Nonmarket Productivity among Working-Age Disability Beneficiaries: Evidence from the American Time Use Survey

Carrie L. Shandra
Department of Sociology
Core Faculty, Program in Public Health
State University of New York at Stony Brook
Carrie.Shandra@Stonybrook.edu

People with disabilities experience much lower rates of employment than people without disabilities, with substantial federal resources directed toward this population for income maintenance in the form of Social Security Disability Income (SSDI) and Supplemental Security Income (SSI). While administrative and survey data have been crucial for understanding formal employment patterns among working-age disability beneficiaries, less is known about how this population spends their time in other forms of productive behavior that may link them to the paid labor market, contribute to home production, facilitate skill building and social inclusion, or increase their human capital. This study addresses this gap by using 2003-2012 American Time Use Survey data to provide the first nationally representative analysis of time use among working-age disability beneficiaries in the United States. Results indicate that those who do and do not receive SSI/SSDI spend a comparable amount of time in household activities and the distribution of nonmarket work as a percentage of all time use looks similar for beneficiaries and non-beneficiaries. While women spend more time than men in nonmarket work, in general beneficiaries increase their productivity with older age, higher levels of education, and in good health. An alternate measure of assessing nonmarket productivity – the daily estimated replacement wage – suggests a similar pattern of results. In sum, beneficiaries make substantial contributions to productivity, albeit not in the market.

March 24, 2014

Draft – Do not cite without author's permission

Acknowledgements: This research was generously supported by an Emerging Investigator Grant from the Disability Research Consortium.

Nonmarket Productivity among Working-Age Disability Beneficiaries: Evidence from the American Time Use Survey

People with disabilities experience much lower rates of employment than people without disabilities. This disparity is a significant public policy concern, as substantial federal resources are directed toward this population for income maintenance in the form of Social Security Disability Income (SSDI) and Supplemental Security Income (SSI) (Livermore, Stapleton, & O'Toole 2011). While administrative and survey data have been crucial for understanding formal employment patterns among working-age disability beneficiaries, less is known about how this population spends their time in other forms of productive behavior that may link them to the paid labor market (e.g. job searching or other income-generating activity), contribute to home production (e.g. household labor and care work), facilitate skill building and social inclusion (e.g. volunteer work), or increase their human capital (e.g. educational or training activities).

This study addresses this gap by using data from the American Time Use Survey to provide the first nationally representative analysis of time use among working-age disability beneficiaries in the United States. The objectives of this analysis are four-fold: first, to examine differences in detailed time use activities by SSI/SSDI status; second, to estimate differences in the relative time spent in productivity-related activities as compared to nonproductive and tertiary activities; third, to quantify differences in the replacement wage in nonmarket productivity; and fourth, to consider variation in these differentials according to gender, age, education, and self-reported health status.

Disability and Time Use

Existing literature on the time use of working-age people receiving SSI/SSDI is limited. However, survey estimates suggest significant differences in employment, education,

volunteerism, and housework between individuals who do and do not receive disability benefits. Time spent in paid work is lower, as results from the 2010 Survey of Income and Program Participation indicate that less than 9% of adults receiving SSI or SSDI were employed compared to 79% of people without disabilities (Brault 2012). Beneficiaries who are employed are also more likely than employed non-beneficiaries to be part-time workers, temporary workers, or independent contractors (Schur 2003). While higher monthly earnings can affect eligibility for (or the size of) cash transfers for disability beneficiaries, only a minority of respondents in the nationally representative National Beneficiary Survey claim this as a reason for not working. Instead, they cite the limitations related to their disability (91%), being discouraged by previous work attempts (26%), and lack of accessibility (24%). Almost one-third of beneficiaries include getting a job, developing new skills, or career advancement as goals, and 27% see themselves working for pay in the next five years – although fewer (16%) believe they can earn enough to stop receiving benefits (Wright et al 2012). Thus, although SSI/SSDI beneficiaries are less likely to be employed and more likely to be nonstandard workers than non-beneficiaries, they are still likely to invest time developing their skills for the labor market.

Previous research suggests that time allocated to education-related activities may also be lower for disability beneficiaries. Those receiving SSI/SSDI are more than two and one-half times more likely to not graduate high school and three times less likely to have at least a Bachelor's degree (US Census Bureau 2012; Wright et al 2012). Myriad barriers to education and vocational training have been documented for people with disabilities (Bounds & Gould; Test et al. 2009; National Council on Disability 2007), and those who are enrolled may also experience limited access to extracurricular and other school-related activities (Neubart, Moon,

Grigal 2004; King et al 2009). In sum, time spent both inside and outside the classroom is likely to be more limited for beneficiaries.

While employment- and education-related time use are important inputs for market production, non-market activities also contribute substantially to Gross Domestic Product (Landefeld, Fraumeni, Vojtech 2009) through the production of tangible goods and services and by investing in the human capital of other individuals (Abraham and Mackie 2005). Analyses of the National Survey of Families and Households in the United States indicates that having a limiting condition is negatively associated with time spent in household labor, although more so for women than for men (South & Spitze 1994). Hook (2004) also finds a negative relationship between limiting conditions and housework among married women in the Australian Time Use Survey. However, analyses of the Spanish Time Use Survey indicate that both men and women with chronic illness or disability spend more time in household production (Pagan 2013), and those from the American Time Use Survey suggest that men with self-reported work limitations spend marginally more time in food preparation as those without work limitations (Meyer and Mok). Thus, disability beneficiaries may be making up for some of their time out of the labor market by investing in nonmarket work.

Another form of nonmarket work – volunteering – has also been shown to facilitate skill-building and social interaction among individuals with disabilities (Miller et al 2002). People with disabilities are underrepresented among the population of volunteers in the United States (Miller, Scheien, and Bedini 2003), and analyses of older individuals suggest mixed results. Freedman and colleagues' (2012) examination of married persons aged 60 and older in the Panel Study of Income Dynamics indicates that people with activity limitations or physical, cognitive, or sensory impairments were significantly less likely to report volunteering in the week prior to

the survey than people without impairments. However, Moen and Flood's (2013) analysis of men and women ages 50-75 in the American Time Use Survey finds that those with work disabilities are no less likely than those without disabilities to participate in volunteer work, but men with disabilities spend less time volunteering when they do participate. More research is needed to examine if these results reflect the time-use patterns of working-age disability beneficiaries.

This research suggests important differences between productivity-related time use among working-age adults who do and do not receive SSI/SSDI. However, differences in time use are also conditioned by other sociodemographic characteristics. Age is negatively associated with time spent in paid work (Krantz-Kent 2005), and positively associated with time spent volunteering (Taniguchi 2007). Level of education is positively associated with market work (Aguiar and Hurst 2007) and volunteering (Taniguchi 2007). Individuals in better health spend more time in housework and paid work than individuals in poorer health (Podor and Hallidary 2012). These factors are important to consider, as SSI/SSDI recipients are typically older, have lower educational attainment, and have poorer health than the general population of working-age adults (author's calculations; SSA 2011; Wright et al 2012). Finally, an extensive literature documents how men and women allocate varying amounts of time in household labor and carework (Bianchi et al. 2012; Milkie, Raley, and Bianchi 2009); therefore analyses are also stratified by sex.

