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DISABILITY, EARNINGS, INCOME, AND CONSUMPTION

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Abstract: We determine the prevalence of disability and examine how a wide range of outcomes change with disability. The outcomes we examine include employment, hours, earnings, income and consumption. We have five main findings. First, disability rates are high. We find that nearly one-fifth of male household heads 22-64 in the PSID are currently disabled. Approximately, 30 percent of our sample has a disabling condition at some time during 1968-2003. Of these disabled, over 51 percent have a condition that lasts more than 3 years. 30 percent are severely disabled and 20 percent are both chronically and severely disabled. In terms of life-time prevalence, we find that a person reaching age 60 has a 54 percent chance of having been disabled at least one during his working years and a nearly 40 percent chance of experiencing a chronic disability. Second, disability is associated with much worse outcomes. Ten years after disability onset, those with chronic and severe disability condition have seen their earnings decline by 61%, income by 46%, food plus housing consumption by 25%, and food consumption by 15%. In addition, 66 percent of these most disabled individuals do not work ten years after onset. Third, these outcome measures differ sharply across disability groups. The previously mentioned declines for the most disabled are over twice as large as those for the average disabled. Fourth, our findings indicate the partial but incomplete role individual savings, family support and social insurance play in reducing the consumption drop following disability. Despite the various government programs available, about one-fifth of the disabled have incomes below the poverty line in the long term. Fifth, we find a noticeable fall in employment and earnings prior to the onset of reported disability.

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1. Introduction

Despite a reduction in dangerous work and improvements in health care, overall disability rates in the United States are high and have fallen little in recent decades. Census of Population data from the year 2000 indicate that 20.9 million families (28.9% of all American families) had at least one member with a disability (Wang 2005). The data also indicate that 12.8% of families with disabled members are living in poverty; the corresponding rate for families without members with a disability is only 7.7%.[1] A widely cited disability statistic indicates that a twenty year old worker has a 30% chance of becoming disabled before reaching retirement age.[2]

Enrollment in public disability programs is also high. In June 2006, the number of individuals receiving Social Security Administration administered disability related benefits was 11.2 million: 6 million received Social Security Disability Insurance (SSDI), 3.8 million received Supplemental Security Income (due to disability) and 1.4 million received both benefits. Over 14 percent of males 60-64 and 7 percent of males 50-59 currently receive SSDI.

Public spending on the growing disabled population has becoming a major budgetary issue. In 2005, $85.4 billion was spent on Disability Insurance benefits and $34.4 billion on the share of Supplementary Security Income (SSI) for the blind and the disabled.[3] Private spending on the disabled was also high with $80.8 billion spent on Workers' Compensation by employers in 2003. These expenditures are considerably higher than other welfare or social insurance programs such as Unemployment Insurance benefits ($40 billion in 2004), Temporary Assistance to Needy Families ($12 billion in 2003) and Food Stamps ($29.6 billion in 2005).[4] Autor and Duggan (2006) recently suggests that SSDI recipiency will rise by an additional 71% before reaching a steady state rate of approximately 7% of non-elderly adults.

Despite these substantial costs, there are still very few studies that examine the economic situation of the disabled, relative to the large economics literature on the unemployed, single

[1] Many studies report a rise in disability rates in recent decades. Haveman and Wolfe (1990) report that the percentage of disabled individuals in the working age population changed from 7% in 1962 to 9.5% in 1984. Bound and Waidman (2002) report an increase in reported disability rates between 1969 and 1996.
[2] See U.S. Social Security Administration (2006).
[3] Specifically a total of $31.2 billion was spent on SSI by the Federal Government on the blind the disabled (age 0-64), a further $3.1 billion was spent by state supplementation (SSA, 2005).
[4] See Council of Economic Advisers (2006).

mothers and recently, retirees.[5] This paper examines the prevalence of disability and how the disabled fare before and after the onset of their disability. First, we examine the rate of disability using several different definitions. Second, we examine how employment, earnings, income, consumption and other outcomes change during the five years prior to disability onset and the subsequent 10 years. Third, we show how these outcomes differ by the extent of disability, where the extent of disability is viewed as having two dimensions, persistence and severity. We examine the overall pattern of transfer receipt, as well as the role it plays for various subgroups of the disabled. To answer these questions, we use up to 33 years of data from the Panel Study of Income Dynamics (PSID). With the longitudinal structure of these data, we can examine changes in the variables of interest before and after individuals suffers disability onset.

Our study differs from the literature in many dimensions. First, we analyze a more comprehensive range of variables that capture the economic circumstances of the disabled: earnings, hours, employment, income, public transfer receipt, poverty rates, food consumption and housing consumption. In taking this wider view, we obtain a better picture of the material well-being of the disabled. Second, we make use of the latest panels of the PSID. Third, we confront the issue of public transfers underreporting, which could lead researchers to overestimate the fall in income for the disabled. Fourth, we go beyond a uniform characterization of the disabled by dividing the disabled based on the duration of their disability condition (persistence) and the severity of the condition.

There are several findings in this paper. First, disability rates are high. We find that nearly one-fifth of male household heads 22-64 in the PSID are currently disabled. Approximately, 30 percent of our sample has a disabling condition at some time during 1968-2003. When dividing these disabled individuals based on the persistence of their condition, 18% have a short term condition and 51% have a condition that lasts more than 3 years. When the division is based on the severity of the condition, 30% of the disabled are severely disabled. When we combine both disability classifications, we find that about 20% of the disabled are both chronically and severely disabled. In terms of life-time prevalence, we find that a man reaching age 50 has a 35% chance of experiencing disability at least once sometime before reaching this

[5] Haveman and Wolfe (1990) look at the difference between the income and earnings of the disabled and non-disabled using the Current Population Survey. Bound and Burkhauser (1999) also compare disabled and non-disabled earnings. Bound and Waidman (2002) look at employment rates among the disabled. Charles (2002) examines earnings, hours and wages after disability. Stephens (2001) analyzes some of these outcomes and food consumption as well.

age. The figure for a man reaching age 60 is 54% and he has a nearly 40 percent of experiencing a chronic disability. Second, disability is associated with much worse outcomes. Ten years after disability onset, those with chronic and severe disability condition have seen their earnings decline by 61%, income by 46%, food and housing consumption by 25%, and food consumption by 15%. In addition, 66% of these most disabled individuals do not work ten years after onset. Third, these outcome measures differ sharply across disability groups. The previously mentioned declines for those with chronic and severe disabilities are over twice as large as those for the average disabled. Fourth, our findings indicate the partial but incomplete role individual savings, family support and social insurance play in reducing the consumption drop following disability. Despite the various government programs available, about one-fifth of the disabled have incomes below the poverty line in the long term. Fifth, we find a noticeable fall in employment and earnings prior to the onset of reported disability.

The rest of the paper is organized as follows. Section 2 describes our data set and sample, as well as how we define the disabled. We explain how we categorize the disabled based on the persistence and severity of their condition. We briefly discuss lifetime prevalence of disability. This section also outlines the empirical strategy we adopt for the rest of the paper. Section 3 examines the change in earnings and employment following disability. Section 4 examines the fall in income following disability onset, the rise in poverty and transfer receipt. Section 5 summarizes the change in consumption, food expenditure and housing expenditures. Section 6 concludes.

2. Data and Categorizing the Disabled

A. Survey, Sample, and Key Variables

We briefly describe the survey, analysis sample, and key variables that we use. More detail is in the Data Appendix. We use the Panel Study of Income Dynamics (PSID) in this study. The PSID is a longitudinal dataset that began in 1968 with an initial sample of about 4,800 U.S. households with 18,000 individuals. The initial sample of the dataset consisted of two separate samples, both of which we use: a nationally representative sample and a national sample of low-income families. The number of families in the latter group was about 1,800.

Until 1997, each household was interviewed annually, when the survey moved to a bi-annual format.[6] Children in sample households are followed as they leave and form their own families. The interviews are mostly done via telephone (92%) during the period between March and September of the year. As of 2003, the PSID had collected information on 65,334 individuals.

Since the survey's initial focus was the dynamics of poverty, questions are asked on benefits received, work hours, earnings, income, health, etc. A particularly attractive feature of the PSID is that it collects information on family food expenditures, an item not available in many other microeconomic surveys. This variable has been used by many authors as a measure of the material well-being of individuals.

We use the entire PSID panel beginning with 1968 through the 2003 wave. We select male household heads who were 22-64 years of age during this survey year. We focus on those who are over the age of 22, because those below this age are unlikely to be household heads. We retain any data on disability for these people outside this age range because it may be useful in determining the persistence or severity of an individual's disabling condition. As we will explain later, the degree of persistence is determined based on the frequency of positive limitation reports after disability onset. Thus, ignoring information after the age of 64 may lead an individual to be misclassified, especially if his age of disability onset is close to 64.[7] The choice to focus on male household heads is forced because the disability questions were not asked of spouses until 1981. The PSID defines the household head in a married couple family to be the male except in the case when he is so severely disabled that he is unable to respond to the survey.

The main disability question in the PSID is: "*Do you have any physical or nervous condition that limits the type or amount of work you can do*?" This question is asked of the household head consistently throughout the survey. Several authors have questioned the validity of these self-reported disability status and chosen to focus on those who receive benefits such as SSI and SSDI.[8] However, such an approach is not without its limitations. First, some disabled individuals may not file for SSDI or SSI because of the paperwork and the requirement

[6] Some data are available for intervening years, because the 1999 survey asked about both 1998 and 1997 earnings, for example.
[7] Similarly the onset age cannot be correctly determined if we exclude all data outside the age range. For example, a person whose disability began at age 18 could have his onset age mistakenly set to 22 if we disregard the responses to the disability question outside the age range.
[8] See Bound et al. (2006) and Kreider and Pepper (2006).

that the disabling condition must be expected to last for at least 12 months. Second, not all disabled individuals will qualify for these programs, in part because SSDI requires the applicant to have worked sufficiently in the years prior to disability while SSI has a stringent asset limit.[9] Third, the denial of an SSDI application does not necessarily imply that the individual is not disabled (see also Nagi 1969; and Bound 1989) and given the high acceptance rates for those who appealed (see Benitez-Silva et al. 1999 who report that in 1993, among the 48% of denied claimants who requested reconsideration, 50% were accepted).[10] Fourth, SSDI and SSI benefits are not given to those who earn above a certain amount despite their disability. In 2006, a recipient of SSDI cannot earn more than $860 after a trial period whereas SSI recipients get their benefits deducted by 50% of earnings above $85 (Social Security Administration 2006b). Moreover, a recent study by Benitez-Silva et al. (2004) suggests that self-reported disability responses are an unbiased indicator of SSA eligibility decisions. Stern (1989) had made a similar argument earlier. Given all of these considerations and our goal to view the disabled as broadly as possible, we believe that these self-reported disability status responses, while not perfect, are better than other alternatives we have currently.

We select those for whom we have interviews for at least four years, at least three of which are consecutive, in order to have sufficient information on the variables of interest. We then split the sample of male household heads into a sample of disabled individuals and a sample of non-disabled individuals. The non-disabled sample consists of those who never report that they have a physical or nervous limitation during the survey years. The sample of disabled individuals, however, requires additional explanation. As we mentioned above, a question regarding the presence of a physical or nervous limitation is asked every survey year. Thus, one can obtain the disabled sample from those who reported that they had such a physical or nervous limitation in any survey year.

Determining the year of limitation onset is not trivial. However, a valuable feature of the PSID is that a retrospective question on when a work limitation began is available for the 1969-1978 waves (except for 1976 and 1977). For those who are disabled before 1978, we use the

[9] Only about 80% of working age individuals are insured by SSDI (Autor and Duggan, 2006).

[10] Bound (1989) suggests that many rejected DI applicants were in fact incapable to work. Citing the study by Nagi (1969), Bound (1989) stated: "Of the population denied benefits, 35.6% were found incapable of any work, and another 12.3% were only capable of work at home or in sheltered environments." In addition, Bound (1989) cites the study of Treitel (1976), which suggests that many rejected applicants did not work despite the DI denials and using administrative follow up records shows that 13.8% of those who were denied benefits in 1967 had died by 1973.

responses to this retrospective question to determine their year of onset. Since the possible responses for these questions were coded in intervals, we determine the intersection of the intervals given by these questions and take the earlier year within the intersection as the year of disability onset. For the disabled who have no work limitations between 1968 and 1978, determining the year of onset requires a little more work since no questions about when the condition began are asked. Also we need to account for those interviewees who enter the survey after 1978. Such individuals will have missing data for 1968-1978, so we cannot simply just take the first year that they report a disability as the onset year. Thus, for those who first report having a disability condition after 1978 we take their year of onset to be the year in which they first report having a limitation, but additionally we require that the individual report no limitations in the two consecutive years immediately prior to the year in which they first report having a limitation.[11] We further impose the restriction that a disabled individual in our sample must be in the survey for a minimum of 3 years within the 10 years after onset so as to have sufficient information after disability onset. This restriction is also important for the determination of the disability persistence and severity groups which we introduce shortly. We further exclude those whose onset age is under 18, since our focus is on disability that begins during the working years. Thus, we slightly understate the extent of work limitations.

We replace missing demographic information (age, marital status, years of education, number of family members, number of children and state of residence) by the non-missing value in the nearest wave. Lastly, we exclude individuals whose key demographic variables (education, age and marital status) are missing. These restrictions result in a primary sample of 7,220 observations, 2181 (30.2%) of whom are classified as disabled.

B. Categorizing the Disabled

As well as determining how the disabled as a whole fare around disability onset, we are interested in differentiating among the disabled. To understand the material circumstances of the disabled requires recognizing that the disabled are not a homogeneous group. We find that different groups of the disabled, defined by questions available in the PSID, differ sharply in their earnings losses, receipt of transfers, and drop in consumption following disability onset. In

[11] For example, if the first time an individual reports having a limitation in 1980, then the year of onset would be 1980 if the individual has no limitation in 1978 and 1979.

this paper, we reduce the overall concept of the extent of disability down to two dimensions: the degree of persistence and the severity of the disabling condition. Our notion of persistence is a modification of Charles (2003) and is based on the individual's number of positive post-onset limitation reports. In the case of disability severity, we rely on whether an individual's ability to do work is severely limited. We use the self-reported severity assessment and validate its use in our analysis. Finally, we combine our persistence and severity measures into a single disability measure by dividing the chronically disabled into those with chronic and severe disabilities and those with chronic and not severe disabilities. These divisions allow us to compare the outcomes for those with differing degrees of disability.

We determine the degree of persistence of a disability based on the number of disability reports during the ten years after disability onset. We divide the disabled into three groups. The **One-Time Disabled** are those who report a disability once, but then do not report a disability again during the next ten years. For those who do not have complete data for the 10 years after onset, we require them to have 2 consecutive negative limitation reports immediately after onset. The **Temporarily Disabled** are those who have one or two positive limitation reports within the ten years after disability onset. Thus, including the onset report, a temporarily disabled individual will have at most three positive limitation reports through the tenth year after onset. The **Chronically Disabled** are those who have three or more positive limitation reports during the ten years after disability onset. Note that we exclude from the sample those who are not in the sample for at least three years after onset.[12]

Our persistence of disability classification differs from that of Charles (2003) as he defines his most chronically disabled group to be those who reported a positive limitation in every year after onset (as long as they are in the survey). This classification system is somewhat sensitive to the number of years an individual is in the survey. This sensitivity is increased by his use of a shorter panel (1968-1993) in past work. Thus, a disabled person is more likely to be in the most chronic group the closer his year of onset is to 1993. Our use of all of the waves, coupled with the previous requirement that a disabled individual has to be in the survey for at least three years (within the 10 years after onset) reduces this problem.

[12] If we require more than three (four to six) post-onset positive limitation reports to be in the chronic group, the results are very similar.

The descriptive statistics of the disabled in the three persistence groups, as well as those for the non-disabled group are displayed in Table 2a. In the disabled sample, 389 individuals (18.2%) are in the one-time group, 649 individuals (30.4%) belong to the temporary group and 1090 individuals (51.2%) belong to the chronic group.[13] The mean age of onset varies slightly across these disabled groups: 36.6 years for the one-time group, and for the temporary and chronic groups, it is 38 years and 42.2 years respectively. Members in the chronically disabled group are on average less educated, only 27.8% have attended college. The corresponding percentages for the one-time and temporary groups are 45.2% and 36.1%, respectively. The three disabled groups, on average, participated in a similar number of interviews over the entire survey.

The second dimension of the extent of disability that we examine is disability severity. In the PSID, after asking whether the head has a physical or nervous condition, a question about how much this condition limits the work the head can do is asked. The question was refined over the years but the essence remains the same. The Data Appendix reports the exact wording of the question and possible responses. The possible answers to the severity questions are the following eight responses roughly in the order of severity: Not limiting, Not at all, Just a little, Somewhat, A Lot, Severely, Completely, Can do Nothing. Using these severity questions, we group the eight possible responses into two categories: those "Severely Disabled" and those "Not Severely Disabled." Those **Not Severely Disabled in year t** are those who report "A little", "Somewhat", "Not Limiting" or "Not at all" in response to the severity question in the year t survey. Those **Severely Disabled in year t** are those who report "Can do nothing", "Completely", "A lot" or "Severely" in response to the severity question in the year t survey.

The main difficulty in using these responses is that they are necessarily subjective. Interpretation of qualitative terms like "somewhat", "a lot" can be different across individuals. One may argue that more objective measures, such as number of tasks the individual has trouble doing, should be used instead (see Bound 1989). For instance, the Census Bureau's definition of severely disabled is based partly on how many ADL, IADL and functional activities the

[13] About 53 disabled individuals cannot be grouped under the persistence classification because they do not satisfy the requirement that they must have 2 periods of consecutive negative limitation immediately after onset. These people are not included in the regressions that split the sample by degree of persistence.

individual cannot perform.[14] However, surveys like the PSID or the CPS do not ask these questions on a regular basis. The CPS has its own criteria for determining who is severely disabled,[15] but the criteria are so loose that in 2005, 73% of the disabled were classified as being severely disabled by the CPS.[16]

To validate our definition of severely disabled, we would like to compare the number of tasks the severely disabled can perform relative to the not severely disabled group and the non-disabled group. The PSID survey had a special health supplement in the 1986 survey and six questions related to daily activities were asked: 1) Do you have any trouble either walking several blocks or climbing a few flights of stairs, because of your health? 2) Do you have trouble bending, lifting or stooping because of your health? 3) Would your health keep you from driving a car? 4) When you travel around your community, does someone have to assist you because of your health? 5) Do you have to stay indoors most or all of the day because of your health? 6) Does your health confine you to a bed or a chair for most or all of the day? The respondent is asked to simply say yes or no to each of the questions above. We compare the number of these activity limitations for those who said they were severely disabled and the not-severely disabled in 1986. The upper panel of Table 2b shows for each severity group, the percentage of the household heads reported having trouble performing each of the six activities. For all six activities, the percentage is higher for the severe group than the not severe group. We see that 85% of members in the severe group have trouble walking or climbing stairs, whereas only 55% of the not severe group has such a problem. The biggest difference is the "Stay Indoor" category where 40% of the severely disabled group report having a problem compared with only 10% for the not severe group. The bottom panel of Table 2b tabulates the mean number of these daily activities that each severity group has trouble performing. The severe

[14] Specifically, using the SIPP, Census Bureau (McNeil, 2001) define severe disability using the following criteria: 1) The person used a wheelchair, a cane, crutches or a walker, 2) The person had any other mental or emotional condition that seriously interfered with everyday activities, 3) The person received federal benefits based on an inability to work, 4) The person had Alzheimer's disease, 5) The person had developmental disability or mental retardation, 6) The person unable to perform or needed help to perform one or more of the functional activities, ADLs or IADLs, 7) The person was unable to do housework, 8) The person was in the age range 16-67 and had a condition that made it difficult to work at a job or business. A person who falls in any one of the above criteria is considered to be severely disabled.

[15] The CPS, which does not ask about specific activities the individual can perform, also has its own definition of severe disability. A person is severely work disabled in the CPS if he falls into any of the following four criteria: 1) He is not currently in the labor force because of a disability, 2) He did not work at all in the previous year because of illness or disability, 3) He was under 65 years old and covered by Medicare in the previous year, 4) He was under 65 years old and received Supplementary Security Income (SSI) in the previous year.

[16] CPS disability data can be found at: http://www.census.gov/hhes/www/disability/disabcps.html

group on average has trouble in performing 3.25 activities, compared with only 1.61 for the not severe group. The panel also tabulates these numbers for different age groups, and we see that for each disabled group, the number of activity limitation is very similar across each age group. Thus on average it is unlikely that an older disabled individual has a higher likelihood of saying he is severely disabled when the number of activities he has trouble in performing is the same as a younger disabled individual.[17] We take these as evidence supporting our view that these self-reported severity questions are good indicators of how serious is the disabling condition.

Given that these severity questions are asked during each year of disability, the next issue we need to resolve is which of the many years of responses to use. Two natural possibilities are the average severity over the course of the disability and the initial severity at the onset of disability. We choose to rely on average severity throughout the paper, since it entails a more complete picture of the disability condition. It is worth noting that the results are very similar if we use the initial severity report. We define the severity ratio as the fraction of the time the individual reports he is severely disabled in the year of onset and the subsequent 10 years after onset. Then we define the **Not Severely Disabled** to be the disabled whose severity ratio is less than 0.5. That is, starting from the year of onset to the 10th year after onset, less than 50% of the observed severity reports consist of the following responses: "Can do nothing", "Completely", "A lot" or "Severely". The **Severely Disabled** are the disabled whose severity ratio is more than 0.5. In the case where exactly half of the responses indicate severe disability (i.e. a severity ratio of 0.5), we classify the disabled individual using the initial severity report or first observed severity report.[18]

Table 2c reports the means and standard deviations of various characteristics for the two severity groups. Of the 1993 disabled individuals whom we can classify, 607 (30%) are severely disabled. The severely disabled group is about 4.6 years older on average at disability onset, they are less likely to have received higher education (23.2% compared with 39.9% for the not severe group). The severely disabled also on average have slightly more chronic conditions; 4.56 positive limitation reports compared with only 2.92 reports for the not severe group. 85% of their severity reports of the severely disabled group are classified as "severe". In contrast, less

[17] If this happens, we would, for example, see the number of tasks the older severely disabled groups have problem performing to be very close or even smaller than the younger not severely disabled groups.

[18] For those disabled individuals who did not respond to the severity question during the year of onset, we use first observed severity report (up to the 10th year after onset). Those who never responded to the severity question in this 11 year period (year of onset and the subsequent 10 years) are dropped.

than 10% of the severity reports for the not severe group are classified as "severe". Since the average number of post onset reports (up to the 10th year after onset) for both severity groups are very similar (7.78 and 7.35 for the not-severe and severe groups respectively), it appears that this grouping method is not sensitive to the number of years the disabled individual remains in the survey after disability onset.

In many of our analyses, we combine the two disability concepts together by splitting the Chronically Disabled into two groups. The **Chronically, but Not Severely Disabled** are chronically disabled, but not severely disabled under the severity classification. The **Chronically and Severely Disabled** are chronically disabled and severely disabled under the severity classification. Hence this classification yields four groups of interest – one-time, temporary, chronic-not severe and chronic-severe groups, which we collectively call the "extent of disability groups". Note that in principle these four groups are not fully ordered. A priori we cannot say, for example, that the chronic-not severe group is "more disabled" than the temporary group. In practice, though, the chronic-not severe group fares much worse as we see below.

Table 2d reports the descriptive statistics for these extent of disability groups. The chronic-not severe group consists of 639 individuals (30.5% of the disabled) and the chronic-severe group consists of 421 individuals (20.1%). Focusing on the difference between the chronic-not severe group and the chronic-severe group, we see that the latter group has a higher average age of onset (45.3 years of age) about 5 years older than the former group (40.2 years). Also the chronic-severe group is less educated, with only 18.8% having ever attended college. This group also has a slightly more chronic condition, with an average of 6.2 positive limitation reports in the 10 years after onset, compared with 5.4 reports for the chronic-not severe group. In terms of the severity ratio, the average for the chronic-severe group is some 6.1 times higher than that of the chronic-not severe group. It is, therefore, fair to say that the chronic-more severe group consists of the most disabled individuals given their higher degrees of persistence and severity.

Working Lifetime Prevalence

With is data spanning over 35 years, the PSID is ideally suited to examine the likelihood of a disability occurring during the working life of an individual. We define the working lifetime prevalence of disability the probability of an individual ever becoming disabled by a given age.

We calculate this measure for all ages from 28-64. In defining lifetime prevalence of disability we classify individuals by the most serious form of disability the individual has ever experienced. We rank the disability types in increasing order of seriousness as follows: one-time, temporary, chronic-not severe and chronic-severe. We use the information on disability reports and severity in a rolling ten-year-ahead window to classify an individual's current disability. Thus, this measure accounts for the potential worsening of a condition over time.

In these analyses we use sample weights to make the disability frequencies better approximate U.S. averages.[19] As the year after 1968 increases, the number of years of past information in the PSID increases. In addition, we use up to ten years of future information on persistence and severity to classify a person's current condition. Thus, in order to have the best data to summarize disability histories, we focus on those individuals in the middle years of the survey. Specifically, we report results for those male household heads who answer the survey in sometime during 1980-1990 and have been in the survey for at least ten years prior to the specified year. If we were to use the initial waves of the survey, we would understate the prevalence rate because we do not have information on the individual prior to 1968 and many individuals will have a disabling condition well before the PSID began.[20] On the other hand, using the most recent years would not give us the full ten years of data after onset to classify a given disability.

We first report these prevalence rates by studying the chance of experiencing disability by the time an individual falls in three different age groups: 40-49, 50-59 and 60-64. These results are displayed in Appendix Table 1. Generally, we see a rise in disability prevalence over the 1980-1990 period – the probability of experiencing disability at least once before reaching 50 years of age rises from 27.1% to 34.2% over this period, a rise of 26%. Most of it comes from an increase in one-time disability which is more than doubled over this period. Correspondingly, the probability of experiencing disability at least once before reaching 60 years of age rises from 40.7% to 46.6% over this period, mostly due to rise in one-time and temporary disability. By the time the individual is near his retirement age, the probability of him experiencing disability at least is close to 60% in all years. This rise in disability prevalence may in part be due to the SSDI and SSI liberalization that took place after 1984 (Autor and Duggan, 2002). We see an

[19] We use the current year weight in these analyses. Using the initial year weight (in the 1980-90 window) yields almost identical percentages.

[20] Recall that the retrospective question was asked only if the individual is currently disabled.

overall rise in the disability prevalence over this period, but the chance of ever having a chronic and severe condition remains quite stable over this period (it is falling for the 60-64 age group). The chronic and severe group is of particular interest because we will see that it fares particularly badly after disability onset. .

Appendix Table 2 also reports the prevalence rates for the 1980-1990 subsample, but sorted by age. Not surprisingly, the chance of experiencing disability rises with age. By the time an individual reaches 60 years of age, there is 54% chance that he has experienced some kind of disability during his working years. In particular, there is a 20% chance that an individual has ever experienced a chronically and severely disability by age 60. The corresponding rates for one-time, temporary and chronic-not severe disabling conditions are 7%, 9.9% and 17.3% respectively. By the time an individual reaches age 64, the probability of having ever experienced a chronic and severe disability is 29.6%, which is essentially the same as the widely cited statistic that a 20 year old has a 30% chance of becoming disabled before reaching retirement age. Another point to take from this table is the rise in prevalence of chronic-severe disability with age. The probability of ever experiencing a chronic and severe disability by age 50 is more than four times that by age 40. Similarly, the prevalence rate by age 60 is twice that by age 50.

C. Empirical Methodology

We estimate the following fixed effect model for person i in year t:

$$(1) \quad y_{it} = \alpha_i + \gamma_t + X_{it}\beta + \sum_h \sum_k \delta_k^h A_{kit}^h + \varepsilon_{it}$$

Where y_{it} is the outcome of interest such as labor earnings, for person i in year t, X_{it} is a set of time-varying explanatory variables including marital status, state of residence, age and age-squared, education and the number of children,[21] α_i is an individual fixed effect, γ_t is an indicator variable for year t. A_{kit}^h is an indicator variable which equals one if in year t, individual i belongs to disability group h and he is k years from the year in which he becomes disabled, and ε_{it} is a potentially serially correlated error term. Throughout this study, we aim to focus on a set of outcomes 5 years before and 10 years after the year of disability onset, thus k ε {-5, 10}. Given

[21] In the case of analyzing family variables (those other than annual earnings, hours, hourly earnings), we also include the total number of family members in the regression.

the inclusion of individual fixed effects, δ_{hk} measures the change in the dependent variable k years away from the year of onset for those in disability group h relative to the value of their dependent variable more than five years prior to disability. This way of modeling outcomes is essentially the same as that of Charles (2003) and Stephens (2001).[22]

3. Employment and Earnings Following Disability

We first investigate the change in annual earnings, annual hours worked, the probability of work and hourly wage, during the 5 years before and 10 years after disability onset. For earnings and hours we begin by looking at the level changes of these variables and their corresponding percentage changes. It might be more natural to estimate the model (1) above with the dependent variable in logarithms in some cases so as to analyze percentage changes directly. But as we will show, many disabled people have zero earnings and zero hours of work following disability, so taking the log of zero is not possible. Defining a lower cutoff (e.g. log(y)=log(a) for y < a) is not ideal either as the estimates are sensitive to this cutoff due to the large percentage of disabled who have zero earnings and the differences in this fraction across groups and over time.[23] We will first look at the changes in earnings, hours and other outcomes of the disabled group as a whole, before focusing on these changes for the persistence, severity and the extent of disability groups. All monetary variables are defined in 2003 dollars.

A. Earnings

We begin by looking at changes in the level of earnings of the disabled as a whole Table 3, column 2 tabulates the estimated coefficients from equation (1) with earnings as the dependent variable and Figure 3a plots these coefficients. Consistent with our expectations, a sharp decline in earnings takes place for the average individual who becomes disabled, with earnings having fallen by over $5,600 by the year of onset. By the 10th year after disability onset, earnings for

[22] Charles (2002) includes individual-specific time trends in his analysis, which is the essence of one of the approaches in the Jacobson, LaLonde and Sullivan (1993) analysis of the displaced. However, we suspect disabling conditions have effects prior to disability onset, and have found the results to be sensitive to the period over which such trends are estimated.

[23] Charles (2002) analyzes outcomes in logarithms, omitting observations with zero values and includes a selection correction term (inverse Mill's ratio).

the disabled are estimated to be about $11,000 below what they were before the fifth year prior to disability. To see the implied percentage changes we divide these estimated coefficients by the average earnings of the disabled before the 5th year prior to disability ($43,505). The results are shown in the third column of Table 3 and are displayed in Figure 3b. Here we see that during the year of onset (t=0), earnings of the disabled are 13% below the level more than 5 years earlier. By the tenth year after onset, the loss in earnings for the disabled is on average 25%. Our results are very similar to those of Stephens (2001) who finds that disabled individuals experience a decline in annual earnings of about 10% during the year of onset and experience a longer term loss in annual earnings of about 22%. Both our results and those of Stephens (2001) are not comparable to those of Charles (2003) because the analyses in Charles exclude those with zero earnings.[24]

Next we turn to these changes when we sub-divide the disabled individuals based on the persistence of their disability. Section A of Table 4a tabulates these estimates for the three persistence groups and their implied percentage changes. The percentage changes are displayed in Figure 3c. For the one-time group, earnings decline very slowly over the course of disability, reaching a trough in the 5th year after disability onset at about 12%. In the long term, the earnings loss for the one-time group is about 8%. However most of the estimated single year changes for this group are statistically insignificant, a F-test indicates that we cannot reject the null hypothesis that all post-onset coefficients for this group equal zero; the P-value for the F-test is .26.[25] For the chronic group, we see that their annual earnings have fallen by about 22% by the year of onset. The drop continues until the eighth year after onset when earnings for this group have fallen by about 43%. Our long term percentage earnings declines for the one-time, temporary, and chronic groups are about 7.7%, 10.6% and 42% respectively.

Now we turn to the results when the grouping scheme is based on the severity dimension of disability. Section A of Table 5 reports the coefficient estimates and Figure 3d shows the implied percentage change in earnings. The not-severely disabled group's annual earnings has fallen by about 9% by the year of onset, with a long-term decline in annual earnings of about 17%. The severely disabled suffer from much greater losses. During the year of onset, annual

[24] As we summarize in the Charles (2003) Replication Appendix, our attempts (and those of Charles) are unable to produce results similar to those in the published paper.

[25] However, for the temporary group, we can reject at the 5% level the null hypothesis that all post-onset coefficients are equal to zero.

earnings are estimated to be 23% below previous earnings, and the loss widens by a further 16 percentage points during the year after onset. The drop then slows down and by the tenth year after onset, the earnings loss for this group is estimated to be about 48%. Later we will see that this pronounced drop is due to the large number of people who work zero hours after disability onset.

The estimates under the combined persistence and severity classification are reported in section B of Table 4a, while the implied percentage changes are shown in Figure 3f. The estimates for the one-time group and temporary group are very close to those under the persistence classification so we omit them in this section of the table. During the year of disability onset, the chronic-not severe group is estimated to see a further 6 percentage points decline in earnings, resulting in a cumulative 17.6% loss in earnings. The chronic-severe group is estimated to experience a sharp further decline in earnings of about 14 percentage points at onset, resulting in a 30% cumulative loss. Earnings of both groups continue to decline in the years afterwards until around the eighth year after onset with the average earnings for the chronic-not severe group estimated to be about 30% below prior earnings, and earnings for the chronic-severe group estimated to be down by a 65%. An important question here is why there is a drop in earnings even prior disability, especially for the chronic-severe group. We conjecture that these individuals may have some type of health problem well before the year that they first report a work limitation in the PSID. It may be that several years of frequent unemployment and poorly paying jobs leads some people to conclude that declaring disability is preferable to continued attempts to work (see also Autor and Duggan 2001, 2003). We have also estimated these regressions with age and education interactions as well as year and education interactions, and the results are very similar to those without these interactions. In addition, we have also looked at, relative to other disability groups, whether the chronically and severely disabled individuals are likely to reside in high unemployment areas, whether they experienced longer unemployment before onset and whether their subjective personal health assessments indicate deteriorating health prior to disability onset. There is some suggestive evidence that each of these contribute to the pre-onset fall in earnings. Overall our results suggest that annual earnings do decline after disability onset, but this decline is more apparent for the chronic and the more severely disabled group. In addition, there is also little evidence suggesting that earnings will recover for those who are chronically disabled (see also Bound 1989).

B. Hours of Work and Employment

In this subsection, we focus on how hours of work and employment change following disability onset. The third column of Table 3 reports and Figure 4a plots the estimates of equation (1) with annual hours of work as the dependent variable, for the disabled group as a whole. Annual hours of work are estimated to fall by about 230 hours for the disabled by disability onset. Hours fall by a further 130 hours in the year after onset, leading to a total decline in annual work of 360 hours by the year after first reporting disability. From then on, the change in the level of hours is roughly flat. By the tenth year after onset, work hours of the disabled are on average about 372 hours lower per year.

We then examine employment changes. The fifth column of Table 3 reports the unconditional percentage of the male household heads in our sample who are not working (i.e. reported zero hours of work) during the years prior to and after disability onset and Figure 4b graphs these percentages. The non-work percentage rises steadily prior to onset, reaching 9.3% in the year before onset, rises to 12.3% during the year of onset,[26] then to 20.6% in the year after onset and it continues to rise for the next four years. After the sixth year after onset, the percentage of the disabled who are not working begins to decline somewhat. By the tenth year after onset, about 20% of the disabled do not work.

We next examine whether changes in annual hours of work and employment differ across disability groups. Section A of Table 4b shows these hours and employment estimates for the degree of persistence groups. Figures 4c and 4d depict these results graphically. We see that for the one-time disabled group, hours of work are estimated to be about 91 hours lower during the year of onset. The decline in the year of onset is an additional 28 hours, for a total change of 119 hours. But from then on, most of estimates are not statistically different from zero, implying that hours of work recover after the year following onset. Turning to the temporary group, on average there is a 176 hours drop per year by the onset year, then a further 61 hour drop the year after onset, and a still further 18 hour drop in the following year, for a total of 255 hours below the pre-disability level. Nevertheless from then on, a recovery occurs and by the fifth year after onset, annual hours of work for this group are essentially back to the pre-disability level.

[26] Bound and Burkhauser (1999) document that as many as 35% of the disabled do not work during the year of onset (they define not working as working less than 52 hours in the year).

For the chronic group however, the pattern is dramatic – by onset hours of work are estimated to be 368 hours below the level five years earlier and then decline by another 224 hours in the following year. From then on, the drop slows down completely. We, however, do not see any major sign of recovery in the next nine years and hours of work are on average about 600 below the baseline level. Our results are quite different from those in Charles (2003). First, the changes in hours following disability that we find are several times larger than those in Charles (2003), even when he includes those who work zero hours in his regression. Second, Charles (2003) suggests a recovery of working hours, but we only observe this for the one-time and temporary groups. We observe that our most chronically disabled group suffers a long term decline of almost 650 annual hours of work. We should mention that our methods are different from Charles (2003) in several ways. First, we use the post-1993 panels. Second, our fixed effects regressions include educational dummies.[27] Third, we do not include an individual specific linear time trend, because we expect that an individual's hours trend will change with health and this change seems to happen prior to when a respondent indicates he is disabled. We do not want the individual specific trend to incorporate this change, as it is what we are hoping to measure.

We now turn to the employment estimates, which are depicted in Figure 4d. We see that the percentage of the disabled who are not working rises during the year after onset. For the temporary group, the percentage rises to about 15% in the year after onset, but declines over the next three years. However, for the chronic group, the percentage of those who are not working rises to 14% during the year of onset, then to 26.8% in the year after onset and it continues to rise slowly in the years follow, reaching a high at 34.5%. Thus, one of the main reasons why changes in hours of work are so large for the chronic group is due to a substantial number of people who do not work after disability onset.

Let us now turn to the results for the severity classification, which are tabulated in section B of Table 5, and depicted in Figures 4e and 4f. For the not severe group, annual hours of work decline by 138 hours by the year of onset and fluctuate around this level during the next nine years. For the severely disabled group however, the pattern is again dramatic. Annual hours drop rapidly by onset when they have fallen on average 462 hours, they then decline by a further

[27] If years of education do not change over time for sample members, then these education dummies would not be estimable. However, education does change, especially for the younger respondents.

353 hours in the following year, resulting in a loss of work time of 815 hours. The drop then essentially stops and stays roughly at this level in the following years. Looking at Figure 4f, we see that the percentage of the severely disabled who work zero hours is rising rapidly after onset. By the tenth year after onset, as many as 55% of the disabled in this group are not working. Compared with the results in Figure 4e, where we see the estimated hours loss to be fairly stable from the second year after onset, we can infer that the effect of those severely disabled who return to their normal working hours is counter-balanced by an increase in the number of people who are not working.

Section B of Table 4b reports the regression estimates and percentages of zero hours of work under the extent of disability groupings, and Figures 4g and 4h depict these results. Again we focus our attention on the chronic-not severe and chronic-severe groups. Looking first at Figure 4g, we see a significant difference in the change in work hours for these two groups after onset. For the chronic-not severe group, hours of work decline by 209 hours by the year of onset, and by a further 100 hours in the year after onset. From this point onwards, there is little change. But for the chronic-severe group, hours of work are estimated drop a very large 625 hours by the year of onset, then by a further 417 hours in the following year. Hours continue to fall in the next three years, and the long-term change is about 1200 hours. The difference between the chronic-not severe group and the chronic-severe group is large – the former group regains hours of work slowly, while a higher and higher percentage of the latter group is leaving work. By the tenth year after onset, as many as 66% of the chronic-severe group are not working at all, while the percentage for the chronic-not severe group is only about 16%, which is quite close to that for the one-time and temporary groups.

C. Hourly Earnings Following Disability

From the results on employment above, we saw many disabled do not work after disability onset. Here we ask the question of what happens to hourly earnings conditional on working. Clearly those working will not be a random sample of the disabled; we expect they will be disproportionately those who experience lower hourly earnings losses. We measure hourly earnings as annual earnings divided by hours of work (in 2003 dollars), and classify as working those who work 500 hours or more in the year. The fixed effects log hourly earnings equations are shown in the last column of Table 3 and are depicted in Figure 5a. We find that

hourly earnings are on average 2% lower by the year of onset, albeit imprecisely estimated. By the seventh year after onset, hourly earnings have fallen 10.8%. These findings are in sharp contrast compared with those in Charles (2003), who found very small changes in hourly earnings (no more than 3.2% and are mostly statistically insignificant). Our evidence however suggests large and significant changes in hourly earnings following disability.

We next examine the hourly earnings changes for combined persistence and severity groups which are reported in Section B of Table 6 and plotted in Figure 5b. We see that the changes for the one-time and temporary groups are close to zero and none of the estimates are significant at the 5% level. Most of the changes we observed in Figure 5b are concentrated among the chronic-not severe and chronic-severe groups. The loss in hourly earnings is very similar for these two groups. The long term decline in hourly earnings is about 20% for both groups. Our results suggest that among those chronically disabled individuals who are working, the hourly rate of pay is on average similar regardless of the severity of the condition.

4. The Change in Income, Poverty and Transfers with Disability

A. Income

The previous section suggest that earnings fall for the disabled after disability onset, but it would be premature to conclude that these large declines in earnings translate into large reduction in the economic well-being of the disabled. The decline in earnings may be cushioned by 1) government transfer programs, 2) intra-family risk sharing through earnings of a spouse and children and 3) inter-family transfers such as support from friends and relatives. We begin by examining the summary family income variable provided by the PSID, which is the sum of labor, asset and transfer income. This measure may be unsatisfactory for two reasons. First, the summary measure does not include in-kind transfers such as Food Stamps and subsidized housing. Second, public transfer income is generally under-reported in household surveys, and transfers to the disabled in the PSID are no exception.[28] We therefore provide two additional income measures for this study: "total income" which is the sum of labor, asset, transfer incomes

[28] See Meyer, Mok and Sullivan (2006) for evidence on a wide range of transfers in several datasets including the PSID.

(public and private), food stamps and the rental equivalent of subsidized housing[29] and "adjusted family income" that in addition imputes public transfers to account for their under-reporting. Adjusted family income accounts for under-reporting in the five main programs for the disabled (Social Security Disability Insurance, Supplemental Security Income, Unemployment Insurance, Workers' Compensation and Food Stamps) by scaling benefits received by the inverse of the reporting rates by program and year in Meyer, Mok and Sullivan (2006). These reporting rates are calculated by comparing the weighted sum of the benefits received by the entire PSID sample with those reported to be paid out by government agencies. By scaling up benefits in this way, we implicitly assume that non-reporting recipients share the same characteristics as reporting recipients.

