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### THE EFFECTS OF DISABILITY ON EMPLOYMENT PATTERNS AMONG OLDER WORKERS

By

Ju Hee Hwang

#### A DISSERTATION

Submitted to Michigan State University In partial fulfillment of the requirements for the degree of

### DOCTOR OF PHILOSOPHY

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#### ABSTRACT

#### THE EFFECTS OF DISABILITY ON EMPLOYMENT PATTERNS AMONG OLDER WORKERS

By

#### Ju Hee Hwang

Given the substantial number of individuals with disabilities and the sheer rapid growth of U.S. aging population, research on labor transition among older people with disability is vital for improving quality of life for society in general, as well as people with disabilities. Nonetheless, there has been a lack of research on labor transition and older individuals with disabilities in the literature. To reduce and further eliminate labor transition among older people with disabilities, as well as to provide effective interventions and policies for eliminating, it is imperative to investigate the existence of labor transition of older workers and elucidate mechanisms in which labor transition occur.

The purpose of this study was to investigate the prevalence of late onset disability among older workers, the consequences for their acquired disability on employment patterns, and the determining factors affecting later-life employment transitions. Given a lack of research employing a national data set for employment and older workers with disabilities, this study examined older people aged 50 and over and used the object measures for define a disability. This study was tested chi-square, ANOVA test, binary and multinomial logistic regression.

As an ex post facto design, this study employed the Health and Retirement Study data. Of the total 10,890 age-eligible (age over 50) full time workers who reported thoroughly free of disability (healthy) at the time of baseline interview, the final sampling consisted of 1,096 older workers reported functional or mental disability two years later. 506 male (46.2%) and 590 female (53.8%) reported that they are experiencing disabilities. It is about 10.1% prevalence of an acquired disability among full time older workers. Surprisingly, the prevalence of mental disability was 7.3% and the prevalence of functional disability was 2.7% among older labor force participation.

Findings for descriptive results show that about 62.4% workers still kept their full time job even though older workers experienced some types of disabilities. Older workers at older ages were much more likely to change their job to a par-time or quit their job than younger workers. Older workers with mental disability consistently have a better chance of being employed and sustaining their full time job than older workers with functional disability. The findings also confirm that older workers with high levels of education, those who are white, those are female and those in white collar occupations seem to more likely continue their full time job

Chi-square tests, independent t-test, and ANOVA found that significant differences existed in age, the level of education, type of disability, self employed status, current occupation, industry, and financial factors (earnings, household net assets, and Social Security Retirement Income) between older individuals who kept their job and who quit their full time job. The binary logistic regression and multinomial logistic results support that gender, high level of education, mental disability, self employed status, white collar occupation and white collar related industry, and not depending on social security retirement pension were independently associated with employed older workers. Implications for rehabilitation counselor practice, education and future research are discussed.

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This dissertation is dedicated to Hee Sun Na. Without your love, support, patience and understanding, none of this would have been possible. I love you.

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#### CHAPTER 1

#### INTRODUCTION

Today's aging Americans are expected to make up a large share of the population of the United States (U.S.) (U. S. Government Accountability Office, 2001). Between the year of 2000 and 2025, the population who are 55 years of age and older will be increasing more sharply than any other age group (Toossi, 2004). The causes of this phenomenon occurring for older Americans are both an increase in life expectancy and a decrease in birth rates. Contingent with the situation is an aging workforce and a shortage of labor, thus, the characteristics of labor force participation has changed (Danczyk-Hawley, McMahon & Flynn, 2002; Brooke, 2003; Critchley, 2004). By 2050, projections based on 2000 census data indicate that 60.3 percent of workers will be composed of persons age 55 to 64 while individuals age 65 and older will account for an additional 13.4 percent of the workforce (Toossi, 2004). Dychtwald, Erickson & Morison (2006) similarly estimated that 80 percent of the native-born workforce came from those ages over 50 in North America over the next 15 years.

During the past half-century, the rates of older men who participate in the labor force have been the dramatic decline, particularly older men. It was well known by the term of early retirement trend (Quinn, 1997; Quinn, 2002). Historically, for nearly half a century, older Americans have been exiting the labor force early. The age leaving from their labor participation had declined dramatically among American men from age 70 in 1950 to age 65 in 1970, and then to 62 by the mid-1980s (Quinn, 2002; Burtless, & Quinn, 2002). It was possible that many have been able to support themselves with Social Security advantage income from pensions, savings and investments, and earnings from

employment (Burtless, & Quinn, 2002). At that time, the trend leaving the labor force was mostly the result of increasing prosperity and wealth, some of which was 'spent' on additional leisure late in life (Burtless, & Quinn, 2002).

The earlier trend, however, does not exist today. Millions of skilled and experienced workers both full time plus part time will keep their employment status since the current retirement trend has changed (Quinn & Smeeding, 2004, Quinn, 1997; Burkhauser, and Quinn, 1997; Cahill, Giandrea, & Quinn, 2006). Contemporary ideas about retirement include employment which is a desirable part of the retirement process (National Institute on Aging, 2007). Maestas (2004) correspondingly states nearly onehalf of retirees eventually return to work and many of these job changes involve transitions into new careers. Johnson and Kawachi (2007) also report that 77 percent of job changes by older workers leaving long-term jobs (with 10 or more years of tenure) involved a move into a different occupation, and 73 percent involved a move into a different industry.

These concerns, in turn, have had attention to increase employment among older workers. In addition, many public policies are changing to encourage more work by older Americans. For example, mandatory retirement has been eliminated, Social Security work disincentives are being reduced, and the normal retirement age for Social Security is currently 62 in 2000 and this age will gradually increase to 67 in 2022 (Quinn, 2002). At the same time, many employer pension plans continue to penalize work, in order to induce departure at particular late ages.

The ability to work productively and to return to work later in life is an aspiration for most aging Americans in recent days (Bruyère, Erickson, Wilson, & Somerville,

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2004; Finch & Robinson, 2003). In reviewing current trends among older adults, two dominant trends were found: 1) increased participation in the labor force and 2) a corresponding prevalence of acquired disabilities (Quinn, 2002; Swett & Bishop, 2003). Most of aging individuals often choose transition jobs before their retirement or often immediately return to the labor force in the same, similar, or different occupations after their retirement (Quinn, 1997; Burkhauser & Quinn, 1997). They bring good skills, good work habits, and strong work ethics in the form of advantages to the labor force. However, they also bring the disadvantages of the increased likelihood of acquiring a disability, which in them least to the needs for rehabilitation services and community programs.

With the age of workers increasing, the older individuals are likely to acquire a disability in the incidence, severity, and duration of disability due to the aging process (Kraus & Stoddard, 1991; McNeil, 1997; Bruyère, 2006; Vargo & Grzanowicz, 2002). If older workers experience acquired disability during their later working lives, rehabilitation services can serve them to find or sustain their employment since obtaining and maintaining employment for people with disability are significant goals and are considered a major indicator of successful rehabilitation in the rehabilitation counseling (Michell, Adkins, & Kemp, 2006). Over the last 80 years, "rehabilitation professionals have been committed to assisting people with disability in finding and retaining employment" (Gillbride & Stensrud, 2003, p. 407). However, rehabilitation services were mostly focused on the working age population with disabilities. Now is the opportune time to attend to the demographic composition of older clientele. This is a key to solve in the rehabilitation systems of today (Kemp & Mosqueda, 2004). Rehabilitation systems in both public and private settings can contribute to the retention of aging workers who will

likely need intervention and workplace supports. Nowadays, rehabilitation professionals take the steps necessary to expand and develop our dated rehabilitation systems and community programs by promoting greater coordination of services.

#### Theoretical Framework

The definition of employment includes obtaining economic self-sufficiency, establishing a route for social identification, and developing a personal network for the majority of people living in this society (Moore, Feist-Price, & Alston, 2002). Accordingly, employment is a critical factor in developing independence and community integration (Brown, 2003). Employment is also strongly related to established variables such as income, sense of purpose, social relationships, social participation, skill development, and creativity (Fagin & Little, 1984).

A number of studies regarding QOL report that people may increase their levels of economic, social, psychological, and physical well-being through employment (Fagin & Little, 1984; Hess, Mead, Forchheimer, & Tate, 2004; Krause, 1996). Because working or employment provides profound feelings of well-being, typically the individual makes a social contribution, which is significantly related to QOL (Fagin & Little, 1984; Hess, et al., 2004; Krause, 1996; Kinjerski & Skrypnek, 2004). It is about finding meaning and fulfillment beyond one's self.

For the aging population, the issues of how to maintain a positive quality of life have become more important than ever before (Kempt, 2000). To increase a positive quality of life, aging individuals could be more involved in social and community activities by maintaining or gaining employment regardless of whether or not they experience health limitations. A willingness to work has been observed in many studies of

older workers (Reynolds & Horn, 2005; Heidkamp & Horn, 2008). The importance of older adults undertaking productive activities has been advocated to improve health, longevity, and quality of life (Lee, Saito, Takahashi, & Kai, 2007).

In terms of QOL issues for older adults, changed retirement patterns have influenced older adults to continue an involvement in work related activities. Traditionally, people have believed that retirement is one big event shifting from work to leisure. Trends observed in previous studies about an older workforce and in statistics on labor force participation have documented a dichotomous view of the labor force transition on whether they remain employed or exit the labor force (Quinn, 1997). The dichotomous view of the labor force transition means that workers move directly from a full-time career job to a complete labor force withdrawal as a single event. However, many Americans do not retire in a dichotomous fashion today. Permanent or onetime moves directly out of the labor force from full-time work are relatively rare. Scholars have agreed to view retirement as a process instead of a single event (Quinn, 1997; Ruhm, 1995; Cahill, Giandrea & Quinn, 2006). The concept of retirement is therefore now a process for many older workers rather than an abrupt transition. Most recent study reports that about 25 percent of older workers who retired during the 1990s eventually returned to work (Maestas, 2004), and many of these job changes involved job transitions into part time work or new careers.

The baby boomer generation is likely to continue to work due to the changed the pattern of retirement. Contemporary ideas about retirement include employment which is a desirable part of the retirement process (National Institute on Aging, 2007). Prior to retirement, the majority of older Americans who have had career jobs are likely to make a

bridge job within the same occupation or across occupations (Quinn, 1997; Burkhauser & Ouinn, 1997; Cahill, Giandrea, & Ouinn, 2006). The bridge job means a job that is either in a different type of occupation (on a new job or self-employment) or a switched job either to part-time or full-time following a full-time career (Burkhauser & Quinn, 1997). Ouinn and Burkhauser (1994) noted that the importance of part-time work has risen dramatically with age. According to the Bureau of Labor Statistics (U.S. Department of Labor, 1999), 16% of men in 1999, aged 60-64, worked part-time (less than 35 hours per week), while a full 50 percent of men over 65 did. About 33 percent of women aged 60-64 worked part-time, and 60 percent of women 65 and over worked part-time. The study by Purcell (2009), using the Census Bureau statistics conducted between 1990 and 2008, indicates approximately 70 percent of men and 59 percent of women aged 55 to 64 were still either working or looking for work compared to the 25 to 54 age group. Ninety one percent of men and 76 percent of women participated in the labor force in 2008. In addition, Maestas (2004) correspondingly stated nearly one-half of retirees eventually return to work and many of these job changes involve transitions into new careers.

Statement of the Problem and Significance of the Study

Providing more opportunities for older people to participate in and contribute to social life, including through employment, has become an important issue regarding the QOL in our society. Many older people continue to demonstrate a strong desire to participate or remain in the workforce (Brown, 2003). One reasonable explanation for this trend is that the desire to participate or remain in the workforce is related to both financial and social needs in order to maintain or improve their QOL even though the older workers consider extended employment under more varied conditions.

Another reasonable explanation for this trend is that the majority of older Americans with a job history have experienced labor transitions prior to retirement (Quinn, 1997; Burkhauser, and Quinn, 1997; Cahill, Giandrea, & Quinn, 2006). The Health and Retirement Study (HRS) suggested that the majority of older Americans with full-time career jobs moved on to jobs of a part-time or short-duration basis that served as bridges to retirement before exiting the labor force completely at some point following full-time career employment (Cahill, et al., 2006). Johnson and Kawachi (2007) stated that 77 percent of job changes by older workers who left their long-term jobs that involved 10 or more years of tenure, included a move into a different occupation, and 73 percent moved into a different industry.

If older workers experience deteriorated health, they change jobs many times within several years at the onset of their poor health, since changing jobs (job transition) is an important way for older workers to adapt to their situation (Bound, Schoenbaum, Stinebrickner, & Waidmann, 1998). Dwyer and Mitchell (1999) also state that if older workers experience poor health or disability, they have shown a positive influence on labor force participation rather than negative. Because people associated with poor health may feel in the need for an increases in work to replace lost income, to maintain health insurance, or to pay for the additional health services consumed.

While researchers have extensively studied the various social and economic consequences of disability, its impact on labor transition patterns in on older workers with disabilities in the U.S. has received little attention. Rehabilitation counseling professionals work through in a variety of settings, such as public, private, mental health, and one-stop centers in the Workforce Investment Act programs may however lack

knowledge of the characteristics of the aged individuals, even though they have built up (1) knowledge of both various types of disabilities both chronic physical disabilities and mental illnesses, which are common in the elderly populations, and (2) knowledge of helping them to acquire employment (Kelly, 2003). They may approach all aged persons with disabilities uniformly, regardless of the different characteristics of their consumers. Studies of the services utilized by older workers with disability indicate that older persons have traditionally been largely neglected in formal rehabilitation programs (Kemp, 1985).

Older clients with disabilities may find or sustain their employment more easily through rehabilitation services (Michell, Adkins, & Kemp, 2006). A fairly recent study reveals that the number of clients over the age of 50 has continuously increased every year (Wadsworth & Kampfe, 2004) because rehabilitation services are designed to (1) increase the probability of being employed and the duration of periods of employment as well as to (2) decrease the probability that an employed person would become unemployed at a later date (Gibbs, 1991). If older workers with disability desire to have or sustain a job, rehabilitation fields should therefore reflect the needs of older workers with disabilities (Remenyi, 1995; Saxon & Spitznagel, 1992).

Disability system in the U.S. also needs to continue to provide essential support to those who need it, but it must also establish a mechanism that maintains an older worker's ability to stay actively employed. To do so, this is essential to understand the characteristics of older workers with acquired disabilities and to maintain an awareness of the labor force transition patterns. Better information about later life career changes would improve understanding about employment transition patterns and opportunities for

work by the age group called older workers and could lead to rehabilitation counselors and policies that better promote work for all older Americans with disability. These efforts can also be useful to both future consumers (older workers with disability) and rehabilitation counseling professionals with expanded services (Bruyère, Erickson, Wilson & Sommerville, 2004).

## Purpose of Study

Even though there are various studies regarding the aging population, there is still disagreement on the definition of older workers/older workforce (Robert Wood Johnson Foundation, 2006). As shown, for statistical purposes, older workers are often considered to be those between the ages of 55 and 64; however, the law defines an older worker as anyone 40 or over (Robert Wood Johnson Foundation, 2006). In profiles on older workers presented by Georgetown University's Center on an Aging Society, data suggests an older worker is classified an age 50 and over. The Health and Retirement Study (HRS) and other studies also follow this definition. Thus, for the purpose of this current study, older workers are considered to be 50 years and above, unless otherwise specified.

This current study examines the prevalence of acquired disability on full time older workers, the consequences of their later-life transition, and the determining factors affecting the transition pattern of later-life employment as the conceptual framework illustrated (Figure 1). For determining the factors affecting labor life employment transition patterns, this research first estimated the relationship between the level of individual, labor market, and financial characteristics and broad concept of two labor transition outcomes (employment vs. non-employment. Then, three categories, (a)

holding the full time job (b) switching to a part time job, and (c) being non-employed were examined as outcome variables.

To accomplish its purpose, this study used the longitudinal Health and Retirement Survey (HRS) to analyze patterns of employment within a group of older workers who continued to work versus non-employed following a disability. Accordingly, this paper estimated to assess the prevalence of late-onset disability by using objective measures in order to minimize measurement errors in most of the health and economic studies. Objective measures of disability are also crucial for VR fields since Vocational Rehabilitation (VR) agencies mostly target VR services to individuals whose disabilities are significant or most significant. Eligible VR customers must have a physical or mental impairment that substantially interferes with the ability to prepare for, enter, engage, or retain employment. Thus, defining disability using objective measures in this study make a clear sense for the future VR studies.



Figure 1. Conceptual Framework

Given labor market transitions that are a disability in late life work situation, this empirical analysis describes comprehensive differences in demographic, labor market, and financial characteristics among employed (full time or part time work) vs. nonemployed by types of disabilities and gender because most studies have not focused on the gender and types of differences in job transitions among older workers with disabilities. In addition, it was important to understanding separately the labor market transition of different types of disability due to the difference in the nature of the disability and to treating "older workers with disability" as a single group.

This study identified how the demographic factors (age, gender, race, level of

education, marital status, and number of people living in the household), human capital (earning, household wealth, and Social Security retirement funding), and employment characteristics (occupation, industry, and self-employed status) affect labor market transitions after experiencing disability. These factors were used to evaluate where these characteristics account for the two types of disabilities in full time older workers. Modeling the effect of disability may offer important new insights into the rehabilitation fields that may help to enhance the productivity of older workers and it become significant for those who work in and plan programs of rehabilitation for aging workers.

## **Research Questions**

The followings are research questions:

- 1. What is the likelihood of older workers who have acquired disabilities in their later lives?
- 2. What are the demographics, workforce, or financial characteristics of older workers who have acquired disabilities in their later life?
- 3. Specifically, how do employed and non-employed older workers differ in demographic, workforce, and financial characteristics?
- 4. What factors determine the older worker's labor transition?
  - a) What factor affects the choice of a full time job by the disabled older worker?
  - b) What factor affects the choice of a part time job by the disabled older worker
  - c) What factor affects the choice of a non-employed by the disabled older worker

## Definition of Terms

*Disability*: The ADA (American with Disability Act, 1990) defines disability as a physical or mental impairment that substantially limits one or more of major life activities (McNeil, 2001).

