires.

Although these approaches address employment and status, they tend to leave spatial patterning and place of work out of their consideration. The prominence of disability in rural areas might suggest that spatial implications would be addressed. Nevertheless, the literature on this rural population is rare in sociological journals. A brief survey of abstracts in *Rural Sociology* reveals that the terms "disability" or "disabled" last appeared in 1953 as part of a book review. *Sociologia Ruralis* had a more recent article in 1999 describing bio-politics in agro-food system analysis as its only abstract mention of "disability." Rural place and disability, when their intersection is considered, are overlooked with respect to inequality in the sociological tradition.

The rural disabled population has been studied, but with a concentration on medical implications. "Estimating the Prevalence of Disability within the US Farm and Ranch Population" was published in the *Journal of Agromedicine* in 2008. Much of the article was devoted to describing difficulties in assessing the size of disabled populations for the purpose of projecting farm-related injuries. Nan Johnson's 2004 chapter in *Critical Issues in Rural Health* was devoted to comparing urban and rural disabled populations. Johnson (2004) provided needed comparisons within the disabled across place, and used Activities of Daily Living (ADLs) to examine disparities in use of

prosthetics, assistance with eating, and other issues of health maintenance. There is a notable focus on medical analysis when considering the rural disabled that does not parallel broader discussions of economic and social inequality in national scale work.

Little empirical or theoretical analysis has been given to the rural disabled with respect to inequality. Nevertheless, sociology's empirical work and theory can be built upon to identify how structural conditions contribute to inequality within a disabled population. Place-based conditions of infrastructure and labor opportunities in rural sociology can be combined with sociology's considerations of economic inequality to provide a sound foundation for analysis. Employment, poverty, physical mobility, and government intervention can be examined across place within the sociological tradition to explain the degree of disadvantage experienced by wheelchair users in rural as compared to urban areas.

Disability Geography

As sociology and rural sociology describe cumulative disadvantages of disabled status and place, disability geography offers its own account of inequality. Whereas sociological approaches examine national and regional scale indicators of inequality in wages, employment, or social attitudes, disability geography focuses on individual scale processes occurring as the disabled navigate the built environments around them. Disability geography emerged to address underlying aspects of the environment as they relate to individuals' livelihoods and capabilities (Johnston 2000). This approach identifies how wheelchair access, signage, and crosswalk alerts constrain the abilities of individuals, contributing to a relationship between disability and disadvantage (Golledge 1993). This geographic perspective explains trends in unemployment, poverty, and social

isolation by considering individual capabilities of the disabled in their immediate environment.

Explanations of Disability: Instantiated Conditions and Environmental Context

Geographer Reginald Golledge contended that social scientists and policymakers misunderstood disability because of their tendency to use medical categorizations in explaining disadvantage. Rather than identify disability as a medical condition that inherently confers disadvantage, he asserted that physical structures in the environment produced barriers to those with physical problems. To identify the unique nature of disability and disadvantage, Golledge followed disabled scholar Michael Oliver's (1990) lead in differentiating between a medical model and a social model of disability.

The medical model used in sociology holds that the disabled are a class of medically-impaired individuals. Absent appropriate medical treatment and rehabilitation, this physical impairment prevents participation in society. In sharp contrast, disability can be understood by using a social model. This approach contends that disability is a social construct that is produced by marginalization (Oliver 1990; Shakespeare 1998). The social model of disability employed by disability geographers contends that obstacles *cause* disability in individuals and result in unequal access to labor, mobility, and consideration from government. Hence production of disability is not the result of workplace accidents and midlife afflictions, nor prenatal conditions that affect physical health. Instead, disability is produced by social conditions that exclude participation of populations.

This conception of disability does not find a prevalence of disability in one particular place or place type, but instead recognizes disability as instantiated. Because

disability is an occurrence of exclusion, immediate environments produce disability when they are made inaccessible. In this way, disability is still place-based in distribution, but only operates at the individual scale. This means that challenging inequality experienced by disabled populations does not require sweeping social reforms, but instead requires environmental fixes through design and planning.

Conditions for Inequality: Environmental Barriers

While this approach may seem theory-driven or abstract, disability geographers identify very tangible conditions for inequality that vary by physical design. In terms of accessible building design, structures for mobility, and planning input, disability geographers identify livelihood constraints through surveying the design of immediate environments. The implications of compromised mobility and accessibility produce unequal livelihoods between populations.

Disability geographers recognize exclusive building designs as selectively restricting access to persons with particular physical abilities. Absent braille signage or ramp access, sightless and wheelchair-using populations are unable to function in settings without such accommodating designs (Golledge 1993; Imrie 2001). These physical barriers act as obstacles to labor participation, offering a specific explanation as to how unemployment may be higher among disabled populations.

Although particular buildings may prove inaccessible, transport provides people with options for other destinations. Here, too, aspects of design condition whether disabled populations can navigate the built environment. Audible crosswalk signals and wheelchair lifts on buses can determine whether sightless and wheelchair-using populations can safely travel (Gleeson 1996; Golledge 1993; Imrie 1999; Imrie 2001).

While these also complement explanations of unemployment, the reduced capacity to interact has negative implications for civic participation and political livelihood.

Because exclusive designs are symptomatic of social segregation, disability geographers recognize the absence of input from the disabled as the underlying condition for inequality. A lack of dialogue between planners and disabled individuals causes environments to be shaped without considering the needs of the sightless, deaf, or wheelchair users (Golledge 1993). This further entrenches inequality experienced by the disabled, and represents a manifestation of compromised livelihood.

Limitations of the Field

Although remedies to building design and transit offer tangible approaches for resolving disadvantage among the disabled, disability geographers have largely engaged in theoretical disputes over concepts and issue framing (Johnston 2000). An absence of surveys and empirical research, academic infighting among geographers, and a consideration of mostly urban environments have all caused the field to ignore trends in spatial variations of disability and degree of disadvantage experienced by disabled populations.

First, the empirical research project outlined in Golledge's (1993) initial survey was not used by subsequent disability geographers. In cataloguing the mobility, activity patterns, and navigational capability of blind persons, Golledge sought to develop research that would help "comprehend and improve the lifestyle and quality of life of disabled populations" (Golledge 1993: 81). Although geographers would cite his work in explaining disability and disadvantage (Gleeson 1996; Johnston 2000; Smith 2008), their research did not yield mapping databases to demonstrate where built environments

excluded disabled populations or identify where certain areas were typified by more or less disabling environments.

The articles that followed Golledge (1993) tended to concentrate on theoretical challenges instead of empirical research. Rater than expand upon different scales, power dynamics, and approaches to reduce stratification, a series of academic articles were published which challenged whether materialist accounts of disability were justified. Researchers questioned the legitimacy of speaking for the disabled and asserted ableist[2] bias in Golledge's conception of disability (Golledge 1996; Imrie 1993; Johnston 2000). The irony of Golledge's own disability (blindness) was not lost in his response to such claims, but the series of responses and refutations that followed (Golledge 1996; Imrie 1993; Imrie and Kumar 1998; Gleeson 1996) involved rhetorical clarifications that did little to consider the mobility, navigational capabilities, or quality of life of the disabled.

Finally, the theoretical underpinnings of disability geography carried more than catalysts for infighting among geographers. The prioritization of direct experience and fixation on design neglected practical considerations of whether solutions could be implemented. The frequent prescriptions of wheelchair ramps and busing, for instance, had little applicability to remote rural environments (Golledge 1993; Golledge 1996; Imrie 1993; Imrie 1998; Imrie 1999). When considering the prominence of disability within rural Ohio (Figure 2.2), this assumption of urban settings in analysis and recommendations leaves the rural disabled absent from their research.

[2] "Ableism" is a term used to describe a set of values or social conditions which give preference to certain physical abilities and assumes that disabilities deviate from some superior physical norms (Wolbring 2008). Like "racism" or "classism," this term has been applied to identify prejudice- in this case against the disabled (Smith 2008).

The culmination of these shortcomings has left disability geography focused mainly on abstract debates, despite its potential to identify individual scale determinants of livelihood constraint. Without being applied across place, this approach to identifying aspects of design and discrimination in the immediate environment has not been applied to account for degrees of disadvantage experienced across place.

The Synthesis: Place-Considerations within Disability

The two theoretical traditions offer explanations of disadvantage that are neither comprehensive, nor exclusive to one another. Sociology offers evidence of disabled disadvantage and place-based disadvantage while tending to neglect the intersection of disabled persons in particular environments. Conversely, disability geography focuses on theoretical explanation of immediate environmental constraint but neglects empirical trends in cumulative disadvantage. Although sociology demonstrates greater strength in offering practical evidence of inequality, the localized conception of disadvantage in disability geography yields tangible implications for planning to realize livelihood gains without calling for sweeping reform to labor structures. Neither approach, however, analyzes whether spatial conditions contribute to the degree of disadvantage. Does the presence of diversified industry necessitate a better livelihood? Does dialogue with planners or design itself necessitate greater mobility or employment? A synthesis of the two approaches, examining larger structural conditions and obstacles experienced in the immediate environment, produces a convergence of structural and individual constraints to employment and physical mobility. In applying sociological literature on employment and development analysis alongside disability geography's direct accounts of disabled

capabilities and environmental situation, the combined application holds potential for fuller explanation of how disadvantage unfolds in different environments.

A synthesis of the two positions can explain why the presence of physical aids like wheelchair ramps or signage might not result in employment. Conversely, it might also identify why abundantly wealthy environments might still have empty sidewalks and large "shut-in" populations. Drawing from both approaches allows me to explain how livelihoods are affected and can explain where individual agency and structural determinants conflict.

While this study examines the interaction of disabled status with social disadvantage, literatures exist in sociology and geography that examine how other variables constrain social mobility. Class conditions livelihood across rural and urban environments, just as race and gender condition accessibility and social mobility. There is precedent within both disciplines to explain social disadvantage as it relates to race, class, and gender. Just as examination of these statuses can produce findings which overlap or produce unique intersectional findings, disabled status can also interact with other determinants of social disadvantage.

The purpose of this study is to examine how, where, and to what degree disability results in livelihood constraint. While race, class, and gender can influence outcomes, I isolate how aspects of transportation and employment are physically constraining in the context of wheelchair accessibility. Although other explanations of inequality could be posited, this study is unique in its selection of populations based upon this particular disability type.

Other Empirical Foundations

Recognizing the importance of trajectories in sociological and geographic theoretical perspectives, I also draw from a broader body of empirical research that addresses two types of relationships. The first body of empirical research considers the relationship between disability and social disadvantage. While this work has a tendency to contrast disabled and non-disabled populations, it establishes a needed foundation for examining stratified outcomes that I use for in-group comparisons among wheelchair users. The second body of empirical research considers the relationship between rurality and disability. Although dedicated study of disability and rurality is rare, literature that addresses similarly situated populations and general trends in rural employment, physical infrastructure, and government planning can provide guidance for this study.

Empirical Research on Disability and Disadvantage

First, researchers have found that disabled people tend to be on the lower rungs of employment. National data from the Bureau of Labor Statistics (BLS) indicate significant differences in employment between disabled and non-disabled populations. For 2012, the unemployment rate was 12.9% among persons with disabilities, compared to a 7.3% rate among persons without disabilities (US Bureau of Labor Statistics 2012). Two studies suggest this stratified employment pattern is related to employers who give preference to hiring persons without disabilities. Kaye (2011) sampled 468 human resource professionals and supervisors working for employers that were known to be resistant to ADA compliance. When asked to assess reasons for employers not to hire, retain, or accommodate disabled workers, Kaye (2011) found that the leading reasons for this behavior included a lack of awareness of disability and accommodation issues

(81.4% identified this rationale), cost concerns associated with accessibility (80.9%), and fears of legal liability associated with disabled employees (80.2%). Moon and Baker (2010) produced similar findings when assessing workplace accommodation barriers. Using a sample of 44 stakeholders from 2006 through 2009, respondents were asked to identify policy issues related to hiring persons with disabilities. Healthcare and insurance costs were identified as disincentives to hiring disabled populations by 83% of respondents. Specialized training and skills involved in work preparation were identified by 64% of stakeholders as very important. Here national statistics combine with employer preference analysis to support the idea that the disabled experience greater disadvantage in workforce participation.

Second, researchers have found that disabled populations tend to have less physical mobility than persons without disabilities. While it may seem analytically true to identify compromised physical mobility among the physically disabled, the presence of assistive technology and service programs can overcome restrictions to personal mobility. Current research examines the role of accessibility in the community as it relates to mobility behaviors of disabled persons.

Keysor et al (2006) studied a sample of 342 adults with medical, orthopedic, and neurological conditions that were discharged from rehabilitation facilities. To identify environmental barriers and facilitators for mobility in the community, Keysor et al (2006) conducted interviews with patients at one and six months after discharge to collect health and demographic information, as well as information about mobility within the home and the community. Community mobility, assessed through consideration of

architectural barriers, correlated less with social and community participation than social supports from the community. Although an individual's physical mobility may be compromised by a medical condition, this research indicates that social and environmental barriers also play an explanatory role in personal mobility.

The presence of environmental barriers to mobility is addressed by ADA accessibility guidelines providing accessible public transportation infrastructure. Despite this federal policy, compliance assessments demonstrate that the disabled continue to experience disadvantage in mobility within communities. In its 2008 review of transportation agency compliance, the American Association of State Highway and Transportation Officials requested data regarding state agency and city/county inventories of transportation accommodations (AASHTO 2208). This survey of ADA compliance found that only 33% of those in charge of funding, planning, design, construction, and programming of pedestrian infrastructure measured ADA compliance for pedestrian infrastructure. And while sidewalks and ramp width violations were recorded by 91% of those reporting infractions, only 55% identified obstacles and 45% reported deficiencies to usability. Despite assistive means to overcome physical barriers, empirical research indicates that mobility is still limited by a lack of compliance with ADA accessibility guidelines.

Finally, although the means to remedy economic and physical barriers to livelihood can be addressed through government interventions, the disabled experience disadvantage on this front as well. Poor compliance rates with ADA guidelines in transportation accessibility indicate poor responsiveness, but the degree of governmental

interventions and compromised political representation also puts the disabled at a disadvantage.