Table 7a reports the fixed effect regression estimates for various income measures and the disabled group as a whole. As well as reporting the coefficient estimates for the two income measures above, we also report income without public transfers, which enables us to see the importance of public transfers for the disabled. The implied percentage changes are shown after each column of estimates, and are displayed in Figure 6a. The three income measures, not surprisingly, began to differ at the year of onset. Income without public transfers on average falls by 13.3% by the year of onset. Accounting for public transfers, income falls by 10.6% by this point. When one accounts for under-reporting of public transfers, income falls by only about 9%. From the year after onset onwards, the effect of public transfers remains a roughly constant 4% of income. The effect of adjusting for under-reporting is also quite similar over the 10 years after onset, roughly an additional 1.5 percentage points. Thus, if we fail to account transfer underreporting, we overstate income losses by about 1.5 percentage points. The main result here is that income does not recover over time following disability onset. By the 10th year after onset, family income net of public transfers is estimated to fall by 25%. Total income and adjusted income fall 20.1% and 18.9% respectively. Our results show a somewhat larger decline than those of Stephens (2001), possibly due to his focus on families with a head and a wife, rather than all families with a male head.[30] Summarizing the difference between the long-term change in individual earnings and family income, we see that earnings fall by about 25%, but the income

[29] In other words, this is the PSID family income measure plus Food Stamps and the rental equivalent of subsidized housing.

[30] Stephens (2001) finds that family income falls by about 7.4% by the year of onset; by the 5th year after onset, that fall is 15.5%.

fall is lower at about 20%. The next question we ask is how the income fall differs across disability groups. As we will see, the fall we observe above is primarily due to the chronically disabled group. For brevity, we only look at changes in adjusted income for the persistence and severity classifications.

Table 7b reports the estimated dollar changes and implied percentage changes in adjusted income for the persistence groups, and Figure 6b plots the percentage changes. The fall in adjusted income for the one-time and temporary groups is generally between 5% and 10%. There is not a noticeable trend after disability onset. The chronically disabled group is estimated to see their adjusted income decline by a quite large 15% by the year of onset, though income had been falling well before the year of onset. The fall continues for the next 10 years after disability onset and by the 10^{th} year after onset, it is estimated to be 31% (the corresponding change in earnings is 42%). Changes in the same outcome for the severity groups is reported in Table 7c, and Figure 6c displays the implied percentage changes. As one might expect, the fall in adjusted income is more striking for the severely disabled group. By the year of onset, adjusted income is estimated to fall by 5.2% for the not severe group and 19.3% for the severe group. The declines continued for both groups. By the tenth year after onset, adjusted income for the less-severely disabled has fallen by 12.4%. For the severely disabled the fall is 38.1%. These drops are less than these groups' earnings losses (17% and 48.5% for the non-severe and severe groups respectively).

Turning now to the extent of disability classification, the results are reported in Table 7d (income without public transfers), Table 7e (total income) and Table 7f (adjusted income). The results are also displayed in Figures 6d-6f. For the chronic-not severe and chronic-severe groups, income without public transfers is estimated to decline by 15.5% and 32.7%, respectively, by the year of onset. When we include public transfers, these magnitudes are reduced to 12.1% and 26.7%, respectively. When we further account for underreporting, income losses for these two groups are 10.3% and 22.4%. The income loss widens for these two disability groups in the following years, but the rate of change is higher for the chronic-severe group. Looking at the change in adjusted income, the long term loss for the chronic-not severe group is about 23%, but for the chronic-severe group, the loss is about 48%. Excluding public transfers, these losses would be 28.9% and 66.5% for the chronic-not severe and chronic-severe groups respectively (the corresponding loss in earnings are 32% and 61% respectively). Thus, the role played by

private and public transfers is greatest for the chronic-severe group and is of only of small importance for the chronic-less severe group.

B. Poverty

Another standard indicator of well-being is the percentage of a group with income below the poverty line. We compare several of our family income measures to the official poverty line for both families with a currently disabled head and families with a currently non-disabled head. Figure 7a shows the percentage of families with total income below the poverty line. Figure 7b reports the same series for the adjusted income measure. There are several features in these figures. First, in recessions, poverty among the disabled rises faster than the non-disabled. At the height of the 1982-1983 and 1991-1992 recessions, the percentage of families with a disabled head living below poverty are 24% and 23% respectively using our total income measure and are 19% and 18% respectively when adjusted income is used.[31] Second, the disabled are much more likely to live in poverty than the non-disabled; the difference in poverty rates is usually more than 10%. Third, when adjusted income is used, poverty rates among the disabled are on average about 7 percentage points below that using the official income variable. In other words, excluding Food Stamps and public housing, and not accounting for under-reporting in transfer benefits leads to a poverty rate among the disabled that is about 7 percentage points higher.[32]

Figure 8a shows the percentage of the disabled living below poverty in the years before and after disability onset. It is clear that poverty rises around the time of disability onset due to the decline in earnings. In the years prior to the year of onset, the poverty rate of the disabled is roughly 9% under both income measures. It rises to 12% (11%) during the year of onset when total income (adjusted income) is used. The rate rises during the next 6 years, reaching a peak of 16% (14%) measured using total income (adjusted income). Figure 8b shows these percentages for the combined persistence and severity groups, using the adjusted income measure. Not surprisingly, the chronic-more severe group has the highest poverty rates. Almost 23% of the chronic-severe disabled group lives below poverty in the year after disability onset, and the percentage remains high over during the ten years after onset. In contrast, there is little change

[31] The numbers when the official income measure (that excludes Food Stamps and the value of subsidized housing) is used are 26% and 25% for the 1982-1983 and 1991-1992 recessions, respectively.
[32] The poverty rates among the disabled when we use the official income measure are available from the authors upon request.

in the poverty rate for the one-time disabled group over time. For the temporary group, poverty among them rises to a peak of around 17% in the second year after onset, then declines steadily afterwards with the recovery of earnings and employment.

C. Transfer Income

In this section we examine the change in the receipt of public transfers by the disabled. Public transfer income is defined as the sum of AFDC/TANF, UI, WC, SSI, Social Security retirement and disability benefits, and other welfare benefits. This standard measure of public transfer income however does not include Food Stamps and the rental equivalent of subsidized housing, both of which are often received by the disabled. We do include Food Stamps and subsidized housing in our second measure of public transfers, total public transfer income. We also adjust the benefits received from the five programs using the underreporting rates discussed earlier to obtain adjusted public transfers.

We first examine changes in these three measures of public transfers for the disabled group as a whole. Table 8 reports fixed effect regression estimates with public transfer income as the dependent variable and Figure 9a displays these results. Not surprisingly, receipt of public transfer income rises with disability. In the year of onset, using the adjusted public transfer measure, the disabled receive $2,500 (2003 dollars) more than they did prior to onset. Without accounting for underreporting, that amount would be about $1,500. An interesting finding is that we do not see a fall in the amount of public transfer income received during the 10 years after disability onset.

Sections A and B of Table 9 report the estimates for total public transfer income and adjusted public transfer income respectively, using the extent of disability classification. Figures 9b and 9c graphically display these results. For the one-time group, the estimates are small in magnitude and rarely significantly different from zero, indicating that the one-time group receives little in public transfers as expected. For the temporary group, transfer income receipt increases during the year of onset ($1,403 and $1,969 in total and adjusted public transfers, respectively). Transfers peak the year after onset and then decline slowly over time. The pattern is similar for the chronic-not severe group, but with higher magnitudes. The temporary group, whose members have shown signs of improvement in their disabling condition and whose earnings are recovering quickly, are still receiving public transfers even by the tenth year after

disability onset. For the chronic-severe group, however, public transfer receipt increases sharply during the year of onset; $3,303 and $5,781 for total and adjusted public transfers, respectively. By the tenth year after onset, adjusted public transfer receipt for this group is estimated to be $11,354, more than three times that of the chronic-not severe group ($3,239) and more than four times that of the temporary group ($2,764). The sum of public transfers received by a family with an average chronically-severely disabled head by the 10th year after onset is estimated to be $109,030.[33] We have also estimated fixed effects linear probability models for the likelihood of receiving various transfers (results available upon request). We find that for the chronic-severe group, the likelihood of receiving SSDI is about 8% by the year of onset, 18% by the year after onset and close to 40% by the 10th year after onset. For SSI, these numbers are 4%, 3% and 11%, respectively. For Food Stamps, these numbers are 6%, 8% and 11%, respectively.

This part of the paper illustrates the economic hardship and the reliance of the disabled on public transfer programs. This pattern is particularly true for the most disabled group which suffers large earnings and income losses and has a high receipt rate of public transfer income. Despite the various public transfers they receive, about one-fifth of the most disabled have incomes below the poverty line in the long term. We have also examined the changes in earnings of other family members and find that they are small and insignificant, consistent with the findings of Nagi and Hadley (1972).

5. Consumption Changes Surrounding Disability

A. Food and Housing Consumption

We now turn to examining consumption since economic theory suggests that material well-being is more directly tied to current consumption than current income. Conceptually, income is subject to transitory fluctuations due to events such as job changes and changes in family composition. Furthermore, income changes may not translate into living standard changes if savings can be drawn upon (Poterba 1991, Cutler and Katz 1991). In terms of how accurately consumption and income are measured, there is substantial evidence suggesting that income is underreported. Meyer, Mok and Sullivan (2006) find that many types of transfer

[33] Since adjusted public transfers received by this group are close to zero before disability onset (the estimates for the years before onset are small and their sum is close to zero), we estimate adjusted public transfers received by an average chronic-severe disabled individual during the 11 years beginning with onset by summing the coefficient estimates.

income are sharply underreported in major household surveys. Meyer and Sullivan (2003) argue find that income is badly measured for those who live at the bottom the resource distribution, likely due to the many small irregular sources of income for this group. Adding to the problems with income is the fact that government transfer under-reporting has increased over the last decade and that measuring disposable income requires accounting for taxes. On the other hand, using consumption reduces many of the problems discussed above. Consumption seems to be subject to less under-reporting at the bottom and is more is more closely associated with other measures of well-being (Meyer and Sullivan 2003). Consumption reflects income and payroll taxes and the ability to draw upon savings.

We focus on the two components of consumption that can be measured well in the PSID: food and housing. We also analyze the components of food and housing consumption. We define food consumption as the sum of family food consumption at home, family food consumption outside the home and the face value of Food Stamps received.[34] We define housing expense as the sum of owned dwelling service flows calculated as 6% of current housing value, rent payments, and the rental equivalent for those with free or subsidized housing. We should emphasize that consumption is measured at the household level, so a fall in it reflects more than a decline in consumption for the disabled head. In our estimation, we control for demographics including family size. Again, both food and consumption expenditures are deflated using the CPI-U and are put on an annual basis. In revisions, we will likely consider using food and housing expenditures as well as other family characteristics to predict total consumption using Consumer Expenditure Survey data as others have done (Skinner 1988; Meyer and Sullivan 2003; Blundell et al. 2005). A potential concern in predicting consumption for the disabled will be that the relationship between characteristics and consumption differs between the disabled and non-disabled.

Table 10 reports and Figure displays the changes in food consumption and food plus housing consumption for the disabled group as a whole. By the year of onset, the drop in food

[34] The PSID food spending question is "How much do you (family) spend on food in an average week?" The time frame for this question is not entirely clear. We follow Zeldes (1989), Gruber (1997) and others in assuming that the question refers to the time of interview rather than the previous year. We do not adjust Food Stamp values using the underreporting rates discussed earlier. We do not include 1973, 1988 and 1989 in the food consumption analyses because food consumed per week was not asked in 1973, and food stamps received were not asked for the calendar years 1972, 1988 and 1989. We do not exclude 1972 since the Food Stamps program was still small at the time.

consumption is estimated to be a mere 1% and is imprecisely estimated. Food plus housing on the other hand, is estimated to be about 3.4% lower by the year of onset. Food consumption begins to decline from the second year after disability onset; the estimates indicate that it is 5% lower by this period, while food plus housing is now about 8% below its baseline. By the tenth year after onset, food consumption and food plus housing consumption have fallen by about 6% and 11%, respectively. Our estimates for food consumption are very similar to those reported by Stephens (2001). These results suggest that food demand is relatively income inelastic compared with other consumption. It is helpful to compare the long-tem decline in earnings, adjusted income, food plus housing consumption and food consumption for the disabled as a whole, which are 24.9%, 18.9%, 11% and 6.2% respectively. We see the effects of behavioral responses in these differences and that different measures of well-being give very different answers.

The consumption responses differ sharply by disability group. Table 11 reports the estimates for the food and food plus housing regressions, respectively and Figures 11a and 11b plot these estimates. Food consumption does not seem to change for the one-time disabled group, as the estimates are all close to zero and statistically insignificant. For the temporary group, food expenses are estimated to drop in the second year after onset by a magnitude of some 6% relative to that at baseline and remain around 4% lower on average over the next 10 years. The chronic group, however, experiences a substantial drop in food consumption. By the second year after onset, food consumption has dropped by an average of about 6%, and drops by a further 6%. Food consumption remains about 12% below the baseline level through the 10^{th} year after onset. For food plus housing consumption, the pattern is somewhat similar, but the magnitude of the decline is larger in general.

Switching to the severity classification scheme gives us the results in Table 12. These results are shown in Figures 12a and 12b. It is apparent that the less severe group does not seem to experience any appreciable decline in food consumption following onset as the estimates are mostly small and statistically insignificant. However, for food plus housing consumption we do see a significant decline for the not severe group. By the tenth year after onset, food plus housing consumption is on average about 7% below that at baseline. The decline for the severe group, however, is again pronounced. Food consumption and food plus housing consumption have declined by about 14% and 19% respectively by the second year after onset, with both

declining further in the following year. The long-term decline in food and food plus housing consumption are about 10% and 22%, respectively.

Dividing the chronic group based on the disability severity gives the results in Table 13. Figures 13a and 13b display the results for food and food plus housing consumption. Here again we see the biggest changes are evident for the most disabled group – the chronic-severe group. By the second year after onset, food consumption is about 19% below what it was at baseline. By the tenth year after onset, food consumption expenditure remains about 15% lower. We also examine food consumed at home and food consumed outside the home which are reported in Table 14 and displayed in Figures 14a and 14b. These results show a significant decline in food consumed at home for the chronic-severe group; by the third year after onset, consumption has dropped by 20%. A sluggish recovery follows and the long-term decline is about 13%. For food eaten out, we observe a 20% decline by the year of onset and a very large 40% decline by the 10^{th} year after onset. The long-term disaggregated food consumption changes for the other groups are mostly small and imprecisely estimated. Our results are consistent with the overall picture that the chronic-severe group is deeply affected by disability. The results also indicate that the families with the most disabled heads adjust their food consumption behavior by becoming less likely to eat outside and more likely to eat at home over the course of the disability. Looking at food plus housing consumption, we see a decline of 13% by the year of onset, and 23% by the second year after onset. By the 10^{th} year after onset, food plus housing consumption is about 25% below that prior to disability. These changes fit with our notion of what types of expenditures are income elastic. We see the largest responses for food away from home and for housing and the smallest for food at home. The long-term decline in annual earnings, adjusted income, food expenditure and consumption expenditure for the chronic severe group are 60.75%, 46.19%, 25.4% and 15.5%, respectively. These magnitudes are more than twice the changes for the average disabled. Given that twenty percent of the disabled belong to this category, and forty percent eventually fall in this group, the question arises as to whether current transfer programs provide sufficient insurance.

B. Exploring the Source of Changes in Housing Consumption

The above results indicate that housing consumption falls following disability onset. Exactly how the fall in housing consumption occurs is unclear since we might think housing

consumption is hard to adjust. We examine the importance of changes such as selling a house and becoming a renter or buying a smaller house or apartment. To understand the sources of the decline we decompose the changes in housing consumption into changes in housing type and consumption given the housing type. Let the consumption for person i in year t be the sum over housing types of the product of an indicator for housing type j times the consumption of housing type j, where j ∈ {own, rent, public housing}. In other words

$$(2) \quad C_{it} = \sum_j S_{it}^j C_{it}^j .$$

We let the corresponding variables without the subscript i denote averages over i. By appropriately adding and subtracting terms we can then write the change between two periods, denoted 1 and 2 as

$$(3) \qquad C_2 - C_1 = \sum_j (S_2^j - S_1^j) C_2^j + \sum_j (C_2^j - C_1^j) S_1^j .$$

Equation (3) then shows that the change in consumption between two periods depends on the change in shares (S^j) and the changes in consumption given type (C^j). To estimate these terms, accounting for individual characteristics, we run a series of fixed effect regressions similar to those above. We focus on changes specifically after the fifth year of disability onset. First, we run a series of fixed effect linear probability models of the form

$$(4) \quad s_{it} = \alpha_i + \gamma_t + X_{it}\beta + \sum_h \sum_k \delta_k^h A_{kit}^h + \sum_h \theta^h B_{it}^h + \varepsilon_{it} .$$

where s_{it} is a dichotomous variable which equals one if individual i consumes a particular housing type,[35] α_i is a fixed effect, γ_t is a set of time indicator variables, X_{it} is a set of time-varying explanatory variables including marital status, state of residence, age and age-squared, education and the number of children. A_{kit}^h is a dichotomous variable which equals one if individual i is in disability group h and is k years after disability onset, where k∈ {-5, -4,…,4, 5} B_{it}^h is a dichotomous variable which equals one if the individual i is in disability group h and is in year 6 through 10 after disability onset. ε_{it} is a potentially serially correlated error term as before. There are three possible types of housing thus we run the fixed effect linear probability model three times, one for each housing type. We again focus on our persistence-severity groups so h

[35] We determine housing type consumption in a year based on the highest amount of 1) 6% of home value, 2) rent paid and 3) the rental equivalent of subsidized housing received.

$\in \{1,2,3,4\}$. The coefficients of interest are the θ_h which represent the estimated change in the probability of consuming a housing type in the long term following disability.

The results are shown in the upper panel of Table 15. For the one-time and chronic-not severe groups, the estimated changes are generally small and are all statistically insignificant. For the temporary and chronic-severe groups, it is estimated that in the long run, there is a decline in the likelihood of owning a home and consequently a rise in the likelihood of renting. We also find a decline in the likelihood of the chronic-severe group members living in subsidized housing in the long-term.

To examine adjustments by the disabled in the amount of housing, we estimate models similar to (4), but now the amount of housing consumption of a particular type is the dependent variable. We split the sample in three parts according to the type of housing chosen and estimate the fixed effect regressions in each sub-sample. Again, the coefficients of interest are the θ_h which represent the estimated long-term change in the amount spent on housing, conditional on the individual being in disabled group h and consuming a particular housing type. The results are displayed in the bottom panel of Table 15. For those who own a home, we see a decline in housing consumption in the long term. It seems likely that disability causes some people to move to a smaller home or not move up to a larger home at the same rate as others. This tendency is especially evident for the most disabled chronic-severe group, which has an average long-term decline of $1440 per year in housing consumption. This change translates into a fall in home value of about $23,000. For those who rent, we observe a similar pattern, as the chronically and severely disabled spend less on rent – an average of $960 dollars per year less ($80 per month). The same pattern holds for the chronic-not severe group, but with smaller magnitudes. Regardless of whether the decline is due to moving to a smaller house or to a less desirable area, the evidence illustrates that the most disabled individuals do adjust their housing expenditure downwards to accommodate the overall decline in their earnings.

6. Conclusions

Given that almost one-fifth of the working-age population in the United States is currently disabled, examining the economic circumstances of these individuals is important for

both economists and policymakers. This paper studies the prevalence of disability and changes in the economic well-being of the disabled surrounding disability onset. We examine changes in earnings, hours of work, employment, hourly earnings, income, poverty, receipt of public transfers, food and housing consumption over the years prior to and after disability onset. We also examine how the changes in these variables differ with the persistence and severity of the disability. Several measurement issues are accounted for as we include in-kind transfers in income and second we account for the underreporting of government transfers. These issues are not handled carefully in much empirical, and can lead to an overstatement of the losses following disability, especially for the less well-off groups that are very dependent on these transfers.

We find that lifetime disability prevalence in the United States has not fallen over the 1980s. The chance of having experienced at least one period of disability for a person who is reaching his retirement age is found to be 72%. In particular, the chance of having experienced a chronic and severe disability rises with age, from about 3% for a 40 year old to 20% for a 60 year old. Consistent with previous research, we show that the well-being of the disabled as a whole declines significantly following disability onset and we show that the decline varies sharply across disabled groups. For the least disabled group, there is very little evidence of a long-term decline in economic circumstances. However, for those with a severe and chronic disability, the decline in well-being is dramatic. The long-term decline for this most disabled group is 61% for annual earnings, 46% for income, 25% for food and housing consumption expenditures and 16% for food expenditures. These drops are more than twice those for the average disabled individual and in the long term, and about 20% of this group lives below the poverty line. We also see a noticeable fall in earnings prior to disability and conjecture that deteriorating health and a high frequency of unemployment may be responsible. The chronic and severe disabled group is not small – 4% of the working-age males currently in this group and about 20% will enter this group by age 60.

Our research also gives a very mixed conclusion about the extent to which individuals themselves and government programs provide insurance against the shock of disability. We find that the least disabled groups do not exhibit large changes in consumption expenditures, but the most disabled group experiences a sharp fall. Future research should investigate the reasons for this fall, including the functioning of private insurance markets and the adequacy of and gaps in coverage of government insurance programs. Faced with an aging population and high disability

prevalence that rises with age we may experience a “double crisis” of rising spending as suggested in Autor and Duggan (2006) and pronounced material deprivation as is suggested in our study.

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Appendix 1

Data Appendix

The PSID Sample

Our primary data source is the Panel Survey of Income Dynamics (PSID). Our sample consists of the male household heads age 22-64 during the survey years of 1968-2003. We require the person to be in the survey for at least 4 years, 3 of which must be consecutive. We require that those disabled after 1978 have 2 consecutive years of non-disability immediately before the first positive limitation report. All disabled must have at least 3 years of data in the subsequent 10 years after the year of onset. Those who are first observed to be disabled in 1999, 2001 or 2003 will automatically be eliminated by the requirement that an individual must be in the survey for at least 3 years after the year of onset.

We replace missing demographic variables with those in the nearest survey year, if available. If such data are not available, we delete those with missing values. The number of observations in the primary sample is 7220.

Source of Variables

The PSID consists of family level data and individual level data. While the same variable can appear in both files, it need not be identical. Based on the assessment of the PSID staff, we select our variables as below:

Age of head: Individual file
Marital status of head: Family level
Education of head: Family level
Hours of work: Family level

Determining the Year of Disability Onset

The year of disability onset is determined by the responses to the retrospective question of when a work limitation started (through 1978) and is the first time a disability is reported following at least two negative limitation report (after 1978). The wording of the retrospective question is: "*How long have you been limited in this way by your health?"* The PSID coded the responses into 4 categories: zero to 18 months, 2-4 years, 5-7 years, 8 or more years. For the 1978 survey, the responses were the actual number of years the individual has been limited. For those disabled who answer the retrospective questions, we select the first string of positive limitation reports. For these years we use the retrospective question to determine the interval in which the onset year must fall. We determine the intersection of these intervals, taking the onset year to be the earliest year within the remaining interval. If the individual's first observed disability is prior to the earliest year given by the retrospective questions, we will take the year of first observed disability as the year of onset. Those who answered the category "8 or more years" all the time are dropped from the sample as their condition might be birth related. For those who do not

answer these retrospective questions, we require them to have 2 consecutive years of non-disability immediately before the first observe positive limitation.

We do not regard a missing response to the disability question as a negative limitation report. Note also that an individual who first reports disability in the 1990 wave, for example, may actually have had his condition since soon after his previous interview in 1989. We therefore adjust his year of onset by determining the midpoint of the dates between the interview that he reported a positive limitation and the interview in the previous year, if available. Should this midpoint fall in year t-1 for an individual who first reported disability in year t, his year of onset would be year t-1. We make this adjustment only for those who do not answer the retrospective disability questions. If an adjustment is made such that year t-1 is the year of onset, we still count the disability report in year t as the onset report.

Severity questions and main possible responses in the PSID

The following table shows the questions about limitation severity over time in the PSID.

Screening question: Do you have any physical or nervous condition that limits the type or amount of work you can do?	
Survey Years	**Question and the main possible responses**
1968, 1972-1976	How much does it limit your work? Completely: "I can't work" Severely: "It limits me a lot" "Some"; "Not much"; can only work a few hours at a time, "must rest"; mentions part-time work; can't life heavy objects; reports periods of pain Limitation, but not on work
1977-1985	Does it limit your work a lot, somewhat, or just a little? A lot Somewhat Just a little
1986-2003	Does this condition keep you from doing some type of work? Yes No (i.e. Not limiting) Can do nothing For work you can do, how much does it limit the amount of work you can do – a lot, somewhat or just a little A lot Somewhat Just a little Not at all Answered "Can do nothing" or "Not Limiting" in the preceding question

Note that starting with the 1986 wave, the individual first answered whether the condition caused them to be unable to anything, before answering the extent of the disability question. Even though those who said "Can do nothing" or the condition is "Not limiting" were not asked the subsequent seriousness question, we can still divide them into the six qualitative types. We utilize only the severity reports up to the 10th year after onset. The results are virtually the same when more severity reports are used for the longer-term disabled.

Accounting for Underreporting

We scale up the five main programs for the disabled using these underreporting rates: Unemployment Insurance (0.603), Workers' Compensation (0.373), Social Security Disability Insurance (0.823), Supplementary Security Income (0.608) and Food Stamps (0.66). Since unemployment benefits and Workers' Compensation were combined for the earlier years, the underreporting rate for these two benefits combined is 0.484). Also in some of the years we only have social security income, rather than each component separately, we assume that those families with a member above the age 62 were receiving retirement income. Thus we only count social security income as disability insurance if none of the members in the family is above 62.

Poverty Thresholds

The official poverty line varies with the number of adults, children and family member over age 65. We use the official poverty thresholds published by the U.S. Census bureau annually from 1980 to present. For poverty thresholds prior to 1980, we use the CPI-U to index the 1980 thresholds backwards.

Weights

Weights are adjusted using the population multiplication factors given in the PSID documentation. These multiplication factors are: 1969-1971: (400), 1972-1977: (500), 1978-1983 (565), 1984-1996 (688), 1997 and beyond (1000).

Definitions

Adjusted Income equals income but with DI, SSI, FS, WC and UI receipts scaled up using the underreporting rates.

Asset Income is the sum of rental income, interest and dividend income, non-labor farm and gardening income, alimony and non-labor business income for head and wife of the family.

Food Expenditures are the sum of the value of food consumed at home, food eaten outside, and the value of food stamps received.

Consumption Expenditures are the sum of food and housing expenses.

Housing Expenditures are the sum of rent paid, subsidized housing received, and for home owners, 6% of current home value.

Hourly Earnings are the amount of annual earnings divided by the number of hours worked in the year.

Income is the sum of labor income, asset income, transfer income, value of food stamps received and the rental equivalence for those who received subsidized housing.

Private Transfers are the sum of money received from friends and relatives by all family members.

Public Transfers are the sum of AFDC, UI, WC, SSI, Social Security Income, Food Stamps, Rental Equivalence of Subsidized Housing, and Other Welfare Benefits.

Severity Ratiois the fraction of the seriousness reports (up to the 10^{th} year after the year of onset) such that the individual reported "Can do nothing", "Completely", "A lot" or "Severely".

Under-reporting Rate is the ratio of weighted aggregate benefit receipts in the PSID and the administratively reported amount of benefits paid out.

Independent Variables in the Regression

1) Time dummies
2) State dummies
3) Marital Status
4) Education Indicators (12-16 years of education and 17+ years of education)
5) Number of Children under 18 years of age
6) Age and Age-Squared
7) Time dummies for the year since onset, 21 in total representing the 10 years before and after the year of disability. A separate set of time dummies for different severity class.
8) Number of members in the family (except in the earnings, hours and hourly earnings regressions).

Appendix 2

Charles (2003) Replication Appendix

In this appendix, we attempt to replicate some of the results in Charles (2003) and we report estimates from some closely related specifications. Our main paper begins with similar data and methods to those in Charles (2003). However, the qualitative features of our findings are sufficiently different from those reported in Charles (2003) that the earlier work merits a closer examination. Charles (2003) finds a small decline in earnings and hours following disability onset, even for those who have positive disability reports for each of the next ten years. These outcomes also rebound quickly after the onset of disability. We find large and persistent declines in earnings and hours, generally several times those reported in the published paper. We believe the current findings because identical version of the full sample results below (Appendix Figures 4 and 8) were arrived at by two research teams working independently without sharing any computer code.

Specifically, we attempt to reproduce the results from that paper for changes in log real earnings and annual hours worked. The sample is male household heads in the 1968-1993 waves, though we also report some estimates including data through the 2003 wave. The selection of the disabled sample is the same as that in the main text. The grouping of the disabled here follows that in Charles (2003), rather than that in the main text of this paper. Charles (2003) divides the disabled into three groups based on their post onset disability history. The three groups are those who report a limitation in all years (that the individual is in the survey) following onset, those who never report a limitation again after onset, and those who do not belong to the two previous categories (all other disability histories). In addition, those who are disabled before 1967 are put in the residual group since we do not observe their histories until the first wave of the survey.

The initial model estimated is:

$$y_{it} = \alpha_i + w_i t + \gamma_t + X_{it}\beta + \sum_h \sum_k \delta_k^h A_{kit}^h + \varepsilon_{it}$$

Where y_{it} is either log real earnings or annual hours for person i in year t, X_{it} is a set of time-varying explanatory variables including marital status, state of residence, age and age-squared, and education, α_i is an individual fixed effect, γ_t is an indicator variable for year t. A_{kit}^h is an indicator variable which equals one if in year t, individual i belongs to disability group h and he is k years from the year in which he becomes disabled, and ε_{it} is a potentially serially correlated error term. As explained above, there are three disabled groups so $h \in \{1, 2, 3\}$. As in Charles (2003), we look at changes 10 years before and 10 years after the year of disability onset, thus $k \in \{-10, -9, \ldots, 9, 10\}$. Note that Charles (2003) includes an individual specific time trend $w_i t$ in the specification, so we do here also. We also require that each individual must have at least 3 observations in the person-year format.

With the change in log real earnings as the dependent variable, we delete, as in Charles (2003), those individuals who have zero earnings in the person-year format of the data. Although Charles (2003) also includes a selectivity correction, we do not include it in our replication as

Charles (2003) points out that the results of the various models are nearly identical to what is obtained when the Heckman correction is not used.

Estimation of this model follows Jacobson et al. (1993):

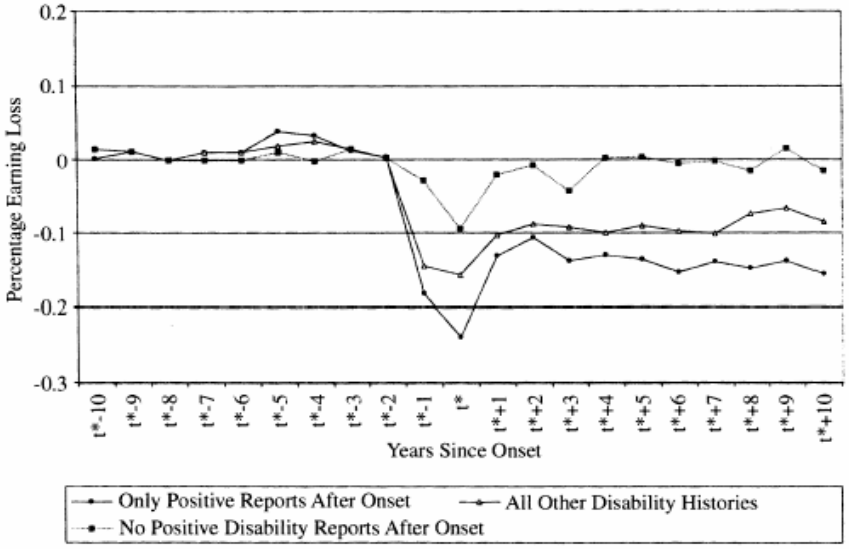
1) For each person i, we regress each variable (dependent variables, time dummies and the variables in X, and the time from onset dummies) on a constant and a variable which equals (year of the observation in the person/year format -1967), for all the data in the person/year format pertinent to this person i.

2) Obtain the residuals from the above regression, giving us for each person, his detrended log earnings, hours, age, age-squared etc.

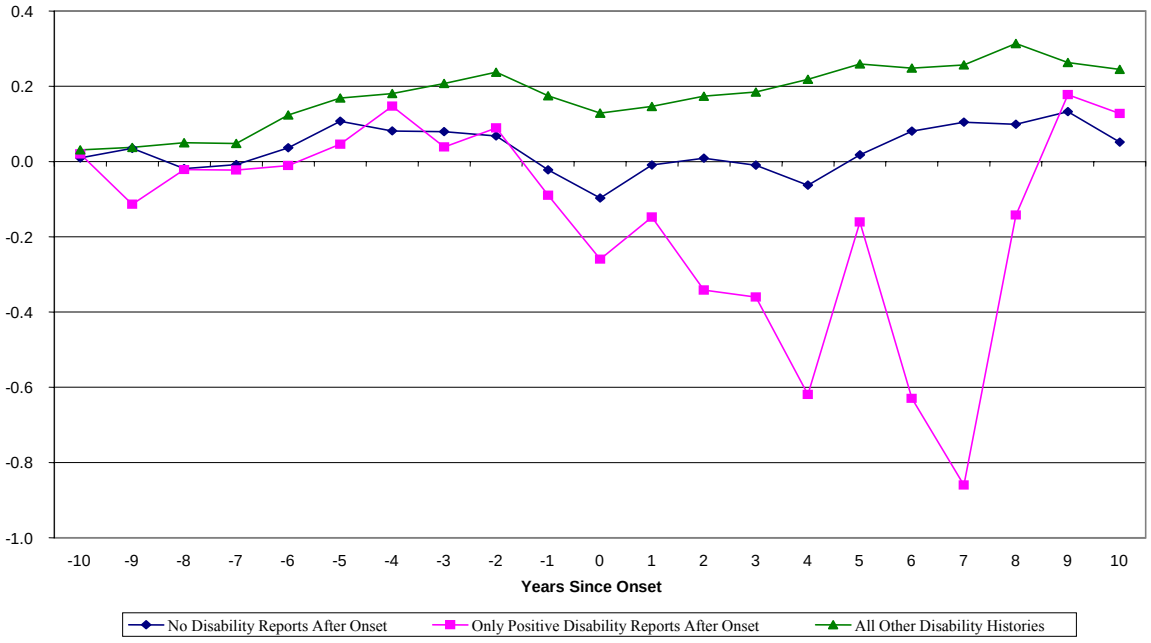
3) We then regress the detrended dependent variables on the detrended explanatory variables using OLS. For example, for the log earnings regression, we regress the log earnings residuals on the time dummy residuals, age residuals, age-squared residuals, marital status residuals, time from onset dummy residuals etc. We do not have a constant in the regression. Thus this "partialing out" removes the $w_i t$ term and the fixed effect term.

Appendix Figure 1 is a reproduction of Figure 1 for the change in log(annual earnings) for disabled men in Charles (2003). Appendix Figure 2 is our attempted replication of this same figure.

Appendix Figure 1
Change in Log (Annual Earnings) for Disabled Men,
A Reproduction of Figure 1 in Charles (2003)



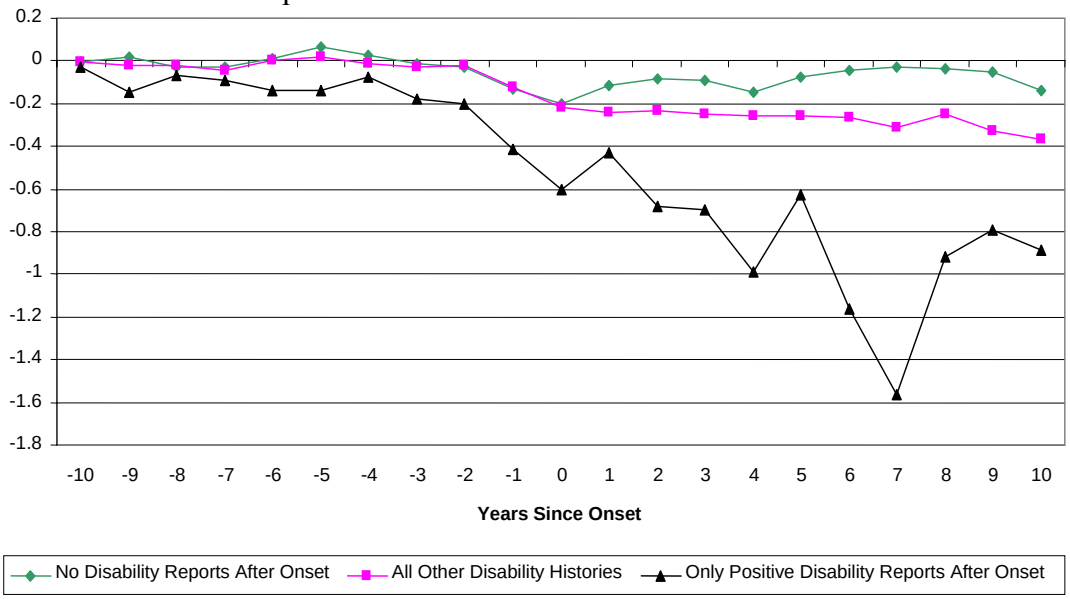
Appendix Figure 2
Change in Log(Annual Earnings) for Disabled Men
Specification with Individual Specific Time Trends



Appendix Figure 2 indicates a much larger fall in earnings in the years immediately after onset than indicated in Appendix Figure 1 for the most disabled group. There also is a surprising rise in post-disability earnings in the years 8 to 10 years after onset for this group. This pattern in the later years is likely due to the restriction of this most disabled group to only those that never have a positive post onset limitation report (and have positive earnings). This restriction leads to a small sample size for this group; there are never more than 14 observations in any of the last 3 years. There also is an anomalous rise in earnings for the "all other disability histories" group. The estimation of the person specific time trends using very limited information seems to add to the sensitivity of these estimates. For this reason, we focus on the estimates with individual fixed effects, but without individual specific time trends below.

Appendix Figure 3 reports estimates from the same sample and specification as Appendix Figure 2, except individual specific fixed effects are included rather than individual specific time trends.

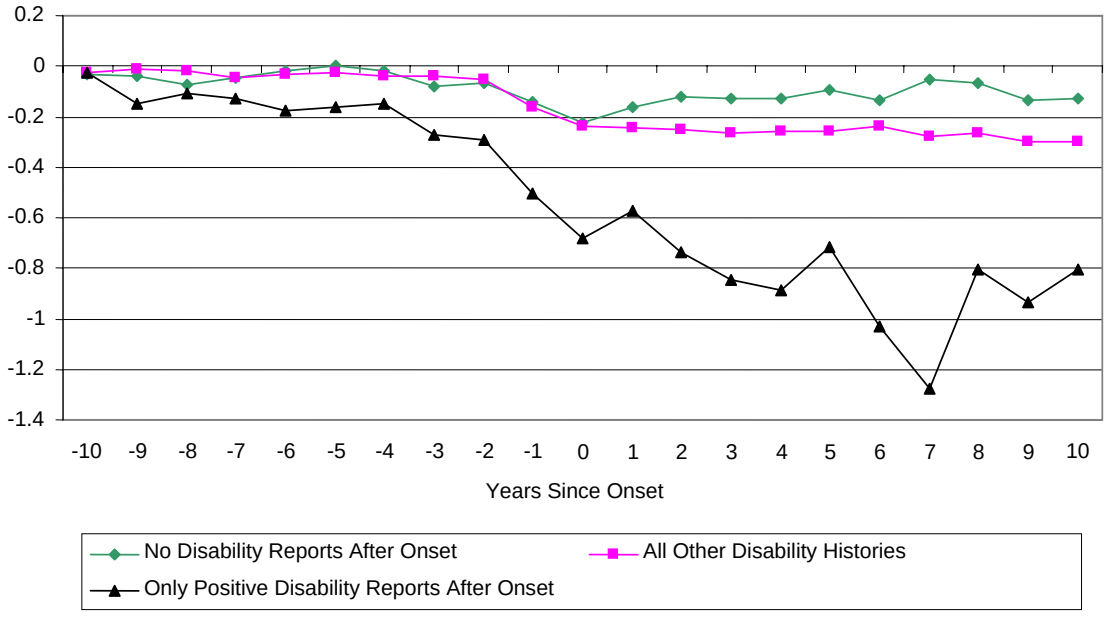
Appendix Figure 3
Change in Log(Annual Earnings) for Disabled Men
Specification with Individual Fixed Effects



The estimates in Appendix Figure 3 indicate post onset losses that do not disappear for all three disability groups. For the most severely disabled group the loss in earnings are particularly severe, about a full log point. This is a sharply different pattern from that shown in Appendix Figure 1 where earnings losses are at most a bit over .2 log points and diminish after onset.

We also updated this figure to include data through 2003. The resulting pattern is shown in Appendix Figure 4.

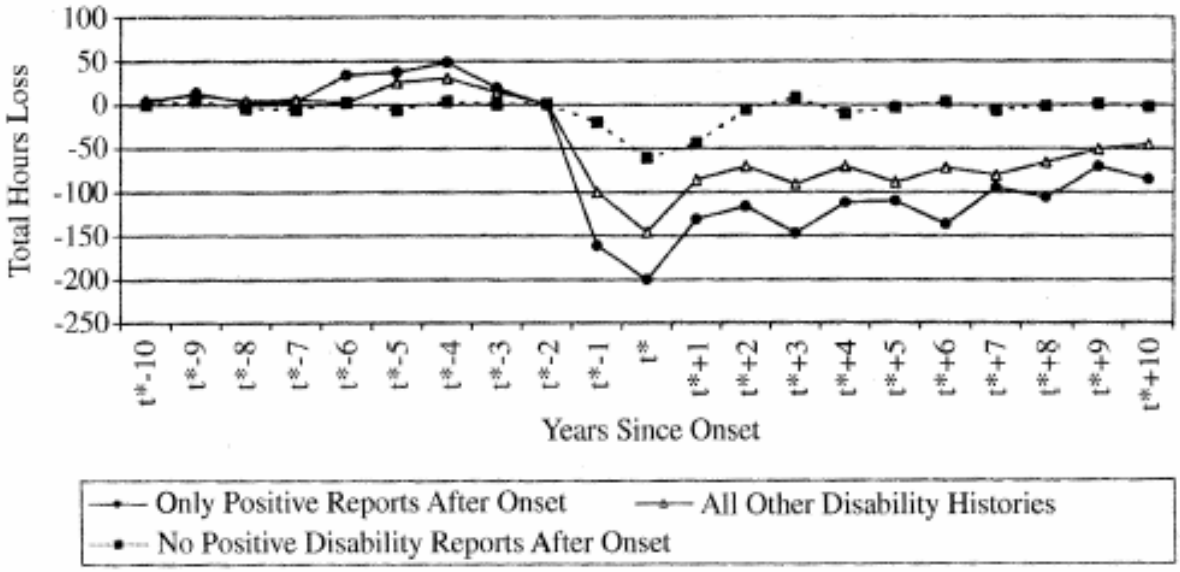
Appendix Figure 4
Change in Log (Annual Earnings) for Disabled Men
Specification with Fixed Effects, Data through 2003



The pattern in Appendix Figure 4 is very similar to that in Appendix Figure 3.

