THE RURAL PENALTY: THE SOURCES AND MAGNITUDE OF INCOME DIFFERENCES BETWEEN URBAN AND RURAL OLDER ADULTS IN THE UNITED STATES

A Thesis by

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The following faculty members have examined the final copy of this thesis for form and content, and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts with a major in Sociology.

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ABSTRACT

This study examined the impact of rural residence on the earned income of older adults and the relationship of rural residence to possible structural, individual, and life course determinants of income. Using a sample of full-time workers age 50 and older drawn from the 2009 Current Population Survey, explanations of income based upon theories of dual economy, labor market segmentation, occupational sex segregation, human capital, rational choice, and the life course perspective were explored for both the full sample and for rural and urban workers. The research results found clear differences in income between rural and urban older workers, and differences by location in the predictive power of the segments in the proposed model. Strong support was found for the hypothesis that rural older workers have lower wage and salary income than urban older workers. Overall, urban older workers earned more than rural older workers, and in every condition except one, urban workers outearned rural workers.

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CHAPTER 1

INTRODUCTION

Rural locations can evoke a sense of serenity and beauty: rolling open hills, wide vistas, clear air. The economics of rural life is less appealing. Rural residents generally are paid less, are more likely to be unemployed, and have fewer job opportunities than urban residents (Miller, 2009). Recent recessions have had a strong negative impact on rural areas, resulting in longer duration of unemployment and higher resulting rates of poverty than for workers in urban areas (Parker, Kusmin, & Marre, 2010; United States Department of Agriculture Economic Research Service, 2010).

It is especially important for workers over age 50 to maintain income at as high and consistent a level as possible because of the need to accumulate wealth for retirement. Because the economies of rural areas have changed from dependence on agriculture to dependence on manufacturing and services, older workers may have the wrong education and skills for more highly-paid jobs and end up working in low-skill, low-pay positions with little opportunity for wealth accumulation through either income or benefits (Barkley, 1995; Whitener & Parker, 2007; Wojan, 2000). This study examines the sources and magnitude of the rural-urban income divide for older workers by exploring the impact of structural, individual, and life course factors on income and their relationship to geographic location.

CHAPTER 2

LITERATURE REVIEW

As the baby boom cohort in the United States edges toward retirement in an age of economic uncertainty, the amount and the security of income of all types have become topics of critical interest to workers, employers, and scholars. More than 70 million people were born between 1946 and 1964, and more than 65 million are still alive, or about one-fourth of the population of the United States (Rogerson & Kim, 2005). Wealth accumulation or erosion in a cohort as large as the baby boom has a very large impact in many macro-level policy areas, including the evaluation of the long-term viability of Social Security, the effect of raising the Social Security full retirement age, the provision of government benefits for health and long-term care, and tax policy. These policy issues are of key concern in rural areas for a number of reasons. First, rural populations are older than urban populations (Miller, 2009; United States Department of Agriculture, 2007). In 2004, 15 percent of the population of rural areas in the United States was age 65 or older compared to 11.7% of the urban population. Generally, greater outmigration of younger residents leads to higher proportions of older residents; people in the prime working years of ages 20 to 44 have the highest rates of migration in the United States (United States Census Bureau, 2010). Second, rural older adults have higher dependence on Social Security income than their urban counterparts because lower levels of income and benefits during their working years result in less retirement savings and fewer retirement benefits (United States Department of Agriculture, 2007; Whitener & Parker, 2007). Finally, delivery of critical health and welfare services in large, sparsely populated land areas is more difficult and more costly (Gamm, Hutchison, Dabney, & Dorsey, 2003; Miller, 2009; Rawlinson & Crews, nd).

The level of current income drives important individual life decisions for the older worker such as deciding how long to work, preparing for financial contingencies in later life, and planning for family investments and estates. These issues are especially important for women who, in spite of lengthening life spans for both men and women, are likely to outlive men and therefore are likely to have a longer period of retirement to finance than men regardless of how long they choose to work. Women born in 1950 had a life expectancy at birth that was 5.5 years longer than for men born the same year, and women born in 1960 had a life expectancy at birth that was 6.5 years longer than men born the same year (National Center for Health Statistics, 2010). Women who were 65 years old in 2006 were expected to live almost three years longer than men of the same age, and those who were 75 were expected to live about two years longer than men of the same age.

2.1. Rurality, Employment, and Income

In 2009, about 16.4 percent of the United States population lived in rural areas (United States Department of Agriculture, 2010). In 2008, the per capita income of rural residents was about 74 percent of the per capita income of urban residents. With lower income, poverty rates are higher in rural areas than urban areas. In 2008, the household poverty rate in rural areas was 16.2 percent; in urban areas, the household poverty rate in 2008 was 12.6 percent (United States Department of Agriculture Economic Research Service, 2010).

Why is there such an income differential between rural and urban areas? Structural factors in the economy contribute to an income difference between rural and urban workers. Rural areas have fewer jobs available in rapidly-growing areas of the economy with higher rates of pay. In 2006, larger percentages of rural workers than urban workers were employed in government, retail, manufacturing, and agriculture. Larger percentages of urban workers than

rural workers were employed in higher-skill jobs in higher-paying jobs in professional and technical services, real estate, finance, insurance, and information services (Miller, 2009). Agriculture, while once a dominant part of the economy of the rural United States, now employs a small and shrinking part of the rural workforce, with only 14 percent of the rural workforce employed in farming in 2007 (Whitener & Parker, 2007). Manufacturing jobs in all regions have been lost to offshoring and recession (Drabenstott & Henderson, 2006; United States Department of Agriculture Economic Research Service, 2010; Whitener & Parker, 2007). To the extent that income depends on industrial and occupational factors, rural workers will be disadvantaged compared to urban workers.

Human capital factors also influence the income differential. Workers in rural areas often have lower levels of education and work skills than workers in urban areas (Drabenstott & Henderson, 2006; United States Department of Agriculture, 2003; Whitener & Parker, 2007), which reduces the likelihood that employers with higher skill, higher pay jobs will locate in rural areas, which in turn reduces workers' access to jobs with higher pay and better benefits (Markley & McNamara, 1995). Although the proportion of rural workers with high school and college diplomas has risen since 1970, only about 16 percent of rural adults age 25 and older had college degrees in 2000 compared to about 27 percent of urban adults in the same age range (United States Department of Agriculture, 2003). Rural adult high school and college completion rates are highest through the North Central and Great Plains areas of the country and lowest in the South, reflecting race and ethnicity differences in college completion (United States Department of Agriculture, 2003). To the extent that jobs providing higher pay and better benefits are available to workers with higher levels of education and skills, and because income levels have a

direct impact on poverty, rural workers will be disadvantaged compared to urban workers by lower levels of education.

Older workers in lower-skill, lower-income jobs are additionally disadvantaged by the lack of access to retirement benefits. Employer-provided retirement plans are a key component of private retirement income. Until the late 1970s, these plans were generally in the form of defined benefit plans, in which the employer funds a plan that pays guaranteed benefits to eligible workers based upon a formula that generally relates to the worker's earnings in the last few years of his or her career. In 1978, changes to the tax code allowed the development of defined contribution plans, which are retirement plans which define the amount of contribution to a retirement plan, but do not guarantee the amount of the benefit (Beckmann, 2006). Because defined contribution plans shift most of the benefit funding from the employer to the employee, they are much less expensive for the employer than defined benefit plans, so defined contribution plans were embraced by employers as a way to provide a retirement benefit to workers at a much smaller cost. In 2005, 22 percent of workers in the private sector were eligible for defined benefit plans, and almost all participated in their plan. In the same year, 53 percent of workers in private firms were eligible for defined contribution plans and about 42 percent participated in the plan. Because workers can borrow or withdraw from a defined contribution plan before retirement, this benefit also can provide an important safety net in times of need. However, neither type of plan is typically offered in service-producing industries, in service occupations, in firms with fewer than 100 employees, or to part-time employees, all of which are typical of rural employment (Beckmann, 2006; Costo, 2006).

It is projected that as of 2009, half the households in the United States will not have enough retirement income to support their preretirement standard of living (Munnell, Webb, &

Golub-Sass, 2009). To the extent that worker income in the last years of a career determines the level of income from retirement benefits, rural workers will be disadvantaged by lower current income. Availability of income from employer-provided retirement plans varies widely among industries, occupations, size of firm, and collective bargaining status of employees (Beckmann, 2006; Costo, 2006). Additionally, it may vary by life course-related factors including sex, marital experience, and family status. To the extent that rural workers differ from urban workers in these factors, they will be disadvantaged.

2.2 Structural model

Structural models of income inequality are macro-level theories that attribute differences in income to structures that are external to and uncontrollable by the individual. Dual economy theory asserts that differences in income are the result of the division of the economy into two industrial sectors which are differentiated by the type and size of firm. Labor market segmentation theory focuses on occupations rather than industries, and divides jobs into two sectors that result in income inequality.

Dual economy.

Dual economy models divide the economy into two industrial sectors which have distinctive features, and depending upon the scholar, these sectors are known by different names including center or core and periphery (Averitt, 1968; Beck, Horan, & Tolbert II, 1978; DeViney, 1995), monopoly and competitive (Lord & Falk, 1980), and primary and secondary (Baron & Bielby, 1980; Fields, 2007; C. S. Meyer & Mukerjee, 2007). For this study, the terms "core" and "periphery" will be used to discuss industrial sectors. Core industries consist of large firms whose businesses tend to be manufacturing and mass retailing and are central to the economy of a nation. From an economic standpoint, core industries are firms for which average

cost curves have the potential to rise with growth, and yet do not as a result of economies of scale, of purchasing and production, rationalization of processes, and the ability to manage efficiently. In addition, core firms have access to more efficient capital markets which keep the cost of capital lower (Averitt, 1968). Theoretically, these qualities would ensure unlimited growth. In the past, core industries have traditionally been the backbone of the economy: automobiles, steel and aluminum, rubber, aerospace, and similar industrial firms. These firms are capital intensive rather than labor intensive; they operate using large-scale production processes, provide products rather than services, and sell these products in large national or global markets (Averitt, 1968; Lord & Falk, 1980). These organizations are traditionally bureaucratized, including job structures such as labor relations management, wage and salary administration, job definition, and career paths; skilled workers are frequently unionized (Averitt, 1968; Baron & Bielby, 1980; Beck, et al., 1978; Lord & Falk, 1980). As a result of collective bargaining, wages and benefits in these industries have traditionally been higher and more protected.

By contrast, industries in the periphery are smaller and are characterized by average cost curves which always rise with growth. Because they are smaller in size, they cannot take advantage of economies of scale in the same way that core industries do. Because of their size, they are also unable to generate capital in the same ways as core firms (Averitt, 1968). As a result, operating costs and financing costs will be higher for peripheral firms and it is less likely that their profits will rise with growth. Peripheral industries include those that provide non-professional services, produce single or a limited line of products, and operate small retail businesses; they are labor intensive rather than capital intensive. However, labor is generally unskilled and unorganized (Averitt, 1968; Beck, et al., 1978; Lord & Falk, 1980), working in firms such as nursing homes, child care centers, fast food chains, and small retail stores. Because

the costs of capital and operation are usually higher for these firms, and because employees usually are not covered by collective bargaining agreements, one of the few ways firms in the periphery can reduce costs is by paying less, providing fewer benefits, and offering work schedules that are nonstandard.

It should be mentioned that there has been significant change in the status of core industries in the United States. Growth stalled in the late 1960s in several industries (Bluestone, Harrison, & Clayton-Matthews, 1986) and has dramatically declined in recent recessions. Employment in goods-producing industries declined between 1998 and 2008 and was projected in 2009 by the Bureau of Labor Statistics to remain flat through 2018. However, even these recent projections did not include the large employment losses since 2008 in core industries in the United States (Woods, 2009). Union membership has declined from a rate of about 20% in 1983 to a rate of about 12% in 2009, and most union members are now employed in the public sector rather than the private sector (United States Bureau of Labor Statistics, 2010). With massive restructuring of core employers in the United States, membership declines through 2018 are likely to be even greater (Woods, 2009), and as a result non-retired workers in these industries may show a dramatically different pattern of income than would have been expected prior to the recession that began in 2007.