Claims of marginalization and a lack of resources for supporting the disabled must account for the variety of interventions that specifically target this population. In terms of public financial support for the disabled, combined state and federal budgets for health and social services have grown from $294 billion in 1997 to $426 billion in 2002 (Braddock 2002: 478). But empirical research demonstrates that these increases in national funding do not entail greater responsiveness to the needs of the disabled. Rather, discrepancies between states in spending on supportive services further a narrative of governmental neglect and marginalization that parallels other disadvantaged populations.

Braddock's (2002:482) study of state spending on disabled programs identified "severe differences" in state spending that showed a 295% difference between leading and lagging states in fiscal effort measures. Collecting spending levels for seven income maintenance programs, three health care programs, long-term care, and special education services, Braddock (2002) used hierarchical regression analysis to test the relationship between fiscal efforts between states. State size (population), state wealth (statewide personal income), the presence of progressive civil rights action in each state's history (state ranking in adoption of public accommodation statutes for racial minorities), and state utilization of Medicaid Waiver Assistance were examined with respect to each state's total disabled population. His findings indicated that each state population and wealth did not significantly affect fiscal supports, as variation in state spending did not correlate with respective size or needs of disabled populations. Instead, histories of

progressive civil rights actions and Medicaid Waiver Assistance had a statistically significant relationship with state spending. Consequently, states like New York, Maine, and North Dakota spend over $10 per $1,000 of state resident income into assistive programs with the disabled, whereas Georgia, Florida, and Virginia spend less than $5 (Braddock 2002: 486). The consideration of these populations is not based on need nor resource availability, but instead parallels governmental responsiveness to marginalized racial minorities.

The impact of this neglect can also be seen through analysis of accommodations to the disabled in specific government interaction. Disabled access to E-Government, the web-based coordination of social services and civic information, has been studied as an indicator of effective governmental responsiveness to this population. The purpose of E-Government is to inform the public of programs and coordinate their use. The nature of this medium, however, suggests interaction and dialogue with government that is consistent with other measures of civic participation and political livelihood (Kliewer and Biklen 2000).

Rubaii-Barrett and Wise (2008) studied state practices, drawing from 1,569 state government websites to assess accessibility and use by disabled populations. While other empirical studies have used electronic tools to document widespread inaccessibility of government websites (Ellison 2004; Jackson-Sanborn et al 2002; Schmetzke 2001), this analysis offers the largest number of websites surveyed and the most lenient standard for what is deemed "accessible." In their study, Rubaii-Barret and Wise (2008) consider any website that meets one of the following three criteria accessible:

1. The website offers either text telephone or phone numbers for telephonic devices for the deaf.
2. The website is deemed disability accessible by a nonprofit group that rates websites.
3. The website complies with the US Rehabilitation Act of 1973 standards or W3C standards of disabled accessibility.

They found that only 37% of state websites were accessible to the disabled, with accessibility rates of each state ranging from 7% (Virginia) to 91% (North Dakota). This inability to access information regarding the availability of governmental services and coordination of their use illustrates a marked difference in responsiveness between disabled and non-disabled populations.

Disparities in governmental responsiveness are further confirmed through survey research, as indicated by two national surveys from the 1998 and 2000 November elections (Schur et al 2005). The Rutgers University Survey Research Center used two random phone surveys to collect information on employment, voter turnout, Current Population Survey (CPS) demographics, American National Election Survey (ANES) data, and information involving group activities and transportation. From these samples of 1242 and 1002 adults, respectively, disabled respondents identified that they were less likely to receive equal treatment from public officials or have equal influence in politics. On a 1-5 scale, disabled respondents rank scored their treatment and influence at 3.23, compared to 3.64 among respondents without disabilities. Additional data demonstrated

that 18% of the disabled population encountered discrimination, contrasting sharply with the 1.8% reported among those without a disability.

When considering the empirical research involved with establishing these disadvantages, it is important to consider the interrelatedness of employment, mobility, and governmental responsiveness. Here, too, empirical research has demonstrated connections between these three factors, wherein obstacles in one area create negative outcomes in another. Anderson and Vogel (2002) conducted interviews among 195 individuals with pediatric-onset spinal cord injuries to determine employment outcomes and factors associated with employment status. The low employment rate of these subjects (51%) was the product of both positive and negative influences related to four explanatory variables. Education, community mobility, functional independence, and decreased medical complications combined with other variables like community integration and independent driving to determine employment outcomes. Education, which the researchers identified as a product of community integration and a preparatory mechanism for employment, was most strongly associated with employment when controlling for gender, income, and race. The level of employment increased with the level of education, with 78% employment among those with a college education contrasted with 43% employment among those with a high school diploma. The same study indicated that 88% of the employed had higher levels of mobility within their community, where "mobility" is measured by the amount of travel outside of the home. While this research did not compare employment or mobility across environments, disadvantages experienced by the disabled are not isolated. When this population

experiences barriers to livelihood within one area, spillover effects from compromised mobility or poor community integration can result in economic disadvantage.

These empirical studies support a general claim that disability is related to disadvantages in work, physical mobility, and governmental responsiveness. These studies do not compare disadvantages encountered between disabled populations, nor do they isolate the needs of particular disability types. Nevertheless, we can surmise that wheelchair users are likely to encounter disadvantages in all three categories.

Empirical Research on Rurality and Disability

The second body of empirical research considers the relationship between rurality and disability. Although systematic study of disability and rurality is rare, similarly situated populations and general trends in rural labor, physical infrastructure, and government planning can provide guidance for this study.

The employment situation of the rural disabled can be analyzed using 2000 Census data of disabled Ohioans between the ages of 21-64. RUC codes between 6-9 represent rural counties with populations below 20,000 and are not adjacent to metropolitan areas, while counties coded between 1-3 are metropolitan in designation. The mean employment of disabled in RUC 6-9 counties is 52.6%, contrasted with 57.3% among metropolitan counties (U.S. Census Bureau 2000). Empirical studies have frequently discussed the physical nature of labor within rural areas (Fawson 1998; Schulman 2004; Tickamyer and Duncan 1990), but these data confirm that employment among the disabled is lower in rural places.

Physical mobility varies by rural and urban place. Empirical studies of the elderly, while not isolating the disabled as the only subject for consideration, provide

insight into how physical capabilities of individuals constrain physical mobility in rural settings. Using October and November 2008 survey data from the American Association of Retired Persons (AARP) North Dakota Office, 1,042 AARP members were asked to describe their most frequent travel destinations, distance to those locations, and method of travel (Mattson 2011). Respondents living in small urban, large town, and rural residences were compared to investigate differences in physical mobility. When comparing whether respondents believed they had adequate transportation options, avoided driving, or used transit for medical or social trips, women and people with disabilities were significantly more likely to avoid driving and to use transit. People with disabilities who lived further from travel destinations and rural residents were less likely than others to believe that adequate transport options were available to them. In a 1-5 scale of likelihood, transportation was seen as increasingly limited among the disabled (3.79) over those without disabilities (3.03). Generally, respondents living in rural environments had a lower likelihood of claiming adequate transportation options (0.57) than small urban counterparts (0.63). The sample for this survey, while exclusive to an aged population, still allows us to surmise that rurality provides its own limitations to physical mobility that surpass those of disability alone.

Levels of responsiveness to needs of the disabled in rural environments are often approached from policy or health perspectives, often considering international cases for specific health interventions. Research suggests that capacities to administer services are reduced in areas with low population densities. Kellow and Parker (2002), in their comparative case study analysis of mental health services between suburban and rural

communities, offer rare empirical insight into disparities among disabled individuals that are actively receiving services. Sampling from two rural and suburban communities, their 2001 study of eight working age adults documented the number, type, frequency of use, and satisfaction with social support services. Because the authors sampled from persons with mental disabilities that were already receiving supports, they found that despite relative similarities in quantity and frequency of supports, levels of perceived adequacy in services were stratified by rural designation. In their 1-8 rank order measuring adequacy of supports, the mean suburban score was 3.75, compared to 5.25 in the rural community. The authors found transportation availability and involvement with employment needs provided unique strengths to suburban programs, while a lack of local services and employment assistance were unique weaknesses in rural supports.

The rural disabled have demonstratively lower employment, fewer options for transportation, and comparatively less adequate provision of supportive services. Research on disabled and non-disabled populations neglects the cumulative disadvantages that result from the intersection of rurality and disability. With these environmental restrictions in mind, disabled populations in rural environments demonstrate greater degrees of disadvantage than the disabled populations in other areas.

Conceptual Framework

The synthesis of sociology and disability geography provides a conceptual framework for my study. I analyze physical environments, employment opportunities, and levels of governmental responsiveness across places with respect to wheelchair users. This is not done to resolve whether inequality exists between disabled and non-disabled populations, but to identify whether a given disability type is subject to differing degrees

of inequality between places. My goal is not to dispute that populations with disabilities encounter disadvantages, but to find whether characteristics of places create environments that are more or less disadvantaging to particular disability types.

I draw from three aspects of disadvantage that have been explored in previous literature to compare livelihoods across place. Physical mobility, employment, and governmental responsiveness have each been addressed as important aspects of livelihoods. These capture important aspects of livelihoods, illustrating whether disabled populations can leave their homes or provide for their families. I acknowledge that mobility, employment, and governmental responsiveness do not exist independently from one another. Compromised physical mobility can inhibit travel to work, just as employment can determine whether a household has resources to pay for transit costs. Because state support can intervene to assist disabled individuals when either of these aspects of disadvantage is present, I also examine governmental responsiveness when measuring differences in livelihoods. By considering all three aspects of livelihoods, I create a more comprehensive view of the daily lives, challenges, and sources of support available to disabled populations in different environments.

I use cross-county comparisons to establish whether degrees of disadvantage are identifiable across locations. I create county profiles as units to summarize mobility, work, and governmental intervention within each of the county samples. An analysis of the county's makeup addresses spatial characteristics that are lost in macro-level analysis, while capturing phenomena that are no tied to individual interactions studied by disability geographers. In comparing county profiles, I demonstrate differences in particular

aspects of livelihoods encountered in different locations. Although sociologists examined general disadvantage inherent in disabled populations and rural sociologists identified more general disadvantage across place, my study combines the two to examine whether wheelchair users experience different degrees of disadvantage across places in Ohio. I further apply disability geography's considerations of immediate environment to evaluate whether aspects of building design, transportation, and responsiveness of planners produce similar disadvantage across places. Both literatures provide reason to expect greater disadvantage to be experienced by wheelchair users in rural areas. Sociology identifies employment disadvantages and place-based constraints with regard to infrastructure, service provision, and healthcare access in rural environments. Disability geography, in depicting modern building design, thriving public transportation networks, and well-funded planning entities, neglects accommodating conditions typical in rural environments. I therefore expect that livelihood constraints among Ohio wheelchair users are likely to be greater for the rural disabled population.

CHAPTER THREE

DATA COLLECTION AND METHODOLOGY

In this study, I synthesize structural determinants of inequality with disabling conditions of the built environment, recognizing both physical and social conditions of place. Primary and secondary data are collected, gathering information about age, gender, disability status, and county makeup (degree of rurality) across Ohio. Asking whether disadvantage experienced by the disabled vary across place, I also use primary and secondary indicators from both the sociological tradition (employment, poverty, institutional support) and the framework of disability geography (accessibility, transportation accommodation, and institutional response). In this way, I synthesize place characteristics with personal livelihood conditions.

Location Sampling

My sample consists of wheelchair users and county-level operatives within the state of Ohio. While a national study might be ideal, Ohio provides a more economically feasible and convenient sample for this researcher to explore. The 88 counties of Ohio span diverse levels of rurality and urbanization, provide stark contrasts in physical terrain, and demonstrate significant variation in economic activity between regions. Established regional maps used by state and county agencies for dividing county health services, economic activity, and job training divide the state into convenient regional territories that are recognized as deserving distinct treatment. (Figure 3.1) Within state

analysis, then, should be appropriate for analyzing how service and opportunity structures vary among the disabled across place.

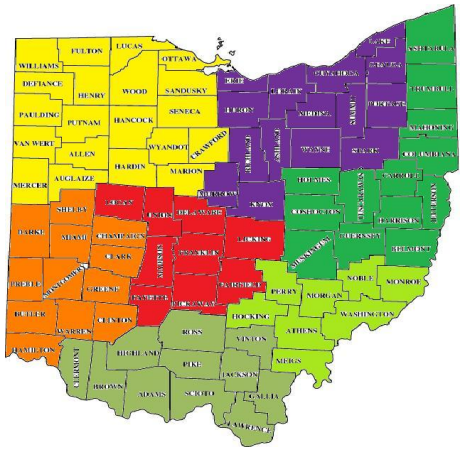

Figure 3.1 Ohio regional sampling map. Distinct regions for location sampling are indicated above, where Northwest (yellow), Northeast (purple), Central (red), and Central-West (orange) being distinguished from ARC-designated Appalachian (green) regions of East Central (shamrock), South East (yellow-green), and Southern (olive) orientation.

Because I investigate whether particular disadvantages vary by place makeup, I stratify sampling across regional divisions. Economic development and social service territories within Ohio regularly divide the state into distinct geographic regions. Conforming to Ohio Economic Development Regions, JFS County Career Center and Vet Services districts, and Ohio Medicaid coverage areas (Office of Workforce Development 2012; Ohio Department of Job and Family Services 2012), I sample from four Ohio regions: Northwest (Van Wert), Northeast (Stark), Central (Franklin), and Central-West (Clark). This place-stratified sample draws from the JFS-recognized and ARC-designated Appalachian counties for the remaining southern and eastern regions, analyzing them according to the established East Central (Tuscarawas), South East (Hocking), and Southern (Pike) regions (Ohio Department of Job and Family Services 2012).