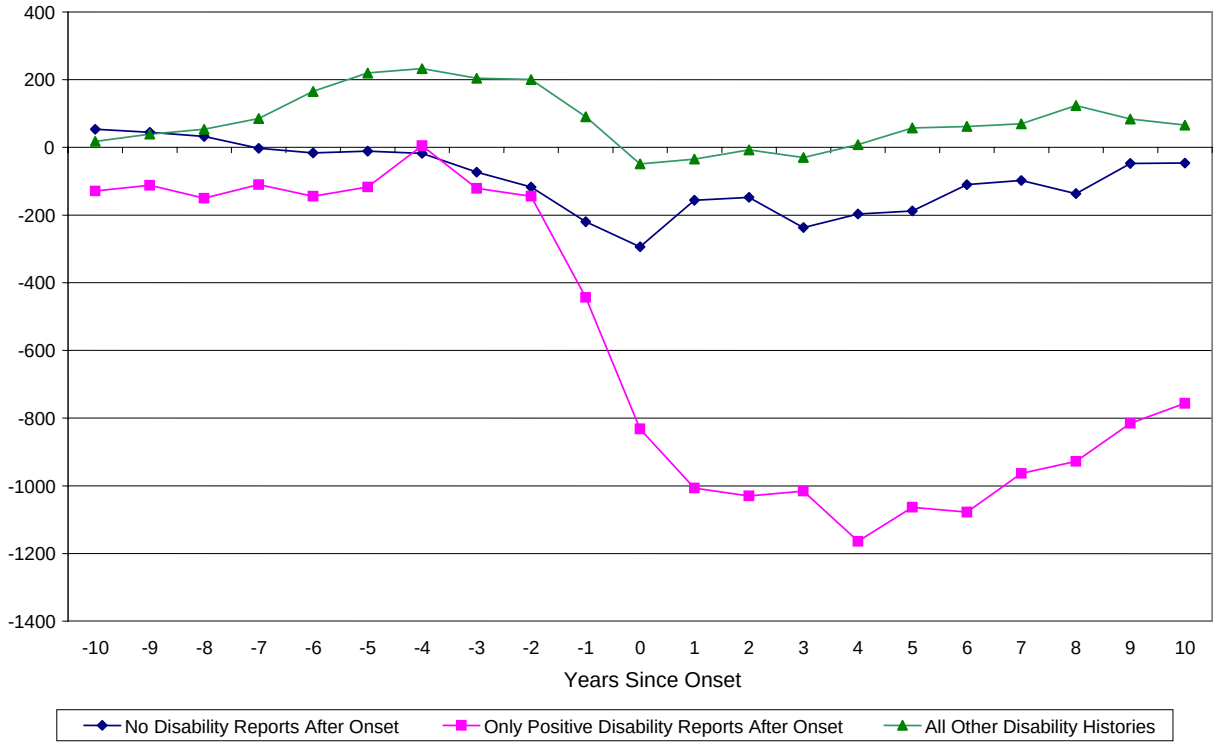
The second outcome that we examine is the change in hours worked surrounding disability onset. Appendix Figure 5 below is a reproduction of the original Figure 2 in Charles (2003).

Appendix Figure 5
Change in Annual Hours of Work for Disabled Men,
A Reproduction of Figure 2 in Charles (2003)

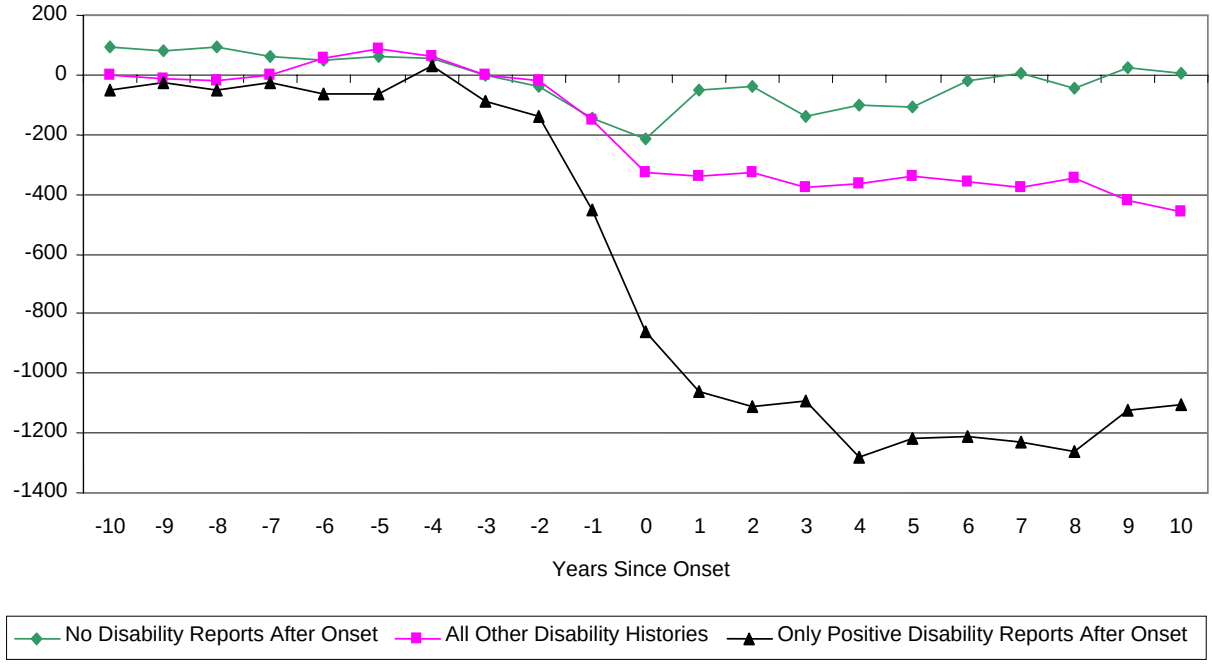


Appendix Figure 6 reports our replication of Appendix Figure 5. The pattern is very different with the most disabled group seeing an hours decline six times as large at its greatest point as that seen in the published figure. A slight recover occurs in hours by ten years after onset, but the drop in hours is still about eight times as large in our new figure. Appendix Figure 7 reports the hours pattern for the same sample and specification, but again we replace the individual specific time trends with individual specific fixed effects. The pattern is quite similar except there is less of a recovery of hours five to ten years after disability onset. Appendix Figure 8 reports the same specification using a sample extended through 2003. The augmented data suggest somewhat larger declines in hours than those in Appendix Figure 7.

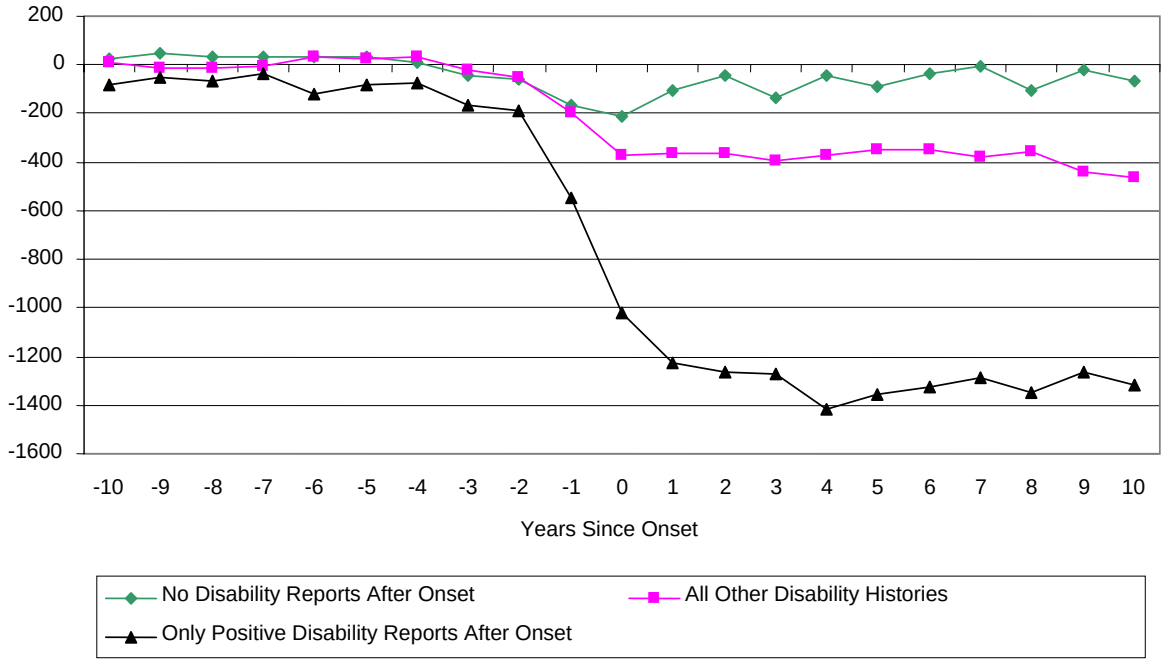
Appendix Figure 6
Change in Annual Hours of Work for Disabled Men
Specification with Individual Specific Time Trends



Appendix Figure 7
Change in Annual Hours of Work for Disabled Men,
Specification with Fixed Effects



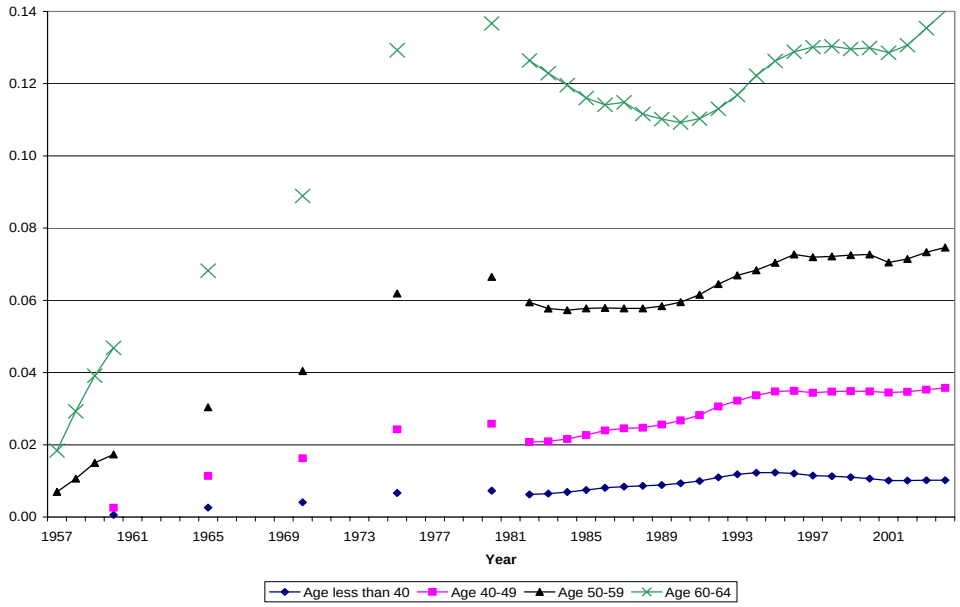
Appendix Figure 8
Change in Annual Hours of Work for Disabled Men,
Specification with Fixed Effects, Data through 2003



.

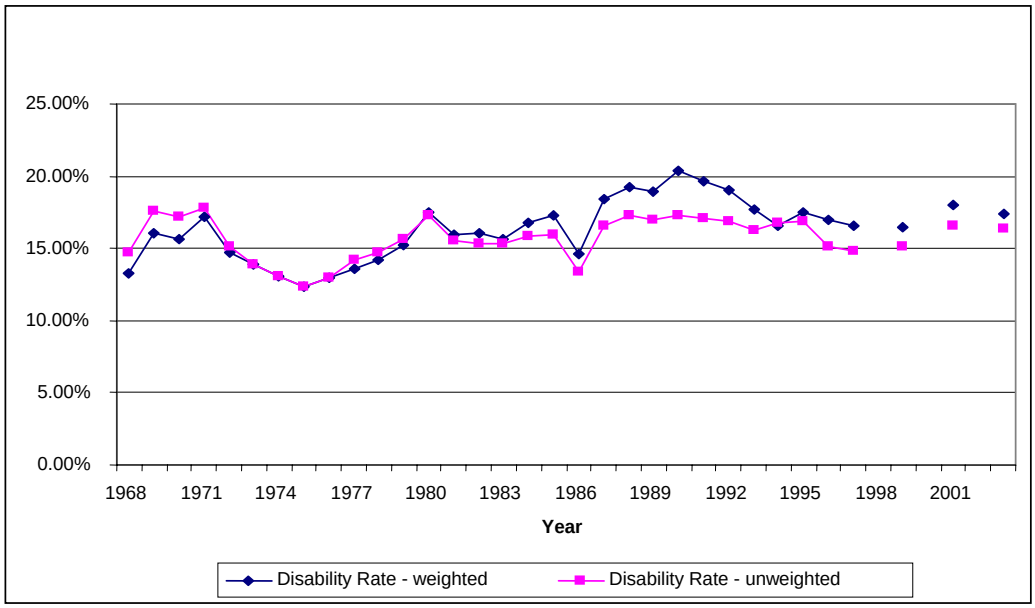
Overall, the corrected analyses indicate much larger losses from disability than those in the published paper. This pattern is evident for both earnings and hours and is especially pronounced for those with the most long-lasting disabilities.

Figure 1
SSDI Recipient to Population Ratios by Age, Males, 1957-2004



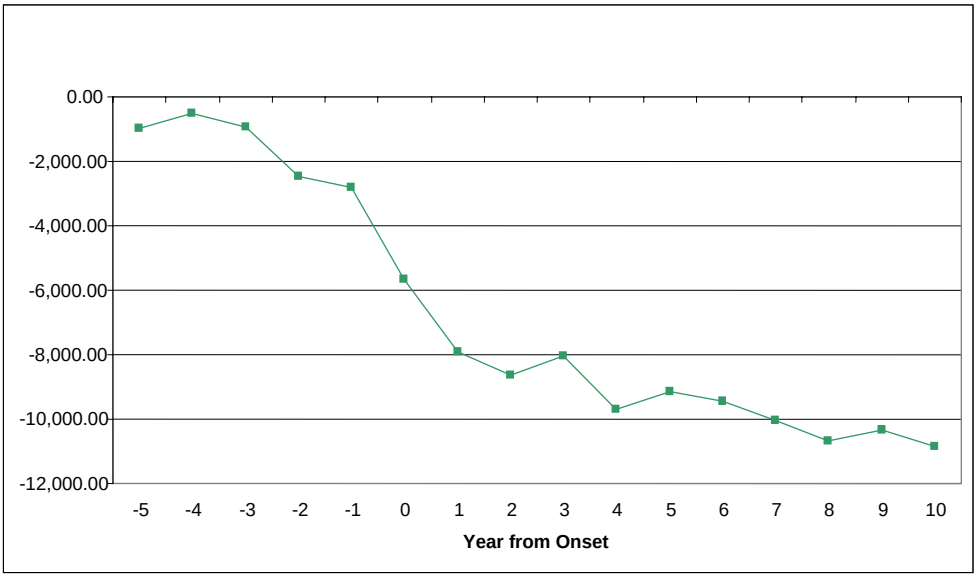
Source: Annual Statistical Supplement, Various Years and US Census Bureau

Figure 2
Disability Rate, Male Household Heads, 1968-2003



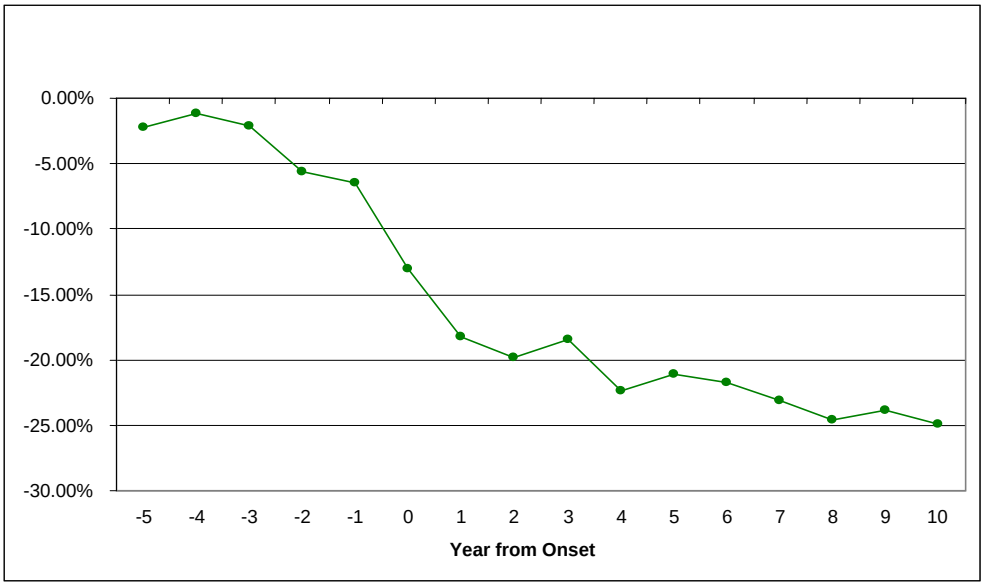
This figure shows the percentage of male household heads that are currently disabled in the PSID. The sample is household heads 22-64 years of age who are in the survey for at least three consecutive years. The currently disabled are those who report having a physical or nervous limitation in the survey year. PSID family weights are used. See the notes to Table 1 for more detail.

Figure 3a
Change of Annual Earnings Before and After Disability, All Disabled



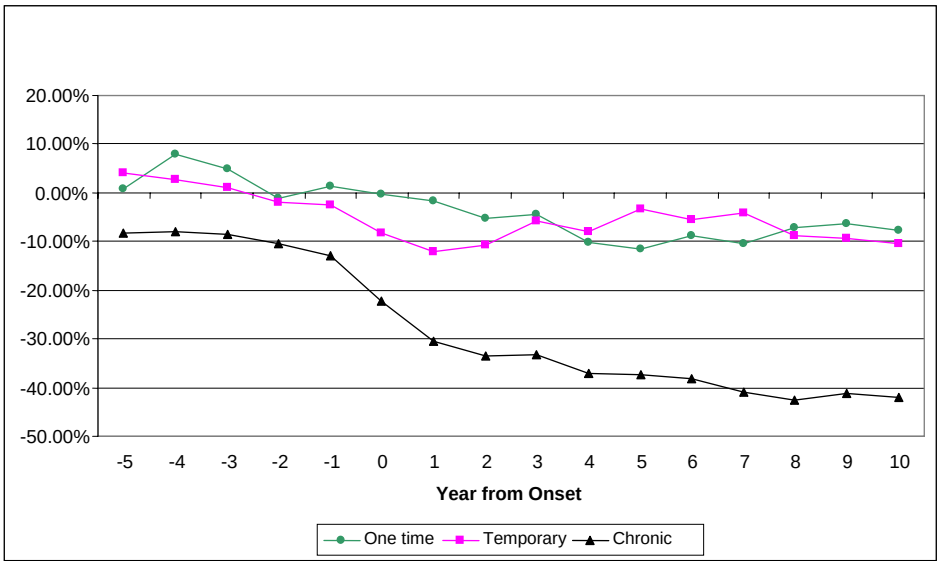
This figure plots the fixed effect regression estimates in Table 3. See Table 3 for details.

Figure 3b
Implied Percentage Change in Annual Earnings Before and After Disability, All Disabled



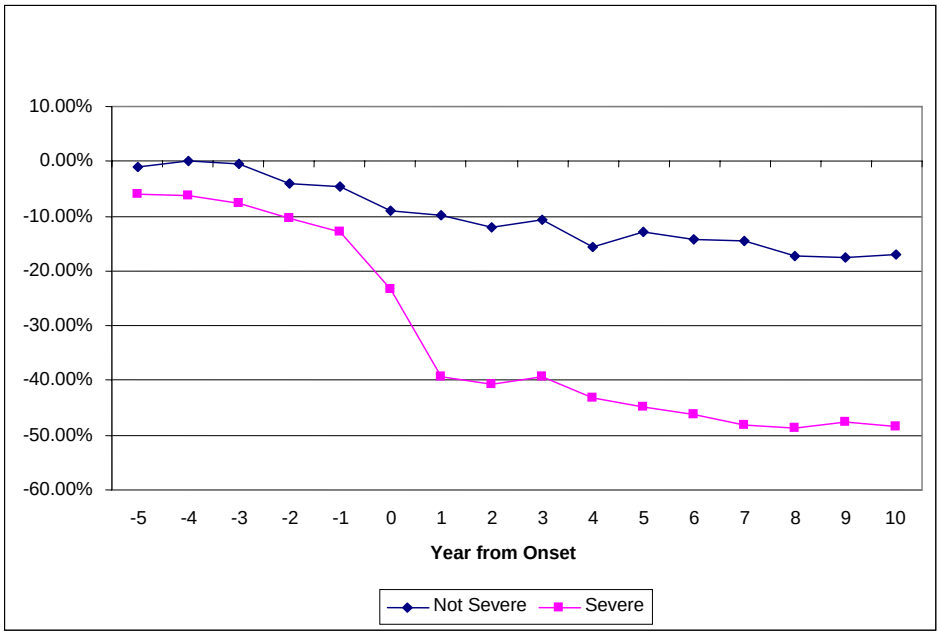
This figure plots the percentage change in annual earnings of the disabled relative to their earnings prior to the 5th year before disability as implied by estimates in Table 3.

Figure 3c
Implied Percentage Change in Annual Earnings Before and After Disability, By Persistence Group



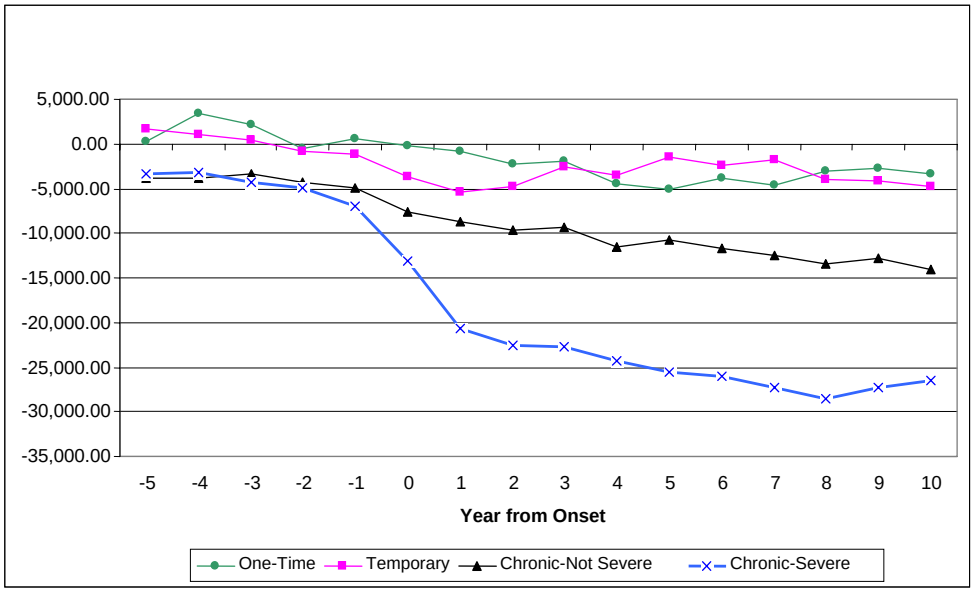
This figure plots the percentage changes implied by estimates in Table 4a.

Figure 3d
Implied Percentage Change in Annual Earnings Before and After Disability, By Severity Group



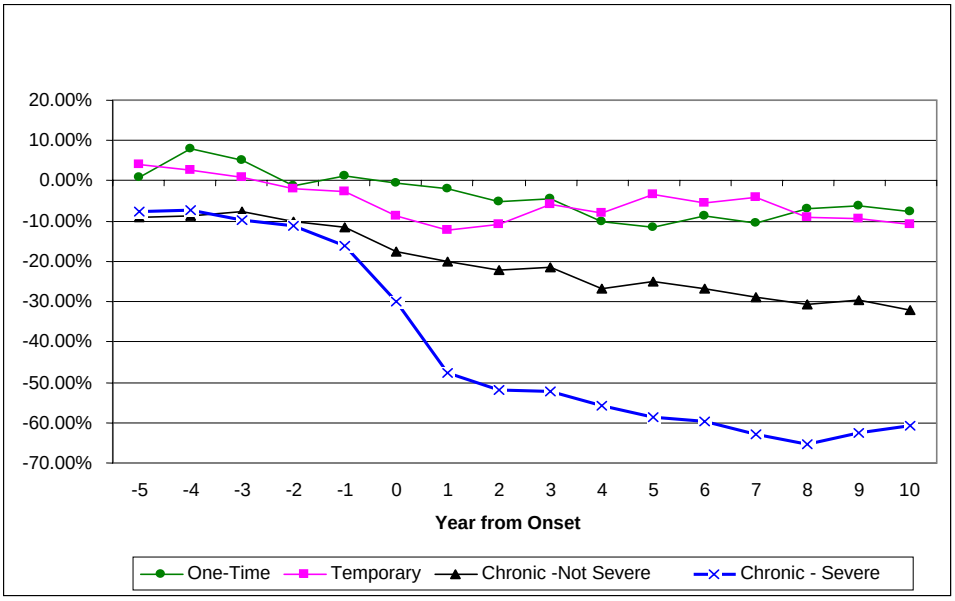
This figure plots the percentage changes implied by estimates in Table 5.

Figure 3e
Change in Annual Earnings Before and After Disability,
By Extent of Disability Group



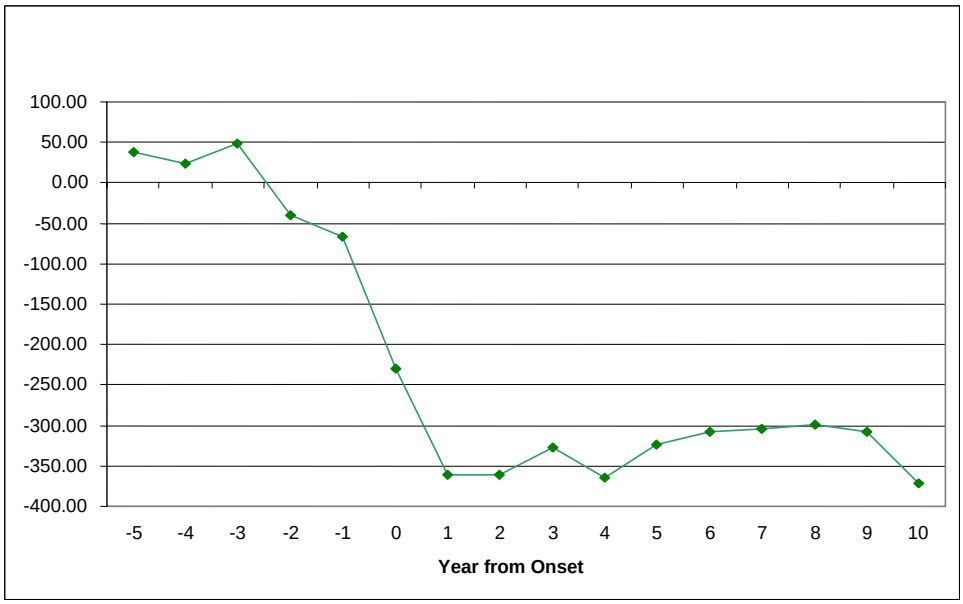
This figure plots fixed effect regression estimates in Table 4a.

Figure 3f
Implied Percentage Change in Annual Earnings Before and After Disability,
By Extent of Disability Group



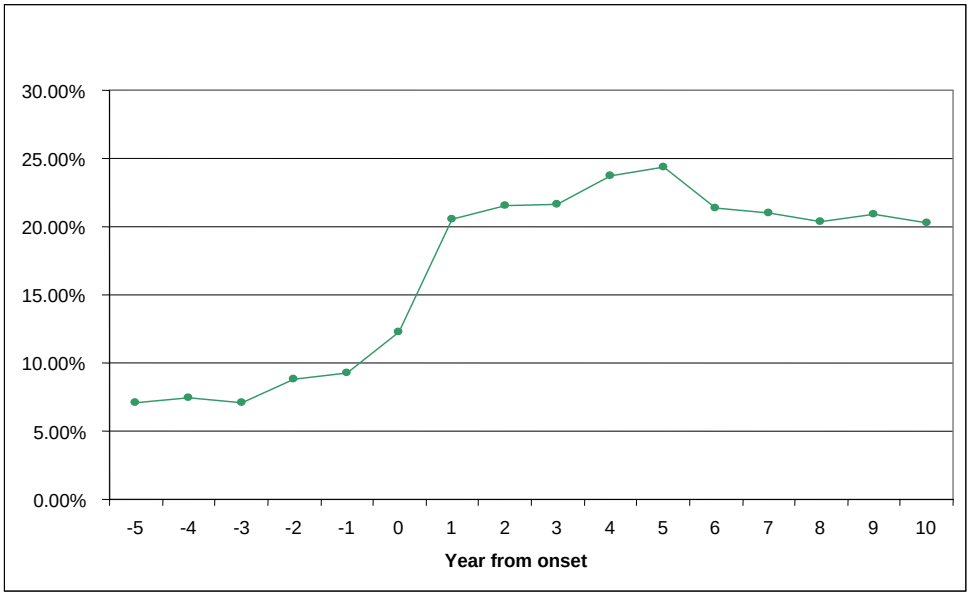
This figure plots the percentage change in annual earnings of the disabled relative to their earnings prior to the 5th year before disability as implied by estimates in Table 4a.

Figure 4a
Change in Annual Hours of Work Before and After Disability, All Disabled



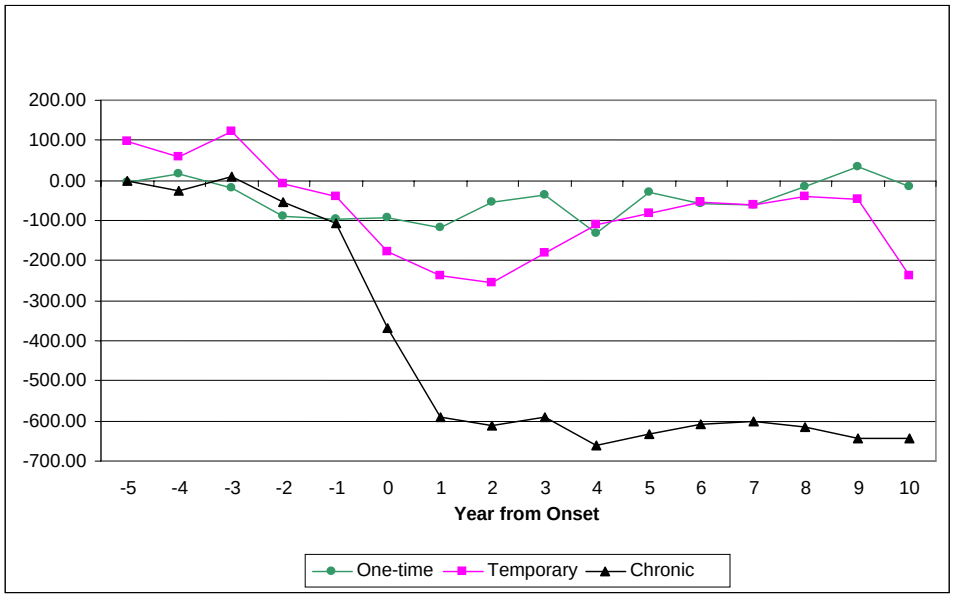
This figure plots fixed effect regression estimates from Table 3.

Figure 4b
Percentage with Zero Hours of Work Before and After Disability, All Disabled



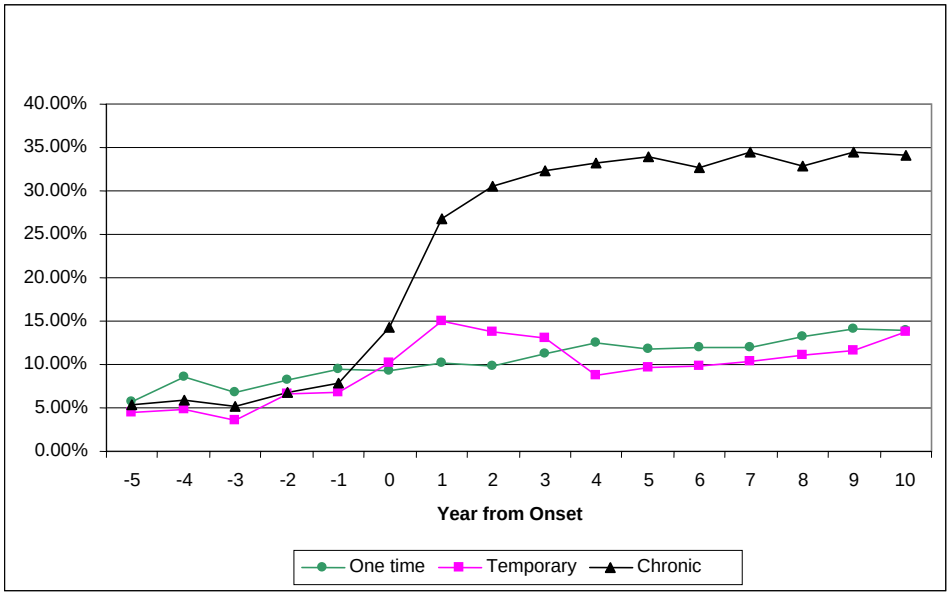
This figure shows the percentage of the disabled who work zero hours in the year.

Figure 4c
Change of Annual Hours of Work Before and After Disability, By Persistence Group



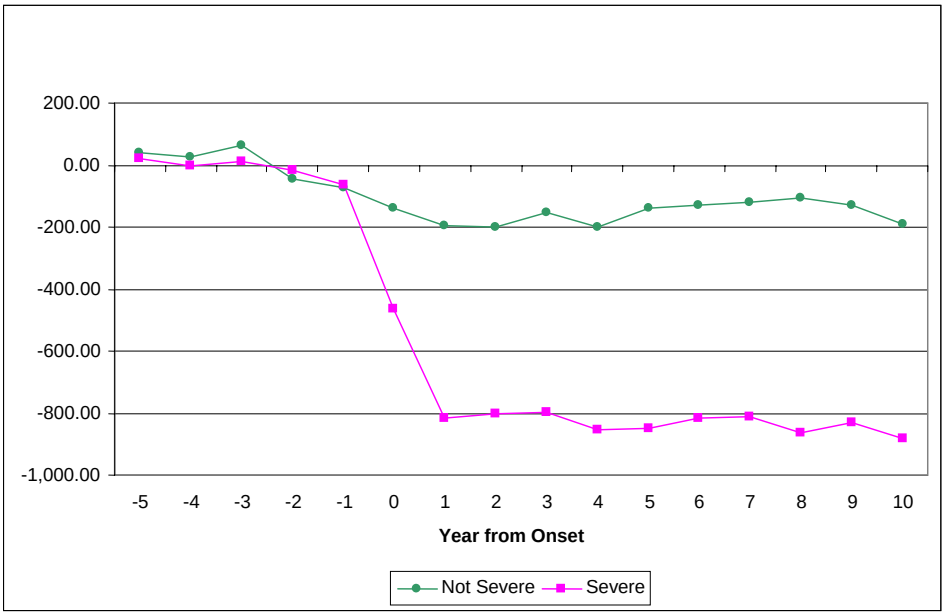
This figure plots fixed effect regression estimates from Table 4b.

Figure 4d
Percentage with Zero Hours of Work Before and After Disability, By Persistence Group



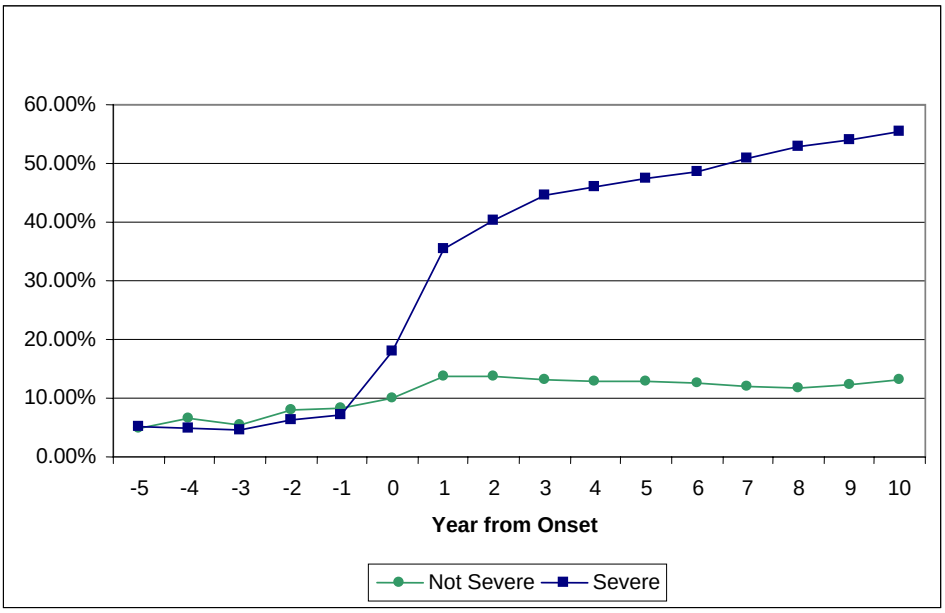
This figure plots the percentage of the disabled who worked zero hours as tabulated in Table 4b.

Figure 4e
Change in Annual Hours of Work Before and After Disability, By Severity Group



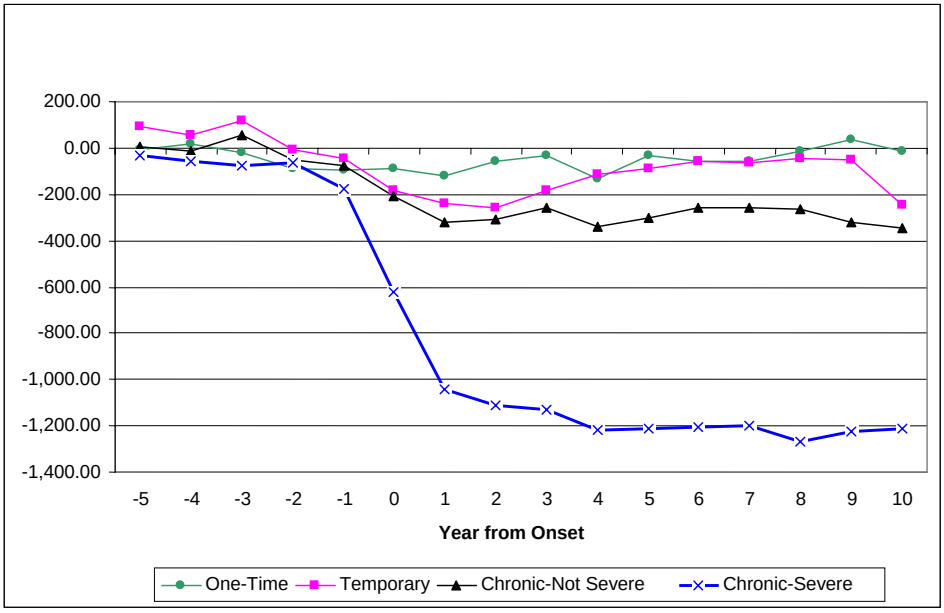
This figure plots fixed effect regression estimates from Table 5.

Figure 4f
Percentage of People with Zero Hours of Work Before and After Disability, By Severity Group



This figure plots the percentage of the disabled who worked zero hours in the years from onset as tabulated in Table 5.

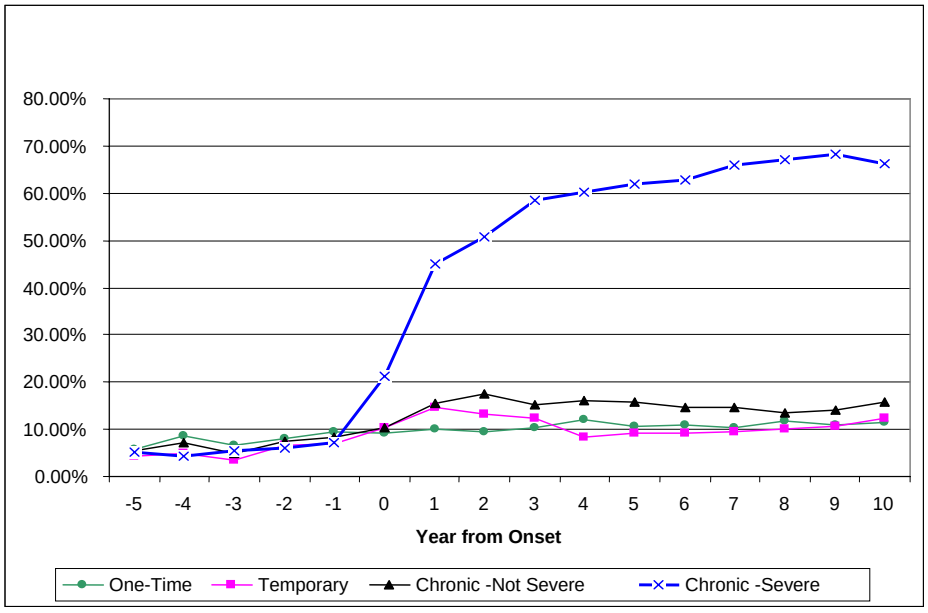
Figure 4g
Change in Annual Hours of Work Before and After Disability, By Extent of Disability Group



This figure plots fixed effect regression estimates from Table 4b.