Data and Measures

Data Sources

Data is analyzed from the publically available American Time Use Survey (ATUS), a nationally representative survey sponsored by the U.S. Bureau of Labor Statistics that collects

information on daily time use, including sleep and wake activities (Hofferth, Flood, and Sobek 2013; U.S. Bureau of Labor Statistics 2013). Respondents aged 15 and over were chosen randomly from households that had undergone their final interview for the Current Population Survey. The sample was randomized by day such that half the respondents reported on a weekday and half reported on a weekend day. Sample weights were later applied to correctly represent each day of the week. Computer-assisted telephone interviewing was used to ask respondents to provide demographic information, as well as a detailed account of their activities during a 24-hour period beginning at 4:00 am. Pooled data from 2003-2012 results in a total initial sample size of 136,960.

While the ATUS includes detailed information on time use and basic sociodemographic characteristics, it does not collect data on SSI/SSDI receipt. This information, in addition to other income and health data, is included in the March Supplement (also known as the Annual Social and Economic Supplement) of the CPS and thus can be matched with ATUS by linking roster identification and sociodemographic characteristics. The construction of this matched data allows for the identification of disability beneficiaries. Not all households in the CPS are included in the March Supplement due to the sampling frame of the CPS. While this reduces the sample size by approximate two-thirds, adjusted probability weights can be applied so that the data remains nationally representative (ATUS-X).

The final sample is restricted to 32,619 individuals aged 18-64 as of both the March Supplements (when SSI/SSDI information was collected) and the ATUS (when time use information was collected) – 4.6% of whom report receiving SSI or SSDI as a result of their own disability. All results are weighted to represent each day of the week and to adjust for inclusion in the matched CPS-ATUS sample.[1]

Disability and Sociodemographic Measures

SSI and SSDI capture the population of individuals with disabilities who meet the eligibility criteria for cash assistance, and thus whose limitations are severe enough to prevent them from performing any substantial gainful activity (Burkhauser, Houtenville, Tennant 2014). Information about SSI/SSDI receipt was collected in the March Supplement of the CPS, such that respondents who identified Social Security or Supplemental Security as a source of income for the previous year were subsequently asked, "What were the reasons you were getting [Social Security Income or Supplemental Security Income] last year?" Those that responded "disabled" were coded as beneficiaries.

Health information is only sporadically assessed in the American Time Use Survey as part of supplemental modules; however, information about self-reported health status – which has been shown to be a valid proxy for health status (Miilunpalo et al 1997) – is collected in the March Supplement of the Current Population Survey. Respondents are asked, "Would you say [your] health in general is excellent, very good, good, fair, or poor?" Respondents receiving SSI/SSDI report significantly lower health than non-beneficiaries, with only 2.5% reporting "excellent", 5.3% reporting "very good", 19.9% reporting "good", 39.8% reporting "fair", and 32.6% reporting "poor" – compared to 32.9%, 36.2%, 24.1%, 6.2%, and 1.7% of non-beneficiaries, respectively.

Education is measured as the respondent's highest completed level of education and includes the three categories of "less than high school", "high school degree" (including General Educational Development and some college coursework), and "bachelor's degree or higher". This information is not updated at the time of the ATUS interview, and is therefore drawn from the last CPS interview. SSI/SSDI beneficiaries report lower levels of education than non-

beneficiaries, with 27.9% reporting less than high school, 62.8% reporting a high school degree, and 9.3% reporting a college degree – compared to 9.5%, 55.7%, and 34.8% of non-beneficiaries, respectively.

Age in years is measured both at the time of the CPS and at the time of ATUS to adequately capture the working-age population. Given the multiple data sources used for these analyses, respondents must report being of working age as of both surveys to be included in the sample. However, the age indicator is constructed as of the CPS interview in order to remain consistent with the other covariates. Five age categories are constructed, corresponding to respondents ages 18-25, ages 26-35, ages 36-45, ages 46-55, and ages 56-64. SSI/SSDI beneficiaries are, on average, older than non-beneficiaries, with 2.7% aged 18-25, 7.9% aged 26-35, 15.7% aged 36-45, 36.4% aged 46-55, and 37.3% aged 56-64 – compared to 10.1%, 23%, 28.2%, 23.6%, and 15.2% of non-beneficiaries, respectively.

Results

The analysis proceeds by examining four questions about disability and the distribution and valuation of time use: How to disability beneficiaries spend their time? What percentage of time do disability beneficiaries spend in nonmarket and market productivity? What is the replacement wage for time spent in nonmarket productivity by disability beneficiaries? And, how do these differ by sex, age, education, health, and compared to non-beneficiaries?

Overall Time Use

Table 1 presents the average number of minutes spent in time use activities according to SSI/SSDI receipt. Data shown are weighted mean minutes, and tests of significance for differences between means (discussed in-text, with results not shown elsewhere) are based on adjusted Wald tests. The ATUS includes 17 major categories in its activity lexicon (Shelley

2005), which are categorized here into nonmarket production (including household activities, caring for and helping household and non-household members, volunteering, and purchasing goods and services), market production (work and education), nonproductive activities (socializing and leisure, sports and recreation, religious, and telephone calls), and tertiary activities (personal care and eating and drinking). Each major category includes a further level of detail in the form of first-tier and second-tier subcategories; first-tier categories are displayed when they offer substantive insights into differences in time use[2] and when more than 2% of SSI/SSDI beneficiaries report spending any time in the subcategory activity. Residual subcategories are combined in these instances, and – when more than 2% of SSI/SSDI beneficiaries report these residual activities – classified according to substantively similar groups or as "other" time use within each major category.[3]

This categorization scheme is based on Pagan's (2013) categorization of disability and time use in the Spanish Time Use Survey and follows Frazis and Stewart's (2011) use of the American Time Use Survey. Like Frazis and Stewart (2011) and Bureau of Labor Statistics reports (e.g. Bureau of Labor Statistics 2013), associated travel time is combined with each corresponding detailed activity category. Unlike Frazis and Stewart (2011), volunteer work is included as a productive activity here as it could have market value (Brown 1999; Salamon, Sokolowski and Haddock 2011) and is considered a productive activity – particularly for those who may be less likely to be in the paid labor force (Hank and Stuck 2008; Moon and Flood 2013). Likewise, time spent in care to non-household children and adults is also included as productive time, as it represents another form of carework.