Two secondary data sets are used to provide quantitative assessments of county economic and labor activities, as well as rural/urban designation. 2010 County Business Patterns (CBP) reports provide data relevant for capturing composition, economic activities, and measurable indicators of health and social services (US Census 2010). Specifically, Rural-Urban Continuum Codes (RUC) offer a 1-9 grade to designate the degree of urbanization[3] in a manner more specific than "metropolitan" or "non-metropolitan" status (United States Department of Agriculture 2003). This allows entire counties to be represented, rather than a particular household or a more general region. CBP data also give specific information that identifies major industry activity within a given county, demonstrating whether sectors like agriculture, educational services, or finance represent the primary sources of employment within a county. Although this serves to contextualize employment opportunities when assessing labor market accessibility, the prevalence of the Health Care and Social Assistance sector can also serve to indicate whether there is a capacity to meet the "higher demand" of these services among the disabled (Vali 1998).

Although RUC coding can capture degrees of rurality for counties, I also recognize that the immediate environments of wheelchair users within counties can vary. Franklin County, for example, has the largest metropolitan population in the state. Economic activity, transportation infrastructure, and administrative government services near the capital city of Columbus are vastly different from more remote rural areas along the county's southeastern border. To account for this contrast, I code the immediate environment of wheelchair users for rural designation. The USDA identifies rural

[3] Refer to figure 2.1 for details of RUC coding criteria.

designation for housing and business programs using a Rural Eligibility Map (Figure 3.2). I use the zip codes of each respondent's residence to identify whether their immediate environments reflect the greater urban and rural profile of the county.

Figure 3.2 USDA Rural Eligibility Map of Ohio. Unshaded areas in the USDA map depict rural designation.

Figure 3.3 USDA Rural Eligibility Map of Franklin County. Unshaded areas demonstrate the presence of areas with rural designation within the county.

I use data from the U.S. Census to assess overall county measures of disabled populations and disabled employment. Census data collection methods have changed from decade-to-decade with respect to disabled populations, with different implications for accuracy and use according to the level of detail in information collected. Evaluating claims of employment and labor accessibility is made difficult due to the covariance of disability and aging in populations. Consequently, Census figures that cluster disabled populations without specifying age group fail to identify whether unemployed disabled populations are in age groups that are active in labor pools at all. Because the 2000 Census collected county level employment trends by age and disability status, I use these data to identify unemployment trends among the disabled while accounting for age variables. 2000 Census data can be used here to identify structural indicators of

disadvantage by county in isolating employment differences between disabled and non-disabled populations in the 21-64 age bracket.

Subject Sampling

These two data sets provide important indicators of place conditions with specific implication for employment, poverty, and service provision across counties. Despite their importance in assessing general claims about employment or services, these data alone are limited in explaining degrees of disadvantage as they are realized across place. Primary data were collected from May, 2012 through August, 2012 to employ the methodology of disability geography while contextualizing the conditions identified in secondary data sets. Because a convergence of sociology and disability geography requires an examination of quantitative measures of inequality with qualitative assessments of how disadvantage is realized, two different samples were collected among county level service providers and wheelchair users across Ohio.

Job and Family Services Sampling

Job and Family Services (JFS) offices are able to provide information about employment within the county, but also act as the primary source of information regarding specific service provisions to the disabled. Whereas aggregate accounts of health and social services from CBP data might give an indication of general investment into vulnerable populations, that data does not indicate what the makeup of the recipient population might be. Consequently, general social services indicators fail to inform whether there are services that can be utilized by the disabled or which represent responsiveness to this particular population. Acting as the official county agent for coordinating assistive services, county JFS offices are the most appropriate source of

specific information regarding service provision and institutional responsiveness to this population.

In sampling JFS agents for data, two considerations are made with regard to place and accuracy of content. Because I investigated whether particular disadvantages are affected by place makeup, I intentionally stratified sampling across place in the same counties identified in 2010 CBP and 2000 Census data. I sampled JFS offices from Northwest (Van Wert), Northeast (Stark), Central (Franklin), Central-West (Clark) , East Central Appalachian (Tuscarawas), South East Appalachian (Hocking), and Southern Appalachian (Pike) regions using the Ohio Regional Sampling Map (Figure 3.1).

I also sampled from JFS offices for accuracy of content by employing a specific method of subject selection. Because there is variation in information and duties between and within county offices, I used county JFS directors as the key determinant of the appropriate representative for information. In larger offices, JFS informants had dedicated titles related to disability services, while other offices found directors as the most relevant agents for information. JFS informants may be subject to bias, as low levels of disability services may reflect shortcomings of their offices. To offset either an eagerness to demonstrate successful JFS interventions or to use the interview to highlight additional funding needs, questions focused on conditions within the county instead of direct actions taken by JFS offices. Semi-structured interviews largely followed the County Subject Interview Tool (Appendix A), asking specific questions related to job availability, transportation infrastructure, disability services, and availability of resources to respond to disabled populations.

Wheelchair User Sampling

Primary research was also collected through semi-structured interviews with wheelchair users in the stratified county sample. Because disability geography contends that conditions in the immediate environment construct disadvantage, this study participates in Golledge's Geography ***of*** the Disabled[4] by consulting with wheelchair users to identify when and how livelihood constraints emerge. Although quantitative assessments of employment can identify whether disabled populations are more or less experiencing disadvantage, direct accounts from the disabled are necessary to complete the picture of how disadvantage is realized. Rather than identify low participation in labor markets or a particular level of transportation and social services, I asked disabled populations why they don't or can't participate or whether services have tangible impacts on their lives. Again, bias can result from subjects self-reporting on their comparative success and disadvantage within their community. On one hand, pride can cause wheelchair users to downplay obstacles, while other subjects might explain a disadvantaged state by referring to obstacles that might be unrelated to their own capabilities. The nature of the questions, in their prioritization of program, transport, and labor information, likely minimized effects of biased responses. Following the Wheelchair Subject Interview Tool (Appendix B), subjects were asked to identify what labor opportunities were available to them and how their employment might be limited. And rather than assume that the presence of transportation assistance necessitates mobility, I analyze whether disabled subjects actually have mobility. This study is the

[4] Golledge distinguished a Geography of the Disabled from a Geography for the Disabled. The former advocates for input from the disabled in collecting accurate data, while the latter advocates for planners to consider the disabled in their designs (Golledge 1993).

first of its kind to analyze whether identifiable indicators of labor opportunity and service provision are perceived and realized by a specific disabled population.

Although national scale analysis tends to recognize disabled populations as a unified population, personal identification as "disabled" in Census data recognizes sightless, schizophrenic, and quadriplegic individuals as a single category. Such an approach neglects needs for job training or physical mobility that might have special application for particular disability types and would recognize any government intervention for a disabled population as an intervention for all disabled individuals. Cognitive therapies for developmental disabilities can involve specialized training and job placement programs that would be inappropriate for amputees that may only require wheelchair ramp access. For this study I have chosen to isolate how specific aspects of the built environment, employment structures, and services interact with a particular disabling conditions and have taken caution not to commit to a medical model of disability by selecting from a particular medical category of disability. Instead, I have chosen to avoid theoretical disputes involved with medical categorizations of disability by concentrating on the necessary object that requires accommodations in the built environment: the wheelchair. Because building accessibility and transportation needs emerge with wheelchair usage, this study identifies wheelchair users as the disabled population relevant for analysis.

Whereas JFS representatives occupy publicly-accessible positions that require regularly informing the public about conditions and activities within the county, wheelchair users are quite a different story. I used a variety of methods for subject

recruitment, with varying degrees of success across Ohio. Acknowledging the importance of randomization and the precedent of respondent driven sampling methods (RSD) for research among rural populations (Mammen and Sano 2012), I established recruitment networks among home healthcare servicers, assistive device retailers, wheelchair users previously known by the researcher, and disability advocacy groups. These entities were given information to distribute to wheelchair using clients and acquaintances, while not participating as subjects themselves. This network approach was created to seek participation among respondents that were least acquainted with established interview subjects in a manner suggested by the RSD model. Low response rates and low referral connections outside of urban Franklin County, however, meant that the RSD approach could not be applied to remote rural populations. The "shut-in" tendency of rural disabled populations described in previous empirical research (Johnson 2004) meant that rural subjects were not part of unified referral networks. In these cases, I used a variety of strategies for snowball sampling. I occupied booths at a number of community and health-related events throughout Ohio where interviews were scheduled. I posted flyers in churches, libraries, and grocery stores with greater frequency in rural counties to generate samples for study.

Although Franklin County yielded the most respondents, I analyze user input within the subject's county to establish profiles for cross-county comparisons. This means that the higher rates of interview participation among the disabled in Franklin County do not skew results, as each county generates its own place-specific conditions

for disabled populations. The seven regions of Ohio each produced wheelchair users to provide input for employment, mobility, and government responsiveness.

County Profile Analysis

Synthesizing the methodology of disability geography with sociology's structural accounts of inequality required the establishment of county-by-county profiles. In isolating conditions related to economic opportunity, physical mobility, and institutional responsiveness, the composition of profiles at the county level allows for an examination of place as it relates to relative degree of disadvantage.

Using cross-county profile analysis, I synthesize structural conditions of disadvantage with individual qualification of how disadvantage is realized. When a comparison of structural conditions between places fails to identify whether livelihood constraints are actually present, individual accounts are used to verify that a potential constraint from structure manifests itself as disadvantaging. Drawing from theoretical explanations of disadvantage and empirical research into stratification of the disabled, I recognize economic, physical, and political livelihood indicators in terms of "employment," "physical mobility," and "governmental responsiveness." In my cross-county profile analysis, I code for whether these categories are recognized as constrained by structural or individual perspectives.

Employment

For coding purposes, I use the term "constrained" to identify whether structural indicators or individual accounts describe differences in accessibility between wheelchair users and non-users in work and physical mobility. Structural constraint to employment is determined by whether leading employment opportunities within the county require

physical labor that is considered beyond the capability of wheelchair users. Both CBP data and JFS input are used to assess employment opportunities within the county and code labor sectors with physical capability. Individual constraint to employment is determined by whether wheelchair users identify common employment opportunities occupied by people in their zip code as accessible to them. If wheelchair users indicate that people within their zip code are predominantly working in sectors that they cannot participate in, I recognize employment as constrained. In counties that have mixed rural-urban makeup, I indicate whether structural or wheelchair user inputs recognize difference in each type.

Physical Mobility

Structural constraint to physical mobility is determined by whether transportation provisions within the county address physical infrastructure (sidewalks, curb ramps, freestanding crosswalk signals) and/or direct transit assistance (shuttle services, dial-a-cab programs, financial reimbursement programs for transportation) to provide mobility to wheelchair users roughly equivalent to non-users. JFS input is used to identify whether infrastructure or transit assistance is available and where it is unavailable. For the purpose of surveying accessible transportation at the residences of wheelchair users, I created a Transportation Landscape Assessment Tool (Appendix C). Using the Transportation Landscape Assessment Tool, I identified whether physical infrastructure was visible from the homes of wheelchair users. I also indicated whether physical infrastructure was made inaccessible due to telephone poles, sidewalk width, or other obstructions to wheelchair use. Individual constraint to physical mobility is determined by whether wheelchair users indicate accessible transportation infrastructure and/or

transit assistance programs, reasonably little time needed to plan transportation outside of the home, and travel outside of the home more than once a month. "Reasonably little time needed" for planning indicates a period of less than two weeks in advance of departure. I use the "more than monthly" frequency of travel to capture whether wheelchair users are actually mobile in their environments. I acknowledge that no single answer from wheelchair users determines whether they can be similarly mobile to non-users in their zip code. Because family members or wheelchair users themselves could provide their own transportation and because convenience of transportation might not reflect actual mobility, I use a strict coding of these indicators in which all three must be present to identify constrained mobility.

Governmental Responsiveness

An assessment of government responsiveness requires consideration of interventions and assistive programs, knowledge of these interventions among wheelchair users, and their respective levels of provision across each county. Structural constraint to government responsiveness is determined by whether JFS respondents identify programs and interventions that specifically address disabled populations. Because these must have a component that specifically addresses disabled populations, Medicaid and food stamps are not recognized as indicators of "responsiveness" to disabled populations, while job training or transportation services with a disability-specific component are. Individual constraint to government responsiveness is indicated by whether wheelchair users identify an awareness and an ability to access interventions and assistive programs. Assessing awareness of programs is necessary to determine whether the administration and promotion of interventions is conducted in a manner that would promote their use.

The ability to access interventions can indicate whether program availability is limited in area or contains a specific criteria for eligibility that might not be met by wheelchair users throughout the county. Cases in which wheelchair users identify either a lack of awareness or inaccessibility of programs are coded as constrained.

Constraints to economic opportunity, physical mobility, and institutional responsiveness will be verified through disabled input to compile county profiles for analysis. In using county units as compartments to resolve whether disadvantage actually results, this study can examine whether place contributes to the degree of disadvantage experienced by disabled populations.

Procedural Considerations

The Office of Responsible Research Practices (ORRP) at the Ohio State University recognizes that persons with physical disabilities "may be particularly vulnerable" (ORRP 2013) subjects in human research. In preparation for research with this population, I completed coursework to satisfy the university's Collaborative Institutional Training Initiative (CITI) requirement for human subjects research in September, 2011. In the months following, I submitted and revised protocols with the Institutional Review Board (IRB) to demonstrate adequate protections to interview participants and to minimize coercion in research participation. Working with protocol analysts at ORRP, I submitted my research proposal, screening materials, scripts, and data collection tools (Appendix D) which were approved on May 1, 2012.