Labor market segmentation.

From a neoclassical economic perspective, labor markets operate like any other free market: prices--in this case, wages--are driven by changes in worker supply and industry demand. As with any good or service, wages are expected to decline as the supply of workers increases and are expected to increase as demand by firms increases. Both workers and firms have perfect information, so neither workers nor firms are able to influence wages individually.

However, workers have the ability to move freely to different areas of the market in order to take advantage of wage differences resulting from supply and demand forces (Kalleberg & Sorensen, 1979; Kaufman, 2004; Lord & Falk, 1980). By contrast, in a labor market segmentation model, the market is generally divided into two segments: high tier and low tier, primary and secondary, or good jobs and bad jobs (DeViney, 1995; Doeringer & Piore, 1975; Hudson, 2007; Kalleberg & Sorensen, 1979). Jobs in the primary segment tend to have higher wages, better working conditions, better benefits, more stability, and greater chances of advancement than those in the secondary segment. Jobs in the secondary segment, because of lower wages, poorer working conditions, fewer benefits, and little likelihood of advancement also tend to have higher turnover and less labor market attachment (Doeringer & Piore, 1975; Gray & Chapman, 2004; Hudson, 2007; Kalleberg & Sorensen, 1979; Piore, 1983). Nonstandard work arrangements including part-time, seasonal, on-call, temporary, and contract work are typically found in the secondary segment (Hudson, 2007; Wiens-Tuers, 2004). Jobs in the primary segment require more highly-skilled or highly-educated workers who have opportunity for upward mobility; those in the secondary segment require few skills, have minimal job training, and often provide at best lateral movement in the job market (Reid & Rubin, 2003). Labor segmentation models suggest that workers are rationed into the lower market rather than selecting it, and that there is restricted mobility between the lower and upper tiers (Beck, et al., 1978; C. S. Meyer & Mukerjee, 2007; Reid & Rubin, 2003).

In both of these structural models, a relationship exists between life course choices and the worker's position, and in many cases these choices are related to or affected by gender. Both marriage and parenthood can have an impact upon where the person is located within an industry structure or an occupational structure. Traditionally married women have had responsibility for

more child care, more domestic labor, and more caregiving than men, and as a result have more delays and interruptions in education and careers than men, and are more likely than men to be employed in secondary segment jobs in periphery industries with less access to income-producing benefits (DeViney, 1995; R. Hogan & Perrucci, 1998; Kail, Quadagno, & Keene, 2009; M. H. Meyer, 1990; Pienta, 2003; Raymo & Sweeney, 2006; Shuey & O'Rand, 2004; Zimmerman, Mitchell, Wister, & Gutman, 2000).

These models have the common weakness that changes in the structure of the United States economy may have a significant effect in the future upon the relationship of industry sector or occupational segment to income. The industrial structure itself has transformed over time, and occupational structure has changed dramatically with the introduction of offshoring and outsourcing jobs as a tool for reducing labor cost. Another central weakness of the structural model is the failure to account for the possibility that the individual has the ability to affect his or her own work choices. The worker is seen as a means of production located in one industrial sector or occupational segment, but without the ability to move between these. In contrast, human capital and rational choice theories attempt to explain the individual worker's contribution to income.

2.3 Individual Model

Theories of income inequality based upon status attainment or choice are micro-level theories that relate the level of income to individual effort. Human capital theory addresses the individual's investment in personal resources that increase his or her ability to earn more income. Rational choice theory describes how individuals make choices that affect their level of income.

Human capital theory.

Human capital theory is frequently used as a basis for explaining differences in income. Becker conceptualized human capital as "the imbedding of resources in people" (Becker, 1962, p. 9). In economic terms, an individual's investment in human capital is expected to yield extra returns on investment. The outcome is not intended to be a breakeven investment in which the returns equal the investment, but one in which the individual earns in excess of his or her investment. In an early statement on human capital, five major types of human capital were proposed: investment in better health, on-the-job training, formal education, study programs outside the workplace, and migration to better job opportunities (Schultz, 1961). Other types of human capital investment include increased socialization, motivation, and accumulation of experience that allow individuals to work productively in a variety of circumstances or positions of increasing responsibility (DeViney, 1995; McFadden, 2008). Although these may traditionally be found in a long career, some of these may be found in unpaid labor, such as volunteer work or unpaid internships, although it is likely that the people who are most able to transform these unpaid experiences into human capital are those who already have other resources and are able to afford a period of unpaid work (Smith, 2010).

If a worker invests in any of these elements of human capital, the expectation is that individual earnings will gradually increase over time (Ben-Porath, 1967). However, as with any investment, an opportunity cost may be associated with making the investment in human capital, which may create a plateau or lag in the increase in earnings. For example, if a person leaves the workforce for four years in order to attend college, an indirect cost is incurred with the absence from paid work as well as the direct cost of investment in a college degree. The expectation is that as a result of the investment, resulting individual income will be higher than without the

investment, even accounting for lost earnings and benefits (Becker, 1962). However, returns to investments in human capital may vary based upon excess supply of workers with the same skills (Ben-Porath, 1967). Therefore, movements along the individual's earnings curve may flatten or be discontinuous depending upon supply, demand, and periods of investment (Ben-Porath, 1967). Additionally, human capital may depreciate, either through age, obsolescence, disuse, frequency of switching among activities, and lack of incentive to continuously invest (Bartel & Sicherman, 1993; Becker, 1962). For example, workers who are closer to retirement may be disinclined to participate in human capital investments that are spread over a longer time period. In periods of unexpected changes in technology, not only are older workers more likely to retire rather than invest in lengthy training (Bartel & Sicherman, 1993), firms are more likely to encourage retirement of highly paid older workers rather than to invest in retraining them (Song, 2009). Human capital theory predicts that higher levels of education and longer and more continuous work experience will translate into higher levels of income or income-producing benefits. Therefore, workers who are able to maintain a continuous and upward career trajectory are likely to receive a greater financial benefit from investments in their own development than are workers with discontinuities of participation in the labor force.

Rational choice theory.

Rational choice theory predicts that people will act rationally to optimally satisfy their preferences, or in the language of economics, they will attempt to maximize utility (Zafirovski, 1999). If perfect information is available, decisions can be made that will lead to the best outcome. If information is incomplete or unknown, then risk becomes a factor in the choice (Aguiar & de Francisco, 2009). For example, if a worker is presented with the opportunity for early retirement and is told at the same time that his or her job is being eliminated, if the

worker's highest preference is maximizing income, then perfect information is available and the choice is clear. However, if a worker is offered early retirement but the alternatives to accepting the offer are not known, then he or she must make a decision that maximizes utility in the presence of risk.

Rational choice theory can be viewed from two perspectives relative to the individual (Aguiar & de Francisco, 2009). The first perspective, the "thin" model (Hechter & Kanazawa, 1997), is external to the person: only that which can be observed can be used to explain actions. The decision that a person makes is a "revealed preference" (Baron & Hannan, 1994; Hausman, 2000) and therefore the internal structure of a person's beliefs or desires need not be known. In this framework, a belief becomes a probability component in a calculation. The second perspective, the "thick" model (Hechter & Kanazawa, 1997), addresses what happens internally when the individual makes a choice. This model suggests that the person makes choices based upon subjective beliefs, values, and desires, and that these are the motivators for the choice: the person believes that the choice will be the best one (Aguiar & de Francisco, 2009; Hausman, 2000). These models also allow for the inclusion of non-material goods, "…that some people live for the music of Mozart, and others for the thrill of horse racing" (Hechter and Kanazawa 1997, p.194). Within this framework the choice model becomes a richer, more personal one.

Aguiar and de Francisco (2009) argue that rational choice theory can incorporate social identity because within the thick model of rational choice, beliefs are explicitly acknowledged. If this is true, then it should be possible to argue that a person makes rational choices about employment and retirement based upon identification with a social group: a union, management of a company, blue-collar workers, stay-at-home mothers, and so on. These identities would be

factored into the assessment of risks and possible earnings outcomes of work decisions, and through this calculus have an impact on the level of income.

Life course-related decisions such as marriage, parenthood, and retirement can be seen as the result of rational choices. However, because the future as a result of decisions such as these is rarely completely knowable, through a rational choice lens decisions about the life course have a degree of risk. Therefore, a decision to marry carries with it the unknown risk of the death of a spouse or divorce, and the resulting unknown risk to income. The decision to have children may contain a calculation of the risk to a career and future earnings. Because of gender differences in the likely outcomes of decisions such as these, the risk level will be different for men and women.

Individual-level theories provide an important piece of the puzzle that defines income levels, but cannot provide a total explanation because they ignore factors that the individual cannot control: those related to characteristics of specific industries, to changing economic conditions, or to restrictions in access to industries or occupations based upon factors such as sex or race. However, they do add more dynamism to the relatively static models proposed by structural theories. The life course perspective increases the richness of the individual model explanations by providing a context within which individual opportunities are exploited and within which individual choices are made.

2.4 Life course perspective

The life course as a sociological perspective has developed in the last thirty years. This perspective, while not a uniform theory, allows for the consideration of the social, cultural, and historical contexts in which people live. Unlike the life span, which is related to the length of a life, the life course focuses on the events, transitions, and trajectories of a life (George, 1993;

Hatch, 2000; D. P. Hogan, 1978; Rossi, 1980), and it is within the framework of the life course perspective that many factors which are differentiated by gender emerge. Transitions are tied to age and event sequences that are socially or culturally acknowledged, such as marriage, parenthood, military service, the death of a parent in middle age, and retirement (George, 1993; Hatch, 2000). The transitions specific to some of these sequences may include several levels, such as parenthood: family formation, the birth of the first child, the birth of the last child, and the departure of the last child from home (D. P. Hogan, 1985). Transitions are not only affected by social and cultural forces; they are also changed by historical events. For example, retirement has only emerged as an established life course transition in the twentieth century, when improvements in mortality rates and the establishment of Social Security and company retirement plans allowed for a longer life lived in reasonable comfort (Dannefer & Kelley-Moore, 2009; Riley, 1987). An established period of military service for young men in the United States changed over the course of the twentieth century depending upon whether the country was at war or at peace (D. P. Hogan, 1978). Major structural changes in economic conditions and in the workforce can be expected to have significant impact upon the nature and timing of life course transitions (George, 1993; Moen & Orrange, 2002).

Transitions are limited in duration, but may have long-term effects; trajectories are longer-term patterns of stability or instability, and interact with individual transitions to become unique (George, 1993). Trajectories are dynamic processes that are altered and shaped by different choices during the person's lifetime (Moen & Orrange, 2002). For example, a career trajectory for a man born in the late 1930s might be relatively continuous and upward, with a short period of discontinuity for military service but with little interruption as a result of marriage and parenthood. The career trajectory for a woman born at the same time is likely to be

much more discontinuous, perhaps starting later after having children, or stopping and starting again due to caregiving responsibilities, relocation due to her husband's career, or a change in marital status. However, despite being traditionally responsible for child rearing, domestic work, and caregiving, the rate of participation in the labor force for women has risen steadily since 1988, showing an especially large jump for women age 45 to 54 who generally may be presumed to be past the transition of childbearing (Toosi, 2009).