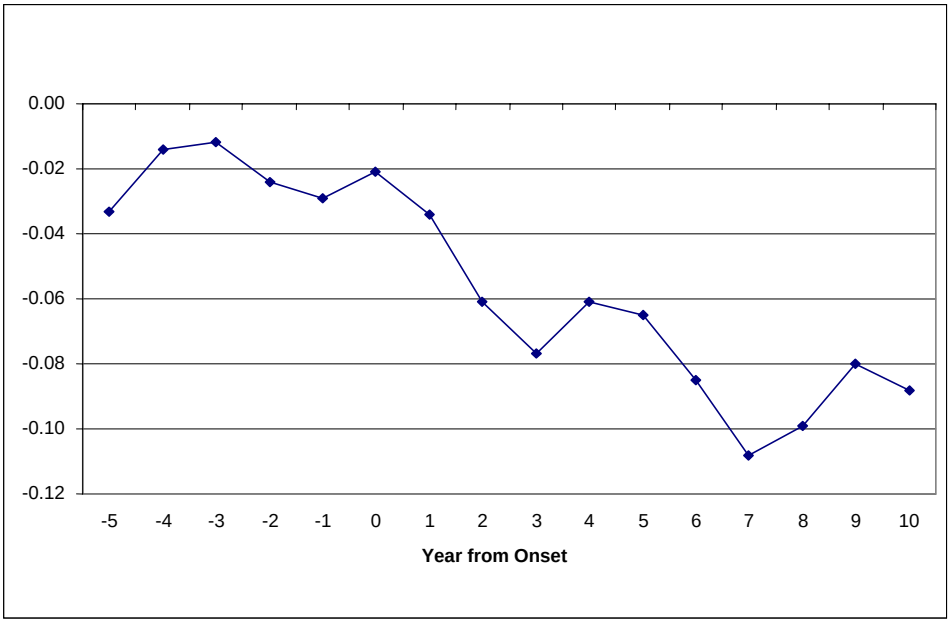
Figure 4h

Percentage of People with Zero Hours of Work Before and After Disability, By Extent of Disability Group



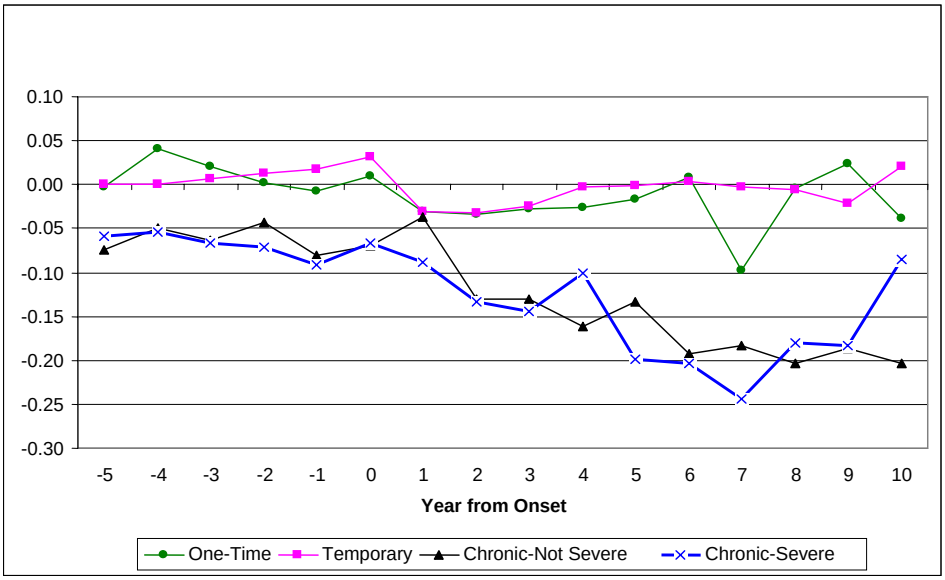
This figure plots the percentage of the disabled who worked zero hours in the years from onset as tabulated in Table 4b.

Figure 5a
Change in Log Hourly Earnings Before and After Disability, All Disabled



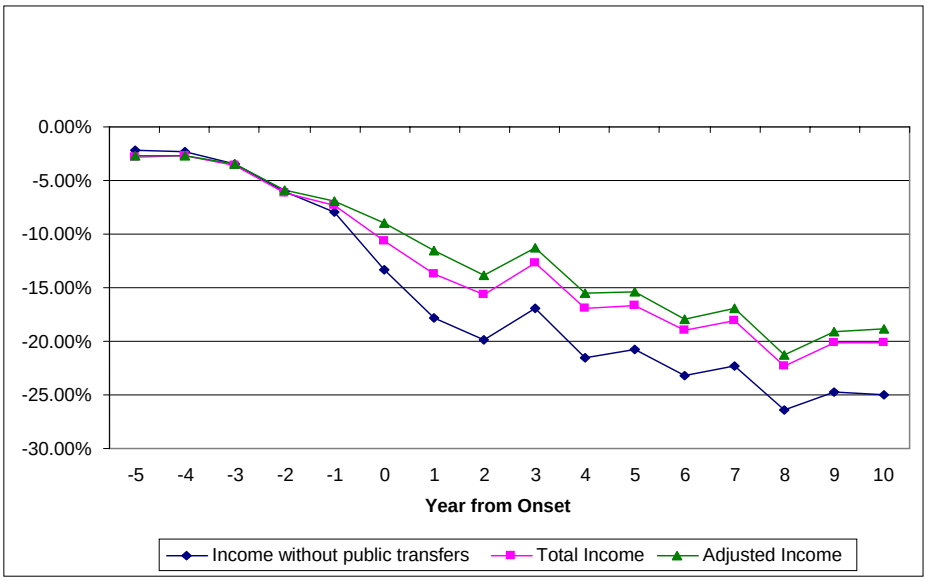
This figure plots fixed effect regression estimates from Table 3.

Figure 5b
Change in Log Hourly Earnings Before and After Disability, By Extent of Disability Group



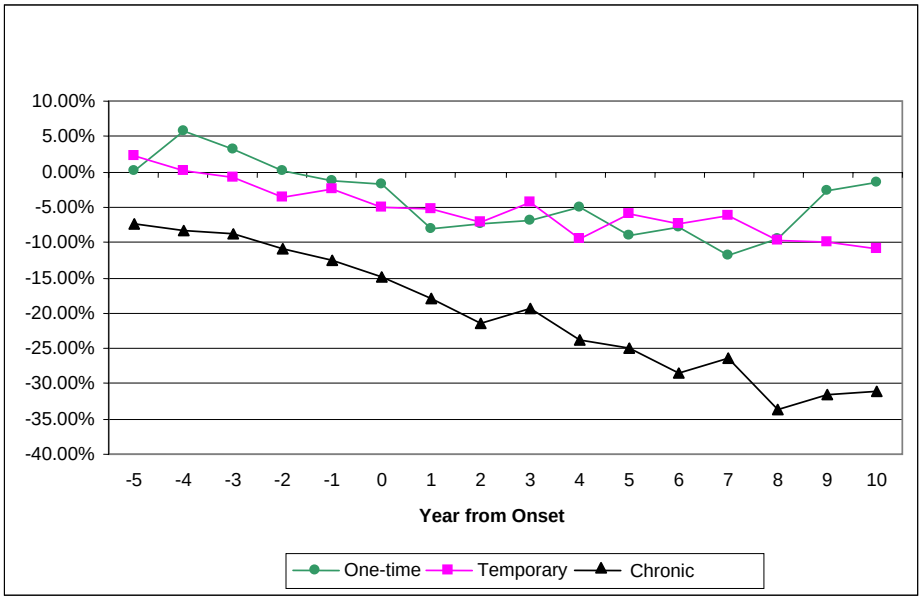
This figure plots fixed effect regression estimates from Table 6. See the notes to Table 6 for details.

Figure 6a
Implied Percentage Change in various Income Measures Before and After Disability, All Disabled



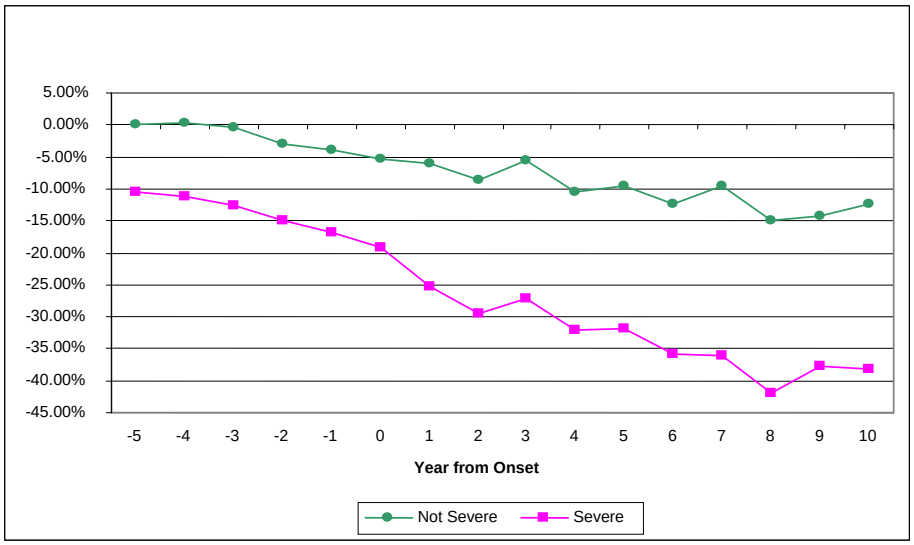
The figure above shows the implied percentage change in various income measures, obtained by dividing the estimates in Table 7a by the corresponding average income measure prior to the 5th year before disability onset (Income without public transfers: $59,304, Total Income: $60,420, Adjusted Income: $60,794).

Figure 6b
Implied Percentage Change in Adjusted Income Before and After Disability, By Persistence Group



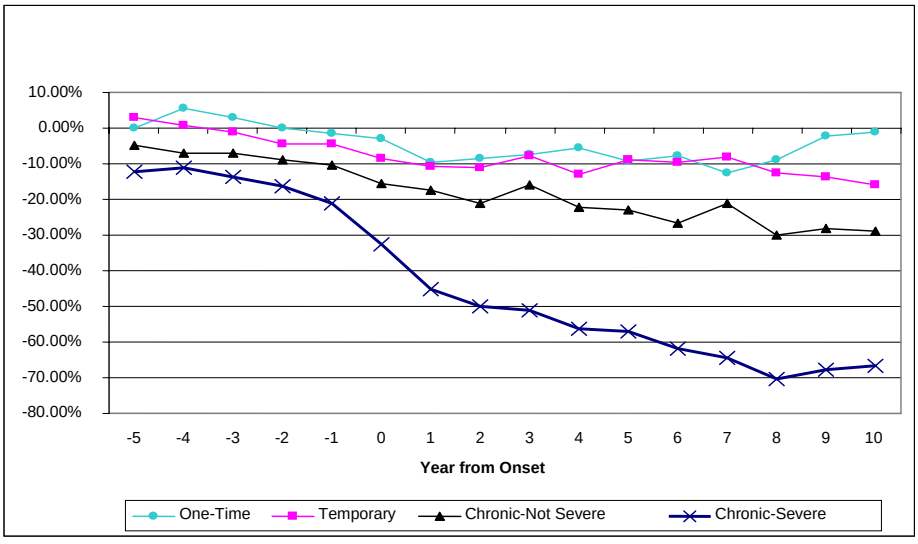
The figure above shows the implied percentage change in adjusted income, obtained by dividing the estimates in Table 7b by the average adjusted income of the disabled prior to the 5th year before disability onset ($60,794).

Figure 6c
Implied Percentage Change in Adjusted Income Before and After Disability, By Severity Group



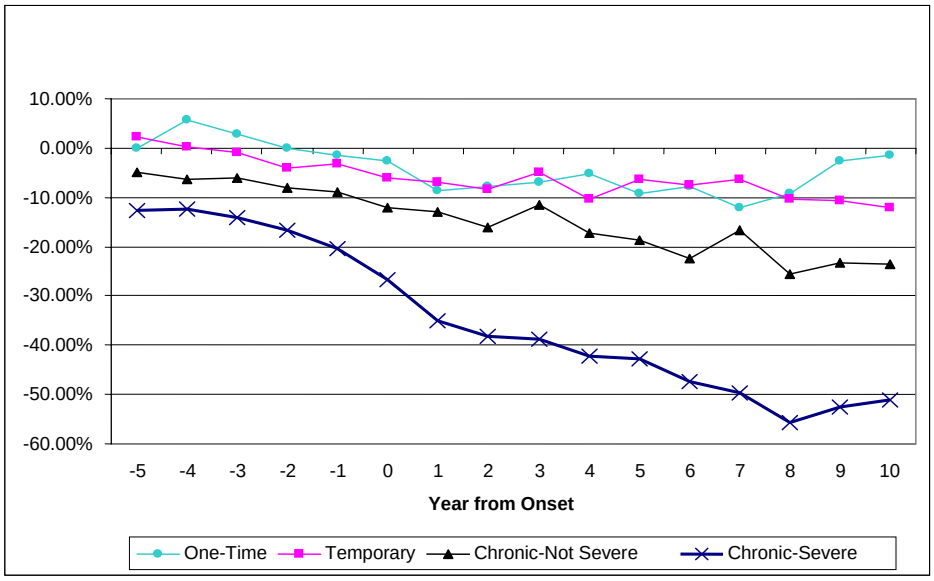
The figure above shows the implied percentage change in adjusted income, obtained by dividing the estimates in Table 7c by the average adjusted income of the disabled prior to the 5th year before disability onset ($60,794).

Figure 6d
Implied Percentage Change in Income without Public Transfers Before and After Disability, By Extent of Disability Group



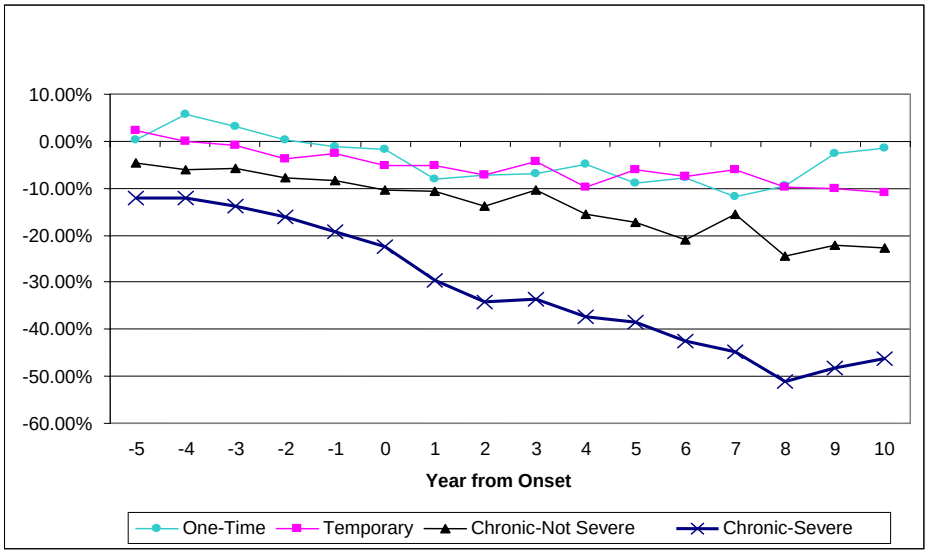
The figure above shows the implied percentage change in adjusted income, obtained by dividing the estimates in Table 7d by the average income without public transfers of the disabled prior to the 5th year before disability onset ($59,304).

Figure 6e
Implied Percentage Change in Total Income Before and After Disability, By Extent of Disability Group



The figure above shows the implied percentage change in total income, obtained by dividing the estimates in Table 7e by the average total income of the disabled prior to the 5th year before disability onset ($60,420).

Figure 6f
Implied Percentage Change in Adjusted Income Before and After Disability, By Extent of Disability Group



The figure above shows the implied percentage change in adjusted income, obtained by dividing the estimates in Table 7f by the average adjusted income of the disabled prior to the 5th year before disability onset ($60,794).

Figure 7a
Fraction of Families with Total Income below the Poverty Line, Families with Male Head

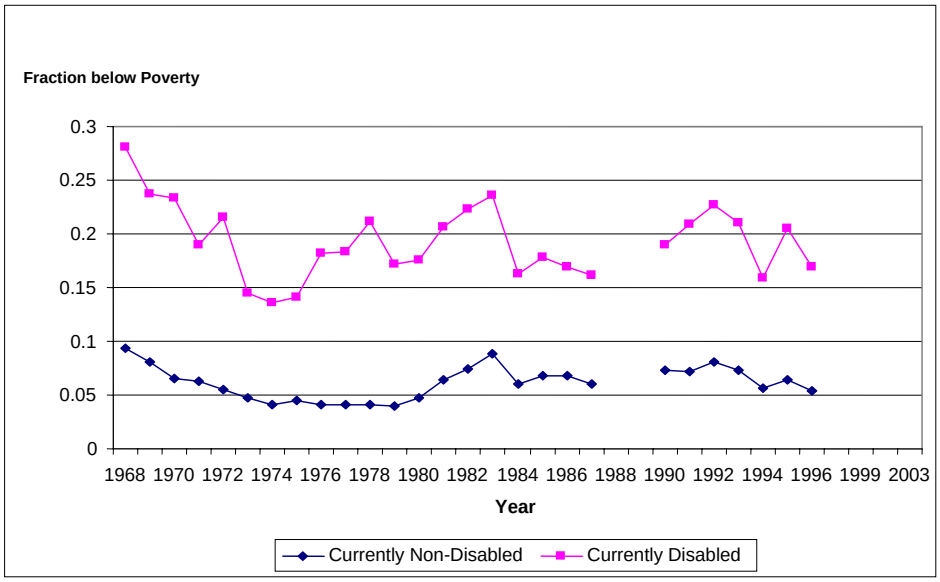


Figure 7b
Fraction of Families with Adjusted Income below the Poverty Line, Families with Male Head

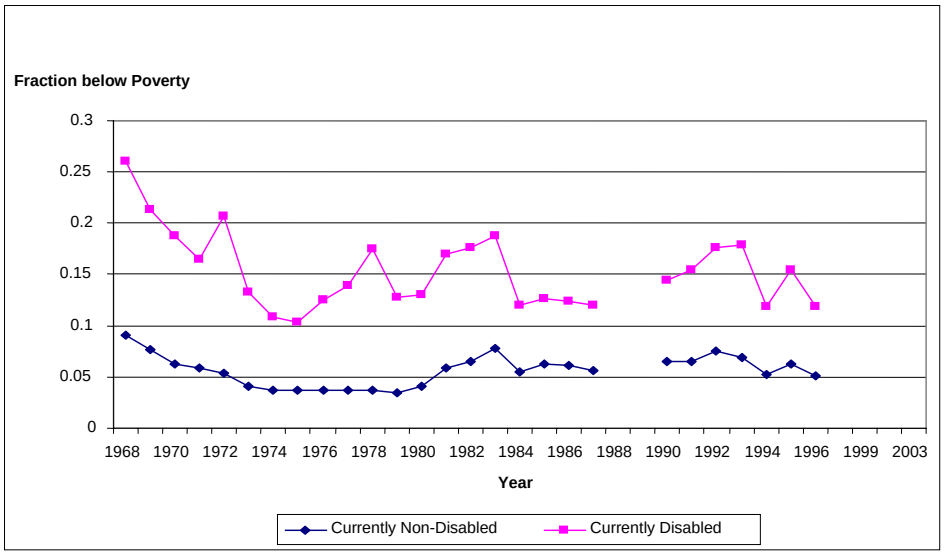


Figure 8a
Fraction of Families with Income below the Poverty Threshold, All Families with Disabled Male Head

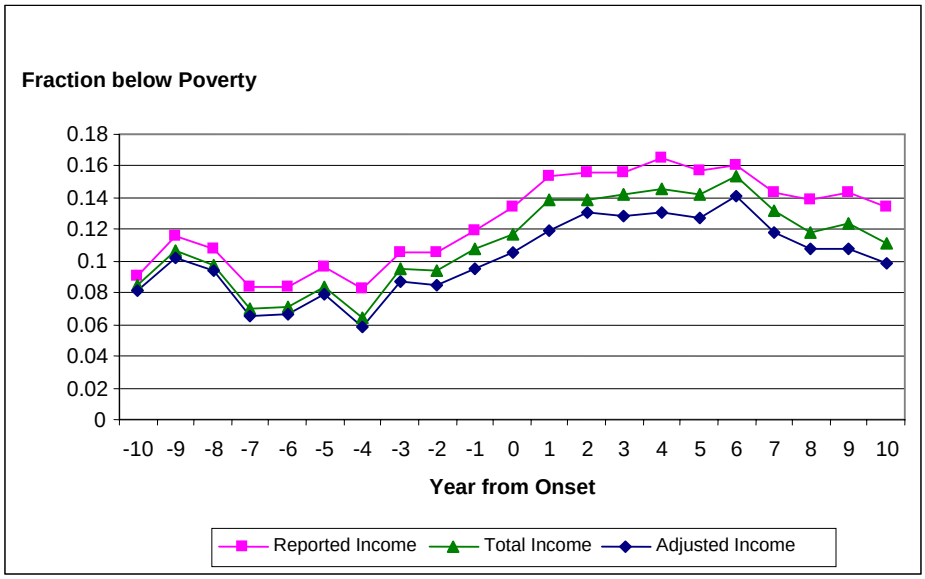


Figure 8b
Fraction of Families with Adjusted Income below the Poverty Line, By Extent of Disability Group

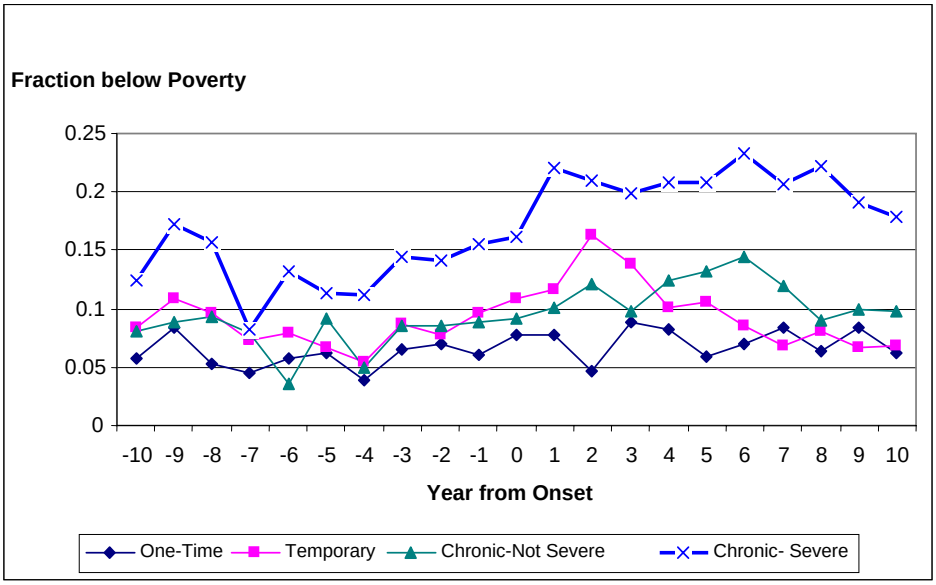
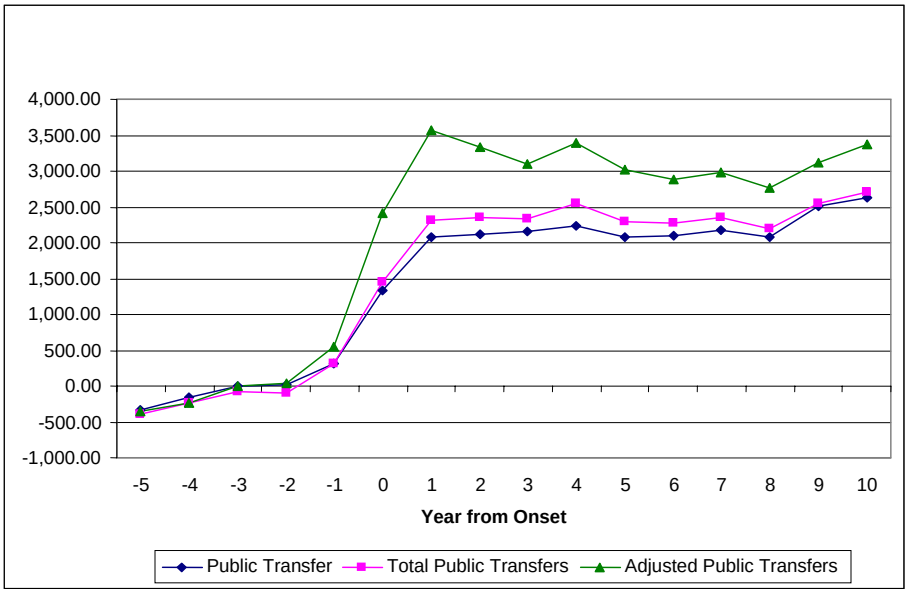


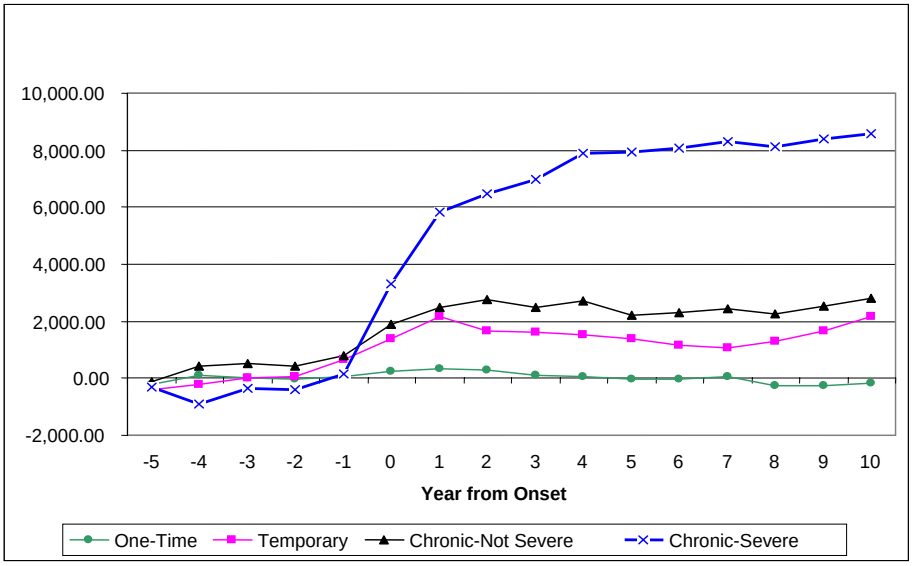
Figure 9a
Change in Various Public Transfer Income Measures Before and After Disability, All Disabled



This figure plots fixed effect regression estimates from Table 8. See the notes to Table 8 for details.

Figure 9b

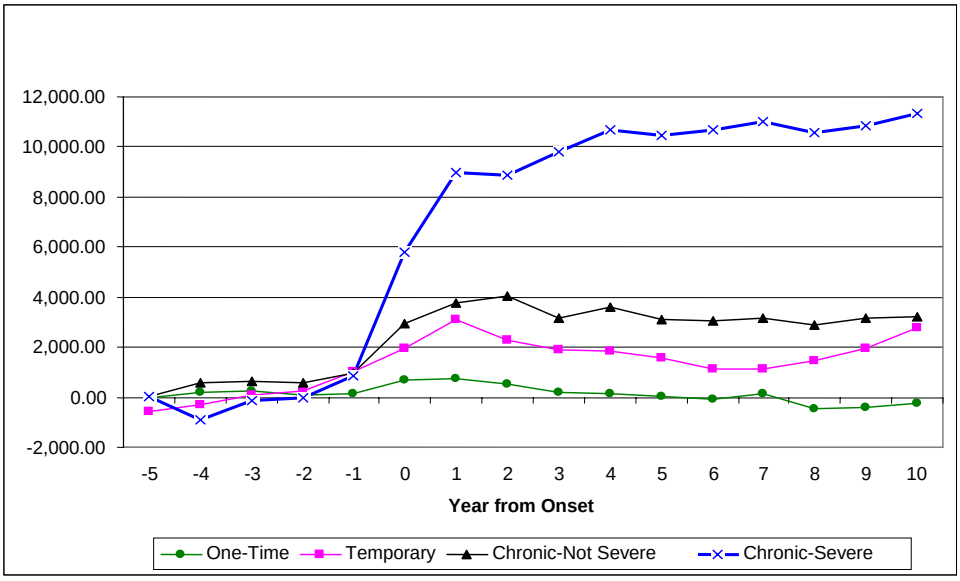
Change in Total Public Transfer Income Before and After Disability, By Extent of Disability Group



This figure plots fixed effect regression estimates from Table 9. See the footnote in that Table for sample selection and estimation particulars.

Figure 9c

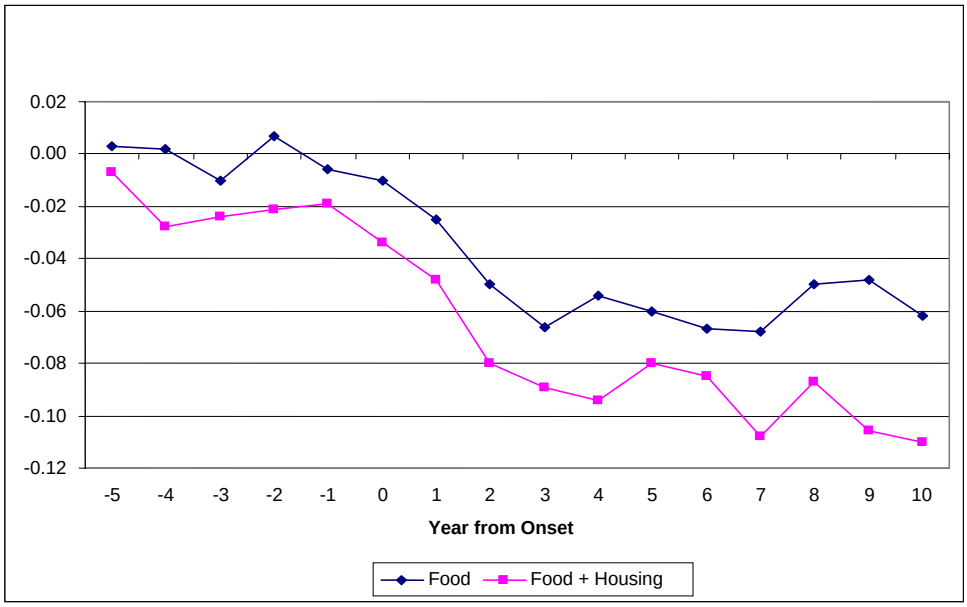
Change in Adjusted Public Transfer Income Before and After Disability, By Extent of Disability Group



This figure plots fixed effect regression estimates from Table 9. See the notes to Table 9 for details.

Figure 10

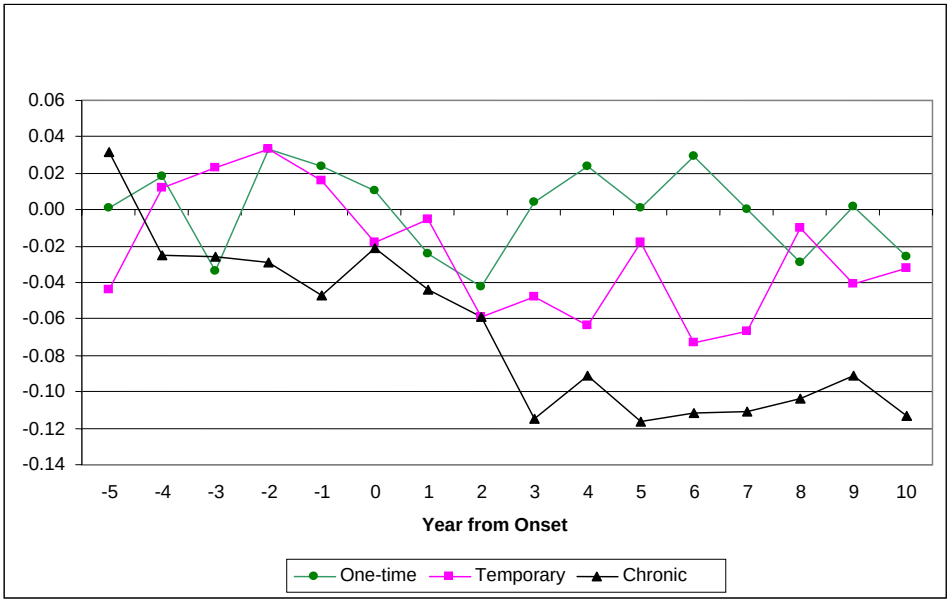
Change in Log Food Consumption and Log Food plus Housing Consumption, Before and After Disability, All Disabled



This figure plots fixed effect regression estimates from Table 10. See the notes to Table 10 for details.

Figure 11a

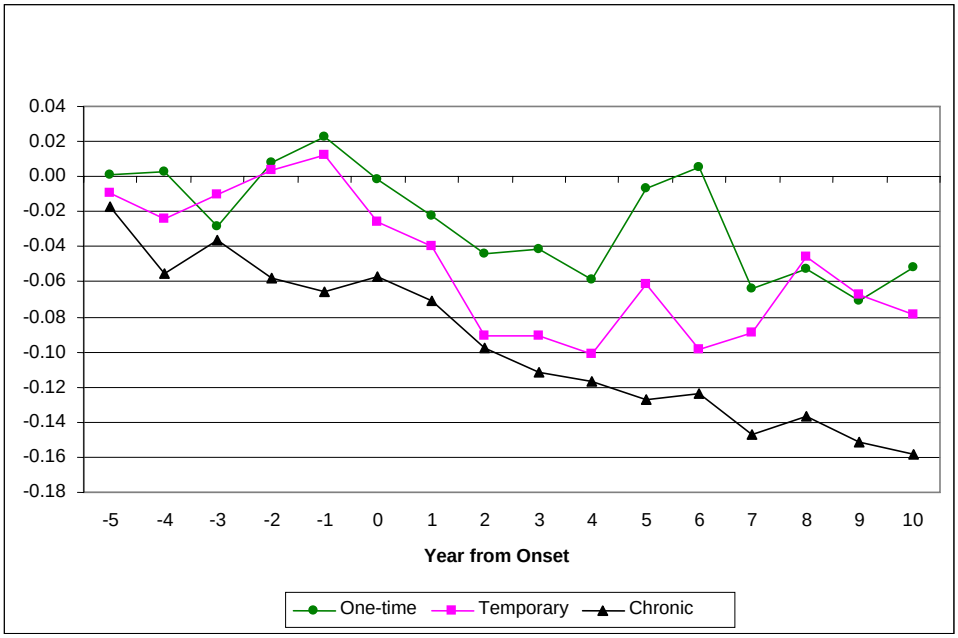
Change in Log Food Expenditure Before and After Disability, By Persistence Group



This figure plots fixed effect regression estimates from Table 11. See the notes to Table 11 for details.

Figure 11b

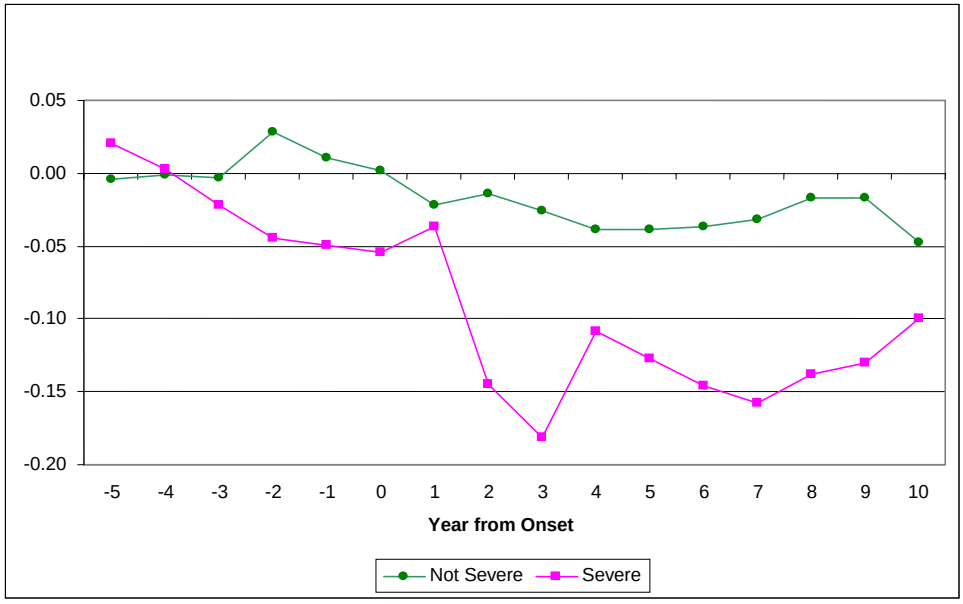
Change in Log Consumption Before and After Disability, By Persistence Group



This figure plots fixed effect regression estimates from Table 11. See the notes to Table 11 for details.

Figure 12a

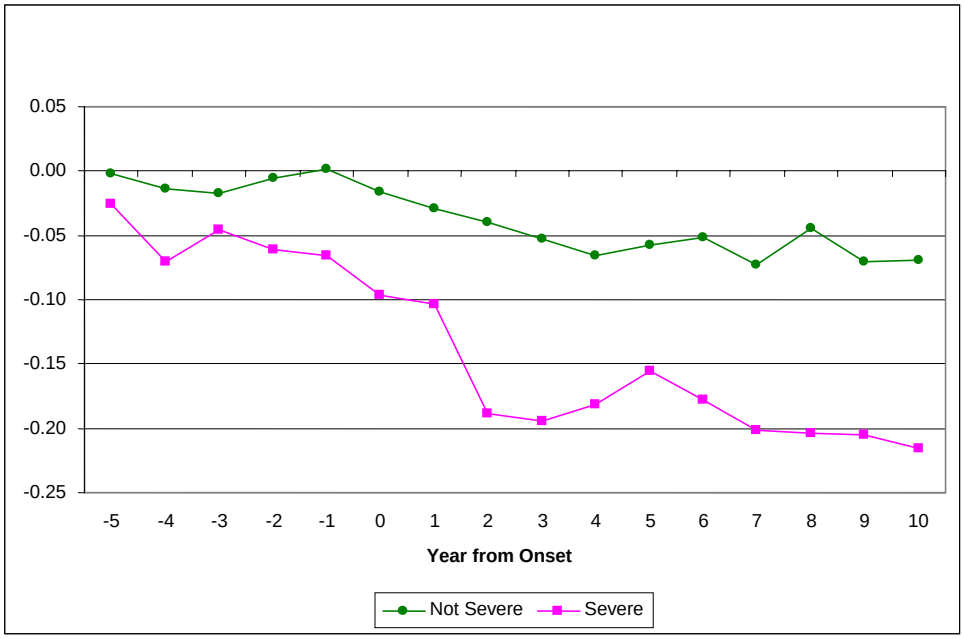
Change in Log Food Consumption Before and After Disability, By Severity Group



This figure plots the fixed effect regression estimates in Table 12. See the footnote in that Table for sample selection and estimation particulars.

Figure 12b

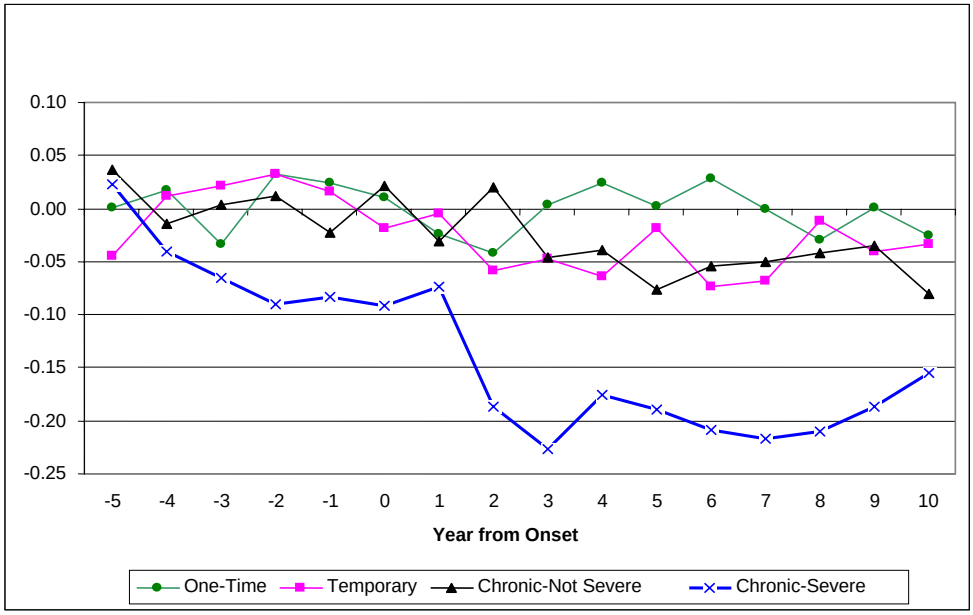
Change in Log Food plus Housing Consumption Before and After Disability, By Severity Group



This figure plots fixed effect regression estimates from Table 12. See the notes to Table 12 for details.

Figure 13a

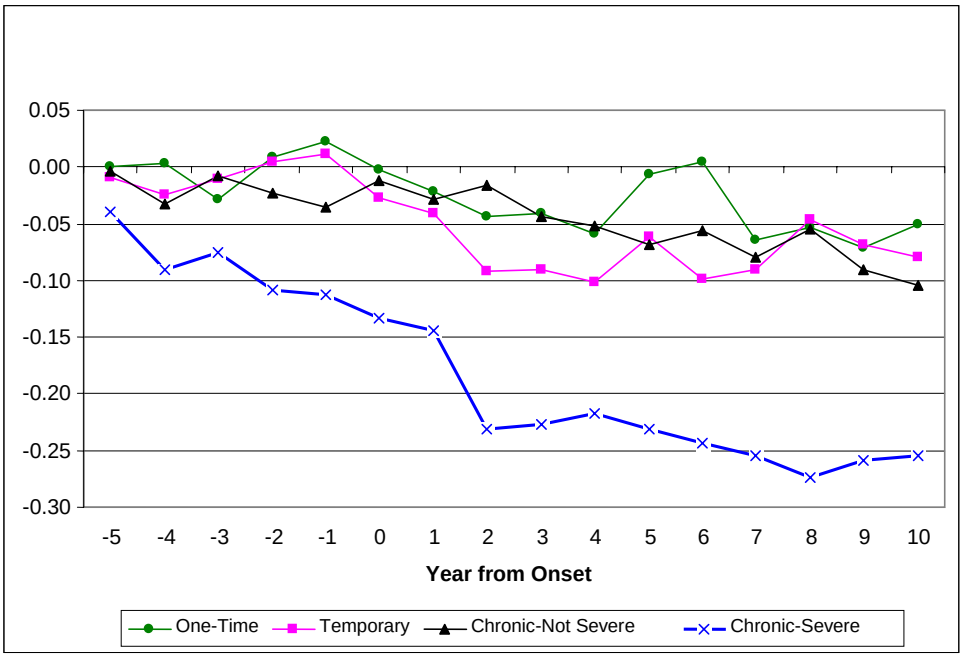
Change in Log Food Consumption Before and After Disability, By Extent of Disability Group



This figure plots fixed effect regression estimates from Table 13. See the notes to Table 13 for details.