*Functional Disability*: Defines as a multidimensional concept encompassing mobility, large muscle functioning, fine motor skills, gross motor skills, and the ability to perform activities of daily living (ADLs) such as eating, dressing, bathing, toileting, getting in and out of bed, and being mobile in one's residence, and instrumental activities of daily living (IADLs) such as doing housework, doing laundry, preparing meals, grocery shopping, and being mobile outside the home, managing money, and using a telephone).

Mental Disability (Depression): Defines as a depression or depressive symptom measured by the Center for Epidemiologic Studies Depression (CES-D) scale (Radloff, 1997). The CES-D is a self-reported inventory of depressive symptoms ("was depressed," "everything was an effort," "sleep was restless," "was happy," "felt lonely," "enjoyed life," "felt sad," and "could not get going") that occurred in the week prior to the respondent's interview date.

Late Life Disability: It is "those that occur in the later years and are often associated with the aging process" (Corthell and Fleming, 1990, p.17).

Older Workers: Define an "older worker" as beginning at 51 years old.

Labor Force Participation: Labor force participation includes all individuals who are currently employed regardless of their previous history of retirement.

Full-Time Job: Defined as employment that consists of at least 35 hours per week

or 36 weeks per year (HRS codebook, p. 921).

*Part-Time Job:* Defined as employment that consists of less than 35 hours per week or 36 weeks per year including partly retired individuals (a person reports working part time and mentions retirement before) (HRS codebook, p. 921).

*Non-employment:* Refers to the individual who is not working at the time of the interviews and has the following work status: unemployed, retired, applied disability benefits, or exit the labor force.

*Bridge Job:* Refers to a job that follows a full time career either in a different type of occupation (on a new job or self-employment), that is, a switched job either part-time or full-time following a full-time career (Quinn & Burkhauser, 1994; Auinn, Burkhauser, Cahill, & Weathers, 1998; Ruhm, 1995).

#### CHAPTER 2

#### LITERATURE REVIEW

#### The Value of Work for Older Workers

The definition of employment includes obtaining economic self-sufficiency, establishing a route for social identification, and developing a personal network for the majority of people living in this society (Moore, Feist-Price, & Alston, 2002). Accordingly, employment is a critical factor in developing independence and community integration (American Association of Retired Persons, 2001). In addition, employment is strongly related to established variables such as income, sense of purpose, social relationships, social participation, skill development, and creativity (Fagin & Little 1984). For aging individuals, the value of work can also apply as a source of personal identity, a reward, and a strong component of QOL (Szymanski, Ryan, Merz, Trevion, & Jonhston-Rodriguez, 1996). Benefits associated with employment include income and health care. It is possible for the worker to participate in productive activities, make a social contribution, and have psychological benefits. Such psychosocial benefits often comprise a sense of well-being and self value (Fagin & Little 1984; Hess, Mead, Forchheimer, & Tate, 2004; Krause, 1996; Turner & Turner, 2004). Many of these benefits have a definite effect on specific or global indicators of the OOL for people with disabilities.

A number of studies regarding QOL have reported that people increase their levels of economic, social, psychological, and physical well-being through employment because it is about finding meaning and fulfillment beyond one's self (Fagin & Little, 1984; Hess, Mead, Forchheimer, & Tate, 2004; Krause, 1996; Turner & Turner, 2004). Working or employment provides profound feelings of well-being and typically one's

work makes a social contribution, which is significantly related to QOL (Fagin & Little 1984; Hess et al., 2004; Kinjerski & Skrypnek, 2004). Researchers also suggested that for older workers employment results in less stress, and more satisfaction with their personal lives. They were less health care, take fewer sick days, and staying longer with their company than those of their counterparts who do not have a job (Gallup Organization, 2003; Harter, Schmidt, & Hayes, 2002).

For the aging population, the issues of how to maintain a positive quality of life have become more important than ever before (Kempt, 2000). To increase the individual's positive quality of life, elders could be more involved in social and community activities by maintaining or gaining employment regardless of whether or not they experience health limitations. Hively (2004) indicated that older workers who voluntarily continue to participate in the labor force have the desire to add meaning and purpose to life, to use special skills and education, and to preserve an identity tied to work.

Studies have observed the willingness to work among older workers (Reynolds, Ridley, & Horn, 2005; Heidkamp & Horn, 2008). It is because "for older persons, work provides a means to stay active and independent. It is rewarding, promotes good health, and contributes to a sense of usefulness and purpose in life" (Myers, 1992. p. 283). The importance of older adults undertaking productive activities has been advocated to improve health, longevity, and quality of life (Lee et al., 2007). Other studies have supported the notions that the ability to work productively and continue to participate in work activities in later life is an aspiration for the quality of life among most aging Americans (Alwin, 1998; Bruyère et al., 2004).

Menec (2003) examined the longitudinal relationship of activity among the aging population. He found that many older people continue to complete a substantial amount of productive work, regardless of whether they are paid or unpaid. This means that social and productive activities were positively related to happiness, function, and mortality. The MacArthur Foundation Study of Aging in America (1999) conducted by Seeman, Unger, McAvay, & Mendes de Leon also suggested that more than 40 percent of the elderly report at least 1,500 hours of productive activity per year including volunteering. Other studies revealed similar findings. A study from the Georgetown University's Center on an Aging Society (2000) found this effect of employment: based on self-reported health status young retirees age 51 to 59 who have no job are much less healthy than older workers (age 60 and older) and their working counterparts (young retirees who have a job). Furthermore, workers aged 60 and older are almost two times more likely to report that they are in fair to poor health than their nonworking counterparts.

#### Definition of Older Workers

Myers (1992) indicated that the criteria for defining an individual as an older person remain elusive. Generally, studies have disagreed on the definition of older workers. In the United States, the definition of "old age" is different in legislative and administrative policies: "the Older American Act designates age 60 as the base age for eligibility for a variety of social and support services" (Cottrell & Fleming, 1990, p. 11), and "the Social Security Act defines age 65 as a beginning point of entitlement for the collection of full old age and retirement benefits" (Cottrell, & Fleming, 1990, p. 11).

Most definitions are based on chronological age, and some are associated with role status. Age 55 to 64 is widely regarded as the age of older workers for statistical

purposes but "the legal definition tallies with a pervasive attitude among many corporate recruiters who consider 40 and up unacceptably old" (Robert Wood Johnson Foundation 2006, p 6). In the Age Discrimination in Employment Act of 1967, an older worker was defined as an individual who is 40 years or older from employment discrimination (U.S. Equal Employment Opportunity Commission, 1997). Researchers frequently define older workers based on the their status, such as career changers, retirees returning to the labor force full or part time, displaced/dislocated workers, or displaced homemakers (Moon & Hushbeck 1989). Inconsistencies in defining older workers have resulted in complexity when comparing and contrasting demographic predictions, research findings, and analyzing policies (Lockwood, 2003).

There are various age eligibility requirements for membership in organizations that service the older adult. For example, American Association of Retired Persons (AARP) requires that individuals must be at least 50 years of age to apply for membership (Rix, 2004). In the profiles on older workers presented by Georgetown University's Center on an Aging Society, the data suggest that being an older worker starts above age 50; studies generally consider an employee aged 50 or over to be an older worker as the Health and Retirement Study does. Thus, for the purpose of this paper older workers are considered to be above 50 years. Unless otherwise specified.

#### The Current Workforce and Environment

The current workforce trend in the United States is turning gray and shrinking because young adults entering the workforce comprise a relatively small percentage of the population (Giorgianni, 2005; Pitt-Catsouphes & Matz-Costa, 2008). Thus, concerns about "whether employers was able to meet future workforce needs, and whether Social Security and Medicare trust funds remain solvent" (Abraham & Houseman, 2004, p 1) have been raised. These concerns, in turn, are recognized by federal policy because "the smaller share of the population that is of major working age make it more difficult for employers to satisfy their demand for labor" (Abraham & Houseman, 2004, p 1), and the number of workers with disabilities covered by Social Security benefits has increased over time" (Ho, 2002, p 1). Thus, an increase in labor force participation among older Americans regardless of the existence of disability could be the solution for these problems.

#### **Retirement Pattern and Job Transitions**

Traditionally people have thought that retirement is one big event (the dichotomous view) shifting from full-time employment to complete withdrawal from the labor force (Quinn, 1997). However, not all older Americans retire in a dichotomous fashion today. Thus, many scholars have agreed to view retirement as a process instead of a single event (Quinn, 1997; Ruhm, 1995; Cahill, Giandrea, & Quinn, 2006). Often older workers leave the labor market in a gradual fashion. Thus, contemporary ideas about retirement include labor force participation as a desirable part of their retirement process (Cahill, et al., 2006).

Contemporary ideas about retirement include employment as a desirable part of the retirement process. Conducted by an Brown's study (2003), a nationwide telephone survey designed of 2,001 individuals between the ages of 50 and 70 years old was to explore the current definition of retirement. This report states that some older workers define retirement as leisurely pursuits, fun, and time with family and friends, but "over half (53%) state that their definition of retirement includes working for enjoyment, not money, and 42 percent report that their retirement definition includes having to do some

kind of work to help pay the bills" (p 3). Maestas (2004) correspondingly states nearly one-half of retirees eventually return to work, and many of these job changes involve transitions into new careers. Johnson and Kawachi (2007) report that 77 percent of job changes by older workers leaving long-term jobs (with 10 or more years of tenure) involved a move into a different occupation, and 73 percent involved a move into a different industry.

Other retirees use job transitions and second careers, sometimes called bridge job. After retirement, older workers re-entered the work force in a number of different ways. Some transition is from one to another similar job. Some of them have part time work as a second career. It often includes part-time work and sometimes self-employment (Cahill, et al., 2006). According to Bergman (2007), older workers with job experiences are finding part-time jobs in school bus transportation, real estate sales and leasing, retail stores, health care, and accounting and tax preparation services.

The self employed option offers flexible work schedules and expects to find a growing number of interested and available older workers because older workers are expressing concerns about the financial burdens of being out of work for extended periods during retirement. Evidence from the Census Bureau Statistics Survey confirm that between 1990 and 2008 approximately 70 percent of men and 59 percent of women aged 55 to 64 were still either working or looking for work compared to the aged 25 to 54 group whereby 91 percent of men and 76 percent of women participated in the labor force in 2008 (Pucell, 2009). He also reports that the employment rate of men aged 55 to 61 was 73 percent in 2008.

#### Other Factors Influencing Job Transitions

Federal policies have altered to encourage older Americans to work longer. The recent policy initiatives have tended to focus on financial incentives and dis-incentives. For example, the policies for Social Security benefits, Social Security financial incentives, and employer pensions have changed. First, Social Security benefits are expected to replace only about 36 percent, instead of 40 percent, of pre-retirement income for a 65-year-old worker who retires in 2025 (Social Security Administration, 2006). In addition, strong Social Security financial incentives to claim benefits at age 65 have been eliminated for the average worker because of a continuing increase in the delayed retirement credit (Giandrea, Cahill, & Quinn, 2008).

Dramatic changes in employer pensions, the key source of retirement income provided by employers, also affect younger retirees. Munnell, Sundén, and Lidstone (2002) and Munnell and Perun (2006) found that defined-benefit (DB) pension plans that pay a lifetime annuity at retirement have declined substantially in recent decades as companies and workers shift to defined-contribution (DC) pension plans in which retirement benefits depend on workers' contributions. In contrast to those under DB pensions, individuals in DC plans who manage their own accounts face financial market risk and work disincentives. Thus, "labor force participation among people 55 and older might increase due to the trend away from defined-benefit pension plans that pay a guaranteed benefit for life toward defined contribution plans, which often pay out a single lump sum at retirement" (Purcell, 2009, p. 5).

Several studies have identified factors that influence employment among older workers, such as general economic conditions, eligibility for Social Security benefits, the
availability of health insurance, and the prevalence and design of employer sponsored pensions (Purcell, 2009; Heidkamp, Carl, & Horn, 2008; Reynolds, Ridley, & Horn, 2005). According to the Heldrich Center survey, more than one in three (35%) workers has insufficient retirement savings such and thereby they have to rely fully on Social Security benefits when they do retire (Reynolds, et al., 2005). That is why 39 percent of male recipients and 33 percent of female recipients remain employed even though older individuals receive employer pensions and retirement savings plan (Heidkamp, et al., 2008; Purcell, 2009). Another primary reason to return to work is insufficient personal savings or Social Security pensions. In addition, the insufficient retirement savings and personal savings plan are likely driven by their need to obtain affordable employmentbased health insurance and the need to continue to accumulate savings in employment. However, the reasons given for a return to work or to postpone retirement are varied. The older workers consider extended employment under more flexible conditions. Financial need and access to health insurance are important for older workers, but so is interest in keeping active, challenged, and engaged (Brown, 2003).

Other factors additionally affect employment opportunities for older workers (McNaught & Barth 1992). The nature of work in our society has changed from manufacturing-based jobs to service- and knowledge-based employment. As a result, most American jobs no longer involve heavy physical demands and are therefore suitable for older workers. Advances in medicine and technology have allowed individuals to function well in work settings and have reduced the severity of some medical conditions. Correspondingly, "as the workplace adapts to the needs of a more diverse workforce, accommodating more women and ethnic employees, managers and corporate policy may

also become more flexible with respect to the needs of older workers, providing opportunities for part-time or flex-time positions. In addition, the pressures of a globalizing economy place increased pressure on employers to retain skilled workers and older" (Hansson, DeKoekkoek, Neece, & Patterson, 1997, p. 203)

#### Disability and Older Workers

Older individuals are likely to acquire a disability due to the aging process in combination with an increase in life expectancy (Kraus & Stoddard, 1991; McNeil, 1997; Bruyère, 2006) and further states "the incidence and prevalence of disability increases with age" (He et al., 2005, p. 59). In 1995, about 16 million of an estimated 31 million seniors age 65 and over reported some level of disability (McNeil, 1997). If this trend continues to 2030, half the older population will have some disability. Numbers will be much larger because increased life expectancy is accompanied by an increased prevalence of chronic diseases and conditions that are positively associated with aging (National Center for Health Statistics, 2006). According to the National Institute on Aging (2007), "persons who had some form of health event (acute, chronic, or decline in functional ability) between 1992 and 1994 were about twice as likely to be out of the labor force in 1994 and 1996 compared with persons who had not experienced a significant health event" (p 33). Platt (2001) suggested that by the age of 50, a person's first serious medical problem might occur with a 25 percent chance that it was a life-long condition.

As mentioned earlier, the decision to exit the labor force (retire) is affected by a number of factors, including the availability of health insurance, Social Security eligibility, and financial resources. However, several studies have also pointed to a

deteriorated health status (disability status) as a significant determinant. Generally, it is believed that deteriorated health would lower productivity and thus reduce the probability of being employed based on the concept of the economic rationale (Doshi, Cen, & Polsky, 2007). In a study Maestas (2004) also supported that "the individuals acquiring new health conditions were somewhat less likely to go back to work than were those who saw no change in health (16.1 percent versus 18.4 percent)" (p. 21). Santiago & Muschkin (1996) similarly report that disability greatly reduced labor force participation and the return to work. They state that "labor force participation rates were approximately 50 to 75% lower for persons with disabilities than their non-disabled counterparts" (p.304).

Being older and having a disability makes it twice as hard for older workers to find or sustain a job. Recent evidence reveals that in the U.S. older workers over age 50 experienced a disproportionate share of involuntary job losses due to chronic disease and/or a declining health status (Gallo, Bradley, Dubin, Jones, Falba, Teng, & Kasl, 2006; Chan & Stevens 2001; Hipple 1999). The older workers' share of involuntary job losses in the United States has grown consistently in recent decades (Gallo, et al., 2000). Researchers also have found that as workers age they become more vulnerable to injury (Minter, 2002). A study using state data on workers' compensation claims linked to longitudinal earning records notes that older workers are more likely to have permanent disabilities because of work-related injuries (Biddle, Boden, & Reville, 2003), even though older workers reportedly have fewer work-place accidents (Biddle et al., 2003). A similar pattern was observed in the studies by UnumProvident Company (2005) and the Bureau of Labor Statistics (2007): the chance of becoming either long- or short-term

disabled increases with age. "Workers ages 50 to 59 make up approximately 19 percent of the workforce and 19 percent of short-term disability claims, but 34 percent of long-term disability claims" (UnumProvident Company, 2005, p. 7).

Bound, et al., (1998), however, report if older workers experience deteriorated health, they change their jobs many times within several years at the onset of their poor health, since changing jobs (job transition) is an important way for older workers to adapt to their situation. Dwyer and Mitchell (1999) also supported the notion that if older workers experience poor health or disability, they have shown a positive influence on labor force participation rather than negative. It is because people associated with poor health may induce an increase in the need for work to replace lost income, to maintain health insurance, or to pay for the additional health services they have used. Even though there is a question how the severity of disabilities or injuries among older workers affect keeping a job in later life, essential questions arise first; how many older workers employed in full time jobs will experience an acquired disability which limits their work activities? What are the consequences of disability on labor transition patterns among older workers? Are there any differences by gender and types of disabilities? Are there any different characteristics between employed workers (continued workers) and nonemployed workers (discontinued workers)?

## Factors Affecting Employment for Older Workers

In recent years, researchers have acknowledged a negative association between employment status and disability due to the nature of the disability. Platt (2001) suggested that the nature of disability which is a person's first serious medical problem among aging population might occur with a high percent chance that it was a life-long

condition. As an older worker have a permanent disability, the chance to get or sustain a job would be more difficult. Choi (2000) examined the determinant factors of work status among low income older workers and reported that older workers and those with permanent disabilities were less likely to work regardless of gender. Although white males represent the majority of the older working-age population, the proportions of women and ethnic minorities have grown steadily (Barresi & Stull, 1993). In studies of disability in men and women workers aged between 45 and 64 years old, some researchers report that labor participation are differently shaped by gender. (Wray, 1996; Reimers & Honing, 1996). Wray (2001) stated that women are concentrated in industries and occupations that tend to receive lower Social Security and pension benefits than men.