	Non-Appalachian				Appalachian		
	Clark	Franklin	Stark	Van Wert	Hocking	Pike	Tuscarawas
RUC Code	3	1	2	6	6	7	4
Total County Population	144,742	1,068,978	378,098	29,659	28,241	27,695	90,914
Disabled % (21-64)	20.9	16.5	16.9	17.4	22.9	27.4	16.9
Median Household Income	$44,037	$50,045	$45,347	$45,111	$42,227	$39,669	$42,846
Employment (Disabled)%	55	59.9	58.2	65.3	47.3	42.6	57.4
Employment (Non-Disabled)%	78.8	82	80	82.7	74	68.3	79.3
Employment Difference	23.8	22.1	21.8	22.7	26.7	25.7	21.9
JFS Sample	1	1	1	1	1	1	1
Male/Female	Female	Female	Female	Female	Female	Female	Female
Years at JFS	10 years	8 Years	6 Years	1 Year	<1 Year	>5 Years	<2 Years
Racial Minority	No	No	No	No	No	No	No
Wheelchair User Sample	2	13	2	1	1	1	2

	Metro	*Rural*	*Metro*	*Rural*	*Metro*	*Rural*	*Metro*	*Rural*	*Metro*	*Rural*	*Metro*	*Rural*	*Metro*	*Rural*
Sample	2	N/A	11	2	2	N/A	N/A	1	N/A	1	N/A	1	1	1
Male	1		8	2	1			1				1	1	1
Female	1		3		1					1				
Age														
Age 18-35			4									1	1	
Age 35-64	2		6	2	2			1		1				1
Age 65+			1											
Employed	1									0		0		
Full time			6	1	2								1	
Part time	1		5					1						1
% of Sample Income														
<$15,000			2	1						1		1		
$15,000-$25,000	1		4	1				1					1	1
>$25,000	1		4		2									
Refused			1											

Table 3.4 Sample data. County population demographics use 2000 Census data

CHAPTER FOUR

DATA ANALYSIS

Collecting data for analysis was no simple task. I began this project by establishing county profiles as units of analysis to identify differences in livelihoods among a particular disabled population across place. The months involved with planning, transcribing and coding interviews accounted for only a portion of the work needed to construct county profiles. The data involved in their creation required more than just a consideration of what respondents told me during interviews. Acknowledging potential for bias in personal accounts, the project required triangulation and verification wherever possible. Census, CBP, and BLS reports combined with program brochures, maps of bus routes, USDA property determination maps, and even the personal testing of automatic door assist openers to gauge accessibility across locations.

Perhaps equally challenging was the task of condensing information into easy-to-understand profiles without dismissing details of each county's unique characteristics. The seven regions contained in this sample are indeed diverse, regardless of simple summations of "constraint" across categories. Nevertheless, I have organized data according to the pre-established coding criteria described in Chapter Three so that the project of comparing livelihood measures is not muddled by my own appreciation of the barber in Van Wert that makes house calls, the questionable legality of riding in the bed

of a pickup truck, or the variety of helpful acts offered by neighbors of interview subjects.

I created county profiles by providing basic county demographic information to indicate the degree of rurality, poverty, and prominence of disabilities before considering leading opportunities for employment within each county. This information is then used to gauge how disabled populations in each county find work, move throughout their community, and access governmental supports. It also provides a context for how JFS respondents act within each community. Are the disabled more or less of a priority when considering overall poverty and unemployment rates? Do the disabled represent a significant proportion of their county's population? A combination of county indicators and individual perspectives results in profiles that demonstrate different constraints to disabled populations across place.

Ohio in Profile

Before examining profiles of individual counties, it is worthwhile to consider the overall demographic and economic makeup of Ohio. There are 11.5 million residents in Ohio. With 14.2% of the population living below the poverty line, Ohio is slightly above the nation's 13.8% average. About 17% of the state's 21-64 year old population are disabled, with 56% employment within this cohort. Compared to the 79.4% employment figure among non-disabled populations, there is a sizeable 23.4 point disparity between the two (US Census Bureau 2000).

The health care and social assistance sector is the leading employer of Ohioans, with 789,118 paid employees within the state among 28,094 total establishments. The manufacturing sector is the next largest employer, with 599,130 in its payroll among

14,729 establishments. Chi (1999) and Bragman and Cole (1984) identify elements of manual ability, agility, lifting, and an ability to respond to hazards in these occupations that are specifically challenging to wheelchair users. Although more accommodating administrative, technical, and customer service positions may be available within these sectors (Chi 1999), BLS employment statistics demonstrate that those occupations are uncommon (BLS 2013). Within the health care and social assistance sector, registered nurses (2,362,520), nursing aides and orderlies (1,349,220), and home health aides (862,610) are the leading occupations. Medical and laboratory technicians (156,860) and medical transcriptionists (76,570), while more offering more accessible work, are less common occupations. Similarly, the least accommodating positions in manufacturing (team assemblers, machinists, testers) are the most prominent (BLS 2013). Both of these sectors represent physical labor types that are less conducive to wheelchair use (US Census Bureau 2000; U. S. Census Bureau 2010; USDA 2003)

Within this context, Clark, Franklin, Stark, Van Wert, Hocking, Pike, and Tuscarawas Counties are positioned. County profiles draw base information using similar measures, but will also incorporate primary data that can further contextualize how employment, physical mobility, and institutional responsiveness exist for disabled populations in different locations. The resulting profiles allow cross-county comparisons to identify whether place affects degree of disadvantage.

Clark County

Clark County, located in the Central-West region of Ohio, contains both rural and urban environments. With a population of 144,742 and a Rural Urban Continuum code (RUC) of 3, the City of Springfield provides the only metropolitan-designated area within

the county. Nevertheless, Springfield occupies roughly half of its total area, offering metropolitan designation to the majority of its residents. Poverty rates for the county are above the state average at 15.9%. Of the county's 21-64 year old population, 20.9% are disabled, representing 3.4% above the state average. 55% of this cohort is employed, with a 23.8 point disparity between disabled and non-disabled populations (U.S. Census Bureau 2000; U. S. Census Bureau 2010). Paralleling the state's overall trend, the health care and social assistance sector is the leading employer, with the manufacturing sector acting as the next largest employer of the county (USDA 2003). The nature of this work is less conducive to wheelchair user participation due to physical job demands and occupational hazards (Chi 1999; Bragman and Cole 1984).

Although CBP data demonstrate a prominence of health care and manufacturing work, the county JFS operative identified manufacturing and agriculture as the leading employers of the county. The addition of agricultural work, however, does not provide an easily accessible form of employment for wheelchair users in Clark County. Manual skills, lifting, loading, and machine operations involved in these occupations (BLS 2013) pose physical challenges for wheelchair users (Chi 1999; Bragman and Cole 1984). The two wheelchair user samples (48-year-old female and 62-year-old male) in the county identified the primary employers of people in their specific zip codes. While one suggested manufacturing and agriculture as the primary employers (Subject A), the other subject identified the retail sector as the most prominent employer in their zip code (Subject B). Both subjects had different responses, though both lived within the same metropolitan zip code. Applying the county profile coding scheme, the structural

perspective recognizes the physical labor requirements of Clark's leading occupations "constrains" employment in Table 4.1 below. Although I use the term "constrained" in Table 4.1, this does not indicate that wheelchair users are completely incapable of working within the county. Instead, the term is used to demonstrate that there are more constraints to working within this county that in one whose leading occupation has fewer physically demanding tasks.

Both subjects were also asked to identify whether the leading sector was available to them as a means of employment. Subject A identified manufacturing and agricultural sectors as inaccessible due to the physical nature of the work itself. Subject B believed retail work was accessible and he held a part-time position in a retail establishment. Subject B used this part-time job in combination with his Social Security income to make between $25,000 and $35,000 annually. Subject A was not employed, but identified making less than $20,000 from Social Security income. In Table 4.1, the individual perspective recognizes the "unconstrained" ability of an urban wheelchair user to find work in the leading employment sector that they've identified.

In terms of physical mobility, the JFS operative identified metropolitan areas of Clark County as having transportation structures that were accommodating to wheelchair use. Sidewalks and crosswalks with curb ramps were identified by the operative as being present within the metropolitan area, and both absent and infeasible once outside that boundary. Visible from the homes of both subjects were sidewalks, though there were not curb ramps to allow sidewalks to be accessed using a wheelchair. Despite the lack of accessible design in their immediate environments, both left their homes within 24 hours

of their respective interviews and made regular trips away from home. These wheelchair users did not use sidewalks, but did use a government-supported transportation service. This transportation service was an essential component for Subject B's work commute. Both used the service to keep medical appointments, shop, visit friends and family, and attend religious services. The structural perspective recognizes that the presence of physical infrastructure and transit assistance programs in metropolitan areas creates less constrained physical mobility in Table 4.1, while their absence in rural areas represents more constraint. Because both subjects used government-supported transportation services and left their homes, the individual perspective of less constrained physical mobility in metropolitan Clark County is identified as "unconstrained" in the Clark County Summary (Table 4.1).

Clark County	Structural Perspective		Individual Perspective	
Employment	Metro	Rural	Metro	Rural
	Constrained	*Constrained*	*Unconstrained*	*N/A*
Physical Mobility	*Unconstrained*	*Constrained*	*Unconstrained*	*N/A*
Governmental Responsiveness	*Unconstrained*	*Constrained*	*Unconstrained*	*N/A*

Table 4.1 Clark County Summary

Regarding institutional support and responsiveness, the county JFS subject claimed that there was strong institutional responsiveness to the needs of the disabled, but had no information available to identify the quantity of disabled persons or wheelchair users within the county. Transportation services were supported through JFS programs, including busing and shuttle transit. These transportation services did not extend beyond the metropolitan boundary. Job training services were also coordinated by the JFS office,

and could extend to provide training for disabled persons with physical needs. The presence of government programs with a disability-specific component constitutes unconstrained responsiveness in metropolitan areas, while their absence in rural areas represents constraint in Table 4.1. Both wheelchair users were asked whether their input was ever requested by service providers to see if accessibility needs were being met. Subject A could not recall, while Subject B claimed that transportation workers had asked him regularly whether his transportation needs were being met.

Using the county profile coding scheme described in the previous chapter, Table 4.1 indicates whether employment, physical mobility, and governmental responsiveness were constrained in metropolitan and rural areas. Employment, as understood by the structural perspective, is considered "constrained" in both metropolitan and rural environments, as the physical labor requirements of the leading jobs make them less accessible to wheelchair users. The individual perspective, however, acknowledges that an urban wheelchair user was able to find work in what they identified as the leading employment sector.

Although there is tension between the structural and individual perspectives in their assessment of employment, both suggest that physical mobility is less constrained in metropolitan areas. The presence of physical infrastructure and transit assistance programs in urban areas create an environment that allows wheelchair users to travel. Table 4.1 acknowledges, however, that the absence of these amenities has left rural wheelchair users in more constrained environments where mobility is more difficult. Because both wheelchair users used government-supported transportation services and

left their homes with some regularity, the individual perspective acknowledges their movement as less constrained. Despite the lack of transportation infrastructure or assistive services in rural Clark County, these are not necessarily areas where wheelchair users are immobile. Because private transportation assistance might still be available through church or volunteer organizations, the coding scheme does not recognize these as "constrained" in Table 4.1.

Governmental responsiveness is confirmed as less constrained in metropolitan areas, as programs specifically addressing disabled populations are offered and used by wheelchair users in those locations. Job training programs and transit assistance each have components that specifically cater to disabled populations. Both reflect attentiveness to the disabled, but both programs are not extended to rural wheelchair users within the county. Because neither program is extended to rural areas of Clark County, however, the responsiveness to wheelchair users in those areas is considered "constrained."

Although Table 4.1 shows a clear difference between how government responds to urban and rural wheelchair users, the administration of JFS programs should not be confused for intentional neglect of rural populations. Clark County offers only the first example in which programs encountered obstacles related to outreach, limited resources, and limited information to address the rural disabled. Providing programs like shuttle services to more remote areas requires information that was not available to the JFS office. How many disabled are in the county? Do they have a physical disability that requires transportation assistance? Where are they located? The JFS representative

explained that “they have to come to us” (K. Pedraza, personal communication, May 17, 2012) because that information was not available to “bring services to the country.” The greater responsiveness to metropolitan residents is likely the result of difficulty identifying and reaching out to rural areas.

Franklin County

Franklin County is largely urban in composition. With a population of 1,068,978 and an RUC of 1, Franklin County is home to the largest city in Ohio, leaving only a small southwestern portion of its territory designated as rural. Poverty rates are above the state average at 17%. The 21-64 year old disabled population represents 16.5% of the county population, 1% below the state average. 59.9% of this cohort is employed, with a 22.1 point disparity between disabled and non-disabled populations. Health care and social assistance again leads the county employment type, but with retail trade as the next largest employer in the county. The nature of health care work is not conducive to wheelchair user participation, while retail trade does not present exclusive physical conditions for participation (Chi 1999; U.S. Census Bureau 2000, U. S. Census Bureau 2010, USDA 2003).

CBP data demonstrate a prominence of health care and retail work, but the county JFS operative could not pick a single sector to identify as the leading employer. Government employment is a large sector since Columbus is the state’s capital, and the presence of several universities within the county provide additional employment opportunities. These additional employment categories did not present exclusive physical conditions for participation. Eleven wheelchair user samples in the county identified government, education, and retail as the primary employers of people within

their specific zip codes. All subjects identified these as primary employers, although only four shared a zip code. Of the 11 subjects interviewed, only two had rural zip codes.

All subjects were also asked to identify whether these leading sectors were available to them as a means of employment. Of those who reported "no," four contended that transportation prevented them from either getting to the place of work or getting there reliably. One of the three added that they would need more training or education in order to work in academia, as advanced degrees are required for employment at institutions of higher learning within the county. Four of the eleven subjects earned less than $25, 000 annually, four earned between $25,000 and $35,000, two earned over $50,000, and one refused to disclose that information. Two of the employed subjects and the three unemployed subjects received Social Security assistance. Three reported that they were unemployed. Two reported part time retail employment. One reported full time retail employment. One reported government employment that was unspecified. Two reported employment in education. Two reported employment in a technical field. Two of the unemployed subjects lived outside of a metropolitan district.

In terms of physical mobility, the JFS operative identified metropolitan areas of Franklin County as having transportation structures that were accommodating to wheelchair use. As with Clark County, sidewalks and crosswalks with curb ramps were identified by the operative as being present within metropolitan areas, and both absent and infeasible once outside those boundaries. Visible from the homes of eight subjects were sidewalks, of which all eight lived in a metropolitan district. Curb ramps were visible in all eight instances, though three of these sidewalks had obstacles related to

surfacing or obstructive objects that impeded wheelchair mobility. Of these eight residents, six left their homes within 24 hours of the interview and made regular trips away from home. Two of these residents left their homes less than one month from the time of the interview. These metropolitan residents used a variety of services, largely coordinated by either the bus system run by the City of Columbus or through personal transportation. One rural resident had left his home within one week of the interview, using a government-assisted transportation service. The other resident left his home within two weeks of the interview, using a family friend's assistance. Although travel outside of the home differed across the county, wheelchair users recognized transportation as important for work, medical appointments, and attending religious services regardless of whether they were able to leave their home with any regularity.