Time Spent in Market Productivity

As expected, results indicate large differences in market-related productivity between beneficiaries and non-beneficiaries. On average, non-beneficiaries spend 254 more minutes per day in work and 9 more minutes per day in education than non-beneficiaries. The employment gap is larger between male beneficiaries and non-beneficiaries (306 minutes) than between female beneficiaries (203 minutes), although men who receive SSI/SSDI do not spend significantly more time working than women who receive SSI/SSDI. Interestingly, the education gap is larger between female beneficiaries and non-beneficiaries (11 minutes) than it is for male beneficiaries and non-beneficiaries (6 minutes), although women and men who receive SSI/SSDI spend a comparable amount of time in education-related time use.

Time Spent in Nonmarket Productivity

Conversely, beneficiaries and non-beneficiaries look more similar when examining time spent in nonmarket production. They spend a nearly identical amount of time in the major category of household activities (112 minutes for non-beneficiaries and 110 minutes for beneficiaries), irrespective of gender. In relative terms, beneficiaries spend over 98% as much time in household activities as non-beneficiaries. Large differences in subcategories of household activities also do not emerge, with most differences greater than five minutes occurring because beneficiaries spend *more* time in household activities: 7 more minutes in men's food and drink preparation and 5 and 7 more minutes in total and women's housework, respectively. Male beneficiaries spend nearly 6 minutes less time than non-beneficiaries in care of the lawn, garden, and houseplants.

SSI/SSDI beneficiaries spend less total time than non-beneficiaries caring for household members (18 minutes versus 37 minutes, respectively), with this gap mainly attributable to differences in the care of children rather than in the care of adults. This difference is more

pronounced among women than among men, as female beneficiaries spend 28 fewer minutes – and male beneficiaries spend 10 fewer minutes – than non-beneficiaries. Significant differences do not emerge when examining time spent in total care of non-household children and adults.

Beneficiaries do spend significantly less total time volunteering than non-beneficiaries – more specifically, less than half as much. This difference is not significant among women, and female beneficiaries spend more time (6 minutes), on average, than male beneficiaries (2 minutes). Total time spent in consumer purchases (i.e. shopping and related activities) is also lower for beneficiaries, but only significantly so among women. Women who receive SSI/SSDI spend nearly 14 minutes less time in consumer purchases than women who do not receive SSI/SSDI.

Differences in time spent in other services (combining household services and government services/civic obligations) are negligible. However, beneficiaries do spend significantly more time in professional and personal care services, primarily because of their increased time using medical services: on average, those who receive SSI/SSDI spend 12 minutes more per day – or 364% more time – than those who do not receive SSI/SSDI. Female beneficiaries spend more time using medical services than male beneficiaries (18 minutes versus 13 minutes, respectively).

Time Spent in Nonproductive Activities

Much of the time displaced from market work is spent in nonproductive activities, particularly in the category of socializing, relaxing, and leisure. Overall, those who receive SSI/SSDI spend over three hours more of their time (86% more), on average, when compared to those who do not receive SSI/SSDI. Most of this difference can be attributed to time spent socializing and in relaxation, where beneficiaries spend 12 minutes and 211 minutes more than

non-beneficiaries, respectively. This total leisure gap is larger among men (240 minutes) than among women (186 minutes), with male beneficiaries spending significantly more time (519 minutes) than female beneficiaries (429 minutes).

Beneficiaries also spend less total time in sports, exercise, and recreation (19 minutes versus 26 minutes) – although most of this difference occurs among female SSI/SSDI recipients and non-recipients. Male beneficiaries spend no less time than non-beneficiaries participating in sports, whereas female beneficiaries spend half as much as female non-beneficiaries. Overall, there is just over a minute difference in time spent in religious activities, with male beneficiaries spending less time than non-beneficiaries and female beneficiaries spending more time. Finally, beneficiaries spend significantly more time than non-beneficiaries on the telephone.

Time Spent in Tertiary Activities

Large differences also emerge in personal care – particularly sleeping, where beneficiaries report more than an hour more (14%) in sleep per diary day. They also spend significantly more time (21 minutes) in health-related self-care (for example, taking medications and tending to injuries) than non-beneficiaries, with the gap largest among women. Women who receive SSI/SSDI spend an average of 27 minutes in health self-care (616% more) while women who do not receive SSI/SSDI spend only 4 minutes. Beneficiaries also spend less time grooming (33 minutes versus 41 minutes) and less time in the major category of eating and drinking (62 minutes versus 74 minutes).

Relative Time Use

While this analysis provides a detailed overview of how working-age disability beneficiaries spend their time, it is less useful for understanding how nonmarket productivity is distributed relative to other types of time use. Figure 1 presents the average time spent in each

category of nonmarket productivity, market productivity, nonproductive activities, and tertiary activities as a percentage of total average time spent in these activities.

Results confirm the pattern observed in Table 1: overall, disability beneficiaries spend a similar percentage of their time in nonmarket productivity as non-beneficiaries (14% versus 15%, respectively). This gap is slightly larger among women (17% versus 19%) than among men (10% versus 11%). The largest discrepancy occurs among time spent in market productivity, where non-beneficiaries spend, on average, 20% of their day compared to 2% for beneficiaries. Finally, beneficiaries spend 15% more of their day in nonproductive activities (36% versus 21%) and nearly 5% more of their day in tertiary activities (over 48% versus 44%) when compared to non-beneficiaries.

Differences by Age, Education, and Health

Table 1 and Figure 1 suggest that the absolute and relative distribution of time spent in nonmarket productivity is similar between disability beneficiaries and non-beneficiaries. Figures 2, 3, and 4 examine if age, education, and health (respectively) condition time spent in these activities or the gap in time spent between those who do and do not receive benefits.

Figures 2a and 2b display differences in time spent in nonmarket productivity (household activities, caring for and helping household members, caring for and helping non-household members, volunteer activities, and purchasing) between SSI/SSDI beneficiaries and non-beneficiaries by age and sex. Male beneficiaries spend an increasing amount of time in nonmarket work as they age – from a low of 91 minutes between 18-25 years to a high of 166 minutes between 56-64 years. Patterns for non-beneficiaries somewhat mirror this trend; however, they peak between ages 36-45 and somewhat decline thereafter. Therefore, the largest (and significant) gap between groups emerges in the 36-45 age range, when beneficiaries spend

nearly 43 fewer minutes (23% less time) in nonmarket work, respectively. Those who do and do not receive SSI/SSDI look the most similar in the 56-64 age range, when beneficiaries spend only 11 fewer minutes, or 6% less time than non-beneficiaries. This pattern of time use is less linear among female beneficiaries, who spend the most time in nonmarket work during ages 26-35 (306 minutes). During this and the 18-25 year age range, beneficiaries spend 11% and 4% *more* time in nonmarket work than non-beneficiaries, respectively. As among men, the largest gap emerges in the 36-45 age ranges, when beneficiaries report 68 fewer minutes (22% less time), respectively.