Dislocations can be conceptualized as the introduction of risk into the career trajectory, with each transition having an impact upon the direction and slope of the trajectory. These risks can also be seen as cumulative because the trajectory may not return to its original direction as each transition is encountered (Ferraro, Shippee, & Schafer, 2009; Holden & Fontes, 2009; Kail, et al., 2009; McNamara, 2007). For women, risks such as these often are translated into being sorted into jobs that are unlikely to provide access to high pay or income-producing benefits: part-time jobs, jobs in the non-professional service sector, jobs in secondary sector industries, and jobs that have been traditionally filled by women. Additionally, even if a woman is covered by an employer-provided retirement plan, she bears additional risk that her life course experiences will have a negative impact upon her as a result of "invisible" gender bias in the structure of the plan (Quadagno, 1988; Richardson, 1999), such as in rules regarding seniority rights and continuous service. If the retirement plan is a defined contribution plan rather than a defined benefit plan, she also assumes the investment risk of the plan that is shifted away from the employer (Shuey & O'Rand, 2004).

Retirement is a key life course marker, and the timing of retirement for men has typically been related to the availability of retirement plan benefits or reaching Social Security eligibility age. However, for a married woman, the retirement decision is often made jointly with her

husband, taking into account factors including health, pension coverage, and self-employment (Ho & Raymo, 2009; Pienta, 2003). Until the late 1990s, it was typical for married couples to coordinate their retirements, with women often retiring early in order to retire at the same time as their husbands, especially if the husband was in poor health (Calasanti, 1993; Moen, Sweet, & Swisher, 2005; Pienta, 2003; Shuey & O'Rand, 2004). Early retirement for married women introduces more risk into the career trajectory because by retiring early, a woman may reduce her own retirement benefit amounts. Because of less access to employer-provided retirement plans, women are more dependent upon Social Security income than men (M. H. Meyer, 1990; Shuey & O'Rand, 2004). If a woman is dependent upon her husband's retirement plans and Social Security, her financial security is jeopardized if he dies before she does. However, the ongoing shift from defined benefit retirement plans which encourage earlier retirement to defined contribution retirement plans which are neutral may contribute to a decline in early retirement in general (Gustman & Steinmeier, 2009).

Marital experience, another life course trajectory, is also a key driver in later-life economic security, especially for women. Women who have never married are more likely to have had continuous work experience which leads to a smoother, more consistently upward career trajectory; unmarried women show more than four additional years of work during their prime working ages and as a consequence become fully insured for Social Security earlier than married women (Levine, Mitchell, & Phillips, 2000). However, the never-married are a heterogeneous group, and a more recent study projects that by 2020, the never-married elderly are expected to have a higher than average share of college degrees but also a higher percentage of persons without a high school diploma (Tamborini, 2007). Married women are likely to share for at least some period of time in their husband's retirement benefits (M. H. Meyer, 1990).

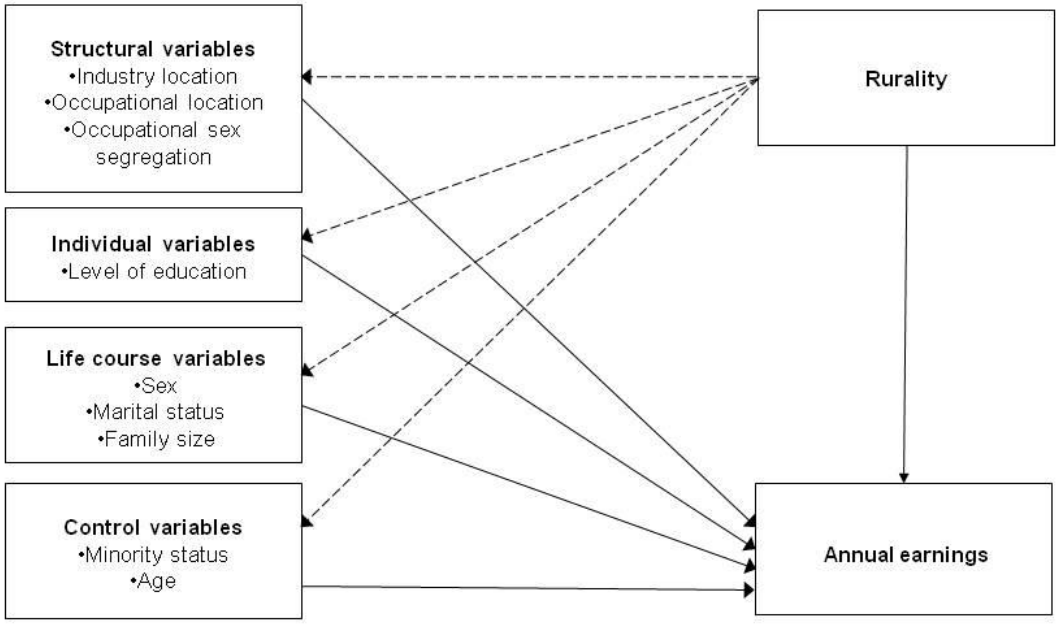
Divorced, separated, and widowed women are all more likely than single or married women to become poor in old age (Orel, Ford, & Brock, 2004; Richardson, 1999).

If working after traditional retirement age is related to the need for financial security (Boston College, 2009), life course transitions and trajectories suggest several reasons why people continue to work beyond age 65. First, they may be financially unable to retire based upon different career trajectories: women may need to work longer as a result of discontinuities in job experience in order to become fully vested in a retirement plan or Social Security. Second, workers may have financial obligations related to family trajectories, such as ongoing responsibility for children, spouses, or aging parents. Finally, married women may desire to work longer in order to maximize their own income to hedge against the risk of future financial losses due to the loss of a spouse.

2.5 Proposed model

Because none of the three theoretical approaches alone is adequate to explain differences in the level of income for older workers, an alternative multifactor model is proposed. The following model shows the relationship of rurality to individual factors, structural factors, and the life course perspective, and their relationships to income for workers age 50 and older.

Figure 1. A Proposed Model of Income Determinants for Workers Over Age 50



Solid line = direct effect
Dashed line = indirect effect

Structural, individual, and life course variables are all expected to have a direct effect on income at age 50 and older, and rurality is expected to reduce the level of income for older workers across all conditions. The structural segment suggests that older workers in certain industries or in certain occupations will be positioned to have higher income than others, and that rurality affects the magnitude of this difference. The individual segment suggests that a greater individual investment in education or skill development will result in higher income for older workers, and that rurality will affect the magnitude of this impact. The life course perspective segment suggests that because of particular life course events, older workers will have more or less access to higher-income jobs, and that because sex has a direct relationship to those life

course events, sex has a direct relationship to the ability to access higher-income jobs and therefore has a direct impact upon the level of income for workers age 50 and older.

2.6 Hypotheses

The hypotheses suggested by this model are:

1. Hypothesis based upon rurality
    1.1. For all conditions, older rural workers will have less wage and salary income than non-rural older workers.
2. Hypotheses based upon structural factors
    2.1. Net of other factors, workers who are employed in a core industry will have higher wage and salary income than workers who are employed in non-core industries. This hypothesis is based upon the dual economy theory assumption that workers in core industries will have higher income than those not employed in core industries.
    2.2. Net of other factors, workers who are employed in primary labor market segments (white collar high skill and blue collar high skill) will have higher wage and salary income than those who are employed in secondary labor market segments (white collar low skill and blue collar low skill).
    2.3. Net of other factors, workers who are employed in an occupation dominated by women are likely to have lower wage and salary income than those who are employed in a neutral occupation or in a male-dominated occupation. Hypotheses 2.2 and 2.3 are based upon the labor market segmentation theory assertion that occupations in the secondary segment of the labor market are in firms that are less likely to provide access to higher-income jobs, and women tend to be located

in these occupations. Therefore, workers employed in these occupations are likely to have lower income than those in occupations dominated by men.

3. Hypotheses based upon individual factors

    3.1. Net of other factors, workers with higher levels of education will have higher wage and salary income than workers with lower levels of education. This hypothesis is based upon the human capital theory assertion that people with higher investments in human capital such as education will have higher returns on their investment than those with less investment in human capital and on the rational choice theory assumption that people will make choices that maximize their income.

4. Hypotheses based upon life course factors

    4.1. Net of other factors, women will have lower wage and salary income than men.

    4.2. Net of other factors, workers who are married or who have ever been married will have lower wage and salary income than workers who have never been married. This hypothesis is based upon the life course perspective that indicates that women who are married are more likely than men who are married to have had life course events or trajectories which have an impact on the likelihood of having access to higher-income jobs.

    4.3. Net of other factors, workers with larger families will have lower wage and salary income than those who have smaller families. This hypothesis is based upon the life course perspective that indicates that people who have more familial demands such as children are more likely than those with no familial

demands to have had life course events or trajectories which have an impact on having access to higher-income jobs.

5. Control variable hypotheses

   5.1. Net of other factors, minority workers will have lower wage and salary income than non-minority workers.

   5.2. Net of other factors, wage and salary income will decline as age increases.

CHAPTER 3

METHODOLOGY

3.1 Data

The dataset used for this study is the Current Population Survey (CPS) 2009 Annual Social and Economic (ASEC) Supplement conducted by the United State Bureau of the Census for the United States Bureau of Labor Statistics (United States Department of Labor: Bureau of Labor Statistics, 2002). This survey is designed to collect monthly labor force data as well as supplemental data on work experience, income and benefits, and migration. The universe is the civilian noninstitutional population of the United States living in housing units and members of the Armed Forces living in civilian housing units on a military base or in a household not on a military base. 57,000 housing units are selected using a multistage stratified sample. The sample is located in 792 sample areas comprising 2007 counties and cities in all states and the District of Columbia. This sample is selected to create both national and state estimates of labor force characteristics of the civilian noninstitutional population 16 years of age or older (United States Department of Labor: Bureau of Labor Statistics, 2002).

Because the current study is focused on older workers, the sample has been restricted to respondents who are age 50 or older and who identify themselves as working for pay full time for the full year. In addition, the sample was restricted to annual income greater than or equal to $258 and less than or equal to $200,000 in order to reduce outliers. This restriction eliminated 102 cases under $258 and 112 cases over $200,000. Standard weights are provided within the CPS, but relative weights were calculated and imposed in order to ensure that the sample size and distribution remained consistent with the target population. The relative weight was calculated by dividing the standard weight by its mean.

Rurality is the central independent variable in this study. Before weighting, the sample when split between rural and non-rural residents was very lopsided with about 20 % of the total sample located in the rural category and about 80 % in the non-rural category. Because of this extremely unbalanced division, a random sample was taken of the non-rural group in order to create a more balanced proportional split with 30 % in rural locations and 70 % in non-rural locations. A new weight variable was calculated to account for the reduced number of cases. The final weighted sample size after all sample restrictions and re-sampling was 10,178 cases.

3.2 Variables

Dependent variable.

The dependent variable under study is the amount of annual income from wages and salary received in 2008. Annual wage and salary income is an interval-level variable reported in dollars.

Independent Variables.

Rurality.

In the CPS, geographic location that includes rural locations is represented by two household level variables: core-based statistical area (CBSA) status (GTCBSAST) and metropolitan status (GTMETSTA). For the purpose of this study, rurality is represented by a binary variable that has been created from the CBSA-linked variable in which 1=rural location and 0=not rural, with rural location defined as any place that is not included in the CBSA designation. It is predicted that, for all conditions, rural workers will have less wage and salary income than non-rural workers.

Individual model segment.

Human capital theory and rational choice theory are used to explain individual differences in income. The variable used to represent a worker's choice to invest in and the level of investment in human capital is level of education. In the CPS, educational attainment is captured as an ordinal-level variable of 16 levels. For this study, this variable was recoded into a five level ordinal variable. The five levels include less than high school, high school graduate, some college, bachelor's level college degree, and graduate level college degree.

Dummy variables were created for each of the five levels of education. Using human capital theory and rational choice theory as bases, it is predicted that respondents with higher levels of education will have higher wage and salary income than respondents with lower levels of education.

Structural model segment.