Regarding institutional support and responsiveness, the county JFS subject claimed that there was strong institutional responsiveness to the needs of the disabled, but had no information available to identify the quantity of disabled persons or wheelchair users within the county. The dense network of non-profit social service providers within the county, it was asserted, used their own reliable projections for coordinating assistance. Transportation services were supported through JFS programs, with close working relationships with COTA, the local bus system, in providing specific shuttle services for disabled populations. Although COTA transportation services were largely coordinated within metropolitan areas around Columbus, additional use of private transportation services were reimbursed by the county. While interviews did not specifically ask about the awareness of transportation services among wheelchair users,

one rural subject explicitly noted the lack of government help in personal transportation: "We're on our own out here. They've got buses and taxis and who knows- they've got-if you live just a mile or two up, they'll pay for it. Not here, though. I have to get [family friend] on the phone and see if he can get me out of here."

Job training services are also offered by the JFS office, as well as job placement services. In addition to the direct provision of occupational assistance, the county operative identified a dense network of local non-profit organizations that were specifically used for this purpose. A cooperative relationship exists between the county office, non-profit, and religious entities for service provision and assistance referrals. Although there is a concentration of non-profit organizations within the metropolitan capital, religious entities are more active in the provision of services outside of that area.

Franklin County	Structural Perspective		Individual Perspective	
Employment	Metro *Unconstrained*	Rural *Constrained*	Metro *Unconstrained*	Rural *Constrained*
Physical Mobility	*Unconstrained*	*Constrained*	*Unconstrained*	*Constrained*
Governmental Responsiveness	*Unconstrained*	*Constrained*	*Unconstrained*	*Constrained*

Table 4.2 Franklin County Summary

This county represents a less constrained environment for disabled livelihoods throughout metropolitan Franklin County. Physical livelihoods are relatively less constrained, as the presence of accommodating transportation infrastructure and transportation services seem to assist or accommodate mobility. And while the primary labor market might include sectors with physically exclusive work conditions, the repeated claims by wheelchair users across the county illustrated a diverse labor market

to which physical barriers were not identified. Political responsiveness was also strong, even when specific services were unknown or unused. Government programs combined with non-profit and religious organizations in an attempt to reach disabled populations that were out of the immediate purview of the county government. This institutional support was not perceived among rural residents, however, who gave specific mention of comparative neglect. Metropolitan areas find multiple levels of institutional support and a capacity for cooperative actions between organizations that is not seen in the context of rural Franklin County.

While the overwhelming narrative of Franklin County is one of less constrained urban livelihoods, rural residents did not have physical infrastructure for transportation. Their non-participation in local labor is not indicative of exclusive physical aspects of local employment, but reflected the lack of job opportunities experienced within the immediate community. In the specific instance where a rural wheelchair user identified work they could physically get to, they offered the following: "I'm not gonna get a job at the [gas] station unless somebody does something really dumb. Everybody needs the money, man. Nobody's gonna leave a job like that." An underlying lack of jobs in rural Franklin County finds that the structural trends of unemployment combine with physical limitations of work transit to create conditions that represent constraint. While the county's largely metropolitan makeup provides less constrained livelihoods, the smaller rural areas are wholly different.

In this case, structural analysis of employment, physical mobility, and government responsiveness predict urban advantage. While county level indicators

confirm that Franklin's largely metropolitan makeup produces lower unemployment among the disabled, direct input from wheelchair users is needed to identify where these economic opportunities may be restricted. In this case, there are further mismatches between mobility and government response indicators that are revealed by wheelchair user input that would be lost with consideration of only the structural perspective. Moreover, analysis within the county by rural and urban area demonstrates stratification across place that occurs within a county's borders. This finding is unique, as disabled individuals living within ten miles of one another identify substantial differences in livelihoods resulting from development in their area. Certainly this is not a matter of status, nor of immediate environmental design, but instead offers evidence for rurality producing constraints to wellbeing.

Stark County

Stark County is largely urban in composition. With a population of 378,098 and an RUC of 2, the county has multiple metropolitan centers with less than one third of the land area designated as rural. These rural areas of Stark County are located along its Tuscarawas-adjacent southeastern corner. Poverty rates are below the state average at 12.7%. Of the county's 21-64 year old population, 16.9% are disabled, representing roughly 1% below the state average. 58.2% of this cohort is employed, with a 21.8 point disparity between disabled and non-disabled populations. The CBP category of healthcare and social assistance again leads the county employment type, but with manufacturing as the next largest employer in the county (U.S. Census Bureau 2000; U. S. Census Bureau 2010; USDA 2003). The physical nature of both leading labor sectors

present exclusive physical conditions for wheelchair users (Chi 1999; Bragman and Cole 1984)..

Although CBP data demonstrate a prominence of health care and manufacturing work, the county JFS operative claimed an increasing diversity in labor markets, with employment within government, a growing service sector, and an emerging computer and technical sector providing additional opportunities for work. Educational initiatives have created increased cooperation between trade schools, community colleges, and industry that have diversified the manufacturing profile of Stark County and added elements of technical service to the thriving healthcare sector. Of the wheelchair user samples in the county, both were able to find employment in what they believed to be leading fields within their respective zip codes. Finding employment in educational services and IT within their metropolitan areas, both identified having an annual income above $50,000.

In terms of physical mobility, the JFS operative identified metropolitan areas of Stark County as having pedestrian transportation structures that were accommodating to wheelchair use. As with other counties demonstrating heterogeneous urban/rural diversity, these structures were identified as being present within metropolitan areas, and both absent and infeasible once outside those boundaries. Although both wheelchair subjects lived within metropolitan areas, sidewalks and curb ramps were not visible from their homes. Both subjects left their homes within 24 hours of their interviews. Bus and shuttle services were offered through the county's public transit entity, SARTA, but neither of these residents used the available services. Having custom accessible vehicles of their own, the wheelchair user subjects had independent means of transportation.

Stark County's JFS official reported that there was strong institutional responsiveness to the needs of the disabled, but followed the pattern of lacking information to identify the quantity of disabled persons or wheelchair users within the county. Partnering with the Salvation Army, Stark County officials had regular interactions with interfaith and non-profit groups that specifically sought to provide services to the disabled. Job training, job placement, meal delivery, and education initiatives were coordinated between the county, the Salvation Army, and community and branch colleges in the area. Transportation assistance via SARTA bus and shuttle services were also offered, with transport compensation given to those that identified needing other means. Although there were active programs to service disabled populations, the two wheelchair subjects identified no interaction with government or non-profit programs. Citing personal transportation and having acquired stable employment, none of these were utilized by the wheelchair subjects.

Stark County	Structural Perspective		Individual Perspective	
Employment	Metro	Rural	Metro	Rural
	Unconstrained	*N/A*	*Unconstrained*	*N/A*
Physical Mobility	*Unconstrained*	*Unconstrained*	*Unconstrained*	*N/A*
Governmental Responsiveness	*Unconstrained*	*Unconstrained*	*Constrained*	*N/A*

Table 4.3 Stark County Summary

This county represents a less constrained environment for disabled livelihoods within its metropolitan areas. The presence of physical transportation infrastructure in metropolitan districts and transit services throughout the county either accommodate or assist mobility. Although CBP data indicate areas of employment that are typically less conducive to

wheelchair users (Chi 1999; USDA 2003), the healthcare sector within Stark County has a large computer and technical support network that offers more accessible work opportunities. The decline of manufacturing and emergence of a computer and tech sector suggest an increasingly favorable climate for wheelchair users to find work. The wheelchair subjects of this county were able to identify employment within their zip codes that represented similar employment opportunities of those within their districts and did not report economic constraints encountered in the county. Institutional support for disabled populations is evidenced by the diversity of services throughout the county and coordination with other organizations to further identify ways to address disabled populations.

The individual perspective recognizes governmental responsiveness as more constrained in metropolitan areas of Stark County. It may seem counterintuitive that urban Stark County is coded as "constrained" when multiple work, transportation, and educational programs are offered to the disabled. The wheelchair users in this study, however, did not recognize or use these programs. Because disability geography considers accessibility and accommodation from the perspective of the disabled themselves, there is no evidence of governmental responsiveness even though programs actually exist.

Van Wert

Van Wert County is, according to USDA-coding, entirely rural in composition. With a population of 29,659 and an RUC of 6, the county population is concentrated within the cities of Van Wert and Delphos. Poverty rates in the county are far below the state average at 8.8%. The 21-64 year old disabled population represents 17.4% of the

county population, roughly equivalent to the state average. Sixty-five percent of this cohort is employed, with a low 17.4 point disparity between disabled and non-disabled populations. Of all counties sampled in this study, Van Wert had the highest rate of employment among the disabled and the smallest level of disparity in employment between disabled and non-disabled populations. In spite of these favorable trends, the leading employers of the county are in manufacturing and health care and social assistance (U.S. Census Bureau 2000; U. S. Census Bureau 2010; USDA 2003). Although the data demonstrate more favorable trends in employment among the disabled, data indicating the most prominent types of disability in the county would be helpful in explaining whether these industries are more or less accessible to the types of disabilities that are most common in Van Wert. Given Chi's (1999) assessment of manufacturing as accessible to populations with hearing loss, specific details about prominent disabilities would again prove helpful in explaining differences between county employment statistics.

The county JFS operative confirmed the prominence of manufacturing work, but suggested that a large proportion of the population was employed in an auto-manufacturing plant in the neighboring county. Within Van Wert, the JFS source claimed that there was still substantial manufacturing work for industrial supplies and in food processing. The JFS subject identified that rural counties in the region used career "One-Stop" centers for job training. Van Wert's One-Stop center was largely associated with training and placement for manufacturing work, but this facility was also identified as the entity for disabled residents to receive occupational assistance. The wheelchair

user in Van Wert identified the Lima Ford plant in the neighboring county as the leading employer of people living within their zip code. This work was identified as inaccessible to the subject due to its physical nature and difficulty coordinating transit. This subject was able to find employment in "in town" retail instead. This part time employment provided an income under $20,000, with supplemental assistance from Social Security.

Physical mobility was highly stratified throughout the county. The JFS operative identified pedestrian transportation structures within "some parts of" Van Wert and Delphos that were accommodating to wheelchair use. Even within these areas, the general sprawl was not conducive to pedestrian infrastructure. No assistive infrastructure was visible from the wheelchair user's home. Neither the JFS subject nor the wheelchair user could identify transportation services coordinated by the county. The only known assistance for transport was coordinated directly with area medical facilities for health appointments and emergency response. The wheelchair subject had left his home within 24 hours of the interview, explaining that arranging transportation away from his residence was dependent on the availability of a family friend. Any activities outside of the home were scheduled during days when he had to work.

The Van Wert JFS official identified institutional responsiveness to the needs of the disabled in the form of job training services of the "One-Stop" facility. The official noted that she did not have information to identify the quantity of disabled persons or wheelchair users within the county. While this data may not have been available, this official identified that she recently acquired the position and did not know if she "knew where to look" for such data. No cooperative programs were identified with non-profit or

religious services. The wheelchair user noted dissatisfaction with the county's provision of services to the disabled, citing disorganization, disinterest, and "incompetence" for failure of government service provision.

Van Wert County	Structural Perspective		Individual Perspective	
Employment	Metro	Rural	Metro	Rural
	N/A	*Constrained*	*N/A*	*Constrained*
Physical Mobility	*N/A*	*Constrained*	*N/A*	*Unconstrained*
Governmental Responsiveness	*N/A*	*Constrained*	*N/A*	*Constrained*

Table 4.4 Van Wert County Summary

This county represents a more constrained environment for disabled livelihoods. Despite relative affluence among the general population of Van Wert, there is evidence of individual scale constraint in each category. Physical mobility is undermined by a lack of transportation infrastructure and transit services. A lack of reliable transit is directly cited as the reason for not obtaining full time employment. Recent administrative changes within the county JFS office combined with information shortages to provide a very limited governmental response to disabled needs. The "One-Stop," offered as the county's sole assistive program for persons with disabilities, was not exclusive to disabled populations, nor did it gear its operations toward work outside of the manufacturing sector. The distrust of the county government from the wheelchair subject identifies a breakdown in coordination between the disabled and officials in a manner consistent with disability geography's indict of improper service planning (Imrie and Hall 1999).

Despite high employment among the disabled indicated in county census data, there is evidence for constrained economic livelihoods among wheelchair users when using the structural perspective. The manufacturing sector, which acts as the leading source of employment for the county, is less accessible for wheelchair users than it is for people with learning disabilities, hearing loss, and mental retardation (Chi 1999). The relatively high levels of employment among the general disabled may include a larger demographic of the disabled that do not have the same restrictions to mobility and physical work as wheelchair users. Because I isolate wheelchair users in my analysis, I acknowledge that this population faces a greater disadvantage in finding accessible work than those with hearing loss, mental retardation, learning disabilities, and those without a disability.

Hocking County

Hocking County is similar to Van Wert in population (28,241), its USDA-coding of rurality, and in its identical RUC of 6. Hocking diverges from Van Wert, however, in other areas. Poverty rates in Hocking are above the state average at 15.3%. The 21-64 year old disabled population is also higher, comprising 22.9 % of the population. Forty-seven percent of this cohort is employed, with a 26.7 point disparity between disabled and non-disabled populations. This Appalachian county follows a general trend in the region of having higher percentages of disabled populations, lower levels of employment, and higher disparities in unemployment. Although these are not favorable trends, retail comprises the leading employment sector within Hocking. This is the only county studied whose leading form of employment is not associated with physically exclusive

conditions (Chi 1999; U.S. Census Bureau 2000; U. S. Census Bureau 2010; USDA 2003).