Figures 3a and 3b display differences in time spent in nonmarket activities by level of education. Men report spending more time in nonmarket work as their educational attainment increases, with the smallest amount of time spent among beneficiaries with less than a high school degree (138 minutes) and the largest amount of time spent among those with at least a Bachelor's degree (197 minute). Male non-beneficiaries follow a similar – but flatter – increase, such that college-educated non-beneficiaries spend 23 minutes *less* than beneficiaries. Thus, those with a high school degree are most similar to each other. Female beneficiaries also spend more time in market work when they have a high school degree, versus no degree (251 minutes versus 233 minutes), and look most similar to non-beneficiaries in this education category. Unlike men, the largest gap between those who do and do not receive SSI/SSDI occurs for those with less than a high school degree, who spend 19% (56 minutes) less time in nonmarket work.

Figures 4a and 4b display differences in nonmarket productivity by self-reported health. The greatest difference between beneficiaries and non-beneficiaries for both men and women occur among those reporting poor health (48 minute and 43 minute difference, or 25% and 15% less time, respectively). Non-beneficiaries appear to be able to maintain nonmarket productivity

even if they are not healthy – as those in poor health spend the most time in nonmarket work among both men (193 minutes) and women (280 minutes). This pattern does not hold among beneficiaries, who spend the most time in nonmarket work when they self-report their health as good among men (159 minutes) or very good among women (309 minutes). Likewise, the gap between beneficiaries and non-beneficiaries is smallest among both men and women who report good health, such that male beneficiaries perform 5 minutes less, and female beneficiaries perform 6 minutes more.

Replacement Wage

These figures indicate that – although beneficiaries and non-beneficiaries spend a similar amount of time in nonmarket productivity – the distribution of this time and the gap between those with and without disabilities vary by age, education, and health. However, time spent in nonmarket work also costs money. Housework, care work, volunteering, and the coordination of services related to household production all have exchange value in the market (Abraham and Mackie 2005; Frazis and Stewart 2009; Landefeld, Fraumeni, Vojtech 2009). Numerous studies have used the American Time Use Survey to estimate the exchange value of time use; however, these focus on comparisons between mothers and fathers (Folbre and Yoon 2008), gender and marital status (Frazis and Stewart 2011), and over time and between other data sources (Landefeld, Fraumeni, & Vojtech 2009). However, less is known about differences in the replacement wage for nonmarket work between individuals who do and do not receive disability benefits.

Table 2 presents the estimated average daily replacement wage, by SSI/SSDI receipt, sex, age, education, and health. There are multiple ways to monetize household production; however, the specialist wage is assigned given this study's focus on both the amount and the type of time

use.[4] This approach matches specific nonmarket time use activities to their corresponding specific market activities using occupation codes and mean hourly earnings. Here, the crosswalk developed by Frazis and Stewart (2011) is used for this match, with a few exceptions, to assign replacement wages based on the hours-weighted mean wage for each three-digit Census occupation based on the Current Population Survey's Outgoing Rotation Group. Unlike Frazis and Stewart, time spent volunteering, in care of non-household children, and in all types of service consumption is also included in these estimates to take a more comprehensive perspective on household and non-household production that matches the definition of nonmarket work used throughout this study.[5] To achieve comparability across survey waves, each occupation-specific hourly wage is adjusted to 2012 dollars using the Consumer Price Index. Each mean represents the average daily replacement wage (on diary day) earned by respondents. Thus, Table 2 represents an alternate measure of nonmarket production for household activities, care of household and non-household children, volunteer work, and service consumption.

Focusing on overall differences between those with and without disabilities, male and female beneficiaries earn an average of $4 and $5.50 less per day than male and female non-beneficiaries, respectively. However, differences emerge by age, education, and health. Mirroring the time use results, male beneficiaries make a higher average wage as they age, with the largest gap between them and non-beneficiaries ($10.30) occurring between ages 36-45. The same pattern is found for women, with beneficiaries outearning non-beneficiaries (although not significantly so) in ages 18-35 and experiencing the largest wage gap ($14.00) during ages 36-45.

A similar pattern is observed by educational attainment and health. Male beneficiaries make more money with more advanced degrees, as those with a college degree make $13.70 more than beneficiaries with less than a high school degree and $5 more than non-beneficiaries. Female beneficiaries also earn more for their nonmarket work with higher education, although female beneficiaries without a high school degree still make more than male beneficiaries with a college degree ($44.30 versus $41.4). Finally, when examining trends by self-reported health, the smallest overall difference between those who do and do not receive SSI/SSDI occurs among beneficiaries who are in good health (who earn $2 or 4% less), with the largest difference emerging among those who report poor health (who earn $9 or 19% less).

It may have been true that – even if disability beneficiaries spent a similar amount of time in nonmarket productivity – the replacement wage for that time could have been lower. In other words, the *quality* of that time (as measured by its market analogue) could have been lower. The similar pattern of results from Table 2 as compared to those from Figures 1, 2, and 3 suggests that this is not the case.

Discussion

This study uses data from the American Time Use Survey to provide the first nationally representative analysis of time use among working-age disability beneficiaries in the United States. Additionally, results describe time spent in nonmarket productivity, including household activities, caring for and helping household members, caring for and helping non-household members, volunteer activities, and purchasing – and how this time varies by sex, age, education, and health. In sum, results reveal that men and women who receive SSI/SSDI are very similar to those who don't receive benefits when examining nonmarket work. Overall, they spend only 2% less time in household activities than non-beneficiaries, and – despite logging fewer minutes

caring for household children – they spend more time caring for non-householders. Thus, the distribution of nonmarket work as a percentage of all time use looks similar for beneficiaries and non-beneficiaries. Beneficiaries look the *least* similar to non-beneficiaries when they are in their childrearing years (ages 36-45) and when they report poor self-reported health. Female beneficiaries spend more time in nonmarket work than male beneficiaries regardless of age, education, or health category. An alternate measure of assessing nonmarket productivity – the daily estimated replacement wage – suggests a similar pattern of results. Thus, these patterns are consistent when measuring both the quantity and the quality of time.

The stratification of these results by gender reveals stark differences in the way men and women who receive SSI/SSDI spend their time. One explanation for divergent time use trends by gender and age likely relates to differences in fertility timing between women with and without disabilities. For example, male beneficiaries follow a relatively linear pattern of increasing nonmarket productivity as they get older, while female beneficiaries report a spike in productivity during ages 26-35 and a linear increase thereafter. Mothers with disabilities are significantly younger than mothers without disabilities at first birth (Rivera Drew 2013), and similar age patterning is observed in these data. For example, female beneficiaries in the unweighted sample are 30% less likely than non-beneficiaries to report that a child under the age of 18 lives in the household. However, 7.5% *more* beneficiaries than non-beneficiaries report a household child in the 18-25 age group – corresponding to their 22 average minutes *more* spent in nonmarket productivity. In subsequent age categories, beneficiaries are 4%, 27%, 17%, and 2% *less* likely to report a household child. The smaller differences in the likelihood of living with a child correspond with smaller differences spent in nonmarket work. Further analyses of

the relationship between disability and child care time among parents with disabilities are needed to disentangle these effects.