Three variables are used to represent the structural model segment. First, the industry of the respondent's last job is used to identify whether the respondent was employed in a traditional core industry segment. Traditionally, a core industry is considered to be a large, capital-intensive firm, such as a manufacturer of automobiles, rubber, or steel. Industrial location of the last job is a nominal variable in the CPS. It was collapsed and recoded as a binary variable with core industry (labeled "goods") as "1" and non-core industry (labeled "service") as "0." Using dual economy theory, it is predicted that respondents who were employed in a core industry will have higher incomes than respondents who were employed in non-core industries.

Second, the occupation of the respondent's last job is the variable used to identify whether the respondent was employed in a primary or secondary labor market segment. The primary occupational segment includes jobs that have high skill and education requirements,

such as management, technical, or highly skilled labor positions. Occupational location of the last job is a nominal variable in the CPS. It was collapsed and recoded into four binary variables representing white collar high skill occupations, white collar low skill occupations, blue collar high skill occupations, or blue collar low skill occupations. A new binary variable was created called "primary" in which "1" represents respondents employed in high skill positions and "0" represents respondents employed in low skill positions. Using labor market segmentation theory as a basis for prediction, it is expected that respondents who were employed in primary labor market segments (white collar high skill and blue collar high skill) will have higher wage and salary incomes than those who were employed in secondary labor market segments (white collar low skill and blue collar low skill).

Finally, a measure of occupational sex segregation is used to identify whether the respondent worked in a "bad job" segment of the labor market. Occupational sex segregation is an index variable with values ranging from 0 to 2.00. A value of 1 indicates equal representation of men and women in an occupation. A score lower than 1 indicates an over-representation of men in the occupation and a score higher than 1 indicates an over-representation of women in the occupation. A new binary variable was created in which "1" represents respondents whose occupational sex segregation index score is greater than 1 and "0" represents all others. Labor market segmentation theory predicts that people who work in an occupation dominated by women are likely to have lower wage and salary income than those who work in a neutral occupation or in a male-dominated occupation.

Life course model segment.

Three variables are used to analyze the hypotheses within the life course model segment: sex, number of family members, and marital status. These variables were selected to assess the effect of life course transitions and trajectories on wage and salary income in later life.

Sex was recoded from a nominal variable to a binary variable with 0=male and 1=female. Based upon the results of prior studies showing that, controlling for all other factors, women have lower incomes than men, it is predicted that women age 50 and older will have lower wage and salary income than men in the same age group.

The number of persons in the family is an interval variable ranging from 1 to 15. A new binary variable was created in which "1" represents respondents who have 3 or more people in their family at home and "0" represents those with only themselves or one additional person at home. It is predicted that respondents with larger families will have lower wage and salary incomes than those who have smaller families based upon the expectation that larger families require now or have required in the past more time away from work which would result in an interrupted upward movement in pay.

Marital status was recoded from a seven-level nominal variable into a three-level nominal variable representing never married, married, and ever married. Ever married includes respondents who are widowed, divorced, or separated. These three levels were then recoded into three binary variables, in which 1 represents either never married, married, or ever married.

Using the life course perspective, it is predicted that workers who are married or who have ever been married will have lower wage and salary income than workers who are not married. Additionally, it is predicted that workers who have family obligations will have lower wage and salary income than workers who do not have family obligations.

Control variables.

Age and race are used as control variables in this study. Age is an interval-level variable, and for the purposes of this study, has been restricted to a lower limit of age 50. At the upper end, age 80 includes all workers from age 80 through age 84. Age 85 includes all workers age 85 and older. Additionally, a new three-level ordinal variable has been created for age in which respondents are assigned groups which represent their relative position in the work/career life cycle: ages 50-59, ages 60-65, and over age 65.

Race and ethnicity are two separate variables in the CPS. For this study, they were combined. Because the dependent variable is earnings, a binary variable called "minority" was created using a post-hoc Scheffé analysis to sort respondents by earnings into minority and non-minority groups. Using this method, white non-Hispanic and Asian non-Hispanic workers had earnings levels significantly different from all other workers, so were sorted into non-minority ("0"). Minority ("1") includes all other racial and ethnic groups.

CHAPTER 4

RESULTS

4.1 Univariate Results

Univariate results for the entire sample and for urban and rural locations are shown in Table 1. Mean earnings for the entire sample (*n*=10,178) were $45,677. As expected, earnings for urban workers (*n*=7,599) were higher at $47,571 than earnings for rural workers (*n*=2,579) of $40,096. The range of earnings was more restricted for rural workers than for urban workers, with a range of $139,700 for urban workers and $118,368 for rural workers.

Structural model segment variables.

Larger proportions of rural workers were employed in the goods-producing industrial sector compared to urban workers, with over 29% of rural workers employed in that sector compared with about 19% of urban workers. In the full sample, about two-thirds of all workers were employed in white collar jobs. In the urban group, about 69% of all workers were employed in white collar jobs. In the rural group, a much smaller proportion (about 57%) of all workers were employed in white collar jobs. However, the proportions of workers employed in high skill jobs, both white and blue collar, where it is expected that earnings are higher than in low skill jobs, are much closer between the two groups, with about 57% of urban workers and 56% of rural workers employed in high skill jobs. A much higher proportion of urban workers are employed in high-skill white collar jobs (41.53%) than rural workers (34.86%), and a much higher proportion of rural workers are employed in low-skill blue collar jobs (22.06%) than urban workers (16.84%). The mean occupational sex segregation measure was 1.01 for the entire sample, showing about equal occupational representation of women and men. For urban workers

the mean occupational sex segregation measure was .94, showing a slight over-representation of men; for rural workers it was 1.03, showing a slight over-representation of women.

Individual model segment variables.

Educational level for this group of older workers as a whole is fairly high, with over 30% of all workers holding a bachelor's degree or above. Urban workers show an even higher proportion having higher education, with almost 35% having a bachelor's degree or above. By contrast, about 23% of workers in rural areas hold a college degree of any kind. Although about the same proportions in both urban and rural groups have less than a high school education, a much higher percentage of rural workers hold high school diplomas (40.16%) than urban workers (28.34%). This may indicate the level of education required for most jobs in rural areas.

Life course model segment variables.

The total sample has slightly more men than women, with about 53% men and 47% women. For urban workers, there are about 48% women and 52% men. For rural workers, the sample is slightly more heavily weighted with men: about 54% men and 46% women. Because our sample is drawn from older workers, it is possible that more women than men in this group have already left the work force. The average number of persons in the family in the total sample is 2.34 with a range of 12. For urban workers, the average family size is 2.37; for rural workers, the average family size is 2.25. For entire sample, about 69% were married, 23% had been married at one time, and about 8% had never been married. For urban workers, a slightly smaller proportion was married (about 68%), and a slightly larger proportion had never married (about 9%). However, for rural workers, a much greater percentage was married (about 75%) and a much smaller proportion had never married (less than 5%).

Control variables.

The average age of the entire sample was 56.45 years, with a range of 34 years. The average ages of the urban and rural groups were very similar with 56.48 years the average age for urban workers and 56.38 years the average age for rural workers in this sample. In the total sample, almost 80% of the workers were non-minority. In the urban group, this was somewhat lower, with 77% of the workers non-minority and 23% minority. In the rural group, a much smaller proportion of workers were minority (about 12%) and 88% were non-minority.

4.2 Bivariate Results

A bivariate analysis was performed to assess differences between means of model segment variables for the full sample and for rural and urban segments of the full sample. *T*-tests were performed for binary variables and Cohen's *d* was calculated to estimate effect size (Tables 2 and 3). One-way analysis of variance was performed to compare means for ordinal variables and Scheffé's post-hoc analysis was calculated to examine the relationships among levels of the ordinal variables (Tables 4 and 5).

Structural model factors model segment.

For the full sample (see Table 2), respondents who worked in goods-producing related industries earned on average $1,131 more per year than respondents who worked in service-related industries ($t = -2.06$, $p < .05$). However, Cohen's *d* was very low ($d = .05$), indicating that this difference is not meaningful. Respondents who worked in occupations in primary occupational segments earned an average of $53,667 annually compared with respondents who worked in secondary occupational segments who earned only $35,350, for a difference of $18,317. This difference was highly significant ($t = -45.69$, $p < .001$). Cohen's *d* was very large for this difference at 1.08, indicating a very strong effect. Respondents who worked in occupations that were either neutral in occupational sex segregation or were more weighted

toward male workers earned an average of $48,882 annually. Respondents who worked in occupations that tend to have more women workers earned an average of $42,145, a difference of $6,737 ($t = 15.20$, $p < .001$). Cohen's d was .33, indicating a small effect.

In rural areas, workers in all variable segments significantly underearned their urban counterparts (see Table 3). Rural workers in goods-producing industries earned an average of $40,904 annually compared with urban workers' annual earnings in this segment of $49,526. Rural workers' earnings in this segment were about 82% of those of urban workers, a difference of $8,622 ($t = 9.22$, $p < .001$). Cohen's d was .34, indicating a small effect. Rural workers in service businesses earned an average of $39,761; urban workers in service businesses earned $47,112, a difference of $7,351 ($t = 13.23$, $p < .001$). Cohen's d was .40, indicating a small to moderate effect size. Although service workers earned less than workers in goods-producing firms, rural service workers' pay was a slightly larger proportion of urban service workers' pay (84.4%) compared to rural and urban goods-producing workers.

Rural workers in primary occupational segments earned an annual average of $47,059, or about 84% of their urban counterparts' earnings of $55,872, for a difference of $8.813 ($t = 13.52$, $p < .001$). Cohen's d was .43, indicating a small to moderate effect. In secondary occupational segment jobs, rural workers earned about 85% of urban workers' pay in the same jobs, earning $31,351 compared to urban workers' earnings of $36, 737, for a difference of $5,386 ($t= 10.09$, $p < .001$). Cohen's d was .36, indicating a small to moderate effect between the two groups. Among the individual occupational categories, the least difference between rural and urban earnings was found in blue collar positions. Among workers in blue collar low skill occupations, rural workers earned an average of $29,993 and urban workers earned an average of $32,226, for a difference of $2,233 ($t = 2.95$, $p < .01$), but Cohen's d was only .16, showing a very small

effect. For workers in blue collar high skill occupations, rural workers earned 93% of urban workers' pay in the same positions, with rural workers earning $42,477 and urban workers earning $45,539, for a difference of $3,061 ($t = 3.28$, $p < .001$). Cohen's d was .18, showing little meaningful difference. The differences between earnings in white collar positions were more marked. Among workers in high skill jobs, rural white collar workers earned $49,799, about 83.5% of urban workers' pay of $59,624, for an annual difference of almost $10,000 ($t = 11.63$, $p < .001$). Cohen's d was .45, showing a close to moderate effect. For workers in low skill jobs, rural white collar workers earned $32,697 annually, 82.6% of urban white collar workers' earnings of $39,600, a difference of almost $7,000 ($t = 9.27$, $p < .001$). Cohen's d was again .45, a close to moderate effect.

There were significant differences between rural and urban workers' earnings in different occupational sex segregation categories. In both occupational sex segregation categories (neutral/male-dominated or female dominated, rural workers earned about 83% of urban workers. For those in the neutral or male-dominated segment, rural workers earned an average of $42,791 compared to urban workers earnings of $51,195, a difference of $8,403 ($t = 12.52$, $p < .001$). Cohen's d was .41, a close to moderate effect. For workers in the female-dominated segment, rural respondents earned an average of $36,534 and urban respondents earned an average of $43,816, a difference of $7,282 ($t = 11.37$, $p < .001$). Cohen's d was .40, showing a close to moderate effect size.

Individual factors model segment.