Many prior studies also emphasize the role of race (Wray, 1995; Flippen & Tienda, 2000; Hayward, Hardy, & Chen, 1996) in the relationship between employment and disabilities. The recent study on disability and work among pre-retirement-age Americans by Wray (1995) find disproportionate results between White and non-White: "African Americans and Latinos had disproportionately more potentially disabling health conditions, greater difficulties with function, and more severe symptoms" (p. 294). Given the links between work status and pre- and postretirement economic security, "African Americans and Latinos tended to report lower job status and wages as well as fewer job benefits than did Anglo/others" (Wray , 1995, p. 294). Generally research reports black workers at middle and older ages reports are more likely than white to experience disability and to experience restriction in a major activity, including work (Hayward, Friedman, & Chen, 1998). Flippen & Tienda (2000) also demonstrated that mature blacks and Hispanics, who are more vulnerable to lay-off, disability. This population frequently

reports that they have few retirement benefits. Thus, the role of race and gender differences among older workers has significant implications for inequity in economic well-being among aging population.

Among the older workers, the effects of marital status on employment differ for men and women. For men, being married is positively associated with the likelihood of working, whereas for women, being married is negatively correlated with the likelihood of working. Loprest, et al., (1995) reported that work status among older workers with disabilities is positively associated with having no child for women. They found that single women are more similar to men on labor force participation pattern than to married women. In the study of Reitzes, Mutran, & Fernandez (1998) researching general older women regardless of existence of disabilities, they similarly found that women at any age are more likely than men to exit the labor market due to the response of family caregiving obligations. This phenomenon is casing of women's unstable work histories and their concentration in lower skill occupations. It could make women more vulnerable to involuntary job loss as they approach retirement age (Flippen & Tienda, 2000).

Most previous studies have shown that education was positively related to the labor participation (Holtmann, Ullmann, Fronstin, & Longino, 1994; Hayward & Hardy, 1985). Education also plays a significant role in the different types of labor force participation in which people with disabilities are engaged (Schechter, 1999). Older workers with higher levels of educational attainment are found to be in white-collar employment sector. The factor of education attainment level might reflect economic and may lead to more desirable jobs and working condition. For example, older black workers are "more likely to have lower levels of education and fewer economic resources

and tend to work in more unstable industries than white workers" (Flippen & Tienda, 2000, p6). It is because blacks are disproportionally concentrated on more physicaldemanding jobs such as mining, transportation, construction, and manufacturing.

Baldwin (1999) demonstrated the effects of different types of impairments on employment and wages among low income older workers. Her findings show that persons with mental conditions such as mental disorders, emotional problems, mental retardation, alcohol/ drug problems, or learning disabilities have the poorest labor market outcomes (low employment rates and wages) compared with those experiencing physical disorders. If older workers rarely have other sources of incomes such as pensions or savings for retirement, the role of Social Security benefits is the most important. According to Burtica (2008), Social Security provides at least three-quarters of total income for low-income and poor elderly.

Further, several studies have demonstrated that job characteristics affect the ability of older workers to remain in the workforce. For example, a number of studies show older workers reaching in retirement ages are lower for individuals who work in physically demanding occupations (Hayward &Grady, 1990; Gustman & Steinmeier, 1986). Job characteristics are different by gender; women are concentrated in industries and occupations that tend to receive lower Social Security and pension benefits than men (Wray, 2001). Related to the race on job characteristics, blacks and other minority older workers typically are less likely to work in professions or jobs with high benefits. They have less education, fewer skilled jobs, lower salaries, and long periods of unemployment (Bacon, 1995).

Many prior studies determined the various factors affecting retirement decisions

among older workers (Bryant, 1990; Hatcher, 2002; DeVaney & Chien, 2001; DeVaney & Su, 1997; Hatcher, 2002; Montalto, Yuh, & Hanna, 2000; Holtmann, Ullmann, Fronstin, & Longino, 1994; Honig, 1996). First, financial resources are important factors affecting retirement decision. Older workers with more financial resources will be more likely to exit the labor force early based on the previous studies. Bryant (1990) and Hatcher (2002) found that there is a positive relationship between higher level of assets and a lower level of debt and the demand for leisure time which means to decrease the number of years of work. Second, household assets are undoubtedly hypothesized that these have an influence on the decision to fully retire (Flippen & Tienda, 2000). Third, income from a career position has been recognized as having a negative effect on the expectation of retirement (Flippen & Tienda, 2000). Previous studies revealed that a high wage rate or more profit from work induces the worker to remain in their career longer (Bryant, 1990; Holtmann, Ullmann, Fronstin, & Longino, 1994; Honig, 1996). Income is indirectly related to the decision of retirement since income is related to the accumulation of household assets and more household assets itself are likely to have an encouraging retirement (Bryant, 1990). Income itself is also a direct relationship with continuing to work and to delay retirement (Bryant, 1990; Honig, 1996). For example, retirement income is based on Social Security benefits, pensions, and earning from financial assets. If older workers have some forms of retirement income, they are more likely to feel confidence about their retirement (DeVaney & Chien, 2001; DeVaney & Su, 1997; Fronstin, 1999; Quinn et al., 1998).

The Age Discrimination in Employment Act (ADEA) and American Disability Act (ADA)

"Overriding all other issues is ageism (that is, age bias), which is the most

obvious and pervasive problem faced by older workers seeking employment" (Corthell, Corthell, & McAlees, 1991, p. 30). Over the past 35 years, the federal government has taken steps to prohibit discrimination in hiring and discharging individuals as a result of age, to protect older workers, and to make it easier to remain at work. Recently, researchers reported that the ADEA has not succeeded in eliminating discrimination against older workers and jobseekers. For example, age discrimination claims are the fastest growing category of discrimination cases filed with the U.S. Equal Employment Opportunity Commission (EEOC). They also make up the largest percentage of all charges filed (Morton, Foster, & Sedlar, 2005). The prohibition against discrimination in discharging employees also implies increased employment of older workers due to reduced involuntary terminations (Stock & Beegle, 2004). There have been numerous studies on the empirical impact of age discrimination laws on labor market outcomes. For example, Neumark and Stock (1999), using U.S. Census data, reported that age discrimination prohibitions increase employment of workers age 60 and over.

Similarly, Adams (2000), using the Current Population Survey, found that age discrimination prohibitions have negative effects on the probability that a worker age 65 or older would have a new job. He attributed this to the reduced incident of retirement for this age group because of the ADEA. Other studies have been conducted to examine consequent problems with the ADEA. Bendick, Brown, and Wall (1999) and Lahey (2005) suggested that employers discriminate against older workers in the job application process. After they are on the job, age discrimination is common and impacts job security, deployment, retention, and promotion of older workers (Goldman, Gutek, Stein, & Lewis, 2006). In a study that focused on the ADEA's mandate to eliminate mandatory retirement,

Ashenfelter and Card (2000) found that this provision for professors was associated with reductions in retirement. Consequently, ineffectively managing the aging workforce and a non-accommodating environment may contribute to claims of discrimination (Bjelland, Bruyère, Schrader, Houtenville, Ruiz-Quintanilla, & Webber, 2009).

Compared to age discrimination, fewer studies have been conducted regarding disability employment discrimination among older workers (Goldman, et al., 2006). The Americans with Disabilities Act (ADA) is also applied when older workers experience any type of disabilities. The ADA enacted in 1990 mainly to increase the employment rate of people with disabilities. The act made it illegal to discriminate against an individual with a disability. The employment provisions of the Americans with Disabilities Act of 1990 (ADA) came into effect for employers of 15 or more employees and require to make "reasonable" accommodations to allow qualified workers with disabilities to participate in the workforce (Blanck, 1996). The act has also been helpful in providing access to jobs, especially in the small business sector, which has created two-thirds of all new jobs since the early 1970s (Bruyère, 2000). According to Bjelland et al., (2009), when examining charges made by those protected under both the ADA and ADEA, results from a logit model indicated that compared to charges filed under the ADA alone, jointly-filed ADA/ADEA charges were more likely to be filed by older individuals, by those who perceive discrimination in hiring and termination, and to originate from within the smallest firms.

Older Workers and Vocational Rehabilitation Professionals

Szymanski (1985) defined rehabilitation counseling as "a profession that assists persons with disabilities in adapting to the environment, assists environments in

accommodating the needs of the individual, and works toward full participation of persons with disabilities in all aspects of society, especially work" (p.3). The aim of vocational rehabilitation is to retain and reintegrate individuals with reduced work capacity as a result of physical, mental and/or social circumstances on the labor market (Gupta, Nabanita, & Larsen, 2007). Another role of rehabilitation is that "the negative human consequences of work injuries and subsequent unemployment compel rehabilitation counseling professionals to learn how to assist employers in the adoption of company practices that can prevent injury and maintain employment when disability occurs" (Habeck, Leahy, Hunt, Chan, & Welch, 1991, p. 213).

Older workers are likely to acquire a disability due to the aging process (Kraus & Stoddard, 1991; McNeil, 1997; Bruyère, 2006). If older workers with disability choose to remain in the workforce, the need for career planning will increase for this population because they also need to adjust their disability as well. Without doubt, there is a current and continued need to address the employment concerns of older workers with disability as they continue to participate in the workforce. If older workers experience deteriorated health or disability, they change their jobs many times over several years from the onset of their poor health since changing jobs (job transition) is an important way for older workers to adapt to their situation (Bound, et al., 1998).

Dwyer and Mitchell (1999) also supported the notion that if older workers experience poor health or disability, they have shown a positive influence on labor force participation rather than negative withdrawal. People's lower earnings, associated with poor health, may induce an increase in the need for work to replace lost income, to maintain health insurance, or to pay for the additional health services consumed (Dwyer

& Mitchell, 1999). Gupta, Nabanita and Larsen (2007) also stateed that "vocational rehabilitation might be a pathway to retirement in those cases where there is a return to the labor market" (p 211). Rehabilitation counselors should effectively facilitate older workers with disabilities in need of employment.

### Aging Population in Rehabilitation Counseling

Over the past two decades, relatively few articles have been published in rehabilitation journals aimed at the issues of the aging and their disabilities. The focus of the studies for a member of rehabilitation practitioners has been specified to the need of older individuals with disabilities (Dixon, Richard, & Rollins, 2003). The subjects are on (1) identifying the future research, training, and service directions for geriatric rehabilitation (Kemp, Brummel-Smith, & Plowman, 1989); (2) aging bias and ageism and rehabilitation counseling (Bearden & Head, 1986; Benedict & Ganikos, 1981; Reiner, 1974; Saxton & Spitznagel, 1992), (3) creating an integrated agenda for the aging and disability (Zola, 1989), and (4) the factor of aging among persons with disabilities (Lewis, 1989).

At the same time there were large volumes of studies under disability management in the rehabilitation counseling journals (Habeck & Kirchner, 1999; Shaw & Betters, 2004; Rosenthal, Hursh, Lui, Isom, & Sasson, 2007). The concern was for the "increasing cost of medical care and workers' compensation insurance, and the rise of private (insurance) rehabilitation in the mid-1970's (Strensrud & Gilbride, 2004, p. 222). During the 1980's, employers, insurers, policy makers, and service providers began to recognize the negative impact of employees' health care costs, the aging workforce, and the increasing occurrence of disability in the workplace (Galvin, 1991). Thus, private

sector rehabilitation counseling quickly initiated the concept of disability management and emphasized cost-effectiveness (Shaw & Betters, 2004). As a result, these initial disability management programs began to show a positive return on investment and resulted in financial savings and positive outcomes for injured workers who returned to work (Habeck & Kirchner, 1999).

More recently, the issues on older consumers in rehabilitation studies have developed. This is wider areas than before shown in writings on (1) the phenomenal growth of the aging population and their late onset disability (Finch, & Robinson, 2003); (2) the collaborated approaches for aging population with multiple services needs (Harley, Donnel, & Rainey, 2003); (3) identifying a number of challenges and concerns facing rehabilitation counselors in terms of ageism, legislation, and employment (Dixon et al., 2003) and (4) the characteristics and outcome of vocational rehabilitation services for older adults (Wadsworth & Kampfe, 2004; Drebing, Losardo, Ormer, Krebs, Penk, Nasser, Ray et al. 2002).

## Case Management in Rehabilitation Counseling

Disability management is defined by Shrey & Lacerte (1995), who state that disability management is "an active process of minimizing the impact of an impairment (resulting from injury, illness, or disease) on the individual's capacity to participate competitively in the work environment (p. 5)" regardless of age. Historically, the concept of disability management has been employed by various parties (e.g., medical providers, claims managers, insurance carriers, and rehabilitation professionals) with their own purposes or interests. Thus, the term disability management has been broadly defined and sometimes treated as the most blurred terms in health care (Shrey & Lacerte, 1995). In

the rehabilitation counseling fields, the importance of disability management for the needs of older workers was reiterated by Bruyère (2006). Bruyère (2006) stated that "the primary emphasis of disability management in the employment setting is preventing or minimizing the impact of the disability on the employer and employee and assisting in job retention (p. 155)." There is a significant need for employers to find proven strategies to return employees to work after disability (Vargo & Grzanowicz, 2002) due to the rising medical costs associated with disability that challenges employers. As a result, more employees are seeking strategies to return employees to work and reduce their costs related to disability (Gottlieb, Vandergoot, & Lutsky, 1991). Disability management strategy provided by rehabilitation counselors can be the one fulfilling the employers' needs. Especially in an aging society, this strategy is able to assist in assuring the productivity of workers during all phases of life (National Institute of Disability Management and Research, 2005). If society or business fields are struggling with an aging workforce and their disability, professions like rehabilitation counseling directly become as a disability management professions for them (National Institute of Disability Management and Research, 2005).

# **Employment** Nondiscrimination Legislation

The culture of the workplace itself is a significant factor influencing the retention or rejection of older workers. Age-based stereotyping perpetuates discriminatory practices and discourages older workers from remaining in or returning to the workplace. Thus, rehabilitation counseling professionals should be knowledgeable about employment nondiscrimination legislation (Finch & Robinson, 2003) because the nature of the workforce and of older workers with disabilities are too often seen as a problem to

be dealt with, rather than a workforce opportunity (Morton, et al., 2005). In order to create more opportunities with these groups, it is crucial that rehabilitation professions consider how to both minimize discrimination toward and maximize participation of older workers with disabilities.

Rehabilitation professionals also need to be aware of the possible attendant mental health considerations in the aging process (Swett & Bishop, 2003), and to keep in view the aging of people with existing disabilities (Larkin, Alston, Middleton, & Wilson 2003). Increasing retraining requires knowledge of specific usable concerns and adaptations to technology to ensure effective functioning.

### Training Programs for Older Workers

For older workers training is an important component of retention (The Commonwealth Fund, 1993) or of a return to work. Given the current nature of work, which involves more brain than physical strength, the need for continuous skill updating in light of rapid technological changes make it possible for older workers to continue on the job (Poulos & Nightingale, 1997).

Today, older workers may receive training through both private companies (employers) and publicly funded programs. However, most private companies or employers seem to have little attention given to retraining for older workers because the U. S. General Accounting Office (2001) report that they "simply [have] not considered" (p 23) doing so. Employers have shown a lack of willingness to train their employees. According to a survey of training in establishments of 50 or more employees conducted by the U.S. Department of Labor in December 1996, older workers reported substantially fewer hours of training than younger workers aged between 25 and 44. This report also

mentioned that generally workers in larger firms receive more training than those in smaller firms.

The public training programs for older workers are also limited. The key of public job training programs in the United States is the Workforce Investment Act (WIA) of 1998 (United States Government Accountability Office, 2001). Poulos and Nightingale (1997) mentioned that "WIA has eliminated specific targeting for certain populations, including older and disadvantaged workers, and instead encourages state and local Workforce Investment Boards to develop integrated systems and one-stop services that best meet the needs of their areas" (p 1). This new law "also represents a shift in emphasis to incumbent worker training, including retention, skill upgrading, and concurrent education" (Poulos & Nightingale, 1997, p 1).

The U.S. General Accounting Office (2003) reported that "about 12 percent of the 1.3 million older people who were not working and wanted a job were enrolled in these programs between July 2000 and June 2001" (p3). More than two thirds (156,000) of the participants receive some form of aid from the Senior Community Service Employment Program (SCSEP) which is developed for low income persons 55 and older. These low income participants were typically placed in subsidized minimum-wage community service jobs (Rix, 2004). Carthell and Flemming (1990) stated that this program "places older workers in part-time public sector jobs at senior citizen centers, in schools, hospitals, libraries, social service projects, and other community projects" (p. 13).

Rix (2004) however argued that this program "does not seem suited to meeting the training needs of large numbers of better educated boomers" (p 29) since "this small but very popular program, which serves about 100,000 persons a year, was designed to

assist economically disadvantaged persons aged 55 and older" (p 29). Poulos and Nightingale (1997) reported that "older workers with high education or technical skills would probably continue to be in demand as long as they maintain or upgrade their skills as appropriate" (p 31). Still, there are no public services for older workers with high education or technical skills. Rix (2004) also concludes that "[public training] resources have never been sufficient to reach more than a small proportion of potentially eligible [older] workers" (p 29).

If the participants have a disability, SCSEP is working with vocational rehabilitation to enroll and place persons with a disability (Michigan Office of Services to the Aging (2004). However, specific strategies, interventions, and outcomes for older workers with disabilities are not addressed by these reports. The SCSEP program may have much potential to serve elderly people with disabilities by expanding the service areas and developing some specialties. In order to better serve the aging population with disabilities, collaborative strategies including SCSEP, vocational rehabilitation, and the JTPA Adult Training should be promoted among service systems. Potential vocational planning with practical job goals can become a major task for those who desire to get a job because they may be unfamiliar with the current labor market and contemporary job seeking skills (Finch & Robinson, 2003). Thus, alternative programming should be needed in the future.