Similarly interesting is the 50 minute increase in nonmarket work among male beneficiaries with college versus high school degrees – a pattern that is not observed among female beneficiaries, who plateau after attaining a high school degree. As in the general population (US Census Bureau 2012; Wright et al 2012), male beneficiaries in the ATUS sample are significantly less likely to have a college degree than non-beneficiaries. Supplemental analyses reveal that they also spend less time in leisure than those with a high school degree; however, women follow a similar pattern. Data that include detailed employment histories and job tenure might be especially useful in understanding time use among highly educated beneficiaries.

This study provides a first look at differences in time use – particularly nonmarket productivity – among SSI/SSDI beneficiaries and non-beneficiaries. This bivariate approach reveals how discrepant time use can be across the key axes of gender, age, education, and health. The overall trend for beneficiaries to increase their productivity with higher levels of education and in good health suggests that other social disparities associated with disability may be driving some of the variation in nonmarket productivity between adults with and without disabilities. Multivariate analyses can help understand the residual effect of having a disability on nonmarket work, net of these other factors. This is particularly relevant when considering health status and other characteristics with a small number of cases, as only 3% and 5% of beneficiaries report "excellent" or "very good" health, respectively. Likewise, only 5% report spending any time in paid employment on diary day. A multivariate approach can also provide greater flexibility when considering potential non-linear relationships between disability and time use. For

example, Shandra, Kruger, and Hale (forthcoming) find a bimodal relationship between disability and sleep time such that – for respondents with work disabilities versus those without work disabilities – the relative risk of both short and long high-risk sleep is 1.4 and 1.5 times that of those with midrange, optimal sleep.

In sum, disability beneficiaries make substantial contributions to productivity, albeit not in the market. The results presented here advance the understanding of nonmarket productivity among a previously understudied population and indicate that the relationship between disability and time use is conditioned by other sociodemographic factors. Further examination of discrepancies in capacity-building activities (such as volunteer work) as well as health-related activities (such as self-care) can extend our knowledge of the processes and constraints associated with time use and nonuse among individuals with limiting conditions.

---

[1] Following the guidelines described in the general documentation for linked ATUS-CPS supplement files. Available from: www.atusdata.org/linked_docs/linked_generic.pdf

[2] For example, the major category "religious and spiritual activities" has only two first-tier subcategories – "religious or spiritual practices" and "religious and spiritual activities – not elsewhere classified". In this case, as for the major categories of "telephone calls" and "eating and drinking", only overall time use is described.

[3] ATUS coding schemes vary across first-tier subcategories, therefore, a series of coding rules are applied to achieve greater consistency. First, travel is combined when it matches subcategories exactly (i.e. "travel related to housework" matches to "housework"). However, when it does not match exactly, it is treated as a residual category (i.e. "travel related to personal care" and "travel related to personal care, n.e.c" do not match to the first-tier subcategories of "sleeping", "grooming", "health-related self care", "personal activities", or "personal care emergencies") and the minimum percentage category applied. Finally, some travel codes are revised over time from less to more precise. In these cases, the above coding rules are applied, or first-tier subcategories grouped in substantively similar groups as appropriate. For example, in both major categories of "caring for and helping household members" and "caring for and helping nonhousehold members", travel was coded inclusively for either child-related or adult-related care. First-tier activity subcategories are thus combined to match these travel codes.

[4] See Abraham and Mackie (2005) for an overview of the strengths and limitations of various approaches.

[5] More specifically, time with non-household time is assigned the same occupation codes as those assigned to time with household children, and the generalist wage (for maids and housekeepers) is assigned to volunteer work and the residual purchasing time use categories. Additional details about the matching procedure are available from the author upon request.

Works Cited

Aguiar, M., & Hurst, E. (2007). Measuring trends in leisure: The allocation of time over five decades. *The Quarterly Journal of Economics*, *122*(3), 969-1006.

Bianchi, S. M., Sayer, L. C., Milkie, M. A., & Robinson, J. P. (2012). Housework: Who did, does or will do it, and how much does it matter?. *Social Forces*, 91(1), 55-63.

Bounds, M. B., & Gould, A. (2000). Reasons Students with Disabilities Drop Out. Journal for Vocational Special Needs Education, 23(1), 3-9.

Brault, Matthew W. 2012. *Americans with Disabilities: 2010*. Washington D. C.: United States Census Bureau.

Bureau of Labor Statistics. (2013, June 20). American Time Use Survey: 2012 Results. *American Time Use Survey News Release.* Retrived March 11, 2014 from http://www.bls.gov/news.release/atus.htm.

Folbre, N., & Yoon, J. (2008). "The Value of Unpaid Child Care in the United States in 2003." In *How Do We Spend Our Time?: Evidence from the American Time Use Survey*, Jean Kimmel, ed. Kalamazoo, MI: WE Upjohn Institute for Employment Research, pp. 31-56.

Frazis, H., & Stewart, J. (2011). How does household production affect measured income inequality? *Journal of Population Economics*, 24(1), 3-22.

Freedman, V. A., Stafford, F., Schwarz, N., Conrad, F., & Cornman, J. C. (2012). Disability, participation, and subjective wellbeing among older couples. *Social Science & Medicine*, *74*(4), 588-596.

Sandra L. Hofferth, Sarah M. Flood, and Matthew Sobek. 2013. American Time Use Survey Data Extract System: Version 2.4 [Machine-readable database]. Maryland Population Research Center, University of Maryland, College Park, Maryland, and Minnesota Population Center, University of Minnesota, Minneapolis, Minnesota.

King, G., Petrenchik, T., Law, M., & Hurley, P. (2009). The enjoyment of formal and informal recreation and leisure activities: A comparison of school-aged children with and without physical disabilities. *International Journal of Disability, Development and Education*, 56(2), 109-130.

Krantz-Kent, R. (2005). Variations in time use at stages of the life cycle. *Monthly Labor Review*, *128*(9), 36-43.

Livermore, Gina, David C. Stapleton, and Meghan O'Toole. "Health Care Costs are a Key Driver of Growth in Federal and State Assistance to Working-age People with Disabilities." *Health Affairs*, vol. 30, no. 9, 2011.

Meyer, B., & Mok, W. K. (2009). *Disability, earnings, income and consumption* (No. onb09-13). National Bureau of Economic Research.

Milkie, M. A., Raley, S. B., & Bianchi, S. M. (2009). Taking on the second shift: Time allocations and time pressures of US parents with preschoolers. *Social Forces*, 88(2), 487-517.

Pagán, R. (2013). Time allocation of disabled individuals. *Social Science & Medicine.*

Podor, M., & Halliday, T. J. (2012). Health status and the allocation of time.*Health Economics*, *21*(5), 514-527.

Rivera Drew, J. A. (2013). Hysterectomy and Disability among US Women. *Perspectives on sexual and reproductive health*, 45(3), 157-163.