The county JFS operative confirmed that retail work associated with tourism dominated economic activity within the county and could not identify another sector of employment that created similar work opportunities. The Hocking County Job Service Center functioned as the county's "One-Stop" for job training and placement services. The JFS operative explained that disabled residents of Hocking were taught retail service skills. The wheelchair user sampled from Hocking County also identified tourism-related retail as the leading labor sector within their zip code. This subject did not believe her own physical condition would allow participation in retail work, but insisted that wheelchair users did find such work in the area. The subject was unemployed, collecting under $20,000 annually from Social Security.

Within the County Seat, Logan, the JFS operative identified that pedestrian transportation structures existed for wheelchair access. These structures were not found throughout all of Logan, nor were they identified as present in any other part of the county. Transit services were provided throughout the county, however. Hocking did not use an established system of public transit, but instead had shuttle services which reached all parts of the county. Although services for transportation were available, the wheelchair user in this study had not used them. The wheelchair subject had last left her home more than one month before the time of the interview for a medical appointment. The wheelchair user confirmed that she was aware of transportation assistance from the county but reported there was "nowhere to go." The subject explained that there was a

lack of corresponding mobility at destinations within the county, as wheelchair accommodations were unlikely to be present in retail outlets or around public spaces in and around Logan. Moreover, the outdoor tourist destinations were parks that the subject identified as having unaccommodating terrain.

The Hocking JFS official identified high institutional responsiveness to disabled populations within the county, citing multi-county collaborative efforts for transportation and job training. Within this county, a lack of population density and funding were seen as hard barriers to providing more comprehensive services. As with other counties studied, the official from Hocking was also unable to identify how many disabled persons and how many wheelchair users lived within the county. Despite the provision of job and transportation services offered by at the county level, the wheelchair user in this study did not use either service.

Hocking County	Structural Perspective		Individual Perspective	
Employment	Metro	Rural	Metro	Rural
	N/A	*Unconstrained*	*N/A*	*Constrained*
Physical Mobility	*N/A*	*Unconstrained*	*N/A*	*Constrained*
Governmental Responsiveness	*N/A*	*Unconstrained*	*N/A*	*Constrained*

Table 4.5 Hocking County Summary

Hocking County presents a profile in which structural considerations consistently demonstrate an accommodating environment, while the wheelchair user describes inaccessible work, community mobility compromised by poor accessibility at destinations, and governmental supports deemed unusable due to their failure to address obstacles encountered. Because the disabled subject cannot perform work in the leading

sector and recognized transportation within her county as a futile effort, the profile demonstrates significant constraint for the wheelchair user.

Physical obstacles preclude the provision of transportation services. Even with an unbounded doorstep transportation service, building accessibility and terrain still compromised physical mobility in a manner that transit alone does not address. In terms of economic livelihood, work in Hocking County does not involve manual tasks or occupational hazards that are less accessible to wheelchair users. But although the structural perspective recognizes this as a less constrained environment for work, the wheelchair user's own reported inability to work in the leading sector indicates a constrained working environment using the individual perspective. Undoubtedly there is a degree of political responsiveness to the disabled, demonstrated by multiple strategies for assistance and participation in multi-county research endeavors. The county has low population densities and revenues that JFS operatives identified as impeding further levels of responsiveness to the disabled. The availability of retail work and institutional supports for disabled populations represented generally favorable conditions, but overall gains to livelihood are constrained by physical conditions of the immediate environment. In this way, disability geography explains how access to economic and political structures does not translate into demonstrable gains in livelihood. The predicament of the individual within her immediate physical environment mediates other aspects of mobility and employment.

Hocking provides a stark example of the gap between structural perspectives and those of the wheelchair users in analysis of livelihoods. Work opportunities and

governmental programs suggest an accommodating atmosphere for wheelchair users. Obstacles related to transportation and job readiness are addressed by government programs that train and transport the disabled anywhere in the county. Despite supportive measures, however, the individual may not use the services that are available. The wheelchair user in this sample did not use programs because she anticipated difficulties related to terrain and accessible design. Given the relatively high rate of unemployment among the disabled in Hocking County, this individual perspective can explain how perception of the environment prevents leaving the home even when accommodations are provided.

Pike County

Pike County represents the second entirely rural Appalachian county in this study. With a population of 27,695 and an RUC of 7, Pike has the lowest population of all counties in my sample. Poverty rates are well above the state average at 23.6%. The 21-64 year old disabled population is 27.4% of the county population. This is roughly 10% more than the state average. Unemployment is also above the state average, as 42.6% of this cohort is employed, with a 25.7 point disparity between disabled and non-disabled populations. Manufacturing and healthcare sectors lead the county's employment, with physically-exclusive labor requirements that are less conducive to wheelchair user participation (Chi 1999; U.S. Census Bureau 2000; U. S. Census Bureau 2010; USDA 2003).

Although CBP data demonstrate a prominence of manufacturing and healthcare work, the county JFS operative identified agriculture as representing significant economic activity in the area. Manufacturing figures, the subject reported, were

dependent upon breakthroughs involving gas processing and contributions to nuclear energy developments. The wheelchair user interviewed in Pike County identified agriculture and restaurant chains as the biggest employers in his zip code. He reported that jobs in either field were inaccessible to his wheelchair. The wheelchair user in this county reported being unemployed with no income, depending on the income of a family member that he lived with.

In terms of physical mobility, the JFS operative described the county as lacking density for infrastructure provisions like sidewalks and curb ramps. Transit services were coordinated for disabled populations by using a disabled shuttle service (CATS) and a compensation program through the Ohio Elderly and Disabled Fare Assistance Program. These allowed transit services throughout Pike and could also coordinate transportation among several neighboring counties. Medical transportation was provided by the county and independently through some health facilities. The wheelchair subject had used medical transport services, but did not use transportation assistance for other purposes. This subject reported that he had not left his home within six months, with his last departure related to a medical appointment. This wheelchair user had sentiments similar to the Hocking County resident regarding accessibility. A perception of obstructive building design, ramp access, and unfavorable hilly and gravel-laden terrain were cited as reasons to avoid leaving the home.

The JFS subject claimed strong institutional support for disabled populations within the county. Workforce Connections, the county's job training and placement entity, actively screens for disability needs among applicants and caters its activities to

the needs of each client. The Community Action Committee of Pike County (CAC) also develops initiatives to identify needs of the disabled and implement programs for support. CAC's work is responsible for developing the system of transit services throughout the county, but also develops job placement and training programs. The wheelchair user in this study was aware that the county had programs specifically meant for disabled populations, but had not used any of their services.

Pike County	Structural Perspective		Individual Perspective	
Employment	Metro	Rural	Metro	Rural
	N/A	*Constrained*	*N/A*	*Constrained*
Physical Mobility	*N/A*	*Unconstrained*	*N/A*	*Constrained*
Governmental Responsiveness	*N/A*	*Unconstrained*	*N/A*	*Unconstrained*

Table 4.6 Pike County Summary

In the case of Pike County, wheelchair users encounter constraint primarily in terms of employment opportunity. Work is severely limited for wheelchair users, as they cannot find jobs within the leading sectors. The level of institutional response is comprehensive, with multiple county agents and working group activities specifically organized to address this problem. It is possible that political responsiveness can overcome barriers to employment. Given the high disparities between employment among disabled and non-disabled populations in Pike County, however, it is not clear that obstacles to employment are overcome.

The wheelchair user sampled in Pike County provides an example of how individual considerations identify constraint to physical mobility and employment, even

when governmental interventions are present. Although programs in Pike provide transportation services and job placement, the wheelchair user sampled in this county refused to use these programs because he anticipated encountering obstacles outside of his home. Hills and gravel-laden terrain were a part of the rural landscape that he considered when deciding not to leave his home. Again, the contribution of disability geography has value in explaining the mismatch between opportunities available to wheelchair users and their choices in whether or not to use them.

Tuscarawas County

Tuscarawas County represents the third Appalachian county in this study. With a population of 90,914 and an RUC of 4, Tuscarawas has a significantly higher population than its Appalachian counterparts. The presence of two metropolitan zones, New Philadelphia and Dover, provide a degree of development and economic diversity greater than other Appalachian counties studied in this sample, but still to a lesser degree than its neighboring county of Stark. Poverty rates are below the state average at 12.8%. The 21-64 year old disabled population is also below the state average at 16.9%. Unemployment trends also outperform state averages, as 57.4% of this cohort is employed, with a 21.9 point disparity between disabled and non-disabled populations. Although these trends mark a departure from other Appalachian samples, its leading labor sectors are the same as in Pike County: Manufacturing and healthcare (U.S. Census Bureau 2000; U. S. Census Bureau 2010; USDA 2003).

CBP data demonstrate a prominence of manufacturing and healthcare work, but the county JFS operative identified service sector employment as leading the county. Whereas previous JFS subjects had a tendency toward describing areas of growth in job

markets and finding placement opportunities, Tuscarawas was depicted as limited in job availability. Service sector jobs were identified as available, offering low wages and part time employment. Manufacturing work was identified as "going away" year-by-year. The two wheelchair subjects in this county had differing views regarding employment. The urban subject identified retail work as the leading form of employment in his zip code, while the rural subject identified agriculture. The urban resident found "in-town" retail work at a shop, making under $20,000 annually. The rural resident found part time employment at Wal-Mart, making between $20,000 and $30,000 annually, indicating that agricultural work was beyond the physical capability of wheelchair users.

Physical mobility in Tuscarawas County was described as lacking density for infrastructure provisions of sidewalks and ramps outside of New Philadelphia and Dover. Tuscarawas was identified as lacking funds of Hocking and Stark for their services, but still provided a shuttle program throughout the county. This was made possible by organizing transportation pools across multiple counties and establishing schedules of availability to provide next-day transit servicing by request. Neither wheelchair subject lived in visible proximity of sidewalk or curb ramp infrastructure. Both identified the presence of county transportation services and indicated that they had used them for various appointments. The urban and rural subjects had each left their homes within 24hours of the interview, coordinating their transit with county assistance and family respectively.

The JFS subject reported strong institutional support for disabled populations within the county. As a recurrent figure in inter-county planning in Appalachia and

Northeast Ohio, she actively participated in work groups to identify work assistance and transit for disabled populations. As with each other county, figures were available at the state level to indicate disabled populations, but in-county tallies were not. Wheelchair users in this county reported that they had interactions with different county agents asking for their feedback on transit services and training. In Tuscarawas, there was both a high level of institutional initiative and dialogue with disabled populations.

Tuscarawas County	Structural Perspective		Individual Perspective	
Employment	Metro	Rural	Metro	Rural
	Unconstrained	*Unconstrained*	*Unconstrained*	*Unconstrained*
Physical Mobility	*Unconstrained*	*Unconstrained*	*Unconstrained*	*Unconstrained*
Governmental Responsiveness	*Unconstrained*	*Unconstrained*	*Unconstrained*	*Unconstrained*

Table 4.7 Tuscarawas County Summary

Tuscarawas County provides an example of managed constraint, wherein exclusive conditions are overcome through a variety of governmental interventions. The lack of transportation infrastructure presents a physical obstacle to mobility for wheelchair users. Economic obstacles exist in the form of competitive labor markets that are largely exclusive in their physical requirements. Similar to the case of Pike County, however, institutional supports intervene to provide means to overcome barriers. Transportation and job initiatives actively work to coordinate participation of the disabled throughout Tuscarawas. Of the counties sampled, Tuscarawas provides the only example in which institutional support was given and programs were utilized by wheelchair users in both urban and rural environments..

The higher employment rates and lower disparity with non-disabled populations support the idea that institutional supports work. In this case, both wheelchair subjects reported that they talk with county operatives to improve transportation services and are willing to use county programs. County agents recognize the limited job opportunities and transportation difficulties of wheelchair users in the area and actively seek input from the disabled to improve their services.

Here, the structural disadvantages related to work and travel are managed due to the actions of individuals. Although the structural perspective's views of work opportunity and transportation infrastructure predict more constrained livelihoods, the individual perspective reveals that wheelchair subjects are able to find employment and travel.

General Trends

Data collection for the purpose of county profile creation provided unique opportunity to answer where, how, and to what extent disabled populations experience livelihood constraint across place. I synthesized structural and individual considerations of wheelchair users to identify areas of livelihood inequalities. I organized structural and individual perspectives to indicate whether degrees of livelihood constraint vary across location. Drawing from empirical research on disadvantage and rurality, I predicted that place-based constraints of rurality provide greater disadvantages to wheelchair users. Table 4.8 offers a summary of results, demonstrating where wheelchair users had difficulty finding work, were less capable of leaving their homes, and received fewer assistive services. Evidence for disadvantage (shaded as "constrained" in Table 4.8) in each of these categories is identified in 22 instances. Of the areas demonstrating

disadvantage to wheelchair users, 20 of these 22 instances of disadvantage are in rural environments. Examining the 37 instances where no disadvantage is present ("unconstrained" in Table 4.8), only 13 of these instances are in rural environments. Urban counties (RUC 1-4) have evidence of disadvantage in 26% of livelihood categories, a stark contrast to the evidence of disadvantage in 61% of livelihood categories in rural counties (RUC 6-9). The higher likelihood of encountering disadvantage in rural areas is supported by these findings.

Employment

Considering the differences in availability and types of work in rural and urban environments, I used previous empirical research explain the extent to which wheelchair users in rural areas encounter greater disadvantage than those in urban areas. The wheelchair users in my research indicated that they could not work in jobs that were common among non-wheelchair users in all counties with RUC measures above four. Employment within Van Wert and Pike is limited to sectors with physical components that are less accessible to wheelchair users. The limited job availability and physical nature of this work is consistent with previous research (Chi 1999; Fawson 1998; Schulman 2004; Tickamyer and Duncan 1990), and these restrictions are specifically identified by wheelchair subjects as the reason why they are unemployed. Wheelchair users in metropolitan areas of Clark, Franklin, and Stark each identified that they could find employment in occupations that were common among non-wheelchair users. These wheelchair users explained that common occupations in their areas had a stationary or technical component that allowed them to work in jobs that non-wheelchair users held.

These different physical demands and greater varieties of work opportunity in urban environments offer evidence of fewer disadvantages in those areas.