### CHAPTER 3

# METHODOLOGY

The purposes of this study were: 1) to estimate the proportion of late onset disability among the older workers with full time job; 2) to identify the characteristics of the older worker with disability; 3) to examine the changes in demographic, household, and labor market characteristics due to the late onset of disability within employed and non-employed workers; and 4) to determine the effects of disability on employment transitions of those who (a) continuing to work full time (b) change to work part time, and (c) change to non-employed.

Keeping in mind the purpose of the current research, the following discussion provides two issues of defining and measuring disability, and the overview of the Health and Retirement Study (HRS). Then, the study's overall design, sampling, dependent and independent variables, procedures and data analyses will be addressed.

# Defining and Measuring Disability

Defining of disability is imperative for this study because of the variation of measuring the multi-dimensional natures of disability and health limitation (Loprest, et al., 1995). Historically, definitions of disabilities vary. There have been numerous ways to define a sample of disabilities for the purpose of the study (Oi & Andrews, 1992; Loprest & Maag, 2001). Unquestionably, each definition includes a different group of individuals as a sample (Loprest & Maag, 2001). For example, medical professionals believe that the problem of disability is directly caused by disease or health conditions. The sets of health conditions or impairments may be key indicators for disability in medical studies. If some individual reports that he or she suffers from a circulatory condition, then researchers in medical fields consider that he or she has a disability.

Studies developed from the point of view of industry on based on economic concerns define disability from a different angle. Researchers refer disabilities to recipients of disability benefits rather than look at individuals' health conditions or impairments since they believe that "disability has large economic and social costs" (Dunlop, Manheim, Yelin, Song, & Chang, 2003, p. 34). The simplest and most commonly used question to establish the presence of disabilities in large surveys and economic studies is the level of difficulty (or, on one scale, the level of ability) to perform their job demands, or whether an impairment or health problem limits the kind or amount of paid work for the respondent. This is a measure of work disability or limitations. These kinds of questions may have more bias than questions that identify disability, since there is no standard measurement on limitations of work. For example, in the question of whether an individual has a disability that limits his/ her work, individuals who all have the same level of physical limitation may respond differently because they consider work differently depending on what tasks they are considering as work. The relationship between this work disability measure and the labor force is a poor predictor of the actual effect of the limitation on work (Loprest, et al., 1995).

Most criteria that current researchers use for selecting individuals with disability have their own problems. The tendency of any current national survey is to record respondents' subjective self-assessment of their own physical capacity. If researchers employ the definition of disability based on the medical model that uses sets of conditions or impairments, serious problem of bias could result. In the study, neither the

presence of medical conditions was confirmed, nor was any physical exams undertaken to measure health conditions. Generally, the majority of studies, however, focus on individuals with disability utilize the entire criteria of factors that include health conditions, recipients of disability benefits, and individuals who reported limitations on work and limitations of daily activities. Researchers often choose some of these criteria depending on the study purposes or the characteristics of the data set they used. It is therefore imperative to have a suitable definition that "was relevant to ability to work with suitable measurements, but could be implemented the different characteristics among those who are working and not working" (Loprest & Maag, 2001, p. 3).

There are several objective health measures that may be more closely tied to the functional capacity for work, such as indices of activities of daily living (ADL) and instrumental activities of daily living (IADL), rather than using health characteristics, such as health conditions or chronic illness or subjective question about work disability for identifying a disability. Researchers in the disability field often utilize such measures to identify work disability among the disabled (Nagi, 1966).

### Functional Disability and Mental Disability

Any empirical studies of disability must not ignore the possibility of a reverse causal relationship between depression and functional disability. It is not only true that "chronicity of depression has a large impact on physical decline over time" (Penninx, Deeg, Eijk, Beekman, & Guralnik, 2000. p.1), but also the loss of physical ability to perform everyday self and home care tasks increases depressive symptoms and the risk of clinical depression (Bruce, Seeman, Merrill, & Blazer 1994). Due to the reverse causal relationship between depression and functional disability and its effect on labor

participation, it is therefore reasonable to include older workers with depression as well as functional disability for older workers with disability in emphasized studies.

# Functional Disability

There remains the question of how to construct an index of disability measurements. For the functional disability, this study defines functional disability to some level of difficulty in performing at least one of a specific set of activities or the inability to perform at least one of a set of functions among the ever worked full time older workers who age over 50. This definition is useful since it includes those individuals whose condition or impairment has manifested itself as a limitation in one of a wide range of daily activities that likely impacts employment, and it involves asking people about the inability or the lack of physical ability to perform various tasks.

It measures by assessing the respondent's difficulty in performing activities of daily living (ADLs) and the household management level of activities (Instrumental Activities of Daily Living, IADLs). Basic Activities of Daily Living (ADL) range from the ability for dressing, eating, bathing to the ability to move around indoors (e.g., "Does anyone ever help you bathe or shower?"; yes/no). Instrumental Activities of Daily Living (IADL) include shopping, cooking a meal, balancing a checkbook/paying bills, and driving) (e.g., "Are you able to shop for groceries without help?" : yes/no). Thus, in the current investigation, the standard measures of both (ADLs) and (IADLs) were used since these are the most commonly used measures in the literatures (Zwerling, Whitten, Sprince, Davis, Wallace, Blanck, & Herringa 2002; Ho, 2002). Furthermore, Fried, Herdman, Kuhn, Rubin, & Turano (1991) suggest that ADL and IADL limitations represent a fairly advanced stage of functional decline.

### Mental Disability

The most common and debilitating form of mental illness among the aging population is depression or depressive disorder (McKenna, Michaud, Murray, & Marks, 2005). Due to its prevalence and its association with physical disabilities, depression in the older population is a major concern for the disability studies. For this current study, the Center for Epidemiologic Studies Depression (CES-D) scale is useful For the measuring depression (Radloff, 1997). The abbreviated eight-item CES-D version in the HRS is a self-reported inventory of depressive symptoms, and it includes test items such as "was depressed," "everything was an effort," "sleep was restless," "was happy," "felt lonely," "enjoyed life," "felt sad," and "could not get going" and their symptoms that occurred in the week prior to the respondent's interview date. This test has shown a high level of reliability and validity as well as high internal consistency comparable to that of the widely used and validated twenty-item CES-D version (Lyness, Noel, Cox, King, Conwell, & Caine, 1997; Turvey, Wallace, & Herzog, 1999; Steffick, 2000; Wallace, Herzog, Ofstedal, Steffick, Fonda, & Langa, 2000).

Identification of individuals who are suffering from a depressive episode is predicated on the reliability and validity of CES-D cutoff scores. In order to best identify individuals using this score, this researcher relied on an extensive literature on the usefulness of the CES-D in identifying episodes of depression (Lyness et al., 1997; Kohout, Berkman, Evans, & Cornoni-Huntley, 1993). Several methods have been advanced to convert a cutoff score consistent with probable depression in the full survey (Unutzer, Patrick, Simon, Grembowski, Walker, & Katon, 1997; Turvey, Wallace, & Herzog, 1999; Emptage, Sturm, & Robinson, 2005; Doshi, et al, 2007). Some studies

employed a cut-off point of 3 or more for defining the present of active depression since these studies has been found to have a sensitivity of 71 percent and specificity of 79 percent for major depression (Turvey, Wallace, & Herzog, 1999; Emptage, Sturm, & Robinson, 2005; Doshi, et al, 2007). However, it is still not clear that a cut-off point of 3 or more is severe enough to be classified as major depression.

A study by Lyness et al., (1997) investigated the validity of the full CES-D for recognizing depression in older community dwelling populations, aged 55 and older. They report that the optimal cut-off score for identifying major depression in an older adult population using the full CES-D to be 20-21 out of a possible total score of 60. Because a score of 20-21 on the full CES- D survey is equivalent to a cut-off score of 4 in the shortened version, this study, therefore, employs the low cutoff score ( $\geq$ 4). It is set to achieve a higher rate of detection of depression in older workers.

## The Classification of Timing

Like the relationship between functional disability and depression, studies in disability and labor supply also mention that there is the possibility of a reverse causal relationship. In other words, health not only affects labor supply, but labor supply may affect health. Generally, deterioration in health or having a disability would lower productivity and thus reduce the probability of being employed based on the economic rationale (Doshi, Cen, & Polsky, 2008). Conversely, labor activities may have a direct impact on the health of the individual. For example, labor activities may have a negative impact on health through the stress or hazards associated with certain working environments, but the lack of activity during non-labor participation may result in the deterioration of health/ disability (Sickles & Taubman 1986; Stern 1989). This latter

possibility may be especially relevant for retired workers. For example, non-labor participation itself may result in disability (Szinovacz & Davey 2004).

Like the relationship between labor activities and health deterioration, the classification of timing (before and after disability) can therefore be an essential aspect of an empirical study of the causal relationship between independent variables (socio demographic, labor market, and financial factors) and labor participation patterns due to disability. The classification of timing was chosen for this study to emphasize captured acquired disability status for the study purposes. Therefore, it can be ensured that disability event captured by timing may explain the changed job transition considering that the experience of disability may explain how disability may change for older workers' participation patterns in the labor force.

In addition, this empirical model this study presented was based on the extensive labor economic literatures to control for economic factors such as Social Security Retirement income that may potentially bias the relationship between labor participation and disability (Gruber & Wise, 2004; Rogowski & Karoly, 2000; Doshi et al., 2007).

## Overview of HRS Data

The data used in this study was obtained from the Health and Retirement Study (HRS) that provides the most nationally comprehensive representative longitudinal survey on health and disability for aging individuals over the age of 50 and their families. It is based on core biennial interviews of nearly 20,000 individuals representing the U.S. population since 1998. In general, the goal of the HRS is to investigate the impact of health transitions on employment outcomes and personal financial transfer of income and assets among those over 50 years old.

Briefly, the HRS is a multistage probability cohort sample of U.S. households. The HRS is taken from community-dwelling respondents who were 51 years or older, and also contains spouses/ partners who are in various ages. The survey population therefore includes individuals who are not themselves in the age eligible, age over 50. More complete details on the HRS design and methods were published (Heeringa & Connor, 1996). The current version of HRS (RAND data) is representative of all birth cohorts born in 1953 or earlier and is collected at two-year intervals. The benefits of using the RAND HRS data is that it is an extraordinarily user friendly file. It contains several important components: (1) a wide-ranging set of derived variables from the first to the most recent data; (2) consistent depression and disease reports over the survey period; (3) imputations of wealth, income, and medical expenditures, and (4) an intuitive and consistent naming scheme and values labels that have been assigned throughout in order to compare variables across survey waves (RAND, 2006).

The HRS is managed through a cooperative agreement (NIA U01AG009740) . between the National Institute on Aging (NIA) that provides its primary funding, and the Institute for Social Research (ISR), which administrate and conduct the survey. The HRS has shown several strengths compared to the other national surveys. The Current Population survey (CPS) provides detailed data on work disabilities in a long series of cross sections (Loprest, et al., 1995) and The National Health Interview Survey (NHIS) contains detailed information on disability but NHIS data source did not pay specific attention to retirement age (Loprest, et al., 1995). However, the HRS has comprehensive information is available on various dimensions of disabilities (functional limitations, mental limitations and health impairments) and explicitly pay attention on aging

population. In addition, comprehensive information of labor market variables that include details in employment status and industrial data is available in the HRS.

In addition, the HRS provides comprehensive information about assets other than pensions and social security (Juster, 1998). It is known for the high quality measurement of income and wealth matter (Juster, Smith, & Stafford, 1999). For example, a very comprehensive and detailed set of questions was used to measure household wealth. Questions were included in each core interview on housing assets and were separated into the following eleven categories, (a) other real estate, (b) vehicles, (c) business equity, (d) IRA or Keogh, (e) stocks or mutual funds, (f) checking savings or money market funds, (g) CD's, (h) government savings bonds or treasury bills, (i) other bonds, (j) other assets, and (k) other debt.

The HRS uniquely deals with the typical high rates of non-response or refusal to answer the questions about the value of stock holdings, IRA balances or amounts found in other narrow asset categories. The special approach for dealing with non-response or refusal in financial questions is to use a series of bracketed questions whenever an open ended question about the value of an asset is not answered. This approach greatly increases reporting wealth and reduces item non-response or refusal (Moon & Juster, 1995).

# **Research** Design

The present study employed a descriptive, ex post facto research design. According to Leedy and Ormarod (2001), the main uses of descriptive quantitative research have either obtaining a general overview of the characteristics of an observed phenomenon, or exploring possible correlation among two or more phenomena. Thus,

descriptive research design is a valid method for this study.

The ex post facto design means that researcher starts with the observation of the independent variable(s) and a dependent varibe(s) in which have already occurred. With no manipulation and lack of random assignment, this type of research also uses the same types of data as do descriptive studies, but it is the different in that it seeks to generate or explore hypotheses about causes (Hadly & Mitchell, 1997; Heppner, Kivlinghan, & Wampold, 2008). Even though the ex post facto design is much less able to determine causality than true experiments, this method is important for either ethical reasons, or an interest in organismic variables. In this study, all independent variables were not able to be manipulated as they had already occurred. Moreover, this study explored possible factors which can account for the labor transition of the dependent variables. Therefore, ex post facto design was suitable for the present study.

# Sample Selection

The HRS data allowed this study to examine the effect of disability on the older respondent's job transitions from 1998 through 2006. All analyses for this current study used person-weights and sampling error codes for the 2006 HRS data developed at the University of Michigan to provide valid inferences to account for the sample design in the HRS (Heeringa & Connor, 1995, RAND, 2006). Respondents with sampling weights of zero indicated they were institutionalized, non-age eligible or deceased. Thus, these cases were excluded from this study. Then, only those persons who met the criteria in Phase I and II were repeatedly pooled: between 1998 survey and 2000 survey, 2000 survey and 2002 survey, 2002 survey and 2004 survey or 2004 survey and 2006 survey to achieve a sufficient number of cases for the analyses in this investigation. As mentioned,

the time when the respondent was a free of disability referred as Time I. The time when the respondent has disability after the previous survey referred as Time II for this current study.

As Figure 2 illustrates, there are steps in following rules applied in order to be eligible for inclusion in the sample: in the Time I (before disability) as baseline, (1) individuals were age eligible (age over 50) at the time of the HRS survey interview (2) the age eligible individuals were currently employed at least 35 hours per week or 36 weeks per year (full time job) and (3) the age eligible full time workers should have a good healthy condition at the baseline survey (year of 1998, 2000, 2002, and 2004) since this study wanted to look at the labor transition patterns due to the experience of disability. Respondents who reported that they were non-employed or retired at the time of baseline (Time I) were excluded because this population may be underemployed or already in post retirement (Szinovacz & Davery, 2005). In this study, full time workers in Time I was the single value in the employment status. In the Time II, the samples for this study were additionally restricted: individuals who met criteria in Time I were selfdefined as 'functional' or 'mental' disabilities at the subsequent survey (2000, 2002, 2004 and 2006- Time II).



Figure 2. Sampling Process

\* Baseline (Job1): The time (Time I) when individuals who are age over 50 and currently working reported that they were a free of disability.

\* Job 2: The time (Time II) when individuals in Time I reported the experience of an acquired disability in the subsequent survey.

The final samples for this study were the cases who met criteria in both Time I and II. The current working status (labor force status) was therefore the main variable to determine employment status (full time, part time, or non-employee). Respondents who reported non-employed, applied for the disability benefits, retired, and exited the labor force at the time of experiencing disability (Time II), were referred to as non-employed.

# Dependent and Independent and Variables

### Dependent variable

As shown in Table 1, two categories of employment status (employed/unemployed) were used as dependent variables in the bivariate descriptive and binomial logistic regression analyses in this study. To examine the effect of disability on detailed employment transitions among older workers, this researcher examined three alternative transitions between two surveys: whether they are employed full time, part time, or are not employed. These categories are defined to be mutually exclusive.

Unlike the other labor studies, current working status (all individuals who are currently employed regardless of their previous retirement history) was therefore the main variable to determine employment or non-employment status. This current study does not require older workers to move out of long-term jobs or into long-term jobs for the transition to qualify as a career change. Many older workers who change occupations, in fact, were not in long-term career jobs before they moved to a different occupation (Johnson & Kawachi, 2007). The probability of employment status was based on the response to this question in the HRS "Are you currently working?" and "What is your current labor force status?". In cases where respondents classified themselves as retired, but are still working for pay at the time of survey were classified as employed. The cases where respondents are currently working for pay regardless of whether they have continued to work or have returned to work status were also classified as employed.

The dependent variable, labor force status, consist of seven mutually exclusive categories: (1) working full-time (2) working part-time (3) unemployed (4) partly retired (5) retired (6) disabled (7) not in the labor force. In this study, labor status was grouped in

the following three categories: (1) working full time, (2) working part-time, and (3) nonemployed. Since he/she is working part-time and mentions retirement before, the HRS set this case to partly retired. Thus, working part-time includes the cases of partial retirement.

Criterion and Predictor Variables		HRS Variables
Criterion Variables		Continued be Employment Full Time Work Part Time Work
Predictor	Demographic Variables	Age Gender Race/ Ethnicity Level of Education Marital Status Types of Disability Number of People living in the Household
variables	Labor Market Variables	Self-Employment Status Types of Occupation Types of Industry
	Financial Variables	Individual Earnings from Work Amount of Household Asset Social Security Retirement Income (at Time II)

Table 1. Variables for the Mo
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# Independent Variables

The independent variables were chosen based on the theoretical model and previous studies. A set of independent variables is used to predict changes in adults' labor force status. Independent variables are grouped as three potential predictors of the dependent variables. The first category considered is demographic variables, such as age, gender, educational attainment, race, and marital status as essential variables. Age is measured in years up to 90 in the HRS. Gender was a dichotomous variable. Regarding education level, the HRS collects information from respondents the highest grade or year of school they completed. In this study, education level was re-coded into three categories: 1) less than high school (up to grade 11); 2) high school graduates (grade 12) or GED); and 3) more than high school (some college or technical school or college 4 years or more). The HRS asked respondents whether the respondent is Hispanic (p. 111). The HRS measured the respondents' multiple races by allowing them to choosing all categories that apply to them and also asks what race the respondents think they belong to through this question: "Do you consider yourself primarily [race responses separated by 'or']?" (p. 109). Respondents were provided the following categories for the last two questions: White/Caucasian, Black/African American and Other. Race in this study was grouped in the following four categories: 1) non-Hispanic white; 2) non-Hispanic African American; 3) Hispanic; 4) non-Hispanic other race or multiracial. Marital status was a categorical variable consisting of three groups that reflects overall status (i.e., married or widowed, separated or divorced, and never married). The marital status was collapsed into two categories: 1) married and 2) unmarried including divorced, widowed, separated and never married.