Salamon, L. M., Sokolowski, S., & Haddock, M. A. (2011). MEASURING THE ECONOMIC VALUE OF VOLUNTEER WORK GLOBALLY: CONCEPTS, ESTIMATES, AND A ROADMAP TO THE FUTURE. Annals Of Public & Cooperative Economics, 82(3), 217-252. doi:10.1111/j.1467-8292.2011.00437.x

Schur, L. A. (2003). Barriers or Opportunities? The Causes of Contingent and Part-Time Work Among People with Disabilities. Industrial Relations: A Journal of Economy and Society, 42(4), 589-622.

Shandra, Carrie L., Allison Kruger and Lauren Hale. (forthcoming) "Disability and Sleep Duration: Evidence from the American Time Use Survey." *Disability and Health Journal*.

Taniguchi, H. (2012). The determinants of formal and informal volunteering: Evidence from the American Time Use Survey. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, *23*(4), 920-939.

U.S. Bureau of Labor Statistics. 2011. *American Time Use Survey User's Guide.* Retrieved September 29, 2011 (http://www.bls.gov/tus/atususersguide.pdf).

Wright, D., Livermore, G., Hoffman, D., Grau, E., & Bardos, M. (2012). 2010 National Beneficiary Survey: Methodology and Descriptive Statistics. Washington, DC: Mathematica.

Table 1. Time use among working-age adults, by SSI/SSDI receipt, sex, and detailed activity category						
	Total		Males		Females	
	Does not receive SSI/SSDI	Receives SSI/SSDI	Does not receive SSI/SSDI	Receives SSI/SSDI	Does not receive SSI/SSDI	Receives SSI/SSDI
Nonmarket productivity						
Household activities	112.0	110.1	84.4	79.0	138.8	138.6
Housework	35.3	40.5	14.8	17.4	55.1	61.8
Food and drink preparation, presentation, and clean-up	31.2	35.4	16.3	23.2	45.5	46.7
Interior maintenance, repair, and decoration	4.1	1.5	5.4	2.0	2.8	1.1
Lawn, garden, and houseplants	15.6	11.0	20.2	14.4	11.2	8.0
Animals and Pets	5.6	6.9	4.4	6.7	6.8	7.1
Household Management	12.2	9.7	10.5	6.9	13.8	12.3
Other household activities	8.1	4.9	12.7	8.5	3.6	1.6
Caring for and helping household members	36.9	17.9	22.5	12.9	50.9	22.5
Caring for household children	33.8	14.0	20.0	9.1	47.3	18.4
Caring for household adults	3.1	3.9	2.5	3.8	3.6	4.0
Caring for and helping non-household members	14.2	17.3	12.4	10.1	15.8	23.9
Caring for and helping non-household children	5.0	7.3	3.1	4.2	6.9	10.2
Caring for non-household adults	9.1	9.9	9.3	5.8	8.9	13.7
Volunteer activities	8.3	4.0	7.6	2.0	9.0	5.8
Consumer purchases	38.1	30.6	30.1	28.7	45.8	32.1
Professional and personal care services	6.4	17.5	4.3	13.9	8.4	20.8
Medical and care services	3.3	15.3	2.3	12.8	4.2	17.6
Other	3.1	2.2	2.0	1.0	4.1	3.3
Other services	1.9	1.8	1.9	1.1	2.0	2.4
Market productivity						
Work and work-related activities	277.9	24.0	333.3	27.0	224.2	21.3
Education	13.0	4.2	11.3	5.1	14.6	3.4
Nonproductive activities						
Socializing, relaxing, and leisure	253.8	471.7	264.9	518.6	243.0	428.7
Socializing and communicating	47.1	58.7	44.7	56.8	49.5	60.5
Attending or hosting social events	6.7	3.9	5.7	2.4	7.6	5.2
Relaxing and leisure	192.3	403.6	206.9	452.7	178.0	358.4
Arts and entertainment	8.1	4.9	8.1	6.4	8.05	3.5
Sports, exercise, and recreation	25.9	19.4	32.4	29.9	19.5	9.8
Participating in sports, exercise, or recreation	23.0	18.0	29.2	28.6	16.9	8.3
Religious and spiritual activities	8.5	9.6	7.0	5.4	10.0	13.5
Telephone calls	5.6	8.5	3.5	6.6	7.6	10.2

Tertiary activities						
Personal care	550.9	627.6	535.7	617.1	565.5	637.1
Sleeping	505.0	570.1	496.8	570.2	513.0	569.9
Grooming	40.8	32.6	34.5	25.1	46.9	39.4
Health-related self care	3.0	23.7	2.2	19.9	3.8	27.2
Other, including travel related to personal care	2.1	1.2	2.3	1.9	1.9	0.6
Eating and drinking	73.7	62.3	76.4	68.0	71.0	57.0
N	31,108	1,511	13,796	641	17,312	870

Figure 1. Percentage of time spent in nonmarket productivity, market productivity, nonproductive activities, and tertiary activities, by SSI/SSDI receipt and sex

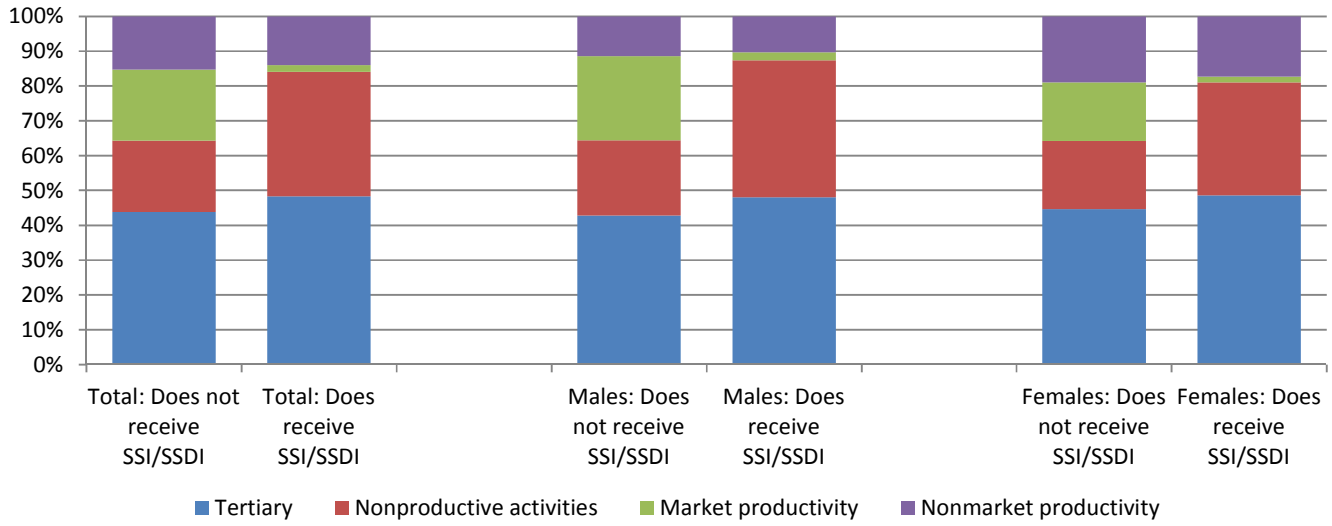

Figure 2a. Minutes spent in nonmarket productivity among working-age males, by SSI/SSDI receipt and age