Figure 13b

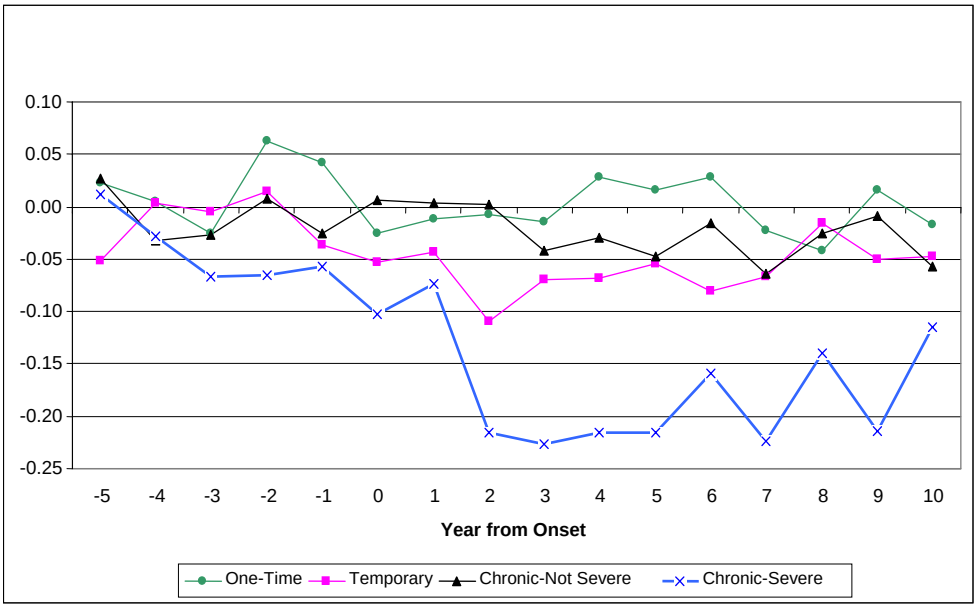
Change in Log Food plus Housing Consumption Before and After Disability, By Extent of Disability Group



This figure plots fixed effect regression estimates from Table 13. See the notes to Table 13 for details.

Figure 14a

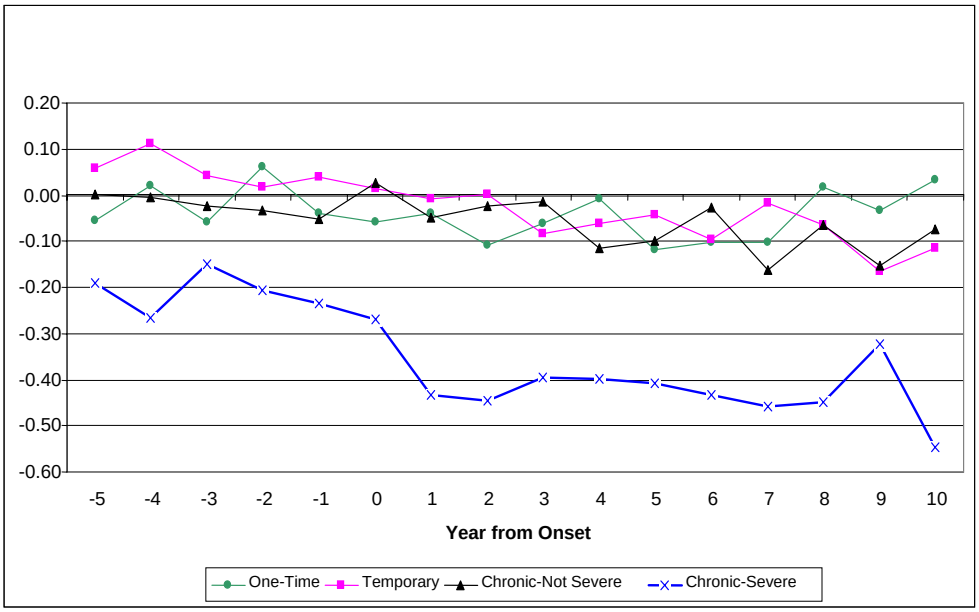
Change in Log Expenditure on Food Eaten at Home Before and After Disability, By Extent of Disability Group



This figure plots fixed effect regression estimates from Table 14. See the notes to Table 14 for details.

Figure 14b

Change in Log Expenditure on Food Eaten Outside Before and After Disability, By Extent of Disability Group



This figure plots the fixed effect regression estimates in Table 14. See the notes to Table 14 for details.

Table 1
Number of Families with a Disabled Head and Disability Rates, 1968-2003

Year	Number of families with a disabled head (weighted)	Disability rate (weighted)	Disability rate (unweighted)
1968	2,242,000	13.23%	14.74%
1969	3,198,800	16.05%	17.63%
1970	3,231,600	15.61%	17.21%
1971	3,618,400	17.17%	17.81%
1972	3,948,500	14.76%	15.11%
1973	3,742,000	13.89%	13.87%
1974	4,096,000	13.03%	13.04%
1975	3,902,500	12.33%	12.36%
1976	4,149,500	12.97%	12.92%
1977	4,413,500	13.58%	14.20%
1978	5,239,245	14.15%	14.68%
1979	6,277,715	15.27%	15.68%
1980	7,222,960	17.44%	17.26%
1981	6,677,735	15.97%	15.55%
1982	6,712,200	16.05%	15.34%
1983	6,542,135	15.68%	15.30%
1984	9,159,344	16.76%	15.87%
1985	9,477,200	17.23%	15.92%
1986	8,035,152	14.64%	13.37%
1987	10,144,560	18.41%	16.54%
1988	10,582,128	19.23%	17.31%
1989	11,768,698	18.88%	16.94%
1990	12,874,770	20.40%	17.30%
1991	12,407,389	19.65%	17.05%
1992	11,917,635	19.03%	16.89%
1993	10,930,252	17.66%	16.25%
1994	14,103,420	16.52%	16.77%
1995	11,346,854	17.48%	16.90%
1996	9,546,472	16.95%	15.08%
1997	10,784,569	16.54%	14.83%
1999	11,228,580	16.43%	15.17%
2001	12,665,362	17.98%	16.58%
2003	12,708,532	17.42%	16.58%

The sample is male household heads ages 22-64 years who are in the PSID for three consecutive years during 1968-2003. The disabled in a survey year are those who answer yes to the question: "Do you have a physical or nervous limitation that limits the amount or type of work you can do?"

Table 2a

Sample Means and Standard Deviations,
Non-disabled and Disability Persistence Groups

	Non-Disabled	One-Time	Temporary	Chronic
Age at Disability Onset		36.599	38.008	42.191
		(10.663)	(12.768)	(12.473)
Age	35.306	37.722	41.534	46.244
	(8.647)	(8.382)	(10.498)	(10.567)
White	0.650	0.720	0.655	0.645
	(0.477)	(0.450)	(0.476)	(0.479)
Married	0.791	0.811	0.803	0.815
	(0.310)	(0.299)	(0.297)	(0.299)
Number of Years In Survey	12.913	19.763	18.267	18.172
	(8.101)	(7.780)	(8.167)	(8.242)
Highest Level of Education –	0.352	0.308	0.313	0.305
High School	(0.478)	(0.462)	(0.464)	(0.460)
Highest Level of Education -	0.447	0.452	0.361	0.278
College	(0.497)	(0.498)	(0.481)	(0.448)
Years in Survey after Onset		10.334	13.103	14.616
		(5.902)	(8.694)	(7.959)
Number of Consecutive			0.487	3.981
Positive Limitation Reports			(0.658)	(5.405)
Number of Valid Reports of		7.527	7.348	8.036
Disability Status From Onset		(2.456)	(2.533)	(2.267)
to the 10th Year after Onset				
Severity Ratio		0.142	0.247	0.419
		(0.349)	(0.332)	(0.385)
Age in the Last Interview	42.817	49.604	53.783	59.285
	(11.664)	(12.530)	(14.613)	(13.895)
Number of Positive Limitation			1.424	5.661
Reports From Onset to the			(0.495)	(2.210)
10th Year after Onset				
Number of Individuals	5039	389	649	1090

Standard deviations are in parentheses. The sample is male household heads ages 22-64 with at least four years in the PSID during 1968-2003, three of which must be consecutive. Age and Married are averages over the sample years during which the individual is the head and ages 22-64. See text for details.

Table 2b
Severity and Activity Limitations

	A. Percentage of household heads with given activity limitation					
	Walking/Stairs	**Bending/Lifting**	**Driving**	**Assistance for Travel**	**Stay Indoors**	**Bed/Chair Confinement**
Not Disabled	0.083	0.092	0.014	0.007	0.008	0.002
Not Severe	0.548	0.615	0.185	0.111	0.098	0.060
Severe	0.850	0.848	0.471	0.388	0.402	0.307

See text for sample definitions. The six activity questions are: 1) Do you have any trouble either walking several blocks or climbing a few flights of stairs, because of your health? 2) Do you have trouble bending, lifting or stooping because of your health? 3) Would your health keep you from driving a car? 4) When you travel around your community, does someone have to assist you because of your health? 5) Do you have to stay indoors most or all of the day because of your health? 6) Does your health confine you to a bed or a chair for most or all of the day? The possible answers to these activity questions are "yes" and "no".

	B. Average Number of Activity Limitations		
	Not Disabled	**Not Severe**	**Severe**
All	0.205	1.612	3.254
Age group 18-40	0.103	1.154	2.541
Age group 41-50	0.201	1.295	3.077
Age group 51-60	0.287	1.702	2.956
Age group 61-65	0.394	2.015	3.149

Table 2c
Sample Means and Standard Deviations,
Non-disabled and the Disability Severity Groups

	Non- Disabled	Not Severe	Severe
Age at Disability Onset		38.693	43.278
		(12.265)	(12.333)
Age	35.306	41.313	45.803
	(8.647)	(10.195)	(11.138)
White	0.650	0.711	0.540
	(0.477)	(0.454)	(0.499)
Married	0.791	0.822	0.773
	(0.310)	(0.283)	(0.333)
Number of Years In Survey	12.913	19.246	16.761
(as head and 22-64 of age)	(8.101)	(7.940)	(8.036)
Highest Level of Education - High School	0.352	0.312	0.292
	(0.478)	(0.463)	(0.455)
Highest Level of Education – College	0.447	0.399	0.232
	(0.497)	(0.490)	(0.423)
Years in Survey after Onset		12.667	12.053
		(7.484)	(7.638)
Number of Consecutive Positive		1.706	3.629
Limitation Reports		(3.779)	(5.377)
Number of Valid Reports of Disability		7.784	7.353
Status from Onset to the10th Year after		(2.417)	(2.521)
Onset			
Severity Ratio		0.093	0.846
		(0.160)	(0.183)
Age in the Last Interview	42.817	54.057	57.486
	(11.664)	(14.176)	(14.248)
Number of Positive Limitation Reports		2.921	4.563
from Onset to the 10th Year after Onset		(2.786)	(3.113)
Number of Observations	5039	1386	607

Standard deviations are in parentheses. The sample is male household heads ages 22-64 with at least four years in the PSID during 1968-2003, three of which must be consecutive. Age and Married are averages over the sample years during which the individual is the head and ages 22-64. See text for details.

Table 2d
Sample Means and Standard Deviations,
Non-disabled and the Extent of Disability Groups

		Disabled Groups			
	Non-Disabled	**One-Time**	**Temporary**	**Chronic Not Severe**	**Chronic Severe**
Age at Disability Onset		36.599	38.008	40.167	45.352
		(10.663)	(12.768)	(12.592)	(11.721)
Age	35.306	37.722	41.534	44.494	48.596
	(8.647)	(8.382)	(10.498)	(10.371)	(10.352)
White	0.650	0.720	0.655	0.729	0.523
	(0.477)	(0.450)	(0.476)	(0.445)	(0.500)
Married	0.791	0.811	0.803	0.830	0.797
	(0.310)	(0.299)	(0.297)	(0.280)	(0.319)
Number of Years In Survey	12.913	19.763	18.267	19.510	16.466
	(8.101)	(7.780)	(8.167)	(8.015)	(8.185)
Highest Level of Education -	0.352	0.308	0.313	0.330	0.264
High School	(0.478)	(0.462)	(0.464)	(0.471)	(0.441)
Highest Level of Education –	0.447	0.452	0.361	0.343	0.188
College	(0.497)	(0.498)	(0.481)	(0.475)	(0.391)
Years in Survey after Onset		10.334	13.103	15.424	13.211
		(5.902)	(8.694)	(7.931)	(7.684)
Number of Consecutive			0.487	3.404	5.064
Positive Limitation Reports			(0.658)	(5.031)	(5.900)
Number of Valid Reports of		7.527	7.348	8.326	7.734
Disability Status from Onset to		(2.456)	(2.533)	(2.141)	(2.320)
the 10th Year after Onset					
Severity Ratio		0.142	0.247	0.138	0.846
		(0.349)	(0.332)	(0.168)	(0.169)
Age in the Last Interview	42.817	49.604	53.783	58.285	60.601
	(11.664)	(12.530)	(14.613)	(14.049)	(13.472)
Number of Positive Limitation			1.424	5.429	6.173
Reports from Onset to the 10th			(0.495)	(2.097)	(2.283)
Year after Onset					
Number of Observations	5039	389	649	639	421

Standard deviations are in parentheses. The sample is male household heads ages 22-64 with at least four years in the PSID during 1968-2003, three of which must be consecutive. Age and Married are averages over the sample years during which the individual is the head and ages 22-64. See text for details.

Table 3
Annual Earnings Before and After Disability
All Disabled

Year from onset	Annual Earning	Implied % change	Hours	% with zero hours	Hourly Earnings	Log Hourly Earnings
-5	-969.287	-2.23%	38.645	7.06%	-0.999	-0.033
	[1,048.790]		[25.176]		[0.478]**	[0.016]**
-4	-529.829	-1.22%	22.891	7.45%	-0.506	-0.014
	[1,290.045]		[27.143]		[0.606]	[0.016]
-3	-924.764	-2.13%	47.869	7.07%	-0.808	-0.012
	[1,340.377]		[27.530]*		[0.593]	[0.017]
-2	-2467.162	-5.67%	-39.213	8.86%	-0.977	-0.024
	[1,328.723]*		[29.568]		[0.575]*	[0.018]
-1	-2795.577	-6.43%	-66.114	9.28%	-1.007	-0.029
	[1,481.394]*		[29.303]**		[0.686]	[0.018]
0	-5656.884	-13.00%	-230.112	12.25%	-0.725	-0.021
	[1,497.082]***		[31.473]***		[0.691]	[0.019]
1	-7911.178	-18.18%	-360.147	20.57%	-0.785	-0.034
	[1,666.268]***		[33.261]***		[0.887]	[0.021]
2	-8636.325	-19.85%	-360.97	21.51%	-1.835	-0.061
	[1,582.556]***		[33.981]***		[0.669]***	[0.022]***
3	-8027.443	-18.45%	-326.915	21.67%	-1.298	-0.077
	[1,647.666]***		[34.039]***		[0.785]*	[0.023]***
4	-9714.883	-22.33%	-365.347	23.77%	-2.2	-0.061
	[1,712.258]***		[34.596]***		[0.720]***	[0.022]***
5	-9168.742	-21.08%	-323.018	24.37%	-2.074	-0.065
	[1,855.029]***		[36.946]***		[0.834]**	[0.023]***
6	-9460.852	-21.75%	-307.665	21.33%	-2.4	-0.085
	[1,831.001]***		[37.615]***		[0.788]***	[0.024]***
7	-10060.423	-23.12%	-304.733	21.02%	-2.54	-0.108
	[2,054.941]***		[38.574]***		[0.882]***	[0.028]***
8	-10697.995	-24.59%	-298.892	20.36%	-3.43	-0.099
	[1,972.542]***		[39.987]***		[0.812]***	[0.025]***
9	-10358.217	-23.81%	-306.973	20.95%	-2.657	-0.08
	[2,057.623]***		[42.378]***		[0.877]***	[0.029]***
10	-10835.705	-24.91%	-372.278	20.30%	-2.277	-0.088
	[2,252.428]***		[43.257]***		[1.059]**	[0.028]***

***Significant at 1%, **Significant at 5%, * Significant at 10%. Standard errors clustered by person are in parentheses. The numbers are, for each variable of interest, the coefficient estimates of the time from onset indicator variables in the basic fixed effect regression model. The implied percentage change column is obtained by dividing the corresponding estimates by the average earnings of the disabled prior to the 5th year before disability onset ($43505). See the text for details.

Table 4a
Annual Earnings Before and After Disability
Persistence Groups and Extent of Disability Groups

Year from onset	A. Persistence Groups						B. Extent of Disability Groups			
	One-Time	Implied % Change	Temporary	Implied % Change	Chronic	Implied % Change	Chronic Not Severe	Implied % Change	Chronic Severe	Implied % Change
-5	359.048	0.83%	1771.221	4.07%	-3,580.41	-8.23%	-3,862.41	-8.88%	-3,314.38	-7.62%
	[3,160.052]		[1,503.568]		[1,077.155]***		[1,330.082]***		[1,577.154]**	
-4	3404.879	7.83%	1144.899	2.63%	-3,501.22	-8.05%	-3,855.62	-8.86%	-3,118.23	-7.17%
	[3,980.435]		[2,125.286]		[1,108.270]***		[1,413.285]***		[1,461.542]**	
-3	2189.412	5.03%	494.324	1.14%	-3,685.59	-8.47%	-3,397.22	-7.81%	-4,246.42	-9.76%
	[4,303.773]		[1,905.253]		[1,133.318]***		[1,317.294]***		[1,626.290]***	
-2	-511.995	-1.18%	-812.674	-1.87%	-4,563.41	-10.49%	-4,362.60	-10.03%	-4,902.86	-11.27%
	[3,706.843]		[2,089.335]		[1,266.448]***		[1,510.192]***		[1,733.209]***	
-1	525.138	1.21%	-1092.533	-2.51%	-5,667.51	-13.03%	-4,965.40	-11.41%	-6,999.99	-16.09%
	[4,539.408]		[2,183.859]		[1,312.633]***		[1,532.109]***		[1,781.949]***	
0	-175.779	-0.40%	-3658.665	-8.41%	-9,729.66	-22.36%	-7,636.84	-17.55%	-13,040.70	-29.98%
	[4,009.858]		[2,466.985]		[1,442.711]***		[1,658.363]***		[1,989.498]***	
1	-783.868	-1.80%	-5269.669	-12.11%	-13,322.26	-30.62%	-8,754.52	-20.12%	-20,716.26	-47.62%
	[4,777.811]		[2,568.043]**		[1,555.657]***		[1,760.177]***		[2,108.051]***	
2	-2316.828	-5.33%	-4662.839	-10.72%	-14,562.84	-33.47%	-9,663.67	-22.21%	-22,627.50	-52.01%
	[3,626.697]		[2,664.794]*		[1,644.157]***		[1,874.841]***		[2,166.295]***	
3	-1903.402	-4.38%	-2564.285	-5.89%	-14,433.10	-33.18%	-9,393.31	-21.59%	-22,681.67	-52.14%
	[2,889.127]		[3,136.860]		[1,687.960]***		[1,887.971]***		[2,199.843]***	
4	-4451.635	-10.23%	-3471.298	-7.98%	-16,180.07	-37.19%	-11,570.41	-26.60%	-24,261.60	-55.77%
	[2,956.093]		[3,289.483]		[1,749.754]***		[1,942.206]***		[2,294.002]***	
5	-5038.827	-11.58%	-1424.008	-3.27%	-16,251.18	-37.36%	-10,819.86	-24.87%	-25,509.28	-58.64%
	[2,315.069]**		[3,885.310]		[1,866.893]***		[2,125.750]***		[2,249.974]***	
6	-3848.227	-8.85%	-2416.326	-5.55%	-16,571.06	-38.09%	-11,711.83	-26.92%	-25,993.27	-59.75%
	[3,075.112]		[3,127.639]		[2,040.667]***		[2,343.459]***		[2,369.471]***	
7	-4611.417	-10.60%	-1753.92	-4.03%	-17,808.50	-40.93%	-12,496.15	-28.72%	-27,304.66	-62.76%
	[3,149.882]		[4,070.149]		[2,090.051]***		[2,396.987]***		[2,445.741]***	
8	-3071.174	-7.06%	-3837.761	-8.82%	-18,574.20	-42.69%	-13,399.87	-30.80%	-28,470.89	-65.44%
	[3,268.357]		[3,200.795]		[2,198.806]***		[2,495.041]***		[2,630.145]***	
9	-2724.323	-6.26%	-4095.833	-9.41%	-17,941.19	-41.24%	-12,838.92	-29.51%	-27,233.96	-62.60%
	[3,693.277]		[3,187.658]		[2,295.228]***		[2,623.788]***		[2,673.695]***	
10	-3365.554	-7.74%	-4608.973	-10.59%	-18,279.37	-42.02%	-13,980.52	-32.14%	-26,427.55	-60.75%
	[4,724.554]		[3,531.489]		[2,422.499]***		[2,768.482]***		[2,860.830]***	

***Significant at 1%, **Significant at 5%, * Significant at 10%. Standard errors clustered by person are in parentheses. The numbers are the coefficient estimates of the time from onset indicator variables in the fixed effect regression model with the Persistence and extent of disability classifications. The implied percentage change column is obtained by dividing the corresponding estimates by the average earnings of the disabled prior to the 5th year before disability onset ($43505). See the text for details.

Table 4b
Annual Hours of Work Before and After Disability
Persistence Groups and Extent of Disability Groups

	A. Persistence Groups						B. Extent of Disability Groups			
Year from onset	One-Time	% with zero Hours	Temporary	% with zero Hours	Chronic	% with zero Hours	Chronic Not Severe	% with zero Hours	Chronic Severe	% with zero Hours
-5	-6.001	5.75%	97.685	4.41%	-2.412	5.32%	7.703	5.49%	-32.10	5.16%
	[48.836]		[41.443]**		[39.577]		[46.608]		[66.827]	
-4	17.975	8.51%	59.594	4.91%	-25.654	5.96%	-12.492	7.06%	-57.05	4.39%
	[54.873]		[46.511]		[40.290]		[53.168]		[58.230]	
-3	-19.051	6.71%	123.404	3.54%	10.08	5.14%	58.166	5.00%	-73.35	5.45%
	[53.286]		[47.805]***		[41.053]		[51.310]		[62.192]	
-2	-90.577	8.17%	-6.51	6.68%	-55.707	6.87%	-53.988	7.45%	-65.15	6.07%
	[56.217]		[53.142]		[43.167]		[52.836]		[68.240]	
-1	-96.721	9.54%	-39.235	6.78%	-108.407	7.79%	-75.41	8.25%	-178.19	7.26%
	[58.320]*		[49.585]		[43.408]**		[55.258]		[64.980]***	
0	-91.204	9.23%	-176.115	10.19%	-367.831	14.30%	-208.796	10.28%	-625.07	21.20%
	[59.427]		[53.394]***		[46.578]***		[57.502]***		[70.251]***	
1	-118.896	10.18%	-237.084	15.06%	-592.093	26.84%	-318.546	15.56%	-1,042.44	44.88%
	[59.719]**		[56.465]***		[49.266]***		[60.159]***		[68.311]***	
2	-54.879	9.84%	-255.381	13.83%	-610.938	30.57%	-306.857	17.44%	-1,110.94	50.88%
	[63.139]		[55.301]***		[50.061]***		[60.134]***		[69.464]***	
3	-35.112	11.17%	-180.387	12.98%	-590.526	32.40%	-255.629	15.12%	-1,130.44	58.62%
	[60.681]		[55.643]***		[49.945]***		[58.359]***		[68.713]***	
4	-131.33	12.46%	-110.835	8.81%	-660.09	33.30%	-341.498	16.07%	-1,215.14	60.17%
	[62.722]**		[54.643]**		[50.468]***		[59.743]***		[68.220]***	
5	-30.207	11.79%	-83.026	9.73%	-633.654	33.91%	-304.456	15.74%	-1,209.15	61.98%
	[73.232]		[58.385]		[52.714]***		[62.725]***		[69.060]***	
6	-57.91	11.92%	-53.167	9.84%	-606.896	32.75%	-258.559	14.77%	-1,202.37	62.70%
	[71.696]		[60.948]		[53.451]***		[62.971]***		[73.545]***	
7	-59.859	12.05%	-62.024	10.36%	-601.1	34.48%	-255.972	14.48%	-1,199.63	65.98%
	[73.116]		[60.545]		[54.948]***		[63.357]***		[78.536]***	
8	-13.713	13.27%	-40.732	11.11%	-613.709	32.87%	-263.278	13.60%	-1,270.20	67.05%
	[75.732]		[62.301]		[55.968]***		[63.869]***		[78.276]***	
9	35.356	14.05%	-46.249	11.70%	-642.138	34.49%	-323.002	14.06%	-1,224.10	68.35%
	[83.025]		[65.531]		[59.580]***		[68.827]***		[83.607]***	
10	-14.341	13.97%	-237.502	13.82%	-644.007	34.05%	-343.013	15.74%	-1,211.54	66.35%
	[82.865]		[67.426]***		[60.420]***		[69.705]***		[85.726]***	

***Significant at 1%, **Significant at 5%, * Significant at 10%. Standard errors clustered by person are in parentheses. The numbers are the coefficient estimates of the time from onset indicator variables in the fixed effect regression model with the Persistence and extent of disability classifications. See the text for details.

Table 5
Annual Earnings and Annual Hours Before and After Disability
Severity Groups

	A. Annual Earnings				B. Annual Hours of Work			
Year from onset	**Not Severe**	**Implied % Change**	**Severe**	**Implied % Change**	**Not Severe**	**% with zero hours**	**Severe**	**% with zero hours**
-5	-499.357	-1.15%	-2570.632	-5.91%	38.513	4.79%	21.734	5.18%
	[1,311.595]		[1,395.435]*		[28.124]		[49.796]	
-4	69.14	0.16%	-2682.075	-6.17%	25.296	6.64%	-2.454	4.78%
	[1,565.402]		[1,968.791]		[32.358]		[45.971]	
-3	-175.495	-0.40%	-3351.323	-7.70%	61.491	5.32%	10.829	4.49%
	[1,655.272]		[1,758.961]*		[31.808]*		[49.569]	
-2	-1805.505	-4.15%	-4499.001	-10.34%	-45.767	8.00%	-14.667	6.15%
	[1,588.227]		[1,789.783]**		[34.089]		[53.559]	
-1	-1947.221	-4.48%	-5596.958	-12.87%	-71.629	8.37%	-65.534	7.23%
	[1,817.419]		[1,852.583]***		[34.159]**		[51.603]	
0	-3905.513	-8.98%	-10111.514	-23.24%	-138.133	10.06%	-462.131	18.03%
	[1,762.149]**		[2,074.389]***		[36.182]***		[56.426]***	
1	-4230.401	-9.72%	-17086.868	-39.28%	-196.401	13.59%	-815.008	35.46%
	[2,024.689]**		[2,045.700]***		[37.601]***		[58.170]***	
2	-5262.045	-12.10%	-17730.888	-40.76%	-198.33	13.71%	-801.174	40.23%
	[1,814.729]***		[2,180.526]***		[38.031]***		[61.277]***	
3	-4691.137	-10.78%	-17157.091	-39.44%	-151.956	13.21%	-797.772	44.64%
	[1,868.455]**		[2,192.862]***		[37.559]***		[61.286]***	
4	-6857.062	-15.76%	-18843.962	-43.31%	-201.523	12.94%	-854.141	46.12%
	[1,948.758]***		[2,185.399]***		[38.115]***		[63.196]***	
5	-5640.515	-12.97%	-19512.83	-44.85%	-140.112	12.78%	-848.668	47.55%
	[2,144.161]***		[2,202.463]***		[41.408]***		[65.580]***	
6	-6223.125	-14.30%	-20059.462	-46.11%	-129.027	12.47%	-818.277	48.53%
	[2,040.686]***		[2,256.362]***		[42.184]***		[68.002]***	
7	-6373.465	-14.65%	-20953.12	-48.16%	-119.369	11.95%	-812.004	50.74%
	[2,367.803]***		[2,494.493]***		[42.056]***		[73.216]***	
8	-7573.332	-17.41%	-21231.425	-48.80%	-106.899	11.68%	-865.79	52.81%
	[2,151.978]***		[2,581.055]***		[43.201]**		[75.227]***	
9	-7644.643	-17.57%	-20743.235	-47.68%	-130.869	12.16%	-829.439	53.89%
	[2,231.585]***		[2,576.189]***		[46.941]***		[80.088]***	
10	-7413.951	-17.04%	-21088.501	-48.47%	-190.243	13.17%	-880.9	55.43%
	[2,548.233]***		[2,703.227]***		[47.170]***		[83.732]***	

***Significant at 1%, **Significant at 5%, * Significant at 10%. Standard errors clustered by person are in parentheses. The numbers are the coefficient estimates of the time from onset indicator variables in the fixed effect regression model with the severity classification. See the text for details. The implied percentage change column is obtained by dividing the corresponding estimates by the average earnings of the disabled prior to the 5th year before disability onset ($43505). See the text for details.

Table 6
Hourly Earnings and Log Hourly Earnings
Extent of Disability Groups

	A. Hourly Earnings				B. Log Hourly Earnings			
Year from onset	**One-Time**	**Temporary**	**Chronic Not Severe**	**Chronic Severe**	**One-Time**	**Temporary**	**Chronic Not Severe**	**Chronic Severe**
-5	0.447	-0.418	-2.032	-0.20	-0.003	0.001	-0.074	-0.06
	[1.470]	[0.755]	[0.629]***	[0.927]	[0.027]	[0.027]	[0.030]**	[0.033]*
-4	1.285	0.197	-1.83	-0.33	0.041	0.001	-0.05	-0.05
	[1.901]	[1.031]	[0.668]***	[0.776]	[0.032]	[0.029]	[0.027]*	[0.042]
-3	7.455	0.626	-1.689	-1.44	0.021	0.007	-0.064	-0.07
	[6.633]	[1.086]	[0.654]***	[0.735]**	[0.029]	[0.029]	[0.031]**	[0.036]*
-2	0.336	0.785	-2.091	-1.27	0.002	0.013	-0.043	-0.07
	[1.603]	[1.695]	[0.695]***	[0.924]	[0.032]	[0.031]	[0.031]	[0.044]
-1	0.805	0.267	-2.14	-2.11	-0.008	0.018	-0.08	-0.09
	[2.164]	[1.199]	[0.858]**	[0.862]**	[0.034]	[0.031]	[0.032]**	[0.040]**
0	1.118	-0.171	-2.691	-3.19	0.01	0.031	-0.07	-0.07
	[1.996]	[1.225]	[0.759]***	[1.070]***	[0.034]	[0.033]	[0.033]**	[0.044]
1	1.927	-1.503	-2.071	-6.76	-0.031	-0.031	-0.037	-0.09
	[2.635]	[1.391]	[1.286]	[1.371]***	[0.043]	[0.035]	[0.032]	[0.058]
2	0.478	-0.19	-3.978	-4.90	-0.034	-0.032	-0.131	-0.13
	[1.817]	[1.745]	[0.974]***	[4.655]	[0.041]	[0.037]	[0.038]***	[0.057]**
3	0.29	0.057	-3.928	-10.31	-0.027	-0.024	-0.131	-0.14
	[1.482]	[1.798]	[0.852]***	[1.204]***	[0.052]	[0.038]	[0.039]***	[0.058]**
4	-0.238	-0.114	-4.398	-9.45	-0.026	-0.003	-0.161	-0.10
	[1.682]	[1.541]	[0.940]***	[1.640]***	[0.038]	[0.036]	[0.036]***	[0.065]
5	-2.022	0.426	-4.041	-9.66	-0.016	-0.001	-0.134	-0.20
	[1.097]*	[1.940]	[1.042]***	[1.759]***	[0.041]	[0.036]	[0.040]***	[0.074]***
6	-1.49	-0.605	-4.553	-11.72	0.008	0.003	-0.192	-0.20
	[1.507]	[1.678]	[1.059]***	[1.375]***	[0.041]	[0.037]	[0.040]***	[0.079]**
7	-1.126	6.819	-5.192	-13.31	-0.097	-0.003	-0.183	-0.24
	[1.529]	[8.336]	[1.166]***	[1.394]***	[0.070]	[0.042]	[0.040]***	[0.100]**
8	-1.829	-1.09	-5.781	-13.13	-0.005	-0.006	-0.203	-0.18
	[1.531]	[1.699]	[1.167]***	[1.452]***	[0.046]	[0.038]	[0.040]***	[0.087]**
9	-0.188	-1.526	-4.806	-12.78	0.024	-0.022	-0.186	-0.18
	[1.861]	[1.755]	[1.233]***	[1.489]***	[0.054]	[0.043]	[0.051]***	[0.082]**
10	-1.663	1.3	-5.804	-11.92	-0.038	0.02	-0.204	-0.09
	[2.328]	[2.530]	[1.318]***	[1.863]***	[0.049]	[0.045]	[0.044]***	[0.113]

***Significant at 1%, **Significant at 5%, * Significant at 10%. Standard errors clustered by person are in parentheses. The numbers are the coefficient estimates of the time from onset indicator variables in the fixed effect regression model with the extent of disability classification. See the text for details. The log hourly earnings regressions also delete those who worked less than 500 hours in the year.

Table 7a
Income Before and After Disability
All Disabled

Year from onset	Income without Public Transfers	Implied % Change	Total income	Implied % Change	Adjusted income	Implied % Change
-5	-1316.035	-2.22%	-1712.065	-2.83%	-1662.739	-2.74%
	[1,300.432]		[1,288.614]		[1,285.837]	
-4	-1369.079	-2.31%	-1596.378	-2.64%	-1601.542	-2.63%
	[1,547.358]		[1,533.557]		[1,529.384]	
-3	-2089.885	-3.52%	-2169.872	-3.59%	-2093.517	-3.44%
	[1,870.742]		[1,860.159]		[1,858.663]	
-2	-3608.342	-6.08%	-3706.726	-6.13%	-3570.908	-5.87%
	[1,733.326]**		[1,722.273]**		[1,719.340]**	
-1	-4748.952	-8.01%	-4449.446	-7.36%	-4198.232	-6.91%
	[1,768.502]***		[1,757.131]**		[1,754.085]**	
0	-7885.864	-13.30%	-6428.63	-10.64%	-5463.05	-8.99%
	[1,847.611]***		[1,831.864]***		[1,828.101]***	
1	-10599.76	-17.87%	-8284.604	-13.71%	-7008.468	-11.53%
	[1,828.751]***		[1,807.595]***		[1,806.982]***	
2	-11793.414	-19.89%	-9424.378	-15.60%	-8438.611	-13.88%
	[1,966.592]***		[1,945.894]***		[1,946.090]***	
3	-10018.872	-16.89%	-7687.282	-12.72%	-6896.541	-11.34%
	[2,245.268]***		[2,225.313]***		[2,219.443]***	
4	-12791.232	-21.57%	-10260.607	-16.98%	-9406.201	-15.47%
	[2,202.882]***		[2,199.276]***		[2,193.846]***	
5	-12343.638	-20.81%	-10048.588	-16.63%	-9324.851	-15.34%
	[2,395.138]***		[2,373.071]***		[2,370.394]***	
6	-13761.248	-23.20%	-11500.331	-19.03%	-10881.16	-17.90%
	[2,374.834]***		[2,354.060]***		[2,351.188]***	
7	-13236.924	-22.32%	-10905.734	-18.05%	-10264.221	-16.88%
	[2,841.046]***		[2,817.695]***		[2,813.983]***	
8	-15693.485	-26.46%	-13502.545	-22.35%	-12934.583	-21.28%
	[2,516.853]***		[2,494.857]***		[2,491.418]***	
9	-14691.49	-24.77%	-12166.398	-20.14%	-11587.542	-19.06%
	[2,629.606]***		[2,604.875]***		[2,601.834]***	
10	-14851.368	-25.04%	-12165.981	-20.14%	-11491.059	-18.90%
	[2,955.855]***		[2,925.544]***		[2,922.363]***	

***Significant at 1%, **Significant at 5%, * Significant at 10%. Standard errors clustered by person are in parentheses. The numbers are, for each variable of interest, the coefficient estimates of the time from onset indicator variables in the basic fixed effect regression model. Income is deflated using CPI-U with 2003 as the base year. Implied percentage changes are obtained by dividing the corresponding estimates by the average income measures of the disabled prior to the 5^{th} year before disability onset (Income without Public Transfers $59304; Total Income $60420; Adjusted Income $60794). See the data appendix for variable definitions and the text for further details.

Table 7b
Adjusted Income Before and After Disability
Persistence Groups

Year from onset	One-Time	Implied % Change	Temporary	Implied % Change	Chronic	Implied % Change
-5	110.926	0.18%	1327.147	2.18%	-4438.401	-7.30%
	[3,659.486]		[2,173.515]		[1,393.873]***	
-4	3533.704	5.81%	92.854	0.15%	-5045	-8.30%
	[4,572.786]		[2,815.648]		[1,436.729]***	
-3	1967.022	3.24%	-442.843	-0.73%	-5338.068	-8.78%
	[6,574.999]		[2,583.852]		[1,594.405]***	
-2	127.338	0.21%	-2253.835	-3.71%	-6621.937	-10.89%
	[5,163.745]		[2,813.891]		[1,682.099]***	
-1	-760.899	-1.25%	-1528.017	-2.51%	-7581.6	-12.47%
	[5,175.286]		[2,840.563]		[1,736.623]***	
0	-1121.014	-1.84%	-3055.616	-5.03%	-9110.713	-14.99%
	[4,936.161]		[3,172.329]		[1,877.031]***	
1	-4892.208	-8.05%	-3136.344	-5.16%	-10876.061	-17.89%
	[3,527.774]		[3,423.836]		[1,976.550]***	
2	-4456.219	-7.33%	-4330.141	-7.12%	-13090.303	-21.53%
	[3,690.267]		[3,720.761]		[2,122.411]***	
3	-4136.949	-6.80%	-2604.476	-4.28%	-11755.164	-19.34%
	[3,404.479]		[4,028.731]		[2,633.926]***	
4	-3044.663	-5.01%	-5831.472	-9.59%	-14400.802	-23.69%
	[4,857.177]		[3,572.771]		[2,538.148]***	
5	-5469.177	-9.00%	-3578.273	-5.89%	-15201.329	-25.00%
	[4,561.204]		[4,672.598]		[2,343.585]***	
6	-4757.592	-7.83%	-4521.341	-7.44%	-17258.775	-28.39%
	[4,691.110]		[4,162.914]		[2,524.411]***	
7	-7240.77	-11.91%	-3714.475	-6.11%	-16026.354	-26.36%
	[4,651.853]		[5,066.256]		[3,406.892]***	
8	-5798.489	-9.54%	-5947.675	-9.78%	-20437.443	-33.62%
	[4,409.903]		[4,379.693]		[2,638.281]***	
9	-1650.564	-2.71%	-6121.224	-10.07%	-19181.278	-31.55%
	[5,378.107]		[4,170.480]		[2,786.383]***	
10	-916.521	-1.51%	-6623.706	-10.90%	-18852.94	-31.01%
	[7,006.704]		[4,305.448]		[3,149.454]***	

***Significant at 1%, **Significant at 5%, * Significant at 10%. Standard errors clustered by person are in parentheses. The numbers are, for each variable of interest, the coefficient estimates of the time from onset indicator variables in the basic fixed effect regression model. Income is deflated using CPI-U with 2003 as the base year. Implied percentage changes are obtained by dividing the corresponding estimates by the average income measures of the disabled prior to the 5th year before disability onset (Income without Public Transfers $59304; Total Income $60420; Adjusted Income $60794). See the data appendix for variable definitions and the text for further details.

Table 7c
Adjusted Income Before and After Disability
By Severity Groups

Year from onset	Not Severe	Implied % Change	Severe	Implied % Change
-5	44.971	0.07%	-6421.352	-10.56%
	[1,606.162]		[1,666.356]***	
-4	135.158	0.22%	-6773.749	-11.14%
	[1,859.320]		[2,332.320]***	
-3	-263.586	-0.43%	-7616.349	-12.53%
	[2,396.039]		[2,212.499]***	
-2	-1806.047	-2.97%	-9110.254	-14.99%
	[2,104.969]		[2,255.854]***	
-1	-2359.662	-3.88%	-10287.007	-16.92%
	[2,126.559]		[2,290.218]***	
0	-3172.176	-5.22%	-11705.589	-19.25%
	[2,174.706]		[2,461.844]***	
1	-3717.811	-6.12%	-15425.368	-25.37%
	[2,080.500]*		[2,427.210]***	
2	-5169.553	-8.50%	-17869.275	-29.39%
	[2,264.188]**		[2,401.641]***	
3	-3335.08	-5.49%	-16520.756	-27.17%
	[2,692.584]		[2,732.758]***	
4	-6352.33	-10.45%	-19563.636	-32.18%
	[2,598.594]**		[2,641.416]***	
5	-5813.858	-9.56%	-19326.176	-31.79%
	[2,848.163]**		[2,767.773]***	
6	-7521.63	-12.37%	-21765.237	-35.80%
	[2,643.812]***		[3,061.775]***	
7	-5769.859	-9.49%	-21906.772	-36.03%
	[3,497.866]*		[3,198.315]***	
8	-9069.668	-14.92%	-25482.005	-41.92%
	[2,765.335]***		[3,248.578]***	
9	-8683.811	-14.28%	-22987.22	-37.81%
	[2,791.383]***		[3,484.099]***	
10	-7551.578	-12.42%	-23148.86	-38.08%
	[3,353.759]**		[3,917.533]***	

***Significant at 1%, **Significant at 5%, * Significant at 10%. Standard errors clustered by person are in parentheses. The numbers are, for each variable of interest, the coefficient estimates of the time from onset indicator variables in the basic fixed effect regression model. Income is deflated using CPI-U with 2003 as the base year. Implied percentage changes are obtained by dividing the corresponding estimates by the average income measures of the disabled prior to the 5^{th} year before disability onset (Income without Public Transfers $59304; Total Income $60420; Adjusted Income $60794). See the data appendix for variable definitions and the text for further details.