Level of education was used to represent human capital investment in this study. In the full sample, a one-way analysis of variance (see Table 4) demonstrated significant differences among respondents' average earnings by level of educational attainment ($F = 880.78$, $df = 4$, $p <$

.001) with income rising steadily as educational attainment increases. Mean earnings range from $28,767 for respondents with less than a high school diploma to $68,302 for respondents with advanced degrees. A Scheffé post-hoc analysis demonstrated significant differences in earnings among all five groups. When the sample was split between rural and urban, a slightly different picture emerged. For urban respondents, an analysis of variance demonstrated a significant difference in earnings among all educational levels ($F = 679.56$, $df = 4$, $p < .001$). For rural respondents, the analysis of variance also showed a significant difference in earnings between groups ($F = 171.28$, $df = 4$, $p < .001$). However, among rural respondents, a Scheffé post-hoc analysis demonstrated no significant difference in earnings between respondents without a high school diploma and those with a high school diploma. Workers with less than a high school diploma were in the only educational level for which urban workers earned less ($28,189) than rural workers ($30,488). This difference was significant but weak ($F = 3.874$, $df = 1$, $p < .05$).

Life course factors model segment.

For this study, sex is conceptualized as a life course factor. In the full sample (see Table 2), male respondents earned an average of $50,779 and women earned an average of $40,027, for a difference of $10,752 annually ($t = 24.73$, $p < .001$). Cohen's d was .54, indicating a large effect. Rural female respondents (see Table 3) earned an average of $34,502, about 83% of their urban counterparts (M =$41,812). The difference ($7,310) was statistically significant ($t = 12.24$, $p < .001$). Additionally, Cohen's d was .43, reflecting a close to moderate effect size. Rural male respondents earned about 85% of male urban workers ($44,809 for rural, $52,895 for urban), a statistically significant difference of about $8,000 ($t = 11.15$, $p < .001$). Cohen's d was .39, lower than for female respondents but still approaching a moderate effect size.

For respondents with 1 to 2 persons in the family at home (see Table 2), the worker's mean annual income was $44,826, compared with mean earnings of $47,569 for workers with three or more persons in the family in the home, for a difference of $2,743 ($t = 5.52$, $p < .001$). Workers with larger families earned 1.06 times the earnings of workers with just one or two family members. However, Cohen's *d* for this difference was weak at .12, reflecting a very small effect. When evaluated by location this picture changes (see Table 3). Urban workers with one to two family members earned about 1.18 times the earnings of rural workers with the same size family ($46,787 compared to $39,556). This was a difference of over $7,000 and was strongly significant ($t = 13.13$, $p < .001$). Cohen's *d* was .37, indicating weak to moderate effect size. For workers with larger families, the difference was about the same. Urban workers with three or more family members earned $49,189 compared to $41,619 for their rural counterparts, or 1.18 times as much. Again, this was a strong and significant difference ($t = 8.20$, $p < .001$, $d = .37$).

Marital status is the final life course model segment variable. In the full sample, being married creates a salary benefit of $6,629 annually (see Table 2). Married workers earned an average of $47,703 annually and nonmarried workers earned an average of $41,075 annually. This was a strong and significant difference ($t = 14.09$, $p < .001$, $d = .31$). Married urban workers earned about $8,000 more than married rural workers (see Table 3), with urban married workers earning about $49,895 annually and rural married workers earning about $41,854. This difference was strong and significant ($t = 14.28$, $p < .001$, $d = .40$). Although the earnings of urban workers who were never married lagged behind the earnings of urban married workers, unmarried urban workers earned 1.32 times more than unmarried rural workers. Never married urban workers earned $42,286 compared to $31,925 for never married rural workers, an annual

difference of more than $10,000 ($t = 5.63$, $p < .001$). Cohen's d is .59, showing a moderately strong effect size.

Control variables.

A binary minority variable was used to evaluate the relationship of race and earnings. In the full sample (see Table 2), non-minority workers earned 1.26 times as much as minority workers. Non-minority workers earned an annual average of $47,693 and minority workers earned an annual average of $37,719, a difference of almost $10,000. This was a strong and significant difference ($t = 19.83$, $p < .001$). Cohen's d was .51, showing a moderately strong effect size. In rural areas, minority workers earned $33,977, about 88.5% of the income of urban minority workers (see Table 3). This difference was significant but not especially strong ($t = 3.68$, $p < .001$, $d = .24$). Non-minority rural workers, although they earned more than minority workers, earned significantly less than their urban counterparts. Non-minority rural workers earned an average of $40,945 annually compared to non-minority urban workers' earnings of $50,304, a difference of over $9,000 and about 81% of urban workers' earnings. This was a strong and significant difference ($t = 18.06$, $p < .001$, $d = .47$).

A one-way analysis of variance was calculated to determine the relationship between age and earnings for the full sample (see Table 5). A significant difference was found between the mean earnings between groups ($F = 15.986$, $p < .001$). A Scheffé post-hoc analysis revealed that the difference existed between the group of respondents age 66 and up and the other two age groups, age 60 to 65 and age 50 to 59, but not between the two younger groups. When analyzed by location, the least difference between earnings of urban and rural workers was found for workers age 66 and over, with rural workers earning $36,338 and urban workers earning $42,139, a difference of $5,801. This was a significant but not strong difference ($t = 2.76$, $p <$

.01, $d = .26$). Rural workers age 60 through 65 earned about 83% of their urban counterparts, with rural workers earning $39,992 and urban workers earning $48,099. This was a strong and significant difference ($t = 7.28$, $p < .001$, $d = .41$). A strong and significant difference was also found between the earnings of rural and urban workers age 50 through 59. Rural workers earned $40,415 and urban workers earned $47,908, a difference of $7,493 ($t = 13.94$, $p < .001$, $d = .38$). A one-way analysis of variance showed a statistically significant difference in earnings between groups in urban locations ($F = 14.170$, $p < .001$) but not in rural locations. This significant difference in earnings in the urban group was found between the oldest group (age 66 and older) and the other two groups.

4.3 Multivariate Results

OLS multiple regression was conducted to determine how well the full model including rurality, structural factors, individual factors, life course factors, and control variables of minority status and age predicted annual earnings for both the full sample and for urban and rural segments of the sample (Table 6). Additionally, partitioning of unique variance was performed to assess how well the individual variables as well as the model segments predicted annual earnings for the full sample and for urban and rural segments of the sample.

The data were checked against the assumptions of multiple regression prior to analysis. The dependent variable, annual earnings, is an interval variable, and all independent variables are interval, binary, or in the case of age, an ordinal variable treated as an interval variable. Assumptions of normality were met as verified by an examination of the p-plots of standardized residuals. The variance inflation factor was less than 10 in all cases, although the tolerance measures for the education variables ranged from .292 to .400. An examination of the bivariate correlation coefficients for these variables showed them to be less than |.50| in all cases. This level of multicollinearity in these variables was judged to be acceptable for the purposes of this

study. Outliers were examined using standardized residuals. 18 were found to be above 3.0 standard deviations and none were below -3.0 standard deviations. Of the 18 outliers, 14 were located in urban areas and 4 were in rural areas, which is proportionately similar to the urban/rural split of the sample. The maximum Mahalanobis distance for any of the 18 outliers was found to be 22.806, so it was determined that outliers would not have a strong effect on the regression results. Scatterplots were examined for evidence of heteroscedasticity but the spread of observations did not present any concerns. Additionally, the scatterplots demonstrated an apparently linear relationship between the variables.

Full model.

The full model (see Table 6) accounted for about 40% of the variance in earnings (adjusted R^2=.401, $p < .001$). In the full model, rural residence resulted in $6,541 less in annual earnings for older workers compared to mean earnings of workers in urban areas ($p < .001$). Workers in the goods sector earned a premium of $1,187 over the earnings mean of those in the service sector ($p < .05$). Jobs in the primary occupation sector (high skill jobs) were worth $9,895 more than mean earnings for jobs in the secondary (low skill) occupational sector ($p < .001$). Workers employed in occupations in which more women are employed than men were penalized by $3,871 ($p < .001$) compared to the earnings mean for workers in occupations in which there are equal numbers of men and women or more men than women. Increasing levels of education showed significant benefit to workers. Compared to the mean earnings of workers without a high school diploma, workers with a high school diploma earned a premium of $7,222 ($p < .001$) more in earnings, those with some college earned $13,228 more ($p < .001$), those with a four year college degree earned $23,503 more ($p < .001$), and those with a graduate degree earned $33,877 more ($p < .001$). In the full model, sex carried the heaviest earnings penalty of

any variable, with women earning $7,786 less than the mean for men ($p < .001$). Workers who had never married or had been married but were not currently married earned statistically significantly less compared to married workers. Those who had never married earned $5,375 less than the mean for married workers ($p < .001$) and those who had been married but were not currently married earned $2,166 less than the mean for married workers ($p < .001$). Workers who lived with more than one other family member earned slightly more ($683) than the mean earnings of those who lived with just one or no other family members, but this difference was not significant. Results for control group variables showed that race resulted in a greater earnings penalty than age in this restricted-age sample. Minority workers had an earnings penalty of $5,350 ($p < .001$) compared to the mean for non-minority workers, but as age increased, workers earned $1,512 less ($p < .001$) for each ordinal level of increase.

Rural and urban comparison.

With the exception of industry sector, rural residents were penalized more than urban residents in structural model segment variables (see Table 6). Rural residents working in the goods sector earned a slightly higher premium ($1,471) over the mean for service sector workers than did urban residents working in the goods sector ($963), but neither of these premiums were statistically significant. However, urban workers in primary occupational sector jobs had an earnings premium of $10,475 ($p < .001$) over the mean earnings of workers in the secondary sector compared to a $8,265 ($p < .001$) premium for rural workers in the primary sector over the mean earnings of workers in the secondary sector. The modified Chow calculation ($z = 2.694$) verified that these earnings premiums were significantly different from each other. Urban workers were penalized by $3,567 ($p < .001$) for working in jobs with a predominance of women compared to the mean for jobs in neutral or male-dominated occupations, and rural workers in

the same type of work were penalized by $4,531 ($p < .001$). However, there was no statistically significant difference between the urban and rural worker pay penalty on this variable.

In the individual factors model segment, the premium earned by rural workers with a high school diploma or higher compared to the mean earnings of rural workers with less than a high school diploma was smaller at all levels of educational attainment compared to their urban counterparts. Having a high school diploma provided an earnings premium of $8,163 ($p < .001$) for urban workers compared to the mean for the reference group, about 1.8 times the earnings premium of $4,543 for rural workers ($p < .001$). The modified Chow calculation demonstrated that this was a statistically significant difference between the two groups ($z = 2.463$). Urban workers with some college earned $14,224 more ($p < .001$) compared to the mean for the reference group. Rural workers with some college earned $10,341 more ($p < .001$) compared to the mean for the reference group, or about 72% of the urban worker premium. The difference between urban and rural workers' earnings on this variable was statistically significant (z=2.527). Urban workers with a four-year college degree earned a premium of $24,208 ($p < .001$) compared to the mean of the reference group while rural workers earned a premium of $21,617 ($p < .001$) compared to the mean of the reference group, or almost 90% of the urban worker premium. This was the only educational variable in which there was not a statistically significant difference between the earnings boost for urban and rural workers. Finally, urban workers with a graduate degree earned a premium of $35,180 ($p < .001$) compared to the mean of the reference group. Rural workers with a graduate degree earned a smaller premium of $29,560 ($p < .001$), or 84% of the premium earned by urban workers in this group. The modified Chow calculation demonstrated a statistically significant difference between these two groups on this variable ($z = 2.947$).