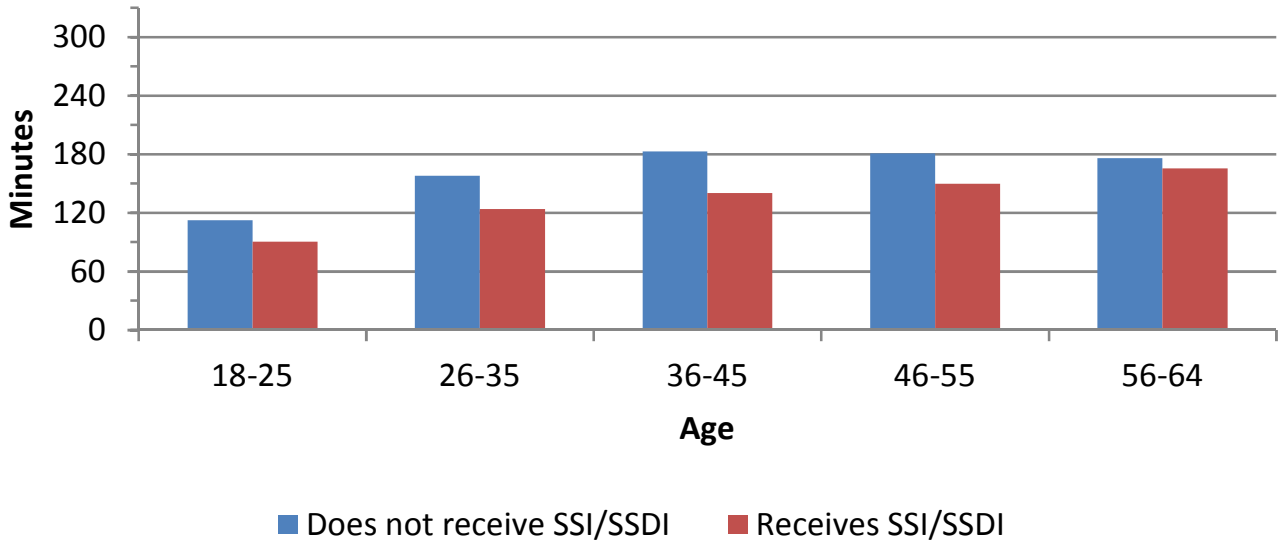

Figure 2b. Minutes spent in nonmarket productivity among working-age females, by SSI/SSDI receipt and age

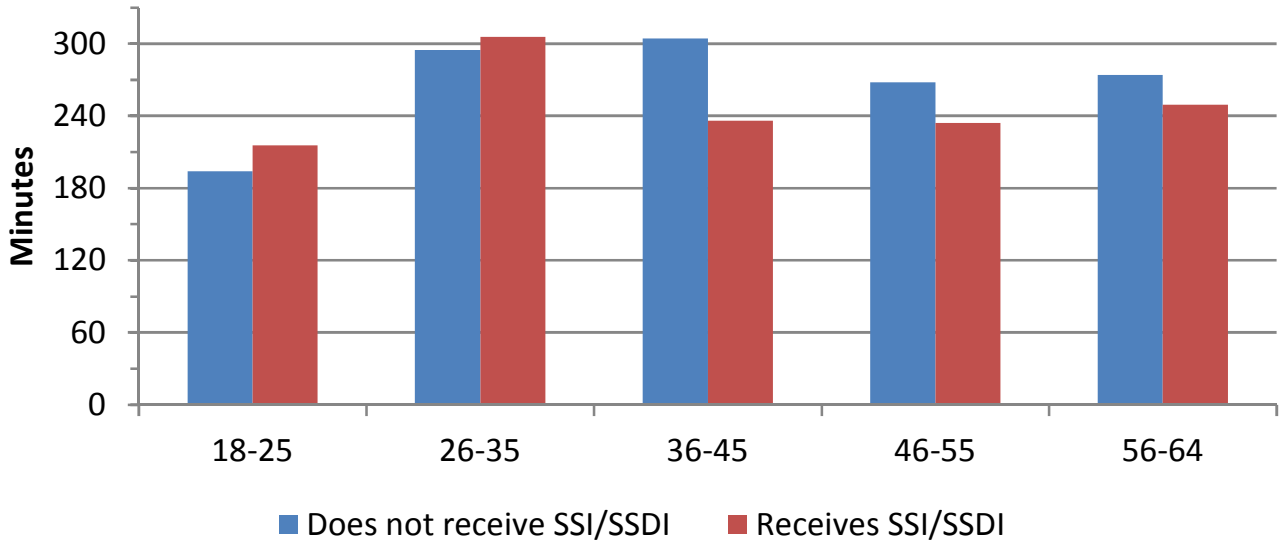

Figure 3a. Minutes spent in nonmarket productivity among working-age males, by SSI/SSDI receipt and education

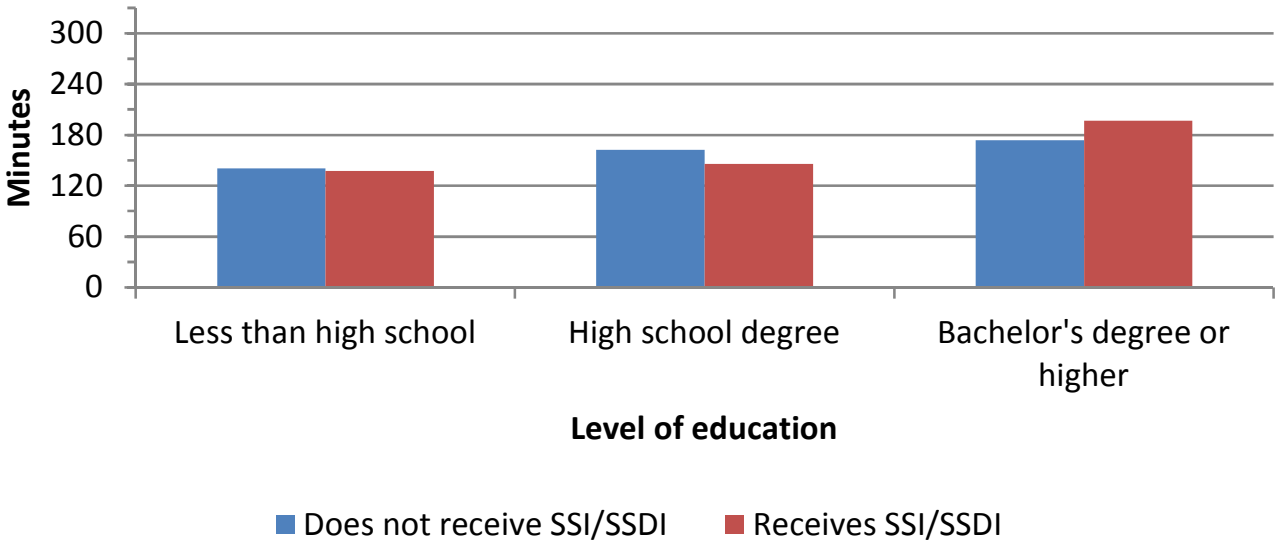

Figure 3b. Minutes spent in nonmarket productivity among working-age females, by SSI/SSDI receipt and education