Table 7d
Income without Public Transfers Before and After Disability
Extent of Disability Groups

Year from onset	One-Time	Implied % Change	Temporary	Implied % Change	Chronic Not Severe	Implied % Change	Chronic Severe	Implied % Change
-5	107.75	0.18%	1837.081	3.10%	-2795.646	-4.71%	-7322.991	-12.35%
	[3,691.812]		[2,169.025]		[1,759.754]		[2,093.114]***	
-4	3315.271	5.59%	345.725	0.58%	-4277.569	-7.21%	-6520.507	-11.00%
	[4,611.334]		[2,816.572]		[1,802.149]**		[2,125.732]***	
-3	1716.819	2.89%	-579.739	-0.98%	-4113.822	-6.94%	-8209.613	-13.84%
	[6,590.460]		[2,591.839]		[1,939.591]**		[2,377.448]***	
-2	49.436	0.08%	-2556.102	-4.31%	-5307.937	-8.95%	-9727.801	-16.40%
	[5,179.506]		[2,829.030]		[2,064.425]**		[2,374.293]***	
-1	-929.46	-1.57%	-2605.054	-4.39%	-6108.859	-10.30%	-12494.95	-21.07%
	[5,199.060]		[2,854.721]		[2,126.320]***		[2,324.409]***	
0	-1824.32	-3.08%	-5077.492	-8.56%	-9212.935	-15.54%	-19389.434	-32.70%
	[4,965.365]		[3,167.464]		[2,278.694]***		[2,595.455]***	
1	-5653.486	-9.53%	-6283.069	-10.59%	-10265.057	-17.31%	-26902.551	-45.36%
	[3,565.194]		[3,439.541]*		[2,386.697]***		[2,581.664]***	
2	-4973.904	-8.39%	-6652.604	-11.22%	-12416.567	-20.94%	-29605.932	-49.92%
	[3,739.455]		[3,712.671]*		[2,575.207]***		[2,741.052]***	
3	-4309.383	-7.27%	-4537.323	-7.65%	-9461.241	-15.95%	-30292.305	-51.08%
	[3,462.446]		[4,056.852]		[3,582.789]***		[2,931.062]***	
4	-3200.517	-5.40%	-7736.544	-13.05%	-13075.177	-22.05%	-33413.927	-56.34%
	[4,901.443]		[3,555.859]**		[3,148.102]***		[2,962.664]***	
5	-5465.976	-9.22%	-5189.284	-8.75%	-13533.535	-22.82%	-33823.375	-57.03%
	[4,589.216]		[4,689.346]		[2,733.115]***		[2,920.873]***	
6	-4685.316	-7.90%	-5722.71	-9.65%	-15859.983	-26.74%	-36620.202	-61.75%
	[4,699.445]		[4,171.599]		[2,955.938]***		[3,044.450]***	
7	-7364.223	-12.42%	-4879.703	-8.23%	-12563.912	-21.19%	-38235.009	-64.47%
	[4,685.657]		[5,086.277]		[4,679.309]***		[3,243.922]***	
8	-5317.143	-8.97%	-7471.26	-12.60%	-17716.113	-29.87%	-41661.397	-70.25%
	[4,437.252]		[4,375.949]*		[2,943.769]***		[3,410.482]***	
9	-1271.822	-2.14%	-8139.959	-13.73%	-16590.653	-27.98%	-40200.478	-67.79%
	[5,412.115]		[4,183.191]*		[3,155.260]***		[3,481.234]***	
10	-639.091	-1.08%	-9475.464	-15.98%	-17110.231	-28.85%	-39434.914	-66.50%
	[7,016.506]		[4,347.933]**		[3,744.942]***		[3,857.774]***	

***Significant at 1%, **Significant at 5%, * Significant at 10%. Standard errors clustered by person are in parentheses. The numbers are, for each variable of interest, the coefficient estimates of the time from onset indicator variables in the basic fixed effect regression model. Income is deflated using CPI-U with 2003 as the base year. Implied percentage changes are obtained by dividing the corresponding estimates by the average income measures of the disabled prior to the 5th year before disability onset (Income without Public Transfers $59304; Total Income $60420; Adjusted Income $60794). See the data appendix for variable definitions and the text for further details.

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Table 7e
Total Income Before and After Disability
Extent of Disability Groups

Year from onset	One-Time	Implied % Change	Temporary	Implied % Change	Chronic Not Severe	Implied % Change	Chronic Severe	Implied % Change
-5	-98.52	-0.16%	1444.366	2.39%	-2903.934	-4.81%	-7665.622	-12.69%
	[3,670.287]		[2,176.953]		[1,743.059]*		[2,011.020]***	
-4	3417.123	5.66%	133.105	0.22%	-3849.271	-6.37%	-7446.87	-12.33%
	[4,584.131]		[2,818.127]		[1,776.137]**		[2,048.809]***	
-3	1738.375	2.88%	-553.202	-0.92%	-3616.449	-5.99%	-8570.179	-14.18%
	[6,574.828]		[2,588.500]		[1,916.396]*		[2,310.519]***	
-2	32.767	0.05%	-2511.005	-4.16%	-4899.436	-8.11%	-10121.914	-16.75%
	[5,166.034]		[2,817.506]		[2,062.408]**		[2,292.743]***	
-1	-888.741	-1.47%	-1935.441	-3.20%	-5328.162	-8.82%	-12353.982	-20.45%
	[5,179.054]		[2,842.685]		[2,122.489]**		[2,255.566]***	
0	-1592.006	-2.63%	-3673.235	-6.08%	-7306.579	-12.09%	-16113.761	-26.67%
	[4,939.695]		[3,173.376]		[2,263.851]***		[2,455.086]***	
1	-5310.244	-8.79%	-4135.279	-6.84%	-7797.844	-12.91%	-21095.925	-34.92%
	[3,524.982]		[3,430.282]		[2,351.924]***		[2,454.943]***	
2	-4702.445	-7.78%	-4975.846	-8.24%	-9645.285	-15.96%	-23155.662	-38.32%
	[3,705.477]		[3,704.475]		[2,557.150]***		[2,589.184]***	
3	-4184.632	-6.93%	-2934.047	-4.86%	-6954.568	-11.51%	-23469.068	-38.84%
	[3,425.541]		[4,039.956]		[3,558.119]*		[2,792.374]***	
4	-3132.076	-5.18%	-6224.623	-10.30%	-10339.071	-17.11%	-25549.32	-42.29%
	[4,871.868]		[3,577.859]*		[3,265.010]***		[2,813.741]***	
5	-5489.123	-9.08%	-3818.676	-6.32%	-11306.655	-18.71%	-25903.874	-42.87%
	[4,561.133]		[4,677.850]		[2,710.451]***		[2,813.663]***	
6	-4733.187	-7.83%	-4564.739	-7.56%	-13557.256	-22.44%	-28559.574	-47.27%
	[4,693.029]		[4,167.099]		[2,926.394]***		[2,955.293]***	
7	-7291.585	-12.07%	-3803.4	-6.29%	-10100.919	-16.72%	-29949.215	-49.57%
	[4,658.359]		[5,073.154]		[4,654.683]**		[3,120.372]***	
8	-5561.583	-9.20%	-6185.331	-10.24%	-15471.956	-25.61%	-33579.689	-55.58%
	[4,411.855]		[4,383.597]		[2,919.499]***		[3,276.768]***	
9	-1513.105	-2.50%	-6454.093	-10.68%	-14031.505	-23.22%	-31804.145	-52.64%
	[5,374.481]		[4,171.900]		[3,118.406]***		[3,385.932]***	
10	-809.979	-1.34%	-7309.703	-12.10%	-14309.939	-23.68%	-30884.36	-51.12%
	[7,003.678]		[4,303.145]*		[3,702.910]***		[3,705.789]***	

***Significant at 1%, **Significant at 5%, * Significant at 10%. Standard errors clustered by person are in parentheses. The numbers are, for each variable of interest, the coefficient estimates of the time from onset indicator variables in the basic fixed effect regression model. Implied percentage changes are obtained by dividing the corresponding estimates by the average income measures of the disabled prior to the 5th year before disability onset (Income without Public Transfers $59304; Total Income $60420; Adjusted Income $60794). See the data appendix for variable definitions and the text for further details.

Table 7f
Adjusted Income Before and After Disability
Extent of Disability Groups

Year from onset	One-Time	Implied % Change	Temporary	Implied % Change	Chronic Not Severe	Implied % Change	Chronic Severe	Implied % Change
-5	102.282	0.17%	1286.708	2.12%	-2788.521	-4.59%	-7273.029	-11.96%
	[3,658.535]		[2,173.956]		[1,747.668]		[2,001.819]***	
-4	3524.601	5.80%	39.193	0.06%	-3673.847	-6.04%	-7435.287	-12.23%
	[4,572.102]		[2,816.656]		[1,768.525]**		[2,039.621]***	
-3	1957.643	3.22%	-491.838	-0.81%	-3493.102	-5.75%	-8343.138	-13.72%
	[6,573.843]		[2,585.566]		[1,913.938]*		[2,302.494]***	
-2	127.237	0.21%	-2306.001	-3.79%	-4723.3	-7.77%	-9767.764	-16.07%
	[5,163.097]		[2,815.419]		[2,056.604]**		[2,280.591]***	
-1	-764.42	-1.26%	-1572.278	-2.59%	-5161.282	-8.49%	-11660.908	-19.18%
	[5,174.908]		[2,841.959]		[2,111.253]**		[2,259.243]***	
0	-1125.98	-1.85%	-3108.15	-5.11%	-6271.468	-10.32%	-13608.311	-22.38%
	[4,935.503]		[3,173.614]		[2,248.051]***		[2,473.292]***	
1	-4895.547	-8.05%	-3190.329	-5.25%	-6502.01	-10.70%	-17939.642	-29.51%
	[3,528.103]		[3,425.354]		[2,354.501]***		[2,512.345]***	
2	-4459.48	-7.34%	-4382.56	-7.21%	-8387.215	-13.80%	-20723.727	-34.09%
	[3,690.705]		[3,722.118]		[2,560.781]***		[2,602.615]***	
3	-4134.938	-6.80%	-2657.54	-4.37%	-6276.311	-10.32%	-20485.102	-33.70%
	[3,404.662]		[4,029.414]		[3,555.851]*		[2,805.582]***	
4	-3036.541	-4.99%	-5875.367	-9.66%	-9465.97	-15.57%	-22704.604	-37.35%
	[4,856.390]		[3,573.968]		[3,259.540]***		[2,837.981]***	
5	-5461.202	-8.98%	-3625.217	-5.96%	-10433.043	-17.16%	-23354.598	-38.42%
	[4,561.360]		[4,673.795]		[2,711.704]***		[2,846.782]***	
6	-4750.129	-7.81%	-4577.649	-7.53%	-12832.828	-21.11%	-25919.389	-42.63%
	[4,691.161]		[4,163.665]		[2,927.778]***		[3,000.990]***	
7	-7233.103	-11.90%	-3774.508	-6.21%	-9400.952	-15.46%	-27245.899	-44.82%
	[4,651.700]		[5,067.339]		[4,651.873]**		[3,168.152]***	
8	-5800.916	-9.54%	-6014.599	-9.89%	-14854.974	-24.43%	-31109.339	-51.17%
	[4,410.353]		[4,380.264]		[2,916.815]***		[3,313.164]***	
9	-1656.054	-2.72%	-6199.64	-10.20%	-13456.474	-22.13%	-29379.162	-48.33%
	[5,378.565]		[4,170.665]		[3,112.008]***		[3,438.536]***	
10	-904.846	-1.49%	-6711.521	-11.04%	-13871.173	-22.82%	-28080.405	-46.19%
	[7,006.556]		[4,306.357]		[3,696.795]***		[3,728.133]***	

***Significant at 1%, **Significant at 5%, * Significant at 10%. Standard errors clustered by person are in parentheses. The numbers are, for each variable of interest, the coefficient estimates of the time from onset indicator variables in the basic fixed effect regression model. Implied percentage changes are obtained by dividing the corresponding estimates by the average income measures of the disabled prior to the 5th year before disability onset (Income without Public Transfers $59304; Total Income $60420; Adjusted Income $60794). See the data appendix for variable definitions and the text for further details.

Table 8
Income Before and After Disability
All Disabled

Year from onset	Public transfer income	Total public transfer Income	Adjusted public Transfer income
-5	-340.465	-393.855	-346.582
	[108.518]***	[126.073]***	[177.347]*
-4	-165.399	-226.567	-234.365
	[125.276]	[142.989]	[189.644]
-3	-8.271	-81.802	-7.908
	[131.616]	[149.779]	[204.106]
-2	29.364	-96.305	36.882
	[136.179]	[153.355]	[203.731]
-1	313.344	303.988	550.986
	[154.661]**	[171.367]*	[224.850]**
0	1331.007	1459.435	2420.849
	[182.175]***	[200.170]***	[286.743]***
1	2079.407	2304.234	3577.008
	[201.336]***	[221.150]***	[334.741]***
2	2112.375	2357.763	3339.61
	[209.181]***	[227.715]***	[327.586]***
3	2156	2341.405	3100.453
	[215.988]***	[233.626]***	[317.256]***
4	2244.931	2541.629	3392.491
	[243.426]***	[268.326]***	[337.127]***
5	2080.999	2302.056	3022.26
	[219.172]***	[236.313]***	[319.063]***
6	2100.22	2265.888	2882.739
	[223.076]***	[240.213]***	[326.290]***
7	2184.122	2344.96	2983.946
	[227.174]***	[243.707]***	[331.549]***
8	2072.042	2205.408	2769.28
	[228.587]***	[244.658]***	[321.914]***
9	2511.38	2539.627	3116.496
	[252.444]***	[271.242]***	[353.076]***
10	2618.675	2703.699	3374.216
	[268.293]***	[289.744]***	[371.087]***

***Significant at 1%, **Significant at 5%, *Significant at 10%. Standard errors clustered by person are in parentheses. The numbers are, for each variable of interest, the coefficient estimates of the time from onset indicator variables in the basic fixed effect regression model. See the data appendix for variable definitions and the text for further details.

Table 9
Total Public Transfer Income Before and After Disability
Extent of Disability Groups

	A. Total Public Transfer Income				B. Adjusted Public Transfer Income			
Year from onset	**One-Time**	**Temporary**	**Chronic Not Severe**	**Chronic Severe**	**One-Time**	**Temporary**	**Chronic Not Severe**	**Chronic Severe**
-5	-205.794	-393.295	-108.628	-327.665	-5.467	-550.373	7.126	49.962
	[202.658]	[224.111]*	[225.439]	[338.515]	[362.950]	[274.056]**	[311.358]	[504.219]
-4	102.584	-212.339	428.125	-910.204	209.331	-306.531	603.722	-914.779
	[218.230]	[220.887]	[311.964]	[326.233]***	[319.358]	[271.823]	[427.450]	[425.171]**
-3	21.8	25.888	496.718	-342.27	240.824	87.901	620.72	-133.524
	[250.026]	[248.757]	[301.023]*	[354.123]	[447.204]	[305.728]	[394.359]	[488.808]
-2	-18.173	45.456	407.761	-374.738	77.801	250.1	584.638	-39.963
	[239.074]	[272.408]	[278.876]	[398.205]	[324.903]	[357.594]	[373.065]	[557.889]
-1	41.08	669.371	779.751	167.447	165.039	1032.775	947.577	834.041
	[277.729]	[325.600]**	[311.637]**	[427.297]	[390.483]	[407.520]**	[388.346]**	[632.754]
0	232	1403.456	1905.508	3303.526	698.34	1969.342	2941.467	5781.123
	[252.552]	[338.799]***	[361.784]***	[638.954]***	[372.307]*	[415.057]***	[508.254]***	[1,013.423]***
1	342.619	2147.575	2466.215	5830.587	757.939	3092.74	3763.046	8962.909
	[313.674]	[370.282]***	[401.664]***	[668.072]***	[431.373]*	[505.572]***	[627.547]***	[1,076.282]***
2	270.887	1675.955	2771.255	6476.552	514.424	2270.044	4029.353	8882.205
	[273.572]	[375.737]***	[436.148]***	[676.775]***	[403.000]	[485.923]***	[679.137]***	[966.745]***
3	123.916	1602.718	2506.111	6981.606	174.444	1879.783	3184.93	9807.204
	[263.881]	[390.482]***	[448.583]***	[661.316]***	[352.691]	[466.341]***	[629.582]***	[960.356]***
4	66.523	1511.891	2735.31	7890.77	163.976	1861.177	3609.207	10709.322
	[276.458]	[399.922]***	[593.101]***	[680.688]***	[408.954]	[476.821]***	[679.106]***	[972.061]***
5	-23.327	1369.718	2225.88	7945.108	4.774	1564.067	3100.492	10468.778
	[300.215]	[380.085]***	[407.667]***	[687.804]***	[372.096]	[433.581]***	[603.484]***	[962.883]***
6	-49.572	1157.007	2299.894	8084.812	-64.813	1145.061	3027.155	10700.813
	[268.436]	[384.089]***	[417.428]***	[719.545]***	[330.047]	[434.579]***	[594.533]***	[1,031.876]***
7	70.771	1075.313	2461.056	8309.546	131.12	1105.195	3162.961	10989.11
	[332.863]	[356.647]***	[416.790]***	[742.193]***	[412.136]	[405.724]***	[562.976]***	[1,113.404]***
8	-244.681	1285.005	2242.57	8110.82	-483.774	1456.661	2861.139	10552.059
	[301.784]	[377.721]***	[395.174]***	[786.115]***	[351.236]	[442.075]***	[513.557]***	[1,126.908]***
9	-242.171	1684.863	2556.542	8417.236	-384.233	1940.319	3134.18	10821.316
	[398.547]	[408.044]***	[424.425]***	[838.214]***	[465.225]	[480.143]***	[519.173]***	[1,219.815]***
10	-171.021	2164.886	2799.203	8580.117	-265.755	2763.943	3239.058	11354.509
	[370.585]	[506.915]***	[463.736]***	[902.620]***	[439.650]	[630.215]***	[562.093]***	[1,251.492]***

***Significant at 1%, **Significant at 5%, *Significant at 10%. Standard errors clustered by person are in parentheses. The numbers are, for each variable of interest, the coefficient estimates of the time from onset indicator variables in the basic fixed effect regression model. See the data appendix for variable definitions and the text for further details.

Table 10
Log Food Consumption and Log Food plus Housing Consumption

	All Disabled	
Year from onset	**Log Food Consumption**	**Log Food plus Housing Consumption**
-5	0.003	-0.007
	[0.016]	[0.012]
-4	0.002	-0.028
	[0.015]	[0.015]*
-3	-0.01	-0.024
	[0.017]	[0.014]*
-2	0.007	-0.021
	[0.016]	[0.016]
-1	-0.006	-0.019
	[0.017]	[0.015]
0	-0.01	-0.034
	[0.016]	[0.015]**
1	-0.025	-0.048
	[0.019]	[0.016]***
2	-0.05	-0.08
	[0.018]***	[0.017]***
3	-0.066	-0.089
	[0.019]***	[0.018]***
4	-0.054	-0.094
	[0.019]***	[0.019]***
5	-0.06	-0.08
	[0.020]***	[0.018]***
6	-0.067	-0.085
	[0.020]***	[0.018]***
7	-0.068	-0.108
	[0.019]***	[0.019]***
8	-0.05	-0.087
	[0.020]**	[0.019]***
9	-0.048	-0.106
	[0.020]**	[0.020]***
10	-0.062	-0.11
	[0.022]***	[0.023]***

***Significant at 1%, **Significant at 5%, *Significant at 10%. Standard errors clustered by person are in parentheses. The numbers are, for each variable of interest, the coefficient estimates of the time from onset indicator variables in the basic fixed effect regression model. See the data appendix for variable definitions and the text for further details.

Table 11
Log Food Consumption and Log Food plus Housing Consumption
By Persistence Groups

Year from onset	A. Log Food Consumption			B. Log Food plus Housing Consumption		
	One-Time	Temporary	Chronic	One-Time	Temporary	Chronic
-5	0.001	-0.044	0.032	0.001	-0.009	-0.017
	[0.035]	[0.033]	[0.020]	[0.024]	[0.025]	[0.017]
-4	0.018	0.012	-0.025	0.003	-0.024	-0.055
	[0.033]	[0.029]	[0.021]	[0.028]	[0.031]	[0.021]***
-3	-0.034	0.023	-0.026	-0.028	-0.01	-0.036
	[0.038]	[0.030]	[0.025]	[0.029]	[0.027]	[0.021]*
-2	0.033	0.033	-0.029	0.008	0.004	-0.058
	[0.032]	[0.031]	[0.024]	[0.028]	[0.031]	[0.022]***
-1	0.024	0.016	-0.047	0.023	0.012	-0.066
	[0.030]	[0.032]	[0.025]*	[0.026]	[0.027]	[0.023]***
0	0.01	-0.018	-0.021	-0.002	-0.026	-0.057
	[0.031]	[0.031]	[0.023]	[0.027]	[0.027]	[0.024]**
1	-0.024	-0.005	-0.044	-0.022	-0.04	-0.071
	[0.035]	[0.031]	[0.029]	[0.031]	[0.030]	[0.023]***
2	-0.042	-0.059	-0.059	-0.044	-0.091	-0.098
	[0.037]	[0.033]*	[0.025]**	[0.031]	[0.031]***	[0.024]***
3	0.004	-0.048	-0.115	-0.041	-0.091	-0.112
	[0.035]	[0.034]	[0.027]***	[0.035]	[0.032]***	[0.024]***
4	0.024	-0.064	-0.091	-0.059	-0.101	-0.117
	[0.036]	[0.040]	[0.026]***	[0.037]	[0.036]***	[0.027]***
5	0.001	-0.018	-0.116	-0.007	-0.061	-0.127
	[0.033]	[0.036]	[0.028]***	[0.029]	[0.032]*	[0.028]***
6	0.029	-0.073	-0.112	0.005	-0.099	-0.124
	[0.035]	[0.035]**	[0.029]***	[0.033]	[0.033]***	[0.026]***
7	0	-0.067	-0.111	-0.064	-0.089	-0.147
	[0.035]	[0.035]*	[0.026]***	[0.036]*	[0.032]***	[0.027]***
8	-0.029	-0.01	-0.104	-0.053	-0.046	-0.137
	[0.039]	[0.033]	[0.029]***	[0.034]	[0.032]	[0.027]***
9	0.002	-0.041	-0.091	-0.071	-0.067	-0.151
	[0.041]	[0.035]	[0.028]***	[0.043]*	[0.033]**	[0.028]***
10	-0.026	-0.032	-0.113	-0.052	-0.079	-0.158
	[0.040]	[0.035]	[0.032]***	[0.042]	[0.035]**	[0.033]***

***Significant at 1%, **Significant at 5%, *Significant at 10%. Standard errors clustered by person are in parentheses. The numbers are, for each variable of interest, the coefficient estimates of the time from onset indicator variables in the basic fixed effect regression model. See the data appendix for variable definitions and the text for further details.

Table 12
Log Food Consumption and Log Food plus Housing Consumption By Severity Groups

Year from onset	A. Log Food Consumption		B. Log Food plus Housing Consumption	
	Not Severe	Severe	Not Severe	Severe
-5	-0.004	0.02	-0.002	-0.026
	[0.019]	[0.027]	[0.014]	[0.024]
-4	-0.001	0.003	-0.014	-0.07
	[0.018]	[0.028]	[0.016]	[0.034]**
-3	-0.003	-0.022	-0.017	-0.046
	[0.020]	[0.033]	[0.016]	[0.028]
-2	0.028	-0.044	-0.005	-0.061
	[0.019]	[0.031]	[0.018]	[0.027]**
-1	0.011	-0.049	0.001	-0.066
	[0.019]	[0.034]	[0.018]	[0.027]**
0	0.002	-0.054	-0.016	-0.096
	[0.019]	[0.030]*	[0.018]	[0.027]***
1	-0.022	-0.037	-0.029	-0.103
	[0.022]	[0.034]	[0.018]	[0.029]***
2	-0.014	-0.145	-0.04	-0.188
	[0.020]	[0.034]***	[0.019]**	[0.030]***
3	-0.026	-0.181	-0.053	-0.194
	[0.021]	[0.040]***	[0.020]***	[0.034]***
4	-0.039	-0.108	-0.066	-0.182
	[0.023]*	[0.037]***	[0.022]***	[0.035]***
5	-0.039	-0.127	-0.058	-0.156
	[0.022]*	[0.039]***	[0.022]***	[0.030]***
6	-0.037	-0.146	-0.051	-0.178
	[0.022]*	[0.040]***	[0.021]**	[0.033]***
7	-0.032	-0.158	-0.073	-0.202
	[0.022]	[0.036]***	[0.022]***	[0.033]***
8	-0.017	-0.138	-0.045	-0.204
	[0.023]	[0.038]***	[0.022]**	[0.032]***
9	-0.017	-0.13	-0.071	-0.205
	[0.023]	[0.038]***	[0.024]***	[0.035]***
10	-0.047	-0.1	-0.069	-0.216
	[0.025]*	[0.045]**	[0.027]***	[0.043]***

***Significant at 1%, **Significant at 5%, *Significant at 10%. Standard errors clustered by person are in parentheses. The numbers are, for each variable of interest, the coefficient estimates of the time from onset indicator variables in the basic fixed effect regression model. See the data appendix for variable definitions and the text for further details.

Table 13
Log Food Consumption and Log Food plus Housing Consumption
Extent of Disability Groups

	A. Log Food Consumption				B. Log Food plus Housing Consumption			
Year from onset	**One-Time**	**Temporary**	**Chronic Not Severe**	**Chronic Severe**	**One-Time**	**Temporary**	**Chronic Not Severe**	**Chronic Severe**
-5	0.001	-0.044	0.037	0.023	0.001	-0.009	-0.004	-0.039
	[0.035]	[0.033]	[0.026]	[0.030]	[0.024]	[0.025]	[0.022]	[0.028]
-4	0.018	0.012	-0.014	-0.04	0.003	-0.025	-0.033	-0.091
	[0.033]	[0.029]	[0.027]	[0.033]	[0.028]	[0.031]	[0.024]	[0.039]**
-3	-0.034	0.022	0.003	-0.065	-0.028	-0.011	-0.008	-0.075
	[0.038]	[0.030]	[0.032]	[0.039]*	[0.029]	[0.027]	[0.025]	[0.034]**
-2	0.033	0.032	0.012	-0.09	0.008	0.004	-0.023	-0.109
	[0.032]	[0.031]	[0.030]	[0.037]**	[0.028]	[0.031]	[0.027]	[0.037]***
-1	0.024	0.016	-0.023	-0.083	0.023	0.012	-0.035	-0.113
	[0.030]	[0.032]	[0.031]	[0.040]**	[0.026]	[0.027]	[0.030]	[0.033]***
0	0.01	-0.018	0.022	-0.092	-0.003	-0.027	-0.012	-0.133
	[0.031]	[0.031]	[0.029]	[0.036]***	[0.027]	[0.027]	[0.030]	[0.034]***
1	-0.024	-0.005	-0.031	-0.073	-0.022	-0.041	-0.029	-0.144
	[0.035]	[0.031]	[0.038]	[0.040]*	[0.031]	[0.030]	[0.028]	[0.033]***
2	-0.042	-0.059	0.02	-0.187	-0.044	-0.092	-0.016	-0.231
	[0.037]	[0.033]*	[0.030]	[0.039]***	[0.031]	[0.031]***	[0.029]	[0.035]***
3	0.004	-0.048	-0.046	-0.227	-0.041	-0.091	-0.044	-0.227
	[0.035]	[0.034]	[0.032]	[0.046]***	[0.035]	[0.032]***	[0.029]	[0.037]***
4	0.024	-0.064	-0.039	-0.176	-0.059	-0.101	-0.052	-0.217
	[0.036]	[0.040]	[0.032]	[0.042]***	[0.037]	[0.036]***	[0.034]	[0.039]***
5	0.002	-0.018	-0.076	-0.19	-0.007	-0.062	-0.069	-0.231
	[0.033]	[0.037]	[0.035]**	[0.044]***	[0.029]	[0.032]*	[0.037]*	[0.035]***
6	0.029	-0.073	-0.054	-0.208	0.005	-0.099	-0.056	-0.243
	[0.035]	[0.035]**	[0.035]	[0.047]***	[0.033]	[0.033]***	[0.031]*	[0.038]***
7	0	-0.068	-0.05	-0.217	-0.064	-0.09	-0.08	-0.254
	[0.035]	[0.035]*	[0.031]	[0.041]***	[0.036]*	[0.032]***	[0.034]**	[0.036]***
8	-0.029	-0.011	-0.042	-0.21	-0.053	-0.047	-0.055	-0.274
	[0.039]	[0.033]	[0.035]	[0.045]***	[0.034]	[0.032]	[0.034]	[0.038]***
9	0.001	-0.041	-0.035	-0.187	-0.071	-0.068	-0.09	-0.258
	[0.041]	[0.035]	[0.034]	[0.044]***	[0.043]*	[0.033]**	[0.035]***	[0.038]***
10	-0.026	-0.033	-0.08	-0.155	-0.051	-0.08	-0.104	-0.254
	[0.040]	[0.035]	[0.039]**	[0.055]***	[0.042]	[0.035]**	[0.044]**	[0.044]***

***Significant at 1%, **Significant at 5%, *Significant at 10%. Standard errors clustered by person are in parentheses. The numbers are, for each variable of interest, the coefficient estimates of the time from onset indicator variables in the basic fixed effect regression model. See the data appendix for variable definitions and the text for further details.

Table 14
Log Food Eaten at Home and Log Food Eaten Outside the Home
Extent of Disability Groups

	A. Log Food Eaten at Home				B. Log Food Eaten Outside the Home			
Year from onset	**One-Time**	**Temporary**	**Chronic Not Severe**	**Chronic Severe**	**One-Time**	**Temporary**	**Chronic Not Severe**	**Chronic Severe**
-5	0.023	-0.051	0.03	0.01	-0.055	0.058	0.001	-0.19
	[0.030]	[0.037]	[0.027]	[0.037]	[0.065]	[0.061]	[0.066]	[0.102]*
-4	0.005	0.004	-0.03	-0.03	0.022	0.111	-0.004	-0.27
	[0.035]	[0.032]	[0.032]	[0.035]	[0.064]	[0.054]**	[0.063]	[0.101]***
-3	-0.025	-0.005	-0.03	-0.07	-0.058	0.041	-0.023	-0.15
	[0.038]	[0.033]	[0.037]	[0.044]	[0.064]	[0.059]	[0.070]	[0.093]
-2	0.063	0.014	0.01	-0.07	0.06	0.017	-0.033	-0.21
	[0.031]**	[0.034]	[0.033]	[0.041]	[0.061]	[0.069]	[0.066]	[0.097]**
-1	0.042	-0.037	-0.03	-0.06	-0.039	0.039	-0.051	-0.24
	[0.032]	[0.034]	[0.035]	[0.042]	[0.060]	[0.064]	[0.063]	[0.096]**
0	-0.026	-0.053	0.01	-0.10	-0.058	0.014	0.026	-0.27
	[0.036]	[0.038]	[0.031]	[0.044]**	[0.068]	[0.064]	[0.069]	[0.093]***
1	-0.012	-0.043	0.00	-0.07	-0.038	-0.009	-0.049	-0.43
	[0.037]	[0.036]	[0.032]	[0.042]*	[0.063]	[0.065]	[0.074]	[0.099]***
2	-0.008	-0.11	0.00	-0.22	-0.108	0.002	-0.023	-0.45
	[0.035]	[0.038]***	[0.032]	[0.044]***	[0.066]	[0.069]	[0.072]	[0.101]***
3	-0.014	-0.07	-0.04	-0.23	-0.06	-0.085	-0.015	-0.40
	[0.037]	[0.038]*	[0.034]	[0.049]***	[0.068]	[0.068]	[0.075]	[0.105]***
4	0.028	-0.068	-0.03	-0.22	-0.009	-0.061	-0.114	-0.40
	[0.036]	[0.040]*	[0.033]	[0.047]***	[0.071]	[0.077]	[0.072]	[0.100]***
5	0.016	-0.055	-0.05	-0.22	-0.117	-0.042	-0.098	-0.41
	[0.035]	[0.041]	[0.037]	[0.049]***	[0.076]	[0.078]	[0.077]	[0.096]***
6	0.029	-0.081	-0.02	-0.16	-0.101	-0.095	-0.027	-0.43
	[0.037]	[0.039]**	[0.036]	[0.049]***	[0.086]	[0.078]	[0.076]	[0.102]***
7	-0.023	-0.067	-0.06	-0.22	-0.102	-0.018	-0.163	-0.46
	[0.038]	[0.038]*	[0.038]*	[0.047]***	[0.084]	[0.072]	[0.079]**	[0.104]***
8	-0.042	-0.016	-0.03	-0.14	0.017	-0.064	-0.063	-0.45
	[0.043]	[0.037]	[0.037]	[0.046]***	[0.083]	[0.082]	[0.084]	[0.108]***
9	0.016	-0.05	-0.01	-0.21	-0.033	-0.166	-0.154	-0.32
	[0.042]	[0.040]	[0.038]	[0.052]***	[0.084]	[0.087]*	[0.084]*	[0.112]***
10	-0.017	-0.047	-0.06	-0.12	0.034	-0.116	-0.075	-0.55
	[0.039]	[0.042]	[0.039]	[0.060]*	[0.107]	[0.092]	[0.093]	[0.129]***

***Significant at 1%, **Significant at 5%, *Significant at 10%. Standard errors clustered by person are in parentheses. The numbers are, for each variable of interest, the coefficient estimates of the time from onset indicator variables in the basic fixed effect regression model. See the data appendix for variable definitions and the text for further details.

Table 15
Decomposition of Change in Housing Consumption

	One-Time	Temporary	Chronic -Not Severe	Chronic - Severe
Housing Type				
Home	-0.023	-0.049	0.013	-0.034
	[0.028]	[0.028]*	[0.028]	[0.037]
Subsidized	-0.013	0.003	0.006	-0.034
	[0.013]	[0.013]	[0.013]	[0.018]*
Rent	0.036	0.046	-0.019	0.068
	[0.028]	[0.029]	[0.027]	[0.036]*
Housing Consumption Given Type				
Home	-886.176	-499.405	-246.283	-2,116.04
	[510.410]*	[566.506]	[618.836]	[528.788]***
Subsidized	-737.358	-1477.976	253.523	-629.326
	[964.085]	[664.491]**	[826.231]	[827.213]
Rent	-575.873	-683.252	-499.797	-1385.311
	[372.704]	[414.706]*	[459.644]	[371.078]***

***Significant at 1%, **Significant at 5%, * Significant at 10%. Standard errors clustered by person are in parentheses. The table reports the coefficient estimates on the interaction of each disability group with being after the 6^{th} year after onset ($t \in \{6,10\}$). For the upper panel, the dependent variable is a dichotomous variable that equals one if the specified housing type is chosen. For the bottom panel, the dependent variable is the amount of housing consumption, conditional on the housing type chosen (which is taken to be the type with the largest consumption). See the text for details.

Appendix Table 1
Prevalence of Disability by Year

Age 40-49

	N	Any disability	Currently Disabled	One-Time	Temporary	Chronic-Not Severe	Chronic-Severe
1980	430	0.2712	0.1263	0.0262	0.0794	0.0983	0.0673
		(0.0256)	(0.0188)	(0.0088)	(0.0158)	(0.0172)	(0.0142)
1982	441	0.2670	0.1059	0.0251	0.0924	0.1005	0.0488
		(0.0249)	(0.0171)	(0.0086)	(0.0165)	(0.0170)	(0.0118)
1984	461	0.2431	0.1055	0.0297	0.0841	0.0829	0.0463
		(0.0232)	(0.0166)	(0.0090)	(0.0148)	(0.0148)	(0.0112)
1986	513	0.2979	0.0967	0.0518	0.0905	0.1208	0.0348
		(0.0237)	(0.0155)	(0.0109)	(0.0144)	(0.0172)	(0.0091)
1988	618	0.3136	0.1289	0.0529	0.0937	0.1242	0.0428
		(0.0222)	(0.0161)	(0.0105)	(0.0139)	(0.0160)	(0.0096)
1990	745	0.3422	0.1446	0.0620	0.0895	0.1449	0.0458
		(0.0210)	(0.0157)	(0.0104)	(0.0129)	(0.0158)	(0.0088)

Age 50-59

	N	Any disability	Currently Disabled	One-Time	Temporary	Chronic-Not Severe	Chronic-Severe
1980	410	0.4075	0.2426	0.0421	0.0628	0.1409	0.1616
		(0.0274)	(0.0238)	(0.0114)	(0.0126)	(0.0196)	(0.0201)
1982	424	0.4143	0.2104	0.0503	0.0604	0.1429	0.1608
		(0.0273)	(0.0226)	(0.0123)	(0.0123)	(0.0195)	(0.0202)
1984	423	0.4022	0.2004	0.0540	0.0684	0.1579	0.1219
		(0.0274)	(0.0222)	(0.0126)	(0.0136)	(0.0205)	(0.0180)
1986	422	0.4108	0.1931	0.0677	0.0681	0.1323	0.1427
		(0.0277)	(0.0222)	(0.0144)	(0.0136)	(0.0191)	(0.0197)
1988	388	0.4356	0.2052	0.1007	0.0862	0.1364	0.1123
		(0.0295)	(0.0237)	(0.0183)	(0.0160)	(0.0200)	(0.0187)
1990	359	0.4655	0.2470	0.0736	0.1052	0.1345	0.1522
		(0.0321)	(0.0283)	(0.0166)	(0.0195)	(0.0218)	(0.0234)

Age 60-64

	N	Any disability	Currently Disabled	One-Time	Temporary	Chronic-Not Severe	Chronic-Severe
1980	131	0.5826	0.4373	0.0130	0.1574	0.1156	0.2966
		(0.0549)	(0.0549)	(0.0129)	(0.0404)	(0.0342)	(0.0503)
1982	152	0.6292	0.4273	0.0433	0.1127	0.1543	0.3189
		(0.0487)	(0.0494)	(0.0213)	(0.0306)	(0.0358)	(0.0468)
1984	148	0.6730	0.4246	0.0302	0.0647	0.2380	0.3401
		(0.0463)	(0.0484)	(0.0163)	(0.0240)	(0.0420)	(0.0459)
1986	150	0.7133	0.2945	0.0361	0.1484	0.2218	0.3070
		(0.0438)	(0.0439)	(0.0182)	(0.0352)	(0.0404)	(0.0440)
1988	184	0.5975	0.3409	0.0683	0.1006	0.2254	0.2032
		(0.0415)	(0.0397)	(0.0219)	(0.0248)	(0.0356)	(0.0329)
1990	197	0.5610	0.2856	0.1220	0.1183	0.1642	0.1564
		(0.0396)	(0.0359)	(0.0262)	(0.0254)	(0.0293)	(0.0287)

This table reports for each year the fraction of the sample that has had a disability by the specified year, the fraction of individuals who are currently disabled, and the fraction for whom a given disability type is their most severe disability to date. These fractions are weighted as are the standard errors which are in parentheses. We restrict this sample to individuals with at least 10 years of data prior to the specified year.

Appendix Table 2
Prevalence of Disability by Age

Age	N	Any disability	Currently Disabled	One-Time	Temporary	Chronic-Not Severe	Chronic-Severe
30	537	0.2179	0.0876	0.0410	0.0640	0.0810	0.0318
		(0.0215)	(0.0156)	(0.0090)	(0.0127)	(0.0144)	(0.0095)
32	896	0.2249	0.0790	0.0433	0.0653	0.0819	0.0343
		(0.0168)	(0.0108)	(0.0085)	(0.0095)	(0.0112)	(0.0074)
34	1051	0.2380	0.0883	0.0542	0.0605	0.0824	0.0409
		(0.0158)	(0.0109)	(0.0084)	(0.0087)	(0.0100)	(0.0078)
36	1008	0.2380	0.0901	0.0526	0.0510	0.1030	0.0314
		(0.0160)	(0.0106)	(0.0082)	(0.0080)	(0.0118)	(0.0063)
38	901	0.2493	0.0765	0.0530	0.0656	0.1008	0.0300
		(0.0175)	(0.0105)	(0.0085)	(0.0099)	(0.0128)	(0.0065)
40	821	0.2614	0.0864	0.0506	0.0671	0.1199	0.0237
		(0.0182)	(0.0111)	(0.0088)	(0.0102)	(0.0138)	(0.0056)
42	709	0.2619	0.1075	0.0493	0.0761	0.1079	0.0286
		(0.0195)	(0.0139)	(0.0093)	(0.0116)	(0.0141)	(0.0069)
44	549	0.3122	0.1297	0.0468	0.1057	0.1284	0.0313
		(0.0234)	(0.0170)	(0.0105)	(0.0157)	(0.0171)	(0.0077)
46	472	0.2922	0.0985	0.0432	0.1058	0.0899	0.0532
		(0.0249)	(0.0164)	(0.0111)	(0.0172)	(0.0151)	(0.0123)
48	459	0.3267	0.1309	0.0433	0.0776	0.1405	0.0654
		(0.0258)	(0.0181)	(0.0112)	(0.0147)	(0.0190)	(0.0130)
50	430	0.3504	0.1525	0.0713	0.0729	0.1041	0.1021
		(0.0277)	(0.0210)	(0.0154)	(0.0145)	(0.0170)	(0.0177)
52	471	0.3579	0.1746	0.0620	0.0707	0.1247	0.1005
		(0.0257)	(0.0204)	(0.0131)	(0.0133)	(0.0180)	(0.0158)
54	454	0.3735	0.2017	0.0497	0.0672	0.1235	0.1331
		(0.0263)	(0.0219)	(0.0120)	(0.0135)	(0.0173)	(0.0186)
56	460	0.4334	0.2363	0.0600	0.0673	0.1450	0.1611
		(0.0268)	(0.0231)	(0.0132)	(0.0130)	(0.0188)	(0.0200)
58	416	0.4989	0.2588	0.0712	0.0927	0.1742	0.1609
		(0.0287)	(0.0252)	(0.0152)	(0.0160)	(0.0220)	(0.0207)
60	393	0.5382	0.2711	0.0718	0.0981	0.1732	0.1951
		(0.0291)	(0.0253)	(0.0156)	(0.0165)	(0.0222)	(0.0223)
62	349	0.6669	0.4241	0.0726	0.1194	0.1892	0.2857
		(0.0302)	(0.0316)	(0.0172)	(0.0206)	(0.0251)	(0.0286)
64	302	0.7226	0.4209	0.0343	0.1607	0.2329	0.2948
		(0.0326)	(0.0355)	(0.0138)	(0.0272)	(0.0306)	(0.0324)

This table reports for each age the fraction of the sample that has had a disability by the specified year, the fraction of individuals who are currently disabled, and the fraction for whom a given disability type is their most severe disability to date. These fractions are weighted as are the standard errors which are in parentheses. We restrict this sample to individuals with at least 10 years of data prior to the specified age.

Appendices to

Disability, Earnings, Income and Consumption

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Appendix 1

Validation of the Severity Question

In this appendix we examine the association between the responses to the PSID severity question and other indicators of health and disability. The PSID includes three sets of questions that allow us to validate the use of these severity questions as summary indicators of disability severity: 1) the 1986 Health Supplement, 2) the activity limitation questions in the 2003 and 2005 PSID questionnaire, and 3) the condition questions in the 1999-2005 questionnaires. The first two sets of questions allow us to examine the tasks that can be performed by the severely disabled compared to the not severely disabled or the non-disabled. The third set of questions gives us reports of the health conditions that the three groups of individuals have, as diagnosed by a doctor or other health professional.