In the life course model segment, sex was the only variable in which rural workers did not have a larger earnings penalty than urban workers. Female urban workers had a slightly larger earnings penalty of $7,981 ($p < .001$) compared to the mean earnings for men than female rural workers' earnings penalty of $7,419 ($p < .001$) compared to the mean earnings for male rural workers. This small difference between the groups was not significant. The presence of more family members created an earnings premium of $1,113 ($p < .05$) compared to the mean of the reference group for urban workers but a $501 penalty for rural workers. The rural result was not statistically significant. Marital status resulted in smaller earnings penalties for urban workers than for rural workers. Urban workers who were never married earned $4,472 ($p < .001$) less than the mean earnings of married workers, and rural workers who were never married earned $9,324 ($p < .001$) less than the mean earnings of married workers, more than twice the size of the urban penalty. The modified Chow calculation demonstrated a statistically significant difference between urban and rural workers on this variable ($z = 2.857$). Urban workers who had been married but were not currently married were penalized by $1,806 ($p < .01$) compared to the mean earnings of married workers. Rural workers who had been married but were not currently married were penalized by $3,107 ($p < .001$) compared to the mean earnings of married rural workers. However, there was not a statistically significant difference between the rural and urban groups.

This study used two control variables, minority status and age. Minority status resulted in a smaller earnings penalty for rural workers than for urban workers. Minority urban workers earned $5,764 ($p < .001$) less than the mean earnings of non-minority urban workers. Minority rural workers were penalized by $3,128 ($p < .01$) compared to the mean for non-minority rural workers, or just slightly more than half the urban penalty. The modified Chow calculation

verified a statistically significant difference between urban and rural workers on this variable (z = -2.389). Rural workers were also penalized less for increasing age than urban workers. Age was a significant factor in the urban model, with workers losing $1,722 for every increase in age level ($p < .001$). Rural workers lost $917 for every increase in age level, or about 53% of the urban penalty. However, this result was not statistically significant.

The adjusted R^2 for the complete model for the full sample is .401 ($p < .001$), indicating about 40 percent of the variance in annual earnings for workers age 50 and older is explained by the combination of these variables. When the impact of rural location alone is removed from the regression equation, adjusted R^2 is reduced by .015 to .386. When the structural segment variables alone are removed, adjusted R^2 declines by .051 to .350. When the individual model segment variables alone are removed, adjusted R^2 declines by .144 to .257. When the life course variables alone are removed, adjusted R^2 declines by .028 to .373. Finally, when the control variables alone are removed, adjusted R^2 declines by .009 to .392. In the full model, location accounts for about 5.6 percent of the unique variance in annual wages, the structural factors model segment for about 16.5 percent, the individual factors model segment for about 64.8 percent, the life course factors model segment for about 9.4 percent, and control variables of race and age for about 3.4 percent. The individual factors model segment has a much greater impact on annual earnings of older workers than any of the other model segments, and rurality alone has very little impact (see Figure 2).

When evaluating this model by location, the analysis still shows the dominance of education in explaining the variance in earnings of older workers. However, the percentages are slightly different between urban and rural workers. The adjusted R^2 for the complete model for urban workers is .395 ($p < .001$), so almost 40 percent of the variance in earnings is explained by

the combination of these variables, as in the full sample. When the structural variables alone are removed from the equation, adjusted R^2 drops by .052 to .343. When only the individual segment variables are removed, adjusted R^2 declines by .148 to .247. When the life course model segment variables alone are removed, adjusted R^2 drops by .027 to .369. Finally, when the control variables alone are removed from the equation, adjusted R^2 declines by only .011 to .385.

The structural model segment alone accounts for 17.4 percent of the unique variance in annual wages for urban workers, the individual factors model segment alone accounts for 69.1 percent of the unique variance, the life course model segment alone accounts for 9.1 percent of the unique variance, and the control variables alone account for 4.2 percent of the variance (see Figure 3).

For rural workers, the adjusted R^2 for the complete model is .368 ($p < .001$), so 36.8 percent of the variance in earnings is explained by the combination of these variables, slightly less than in the full sample or in the urban sample. When the structural segment variables alone are removed from the equation, adjusted R^2 declines by .052 to .316. If the individual segment variables alone are removed, adjusted R^2 drops by .143 to .225. When only the life course segment variables are removed, adjusted R^2 declines by .035 to .333. Finally, when just the control variables are removed from the equation, adjusted R^2 declines by only .002 to .366, a nearly negligible amount.

The structural model segment alone accounts for 18.8 percent of the unique variance in annual wages for rural workers, the individual factors model segment alone accounts for 65 percent of the unique variance, the life course model segment alone accounts for 15 percent of the unique variance, and the control variables alone account for 1.3 percent of the variance (see Figure 4). Although higher levels of education translate into higher earnings in all samples, the

importance of educational variables as predictors of older workers' earnings is less for rural workers than for urban workers. However, the importance of life course variables as predictors for rural workers' earnings is greater than for urban workers, especially for workers who have never married. Although the impact of the control variables is small for both groups, race is a more important predictor of earnings for older urban workers than for older rural workers.

CHAPTER 5

DISCUSSION

This study examined the impact of rural residence on the earned income of older adults and the relationship of rural residence to possible structural, individual, and life course determinants of income. Using a sample of full-time workers age 50 and older drawn from the 2009 Current Population Survey, explanations of income based upon theories of dual economy, labor market segmentation, occupational sex segregation, human capital, rational choice, and the life course perspective were explored for both the full sample and for rural and urban workers. The research results found clear differences in income between rural and urban older workers, and differences by location in the predictive power of the segments in the proposed model. Strong support was found for the hypothesis that rural older workers have lower wage and salary income than urban older workers. Overall, urban older workers earned more than rural older workers in every condition except one.

5.1 Structural factors model segment

Structural factors based in economic theory were found to have a significant impact on income of older workers, but played less of a role in income for urban workers than for rural workers. Overall, the industrial location of the worker's last job as defined by dual economy theory (Averitt, 1968; Beck, et al., 1978; Lord & Falk, 1980) had the least impact of any structural variable on income (see Table 2). However, there were large differences in income between urban and rural workers employed in each of these industrial sectors (see Table 3). These findings may be attributable to changes in the economic structure of United States industry: "core" industries in this country are no longer exclusively goods-related but increasingly related to technology, communication, and finance, and these businesses are more

likely to locate in urban locations where highly skilled and highly educated workers are available (Miller, 2009). In addition, the economies of urban areas are more diversified than the economies of rural areas, and a more diversified economy should reduce the effects on income of structural factors. Rural workers are also more vulnerable than urban workers to the effects of offshoring of jobs. To the extent that higher-paying manufacturing industries relocate to offshore locations where labor is plentiful and cheap, it is likely that rural workers will suffer more of a negative income effect than urban workers because of fewer available alternative jobs at the same level of pay (Drabenstott & Henderson, 2006; United States Department of Agriculture Economic Research Service, 2010; Whitener & Parker, 2007).

Labor market segmentation theory predicts that occupational location and occupational sex segregation contribute to differences in income by limiting the worker's access to higher-income jobs (Doeringer & Piore, 1975; Kalleberg & Sorensen, 1979; Piore, 1983). The results of this study provide support for these explanations. The occupational location of the worker's last job had by far the largest impact on income in the full sample of any of the three structural variables, with workers in the primary occupational sector earning more than $1.50 for every dollar earned by workers in the secondary occupational sector (see Table 2). This difference was most pronounced for urban workers, which may be the result of greater opportunity at the high end of high-skill jobs compared to rural workers. The income differences between rural and urban workers were strongest in white collar occupations, both high and low skill (see Table 3). Again, this may be due to more opportunity for urban workers to access higher-paying white collar jobs (Miller, 2009). The greater upward range of earnings for urban workers found in this study supports this inference (see Table 1).

Occupational sex segregation also contributed to a difference in income in the full sample and between urban and rural older workers. In the full sample, workers in neutral occupations or those dominated by men earned more than those in occupations dominated by women (see Table 2). Urban workers in each segment earned more than rural workers, even though a greater proportion of workers in the rural segment were employed in neutral or male-dominated occupations (see Table 3). This finding may reflect a difference in the location of jobs in the neutral or male-dominated segment. For rural workers, this may mean lower-paying manufacturing, mining, or agricultural occupations, but for urban workers, this may include higher-paying jobs in science, technology, or the professions (Gibbs, Kusmin, & Cromartie, 2005). Overall, the hypotheses relating to structural factors were supported by the findings of the study, and the rural penalty hypothesis was supported in all conditions.

5.2 Individual factors model segment

Strong support was found for the relationship between the individual factors model segment and earnings for older adults. Higher levels of education and work skills provide opportunity for workers to access higher paying jobs, and provide a means of worker movement between high skill and low skill jobs, or from the "bad job" occupational segment to the "good job" occupational segment (Schultz, 1961; Smith, 2010). Using educational attainment as a proxy for investment in human capital, it was predicted that workers with higher levels of education would have higher earnings than workers with lower levels of education. For both the full sample and for urban and rural samples, income increased with every level of educational attainment (see Table 4), and this model segment was by far the strongest predictor of income for older adults in the full sample and the rural and urban samples. An interesting finding was that

this segment is the only segment in which rural workers' income was greater than urban workers' income: for workers without a high school diploma, urban older adults earned slightly less than rural older adults (see Table 4). It seems likely that when the older adults in this sample started work, more opportunities existed in rural areas for work that did not require a high school diploma. Although income increases by level of educational attainment in all samples, the dollar amount of increase for each level is lower in the rural sample than in the urban sample, with much smaller increases in the rural sample for having a high school diploma and for having a graduate degree. Other than for workers without a high school diploma, urban workers earned more for each level of educational attainment than rural workers, with the largest difference in the amount earned by workers with a graduate degree. This large difference may reflect the greater availability of jobs that require this level of education in urban areas (Markley & McNamara, 1995). For the individual factor model segment, the rural penalty hypothesis was supported in all but one level of educational attainment.

5.3 Life course factors model segment

Mixed support was found for the impact of life course factors on the earnings of older adults. The life course perspective suggests that women will earn less than men because of the impact of life course choices which interrupt their careers and result in less opportunity for promotion and an uninterrupted upward earnings curve (George, 1993; Hatch, 2000; D. P. Hogan, 1985). This should be especially true for women who are older because they are positioned farther along their career trajectory which would have already accommodated the growth of a family. Women earned significantly less than men in the full sample, and rural men and women earned significantly less than urban men and women (see Tables 2 and 3).

Based on the life course perspective, it would be expected that people who have family responsibilities would have lower income than those who do not have family responsibilities as a result of absence from work to attend to family responsibilities during the life course (D. P. Hogan, 1985). However, in the full sample, it was found that workers with fewer than 3 persons in the family earned less than those with 3 or more persons in the family. For women in the full sample, there was no real difference in income regardless of family size. When comparing women with men, the picture changes. Women with family responsibilities earned only about 76% of the income of men with family responsibilities. One explanation for this result consistent with the life course perspective is that women in this age group with family responsibilities have had more interruptions in their work life than men with similar responsibilities, and therefore have had less opportunity for a rising earnings trajectory. Rural workers in both family conditions earned about 85% of their urban counterparts, lending support to the rural penalty hypothesis.

The life course perspective suggests that marital status will have an impact on earnings, and that women will experience more of a negative impact because marriage creates more career interruptions for women than for men (D. P. Hogan, 1985; Moen & Orrange, 2002). In the full sample, workers who were married significantly outearned their unmarried counterparts (see Table 2). However, when married men and women are compared, married men earned $1.30 for every dollar that married women earned. In the full sample, women who never married earned slightly more than women who married, but this difference was not meaningful. When urban and rural differences are examined, all rural workers earned significantly less than urban workers regardless of marital status (see Table 3). The greatest penalty was for rural workers who had never married, who earned about 25% less than never married urban workers. This was a much

higher rural penalty than for workers who were married or had ever been married. Rural workers who never married also earned only 76 cents for every dollar earned by married rural workers, compared to urban workers who earned about 85 cents for every dollar earned by married urban workers. In all life course variables, rural workers earned less than urban workers, lending support to the rural penalty hypothesis. Overall, the life course segment was a better predictor of income for the rural sample than for the urban sample.