The second set of variables were more likely to have a strong probability of association with workforce participation consisting of the number of people living in the household (including number of children) and the types of disability based on other studies. The third set of variables was related to the labor market: self employment, types of occupation (blue collar vs. white collar), and types of industry (agriculture/ mining/ construction/manufacturing/ transportation, wholesale/ retail/ services, vs. financial/ insurance/ real estate/ professional related services/ public administration) on the current

job. Self employment status was a dichotomous variable. Blue collar occupations included farming, forestry, and fishing, production, operations, and the military. White collar occupations include managerial and professional, sales, clerical, administrative, and service occupations. The current types of industry were collapsed into tree categories: 1) agriculture/ mining/ construction/manufacturing/ transportation, 2) wholesale/ retail/ services, and 3) financial/ insurance/ real estate/ professional related services/ public administration.

Financial variables were three for this study: (1) individual earnings, (2) amount of household net asset, and (3) Social Security income. Labor income was a continuous variable and it included the respondent's annual salary, bonuses, overtime pay, commissions, tips, second job or military reserve earnings, professional practice or trade income and income from business, if there was a business.

Net worth includes the value of all real and financial assets, including equity in primary and secondary homes, but it excludes the value of future Social Security and Disability Benefit pension rights. Social Security Retirement income which was a continuous variable was the respondent's income from Social Security retirement, spouse or widow benefits. The variables in financial assets analyzed in this study relied on imputed data since the HRS used a series of unfolding bracket follow-up questions for non-response to wealth questions. The imputed financial data produced significantly lower levels of non-response and more reliably imputed values (Smith, 1995).

The first three categories including basic demographic, work related variables, and labor market variables (self employed, occupation, and industry) were included in the empirical model as preference shifters. All of the predictor variables are from baseline

interviews, except for the social security retirement income variable.

### Data Analysis

The present study was designed for four purposes: 1) to estimate the proportion of late onset disability among the older workers with full time job; 2) to identify the characteristics of older workers with a disability; 3) to examine the changes of demographic, household, and labor market characteristics due to a late onset of disability within two groups: the employed and non-employed; and 4) to determine the effects of disability on employment transitions: (a) continuing to work full time job (b) changing to work part time job; and (c) changing to non-employed. There are three types of analyses this study used: descriptive, bivariate analyses, binomial logistic regression, and multinomial logistic regression.

# Descriptive and Bivariate Analyses

For research questions 1 "What is the likelihood of older workers who have acquired disabilities (a health change/health shock) in their later lives?" and question 2 "What are the demographics or workforce characteristics of older workers who have acquired disabilities in later life?" descriptive statistics, and frequencies. For research question 3 "How do employed and non-employed older workers differ in demographic, workforce, and financial characteristics?" bivariate analysis and binary logistic regression were run for an overview of the older workers with disability.

# Binary Logistic Regression

For this study, binary logistic regression and multinomial logistic regression were employed. For the question 3 "How do employed and non-employed older workers differ in demographic, workforce, and financial characteristics?" binary logistic regression

analysis was also appropriate since binary logistic regression analysis has been acknowledged as the data analytic tool of choice when criterion variables are dichotomous and predictor variables are continuous or categorical (Agresti & Finlay, 1997; Tabachnick & Fidell, 2007).

Similar to multiple regressions, logistic regression investigates the association between one criterion variable and multiple predictor variables. In logistic regression, however, the relationship between one categorical criterion variable and a set of predictor variables is examined. The categorical criterion variable can be dichotomous, polychotomous, or ordinal. In interpreting results, binary logistic regression emphasizes the probability of a particular outcome for each case by one or more independent variables. Thus, in this study, binary logistic regression was employed to predict the probability of job transition pattern among older workers with disability. Binary logistic regression model this study presented was used to assess the strength and magnitude of associations between a dichotomous employment outcome (employed or non-employed) and a set of independent variables.

The overall goodness of fit of the models was assessed on the basis of the Hosmer-Lemeshow Chi-square test (Hosmer & Lemeshow, 2000). The Likelihood-ratio test was used to determine how the fit of the models change as additional variables are introduced to equations. The effect of the independent variables on employment outcomes was evaluated on the basis of the corresponding odd ratios and the significance level of the estimated parameters provided by the Wald statistic. The results of Wald statistic was expressed by p-value in this study. The logistic models are estimated using SPSS 18.0.

# Multinomial logistic regression analysis

For the questions question 4 "What factors determine the older worker's labor transition?," multinomial logistic regression was used because the dependent variable has more than two nominal, unordered categories. If observations are independent, the multinomial or polychotomous logistic regression model can be used to assess the influence of explanatory variables on the nominal response variable (Agresti, 1990).

An advantage of this technique is that it is suitable to evaluate the determinants of various demographic, job characteristics, and financial factors on the likelihood of three types of employment outcomes (full-time, part-time, vs. non-employed outcome) for the older workers with disability. The goodness of fit of the models was evaluated on the basis of Pearson's Chi-square and of the Deviance tests (Chan, 2005). In multinomial logistic regression models, the logistic coefficients (log odds) and the exponential form of the coefficients (odds ratio) was estimated using Maximum Likelihood Estimation (MLE) and presented for comparison. The likelihood ratio test was used to check the model's goodness of fit. The Multinomial logistic regression models were estimated using SPSS 18.0. All explanatory variables in this model are measured at the time of the baseline interviews except for the Social Security Retirement income variable.
# CAHPTER 4 RESULTS

This chapter presents the findings of the data analyses in order to investigate the effect of disability on employment patterns among older workers. All results were based on the following purposes of this study: 1) to estimate the likelihood of late onset disability among the older workers with full time job; 2) to identify the characteristics of older workers with a disability; 3) to examine the relationship between demographic, household, and labor market characteristics due to a late onset of disability and labor force behaviors among full-time older workers; and 4) to determine the factors affecting employment transitions due to disability including (a) keeping a full-time job, (b) changing to a part-time job, and (c) changing to be non-employed.

For the first and second purposes, descriptive statistics for all variables were employed, followed by the bivariate analyses, binominal logistic regression and multinominal logistic regression. Bivariate analyses were used to investigate how the characteristics of employed and non-employed older workers differ by conducting a series of Chi-square tests, independent t-tests, and binary logistic regression. Multinominal logistic regression is the most frequently used model for multinomial outcomes (Long, 1997). For this study, a multinomial logit model was designed to examine which individual level variables were accounted for the following criterion variables: employment status (full time job/part time job/non-employed).

# Descriptive and Bivariate Analysis

## Sample Characteristics

Research Question 1: What is the Likelihood of Older Workers who Have Acquired Disabilities in Their Later Lives? The present study was restricted to the individuals who had a full-time career job at age 50 or older and had a healthy condition at the baseline interviews. These sample selection criteria were used since this study was interested in the labor transition behaviors after older worker experience some level of disability. As shown in Table 2, a total 15,049 age-eligible (over age 50) full-time workers reported being free of disability (healthy) at the time of interview (baseline interviews) in 1998, 2000, 2002, and 2004. At time I (baseline interview) and time II (after disability), there were 4,159 missing data in ADL, IADL, and CESD variables. Thus, this study obtained a sample of 10,890 ageeligible older workers who worked full-time and were reportedly healthy at the baseline.

Of these 1,096 respondents, 506 male and 590 female reported disabilities in the subsequent survey (2000, 2002, 2004 and 2006) with following definitions: inability to perform a set of physical ability to do various tasks (1) measured by respondents' difficulty in performing activities of daily living (ADLs), (2) measured by respondents' household management level of activities (instrumental activities of daily living, IADLs), or (3) episodes of depression measured by the CSD-S. Per Table 2, this current study begins to investigate the potential prevalence of late onset disability among the older workers with full-time jobs. Among the total 10,890 age-eligible (age over 50) full-time workers reported being free of disability (healthy) at the time of baseline interview, then, 1,096 older workers (10.1%) reported functional or mental disability two years later.

Table 2. Study Sample

Variable	1998	2000	2002	2004	Total
Full-Time Workers Free of Disability excluding Missing Data at the Baseline Surveys	3,118	2,694	2,042	3,036	10,890
	1998- 2000	2000- 2002	2004004	2004- 2006	Total
Disability at the Subsequent Surveys	321	278	182	315	1,096

\* Excluding all missing data in ADL, IADL, and CESD variables at the time I (n=1,564) and time II (n=2,595).

Research Question 2: What are the Demographics, Workforce, or Financial Characteristics of Older Workers who have Acquired Disabilities in Their Later

# Life?

Table 3 shows that socio-demographic characteristics of the 1,096 participants differed to varying degrees. Most respondents' age was 59.1 years old (SD= 6.3), on average, and had mental disability (72.9%). Slightly over half (53.8%) were women. The sample was largely non-Hispanic White (69 %); almost 17.4% were non-Hispanic Blacks. The vast majority (63.0%) was currently married, but about 37% lived alone due to the separated, divorced, widowed, or never married. The majority (73.5%) had at least a high school education. Like in marital status, 67.2% of older workers were lived in their household with two or by themselves. A majority of the study sample had white collar occupations including managerial and professional specialty operation, sales, administrative support, and various services (69.9%) and their industry areas (66.5%) such as wholesale, retail, services, real estate, professional related services, public

administration also presented similar pattern with white collar occupations. A total of

15.5% of the sample was self-employed.

Variable at the Baseline	Frequency	%	Valid %
Gender			
Male	506	46.2	46.2
Female	590	53.8	53.8
Total	1,096	100.0	100.0
Race			
Non-Hispanic White	756	69.0	69.1
Non-Hispanic Black	191	17.4	17.5
Hispanic	86	7.8	7.9
Other	61	5.6	5.6
Total	1.094	99.8	100.0
Marital Status	-,		
Married	690	63.0	63.0
Not-Married	405	37.0	37.0
Total	1,095	99.9	100.0
Level of Education	·		
< High School	290	26.5	26.5
High School Only or GED	346	31.6	31.6
< College and More	459	41.9	41.9
Total	1,095	99.9	100.0
Type of Disability			
Functional Disability	297	27.1	27.1
Mental Disability	799	72.9	72.9
Total	1,096	100.0	100.0
Number of People in Household			
One or two	737	67.2	67.2
>=Three	359	32.8	32.8
Total	1,096	100.0	100.0
<b>Current Job Occupation</b>			
White Collar	756	69.0	69.9
Blue Collar	326	29.7	30.1
Total	1,082	98.7	100.0

# Table 3. Characteristics of the Sample

Table 3. (cont'd)

Current Job Industry			
Agri/ Mining/			
Construction/Manufacturing/	361	32.9	33.6
Transportation			
Wholesale/ Retail/ Services	304	27.7	28.3
Financial/Insurance/Real Estate/			
Prof related services/ Public	411	37.5	38.2
Administration			
Total	1,076	98.2	100.0
Self-Employed Status			
Not self-employed	924	84.3	84.5
Self-employed	170	15.5	15.5
Total	1,094	99.8	100.0
Continuous Variable	Frequency	Mean	SD
Age	1,096	59.1	6.3
Financial Savings			
Individual Earnings at the baseline	1,096	\$ 29,227	\$ 29,340
Household Net Asset at the baseline	1,096	\$ 243,165	\$ 603,790
Social Security Retirement Income after disability	1,096	\$ 2,419	\$ 4,829

Note: Some N's do not sum to 1,096 due to missing data.

The greatest discrepancies in participants' socio-demographic characteristics were in disability type (Table 4), gender (Table 5) and both disability type and gender (Table 6). Chi-square tests, independent t-tests, and ANOVA (The Analysis Of Variance) were conducted to investigate the existence of differences between older workers with functional disability and mental disability, differences between males and females and both disability type and gender. The differences were considered statistically significant when p-values were significant at the significance level of .001 or .05. The significant differences between the two groups by types of disability and by gender are indicated. As compared to older workers with functional disability, older workers with mental disability were more likely to be younger, female, and to have white-collar occupations. Per the pattern of occupation, older workers with mental disability were more likely to work at the following industries: Wholesale, Retail, Services, Financial, Insurance, Real Estate, Prof related services and Public Administration. However, older workers with functional disability were more likely to work at the industries of agriculture, mining, construction, manufacturing or transportation.

Even though race was not statistically different between functional disability and mental disability, minority including non-Hispanic black, Hispanic and others were more likely to have functional disability rather than to have mental disability. In addition, older workers with mental disability were more likely to have a higher education level than older workers with functional disability, but there is no significant difference reported in education level (p value = 0.058).

There is no significant difference in earnings from work between older workers with functional disability and mental disability. Since the average age for older workers with functional disability was older (mean= 60.7 years old), they reported a higher average social security retirement income of about \$ 1,693 than older workers with mental disability. This finding means a larger proportion of older workers with functional disability were more likely to quit their full-time job if they were old enough to get social security retirement.

Variable	Functional Disability	Mental Disability	<i>p</i> -value
	(N=253)	(N=799)	
Age (Mean)	60.7	58.5	**
	(7.3)	(5.7)	
Gender			
Male	63.6	39.7	* *
Female	36.4	60.3	
Race			
Non-Hispanic White	63.2	71.3	
Non-Hispanic Black	20.3	16.4	
Hispanic	9.5	7.3	
Other	7.1	5.0	
Marital Status		2.0	
Married	64 0	62 7	
Not-Married	36.0	27.2	
Level of Education	30.0	57.5	
< High School	31.3	247	
High School Only or GFD	27.6	33.1	
< College and More	411	42.2	
Number of People in Household			
One or two	69.7	66.3	
>=Three	30.3	33.7	
Current Job Occupation			
White collar	62.5	72.6	
Blue collar	37.5	27.4	**
Current Job Industry			
Agri/ Mining/			
Construction/Manufacturing/	41.8	30.6	
Transportation			**
Wholesale/ Retail/ Services	23.3	30.1	
Financial/ Insurance/ Real Estate/			
Prof related services/ Public	34.9	39.4	
Administration			
Self-Employed Status			
Not self-employed	83.5	84.8	
Self-employed	16.5	15.2	
Continuous Variable			
Age	60.7	58.5	**
	(7.3)	(5.7)	* <b>*</b>

 Table 4. Sample Characteristics by Disability

Table 4. (cont'd)

\$ 27,566	\$ 29,845	
(\$ 27,111)	(\$ 30,120)	
\$ 230,727	\$ 247,788	
(\$ 503,365)	(\$ 637,324)	
\$ 3,654	\$ 1,960	*
(\$ 5,864)	(\$ 4,298)	·
	\$ 27,566 (\$ 27,111) \$ 230,727 (\$ 503,365) \$ 3,654 (\$ 5,864)	\$ 27,566       \$ 29,845         (\$ 27,111)       (\$ 30,120)         \$ 230,727       \$ 247,788         (\$ 503,365)       (\$ 637,324)         \$ 3,654       \$ 1,960         (\$ 5,864)       (\$ 4,298)

t-tests and  $\chi^2$  were significant at the \*\* p< 0.001 and \* p< 0.05 levels.

Table 5 displays the greatest discrepancy in participants' socio demographic and financial characteristics by gender. There are obvious importance of overall gender differences in race, marital status, types of disabilities, occupation, industries, and earnings and total household net value. Based on the definition or the measure of disability in this investigation, the rate of acquired disability is substantially different for men and women. It is different findings from other studies. Other studies from the SIPP (Doyle, Burwell, Good, Kalish, Martini, et al, 1989), the NHIS (LaPlante, 1996), and CPS (McNeil, 1993) indicated that prevalence of work disabilities is not considerably different by gender. The reason of these different findings may be resulted of two differences: (1) other studies used the definitions of work disability rather than objective measures of disabilities (2) other studies were focused on the aging population rather than focused on full time older workers.

Even though Flippen and Tienda (2000) state that "women are over represented in white collar jobs which tend to offer greater stability than service and blue collar occupations," (p. 8) the results from this investigation conformed that female older

workers were more likely to white collar occupation (86.2%), and to work at white collar occupation related industries (80.1%), not physically demanding industries. Although changes in the structure of employment generally favor women and rising stocks of human capital enhance their employment prospects, related to men, women older workers are less likely to earn income from work, and less amount of total household worth than men. Gender seems a central role negatively, especially for female older workers. Most of female old workers experienced less favorable labor market condition than younger cohorts (Hardy, 1991).