1A. 1986 Health Supplement

A special health supplement to the 1986 survey asked six questions related to daily activities:

1) Do you have any trouble either walking several blocks or climbing a few flights of stairs, because of your health?
2) Do you have trouble bending, lifting or stooping because of your health?
3) Would your health keep you from driving a car?
4) When you travel around your community, does someone have to assist you because of your health?
5) Do you have to stay indoors most or all of the day because of your health?
6) Does your health confine you to a bed or a chair for most or all of the day?

The respondent is asked to state simply *yes* or *no* to each question. We compare the activity limitations for those reported as severely disabled and those not-severely disabled in 1986. Columns 1 to 3 of Appendix Table 1 show for each severity group the percentage of household heads who report having trouble performing each of the six activities, the percentage having trouble performing at least one of these activities and the average total number of activity limitations. For all six activities, the percentage is higher for the severe group than the not-severe group. We see that 79 percent of the severe group have trouble walking or climbing stairs, while only 41 percent of the not-severe group have such a

problem. Similarly, 82 percent of the severe group has trouble stooping, bending or lifting, while only 53 percent of the not-severe group has such difficulty. The rates for the non-disabled for these two types of limitations are 0.04 and 0.06, respectively. The average total number of activity limitations for the severe group was 2.74, compared to only 1.15 for the not severe group and 0.11 for the non-disabled group.

1B. Activity Limitation Questions in the 2003 and 2005 PSID Questionnaires

After asking each individual about the presence and severity of a work limitation, the 2003 and 2005 surveys ask a series of activity limitation questions. The questions begin with the following statement: "The next questions are about [your/Head's] ability to do certain activities – by [your/him]self and without special equipment. Because of a health or physical problem, [do you/does he] have any difficulty (performing a specific activity)."

The specific activities include 1) Bathing or showering, 2) Dressing, 3) Eating, 4) Getting in or out of a bed and chair, 5) Walking, 6) Getting outside, 7) Using the bathroom, 8) Preparing own meals, 9) Shopping for personal items or medicines, 10) Managing money, 11) Using telephone, 12) Doing heavy housework (scrubbing floors, washing windows) and 13) Doing light housework (washing dishes, light house cleaning). Generally, each respondent is again asked to state simply *yes* or *no* to each question.[1] These questions are similar to those of the 1986 Health Supplement.

Columns 4 to 6 of Appendix Table 1 report the activity limitation rates of the disability severity groups from the 2003 PSID survey and columns 7 to 9 report these rates from the 2005 PSID survey. For each activity, the severe group once again has a higher propensity to report having a limitation. Specifically, 59 percent of the severely disabled in 2003, and 65 percent in 2005, report difficulty in performing heavy housework. Of the not-severely disabled, only 22 percent (2003) and 25 percent (2005) report such a difficulty. On average, a severely disabled person has approximately 3 activity limitations, while the not-severely disabled have about 0.8, and the non-disabled only 0.05.

[1] There is a follow-up question after each activity. For the first seven activities, respondents who state "yes," are then asked: "Does someone usually help [you/him] with that activity?" For the last six activities, the possible answers are "yes," "no," or "does not do." Those who state "Does not do" (i.e. they do not currently perform that activity) are then asked: "Is this because of a health or physical problem?" We classify the respondent as having one of these activity limitations if he says yes also to the follow-up question.

1C. Health Limitation Questions in the 1999-2005 PSID Questionnaires

The 1999-2005 surveys also ask questions about the presence of health conditions. Each respondent is first asked, "Has a doctor (or medical professional) ever told you that you have or had (a particular health condition)?" For those who answer yes, the date of onset is recorded and the respondent is then asked, "How much does this condition limit your normal daily activity?" The possible answers are: "A lot," "Somewhat," "Just a little," or "Not at all."

We are again interested in the shares of the current not severely and severely disabled who report a health condition. The results for all (1999-2005) surveys are very similar; we, therefore, report the average across these survey years. Columns 1 to 3 of Appendix Table 2 present for the currently non-disabled, not-severely disabled and the severely disabled groups, respectively, the fraction that reports having or having had a particular health condition as told by a doctor. In all cases, the frequency for the severe group is considerably higher than the other two groups. Nonetheless, individuals who answered affirmatively to this health condition question may have had the condition many years ago and have since recovered.

We are more interested in how a condition affects activities currently rather than in the past. Thus, we use the follow-up question regarding how much the condition limits the head and consider only those who answered, "A lot," "Somewhat," or "Just a little" as having a limitation currently. Columns 4 to 6 report these percentages. It is again evident that the severe group reports a much higher share of people with a health condition that currently limits their activities.

Finally, we consider the seriousness of a health condition itself by looking at the percentage of people who report that a particular health condition currently limits them "A lot." Columns 7 to 9 report these results, which display the now familiar pattern – the severe group has the highest rate of serious health conditions. The severe group averages 1.13 serious health limitations, compared to 0.15 for the not-severe group, and less than 0.01 for the non-disabled group. Thus, the severely disabled group not only has more types of limiting conditions, but also has them in more serious forms.

Taken together, the consistent response patterns in these surveys support the view that the self-reported severity questions are good indicators of the true severity of disabling conditions.[2]

[2] Ideally, we would like to have certified medical professionals to verify these self-reported activity limitations. To our knowledge, however, there is no survey that asks both about self-reported severity and includes information about activity limitations that are externally assessed.

Appendix 2
Additional Results

2A. Chronic-Severe Disability Spells after an Initially Milder Disability

Our results suggest that on average members of the Chronic-Severe group experience a large long-term drop in their material well-being. Our disability classification, however, is based only on the first observed disability and the subsequent ten years. We would like to determine if it is appropriate to combine our results on the decline in material well-being for initial Chronic-Severe disabilities with our lifetime frequencies that are reported in Table 4 and Appendix Table 3. Specifically, we ask whether those non-Chronic-Severe disabled individuals whose disability classification subsequently changes to Chronic-Severe over time (using a rolling ten-year-ahead window) exhibit outcomes similar to those in the original Chronic-Severe group. To do so, we re-run our fixed effect regressions using only these new Chronic-Severe disability spells. We determine the year of onset as the year when their disability classification switches to Chronic-Severe, but we still use the period before their first observed disability as the years before onset. We find that the long-term changes in various outcomes based on these Chronic-Severe disability spells that begin after other spells are qualitatively similar to those of the original Chronic-Severe group presented above.

2B. Social Security Recipiency

The evidence we presented in the paper suggests that the Chronic-Severe group fares particularly badly relative to the other groups. We also see that in the long run (six to ten years after disability onset), about 48 percent of these men receive Social Security retirement or disability benefits. A natural question to ask then is how those Chronic-Severe disabled who receive Social Security fare relative to their non-receiving counterparts. To examine this issue, we split the Chronic-Severe group into those who receive Social Security benefits more than half of the time within the ten years after disability onset (SSA recipients) and those who do not (SSA non-recipients). Appendix Figure 4 illustrates the fixed effects regression results for annual earnings.

The drop in earnings for the SSA recipient Chronic-Severe group is much larger than that for the SSA non-recipient Chronic-Severe group. This difference is not surprising given that SSDI recipients cannot have earnings above a certain level and maintain eligibility. Next, we look at the changes in hours of work, which are shown in Appendix Figure 5. These results suggest that on average the annual hours worked of the SSA recipient Chronic-Severe group falls sharply relative to the SSA non-recipient Chronic-Severe group.[3]

Finally, we study how income and consumption differ between social security recipients and non-recipients. Appendix Figure 6 displays the results for income, and Appendix Figure 7 for food and housing consumption. These figures suggest that the fall in material well being is very similar for the two Chronic-Severe groups. In the sixth through tenth years after onset, average after-tax post-transfer income is similar for the two groups, but food consumption drops a bit more for the nonrecipients of social security benefits. When combined with the changes in earnings and hours, this result suggests that those who receive Social Security payments stop working earlier than those who do not. Nonetheless, the fall in material well-being is very similar for the two groups.

2C. Additional Specifications: Changes over Time and Differences by Wealth

We have also examined whether the material consequences of disability have changed over time. To do so, we split the disabled into two samples: those who are first disabled before 1985, and those disabled later. We estimate the regressions on these two samples separately and find that the two sets of results for the Chronic-Severe group are very similar.

We have also studied the changes in economic outcomes for those with high (above median) and low (below median) net wealth. The results suggest that the consumption decline for those Chronic-Severe disabled with high net wealth is in general smaller than that for their less wealthy counterparts over the first seven years after disability onset. Beginning in the eighth year after onset, the consumption decline for these two Chronic-Severe groups is quite similar. This evidence is consistent with our finding that the Chronic-Severe disabled smooth their consumption somewhat by running down their wealth, but the estimates are noisy due to small sample sizes.

[3] In theory, the net effect of the availability of SSDI benefits on a disabled person's work hours decision is ambiguous because the income effect of the benefit can induce him to work more or less (or no change), depending on his taste for leisure.

2D. Food Consumption vs. Food Expenditures

The results in Section 6 suggest that the disabled suffer from a sizable drop in food consumption, particularly so for the Chronic-Severe group. We should interpret these estimates with care, however, because the PSID records only food expenditure. As Becker (1965) notes, consumption is the output of home production that uses both expenditure and time as ingredients. Individuals with a lower relative price of time may substitute expenditure with more time spent in home production. Becker's ideas have strong implications for our conclusions because the fall in food consumption we observe for the disabled may be a result of: 1) the disabled spending more time shopping and searching for bargains, thus getting lower prices for the same quantity of goods and/or 2) the disabled spending more time on food preparation, which may turn cheaper ingredients into better food.[4] In this section, we investigate these two possibilities in turn.

We use data from the 1989-1991 Continuing Survey of Food Intake of Individuals (CSFII) to examine the food quantity that the disabled consume. To study whether the disabled spend more time shopping and preparing food, we mainly use the American Time Use Survey (ATUS). For clarity of exposition, we include descriptions of the surveys in the subsections below. As before, we focus on male household heads ages 22-61. To determine the effect of disability, we estimate:

$$(A1) \qquad Y = \beta_0 + \beta_1 D + X\beta + u$$

where Y is the dependent variable of interest, D is an indicator variable that equals one if the individual is disabled, β_1 is the coefficient of interest, X is a vector of demographic controls including age, age-squared of the male head, year, month of survey, geographical regions, family composition, education and race.

Other than the question about whether an individual has a disability, CSFII and ATUS ask no other disability-related questions.[5] Thus, we can only study the disabled as a whole for the remainder of this section.

[4] Aguiar and Hurst (2005) highlight this distinction by explaining that the fall in food expenditure after retirement that is observed in many studies is due to retirees shopping for food more frequently and spending more time on food preparation (which affects quality of the food eaten).

[5] See the data appendix (Appendix 3) on how we define disability in the ATUS using matched information from the ASEC.

Food Consumption

We first study the quantity of food consumption at the household level using the CSFII. CSFII is a repeated cross-sectional survey which collects detailed information on the type and quantity of food consumed by the non-institutionalized population in the 48 coterminous states. CSFII was implemented annually in 1989-1991 and 1994-1996 and 1998. The survey begins with a general household questionnaire followed by three one-day food diaries. We use only the 1989-1991 surveys because the question about the presence of disability was not asked in the 1994-1997 surveys. The 1989-1991 surveys also interviewed a low income sample; we present results with and without this low income sample. Our sample includes 3,253 male household heads ages 22-61 of whom 362 (11.1 percent) are disabled. There are 2,214 male household heads who completed all three one-day diaries, of whom 266 (12 percent) are disabled.[6]

Columns 1 and 2 in Appendix Table 8 show the descriptive statistics by current disability status. On average, disabled households spend less on food than their non-disabled counterparts, both for food eaten at home and for food eaten outside. Column 3 reports the estimates of β_1 in equation (6) for the full sample and column 4 reports these results for the main sample only (that is, excluding the low-income sample). The results suggest that conditional on the observables, a family with a disabled head expends on average 16 percent less on food than its non-disabled counterpart in the full sample (and 11 percent less in the main sample).

For comparison, we have also estimated similar regressions using the PSID data with and without individual fixed effects; the results are tabulated in columns 5 and 6. The PSID estimates without fixed effects are very similar to the CSFII results in column 4, which excludes the low-income sample. When fixed effects are included, however, the fall in food consumption is smaller. For total and home food expenditures, the fixed effects estimates are about half as big as those without fixed effects, but remain statistically significant at the 1 percent level.

To see whether the disabled suffer from a change in the quantity of food consumed, we examine the change in their log consumption index developed by Aguiar and Hurst (2005). The consumption index is constructed by studying how permanent income can be predicted based on what food the

[6] If we exclude the low-income sample, the sample size falls to 2,431 male household heads, of whom 215 (8.8 percent) are disabled. Selecting only those who completed the three one-day diaries, gives us 1,676 male household heads, of whom 164 (9.8 percent) are disabled.

household head eats. The data appendix (Appendix 3) includes details of its construction but we include a simplified description here. We first predict permanent income of the non-disabled household heads using education, industry, occupation and demographic controls. We then regress predicted permanent income on the household's food expenses, household composition and the head's food consumption quantities. Using only the resulting estimated coefficients pertaining to consumption (food quantities and food expenses), we obtain the log consumption index. A one percent decline in the log consumption index implies that households are consuming as though their permanent income has fallen by one percent. By comparing the log consumption indexes of the disabled and the non-disabled heads, we can see how disability affects consumption.

The regression results (shown in the fifth row of Appendix Table 8) suggest that the disabled experience a decline in consumption equal to 3 percent of their permanent income in the full sample and 2% in the main sample. Since the CSFII disabled sample includes the disabled with all degrees of persistence and severity, it is reasonable to surmise that the actual drop in the log consumption index for our Chronic-Severe group is likely to be much higher than this estimate.

We also observe a decline in the nutrition of the disabled individual himself, with about a 10-15 percent drop in intake of Vitamin A, Vitamin C and Vitamin E, as Appendix Table 8 reports.[7] Finally, we looked at the change in the frequency of eating out. The results indicate that households with a disabled head are less likely to eat out (8 percentage points lower). This difference mostly comes from fewer meals in fast-food outlets (7.8 percentage points lower) and restaurants with table service (5.4 percentage points lower).

Food Preparation/Shopping

To consider whether the disabled also spend more time on food preparation and shopping, we make use of the 2003-2006 ATUS, a large cross-sectional survey of time use by the non-institutionalized population of the United States. Households that have completed the last round of their monthly CPS are randomly selected, and one member of each selected household is interviewed. Like the monthly CPS, the ATUS does not have a disability question that is asked of everyone. The Annual Social and Economic Supplement to the CPS (ASEC) does ask a disability question of everyone, regardless of their

[7] There is no evidence, however, of a decline in the intake of calcium, cholesterol, saturated fat or protein.

employment status. Respondents whose final CPS interview takes place between March and June of the year are potentially also selected to participate in the ATUS. Using this link, we can obtain the disability status of a subset of ATUS respondents.

For our analysis, we again look at male household heads who are 22-61 years of age. Linking the ASEC with the ATUS yields a sample of 4,650 male household heads, with 6.8 percent of them classified as disabled. We study their time spent (in hours per week) on food preparation, food shopping and all kinds shopping. The upper section of Appendix Table 9 reports the results for these male household heads. Columns 1 and 2 report the weighted average number of hours spent per week on each of these three activities for the non-disabled and disabled male household heads, respectively. Column 3 reports the results of estimating equation (6) with time use as the dependent variable in each category.[8]

Currently disabled male heads are estimated to spend 0.66 hours per week (5.7 minutes per day) more on food preparation.[9] Relative to the mean for the non-disabled, this represents a 34 percent increase in the time spent on food preparation, but the amount of time is small. The disabled spend more time improving food quality, but this increase takes up only a small fraction of their extra 24.3 hours of leisure hours per week (see section 2E of this appendix). There is no evidence that the disabled spend more time shopping. It is possible that the disabled spend more time on food preparation simply because they have much more extra time to spend or that their disability makes their time less productive and they compensate by using more time to prepare meals than their non-disabled counterparts.

It is important to recognize, however, that these food preparation and shopping activities may be done by the spouse instead of the head. The lower section of Appendix Table 9 reports the results for a sample of 3,658 wives of household heads, 132 (4 percent) of whom have disabled husbands. The sample means show that married females spend more time on food preparation and shopping activities than the average male household heads do. We estimate equation (6), but with time spent by the wife as the dependent variable; we also include her disability status as an extra control. Column 3 reports the

[8] These regressions control for the age and age-squared of the head, education, region, urbanicity, year, marital status, race, number of children, number of adults, and the month of the ATUS interview.

[9] If we identify the disabled via the Basic CPS monthly labor status recode, which likely heavily weights the more severely disabled people due to their being out of the labor force completely, the results suggest that the disabled spend 1.07 hours per week (9.2 minutes per day) more on food preparation than the non-disabled. This small difference suggests that the severely disabled also do not spend much additional time on food preparation.

estimated coefficient on the head's disability indicator variable. These results suggest that the average wife of a disabled husband does not spend more time on food preparation and shopping given the small, negative, and statistically insignificant estimates. Overall, these findings are inconsistent with the fall in food expenditure among the disabled being purely due to more time spent on food preparation and shopping.

2E. Disability, Time Use and Leisure

The discussion so far points to the conclusion that there is a decline in the material well-being of the disabled. A related question is whether there is a corresponding increase in leisure. This is important for two reasons. First, leisure is an input in an individual's utility function. Second, we saw previously in our analysis that working hours decline following disability; due to the presence of non-market work, however, it remains premature to conclude that leisure increases following disability. In this section, we look at the differences in the leisure patterns of the disabled and the non-disabled.

We again make use of the ATUS. The battery of time-use information in the ATUS allows us to look at time use for many specific activities. In theory, all non-work activities can be defined as leisure, but we prefer to investigate activities that directly affect personal enjoyment. We define Leisure (Narrow) to include all time spent on socializing and communicating, pet care, social events, relaxing, television watching, radio listening, playing games, computer use for leisure, hobbies, reading and writing for personal interest, sports and recreation, traveling for leisure, and telephone use and mailing. Our Leisure (Broad) includes all of the activities above and adds eating, personal care and sleeping.[10]

We again estimate equation (6) with time spent on each category as the dependent variable. Column 3 of Appendix Table 10 reports the results of these regressions. These regression estimates confirm the patterns in the sample means (Columns 1 and 2). Measuring leisure narrowly, the disabled enjoy 18.2 hours per week more than their non-disabled counterparts. Most of this extra leisure time is spent watching TV – 10.6 hours per week, with an additional 3.2 hours spent "relaxing." There are increases in other time-use categories as well, but they are small in general.

[10] Our Narrow and Broad leisure measures are the same as "Leisure 1" and "Leisure 2" in Aguiar and Hurst (2007).

Measuring leisure broadly, the disabled enjoy 24.3 hours per week of leisure more than the non-disabled do. The six-hour increase (relative to measuring leisure narrowly) is due almost entirely to increased time spent sleeping – the disabled spend 6.8 hours more per week sleeping than the non-disabled. We also do not see any evidence that the disabled spend more time on vacation, despite enjoying almost an extra day of leisure per week than the non-disabled.

Finally, we examine the time spent using medical services (for example, visiting doctors). The results indicate that the disabled on average spend 7.2 hours per week more on this activity than their non-disabled counterparts.

Although not reported, we have also investigated the time use of wives of the disabled. On average, wives of the disabled do not spend more time working than those whose husbands are not disabled; this is consistent with the PSID results discussed earlier. Maybe surprisingly, there is also no conclusive evidence that wives of disabled husbands spend more time on caring for adult family members.

Appendix 3

Data Appendix

This appendix provides details of the surveys and the construction of the various variables. Section 1 is devoted to the PSID; it explains the construction of the sample, how year of disability is determined, the severity questions, and the construction of key variables. Section 2 explains these details for CSFII. Section 3 explains these details for ATUS. Section 4 describes the independent variables we include in our regression models.

1. Panel Study of Income Dynamics (PSID)

A. The PSID Sample

Our sample consists of the male household heads in the 22-61 age range during the survey years 1968-2005. We retain all disability information outside this age range. We require the person to be in the survey for at least six years, to be 22-61 years old for at least four interviews, three of which must be consecutive. We also require that disabled respondents whose positive limitation report came after 1978 to have two consecutive years of non-disability immediately before the first positive limitation report. All disabled persons must have at least three years of data in the subsequent ten years after the determined year of disability onset. This last requirement eliminates those who are first observed to be disabled in 2001, 2003 or 2005.

We replace missing demographic variables with those from the nearest survey year, if available. The number of individuals in the primary sample is 6,301, of whom 1,819 (29 percent) indicate the presence of a limitation during the survey years.

B. Determining the Year of Disability Onset

For those who are first observed to be disabled before 1979, the year of disability onset is determined by the responses to the retrospective question of when the work limitation began. The wording of the retrospective question is, "*How long have you been limited in this way by your health?"*

The PSID codes the responses into four categories: 0-18 months, 2-4 years, 5-7 years, 8 or more years. For the 1978 survey, the exact number of years the individual has been limited is recorded. The retrospective question is unavailable for the 1976 and 1977 waves.

We use the response to the retrospective question in each year to determine the interval into which the onset year must fall. Given the panel nature of the data, we may have more than one interval for some disabled. Accordingly, we determine the intersection of these intervals, taking the onset year to be the earliest year within this intersection. If the individual's first observed disability is prior to the earliest year given in responses to the retrospective questions, we take the year of first observed disability as the year of onset. We drop from the sample those who in every year answer "8 or more years," as the onset of their condition might precede their working years.

For the disabled who do not answer these retrospective questions, we require two consecutive years of non-disability immediately prior to the first observed positive limitation. Note also that first reports of disability may come as much as a year later than the condition's actual onset. An individual who first reports disability in the 1990 wave, for example, may in fact have had his condition since soon after his previous interview in 1989. We therefore adjust his year of onset to the midpoint of the interview date in which he reported a positive limitation and the interview date in the previous year, if available. Should this midpoint fall in year t-1 for an individual who first reported disability in year t, his year of onset would be year t-1. This adjustment is made only for those who do not answer the retrospective disability questions.

C. PSID Severity Questions and Possible Responses

The following table shows the PSID questions regarding the severity of limiting conditions over time. We use only the severity reports up to the tenth year after onset.

Severity Questions and Possible Responses

Screening question:* Do you have any physical or nervous condition that limits the type or amount of work you can do? (In the 1969-1971 surveys, this question is divided into two parts.)	
Survey Years	**Question and the possible responses**
1968, and 1972-1976	How much does it limit your work? 1) Completely: "I can't work," 2) Severely: "It limits me a lot," 3) "Some," "Not much," can only work a few hours at a time, "must rest," mentions part-time work; can't lift heavy objects; reports periods of pain, 4) Limitation, but not on work
1977-1985	Does it limit your work a lot, somewhat, or just a little? 1) A lot, 2) Somewhat, 3) Just a little
1986-2005	A) Does this condition keep you from doing some type of work? 1) Yes, 2) No (that is, Not limiting), 3) Can do nothing If respondent's answer to A) is "Yes": B) For work you can do, how much does it limit the amount of work you can do – a lot, somewhat or just a little? 1) A lot, 2) Somewhat, 3) Just a little, 4) Not at all, 5) Answered "Can do nothing" or "Not limiting" in the preceding question

*Both the screening and the severity questions asked only of new entrants in 1973-1975.

Those who respond "A little," "Somewhat," "Not limiting" or "Not at all" to the severity question are defined as "Currently Not Severely" disabled. Otherwise, those who report "Can do nothing," "Completely," "A lot" or "Severely" are defined as "Currently Severely" disabled.

D. Sources of Demographic Variables

The PSID includes family level data and individual level data. While the same variable can appear in both files, it need not be identical. Based on the assessment of PSID staff, we select our variables as follows: age of head (individual level), marital status of head (family level), education of head (family level).

E. Sources of Public Transfer Variables

We construct measures of different types of transfers and total transfers received at the family level. The PSID does not always record all benefits that family members receive. In some cases, it reports only those transfers received by the head. We use whatever information is available and scale

the receipt by the (inverse of the) reporting rates given in Meyer, Mok and Sullivan (2006): AFDC/TANF (0.588), unemployment insurance (0.662), workers' compensation (0.345), all Social Security benefits (1.010), SSI (0.601) and Food Stamps (0.779). We do not scale the receipt of Veterans' benefits and other welfare received. We use the SSDI reporting rate to scale up all Social Security receipts because we focus on the age range 22-61, and about 87 percent of the Social Security recipients in the Chronic-Severe group receive SSDI rather than retirement or survivors' benefits in the six to ten years after disability.

Beginning in the survey year 1994 (1993 benefits), the public data release gives all benefit variables except Social Security in the following format: 1) Amount received, 2) Whether the amount specified is per year, per month, per two weeks, per week, or other, 3) In which months of the year such benefits were received. If the respondent specified that the amount received was on a per year basis, we take the reported amount as the annual amount. Otherwise, we convert the reported amount to a monthly basis and multiply the result by the number of months such benefits were received.

During 1969-1974 and 1994-2003 all public benefits for other family members (non-head, non-spouse) are reported in a variable that combines public and private transfers. We take 85 percent of the reported public plus private transfers as the amount of public transfers such family members received. This percentage is the average public share of public plus private transfers received by other family members in the earlier years of the PSID.

The source of each benefit variable is as follows:

- Unemployment Insurance (UI) and Workers' Compensation (WC) – Data on UI and WC receipts come from the PSID family file. These benefits are reported categorically in 1968-1969, and we take the midpoint in each category as the amount received. UI and WC are reported for the head only in 1968-1974 surveys. UI and WC are combined in 1968-1975 surveys, and we divide them equally. The benefits are reported only for the head and spouse in 1994-2005 surveys (except for the amount received in 2003, which is elicited in the 2005 survey).
- Social Security (SS) – These benefits are reported only of the head in 1968-1970 surveys, and reported of the head and the spouse in 1971-1974 surveys. SS is reported for the whole family beginning in the 1975 survey. These benefits are reported categorically in 1968-1969, and we take the midpoint in each category as the amount received.

- Supplemental Security Income (SSI) – These benefits are reported for the whole family in 1975-1993, 1999 (for amount received in 1997), 2001 (for amount received in 1999) and 2005 (for amount received in 2003). Otherwise, these benefits are reported only for the head and spouse.
- Food Stamps – These are reported in every survey year except 1972. As a result, we set Food Stamps in 1972 to missing.
- Other Welfare – These benefits are reported categorically in 1968-1969, and we take the midpoint in each category as the amount received. These benefits are reported only for the head and wife (combined) in 1968-1974 surveys.
- Veterans' Benefits – These benefits are not separately reported in the 1968-1970 surveys and they are part of "other retirement pay" in 1971-1983 surveys. These benefits are reported only for the head in 1971-1974.
- Aid to Families with Dependent Children (AFDC)/Temporary Assistance for Needy Families (TANF) – These benefits are reported only for the head in the 1969-1970 surveys and only for the head and wife (combined) in the 1971-1974 and 1993-2005 surveys (except for receipt in 2003 asked in the 2005 survey).
- More detail on the reporting of public transfers in the PSID can be found in Appendix Table 1 of Meyer, Mok and Sullivan (2006).

F. Sources of Labor, Income and Food Variables

Annual earnings, annual hours worked and family income come from the PSID family file. Hourly earnings are obtained by dividing annual earnings by annual hours worked. In the pre-1994 data, we convert PSID measures of work hours lost due to illness and unemployment into days lost, assuming an eight hour working day.

All food variables come from the PSID family files. Total amount of food consumed at home is the sum of reported expenses for food at home, food delivered to home and food purchased with Food Stamps. The amount of money spent on food consumed outside the home is reported on a categorical basis in 1968; we take the midpoint of the specified range as the actual amount.

There are instances when some families' food expense variables have zero values. If food consumed at home is reported as zero, we treat it as missing. Food consumed outside the home is treated as missing if expenditures on food consumed at home is also zero for the family. The logarithms of these food variables are set to zero if these variables are equal to or below one.

G. Poverty Thresholds

We use the official poverty thresholds published by the U.S. Census Bureau annually from 1980 to present. For poverty thresholds prior to 1980, we use the CPI-U-RS to index the 1980 thresholds backwards.

H. Estimating Federal Income Tax Liabilities

We estimate a family's federal income tax liability using TAXSIM.[11] We determine the number of dependents, the amount of asset income, dividend income and earnings for up to two tax units: 1) The head and spouse (if present), and 2) Other family unit members. We are forced to consider all other family unit members together as the income of all such members is reported together in the post 1993 surveys. Family federal income tax liabilities is the sum of the taxes estimated for these two tax units. A detailed technical appendix is available from the authors upon request.

I. Housing Type

To analyze the sources of changes in housing consumption, we divide families' housing consumption into three types of housing: home ownership, private rental, and publicly subsidized housing. Each year, the PSID asks each family in what form of dwelling unit the family resides, with the possible responses: "Own Home," "Renting," and "Not Owning and Not Renting." Questions about whether the family is living in a public housing project and whether the state paid the family's rent are asked in the 1968-1972 and 1986-2005 waves, but not 1973-1985. A family that gives an affirmative answer to either of these public housing question is regarded as a publicly subsidized housing resident.

[11] The PSID provides estimated taxes only for 1968-1991. To maintain consistency, we use our TAXSIM generated taxes for all years.

To determine whether a family is living in a publicly subsidized housing unit during 1973-1985, we interpolate from the available years if possible. Specifically, we start from the most recent housing response in 1968-1972 waves and assign a family to publicly subsidized housing in the following year if all of the following conditions hold:

a) The head lived in a publicly subsidized housing unit in the previous year;
b) The family did not move in the previous year;
c) The head does not own a home; and
d) If there is a switch from "Renting" to "Not Owning and Not Renting," the reason for not paying rent must be: 1) Paid for by someone else, 2) Part of compensation or 3) Other. Based on the 1986-1992 surveys, these are the main responses given among those who also indicate that they are in publicly subsidized housing.

We repeat this procedure going forward from 1973 wave, and follow the analogous procedure going backward from 1985. When the two directions given conflicting answers we base our decision on whether the particular year is closer to 1973 or 1985.

We then use the response of the PSID housing choice question (Owning, Renting, Not Owning and Not Renting) together with these public housing recipiency indicators to determine the housing type. If a family is renting in a particular year but is receiving public housing, the family is treated as a public housing recipient (partially subsidized). If the family is neither renting nor owning in a year but is receiving public housing, the family is treated as a public housing recipient (fully subsidized). If a family is "Renting" or "Not Owning and Not Renting" but is not receiving public housing, it is treated as renting privately.

J. Housing Expenses and Private/Public Housing Subsidies

Based on each housing type (as detailed in preceding section) we calculate housing consumption, and any private or public housing subsidy. The method is summarized in the table below. The first entry says, for example, that for those who own their home, their housing consumption during the year is 6 percent of their current home value, and they receive zero private and public housing subsidies.

Housing Consumption, Private and Public Housing Subsidies for Each Type of Housing Choice

Housing Type	Housing Consumption	Private Housing Subsidy	Public Housing Subsidy
Home Ownership	6 percent of home value	Zero	Zero
Private Rental	Rent or the rental equivalent (if he neither rents or owns)	Rental equivalent (if neither rents or owns)	Zero
Publicly Subsidized Housing (Fully subsidized)	Reported rental equivalent	Zero	Reported rental equivalent.
Publicly Subsidized Housing (Partially subsidized)	Housing consumption is the maximum of the estimated rental equivalent and rent paid.	Zero	The amount of rental subsidy is the estimated rental equivalent minus rent paid (set to zero if the difference is negative).

For a family that lives in partially subsidized public housing, the amount of any public housing subsidy received is not reported, and the rent reported is likely to be net rent after any subsidies. To estimate the rental equivalent for those who rent but receive housing subsidies, we do the following:

1. We use the 1986-2005 waves to estimate a rent regression, using the sample of families who rent but do not receive public housing subsidies. The dependent variable is rent paid, and the explanatory variables include state indicator variables, year since 1968, year since 1968 squared, number of rooms, type of unit (two-family house, apartment, trailer, row house and other) and an urbanicity indicator (equal to one if the largest city in the county of residence has a population of 50,000 or more).
2. Using these regression results, we estimate the rental equivalent for those whose housing is partially publicly subsidized as 0.775 times the predicted rent. 0.775 is the mean of the ratio of the reported rental equivalent for those whose housing is fully publicly subsidized to the predictions from the above equation. Because the housing quality for those who receive public housing would generally be lower, we use this factor to scale down the estimated rent for those who receive partial subsidies.

2. Continuing Survey of Food Intake of Individuals (CSFII)

A. Survey Description

The CSFII is a food consumption survey conducted by the Department of Agriculture. Cross-sectional in design, it was implemented annually in 1989-1991 (known as CSFII_89), 1994-1996 (CSFII_94) and 1998 (CSFII_98). The survey begins with a household-level questionnaire (conducted via personal interview) which collects information such as the basic demographic characteristics of household members, household food expenditures and current employment status. Three one-day food diaries (per individual in household) then follow.[12] These diaries record the total food intake of the individual in a particular 24-hour period. The surveys are only representative of individuals who live in the 48 coterminous states; in addition, those who are institutionalized, living away at school or traveling during the survey period are excluded. After the food diaries, there is an optional follow-up survey regarding health perceptions, health status and dietary awareness.

We use only the CSFII_89 in our analyses because the key disability question is not asked in the other years. The CSFII_89 included 15,192 individuals in about 6,700 households. It is also important to note that the CSFII_89 also includes a low-income sample.

B. Sample Selection

To be consistent with the PSID, we select male household heads who are 22-61 years old during the survey year. In selecting the disabled, we first use the response to the disability question from the first food diary: "Do you have any disability or handicap that limits your activities?" For those household heads who do not answer this disability question, we look at their response to the employment status question: "Which of these activities best describes what you were doing most during the last week?" Individuals who did not answer the disability question, but answered "Disabled, unable to work (combined category)" are regarded as disabled. These restrictions result in a sample of 3,253 male household heads (822 belong to the low-income sample). The disability rate in the full sample is

[12] For CSFII_94, interviewees received only two one-day diaries.

11.1 percent.[13] The number of male household heads in the overall sample who completed all three one-day diaries is 2,214.

C. Derivation of Food Expenditure, Shopping frequency

Information regarding how much money was spent on food comes from the household questionnaire. Four questions are asked:

(1) How much money has this household spent per week or per month during the last three months at the grocery store? Include purchases made with food stamps.

(2) About how much of this amount (as in the question above), if any, was for non-food items, such as cleaning or paper products, food bought for feeding a pet or cigarettes?

(3) How much has this household spent per week or per month during the last three months at specialty stores – such as bakeries, liquor stores, meat markets, vegetable stands, health food stores and other similar places? Include any expenditures from carryout places when the food was brought into your home.

(4) What has been this household's usual amount of money spent per week or per month during the last three months for food bought and eaten away from home? Include food and beverages that never entered your home, that is, eaten at restaurants, fast-food eating places, cafeterias at work or at school, purchased from vending machines, or received from day-care centers, for all household members.

We define Food At Home expenditure as the sum of the responses to questions (1) and (3) minus the response to (2). Food Away From Home expenditure is the response to question (4). Total food expenditure is the sum of Food At Home and Food Away From Home expenditures. All variables are annualized and defined in 2005 dollars using the CPI-U-RS for all items published in 2007.[14] We define the logarithm of these food expenditure variables similar to the way we do in the PSID. For further details, see the corresponding section in the PSID.

[13] If we exclude the low-income sample, the disability rate is 8.8 percent.
[14] These CPI-U-RS price indices were downloaded from the US Census Bureau website (http://www.census.gov/hhes/www/income/income06/cpiurs.html) in June 2008.

The shopping frequency variable also comes from the household questionnaire, which asked, "How often does someone do a major food shopping for the household?" The possible responses were: more than once a week, once a week, once every two weeks, and once a month or less.

C. Derivation of Consumption Index

The consumption index is a measure of permanent income reflected by food consumption. A 1 percent decline in the consumption index implies that households are consuming as though their permanent income had fallen by 1 percent (Aguiar and Hurst, 2005). Specific details about how the consumption index is derived can be found at pages 935-936 in Aguiar and Hurst (2005). A summary description follows.

Aguiar and Hurst (2005) suggest the existence of a relationship between a household's permanent income and the composition of its diet. To apply their approach to our study, we first obtain permanent income by estimating a regression of income on race, industry and occupation controls (interacted with education) from CSFII data on a sample of non-disabled household heads who were 25-55 years of age and who reported working full time and normally work one to eighty hours per week. Permanent income is then predicted by using the resultant coefficients, giving $y^{perm,i}$.

We then estimate a regression of permanent income on the head's diet:

$$(A2) \qquad \ln(y^{perm,i}) = \beta_0 + \alpha_1 c^i_{1,t} + \ldots + \alpha_J c^i_{J,t} + \beta_X \ln(x^i_t) + \beta_\theta \theta^i_t + \beta_{age} age^i_t + \beta_{age^2} (age^i_t)^2 + \varepsilon^i_t$$

where y^{perm} is the predicted permanent income as described above, $c_1,\ldots,c_J$ are quantity of food consumed by the household head (20 food groups and eight nutritional measures, obtained from the CSFII food diaries[15]), x is the food expenditure, θ is a vector including the household head's race, sex, size of household, health status, and region of residence.

[15] The 20 food groups include Dairy Products, Cheese, Beef, Pork, Poultry, Other Meat Products, Eggs, Nut Products, Bread, Biscuits and Related Products, Other Sweets, Staples and Cereals, Fruits, Potatoes, Dark Green Vegetables, Other Vegetables, Tomato Sauce, Fats, Salad Dressings, and Alcoholic Substances. The eight nutritional measures are the logarithms of calories, vitamin A, vitamin C, vitamin E, calcium, cholesterol, saturated fat, and protein.

After estimating this regression, the log of the consumption index C^{index} is obtained by taking the estimated coefficients pertaining to consumption, that is,

$$(A3) \qquad \ln(C^{index}) = \hat{\alpha}_1 c_1 + ... + \hat{\alpha}_J c_J + \hat{\beta}_X \ln(x)$$

Note that the expenditure on consumption is included to control for local price differences.

3. The American Time Use Survey (ATUS)

A. Description of Survey

The ATUS is a large-scale cross-sectional annual survey conducted by the Bureau of Labor Statistics (BLS) and the Census Bureau since 2003. The primary purpose of the survey is to study how people divide their time among various activities (Bureau of Labor Statistics and U.S. Census Bureau, 2007). Upon completing the eighth and final Basic-CPS interview, a subset of these households is selected and one person (age 15 and above) from each of these households is interviewed (done mostly by Computer-Assisted Telephone Interviewing) approximately three months later.[16] The first ATUS survey included some 40,500 individuals, and the 2004-2006 surveys collected information from 26,328 individuals.

Selected respondents are first asked about basic household characteristics, his/her employment status and to recall the activities and the time spent on each activity done between 4 a.m. of the previous day to 4 a.m. of the interview day.

B. Sample Selection

We use the 2003-2006 ATUS surveys. ATUS does not have a usable disability question, so we first match the ATUS data with the corresponding Annual Social and Economic Supplement of the CPS (ASEC) of that year. We keep only those whose ATUS interviews are classified as "Complete" by

[16] Since the ATUS sample is drawn from the CPS, the universe is essentially the same as that of the CPS (that is, civilian non-institutional population).

ATUS. Upon matching, we have a sample of individuals who participated in both surveys. Two subsamples are derived:

- *The Male Household Head sample:* We select those who were male household heads and aged 22-61 at the time of their ASEC interview. The disabled are those who gave affirmative answers to the disability question, "Does…have a health problem or a disability which prevents work or which limits the kind or amount of work?"
- *The Female Spouse sample:* We select all female spouses who were aged 22-61 and whose husbands were also in this age range. A husband of a spouse is disabled if his response to the ASEC disability question is affirmative.

C. Leisure

Our narrow measure of leisure includes the following time-use categories: Gardening and Pets (care), Socializing, Communicating and Social Events; Arts and Non-Home Entertainment; Relaxation and Smoking; Music and Radio; Games and Hobbies; Reading and Writing; Watching TV, Sports and Recreation; Telephone Calls, Mails and E-Mails; and Travel for Recreation. Our broader measure of leisure includes Eating, Sleeping, and Personal Care; in addition to the categories in the aforementioned narrow leisure measure. A six-digit classification number is given to each activity; a list of the classification numbers we include for each time-use category is available from the authors upon request.

D. Vacation

Data on vacation comes from the 2005-2006 ATUS trip files. These files contain information on the number of trips, the purpose of each trip and the duration of the trip in a reference month. We consider only those trips that are for vacation and visiting friends and families. Unlike results for leisure hours, results for vacation are not weighted because ATUS does not recommend using weights on these vacation data (see Bureau of Labor Statistics and U.S. Census Bureau, 2007, page 23).

4. Independent Variables in Regressions

In this section, we list the regressors we have included in our main regression models.

A. PSID Fixed Effects Regressions

In all regressions we include:

1) Year indicator variables, 2) State indicator variables, 3) Indicator variable for being married, 4) Four education indicators (high school, some college, completed college education and some graduate studies), 5) Age and age-squared, 6) Time dummies for the year since onset, 21 in total (representing the ten years before and after the year of disability). A separate set of time dummies for each different disability group is also included (except in Table 10 and Appendix Table 5, where we include an indicator variable that equals one if the observation is from the 6-10 years after disability).

When the dependent variable is earnings, hours, hourly earnings, income or public transfers we additionally include:

1) Age and education interactions, 2) Age-squared and education interactions, 3) Education and year minus 1968 interactions, 4) Education and year minus 1968 squared interactions, 5) Number of members in the family (for income and public transfer regressions only).

In the food and food plus housing regressions we additionally include:

1) Number of men and its square, 2) Number of women and its square, 3) Number of Young adults (11-17 years old) and its square, 4) Number of children (0-10 years old) and its square.

B. Regressions using CSFII include:

1) Year indicator variables, 2) Geographic region indicator variables, 3) Education indicator variables, 4) Race indicator variables, 5) Age of head and its square, 6) Number of adults, 7) Number of children under 18 years of age, 8) An indicator variable for residence in a central city, 9) An indicator variable for disability.