Physical Mobility

Using research on the reduced capability for assistive transit services (Smailes 2002) and transportation infrastructure (Freire 2001) in rural areas, I expected that wheelchair users in rural areas would have less mobility in their environment. I used the Transportation Landscape Assessment Tool to verify the presence of supportive infrastructure (sidewalks, curb ramps, crosswalk signals) in metropolitan areas of Clark, Franklin, Stark, and Tuscarawas and its absence in all rural areas. The presence of supportive infrastructure did not provide evidence of greater physical mobility in Clark or some metropolitan areas of Franklin, however, because sidewalks were either blocked (telephone poles, trash cans) or inaccessible (uneven pavement, no ramp connection) at residences of some wheelchair users. All metropolitan areas had shuttle or transit services. All metropolitan wheelchair user subjects also identified leaving their homes more than once per month.

There was less evidence of supportive infrastructure, assistive services, and mobile behavior among wheelchair users in rural areas. The Transportation Landscape Assessment tool confirmed that supportive infrastructure (sidewalks, curb ramps, crosswalk signals) was not visible from any of the rural residences in this study. Assistive transportation services were not available in rural areas of Clark, Stark, and Van Wert. Although wheelchair user subjects had regularly left their homes in three of the sampled rural areas, the subjects in Hocking and Pike had not. Concerns regarding terrain and an assumed negligence in building accessibility prevented wheelchair users in

both counties from leaving their homes. Even though shuttle services were available, the natural environment and frustrations over ADA compliance in buildings contributed to "shut in" behavior described in other empirical research on the rural disabled (Johnson 2004). There is evidence that wheelchair users in both environments face obstacles to mobility. Limitations to transportation services, the absence of assistive infrastructure, and a perception of inaccessible destinations were each identified as unique obstacles, however, to transportation for wheelchair users in rural areas.

Governmental Responsiveness

Based on prior research documenting difficulties in service provision from lower tax revenues and lower population densities of rural areas (McMahon and Salant 1999; Smailes 2002;Stren 2001), I expected to find lower levels of governmental responsiveness than in urban areas. JFS respondents were able to identify programs and interventions that specifically addressed disabled populations in all counties except for Van Wert. Rural areas of Clark and Franklin were either ineligible for governmental assistance or the available programs did not specifically target the disabled. Despite having smaller operating budgets than more urban counties, Pike and Tuscarawas cooperated with non-profit groups and other counties to provide transportation assistance. There was evidence of coordination with religious, non-profit, and volunteer groups from JFS offices in both rural and urban areas. Although the presence of supportive programs in both environments does not support the predicted outcome, rural wheelchair users in some counties did report fewer services than urban wheelchair users. The perceived neglect of wheelchair users in rural areas of Franklin and Van Wert were attributed to a prioritization of metropolitan populations and apathy in government officials. Although

this is consistent with other empirical research documenting urban preferences in governmental supports (Bishop 2012; USDA ERS 2012), Franklin County actually does fund supportive programs for the rural disabled. My assessment of governmental responsiveness is difficult because I consider both investment from the county and the recognition and use of its services. Given that criteria, I find no evidence of less investment in rural counties, but I do find evidence that wheelchair users perceive neglect in some rural areas.

	County		Structure			Individual			RUC
			Employment	Physical Mobility	Governmental Responsiveness	Employment	Physical Mobility	Governmental Responsiveness	
Appalachian	Clark	*Metro*	Constrained	Unconstrained	Unconstrained	Unconstrained	Unconstrained	Unconstrained	3
		Rural	Constrained	Constrained	Constrained	N/A	N/A	N/A	
	Franklin	*Metro*	Unconstrained	Unconstrained	Unconstrained	Unconstrained	Unconstrained	Unconstrained	1
		Rural	Constrained	Constrained	Constrained	Constrained	Constrained	Constrained	
	Stark	*Metro*	Unconstrained	Unconstrained	Unconstrained	Unconstrained	Unconstrained	Constrained	2
		Rural	N/A	Unconstrained	Unconstrained	N/A	N/A	N/A	
	Van Wert	*Metro*	N/A	N/A	N/A	N/A	N/A	N/A	6
		Rural	Constrained	Constrained	Constrained	Constrained	Unconstrained	Constrained	
	Hocking	*Metro*	N/A	N/A	N/A	N/A	N/A	N/A	6
		Rural	Unconstrained	Unconstrained	Unconstrained	Constrained	Constrained	Constrained	
	Pike	*Metro*	N/A	N/A	N/A	N/A	N/A	N/A	7
		Rural	Constrained	Unconstrained	Unconstrained	Constrained	Constrained	Unconstrained	
	Tuscarawas	*Metro*	Unconstrained	Unconstrained	Unconstrained	Unconstrained	Unconstrained	Unconstrained	4
		Rural	Unconstrained	Unconstrained	Unconstrained	Unconstrained	Unconstrained	Unconstrained	

Table 4.8 Condensed Summary of Findings

CHAPTER FIVE

CONCLUSION

The relationship between disability and disadvantage is studied by sociologists and disability geographers alike. Aspatial tendencies of sociological research and the abstract and inconsistent assessments of disability geographers often overlook how physical environments, employment opportunities, and levels of government responsiveness vary across places with respect to wheelchair users. My synthesis of sociology's structural perspective and disability geography's individual perspective examines employment, accessibility of public spaces, transportation accommodations, and the provision of governmental supports to demonstrate whether place influences the degree of disadvantage experienced by disabled populations. Using six months of interviews with wheelchair users and social service providers, and combining those with secondary data of county level economic activity and governance, I examine employment, accessibility of public spaces, and transportation accommodations to find the degree to which livelihood barriers exist within a particular disabled population across Ohio regions. This approach addresses structural attributes of socioeconomic conditions across counties, while also gathering direct information from wheelchair users to find whether disadvantaged status is affected by place.

Reviewing the contributions of each field in relation to my research, their synthesis provides insight to studying the relationship between disability and disadvantage that would be otherwise overlooked. The strictly structural analysis of the sociological approach, for instance, can be limited in understanding county employment opportunities and public funding as primary indicators of disadvantages realized by wheelchair users. Given the prominence of accessible retail work in Hocking County and the variety of government programs to support transportation and job placement of the disabled, researchers might assume that barriers are overcome so wheelchair users can work and move. Because I use input from the disabled themselves to ask whether work and travel are possible, I found evidence that terrain and a perception of ADA noncompliance in buildings prevent work from being accessible and programs from being used. The addition of disability geography's individual perspective verifies whether county provisions actually result in greater mobility and work. Similarly, use of the individual perspective in isolation can cause misleading assessments of disadvantage experienced by the disabled. In the case of Stark County, widespread programs were coordinated between county and non-profit groups to provide wheelchair users with shuttle services, transit reimbursement, job training, and job placement opportunities. Although the county actively engages in outreach and provides resources to overcome barriers faced by the disabled, my sample of wheelchair users were unaware of any programs and did not believe they could use them. The individual perspective suggested low governmental responsiveness consistent with Golledge's (1993) descriptions of poor responsiveness to disabled populations, but it was actually the result of the relatively

affluent lifestyles of these wheelchair users that had no need of government services to secure jobs or travel. The synthesis of the two approaches provides a helpful check where structural constraint and individual capabilities are both considered to determine whether the disabled face disadvantage.

Additionally, my synthesis of these two perspectives answers the limitations encountered within each respective field of study. Sociology demonstrates a tendency to cluster disabled populations as one homogeneous group to be contrasted with persons without disabilities. Comparisons between populations provided national level explanations of discrimination and cost considerations for employers that disincentivized hiring the disabled. Because I compare a population with the same disability type and ask for information regarding local work opportunities, I am able to contextualize whether discrimination and cost considerations are relevant to the ability of wheelchair users to find employment. I find evidence that highly physical job duties, difficulties coordinating transportation, and limited job opportunities in rural environments play a role in whether wheelchair users can find work. Both the input from wheelchair users themselves and place-based considerations of work availability address the limitations of the sociological approach.

Similarly, the individual scale considerations and assumptions of urban environments in disability geography were also addressed through this synthesis. The description of inequality explained by disability geographers tended to consider the navigational capabilities of disabled persons and attributed compromised mobility and employment to poor building design and transportation infrastructure encountered in day-

to-day interactions. Because I provide multiple measures of livelihood obstacles in work, physical mobility, and governmental response, I am able to address whether overcoming specific barriers through design or planning actually results in better livelihoods. I find evidence that the provision of transportation infrastructure and the presence of numerous assistive programs for transit and job training in counties like Hocking and Pike did not actually result in greater mobility among the wheelchair users in this sample. Moreover, the inability to find work in the leading sectors of Van Wert, Pike, and rural areas of Franklin was reported as being more related to the type of work available in those areas than considerations of building design and infrastructure. The addition of multiple livelihood measures and county-level assessments of employment opportunities address obstacles in rural environments that tend to be overlooked in disability geography and provide a means to compare types of disadvantages encountered by wheelchair users in different places.

For sociology, my analysis provides a needed direction for the understanding of physical disabilities. Although disadvantage experienced by disabled populations parallel race, class, and gender categories, the physical manifestation of obstacles to employment, physical mobility, and effectiveness of governmental intervention fundamentally requires ground-level considerations of needs identified by wheelchair users themselves. The environmental component is not one of mere replication in social disadvantage, but involves specific consideration of the immediate environment in a way that sociology had been less capable of incorporating. Disability geography's conception of disadvantage is also shown as insufficient to explain aspects of where and how stratification is realized

by wheelchair users. Although immediate environmental characteristics affect employment and physical mobility, overarching considerations of employment sectors are seen as necessary for determining whether work opportunities are even available. Wheelchair ramps and shuttle services, often recommended as equalizing accommodations in disability geography, do little to make a dominant manufacturing or agricultural sector accessible to employment. Regional conditions related to work opportunity and revenue support for government interventions contribute to the production of disabling environments in ways that Golledge's (1993) individual scale analysis can overlook.

My synthesis of the two perspectives allows each to build upon previous empirical research to analyze the role that rural and urban location play in the relative disadvantage of wheelchair users in Ohio. Empirical research in rural sociology has provided evidence of limited work opportunities, a prominence of occupations with highly physical job duties and occupational hazards, and limited capabilities for services and infrastructure from lower revenues. Likewise, disability geography's descriptions of obstacles to mobility and environmental considerations of work accessibility suggest greater disadvantages in areas lacking assistive infrastructure and governments with the resources to provide assistance. I provide evidence that the rural wheelchair users face greater disadvantages in employment and physical mobility than their urban counterparts. Physical demands and limited opportunities in rural employment are reported as the reasons why rural residents of Franklin, Van Wert, and Pike cannot find work. Environmental considerations of terrain and accessibility are reported as relevant to less

mobile behavior in rural areas of Hocking and Pike. Although national scale assessments of the disabled identify high levels of unemployment and poverty, I find evidence of specific barriers to employment and physical mobility that emerge in rural and not urban environments. These findings can inform future research in sociology and disability geography to incorporate place-based variables related to employment, mobility, and governmental responsiveness at the county level.

The findings of this study have implication for planning as well. The distribution of disabled populations throughout Ohio counties reveal a pattern where disabled populations tend to be higher in counties with high poverty rates, low rates of employment among the disabled, and greater differences in employment between disabled and non-disabled populations. Previous literature has identified the preference for addressing poverty before investing in ways to promote equality with the disabled (Coleridge 2000). Planners should be aware of this process occurring at the county level and recognize when job training, transportation services, and multi-county collaborations can address poverty while also meeting specific needs of wheelchair users.

An additional problem for planning has been revealed in this study, as JFS officials reported that they lack data on the quantity and type of disabilities within their respective counties. This makes job training programs difficult, as some occupations are more accessible to certain disability types than others (Chi 1999). Additionally, coordinating services to the disabled involves the arrangement of shuttle services, outreach initiatives to inform the disabled that assistance is available, and an allocation of resources sufficient for providing service to the amount of disabled in the county. I found

no evidence of any county official having access to this information, with several officials reporting that the lack of this information hurt their ability to provide services to the disabled.

I recognize these shortcomings in data availability as a problem for research on disability and disadvantage as well. Current data on populations with disability have become more frequent, though not necessarily more useful. Both ACS and Current Population Survey (CPS) collection methods were altered after 2005 to include information on the disability status of respondents (McMenamin, Miller, and Polivka 2006). In the case of the CPS, this is the first time in which questions were created to measure disability (McMenamin, Miller, and Polivka 2006). Unfortunately, data collection and availability have each proved problematic for quantitative research. The collection and availability of data are conditioned upon the population density of the area studied. ACS data, for example, provides annual statistics on populations exceeding 65,000, three year estimates for populations above 20,000, and five year estimates for all other areas. While some rural researchers have already identified trends that are masked by five year estimates (Miller 2011), the five year timeframe of data collection has left rural data presently unavailable. Currently, both reports ACS datasets on disability (*Disability Characteristics* and *Selected Economic Characteristics for the Civilian Noninstitutionalized Population By Disability*) are only available for areas in which one year estimates have been collected. For researchers comparing populations between urban and rural environments, the limited availability of rural data is still problematic.

While the availability of data makes research more difficult, the details used to describe disabled populations also present challenges to research. Both ACS and CPS approaches gather information regarding "visual difficulty," "hearing difficulty," "physical difficulty," "difficulty remembering," "difficulty dressing," "difficulty going out," and "difficulty working at a job" (BLS 2012). As these data become more available, researchers and service providers will have more accurate measures of specific needs within a particular area. However, these indicators, while more specific in nature, can be too vague for identifying needs of disabled populations. In the case of "difficulty going out," for example, this metric can conflate problems with physical mobility and mental illness. Using these data, researchers will still be able to identify blind and deaf populations, but will remain unable to distinguish physical disabilities, mental disabilities, or specific conditions and combinations which may also exist. For researchers analyzing degrees of disadvantage within the same population, these data are limited in application.