	Male	Female	<i>p</i> -value
	(N=506)	(N=590)	
Age (Mean)	59.9	58.4	
	(6.6)	(5.9)	
Race			
Non-Hispanic White	70.4	68.0	
Non-Hispanic Black	13.1	21.2	* *
Hispanic	10.5	5.6	
Other	6.0	5.3	
Marital Status			
Married	77.3	50.8	<b></b>
Not-Married	22.7	49.2	* *
Level of Education			
< High School	30.2	23.3	
High School Only or GED	29.2	33.6	*
< College and More	40.5	43.1	
Types of Disability			
Functional Disability	37.4	18.3	* *
Mental Disability	62.6	81.7	**
Number of People in Household			
One or two	64.2	69.8	±
>=Three	35.8	30.2	+
Current Job Occupation			
White collar	50.9	86.2	
Blue collar	49.1	13.8	* *
Current Job Industry			
Agri/ Mining/	49.6	19.9	
Construction/Manufacturing/			
Transportation		<b>a</b> a <b>c</b>	at at
wholesale/ Retail/ Services	26.5	29.7	* *
Pinancial/Insurance/Real Estate/ Prof related services/Public Administration	23.9	50.4	

Table 5. Sample Characteristics by Gender

Table 5. (cont'd)

Self-Employed Status			
Not self-employed	80.6	87.8	*
Self-employed	19.4	12.2	Ť
Continuous Variable			
Financial Savings			
Individual Earnings at the baseline	\$ 33,681	\$ 25,408	**
	(\$33,439)	(\$24,699)	**
Household Net Asset at the	\$ 263,324	\$ 225,875	*
baseline	(\$583,616)	(\$620,541)	Ŧ
Social Security Retirement Income	\$ 2,933	\$ 1,979	<b>.</b>
after disability	(\$5,533)	(\$4,085)	Ŧ

Table 6 also displays the differences between older workers with functional disability and mental disability by gender. In general, females were younger and contained a greater proportion of not-married status than males including widowed, divorced, separated, or never married. The level of educational attainment by gender showed a significant difference. Females were more likely to have a higher level of education attainment than males. Females with functional disability (77.8%) showed the highest proportion of high school diploma or more education than any other groups: 63.5% of male with functional disability, 76.5% of female with mental disability, and 73.5% of male with mental disability. Specifically, non-Hispanic black females and Hispanic females were more vulnerable to have functional disability than their counterparts. Black female workers were more likely to have disabilities than any other racial group.

Generally research on older black workers at middle and older ages reports are

more likely than white to experience disability and to experience restriction in a major activity, including work (Hayward, Friedman & Chen, 1998). It is because blacks and other minority older workers typically have less education, fewer skilled jobs, lower salaries, and long periods of unemployment and are less likely to work in professions or jobs with high benefits (Bacon, 1995). Older black workers are "more likely to have lower levels of education and fewer economic resources and tend to work in more unstable industries than white workers" (Flippen & Tienda, 2000, p.6). The results of this current study confirmed that black female workers were the most vulnerable to have a disability among other races. Hispanic female were more valuable to have functional disability than their counterparts (Hispanic male).

The labor market characteristics, such as type of occupation, industry, status of self-employed and financial status, were also different by gender and types of disabilities. With the findings on educational attainment in female, mostly female workers with disabilities worked with white collar occupations. The proportion of white collar occupation in female group was higher than male group. Specifically, male workers with functional disability are more likely to have a self-employed position (20.6%) and blue collar occupation (54.8%) than females does (self-employed= 9.3%, blue collar occupation=7.5%). Compared to the male workers, female workers' household total net value is less than male group and females' average income is less than males even though female's education level is higher than male group. The social security retirement income was also less in female group than male. It can be resulted of inconsistence of labor activities (instability) among female.

Variable	Func	tional Disabi	ility	Mer	tal Disabili	ity
		(N=253)			(N=799)	
	Men	Women	Sig.	Men	Women	Sig
	(N=189)	(N=108)		(N=317)	(N=482)	)
Age (Mean)	61.7	59.0	**	58.7	58.3	**
Race						
Non-Hispanic White	75.0	68.5		84.5	74.7	
Non-Hispanic Black	18.6	23.1		10.1	21.4	**
Hispanic Other	6.4	8.3		5.4	3.9	
Marital Status at Program						
Entry						
Married	76.7	417		77.6	52.8	
Not-Married	23.3	58.3	**	22.4	47.2	* *
Education at Program						
Entry						
< High School	36.5	22.2		26.5	23.5	
High School Only or	29.1	25.0	*	29.3	35.6	
GED						
< College and More	34.4	52.8		44.2	41.0	
Number of People in Household						
One or Two	69.3	70.4	*	61.2	69.7	<u>ب</u> د
>=Three	30.7	29.6	Ŧ	38.8	30.3	Ŧ
Work Status						
Full Time	50.0	50.6	<b>.</b>	72.2	64.5	
Part Time	15.5	12.9	Ŧ	7.6	13.3	*
Non-Employed	34.5	36.5		20.2	22.2	
Self-Employed Status						
Not self-employed	79.4	90.7		81.4	871	
Self-employed	20.6	93	*	18.6	12.9	*
Current Job Occupation	20.0	7.0		10.0	12.7	
- White collar	452	92.5		54 3	84 8	
Blue collar	54.8	75	* *	45 7	15.2	**
urrent Job Industry	51.0	1.0		10.7	13.2	
Agri/ Mining/	57 5	14.2		<i>44</i> Q	21.1	
Construction/Manufact	57.5	17.4		-TT.J	<b>41.1</b>	
uring/Tronsportation			**			**
Whether (Dec. 1)	22.0	25.5	••	20.2	20 7	- <b>-</b>
wholesale/ Retail/	22.0	23.3		29.2	30.7	
Services						

Table 6. Sample Characteristics by Disability and Gender

Table 6. (cont'd)

Financial/ Insurance/ Real Estate/ Prof related services/ Public Administration	20.4	60.4		26.0	48.2	
Financial Savings	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)	
(amount in uonars)	(30)	(30)		(30)	(30)	
Individual Earnings	\$ 28,757	\$25,481		\$36,617	\$25,391	
	(\$29,304)	(\$22,751)		(\$35,396)	(\$25,137)	
Household Net Asset	\$26,1403	\$177,045		\$264,470	\$23,6817	
	(\$593,002)	(\$280,188)		(\$578,889)	(\$67,3359)	
Social Security Retirement Income after Disability	\$4,467 (\$6,336)	\$2,231 (\$4,622)	**	\$2,018 (\$4,775)	\$1,922 (\$3,958)	**

t-test and  $\chi^2$  are significant at the \*\* p< 0.01 and \* p< 0.05 levels.

Research Question 3: Specifically, How do Employed and Non-employed Older Workers differ in Demographic, Workforce, and Financial Characteristics?

# Employment Status

Table 7 and 8 illustrate the distribution of employment status after acquiring a disability among older workers who had full-time jobs. Compared to non-employed older workers, employed older workers were younger, females (54.3%), had mental disability (77.0%), more than college graduates, had white collar (71.9%) occupation, worked at white collar related industries, and had higher earnings from work. The data also showed that non-employed older workers were more likely to receive Social Security Retirement income (mean, \$4,705), compared to employed older workers received (mean, \$1,851).

Employed younger older workers were much more likely to sustain their employment status. While the mean age of respondents' who continued in a full-time job was 57.79 (SD: 5.39), respondents who quit their full-time job after acquiring a disability were 3.53 years older than the respondents who keep their full-time job. Nonetheless, it is remarkable that 25.8% of workers ages 60 and above and 10.8% of workers ages 65 and above continue to work full-time and 50.4% of workers ages 60 and above and 24.4 % of workers ages 65 and above continue to work part-time even after they experience disability (Table 8).

In addition, older workers who switched their full-time job to part-time were more likely to be female, had a low level of educational attainment, had functional disability, and be self-employed (Table 8). More highly educated workers were more likely to sustain their job either full-time or part-time. Older workers with mental disability were more likely to be employed. Females seemed to be more likely to sustain their employment than males even though there was no found a statistically significant difference in gender.

Employed workers with part-time jobs were more likely to have white-collar occupations, but their earning from work (mean, \$22,139) was almost \$3,500 in average less than those of non-employed older workers (\$25,700). The total house net value for older workers with a part-time job was the highest among three groups. It means that the total house net value could be an important factor for older workers with disability to choose a part-time job.

Variable	Employed Total (N=817)	Non- Employed (N=201)	Sig.
Age (Mean)	59.2	(11 201)	-
Gender	50.5	61.32	*
Male	457	18.5	
Female	54.3	47.5	
Total	100.0	52.5	
Kace		100.0	
Non-Hispanic White	69.2	(0.0	
Non-Hispanic Black	19.0	68.8	
Hispanic	18.0	15.8	
Other	6.7	11.1	
Total	6.0	4.3	
Marital Status at Due no. D	100.0	100.0	
Married			
Not-Married	63.1	62.7	
Total	31.9	37.3	
Education at Program Entry	100.0	100.0	
< High School	22.0		**
High School Only or GFD	23.8	34.3	
<= College or more	30.3	35.4	
Total	45.9	30.4	
Type of Disability	100.0	100.0	
Functional disability	23.0	28.0	**
Mental Disability	23.0 77.0	58.9	
Total	100.0	100.0	
Number of People in Household		100.0	
One or Two	67.0	679	
<=Three	33.0	32.1	
	100.0	100.0	
Self-Employed Status			
Not self-employed	83.8	86.3	
Self-employed	16.2	13.7	
Current Ich Occurrent	100.0	100.0	
White coller			*
Blue collor	71.9	63.9	
Total	28.1	36.1	
Current Job Industry	100.0	100.0	
Agri/ Mining/	21.0		*
Construction/Manufacturing/	31.0	41.1	
Transportation			
Wholesale/ Retail/ Services	27.7	20.8	
Financial/ Insurance/ Real Estate/ Prof	413	27.0 20.1	
related services/ Public Administration	1.5	27.1	
Total	100.0	100.0	

Table 7. Employment Status Distribution: Employed vs. Non-Employed

Table 7. (cont'd)

Financial Savings			
Individual Earnings	\$30,438	\$ 25,700	*
e	(\$ 31,230)	(\$ 22,643)	+
Household Net Asset	\$ 257,263	\$ 202,076	*
	(\$ 670,463)	(\$ 339,735)	Ŧ
Social Security Retirement Income	\$ 1,851	\$ 4,075	**
after Disability	(\$ 4,384)	(\$ 5,630)	

t-test and  $\chi^2$  are significant at the \*\* p< 0.01 and \* p< 0.05 levels.

Variable	Full Time (N=685)	Part Time (N=131)	Non- Employed (N=201)	Sig
Age (Mean)	57.79	60.92	61.32	**
Gender				
Male	46.6	41.2	47.5	
Female	53.4	58.8	52.5	
Total	100.0	100.0	100.0	
Race				
Non-Hispanic White	69.2	69.5	68.8	
Non-Hispanic Black	17.5	20.6	15.8	
Hispanic	67	69	11.1	
Other	6.6	2 1	A 2	
Total	100.0	100.0	4.5 100 0	
IUIAI Marital Status at Program Entry	100.0	100.0	100.0	
Married	62.0	68 7	62 7	
Not-Married	38.0	313	373	
Total	100.0	100.0	100.0	
Education at Program Entry	100.0	100.0	100.0	**
< High School	22.7	29.8	34.3	
High School Only or GED	30.7	28.2	35.4	
<= College or more	46.6	42.0	30.4	
Total	100.0	100.0	100.0	
vpe of Disability				**
Functional disability	21.2	32.8	38.9	
Mental Disability	78.8	67.2	61.1	
Total	100.0	100.0	100.0	
umber of People in Household				
One or Two	66.4	70.2	67.9	
<=Three	33.6	29.8	32.1	
Total	100.0	100.0	100.0	
lf-Employed Status				**
Not self-employed	86.4	70.2	86.3	
Self-employed	13.6	29.8	13.7	
Total	100.0	100.0	100.0	
rrent Job Occupations				*
White collar	71.0	75.6	63.9	
Blue collar	29.0	22.9	36.1	
Total	100.0	100.0	100.0	
rrent Job Industry				**
Agri/ Mining/	32.5	23.0	41.1	
Construction/Manufacturing/				
Transportation				
Wholesale/ Retail/ Services	25.6	38.9	29.8	

Table 8. Employment Status Distribution: Full-Time, Part-Time, vs. Non-Employed

Financial/ Insurance/ Real Estate/	41.9	38.1	29.1	
Prof related services/ Public				
Administration				
Total	100.0	100.0	100.0	
		Mean		
		(SD)		
Financial Savings				
Individual Earnings	\$ 32,025	\$ 22,139	\$ 25,700	**
C C	(\$ 31,478)	(\$ 28,606)	(\$ 22,643)	
Household Net Asset	\$ 216,886	\$ 468,399	\$ 202,076	**
	(\$ 443,695)	(1,314,846)	(\$ 339,735)	
Social Security Retirement	\$ 1,380	\$ 4,311	\$ 4,075	**
Income after Disability	(\$ 3,763)	(\$ 6,223)	(\$ 5,630)	

ANOVA and  $\chi^2$  are significant at the \*\* p< 0.01 and \* p< 0.05 levels.

Table 9 through Table 11 display more detail information regarding employment status (employed vs. non-employed/ full time, part time, vs. non-employed) by disability type. Chi-square tests and independent t-tests were conducted to determine if there were significant differences between those who sustain their employed status or switched to be non-employed.

Differences by group were shown for the amount of total assets and social security retirement benefits, regardless of disability type. More highly educated workers were more likely to sustain their job either full-time or part-time, regardless of disability type. Interestingly, a higher proportion of employed workers with mental disability had significant differences in occupation and industry in comparison to individuals with functional disability.

Table 10 and Table 12 illustrate the results of chi-square tests and ANOVA tests. Several findings regarding switched employment status from full-time are worth mentioning. First, employed older workers who sustained their full-time job were younger, regardless of disability type, compared to employed older workers who changed their full-time job to a part- time job. It appears that as workers age, they have a tendency to choose either part-time job or be non-employed. Second, transitions from full-time to part-time jobs were much more likely among self-employed older workers, regardless of disability type. However, self-employed older workers with functional disability were about 11% more likely to choose a part-time job than self-employed older workers with a mental disability. Economic characteristics also appeared to influence transitions into part- time job or non-employed status (Table 10). Regardless of disability type, social security retirement benefits and total household net value appeared to be important factors influencing the transition from employed to non-employed status (Table 11).

If older workers have a more stable financial status, they are more likely to switch their full time job to part-time or non-employed (Table 12). Further, the interface of marital status and disability type also impact employment transitions, as non-married older workers who have a mental disability were more likely to be non-employed compared to the non-married older workers with functional disability (Table 13). Of 1,096 respondents who had a full-time job, about 74.7 percent of married men and 70.4 percent of unmarried men were continued to choose employed, compared to 74.6 percent of married female and 75.9 percent of unmarried female (Table 13). This finding means that married men and unmarried women were more likely to continue their job even after they experience disability. This pattern, however, was observed to be different in the nonemployed group as 29.6% of unmarried males were non-employed from the full-time job after acquiring a disability, compared to 24.1% married women.

Variahla	<b>Functional Dis</b>	ability (n=297)	$\left  \right $			
	Employed Total	Non- Funlowed	+	Mental Disab	oility (n=799)	
Age (Mean)	(N=188)	(N=109) S		Employed Total	Non- Employed	Sia
Gender	59.7	62.5	+	59.9	(1/1=N)	ie  ,
Male/ Female Race	63.8/36.2	63.3/36.7		10 3 150 7	0.00	•
Non-Hispanic White				1.6010.04	37.4/62.6	
Non-Hispanic Black	62.2 22.3	64.8 16.7		71.2	71.3	
Other	6.9	13.9		10./	15.2	
Marital Status	8.5	4.6		5.3	4.1 4.1	
Married/ Not-Married Education	62.8/37.2	66.1/33.9		63.2/36.8	60.6/39.4	
< High School High School Only or GED	26.1	40.4	*	1 50		*
College or more	26.6	29.4		31.4	30.7	
Number of People in Household	47.3	30.3		45.5	30.4	
One or Two / More than Two Self-Employed Status	71.8/28.2	66.1/33.9		65.6/34.4	0 12/0 69	
Not self-employed/ Self-employed Current Job Occupations	81.9/18.1	86.2/13.8		84.4/15.6	86.4/13.6	
White collar / Blue collar Current Job Industry	63.4/36.6	60.7/39.3		74.4/25.6	65.9/34.1	*
Agri/ Mining/Construction/ Manufacturing/Transportation	40.0	44.9		7 00		*
Wholesale/ Retail/ Services Financial/ Incurance/ Dool Ford	21.1	27.1		4.07 70 7	38.7	
Prof related services / Public Administration	38.9	28.0		42.0	31.5 20.0	
t-test and $\chi^2$ are significant at the ** p< 0.01	and * p< 0.05 leve	ls.			8.42	

Table 9. Employment Status Distribution by Types of Disabilities

		(127-II) AIIINRSI		Mental Dis	iability (n=799)	
Empl Toi (N=1	ployed otal =188)	Non- Employed (N=109)	Sig.	Employed Total (N=628)	Non- Employed (N=171)	Sig.
Financial Savings (Mean)						
Individual Earnings \$29,	9,310	\$24,558	*	\$30,775	\$26,427	*
Household Net Asset \$225	5,199	\$240,262		\$266,862	\$177,736	*
Social Security Retirement Income \$2,8 after Disability	,893	\$4,966	*	\$1,539	\$3,508	*

Table 10. Socio-Demographic Characteristics by Labor Status: Disability Type

Table 11. Socio-Demographic Characteristics by Labor Status: Disability Type

	Func	tional Disabil	lity (n=297)		Me	ntal Disabilit	y (n=799)	
	Full Time (N=145)	Part Time (N=43)	Non- Employed (N=109)	Sig.	Full Time (N=540)	Part Time (N=88)	Non- Employed (N=171)	Sig.
Financial Savings (Mean)								
Individual Earnings	\$ 32,044	\$20,091	\$24,558	*	\$32,019.4	\$23,140	\$26,427	
Household Net Asset	\$209,343	\$278,665	\$24,062		\$218,911	\$561,110	\$177,736	* *
Social Security Retirement Income after	\$1,752	\$6,738	\$4,966	*	\$1,280	\$3,125	\$3,508	*
Disability								

ANOVA and  $\chi^2$  are significant in **\*\*** P< 0.001 and **\*** P< 0.05 levels.