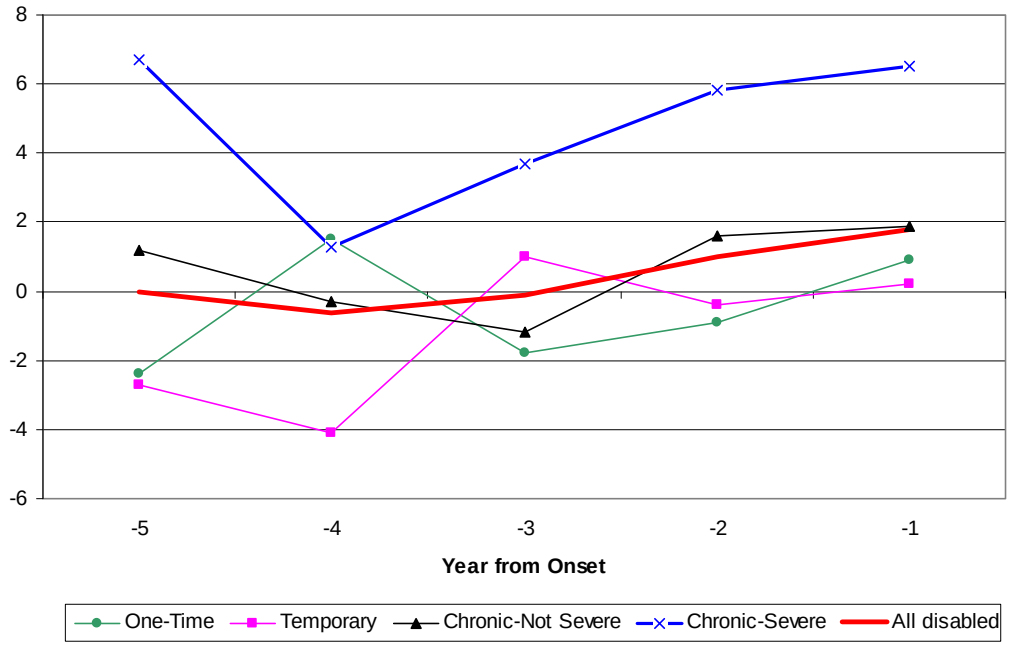
C. Regressions using ATUS include:

1) Age and age-squared, 2) Education indicator variables, 3) Region indicator variables, 4) Year indicator variables, 5) Number of adults, 6) Number of children under 18 years of age, 7) Race indicator variables, 8) A married indicator variable, 9) Month of ATUS survey indicator variables, 10) A disability indicator variable for the household head.

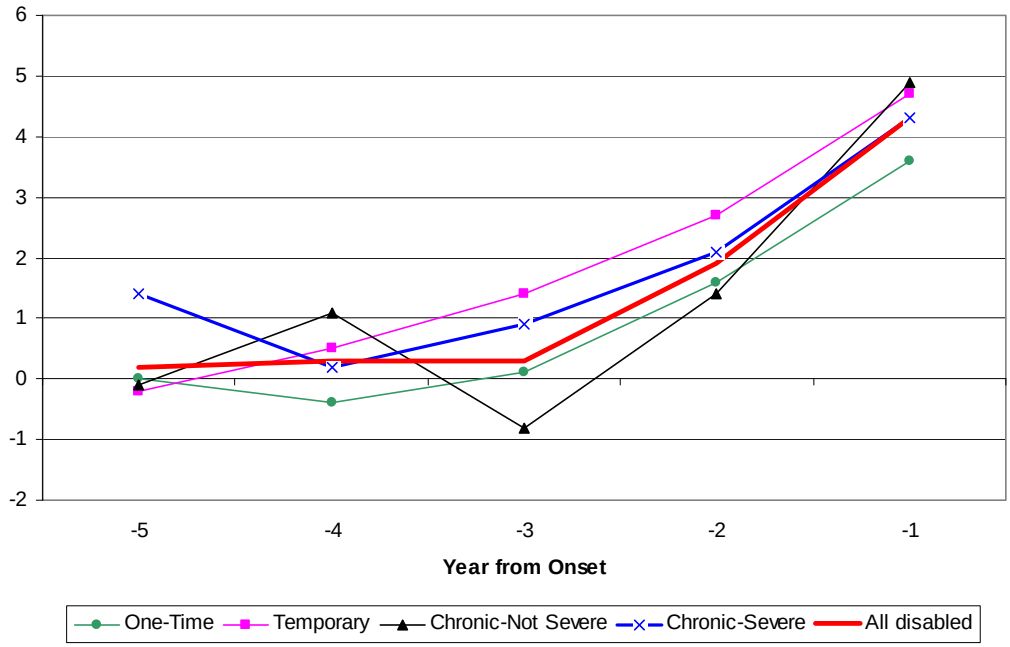
For the female spouse sample we additionally include:

1) A disability indicator variable for the husband, 2) Age of husband.

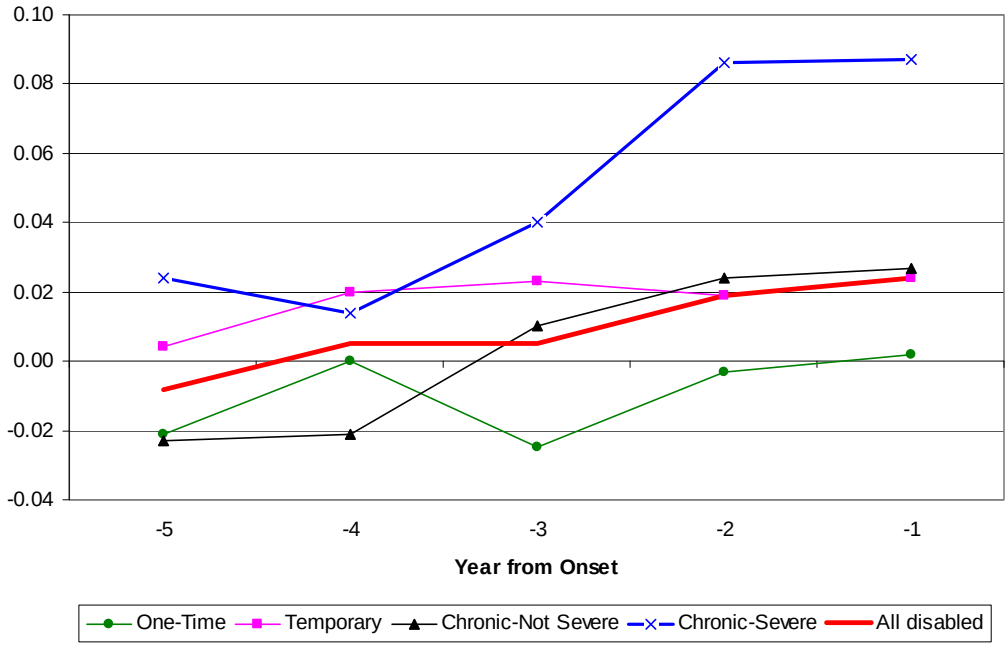
Appendix Figure 1
Change in Work Days Lost due to Unemployment Before Disability Onset, Extent of Disability Groups and All Disabled



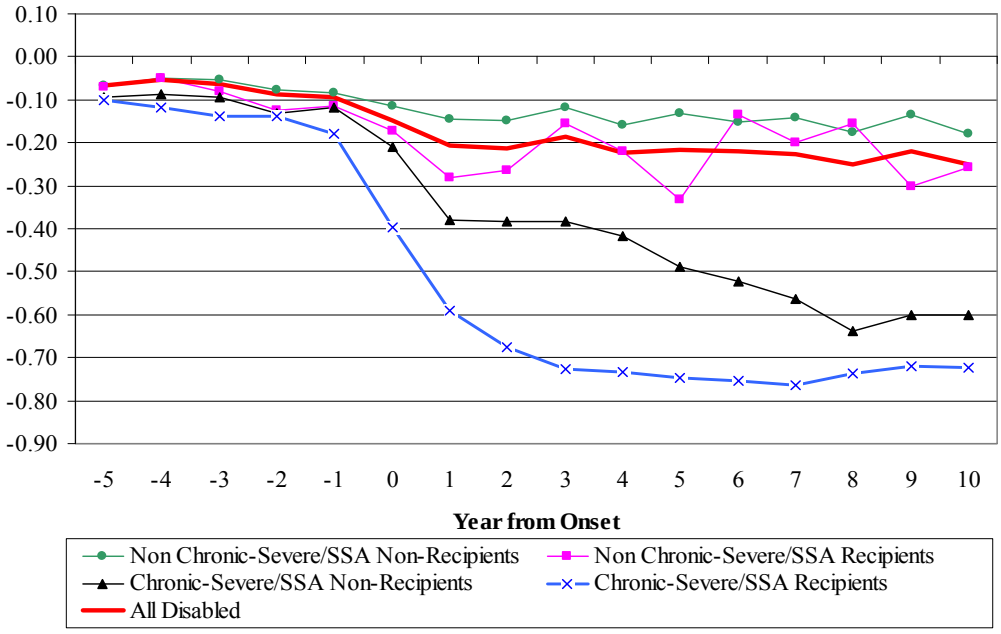
Appendix Figure 2
Change in Work Days Lost due to Illness Before Disability Onset, Extent of Disability Groups and All Disabled



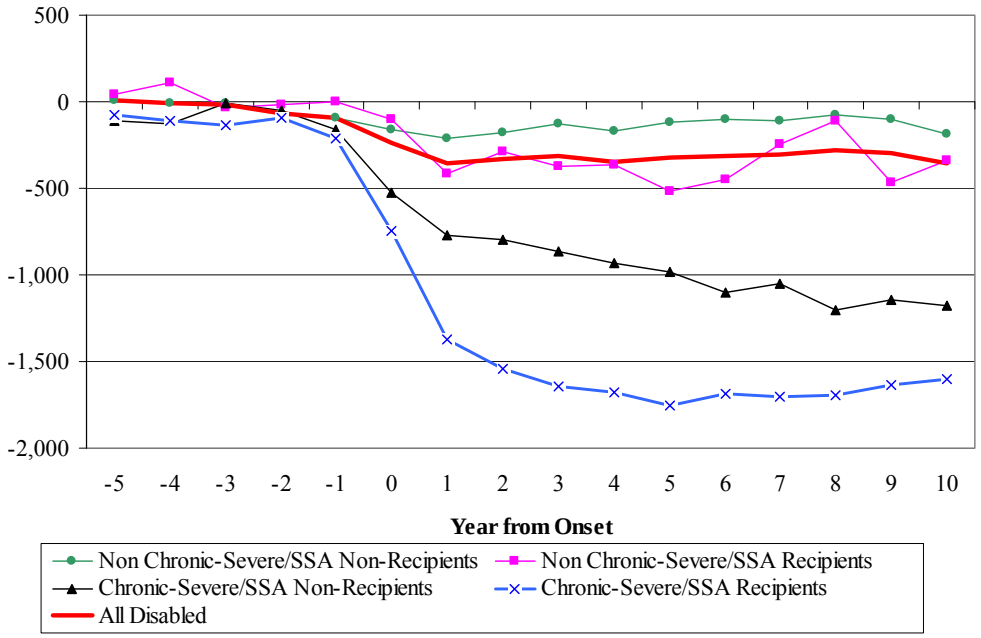
Appendix Figure 3
Change in Probability of Fair or Poor Health Before Disability Onset, Extent of Disability Groups and All Disabled



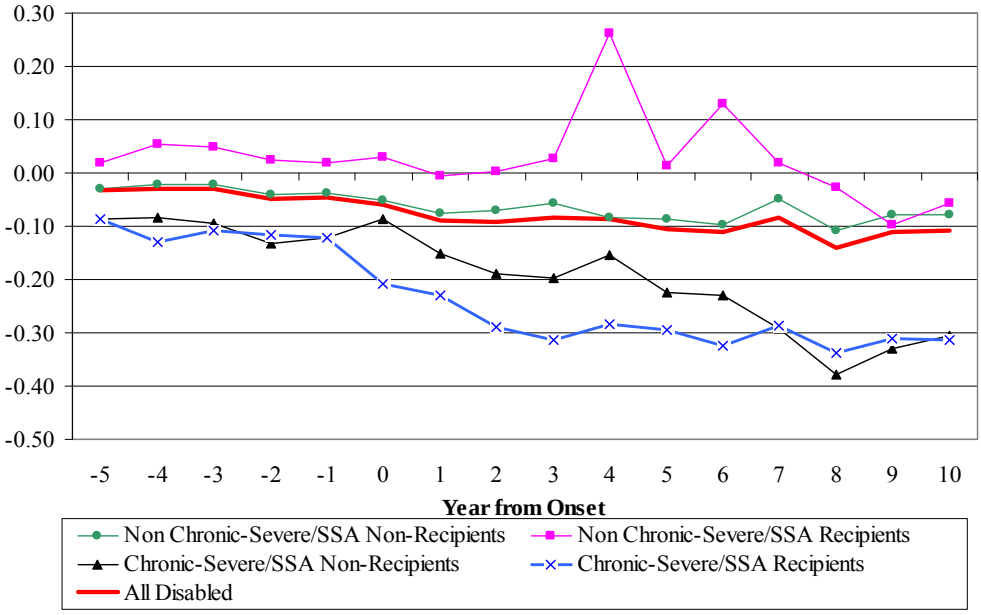
Appendix Figure 4
Change in Annual Earnings Before and After Disability Onset, Groups Defined by SSA Benefit Receipt and Disability



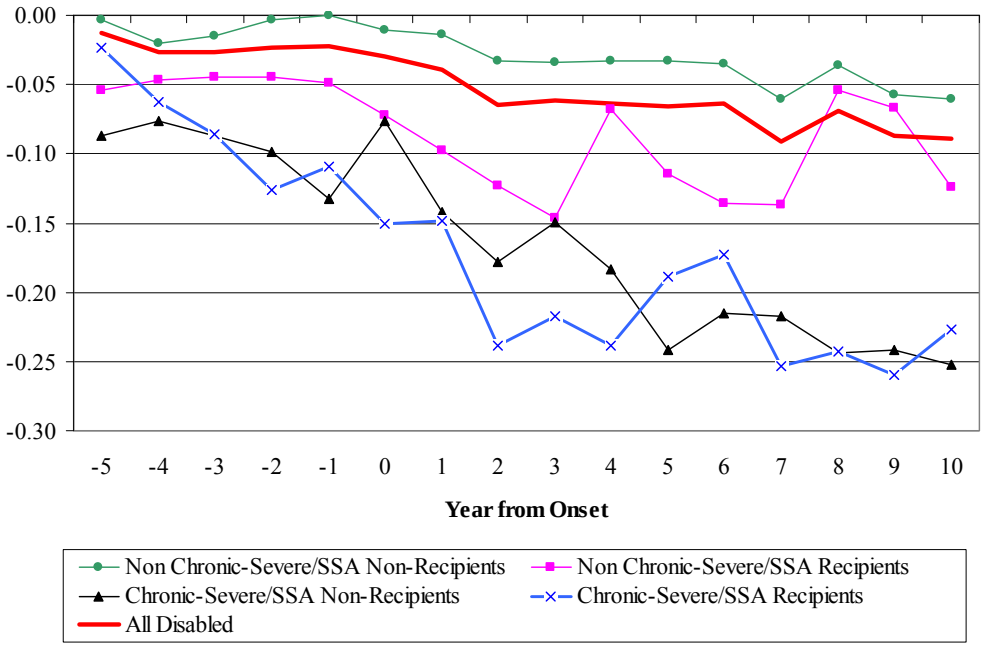
Appendix Figure 5
Change in Annual Hours of Work Before and After Disability Onset, Groups Defined by SSA Benefit Receipt and Disability



Appendix Figure 6
Change in After-Tax Post-Transfer Income Before and After Disability Onset, Groups Defined by SSA Benefit Receipt and Disability



Appendix Figure 7
Change in Log Food plus Housing Consumption
Before and After Disability Onset,
Groups Defined by SSA Benefit Receipt and Disability



Appendix Table 1
Severity and Activity Limitations of PSID Male Household Heads

A. 1986 Health Supplement				B. 2003 and 2005 PSID							
					2003			2005		
	Non-disabled (1)	Not Severe (2)	Severe (3)		Non-disabled (4)	Not Severe (5)	Severe (6)	Non-disabled (7)	Not Severe (8)	Severe (9)
Walking/Stairs	0.04	0.41	0.79	Bathing/Showering	0.00	0.04	0.16	0.00	0.03	0.19
Bending/Lifting	0.06	0.53	0.82	Dressing	0.00	0.05	0.17	0.00	0.03	0.23
Driving	0.00	0.09	0.35	Eating	0.00	0.02	0.06	0.00	0.01	0.07
Assistance for Travel	0.00	0.03	0.23	Getting in/out of a Bed/Chair	0.00	0.10	0.29	0.01	0.11	0.30
Stay Indoors	0.00	0.04	0.30	Walking	0.01	0.18	0.44	0.01	0.21	0.50
Bed/Chair Confinement	0.00	0.04	0.25	Getting Outside	0.00	0.03	0.13	0.00	0.05	0.15
				Using Toilet	0.00	0.03	0.05	0.00	0.01	0.07
				Preparing Own Meals	0.00	0.03	0.12	0.00	0.02	0.18
				Shopping for Personal Items	0.00	0.04	0.17	0.00	0.04	0.22
				Managing Money	0.01	0.05	0.18	0.01	0.06	0.17
				Using Telephones	0.00	0.01	0.08	0.00	0.01	0.07
				Heavy Housework	0.01	0.22	0.59	0.01	0.25	0.65
				Light Housework	0.00	0.03	0.20	0.00	0.05	0.24
Any Limitation	0.08	0.63	0.92	Any Limitation	0.03	0.36	0.76	0.03	0.40	0.82
Total Number of Limitations	0.11	1.15	2.74	Total Number of Limitations	0.04	0.80	2.58	0.05	0.87	3.00
N	3,823	319	131	N	4,261	393	199	4,357	347	223

Notes: The sample consists of male household heads 22-61 years of age in the 1986, 2003 and 2005 PSID. This table shows the percentage of currently non-disabled, not severely and severely disabled male household heads 22-61 years of age reported having the specified activity limitation, the percentage having trouble performing at least one of these activities, the average total number of activity limitations, and the sample size. In 1986, the six activity questions are: 1) Do you have any trouble either walking several blocks or climbing a few flights of stairs, because of your health? 2) Do you have trouble bending, lifting or stooping because of your health? 3) Would your health keep you from driving a car? 4) When you travel around your community, does someone have to assist you because of your health? 5) Do you have to stay indoors most or all of the day because of your health? 6) Does your health confine you to a bed or a chair for most or all of the day? The possible answers to these activity questions are "yes" or "no." For the 2003 and 2005 surveys, the head is asked "Because of a health or physical problem, do you have any difficulty in 1) Bathing or showering, 2) Dressing, 3) Eating, 4) Getting in or out of a bed or chair, 5) Walking, 6) Getting Outside, 7) Using the bathroom, 8) Preparing own meals, 9) Shopping for personal items or medicines, 10) Managing money, 11) Using Telephone, 12) Doing heavy housework (Scrubbing Floor, washing windows), 13) Doing light housework (washing dishes, light house cleaning). The possible answers to these activity questions are generally "yes" or "no."

Appendix Table 2
Severity and Health Limitations of PSID Male Household Heads– Average of 1999-2005 Surveys

	Percentage with Condition								
	A. Doctor Diagnosed the Condition			B. Currently Limiting Daily Activities			C. Currently Limiting Daily Activities A Lot		
Health Limitation	Non-disabled (1)	Not Severe (2)	Severe (3)	Non-disabled (4)	Not Severe (5)	Severe (6)	Non-disabled (7)	Not Severe (8)	Severe (9)
Stroke	0.006	0.042	0.089	0.002	0.027	0.083	0.000	0.005	0.059
High Blood Pressure or Hypertension	0.164	0.344	0.445	0.021	0.159	0.295	0.001	0.011	0.111
Diabetes or High Blood Sugar	0.047	0.123	0.187	0.013	0.081	0.143	0.001	0.013	0.073
Cancer, Malignant Tumor, Skin Cancer	0.012	0.026	0.060	0.002	0.017	0.047	0.001	0.006	0.032
Lung Disease	0.014	0.062	0.133	0.005	0.045	0.119	0.001	0.008	0.083
Heart Attack	0.014	0.072	0.131	0.004	0.048	0.114	0.000	0.003	0.071
Heart Disease	0.024	0.103	0.177	0.007	0.077	0.151	0.001	0.010	0.093
Emotional, Nervous or Psychiatric	0.026	0.131	0.274	0.010	0.099	0.244	0.001	0.020	0.133
Arthritis	0.063	0.300	0.407	0.033	0.261	0.386	0.002	0.034	0.222
Asthma	0.057	0.128	0.148	0.014	0.084	0.117	0.000	0.011	0.033
Loss of Memory or Mental Ability	0.002	0.038	0.132	0.001	0.033	0.124	0.000	0.009	0.079
Learning disorder	0.017	0.060	0.115	0.007	0.033	0.103	0.000	0.005	0.055
Other Serious or Chronic conditions	0.023	0.081	0.119	0.008	0.056	0.110	0.001	0.012	0.083
Any of the Above	0.334	0.731	0.858	0.099	0.576	0.796	0.008	0.103	0.585
Total Number of Conditions	0.469	1.508	2.410	0.126	1.017	2.030	0.009	0.146	1.125

Notes: Data comes from the 1999, 2001, 2003 and 2005 waves of the PSID. We restrict to male household heads ages 22-61 during the time of the survey. Columns 1-3 of the table display the percentages of the currently non-disabled, non-severe and severely disabled that are informed by doctors to have or have had the specified health condition. Columns 4-6 show the percentages of the currently non-disabled, non-severe and severely disabled that have a particular health condition which currently limits their normal daily activities "A lot," "Somewhat" or "Just a little." Columns 7-9 show the percentages of the currently non-disabled, non-severe and severely disabled that have a particular health condition which currently limits their normal daily activities "A lot." Results shown are the averages of the 1999, 2001, 2003 and 2005 results. For the "Other Serious or Chronic Conditions," the results displayed come from the 2005 survey.

Appendix Table 3
Prevalence of Disability by Year

	Age 40-49						
Year	N	Any disability	Currently Disabled	One-Time	Temporary	Chronic Not Severe	Chronic Severe
1980	411	0.2816	0.1335	0.0274	0.0793	0.1077	0.0672
		(0.0266)	(0.0199)	(0.0093)	(0.0162)	(0.0184)	(0.0145)
1982	432	0.2826	0.1146	0.0256	0.0982	0.1069	0.0518
		(0.0257)	(0.0180)	(0.0087)	(0.0172)	(0.0177)	(0.0122)
1984	452	0.2484	0.1064	0.0300	0.0880	0.0835	0.0469
		(0.0236)	(0.0168)	(0.0091)	(0.0153)	(0.0149)	(0.0114)
1986	506	0.3035	0.0971	0.0523	0.0948	0.1214	0.0351
		(0.0240)	(0.0156)	(0.0110)	(0.0149)	(0.0173)	(0.0092)
1988	613	0.3148	0.1295	0.0531	0.0940	0.1261	0.0415
		(0.0223)	(0.0162)	(0.0106)	(0.0139)	(0.0161)	(0.0096)
1990	736	0.3423	0.1459	0.0602	0.0880	0.1482	0.0459
		(0.0211)	(0.0158)	(0.0103)	(0.0129)	(0.0160)	(0.0090)

	Age 50-59						
Year	N	Any disability	Currently Disabled	One-Time	Temporary	Chronic Not Severe	Chronic Severe
1980	326	0.5038	0.2975	0.0548	0.0774	0.1750	0.1966
		(0.0318)	(0.0288)	(0.0147)	(0.0157)	(0.0245)	(0.0246)
1982	351	0.4956	0.2496	0.0614	0.0751	0.1736	0.1854
		(0.0310)	(0.0269)	(0.0152)	(0.0153)	(0.0235)	(0.0239)
1984	364	0.4887	0.2436	0.0656	0.0831	0.1968	0.1432
		(0.0309)	(0.0263)	(0.0152)	(0.0164)	(0.0247)	(0.0212)
1986	363	0.4775	0.2127	0.0808	0.0813	0.1551	0.1604
		(0.0307)	(0.0252)	(0.0171)	(0.0161)	(0.0224)	(0.0226)
1988	352	0.4756	0.2187	0.1063	0.0947	0.1497	0.1248
		(0.0315)	(0.0257)	(0.0199)	(0.0177)	(0.0221)	(0.0207)
1990	334	0.4798	0.2430	0.0780	0.1052	0.1433	0.1533
		(0.0333)	(0.0292)	(0.0176)	(0.0200)	(0.0233)	(0.0242)

Notes: This table reports for each year the fraction of the sample that has had a disability by the specified year, the fraction of individuals who are currently disabled, and the fraction for whom a given disability type is their most severe disability to date. These fractions are weighted as are the standard errors, which are in parentheses. We restrict this sample to individuals with at least 10 years of data prior to the specified year. See text for details.

Appendix Table 4
Changes in Log Hourly Earnings Before and After Disability Onset, All Disabled and Extent of Disability Groups

Year from onset	All Disabled	Extent of Disability Groups			
		One-Time	Temporary	Chronic Not Severe	Chronic Severe
	(1)	(2)	(3)	(4)	(5)
-5	-0.050**	-0.006	-0.056	-0.089**	-0.071*
	(0.018)	(0.026)	(0.047)	(0.034)	(0.036)
-4	-0.030	0.021	-0.003	-0.096**	-0.075
	(0.017)	(0.031)	(0.030)	(0.031)	(0.049)
-3	-0.017	0.009	0.008	-0.075*	-0.087*
	(0.017)	(0.028)	(0.032)	(0.034)	(0.040)
-2	-0.028	0.003	0.001	-0.066	-0.110*
	(0.019)	(0.028)	(0.033)	(0.035)	(0.053)
-1	-0.033	-0.012	0.000	-0.095**	-0.076
	(0.018)	(0.030)	(0.032)	(0.033)	(0.047)
0	-0.033	-0.012	0.005	-0.090*	-0.040
	(0.019)	(0.032)	(0.034)	(0.036)	(0.048)
1	-0.052*	-0.041	-0.045	-0.065	-0.149*
	(0.021)	(0.039)	(0.035)	(0.036)	(0.063)
2	-0.073**	-0.044	-0.035	-0.140**	-0.152*
	(0.022)	(0.038)	(0.037)	(0.041)	(0.065)
3	-0.075**	-0.019	-0.032	-0.143**	-0.148*
	(0.024)	(0.047)	(0.036)	(0.044)	(0.062)
4	-0.059**	-0.011	-0.006	-0.162**	-0.133
	(0.022)	(0.037)	(0.037)	(0.040)	(0.073)
5	-0.070**	-0.016	-0.018	-0.131**	-0.177*
	(0.023)	(0.039)	(0.037)	(0.044)	(0.072)
6	-0.076**	0.005	0.004	-0.190**	-0.212*
	(0.024)	(0.038)	(0.037)	(0.044)	(0.092)
7	-0.103**	-0.066	-0.017	-0.184**	-0.279*
	(0.028)	(0.065)	(0.042)	(0.042)	(0.109)
8	-0.101**	-0.009	-0.025	-0.196**	-0.269**
	(0.025)	(0.043)	(0.039)	(0.041)	(0.104)
9	-0.076**	0.010	-0.047	-0.150**	-0.185*
	(0.028)	(0.051)	(0.050)	(0.042)	(0.090)
10	-0.098**	-0.009	-0.032	-0.198**	-0.192
	(0.027)	(0.044)	(0.049)	(0.044)	(0.118)

Notes: This table reports the coefficient estimates of the time from onset indicator variables in fixed effect regressions. The omitted period is more than 5 years before onset. The sample is restricted to those who worked 500 or more hours in the year. Standard errors clustered by person are in parentheses. Statistical significance of each estimate is denoted as follows: **Significant at 1 percent level, *Significant at 5 percent level.

Appendix Table 5

Benefit Receipt Rates and Net Wealth of the Disabled

	All Disabled (1)	One-Time (2)	Temporary (3)	Chronic Not Severe (4)	Chronic Severe (5)
Benefit Receipt Rate					
Social Security	0.137	0.034	0.053	0.104	0.481
Social Security Disability	0.086	0.003	0.002	0.037	0.419
Supplemental Security Income	0.025	0.009	0.014	0.015	0.085
Social Security or SSI	0.151	0.041	0.064	0.111	0.520
SSDI or SSI	0.118	0.025	0.031	0.057	0.486
Workers' Compensation	0.043	0.013	0.052	0.044	0.060
Unemployment Insurance	0.081	0.056	0.093	0.105	0.038
Food Stamps	0.111	0.051	0.088	0.108	0.238
Public Housing (Partial or Full)	0.027	0.027	0.022	0.022	0.041
Any one of the above	0.329	0.170	0.249	0.314	0.705
Work and Wealth					
Not receiving any benefit above and not working 6-10 years post-onset	0.089	0.108	0.065	0.080	0.129
Median Pre-onset Net Wealth	$35,702	$36,901	$31,735	$34,913	$38,687
Median Net Wealth 6-10 years post-onset	$57,362	$78,500	$51,581	$60,806	$23,168

Notes: Receipt rates reported for disabled individuals who are in their sixth to tenth year after disability onset. Working is defined as working at least 1000 hours. Asset data come from those who participated in the 1984, 1989, 1994, 1999, 2001, 2003 and 2005 PSID surveys. Net wealth is defined as the sum of business and farm equity, savings instruments (checking, savings, and certificates of deposits), real estate, stocks, vehicles, other investments and home equity, less any non-mortgage and non-business debts. Social Security Disability (SSDI) recipiency data come from the 1984-1992 PSID surveys and the fractions reported above represent individuals in this period only.

Appendix Table 6

Hours of Work by Spouse Before and After Disability Onset of Head, All Disabled and Extent of Disability Groups

Year from onset	All Disabled	Extent of Disability Groups			
		One-Time	Temporary	Chronic Not Severe	Chronic Severe
	(1)	(2)	(3)	(4)	(5)
-5	37	14	65	24	71
	(28)	(53)	(53)	(53)	(67)
-4	-26	-63	16	-54	33
	(30)	(58)	(54)	(55)	(76)
-3	-11	-17	-45	7	31
	(31)	(54)	(57)	(55)	(84)
-2	21	1	28	27	37
	(31)	(61)	(56)	(55)	(72)
-1	-22	-68	9	-21	3
	(32)	(61)	(56)	(57)	(82)
0	-8	-67	28	2	19
	(33)	(64)	(59)	(57)	(80)
1	-18	-62	20	-4	-26
	(34)	(63)	(60)	(58)	(83)
2	-54	-118	-53	-14	-32
	(36)	(67)	(61)	(64)	(89)
3	-51	-81	-47	-5	-81
	(36)	(67)	(64)	(61)	(84)
4	-55	-138	-24	-15	-44
	(38)	(72)	(64)	(64)	(92)
5	-35	-70	-27	-18	-17
	(38)	(72)	(64)	(63)	(88)
6	-60	-91	-65	4	-115
	(40)	(74)	(68)	(66)	(93)
7	-69	-108	-64	5	-139
	(41)	(76)	(68)	(68)	(97)
8	-63	-63	-104	19	-150
	(42)	(73)	(68)	(70)	(99)
9	-63	-48	-141	72	-220*
	(44)	(82)	(74)	(71)	(103)
10	-43	-41	-100	68	-188
	(46)	(81)	(77)	(73)	(116)

Notes: This table reports the coefficient estimates of the time from onset indicator variables in the basic fixed effect regression model with annual hours worked by the spouse as the dependent variable. The omitted period is more than 5 years before onset. Standard errors clustered by person are in parentheses. Statistical significance of each estimate is denoted as follows: **Significant at 1 percent level, *Significant at 5 percent level. The sample is restricted to married male household heads aged 22-61. See the data appendix for variable definitions and the text for further details.

Appendix Table 7
Changes in Log of Food Eaten at Home, Log of Food Eaten Outside Home Before and After Disability Onset, All Disabled and Extent of Disability Groups

Year from onset	A. Log Food Eaten at Home					B. Log Food Eaten Outside the Home				
	All Disabled	One-Time	Temporary	Chronic Not Severe	Chronic Severe	All Disabled	One-Time	Temporary	Chronic Not Severe	Chronic Severe
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
-5	0.002	0.015	-0.021	-0.009	0.024	0.032	0.081	-0.051	0.128	-0.170
	(0.015)	(0.026)	(0.036)	(0.023)	(0.034)	(0.079)	(0.132)	(0.155)	(0.142)	(0.245)
-4	-0.009	0.032	0.010	-0.055	-0.046	0.033	-0.008	0.063	0.040	-0.098
	(0.015)	(0.027)	(0.028)	(0.028)	(0.034)	(0.083)	(0.135)	(0.148)	(0.158)	(0.251)
-3	-0.014	0.009	-0.011	-0.022	-0.057	-0.031	-0.271	0.347*	-0.056	-0.263
	(0.016)	(0.028)	(0.029)	(0.031)	(0.038)	(0.088)	(0.153)	(0.152)	(0.170)	(0.254)
-2	0.007	0.062*	0.017	-0.020	-0.067	-0.009	0.037	0.101	0.079	-0.510*
	(0.016)	(0.026)	(0.031)	(0.030)	(0.039)	(0.086)	(0.152)	(0.151)	(0.152)	(0.259)
-1	-0.007	0.048	-0.001	-0.043	-0.059	-0.168	-0.010	0.108	-0.254	-0.801**
	(0.015)	(0.025)	(0.028)	(0.031)	(0.038)	(0.088)	(0.150)	(0.151)	(0.167)	(0.254)
0	-0.01	0.005	-0.004	-0.009	-0.064	-0.01	0.221	0.037	0.024	-0.615*
	(0.015)	(0.025)	(0.029)	(0.028)	(0.037)	(0.086)	(0.141)	(0.150)	(0.160)	(0.252)
1	0.003	0.016	0.016	-0.005	-0.044	-0.239**	-0.018	-0.100	-0.149	-1.001**
	(0.016)	(0.028)	(0.027)	(0.028)	(0.039)	(0.090)	(0.148)	(0.166)	(0.166)	(0.249)
2	-0.035*	0.004	-0.051	-0.016	-0.123**	-0.149	0.020	0.078	-0.131	-0.938**
	(0.016)	(0.028)	(0.030)	(0.028)	(0.037)	(0.086)	(0.142)	(0.146)	(0.161)	(0.251)
3	-0.038*	-0.008	-0.021	-0.040	-0.138**	-0.067	-0.014	0.279*	-0.274	-0.543*
	(0.017)	(0.029)	(0.031)	(0.028)	(0.043)	(0.088)	(0.152)	(0.142)	(0.173)	(0.238)
4	-0.034*	0.040	-0.032	-0.035	-0.151**	-0.191*	0.094	-0.048	-0.210	-0.887**
	(0.017)	(0.031)	(0.033)	(0.029)	(0.038)	(0.089)	(0.148)	(0.155)	(0.162)	(0.242)
5	-0.037*	0.016	-0.013	-0.049	-0.158**	-0.102	0.230	0.106	-0.362*	-0.502*
	(0.017)	(0.030)	(0.033)	(0.031)	(0.039)	(0.091)	(0.143)	(0.164)	(0.172)	(0.245)
6	-0.012	0.037	-0.009	-0.028	-0.082*	-0.183	0.103	-0.107	-0.278	-0.651*
	(0.017)	(0.030)	(0.031)	(0.031)	(0.040)	(0.094)	(0.147)	(0.164)	(0.183)	(0.255)
7	-0.044*	-0.015	-0.039	-0.037	-0.136**	-0.218*	0.003	0.044	-0.172	-1.202**
	(0.018)	(0.030)	(0.033)	(0.033)	(0.041)	(0.093)	(0.149)	(0.167)	(0.161)	(0.252)
8	-0.013	-0.015	0.009	0.000	-0.111**	-0.096	0.252	0.071	-0.234	-0.743**
	(0.018)	(0.032)	(0.032)	(0.032)	(0.040)	(0.095)	(0.163)	(0.176)	(0.157)	(0.263)
9	-0.014	0.010	0.003	-0.001	-0.129**	-0.195*	-0.010	0.013	-0.242	-0.999**
	(0.018)	(0.032)	(0.032)	(0.032)	(0.042)	(0.097)	(0.157)	(0.177)	(0.171)	(0.266)
10	-0.032	0.002	-0.019	-0.032	-0.137**	-0.106	-0.160	0.176	-0.139	-0.610*
	(0.020)	(0.033)	(0.035)	(0.033)	(0.051)	(0.104)	(0.190)	(0.180)	(0.186)	(0.279)

Notes: The numbers reported are, for each variable of interest, the coefficient estimates of the time from onset indicator variables in fixed effect regressions, for the disabled as a whole and for the extent of disability groups. The omitted period is more than 5 years before onset. Standard errors clustered by person are in parentheses. Statistical significance of each estimate is denoted as follows: **Significant at 1 percent level, *Significant at 5 percent level. See the data appendix for variable definitions and the text for further details.

Appendix Table 8
Sample Means and Changes in Food Expenditure, Food Shopping Frequency and Consumption Index by Disability Status

	A. Full Sample: Sample Mean (standard deviation)		B. Regression Coefficient on the Disability Indicator Variable in CSFII		C. Regression Coefficient on the Disability Indicator Variable in PSID	
Dependent Variable	**Non-disabled** (1)	**Disabled** (2)	**Full Sample** (3)	**Exclude Low Income Sample** (4)	**OLS** (5)	**Fixed Effects** (6)
Total food expenditure	3,747	3,304	-0.182**	-0.123**	-0.109**	-0.056**
	(2,252)	(1,863)	(0.031)	(0.038)	(0.010)	(0.007)
Expenditure on Food eaten at Home	2,667	2,476	-0.116**	-0.072	-0.074**	-0.038**
	(1,419)	(1,277)	(0.030)	(0.037)	(0.010)	(0.008)
Expenditure on Food outside Home	1,080	828	-0.813**	-0.504**	-0.657**	-0.193**
	(1,326)	(953)	(0.145)	(0.166)	(0.056)	(0.042)
Shop for food at least once a week	0.628	0.605	-0.01	-0.014		
	(0.483)	(0.489)	(0.008)	(0.010)		
Log Consumption Index			-0.028**	-0.023*		
			(0.009)	(0.012)		
Log calories			-0.049*	-0.005		
			(0.025)	(0.030)		
Log Vitamin A			-0.145*	-0.130		
			(0.057)	(0.074)		
Log Vitamin C			-0.156**	-0.165*		
			(0.053)	(0.065)		
Log Vitamin E			-0.107**	-0.077		
			(0.038)	(0.047)		
N	2,891	362	3,253	2,431		
N Completing 3 diaries	1,948	266	2,214	1,676		

Notes: The sample is currently non-disabled and disabled male household heads aged 22-61 in the 1989-1991 CSFII. In columns 3-6, standard errors clustered by person are in parentheses. Statistical significance of each estimate is denoted as follows: **Significant at 1 percent level, *Significant at 5 percent level. All regressions control for geographical regions, education, race, year, age and age-squared of the head, number of adults, number of children and an indicator variable on whether the residence is located in central cities. Columns 5 and 6 reports the same coefficient estimates using the PSID data (keeping observations after the 10th year since onset), without and with individual fixed effects. See the text for a fuller description of the variables included and the data appendix on the construction of these variables and detail of sample construction. All food expenditure variables are in 2005 dollars.

Appendix Table 9
Time Spent on Food Preparation, Food Shopping and All Shopping Activities (in Hours per Week), by Male Household Heads and Wives

	A. Sample Means (standard deviation)		B. Coefficient on Head Disabled Indicator Variable
	Non-disabled Head	Disabled Head	
	(1)	(2)	(3)
1. Male Household Heads:			
Food Preparation	1.93	2.53	0.66
	(4.00)	(5.13)	(0.34)
Shopping for Food	0.83	0.96	0.14
	(2.56)	(2.90)	(0.21)
All Shopping	4.23	4.38	0.31
	(8.46)	(9.97)	(0.68)
N	4,334	316	
2. Wives:			
Food Preparation	6.41	6.96	0.12
	(7.25)	(7.21)	(0.67)
Shopping for Food	1.59	1.16	-0.38
	(3.44)	(2.38)	(0.25)
All Shopping	7.35	6.08	-0.96
	(11.09)	(8.86)	(1.03)
N	3,526	132	

Notes: The data come from merging the 2003-2006 American Time Use Survey with the corresponding year's Annual Social and Economic Supplement to the Current Population Survey. For the top half of the table, the sample is restricted to male household heads 22-61 years of age. For the bottom half of the table, the sample is restricted to married females 22-61 years of age and whose husbands are also in this age range. In column 3, standard errors clustered by person are in parentheses. Statistical significance of each estimate is denoted as follows: **Significant at 1 percent level, *Significant at 5 percent level. The controls in these regressions include age, age-squared, education, region, year, number of adults and children, race, marital indicator, the month of the survey and the head's disability indicator variable. See text and data appendix for further details.

Appendix Table 10
Changes in Leisure and Time Use by Disability Status

	A. Sample Means (standard deviation)		B. Regression Coefficient on the Disabled Indicator
	Non-disabled	Disabled	
	(1)	(2)	(3)
Market Work	42.49	12.54	-27.71**
	(35.07)	(26.03)	(2.36)
Leisure (Narrow)	36.20	58.37	18.23**
	(26.25)	(30.08)	(2.41)
Watching TV	14.84	29.03	10.64**
	(16.20)	(25.89)	(1.66)
Socializing, Social Events	6.01	7.55	1.89*
	(12.18)	(12.98)	(0.93)
Arts and Non-Home Entertainment	0.87	0.83	0.22
	(5.12)	(7.42)	(0.66)
Relaxing	2.04	6.16	3.21*
	(6.20)	(15.96)	(1.46)
Music and Radio	0.30	1.22	0.84
	(2.61)	(5.84)	(0.50)
Games and Computer	1.74	3.30	1.87*
	(6.42)	(9.21)	(0.75)
Hobbies	0.07	0.39	0.26
	(1.33)	(5.04)	(0.22)
Reading and Writing	1.62	2.46	0.75
	(4.59)	(6.83)	(0.52)
Sports	3.48	2.47	-0.48
	(9.81)	(7.51)	(0.55)
Leisure (Broad)	105.75	134.34	24.28**
	(30.81)	(30.21)	(2.43)
Eating	9.05	8.62	-0.06
	(7.19)	(8.24)	(0.66)
Sleeping	56.28	63.75	6.79**
	(14.47)	(16.82)	(1.31)
Personal Care	4.22	3.61	-0.67
	(4.23)	(5.15)	(0.41)
Vacation (Days per Month)	1.33	0.83	-0.32
	(3.15)	(2.93)	(0.21)
Use of Medical Services	2.04	8.76	7.15*
	(18.74)	(40.10)	(2.85)
N	4,334	316	

Notes: Data comes from merging the 2003-2006 American Time Use Survey with the corresponding year's Annual Social and Economic Supplement to the Current Population Survey. The sample consists of male household heads aged 22-61. In column 3, standard errors clustered by person are in parentheses. Statistical significance of each estimate is denoted as follows: **Significant at 1 percent level, *Significant at 5 percent level. The controls in these regressions include age, age-squared, education, region, year, number of adults and children, race, marital indicator, the month of the survey and the head's disability indicator variable. The results for vacation days are based on the 2005-2006 ATUS surveys only. See text and data appendix for further details.