My own research, sometimes sampling a single wheelchair user in a county, is indicative of the challenge that future research must account for. Sampling rural populations is difficult, particularly when compromised mobility and poor health disconnect populations from the outside world. I acknowledge that my own findings only provide examples of differences in livelihoods, rather than demonstrate statistical support for documenting the extent to which inequality exists among wheelchair users. Nevertheless, I have demonstrated important areas of consideration for future research to build upon as data becomes more available. Future research should incorporate ACS and

CPS data when it becomes available, but should take caution to separate observations about broader disability trends from data describing specific disability types. As my own research indicates, specific mobility needs and aspects of workplace accessibility were related to the use of a wheelchair. Larger data sets will be helpful in quantifying where disabled populations encounter more or less constraints, but should continue to consider how different disabilities experience different types of obstacles to livelihoods.

Disadvantaged status of the disabled is both recognized in academic research by sociologists and disability geographers and demonstrated in national employment and poverty statistics. This understanding of disadvantage, shaped by research in employment, social marginalization, and accessible design, suggests that inequalities should be reduced through national policies that address discrimination and accessibility. Yet despite the implementation of the ADA, widening gaps in employment and poverty between the disabled and non-disabled suggest that sociology's aspatial approach to this inequality and disability geography's individualized assessments of personal mobility do not address how the disabled encounter disadvantage. I consider the spatial situation of the disabled, providing evidence that wheelchair users encounter specific disadvantages in rural locations. This study provides an important first step to researching this spatial component by analyzing employment and mobility between counties and within a particular disability type. My evidence of greater disadvantage among rural wheelchair users suggests that the study and reduction of inequality should involve spatial considerations of work and mobility to account for specific challenges in rural environments. Moreover, my interviews with wheelchair users uncovered obstacles to

transportation and use of government services that were reported as the reason for unemployment among subjects. Building from empirical research in both fields, the use of structural and individual perspectives provides a better understanding of disability and disadvantage that explains how place matters. Who can find employment? Who can leave their homes? Such questions are important to establishing that inequality exists. But incorporating place-based considerations of inequality requires more. *Where* are the disabled more likely to find employment and leave their homes? The addition of this spatial component in the study of disadvantage provides a needed approach to understanding why governmental interventions have not reduced national scale trends of unemployment and poverty among the disabled.

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Appendix A: County Subject Interview Tool

- You have been chosen to participate in an interview as a member of the county's office of job and family services. A series of questions will be asked that involve the provision of social services, employment, or more general information about this county's composition. If, during the course of the interview, you encounter information that you identify as beyond your scope or where your information may be limited in some way, please notify the interviewer. Do you understand?
- Your participation is not coerced, nor provided under duress. Is this correct?
- Subject identities are not required for research objectives to be met. The object of these questions is to identify county-level information and not personal or sensitive information of subjects. Regional location of county services will be used as the primary means of signifying data origins in the reporting of research findings and not names of those interviewed. Recordings of interviews are made for the sake of accuracy in identifying responses and not for public viewing. Do you understand?
- Interviews are projected to last between twenty minutes and one hour, but can vary based upon subject input. If, during the course of the interview, you feel the need to discontinue participation, please identify this to the interviewer and the interview shall end without penalty.
- If you understand the above statement and agree to participate, please indicate that to the interviewer and the interview shall begin.

County Subject Interview Questions

1. What surveillance methods are available to tally or monitor disabled populations in this county? How do you know how large the disabled population is and where they reside?

    How many persons in this county are disabled?

    [definite number, approximate number, info not readily available: check number at later time]

2. What surveillance methods are available to tally or monitor wheelchair-bound populations in this county? How do you know how large the wheelchair-using population is and where they reside?

    How many persons in this county use a wheelchair?

    [definite number, approximate number, info not readily available:check number at later time]

3. What surveillance methods are available to tally or monitor labor trends among the general population in this county?

    The disabled populations in this county?

    How many disabled persons in this county are unemployed?

    [definite number, approximate number, info not readily available:check number at later time]

How many wheelchair users in this county are unemployed?

[definite number, approximate number, info not readily available:check number at later time]

4. What programs are available to disabled households in this county?

[transportation specific, work specific, health specific, social specific]

5. Are trolley, bus, dial-a-cab, or transportation services available to wheelchair users in this county?

If yes, who provides them? [government, community organization, private]

Are there any places within the county where those services would be difficult to implement?

Are there any places within the county where those services would not be used?

6. Are sidewalks, curb ramps, and freestanding crosswalk signals available to wheelchair users in this county?

Are there any places within the county where those services would be difficult to implement?

Are there any places within the county where those services would not be used?

7. What is the most common type of employment available to people within this county?

8. What is the most common type of employment available to wheelchair users within this county?

9. Name a county in Ohio that offers fewer services to wheelchair users than this one.

10. Are there differences in funding, program coordination, environment, population size, private sector influence, or development that contribute to this county's comparatively higher number of services? If yes, please describe them.

Appendix B: Wheelchair Subject Interview Tool

Wheelchair Subject Interview Questions

1. Is a wheelchair your primary tool for personal transportation?

2. What is your age?

3. How many years have you lived in your current zip code?

4, When was the last time you were outside of your home?

5. What, if any, mobility or accessibility problems do you encounter when you are outside of your home?

6. What places outside of your home do you visit more than once a month?

    How is transportation to these locations coordinated?

    Does anyone assist in the transportation to these locations?

    Do public services assist?

    Are public services available to assist?

    Do community programs assist?

    Are community programs available to assist?

    Do you use private transportation?

    Do you, your family, or an outside entity provide private transportation?

    Are there other forms of transportation available that haven't been mentioned?

    What planning is needed to coordinate transport?

    How much time do you require to plan travel outside of your home?

    How much time is spent arranging travel plans?

    How long ahead of your departure do you have to call and make arrangements? [minutes, hours, days, weeks]

    Do you consider the accessibility of the destination you're traveling to before

    departing?

    Are there other planning considerations needed to coordinate transport?

7. What places outside of your home would you visit more than once a month if transportation could be coordinated?

Are there any entities that could provide transportation assistance to those locations?

Could you identify any changes to infrastructure that would allow transportation to be coordinated?

8. Name as many locations as you can that you can currently travel to for the provision of health services.

9. How frequently do you travel to a medical facility?

[daily, weekly, monthly, fewer than once monthly]

How far in advance do you have to schedule transportation to your medical facility?

Is this transportation provided by a professional or governmental entity?

If not, how is transportation provided?

10. What are typical jobs that people residing in this zip code have?

[salary range, labor type, physical characteristics]

11. What kinds of jobs are available to you in this zip code?

[salary range, labor type, physical characteristics]

12. Are you employed?

[salary range, labor type]

What infrastructure is needed to participate in current job?

[transportation, telecommute, labor type/computer]

What infrastructure is needed to get to your job location?

[transportation, telecommute]

What aspects of building design or planning are involved in participation of current job?

[ramp access, sidewalks, automated doors, flexible scheduling]

13. When were the last two elections that you voted in?

What infrastructure was involved in your voting?

[transportation, sidewalks, ramp access, automated doors, poll assistance]

14. Name any civic organizations that you participate in.

What infrastructure was involved in your participation?

[transportation, sidewalks, ramp access, automated doors]

15. Outside of your place of residence, how frequently do you encounter persons in wheelchairs?

[daily, weekly, monthly, less than once monthly]

16. Have you been to another part of Ohio with better transportation conditions for wheelchair users? Where was it? What made the conditions better?

17. Have you been to another part of Ohio with worse transportation conditions for wheelchair users? Where was it? What made the conditions worse?

18. Are you aware of anywhere in Ohio with better employment opportunities for wheelchair users? Where is it? What about the employment there is better? How did you come to know this information?

19. Are you aware of anywhere in Ohio with worse employment opportunities for wheelchair users? Where is it? What about the employment there is worse? How did you come to know this information?

20. When was the last time you were asked to assess the accessibility of the county you live in?

Appendix C: Transportation Landscape Assessment Tool

Using this tool, pedestrian infrastructure is assessed from a point within three feet of the wheelchair user's doorstep. The interviewer should make all initial visual assessments from the front door, unless that entry is indicated as obstructed, unused, and/or not nearest to the closest street. In the event that the subject does not have a front entrance to their residence, use any whatever access point is closest to the nearest street (garage, "side" door, etc.) as the point of reference. Please record all responses.

What components of pedestrian infrastructure are visible from this point?

☐ Sidewalk ☐ Curb ramp

☐ Bus stop ☐ Crosswalk markings

☐ Crosswalk signage ☐ Pedestrian safety signage

☐ Other _____

Is there a clear connection between the residential property and transportation outside of residential property?

☐ Yes ☐ No

Are there any obstructions that prevent a clear path across the property line?

☐ Yes. Describe: _____

_____

☐ No.

From the residence, are there any obstructions visible which prevent or impede use of pedestrian infrastructure?

☐ Yes ☐ No

☐ Temporary obstacle on sidewalk (garbage can, debris, weather-related, etc)

Describe: _____

_____

☐ Permanent obstacle on sidewalk (telephone pole, broken/uneven pavement, walkway too narrow, etc)

Describe: _____

_____

☐ Safety-related (high traffic volume, lighting, etc)

Describe: _____

_____

☐ Other

Describe: _____

_____

Appendix D:Additional IRB Materials

Office of Research
Office of Responsible Research Practices

Protocol Title:	ECONOMIC AND SOCIAL MOBILITY AMONG WHEELCHAIR USERS IN OHIO
Protocol Number:	2012E0073
Principal Investigator:	Linda Lobao
Date of Determination:	05/01/2012
Qualifying Category:	02
Attachments:	None

Dear Investigators,
The Office of Responsible Research Practices has determined the above referenced project **exempt from IRB review**.
Please note the following:

- Retain a copy of this correspondence for your records.
- Only the OSU staff and students named on the application are approved as OSU investigators and/or key personnel for this study.
- No changes may be made to exempt research (e.g., personnel, recruitment procedures, advertisements, instruments, etc.). If changes are need, a new application for exemption must be submitted for review and approval prior to implementing the changes.
- Per university requirements, all research-related records (e.g., application materials, letters of support, signed consent forms, etc.) must be retained and available for audit for a period of at least three years after the research has ended.
- It is the responsibility of the investigators to promptly report events that may represent unanticipated problems involving risks to subjects or others.

This determination is issued under The Ohio State University's OHRP Federalwide Assurance #00006378. All forms and procedures can be found on the ORRP website: www.orrp.osu.edu.
Please feel free to contact the Office of Responsible Research Practices with any questions or concerns.
Thanks,
Cheri

Cheri Pettey
Sr. Protocol Analyst | Office of Responsible Research Practices | The Ohio State University

T: 614.688.0389 **F:** 614.688.0366 **E:** pettey.6@osu.edu **W:** www.orrp.osu.edu

Do you use a wheelchair?

Are you over the age of 18?

Interviews conducted among wheelchair populations in Ohio are asking about accessibility and services in your area.

Ohio State researchers need participants to conduct an Interview lasting between 20 minutes and 1 hour at a convenient location of your choosing. Interview participants are eligible for compensation of $15.

If interested, please contact:

Nick Garcia
400 Kottman Hall
2021 Coffey Rd
(614) 653-8641

RuralOhioResearch@gmail.com (614) 653-8641

RuralOhioResearch@gmail.com (614) 653-8641
RuralOhioResearch@gmail.com (614) 653-8641
RuralOhioResearch@gmail.com (614) 653-8641
RuralOhioResearch@gmail.com (614) 653-8641
RuralOhioResearch@gmail.com (614) 653-8641
RuralOhioResearch@gmail.com (614) 653-8641
RuralOhioResearch@gmail.com (614) 653-8641
RuralOhioResearch@gmail.com (614) 653-8641
RuralOhioResearch@gmail.com (614) 653-8641

Phone Script

My name is ***[Nick Garcia]***, a researcher conducting interviews among wheelchair users in Ohio. These interviews are part of a research initiative at The Ohio State University to assess mobility and accessibility of public spaces throughout Ohio. Participants will be asked approximately twenty questions over a span of 20 minutes to 1 hour. The research conducted is to inform social science fields and policy makers of regional differences in mobility and access among wheelchair users in Ohio. This study is primarily concerned with mobility within your zip code, meaning that personally-identifying characteristics will not be used to indicate information about individual subjects. All interviews will be recorded and secured with research staff at The Ohio State University. All participants will be offered the sum of $15 for their participation in the interview. If, during the course of the study, you feel that you would like to withdraw, please indicate that to the researcher and you can withdraw without penalty.

Do you have any questions?

If you would like to participate in this research, please indicate that you acknowledge the purpose of the study, the ability to withdraw without penalty, and the projected time commitment involved with the interview.

Email Script: Established Referral Activation

My name is ***[Nick Garcia]***, a researcher conducting interviews among wheelchair users in Ohio. These interviews are part of a research initiative at The Ohio State University to assess mobility and accessibility of public spaces throughout Ohio.

You are being contacted because you have identified wheelchair users in Ohio that would be willing to participate in an interview on the topic of mobility. Participants will be asked approximately twenty questions over a span of 20 minutes to 1 hour. The research conducted is to inform social science fields and policy makers of regional differences in mobility and access among wheelchair users in Ohio. This study is primarily concerned with mobility within their respective zip code, meaning that personally-identifying characteristics will not be used to indicate information about individual subjects. All interviews will be recorded and secured with research staff at The Ohio State University. All participants will be offered the sum of $15 for their participation in the interview. If, during the course of the study, participants feel that they would like to withdraw, they can indicate that to the researcher and withdraw without penalty.

If you know of potential subjects that are over the age of 18 and use a wheelchair, please provide them with the contact information below and an interview can be arranged.

Nick Garcia
400 Kottman Hall
2021 Coffey Rd
(614) 653-8641
RuralOhioResearch@gmail.com

Eligibility Screening

Do you use a wheelchair as your primary means of transportation? Yes No

Are you over the age of 18? Yes No

By signing below, you indicate that the researcher has verified your possession and use of a wheelchair for transportation and confirmed your age with the use of a state-approved form of identification.

_____ _____

Printed Name Date

_____

Signature

Instructional Script

You are about to participate in an interview that is approximately 20 minutes to 1 hour in length. Questions contained in this interview are for research purposes. The questions will ask for information regarding your personal experiences as a wheelchair user. They include questions about your mobility, work opportunities, and civic engagement with the community. Questions can be skipped if you indicate that you do not wish to answer. Please answer each question as completely and truthfully as you are able.