Table	12. Employi	ment Status 1	Distribution b	y Disab	lity Type			
	Fun	ctional Disat	oility (n=297)		Ment	al Disability (n	(66L=1	
Variable	Full Time	Part Time	Non-	i	Full Time	Part Time	Non-	į
	(N=145)	(N=43)	Employed (N=109)	Sig.	(N=540)	(N=88)	Employed (N=171)	Sig.
Age (Mean)	58.7	63.2	62.5	*	57.6	59.8	9.09	*
Gender								*
Male/ Female	62.1/37.9	69.8/30.2	63.3/36.7		42.4/57.6	27.3/72.7	37.4/62.6	
Race								
Non-Hispanic White	60.7	67.4	64.8		71.4	70.5	71.3	
Non-Hispanic Black	22.8	20.9	16.7		16.1	20.5	15.2	
Hispanic	6.9	7.0	13.9		6.7	6.8	9.4	
Other	9.7	4.7	4.6	_	5.8	2.3	4.1	
Marital Status								
Married/ Not-Married	62.1/37.9	65.1/34.9	66.1/33.9		62.0/38.0	70.5/29.5	60.6/39.4	
Education				*				*
< High School	25.5	27.9	40.4		21.9	30.7	30.4	
High School Only or GED	28.3	20.9	29.4		31.4	31.8	39.2	
<= College or more	46.2	51.2	30.3		46.8	37.5	30.4	
Number of People in Household								
One or Two / More than Two	71.7/28.3	72.1/27.9	66.1/33.9		65.0/35.0	69.3/30.7	69.0/31.0	
Self-Employed Status				*				*
Not self-employed/ Self-employed	87.6/12.4	62.8/37.2	86.2/13.8		86.1/13.9	73.9/26.1	86.4/13.6	4
Current Job Occupations			202/209		72 5176 5	80 5/10 5	1 120 29	H-
White collar / Blue collar	7.00/0.10	0.10/0.60	0.4611.00		C.07/C.CI	C.CI 10.00	1.4016.00	*
Current Job Industry			0.11		0.00	10 0	Г 0 <i>г</i>	ł
Agri/ Mining/ Construction/	47.4	51.7	44.9		6.67	10.0	1.00	
Manufacturing/ Transportation						ļ		
Wholesale/ Retail/ Services	18.1	31.7	27.1		27.6	47.4	31.5	
Financial/ Insurance/ Real Estate/ Prof	39.6	36.6	28.0		42.5	38.8	29.8	
related Services / Public Administration								
	r 100 0 -	* 0 05 1-						

Variable	Mai	rried	Uni	married
	Male (%)	Female (%)	Male (%)	Female (%)
Employed **	74.7	74.6	70.4	75.9
Non-Employed **	25.3	25.4	29.6	24.1
Total	100.0	100.0	100.0	100.0

Table 13. Employment Status Distribution by Gender and Marital Status

 $\chi^2$  is significant at the \*\* p< 0.001 and \* p< 0.05 levels.

## **Binominal Logistic Regression**

A binomial logistic regression model was calculated for the total sample. The logistic regression models were calculated where odds ratios of intended non-employed were estimated in three consecutive models, using the total sample of 1,071 participants with complete data and no significant interaction effect was found. The Hosmer and Lemeshow statistic, which evaluates the model's goodness-of-fit, provides a measure of overall model fit by comparing the observed and predicted values (Hosmer & Lemeshow, 2000). The odds ratios or the exponentiated value of the raw regression coefficient are used to interpret the change in the odds ratio associated with a 1-unit increase in each predictor variable (Tabachnick & Fidell, 2007). The Variance Inflation Factor (VIF) measures the impact of collinearity among the variables in a regression model. In general, values of VIF that exceed 10 are often regarded as indicating the presence of strong multicollinearity. For this study, there was no found the multicollinearity among predictor variables.

As illustrated in Table 14, results of the binary logistic regression analysis suggested that the models indicated that some predictors reliably distinguished between older employed workers and non-employed workers. The first model was restricted to the

demographic characteristics such as age, gender, level of education, race, marital status, and disability type.

Similar to the results of the descriptive analyses, younger age and having mental disability rather than functional disability were individually strongly associated with be his or her sustained employment in model 1. The odds ratio for mental disability relative to functional disability in model I was 2.04. This means that the odds of deciding to continue to work are 2.04 times higher for older workers with mental disability than they are for older workers with functional disability. In addition, low level of education attainment was negatively associated with sustaining his or her employment. The odds ratio of keeping employment were decreased by these two factor of 0.56 and 0.57 respectively when the older workers have more than high school level of education compared to less than high school attainment and equal level of high school attainment.

In the second model, the three labor market variables were entered simultaneously. Unlike the results of Model I, gender showed statistical significant. Women were significantly less likely to be employed than men. It was conformed many prior studies. There have reported evidence of lower labor force participation rates for women across a wide age range. Self employed older workers were individually strongly associated with choosing employed. The odds ratio for self employed older workers relative to non-selfemployed older workers was 1.68. This means that the odds of deciding to continue to work are 1.68 times higher for self employed older workers than they are for non-selfemployed older workers. Industries with physically demanding jobs such as mining, construction, and transportation were also negatively related to be employed compared to

the white collar related industries such as financial, insurance, real estate, professional related services and public administration.

In model III, the three economic indicators were added such as individual earning, hose net value, and Social Security Retirement income. Receiving Social Security Retirement Income was negatively related to be employed. Unlike the results of model I and II, age did not statistically linked with be employed in model III. The result of Hosmer and Lemeshow test was not statistically significant ( $\chi^2 = 5.92$ , p=0.657) which confirmed that the model was reliable. In addition, the relatively best model fit was observed ( $\chi^2 = 111.13$ , p<.001) in model III. It indicated that these predictors significantly distinguished between employed older workers and non-employed workers. The last model was able to correctly classify 76.3% of the formally processed cases as indicated by the predicted and observed classification statistic. This is considered acceptable in the social sciences (SPSS Inc., 2006; Tabachnick & Fidell, 2007).

In summary, results indicate that higher level of education, female, younger age, self-employed status, white collar related job industry, and not receiving social security retirement have all been linked to sustained employment among older workers with a disability. A substantial proportion of workers switched their employment status to nonemployed when they became eligible for early and full Social Security benefits at age 62.

: Regression Models (odds ratios and 95% confidence intervals) for all (N= 1,071): (Reference= Non-Employed)	Model 1 Model 2 Model 2	Odds Ratio     Odds Ratio       (95% C.I.)     (95% C.I.)	0.94** (0.92-0.96) 0.93** (0.90-0.95) (95% C.I.) 0.77 (0.56-1.05) 0.65* (0.46-0.91) 0.67* (0.47-0.96)	1.40       (0.93-2.09)       1.38       (0.92-2.07)       1.38       (0.91-2.10)         0.67       (0.39-1.12)       0.67       (0.39-1.13)       0.666       (0.39-1.13)         1.37       (0.69-2.71)       1.45       (0.73-2.91)       1.42       (0.71-2.86)         1.00       (0.73-1.38)       0.97       (0.71-1.34)       0.96       (0.69-1.34)	$ \begin{array}{llllllllllllllllllllllllllllllllllll$	v/Manufacturing/ 0.55* (0.36-0.85) 0.53* (0.34-0.83) 0.70 (0.48-1.04) 0.72 (0.48-1.07)	after Disability) 1.02 (0.95-1.10) 0.99 (0.96-1.02) 0.88** (0.83-0.94)
Table 14. Binomial Logistic Regression Model         (Re	Variable	Age	Gender (ref=Male) Race (ref=White)	Black Hispanic Other Marital Status(ref=Not-Married) Education (ref= More than High School) < High School	High School Only or GED Type of Disability (ref= Functional Disability) Number of People in Household (ref= More than Two) Self Employed Status (ref= Non-Self-Employed) Current Job Occupations (ref= Blue Collar) Current Job Industry(ref= Financial/ Insurance/ Real Estate/ Prof related services/ Public Administration)	Agri/ Mining/ Construction/Manufacturing/ Transportation Wholesale/ Retail/ Services Financial Savings Ln (Individual Earnings)	Ln (Household Net Asset) Ln (Social Security Retirement Income after Disability) Log L. Chi-Sq.

#### Research Question 4: What Factors Determine the Older Worker's Labor

Transition?

## Multivariate Analysis

Multinomial logistic regression was used to identify the factors influencing older workers' labor transition patterns. This section examines the various factors that influence the patterns of older workers' transitions after they experience disability. The current study estimated the multinomial model based on the HRS respondents who had a full-time job at the baseline interviews and for whom later their disability was identified. The specification examines three types of employment transitions as follows: (1) remained in a full-time job, (2) moved to a part-time job, and (3) exited the labor force directly from a full time job. The multinomial logit model assumes independence among the choice outcomes, and the probability of any one alternative can be calculated using the outcome of a comparison between the changes in the odds of all three alternatives.

Since the current model involves three different types of labor force participation and no clear hierarchy exists among the alternatives, the multinomial logit model is appropriate (Maddala, 1983). The estimates from multinomial logit regression analysis are presented in Table 15 and Table 16. In order to investigate the odds of being employed either full-time or part-time among older workers with disabilities verses nonemployed, the reference category for the dependent variable was non-employed (Table 15). For the odds of being full-time workers versus part-time workers, the reference category for the dependent variable was full-time work (Table 16).

ouclo-Demographic, Economic Varia	bles with Emp	oyment	Status (Reference	e= Non-Er	nploved)	
Variable -		Full Time			Part	e H
Åra	В	0 é	ds Ratio	a a		odds Ratio
Age	1004		10 (.1.)	1	<b>_</b>	95% C.I.)
Gender (ref=Male) Race (ref=White) Rlack	-0.480*	0.967 0.619	(0.932-1.000) (0.430-0. <b>8</b> 91)	-0.026 -0.005	0.975 0.995	(0.929-1.023) (0.591-1.674)
Hispanic Other	0.290 -0.417	1.336 0.659	(0.869-2.056) (0.377-1.151)	0.475 -0.308	1.609 0.735	(0.891-2.904) (0.316-1.712)
Marital Status(ref=Not-Married) Education (ref= More than High School) < High School	-0.148*	0.863	(0.743-3.081) (0.612-1.216)	-0.095 0.464	0.909 1.591	(0.274-3.021) (0.955-2.647)
High School Only or GED Type of Disability (ref= Functional Disability)	-0.454* -0.401*	0.635 0.670	(0.413-0.977) (0.460-0.974)	-0.109 -0.354	0.897	(0.492-1.636) (0.406-1.215)
Number of People in Household (ref= More than Two) Self Employed Status (ref= Non-Self-Employed) Current Job Occumations (ref= Non-Self-Employed)	0.802** 0.075 0.540*	2.230 1.078 1.717	(1.586-3.135) (0.766-1.516) (0.917-3.212)	0.204 0.131	1.226	(0.753-1.996) (0.693-1.874)
Current Job Industry(ref= Financial/ Insurance/ Real Estate/ Prof related services/ Public Administration)	0.036	1.037	(0.667-1.614)	-0.208	2.511 0.812	(1.152-5.476) (0.413-1.597)
Agri/ Mining/ Construction/Manufacturing/ Transportation Wholesale/ Retail/ Services Financial Savings	-0.628* -0.401*	0.533 0.670	(0.339-0.840) (0.445-1.007)	-0.726* -0.123	0.484 0.884	(0.240-0.977)
Ln (Individual Earnings) Ln (Household Net Asset)	0.039	1.040	(0.963-1.123)	-0.036	0.965	(CCC.1-20C.0) (D.875-1 0640)
Ln (Social Security Retirement Income after Disability) Constant	-0.018 -0.155**	0.982 0.866	(0.952-1.014) (0.797-0 920)	0.006	1.006	(0.957-1.058)
Log-likelihood	3.581 *			0.720	100.1	(0.909-1.103)
** $p < 0.001$ and * $p < 0.05$			1721.1	21		

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 Table 15.Multinomial Logistic Regression:

 Socio-Demographic, Economic Variables with Employment Science

		Part Time	
Variable	ď	Odds	s Ratio
	a	(95%	6 C.I.)
Age	0.008	1.008 (0.9	963-1.056)
Gender (ref≕Male)	0.474*	1.607 (1.0	004-2.573)
Race (ref=White)			
Black	0.185	1.204 (0.7	709-2.045)
Hispanic	0.110	1.116 (0.4	493-2.527)
Other	-0.509	0.601 (0.	202-1.790)
Marital Status(ref=Not-Married)	0.612*	1.843 (1.	.150-2.955)
Education (ref= More than High School)			
< High School	0.346	1.413 (0.	.817-2.446)
High School Only or GED	0.047	1.048 (0.	.638-1.722)
Type of Disability (ref= Functional Disability)	-0.598*	0.550 (0.	.348-0.869)
Number of People in Household (ref= More than Two)	0.056	1.058 (0	(673-1.663)
Self Employed Status (ref= Non-Self-Employed)	0.380	1.463 (0	(738-2.901)
Current Job Occupations (ref= Blue Collar)	-0.244	0.783 (0	.416-1.475)
Current Job Industry(ref= Financial/ Insurance/ Real Estate/ Prof related services/ Public			
Agri/ Mining/ Construction/Manuracturing/ Transportation Wholesale/ Retail/ Services	-0.09/ 0.778	0) 106.0	0.806-2 163)
Financial Savings			
Ln (Individual Earnings)	-0.075	0.928 ((	0.851-1.012)
Ln (Household Net Asset)	0.024	1.024 (	0.979-1.072)
Ln (Social Security Retirement Income after Disability)	0.156**	1.169 (	(1.066-1.282)
Constant	-2.862*		
I og-likelihood		171 171	

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Table 16.Multinomial Logistic Regression: Demographic, Economic Variables with Employment Status (Reference= Full-1

#### Full-Time Work versus Non-Employed among Older Workers with Disabilities

Table 15 summarized the odds of being employed either full-time or part-time among older workers with disabilities verses non-employed. The main drivers of post-full time work transition were male, attained a higher education, mental disability, selfemployed status, white collar related job industry, and Social Security Retirement benefit (see Table 15). One of the notable differences was that older workers with mental disability were more likely to continue their full-time jobs compared to the older workers with a functional disability, when controlling for other variables. The significantly higher odds ratios for a mental disability (2.23, p value=0.001) sustaining their full time were found. This means that the odds of being employed full-time for older workers with a mental disability were 2.23 times higher than the odds for older worker with functional disability.

Female workers relative to male workers decreased the likelihood of employed full time work versus being non-employed. The odds of being full-time rather than nonemployed was deceased by a factor of about 0.62 by being female rather than male, controlling for other variables in the model. As hypothesized, male workers were more likely than female workers to be employed full time rather than to be non-employed. It confirmed that most of female old workers experienced less favorable labor market condition than male (Hardy, 1991).

Higher educational attainment increased the likelihood of full-time work versus the likelihood of non-employed. A higher level of education may impact the worker's ability to have more options in regard to their work (more desirable jobs and better working conditions) (Kim & Devaney, 2005). If an older worker has higher education

attainment, he or she might be able to sustain his or her job. It is expected that the level of education will be positively related to be employed either full-time or part-time.

Married older workers relative to older workers who lived alone decreased the likelihood of full-time work versus the likelihood of non-employed. The odds of being full-time rather than non-employed was deceased by a factor of about 0.86 by living with spouse rather than living alone, controlling for other variables in the model. This means that couples can be an incentive for leisure in an individual's later life and sometimes, they have substantially more financial resources due to the extra earning potential. It is hypothesized that those who live alone will be more likely to have full-time rather than the married. Hispanic older workers had a decreased likelihood of full-time work even though it was not statistically significant. Such a finding is consistent with the statement that "elderly Hispanics are twice as likely and elderly blacks three times as likely to be poor as are elderly whites (Quinn & Kozy, 1996 p. 364).

The likelihood of full-time work versus non-employed increased when older worker were self-employed. Self-employed workers were more likely to sustain their fulltime work compared to non-self-employed older workers. The choice of employed fulltime versus non-employed in self-employed is logical because the self-employed have real advantages such as working for one-self and flexible work hours. The odds of being full-time employed rather than non-employed for self-employed older workers were 1.72 times higher than the odds for non-self-employed older worker.

If older workers were employed in the industries of finance, insurance, real estate, professional related services, and public administration, they would be more likely to keep their full-time job compared to older workers worked at labor related industries. Job

industries such as mining, transportation, construction, and manufacturing or wholesale, retail, and services were significantly negatively related to the likelihood of full-time work versus the likelihood of non-employment.

Receiving Social Security Retirement income was negatively related to the likelihood of employed full-time work. As hypothesized, older workers who received Social Security Retirement income was less likely to be employed full time rather than to be non-employed.

#### Part Time Work versus Non-Employed among Older Workers with Disabilities

Logistic regression for the part-time sample (see table 15) versus non-employed revealed fewer statistically significant coefficients because small sample sizes for older workers who switched their full-time job into part-time appeared to have limited the extent to which statistical significance could be found. However, three findings from multinomial logistic regression remained.

First, older workers with self-employment were positively related to the likelihood of part-time work. The choice of employed part-time versus non-employed in self-employed is also logical like full-time work versus non-employed since the self-employed have the flexibility to establish their hours. The odds of being part-time employed rather than non-employed for self-employed older workers were 2.51 times higher than the odds for non-self-employed older worker. As hypothesized, self-employed older workers were more likely to have a part-time job compared to the older workers who are not in labor participation.

Second, work industries requiring physical demands such as mining, agriculture, construction, transportation, and manufacturing versus white collar related industries

were negatively related to the likelihood of part-time work. The physical demands of work industries were likely to make it more difficult for older workers to continue to work. Lastly, gender, types of disability and financial factors had no effect on choosing part-time work compared to choose non-employed. It may possible that deciding to change their full-time job into part-time among older workers may be more complicated than deciding to sustain their full-time job.

#### Full Time Work versus Part Time Work among Older Workers with Disabilities

Logistic regression for the part-time sample (see table 16) versus full-time revealed some significant findings. Older workers with mental disability relative to older workers with functional disability were less likely to choose part-time jobs compared to the older workers who choose full-time work, when controlling for other variables. The odds of choosing part-time rather than full-time employment was deceased by a factor of about 0.55 by having mental disability rather than functional disability, controlling for other variables in the model. This means that the likelihood of choosing part-time work versus full-time work increased for older workers with functional disability relative to older workers with mental disability.