5.4 Control factors model segment

Two control variables, minority status and age, were examined for their impact on income. It was predicted that minority status would result in lower income for older workers and that increasing age would result in declining income for older workers. Both hypotheses were supported by the results. In the full sample, older minority workers earned about 79 cents for every dollar earned by non-minority workers (see Table 2). Both minority and non-minority older adults earned less in rural locations than in urban locations, providing support for the rural penalty hypothesis, but the earnings penalty of minority status was much greater in the urban sample than in the rural sample, with urban minority workers earning 76 cents for every dollar earned by non-minority workers compared to rural minority workers earning 83 cents for every dollar earned by non-minority workers (see Table 3). This effect may be a result of the greater proportion of minority status workers in urban locations (see Table 1). In this sample of older workers, 42.3% of rural workers with high school diplomas or less were minorities. By contrast, 80.9% of urban workers with high school diplomas or less were minorities. More than 40% of urban workers in the lowest-paying occupational sector of blue collar, low skill jobs were minorities compared to 19% in rural locations. One explanation for the greater earnings penalty for older urban minority workers may be that lower educational attainment has resulted in

minority workers in urban areas being sorted into the lowest paying jobs, but that in rural areas, lower educational attainment does not have the same impact on occupational sorting.

For this study, age was split into three groups based upon three different stages in work life: late career leading up to the early retirement age of 59, the years immediately pre-retirement, and post-traditional retirement age. In both the full sample and the urban sample, increasing age had a negative impact on income. In the rural sample, age did not have a significant negative relationship to income, but there was a greater dollar decline in income in the oldest age group compared to the decline between the two younger groups (see Table 5). However, at all ages rural workers earned less than urban workers, supporting the rural penalty hypothesis.

5.5 Limitations of study

One of the most important limitations in this study is the use of the CPS dataset. This dataset provides cross-sectional data, and as a result, no conclusions can be drawn about trends in income over the life course of respondents. Longitudinal data are necessary to be able to determine the career-spanning impacts of the different model segments. Additionally, the variables available in the CPS determined the proxies used for certain model segments and therefore limit the inferences that can be made from the results. Variables for industry and occupation only relate to the respondent's job in the last year, and there is not a variable for length of time on the job. As a result, length of experience with a particular occupation or industry cannot be used as an additional human capital indicator, nor is it possible to determine whether older workers have been working continuously or if they have returned to work in a lower-paying job or industry after retirement or separation from a different career. This limits the ability to determine the extent of underemployment in this cohort. The number of persons in the

family variable only recognizes the number of people at the time of the survey and does not reflect the number of family members during a life course, so this variable may not accurately reflect the impact of family responsibilities of a worker during a career on income.

Economic changes in the United States also must be recognized when making inferences about the results. The structure of the global economy has changed from dependence on a backbone of old economy industries such as heavy manufacturing to dependence on new economy industries including communication, technology, and finance. This change calls into question the fundamental assumptions made by structural theorists about industries and occupations. In addition, economic recession and resulting industry and organizational restructuring, especially since 2000, increases the likelihood that an older worker is no longer working in the same occupational or industry sectors as in earlier years of a career.

Finally, the single-cohort design of this study limits the examination of the income effects of the variables on income to workers age 50 and older. This limits the ability to generalize the results to other cohorts, either younger or those in the future. The majority of workers in the age 50 and over cohort are likely to be at the highest earnings point in their careers, which is not the case for younger workers. For this sample, rural race/ethnicity effects may be limited by the small number of minorities. However, younger samples of rural workers would reflect a much different race/ethnicity mix because of changes resulting from immigration. The mix of marital statuses may be dramatically different in a younger cohort, and as a result, the income effects of marital status found in this study may not apply. Additionally, it would be useful to be able to make comparisons to workers at younger ages to determine if the income relationships seen in the older group of workers hold true for younger workers who have begun careers at a different time in a different economic environment.

CHAPTER 6

CONCLUSION

For older working adults, the level of earnings is important not only for the expenses of daily living. It also has a direct impact on the amount of retirement income available in the form of Social Security income, retirement plans, and savings. If older rural workers are disadvantaged in the level of work income, they will also be disadvantaged in the level of retirement income. The level of retirement income is of particular concern in rural areas because rural areas generally have higher proportions of older residents than urban areas as a result of outmigration of younger workers and longer life spans of older residents (Miller, 2009; United States Department of Agriculture, 2007). Rural older adults tend to have more dependence upon Social Security income compared to urban older adults, and poverty rates are higher in rural areas than urban areas (Miller, 2009; United States Department of Agriculture, 2007). The transition into poverty for older adults is closely linked to educational attainment, occupation, sex, rural location, and for women, marital status (Glasgow, 1993; McLaughlin & Jensen, 2000), many of the same factors which were found to influence income among older workers in this study. Almost half of the rural sample in this study had a high school diploma or less, compared to about 37% of the urban sample; only about 35% of the rural sample worked in the highest paying white collar high skill jobs compared to about 42% of the urban sample, clearly placing rural workers in a position of greater risk of poverty.

6.1 Implications for policy and further study: older rural workers

For older rural workers closest to retirement, policies that affect the remaining years of work are less important than policies that affect the years of retirement. For any older worker, funding retirement is a critical concern. For older rural workers with lower incomes and fewer

benefits, the preservation of a safety net is imperative. Two key concerns are the availability of income from Social Security payments and health insurance benefits through Medicare. Both of the funds that support these social benefits have been depleted as a result of longer lives of their beneficiaries. Maintaining adequate funding of these benefits or developing replacement benefits is a central governmental policy concern.

Health care issues of affordability and accessibility are also of critical concern for rural workers. Health care is expensive everywhere, but in rural areas the costs are driven higher by poorer health of residents, a shortage of providers of all types of health services, and inadequate public transportation access to locations where services are located. Continued research into and implementation of innovative health care delivery systems using biosensors and communication technologies will allow patients in remote locations to have access to more regular health care; online communication with pharmacies will allow medications to be prepared and delivered even if the patient has no regular access to transportation.

The use of technology to facilitate service delivery depends upon available infrastructure in rural areas to support these systems. The Broadband Initiatives Program, part of the American Recovery and Reinvestment Act of 2009, provides loans and grants for the express purpose of rapidly expanding broadband capability in rural areas of the United States (United States Department of Agriculture, 2011), including programs specifically for the development of telemedicine capability and telecommunications infrastructure. The development of cost-effective safety net services such as transportation in remote areas may require several local communities to work together to provide services. Collaborative efforts of small local governments can be a challenge unless direct benefit can be shown and effective public support can be developed.

Younger workers in this sample will have to work longer in order to be eligible for full Social Security benefits (Social Security Administration, 2011), and it seems likely that the age for Medicare eligibility will increase in order to protect the Medicare trust funds. In addition, workers have been required to assume more of the financial risk associated with funding their pension plans. As a result, it is likely that these workers will expect to work past the traditional retirement age of 65. Policies that support and protect older workers are critical, both at the governmental level and the organizational level. Development of retention strategies and retraining programs will be especially important to keep older workers in place and productive. In the face of less economic diversity in rural locations and the increasing age of the population, these supports will be especially important.

6.2 Implications for policy and further study: younger rural workers

Because this study addresses income disparities between urban and rural older workers using cross-sectional data, results cannot be generalized to younger cohorts. However, it would be valuable to know what differences exist between younger and older cohorts in the sources of the rural income penalty. Studies using longitudinal data sources would allow a more complete picture of the worker's life course in order to determine whether there are particular points at which income disparities are created, minimized, or maximized. In addition, the economic and cultural environments affecting the workers in this study may be much different from those affecting younger workers. Economic shocks may affect younger workers differently from older workers, and marital status may have a different impact on the incomes of younger workers than older workers. Future cross-sectional studies should examine the rural penalty for other age groups.

A key policy question affecting the income of younger rural workers is how to make rural areas better for business. A clear demand of business in the new economy is more highly educated workers, and rural workers of all ages lag urban workers in educational attainment, particularly at the college degree level (United States Department of Agriculture, 2003). Without highly educated workers to fill jobs, the chances of making rural locations attractive to new business are small. Europe has provided a model for the positive economic impact of an aggressive focus on improving the education of rural residents with Ireland being notable for transforming itself from a low-income rural economy to a leader in the new economy prior to the recent global recession by a focus on developing a well-educated workforce (Organisation for Economic Co-operation and Development, 2009).

An expansion of affordable and accessible higher education options, including more online class delivery and satellite campuses from lower-cost state colleges and universities, will be key to improving the educational attainment levels of rural residents. Developing the technology infrastructure of rural communities is basic to economic development, not only for attracting new businesses but also for entrepreneurial efforts to flourish and for existing businesses to grow, all of which will contribute to rising incomes of rural workers.

This study explored the relationship of rural residence to the earnings of older working adults and the relationship of rural residence to three predictive models of income: structural, individual, and life course models. The research found clear differences in earnings between rural and urban older workers as well as differences in the predictive power of the three different model segments based upon location. Strong support was found for the hypothesis that rural older workers earn less than urban older workers. Understanding the sources and magnitude of income disparity between rural and urban workers are important in order to plan at macro- and

microeconomic levels for the impact of lower incomes on later life, as well as to develop and implement effective strategies for reducing the level of income disparity for workers at all ages.

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APPENDIX

Table 1

Descriptive Statistics for Respondents' Characteristics by Location

Variables	Full sample (*n* =10,178)	Urban (*n*= 7,599)	Rural (*n*= 2,579)
Dependent variable			
Annual earnings			
M	$ 45,677	$ 47,571	$ 40,096
SD	$ 22,754	$ 23,378	$ 19,783
Range	$139,700	$139,700	$118,368
Independent variables			
Structural factors model segment			
Industrial location of last job			
Goods	21.60%	18.99%	29.30%
Service	78.40%	81.01%	70.70%
Total	100.00%	100.00%	100.00%
Occupational location of last job			
White collar high skill	39.80%	41.53%	34.86%
Blue collar high skill	16.50%	15.08%	20.82%
White collar low skill	25.50%	26.54%	22.26%
Blue collar low skill	18.20%	16.84%	22.06%
Total	100.00%	99.99%	100.00%
Occupational sex segregation of last job			
M	1.01	0.94	1.03
SD	0.65	0.66	0.64
Range	2.00	2.00	2.00
Occupational sex segregation of last job			
Neutral or male dominated occupation	52.40%	50.90%	56.90%
Female dominated occupation	47.60%	49.10%	43.10%
Total	100.00%	100.00%	100.00%
Individual factors model segment			
Educational level			
Less than high school diploma	8.46%	8.49%	8.41%
High school diploma	31.33%	28.34%	40.16%
Some college	28.72%	28.90%	28.18%
Bachelor's degree	19.75%	21.68%	14.07%
Graduate degree	11.73%	12.60%	9.19%
Total	99.99%	100.01%	100.01%
Life course model segment			
Sex			
Female	47.45%	48.03%	45.72%
Male	52.55%	51.97%	54.28%
Total	100.00%	100.00%	100.00%
Number of persons in family			
M	2.34	2.37	2.25
SD	1.22	1.25	1.09
Range	12.00	11.00	12.00
Marital status			
Married	69.42%	67.65%	74.65%
Ever married	23.00%	23.77%	20.74%
Never married	7.57%	8.58%	4.61%
Total	99.99%	100.00%	100.00%
Control variables			
Age			
M	56.45	56.48	56.38
SD	5.51	5.52	5.48
Range	34.00	34.00	34.00
Age group			
Ages 50-59	75.90%	76.10%	75.40%
Ages 60-65	17.80%	17.50%	18.70%
Ages 66 and older	6.30%	6.40%	5.90%
Total	100.00%	100.00%	100.00%
Race			
Minority	20.22%	22.95%	12.18%
Not a minority	79.78%	77.05%	87.82%
Total	100.00%	100.00%	100.00%