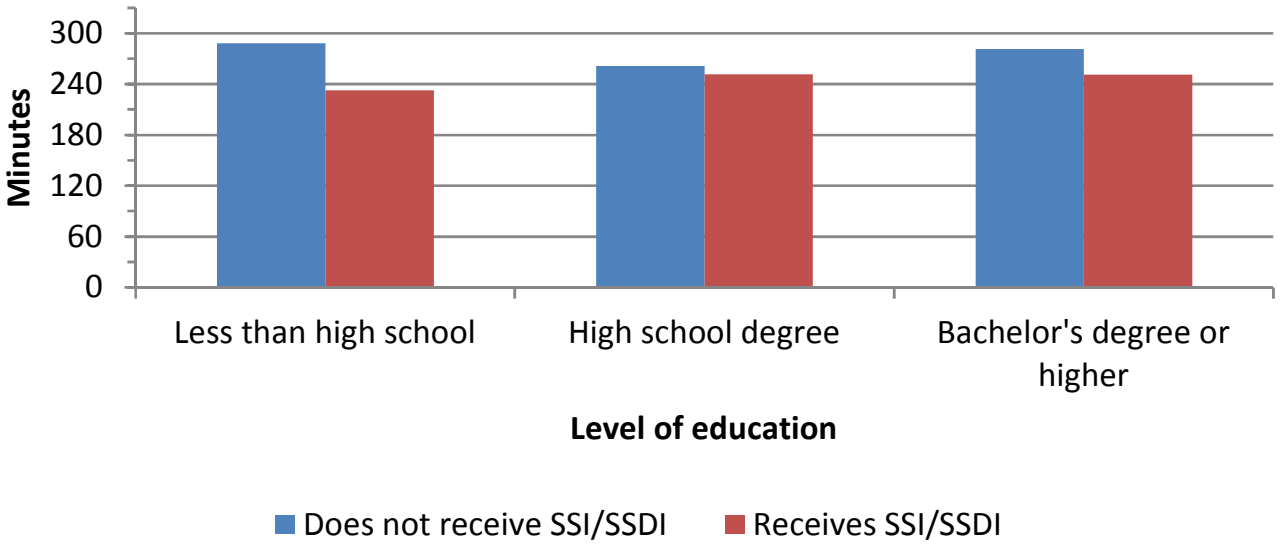

Figure 4a. Time spent in nonmarket productivity among working-age males, by SSI/SSDI receipt and health

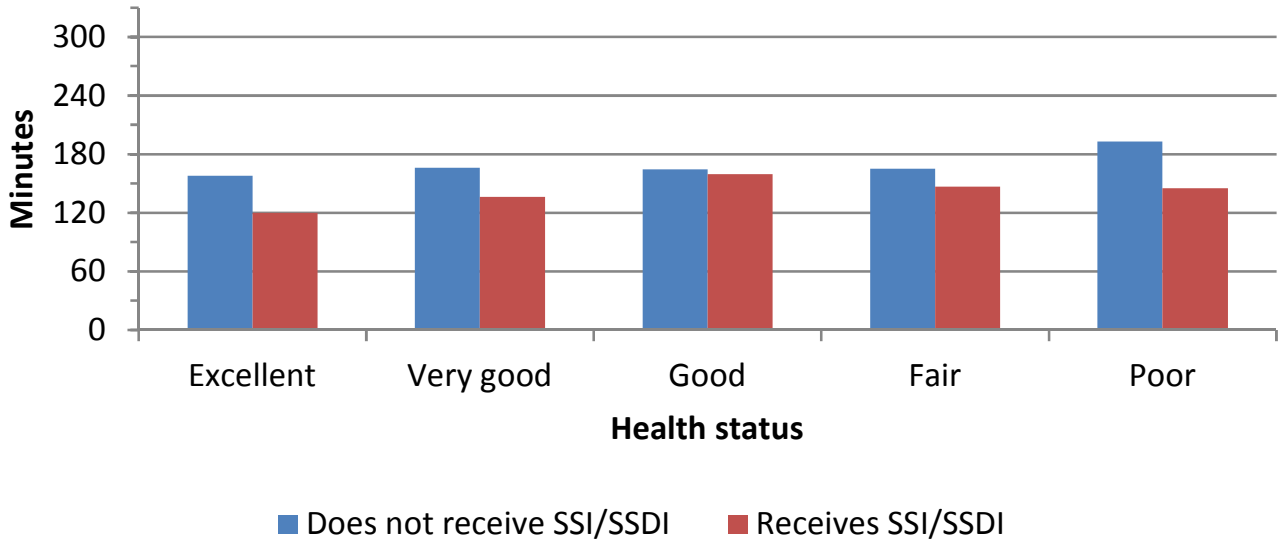

Figure 4b. Time spent in nonmarket productivity among working-age females, by SSI/SSDI receipt and health

Table 2. Daily replacement wage among working-age adults, by SSI/SSDI receipt, age, education, and health

	All Adults		Males		Females	
	Does not receive SSI/SSDI	Receives SSI/SSDI	Does not receive SSI/SSDI	Receives SSI/SSDI	Does not receive SSI/SSDI	Receives SSI/SSDI
Overall	44.0	39.5	34.3	30.3	53.4	47.9
Age						
18-25	30.4	28.8	23.0	20.4	37.8	42.5
26-35	45.0	43.7	32.4	24.8	57.2	58.6
36-45	49.2	37.8	38.0	27.7	60.2	46.2
46-55	46.3	38.9	38.9	31.5	53.4	45.7
56-64	46.8	41.3	38.2	33.5	54.6	48.7
Level of education						
Less than high school	41.0	36.4	29.2	27.7	55.0	44.3
High school graduate	43.1	40.0	34.3	29.9	51.5	49.3
College graduate	46.7	45.9	36.4	41.4	56.2	50.3
Health						
Excellent	43.1	36.5	33.0	24.1	53.4	49.3
Very good	44.9	42.8	34.9	28.6	54.3	59.4
Good	43.8	42.0	34.6	31.6	52.5	53.9
Fair	43.0	38.3	34.4	30.6	50.4	44.5
Poor	47.8	38.7	40.6	29.8	55.0	46.5
N	31,108	1,511	13,796	641	17,312	870