Female workers relative to male workers increased the likelihood of choosing part-time versus full-time. The odds of being part-time rather than full-time was increased by a factor of about 1.61 by being female rather than male, controlling for other variables in the model. As hypothesized, female workers were more likely than male workers to choose part-time work rather than to choose full-time.

Receiving Social Security Retirement income was positively related to the likelihood of employed part-time work. As hypothesized, older workers who received

Social Security Retirement income was more likely to be employed part-time rather than to be full-time. Income and household net assets had no effect on the likelihood of parttime versus full-time employment.

## CHAPTER 5

#### SUMMARY and CONCLUSIONS

The current investigation focused on the prevalence of acquired disability among full-time older workers, the consequences of their acquired disability on employment patterns, and the factors influencing later-life employment transitions. The descriptive and analytical results have important implications for rehabilitation practitioners, researchers and policy makers. This discussion chapter focuses on the implications for the development of practice, research, and policy, with an emphasis on the implications for older workers with disabilities and their employment patterns. The summary of findings is first presented.

## Summary of the Results

Any empirical studies including both depression and functional disability must not ignore a reverse causal relationship. That is, among older people, not only does depression affect functional disability (McKenna, et al., 2005), but also functional disability affects depression (Bruce, et al., 1994; Gurland, Wilder, & Berkman 1988). For example, one estimate using HRS data (Dunlop et al. 2005) indicates that depressed adults between the ages of 54 and 65 have more than four times the risk of ADL disability than their non-depressed counterparts. Limitations in physical and emotional health or disability and the presence of a work disability all significantly affect the employment status of older workers (Santiago & Muschkin, 1996). It is therefore necessary to consider both depression and functional disability as aspects of disability in any research analysis.

Of a total 10,890 age-eligible (age over 50) full-time workers who reported to be
thoroughly free of disability (healthy) at the time of baseline interview, the final sample in the current study consisted of 1,096 older workers who reported a functional or mental disability two years later. Of these individuals, 506 male (46.2%) and 590 female (53.8%) reported that they are experiencing disabilities. In the HRS population data, a 10.1% prevalence of acquired disability exists among full-time older workers. Specifically, the prevalence of mental disability was 7.4% and the prevalence of functional disability was 2.7% among older labor force participation.

The sample used in this study was restricted by the full-time worker status and free of disability characteristic at the baseline interviews because the intent of this investigation was to examine the relationship between disability and job transitions. Thus, the characteristics of the sample (older workers who have an acquired disability during their work life) are unique in some ways compared with other aging studies.

In the sample, a majority of older workers had mental disability (72.9%). The mean age of the sample in this study was 59.1 years (SD= 6.3). Slightly over half (53.8%) were women. This pattern is similar to the general population of older workers without disability. A study using Bureau of Labor Statistics (BLS) data that surveyed older workers without disability noted that "the older labor force has become increasingly female" (Rix, 2004. p. 4).

The sample was largely non-Hispanic White (69%) and 17.4% of the sample was non-Hispanic Blacks. The majority (63.0%) was currently married and 37% lived alone due to the separated, divorced, widowed, or never married. The majority (73.5%) had high school educations or better. Majority participants of this study had white-collar occupations including managerial and professional specialty operation, sales,

administrative support, and various services (69.9%). In addition, the sample employment industry areas (66.5%) such as wholesale, retail, services, real estate, professional related services, and public administration also presented similar pattern with white-collar occupations. A majority (84.5%) of the sample was not-self employed, that is, they were wage and salary workers. An 84.5% non self-employed rate is comparable to the results of Rix's study (2004) using 2000 Bureau of Labor Statistics (BLS) data. This researcher reported that the large majority of older workers were wage and salary workers (87%).

Descriptive findings indicate that 62.4% of older workers kept their full-time job even though they experienced some type of disability. Older workers at older ages were much more likely to change their job to a part-time or quit their job than younger workers. According to the data, older workers with mental disability consistently have a better chance of being employed and sustaining their full-time job than older workers with functional disability. One possible explanation of these findings is that the characteristics of mental disability may not severely affect current job demands as compared to the distinctiveness of functional disability. In other words, older workers with mental limitations may be overcoming or accommodating their work-related challenges better than older workers with functional disability.

The small chance of being employed among the older workers with functional disability may be the result of the fact that their disability is too severe to sustain their full-time job or that the functional disability is more likely to interfere with work if the requirements of the job are more physically demanding (Loprest, et al., 1995). That is why physically demanding industries such as mining, transportation, construction, and

manufacturing or wholesale, retail and services consisted of a high (41.1%) proportion of the non-employed group (see Table 8). Therefore, older workers with functional disability may have special needs in getting or keeping a job and benefit from ongoing support and services provided by vocational rehabilitation counselors. In addition to ongoing VR support and services, work accommodations that promote return to work and work retention may be used to help older workers with disabilities.

Findings from the results of binary analyses indicated that as younger older workers were much more likely to change their employment status. The findings also suggest that older workers with a higher education, those who are younger, who are female, and those in white-collar occupations are more likely continue their employment (see Table 8). According to Loprest, et al., (1995), on average, male and female older workers perform different types of jobs within the overall labor market. These authors also report that "among the older workers between age 51 and 61, only 48 percent of men but 65 percent of women are in three occupational categories: managerial, professional, sales, and clerical" (p. 302). This phenomenon was also similarly observed in the present study (see Table 8). According to Table 9, the total net house value and Social Security Retirement income among older workers with a part-time job was the highest among three groups. It can be assumed that if older workers have financial stability (saved more money), they were more likely to choose a part-time job when they experienced disability.

The results of binary logistic regression supported that male, high level of education, mental disability, self-employed, white collar related industry, and Social Security Retirement income were all related to being an employed older worker. While virtually all workers may be covered by Social Security, in general, there is no further

decline in the age of eligibility for Social Security benefits (Rix, 2004). However, based on the results of this investigation, it is true that if an older worker experiences disability, he or she is more likely to receive Social Security benefits.

Male workers were more likely than female workers to keep their full-time job or change to a part-time job rather than be non-employed. It was conformed many prior studies. There have reported evidence of lower labor force participation rates for women across a wide age range. Education increased the likelihood of being employed versus the likelihood of being non-employed. The attainment of more education impacts a worker's ability to have more options in regard to their work. Older workers with a college degree or more education were more likely to sustain their job than older workers who had less than a high school education. If older workers were employed in the industries of finance, insurance, real estate, professional-related services, and public administration, they were more likely to keep their full-time job. Industries such as mining, transportation, construction, manufacturing or wholesale, retail, and services were significantly negatively related to the likelihood of being employed either full-time work or part-time work versus the likelihood of non-employed status. Receiving social security retirement benefits also significantly decreased the likelihood of employed status versus the likelihood of non-employed status. If older workers received social security benefits, they were more likely to be non-employed.

The striking result from the multinomial logistic regression is that the selfemployed older workers were more likely to keep their full-time job or part-time job compared with the non-employed older workers. This may be because the self-employed have flexibility in work hours. The work industries requiring physical demands such as

mining, agriculture, construction, transportation, and manufacturing versus white collar related industries were negatively related to the likelihood of full-time or part-time work versus non-employed. Logistic regression for the part-time versus full-time (see table 16) revealed some significant findings. Older workers with functional disability and female workers were more likely to choose part-time jobs compared to the older workers who choose full-time work, when controlling for other variables. This means that the likelihood of choosing part-time work increased for female older workers and older workers with functional disability. As hypothesized, there is the small chance of being employed among the older workers with functional disability because sometimes their disability is too severe to sustain their full-time job or the functional disability is more likely to interfere with work if the requirements of the job are more physically demanding (Loprest, et al., 1995). Female workers were more likely than male to choose part-time work rather than to choose full-time. This finding may reflect the fact that men are often more likely to have a full-time position rather than part-time due to their stable work histories. However, many women may have weaker job histories rather than man due to the career interruption for family matters. Or this finding may reflect the fact that women who are still working full-time in their late middle age may tend to remain in their fulltime job because those women may have strong job attachment compared to most women who experience more career interruption for family matters (Kim & DeVaney, 2005). These women may be more likely to have part-time position rather than non-employed. Thus, it is hypothesized that compared to men, women will be more likely to have a parttime job.

## Limitations of the Study

Multiple limitations exist in the current study that must be acknowledged and considered in any data interpretations and conclusions. First, like all expost facto designs, the present study examined the relationship between the predictor and criterion variables in relation to the experience of disability. The results of this study only capture the effect of disability (disability effect) in a one time, cross-sectional view. Even though this study used the classification of timing (before and after disability) in order to examine the relationship between predictor variables and labor participation patterns and attempted to control for economic factors such as Social Security Retirement income that may potentially bias the relationship (Gruber & Wise, 2004; Rogowsk & Karoly, 2000), conclusions regarding causality may not be drawn solely from the results (Hadley & Mitchell, 1997; Heppner, et al., 1999). For example, it is possible that for some older workers, the transition from a full-time job to non-employed status may be the result of job related stress, a layoff, or involuntary job loss. The long-term effects of disability on older workers' employment pattern need to be addressed more fully in a longitudinal manner (Santiago & Muschkin, 1996).

The HRS study was based exclusively on self-report data. Use of self-report data is susceptible to several confounds resulting from participant distortions, social desirability motivations, attribution errors, and/or the participant's relative self-awareness (Katz, Rodin, & Devins, 1995; Schwarz, 1998). Criterion validity is also an issue when self-report data is used since there were no employment records to confirm self-reported work status. Some participants may deliberately present a fake-good or fake-bad image, or may unintentionally provide incorrect information. Further, older workers may have

tendency to not accept of some level of disability or limitation. Older individuals may also provide inaccurate information if they view questionnaires as an invasion of their privacy. Consequently, uncorroborated self-report data can result in erroneous or inconclusive findings.

In addition, limitations related to the research sample impact the study's external validity. The samples utilized are based on small selected samples: full-time worker status and no disability at the baseline surveys, and then the existence of disability measured by validated measures. This situation raises the question about the study's external validity to other populations. Thus, the results may not be generalized to other older workers with disabilities. In the same manner, there may be the unintentional potential selection bias for the female samples. As mentioned earlier, over half of the sample used for this current study was women. In general, women who are still working full-time in their late middle age may be very different in their extent and type of job attachment than other female workers. Older working women tend to remain in their full-time or employed status, regardless of whether they need or want (Kim & DeVaney, 2005).

The issues raised by the study's findings summarized above have a number of important implications for the development of effective and responsive polices, rehabilitation counseling practice, and research efforts. The implications in each of these areas are discussed below.

## Implications of the Study

# Practical and Educational Implication

As descriptive findings indicated, 62.4% of older workers kept their full-time job even though they experienced some type of disability. It means that older workers with

disabilities will become valuable members of the job pool and rehabilitation counselors can contribute to the retention of aging workers who will likely need disability management intervention and workplace supports (Bruyère, 2006). Even though rehabilitation professionals may have been trained in broad areas of knowledge in disability, vocational rehabilitation services in both the public and private sectors are often not well-equipped to deal with the specific educational and occupational needs of older workers with disabilities (Bishop, 2000; May & Vieceli, 1983). Rehabilitation professionals in a variety of settings such as public, private, mental health, and one-stop centers in the Workforce Investment Act programs may lack knowledge of characteristics of older workers. It may true that they may approach all aged persons with disabilities uniformly, regardless of different characteristics of their consumers. Studies of the service utilization of older workers with disability display that older persons have traditionally been largely neglected in formal rehabilitation programs (Kemp, 1985) and few older persons apply for services from the Rehabilitation Services Administration (RSA; Kampfe, 1994; Walls, Misra, & Majumder, 2002).

Now is the opportune time to attend to the demographic composition of older clientele. Kelly (2003) emphasized that rehabilitation professionals should expand their role and function as well as specialized knowledge domain when working with older individuals. In order to provide effective and efficient services, to prepare well for this population and to obtain successful outcomes, rehabilitation professionals should have specific knowledge about customers' disability severity, type, prognosis, and workrelated skills as well as the expectation and needs of employers in relation to older workers. Kennedy (2000) reported that improved accommodations in the workplace and

changes in the nature of work for workers with disabilities have allowed many such individuals to rejoin the workforce. Schechter (1999) also found that special equipment and modification of work schedules (e.g., flexible work schedule) were important factors in job retention for disability insurance beneficiaries. Previous research also indicates that some employers have expressed positive attitudes toward workers with disabilities who are placed by vocational employment or supported employment programs (Hernandez, 2000; Petty & Fussell, 1997). In particular, employers who received supported employment services (workers obtain training and support from a job coach to adequately perform their jobs) are most satisfied with workers with mental or emotional disability. Therefore, it is possible to reduce disparities in employment by providing vocational or supported employment programs for older workers with disabilities.

Creating better estimations of trends in health and disability for older consumers is much more than an academic exercise. Much is predicated on trends in the health of the today's middle-aged adults. As rehabilitation professionals gauge current and future needs for retention services, "clarity about trends in specific measures of disability and independence, based on knowledge about what is driving trends, is essential" (Trends Research Brief, 2008, p. 6). If rehabilitation professionals realize the specific skills in labor transition for older workers they may then minimize any adjustment difficulties that may be experienced by some older workers. In this manner, rehabilitation programs could prevent some workers from involuntarily exiting the labor force due to declining health status or potential job limitations and encourage the aging population of individuals with disabilities to continue to participate in or return to work.

Traditional rehabilitation settings as well as private case management systems

need to train their staff about heterogeneous characteristics of older workers such as health care, job training, and retirement planning programs. The rehabilitation agencies mainly dealing with employment as well as community-based programs need to train their staff on the fact that older workers have unique concerns and values about work and retirement. Moreover, rehabilitation agencies may improve their services for older workers by cooperatively working with other agencies that have already been working with the older population. For example, collaborative strategies including SCSEP, vocational rehabilitation, and Welfare-to-Work should be promoted among service systems. Needs assessment surveys and focus group meetings are effective tools for initiating such collaborations.

As mentioned earlier, physically demanding industries such as mining, transportation, construction, and manufacturing consisted of a high (41.1%) proportion of the non-employed group (see Table 7). If older workers have functional disability, it is more difficult to sustain their work when the requirements of the job are more physically demanding (Loprest, et al., 1995). Therefore, older workers with functional disability may have special needs in getting or keeping a job and benefit from ongoing support and services provided by vocational rehabilitation counselors.

Rehabilitation counseling students need to be well-informed on the current life course perspectives, the issues between older workers and their disability, and political, economic and social forces that bring the older individual into the rehabilitation service system. Students also need to be made aware of diverse characteristics of older workers, their coping skills, resources, and problems facing due to the disability. Improving curriculum to reflect the changing demographics of the current work force is an important

task for rehabilitation counseling education. If students gain knowledge about older workers with disabilities, as they enter the workforce themselves they can provide agency administrators with information about demographic trends and their implications for an aging society as well as help evaluate and develop services that affect older workers with disability. Additionally, hiring faculty members who are able to teach or conduct research on topics related to the older workers with disabilities, recruiting students who are interested in this population, and placing students in agencies serving this population are important actions as well.

## Implication for Research

This study is the first investigation to empirically attempt to show the prevalence of acquired disability and its effects on employment patterns among late middle aged workers in the United States. Hopefully, this effort will spur a new line of research on older workers regarding the need for expanding rehabilitation services for older workers with disabilities and the education of rehabilitation counselors. While the analysis and results presented here constitutes a significant step in understanding the determinants of older workers' job transition patterns after they experience a disability, many important unanswered questions remain. Perhaps, most importantly, the present study does not answer the question of why older workers with disabilities enter non-employed status.

Important issues need to be considered for further research on job transitions related to the experience of disability during later life. First, the importance of social context influencing retirement planning needs to be examined. For example, the role of race, ethnicity, and social class in the differential rates of wealth accumulation, saving behavior and attitudes towards retirement planning merits further research. Second,

interaction between gender and ethnicity/race or between gender and disability types needs to be explored. There has been relatively little research investigating the interaction issue in disability researches. Third, the further differences between the impact of aging on individuals with disabilities who acquired their disabilities at older age and those who are living with long-term disabilities, acquired at birth, in childhood or young-adulthood needs to be examined.

Longitudinal research on older workers with disabilities is also needed. Most of such studies completed to date are cross-sectional in nature. Research also should be conducted regarding the effectiveness of services for older workers with disabilities. Increased research attention on older workers with disabilities may provide rehabilitation practitioners with valuable data for providing effective services. In addition, further research must be conducted to determine the most effective methods for assisting older workers to adapt to a rapidly changing world of work.

#### Implication for Policy Makers

A number of studies have emphasized that rehabilitation counselors should become more involved in providing services that meet the needs of older workers (Brown, 1997; Brown, & Rees, 1996; Fowles & Dunker, 1996). Previous research suggests that traditional retirement preparation programs have not been sensitive to minority elders (Fowles & Dunker, 1996), particularly those who have disability. As previously noted, current private and public funded vocational programs are very limited for older workers with disabilities. Studies show that older workers are more likely to become unemployed and to experience greater difficulties in obtaining new jobs (Mor-Barak & Tynan, 1993) `than other workers. Only 3 percent of 8.4 million low income workers age 45 to 70

participated in federally sponsored employment programs such as the JTPA Adult Training, On-Stop-Career Center, and SCSEP (Poulos & Nightingale, 1995). Clearly, there is a need to reexamine current programs and to develop more programs for this specific population to attract older workers who need employment-related services.

The implications of these findings for policy are addressed follow. First, before work can be supported, people need to find jobs. Programs helping with the job search or even preparation for the job search may alleviate the difficulties of some older adults with disabilities. Programs can provide information about where jobs are or serve as an intermediary between employers and older people with disabilities seeking jobs. Further, programs could be targeted toward those older individuals who are experiencing the most difficulty looking for jobs, those who have less education, female, or those who are lacking skilled work experience. Clarifying distinctions among trends in disease, functional limitations, and disability and their interrelationships will help policymakers and program officials anticipate the relative demand for rehabilitation services.

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