Table 2

Mean Differences in Earnings for Binary Model Segment Variables

Variables by model segment	*M*	Difference	*t*		Cohen's *d*
Structural factors model segment					
Industrial location of last job					
Goods	$ 46,563				
Service	$ 45,432	$ 1,131	(2.06)	*	0.05
Occupational location of last job					
Primary (white collar and blue collar high skill)	$ 53,667				
Secondary (white collar and blue collar low skill)	$ 35,350	$ 18,317	(45.69)	***	1.08
Occupational sex segregation of last job					
OSS=1 or lower	$ 48,882				
OSS= greater than 1	$ 42,145	$ 6,737	15.20	***	0.33
Life course factors model segment					
Sex					
Female	$ 40,027				
Male	$ 50,779	$ (10,752)	24.73	***	0.54
Number of persons in family					
1-2 persons in family	$ 44,826				
3 or more persons in family	$ 47,569	$ (2,743)	(5.52)	***	(0.12)
Number of persons in family (women)					
1-2 persons in family	$ 39,999				
3 or more persons in family	$ 40,104	$ (105)	(0.16)		(0.01)
3 or more persons in family					
Men	$ 52,671				
Women	$ 40,104	$ 12,567	15.79	***	0.62
Marital status (men and women combined)					
Married	$ 47,703				
Not married	$ 41,075	$ 6,629	(14.09)	***	0.31
Marital status (women)					
Married or have been married	$ 39,912				
Never married	$ 41,332	$ (1,420)	(1.21)		(0.07)
Marital status (men and women separate)					
Married (men)	$ 52,972				
Married (women)	$ 40,337	$ 12,635	24.41	***	0.65
Control variables					
Race					
Minority	$ 37,719				
Not a minority	$ 47,693	$ 9,974	19.83	***	0.51

Note. *** $p < .001$; ** $p < .01$; * $p < .05$

Table 3

Mean Differences in Earnings for Model Segment Variables by Location

	Urban *M*	Rural *M*	Difference	*t*	Cohen's *d*
Mean annual earnings	$ 47,571	$ 40,096	$ 7,475	15.81 ***	0.38
Variables by model segment					
Structural factors model segment					
Industrial location of last job					
Goods	$ 49,526	$ 40,904	$ 8,622	9.22 ***	0.34
Service	$ 47,112	$ 39,761	$ 7,351	13.23 ***	0.40
Occupational location of last job					
Primary	$ 55,872	$ 47,059	$ 8,813	13.52 ***	0.43
Secondary	$ 36,737	$ 31,351	$ 5,386	10.09 ***	0.36
White collar high skill	$ 59,624	$ 49,799	$ 9,825	11.63 ***	0.45
Blue collar high skill	$ 45,539	$ 42,477	$ 3,061	3.28 ***	0.18
White collar low skill	$ 39,600	$ 32,697	$ 6,903	9.27 ***	0.45
Blue collar low skill	$ 32,226	$ 29,993	$ 2,233	2.95 **	0.16
Occupational sex segregation of last job					
OSS=1 or lower	$ 51,195	$ 42,791	$ 8,403	12.52 ***	0.41
OSS= greater than 1	$ 43,816	$ 36,534	$ 7,282	11.37 ***	0.40
Individual factors model segment					
Educational level					
Less than high school diploma	$ 28,188	$ 30,488	$ (2,299)	-1.86	-0.14
High school diploma	$ 38,087	$ 33,547	$ 4,540	7.25 ***	0.28
Some college	$ 45,349	$ 39,883	$ 5,466	7.14 ***	0.31
Bachelor's degree	$ 57,369	$ 51,516	$ 5,853	4.85 ***	0.29
Graduate degree	$ 70,190	$ 60,673	$ 9,517	6.11 ***	0.46
Life course factors model segment					
Sex					
Female	$ 41,812	$ 34,502	$ 7,310	12.24 ***	0.43
Male	$ 52,895	$ 44,809	$ 8,086	11.15 ***	0.39
Number of persons in family					
1-2 persons in family	$ 46,787	$ 39,556	$ 7,231	13.13 ***	0.37
3 or more persons in family	$ 49,189	$ 41,619	$ 7,570	8.20 ***	0.37
Marital status					
Married	$ 49,895	$ 41,854	$ 8,041	14.28 ***	0.40
Ever married	$ 42,865	$ 35,582	$ 7,284	7.74 ***	0.40
Never married	$ 42,286	$ 31,925	$ 10,361	5.63 ***	0.59
Control variables					
Age					
50-59 years	$ 47,908	$ 40,415	$ 7,493	13.94 ***	0.38
60-65 years	$ 48,099	$ 39,992	$ 8,107	7.28 ***	0.41
66 years and older	$ 42,139	$ 36,338	$ 5,801	2.76 **	0.26
Race					
Minority	$ 38,394	$ 33,977	$ 4,417	3.68 ***	0.24
Not a minority	$ 50,304	$ 40,945	$ 9,358	18.06 ***	0.47

Note. *** $p < .001$; ** $p < .01$.

Table 4

One Way Analysis of Variance of Earnings by Educational Level by Location

	Full sample	Urban	Rural
Educational level	*M*	*M*	*M*
Less than high school diploma	$ 28,767	$ 28,188	$ 30,488
High school diploma	$ 36,612	$ 38,087	$ 33,547
Some college	$ 43,990	$ 45,350	$ 39,883
BA/BS	$ 56,312	$ 57,369	$ 51,516
Graduate degree	$ 68,302	$ 70,189	$ 60,673
F	880.78 ***	679.56 ***	171.28 ***
N	10,178	7,599	2,579

Note. ***$p < .001$

Table 5

One Way Analysis of Variance of Earnings by Age Levels by Location

	Full sample	Urban	Rural
Age levels	*M*	*M*	*M*
50-59	$ 46,021	$ 47,908	$ 40,415
60-65	$ 45,944	$ 48,099	$ 39,992
Over 65	$ 40,763	$ 42,139	$ 36,338
F	15.99 ***	14.17 ***	3.01
N	10,178	7,599	2,579

Note. ***$p < .001$

Table 6
Ordinary Least Squares Regression Results for Annual Earnings

Variables by model segment	Full Model			Urban			Rural			
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β	Chow *z*[6]
Constant	$36,102 ***	876.359		$34,957 ***	1034.190		$32,693 ***	1551.797		
Rural residence	-$6,541	411.235	-.125 ***							
Structural factors model segment[1]										
Industry sector	$1,187	464.610	.021 *	$963	571.515	.016	$1,471	776.046	.034	
Occupational sector	$9,895	383.222	.216 ***	$10,475	458.099	.222 ***	$8,265	680.026	.208 ***	^
Occupational sex segregation	-$3,871	430.551	-.085 ***	-$3,567	508.134	-.076 ***	-$4,531	798.167	-.113 ***	
Individual factors model segment[2]										
High school diploma	$7,222	696.441	.147 ***	$8,163	841.474	.157 ***	$4,543	1205.111	.113 ***	^
Some college	$13,228	715.525	.263 ***	$14,224	853.805	.276 ***	$10,341	1277.542	.235 ***	^
BA/BS degree	$23,503	769.065	.411 ***	$24,208	905.734	.427 ***	$21,617	1452.400	.380 ***	
Graduate degree	$33,877	857.236	.479 ***	$35,180	1008.806	.499 ***	$29,560	1618.785	.432 ***	^
Life course model segment[3]										
Sex	-$7,786	420.958	-.171 ***	-$7,981	498.848	-.171 ***	-$7,419	770.154	-.187 ***	
Family	$683	398.538	.014	$1,113	470.349	.022 *	-$501	736.579	-.011	
Never married	-$5,375	685.999	-.062 ***	-$4,472	776.947	-.054 ***	-$9,324	1509.580	-.099 ***	^
Ever married	-$2,166	440.889	-.040 ***	-$1,806	523.797	-.033 **	-$3,107	798.469	-.064 ***	
Control variables										
Minority[4]	-$5,350	459.520	-.094 ***	-$5,764	524.599	-.104 ***	-$3,128	970.813	-.052 **	^
Age[5]	-$1,512	304.788	-.039 ***	-$1,722	362.589	-.043 ***	-$917	548.627	-.027	
R^2 (adjusted)			0.401			0.395			0.368	
F			487.381 ***			383.326 ***			116.636 ***	
N	10,178			7,599			2,579			

Note. [1]Industry sector: goods=1, services=0; occupation sector: primary=1, secondary=0; occupational sex segregation: female prevalence=1, neutral or male prevalence=0.

[2]Education level binaries using less than high school diploma as reference group.

[3]Family binary: 3 or more family members=1, 2 or fewer=0. Marital status binaries using married as reference group.

[4]Minority binary: minority=1, not minority=0; [5]age is three level ordinal variable.

[6]Modified Chow *z* calculated between urban and rural; ^ *z* >1.96 or <-1.96.

*p < .05, **p < .01, ***p < .001.

Figure 2. Income Determinants for Workers Over Age 50: Full Sample Partitioning of Variance

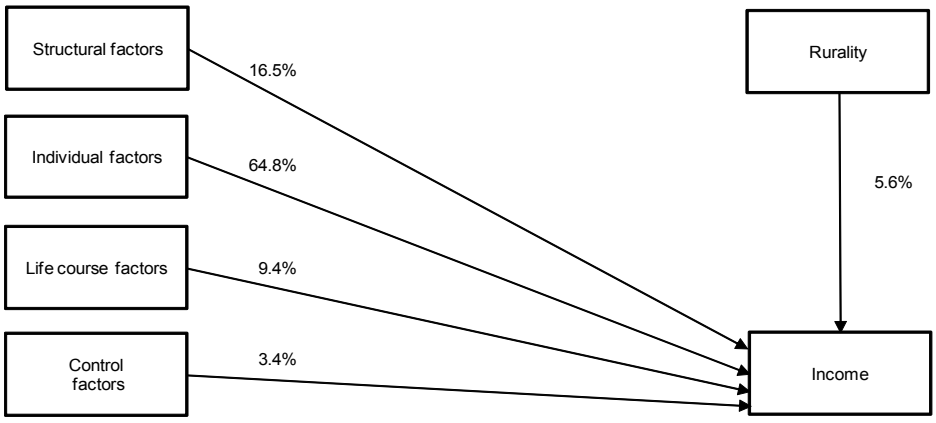

Figure 3. Income Determinants for Workers Over Age 50: Urban Worker Sample Partitioning of Variance

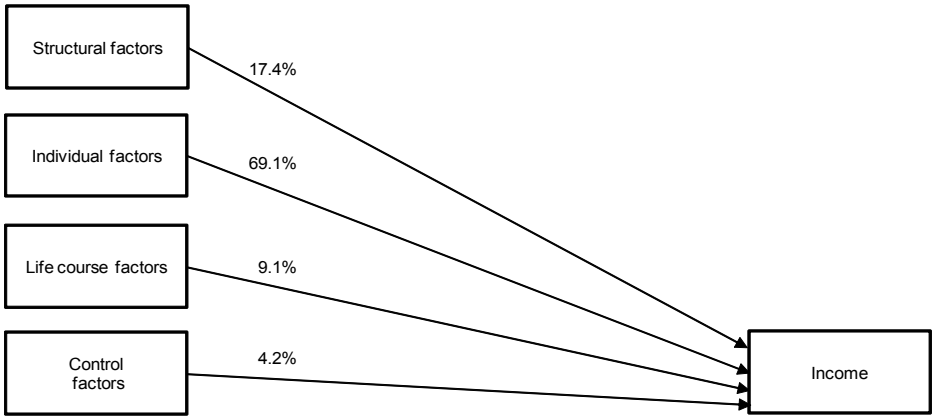

Figure 4. Income Determinants for Workers Over Age 50: Rural Worker Sample Partitioning of Variance