# ARE DISABILITY APPLICANTS UNHEALTHIER THAN EVER?

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**Abstract/Policy Abstract**

Most existing research about the high share of the population receiving Social Security Disability Insurance (SSDI) or Supplemental Security Income (SSI) has focused on economic motivations for applying for benefits, but less is known about the underlying health status of SSDI and SSI applicants. This paper uses a unique dataset that combines administrative SSDI and SSI records from the Social Security Administration with health measures and personal characteristics from the *Survey of Income and Program Participation* to examine whether SSDI and SSI applicants are more likely to report negative health outcomes one year or more before application, and whether their health differs by age or the application's ultimate success. The analysis finds a statistically significant decline in work-preventing health conditions, but no other evidence of better self-reported health, work-limiting health conditions, or fewer limitations in the Activities of Daily Living. These results suggest that the health of SSDI and SSI applicants has remained relatively unchanged over time.


Keywords: disability, SSDI, SSI, work limitation, ADL, IADL, health status

**Introduction**

The growth in the rolls of Social Security Disability Insurance (SSDI) and Supplemental Security Income (SSI) over the 1990-2013 period has been a subject of much concern for policymakers. Of particular concern is the growing proportion of younger disability applicants. Despite more strict evaluation criteria (Chen and van der Klaauw 2008), the incidence rate – the number of awards per 1000 SSDI-insured adults – among those under age 50 rose consistently through most this period, both absolutely and relative to older applicants (Zayatz 2011; Liebman 2015).

The cause of the increase in the incidence rate among younger applicants is unclear. The criteria used by Social Security examiners to evaluate an application take into account both the applicant's labor market prospects and the severity of the disabling health condition. Most research has focused on the former factor. Stagnation in median income may have contributed to an increase in applications (Autor and Duggan 2003), but the effect of macroeconomic fluctuations on the allowance rate remains ambiguous.[1]

This study evaluates the latter factor: whether the underlying health of younger SSDI and SSI applicants has gotten worse, leading to increased allowance rates. A number of factors have led to improved health and increased life expectancy: structural changes in the labor market have helped improve safety among working-age adults, fewer people are smoking, and medical technology has improved. But obesity is on the rise in the U.S., and with it, heart disease, diabetes, and back pain have also increased (NCHS 2010); the rise in obesity may explain the

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[1] Strand (2002) finds that allowance rates tend to be lower when the unemployment rate is high, because those adults that respond to worsening job prospects by applying to disability insurance programs are likely in relatively better health. Rutledge (2011), however, finds that state allowance rates rise when unemployment insurance durations are extended, suggesting that marginal applicants delay filing for SSDI benefits until other income sources are exhausted.

growing prevalence of musculoskeletal conditions among disability applicants, especially those

under 50 (SSDI Annual Statistical Report 2010).

An extensive literature has examined whether working-age adults are healthier or

unhealthier than in past cohorts, but failed to reach a consensus, despite the use of a common

data source.[2] Lakdawalla, Bhattacharya, and Goldman (2004) find that a growing proportion of

working-age adults report needing help with routine needs, with the rise in obesity explaining

between 10 and 25 percent of the rise in routine-needs disability among those age 30 to 50.

Bound and Waidmann (2002) also find that the proportion of working-age adults reporting a

work-limiting disability between 1969 and 1996 has increased, though they point out  that much

of this growth could be out-of-work individuals providing justification for their labor force exit.[3]

In contrast, Duggan and Imberman (2009) find that health has improved for the near-elderly and

remained roughly constant for younger adults; they conclude that underlying health explains

little of the increase in disability applications.

The existing work in this area provides contradictory, and largely circumstantial,

evidence as to whether changes in underlying health could possibly explain the increase in

disability enrollment.  This study provides more direct evidence by examining changes over time

in the subgroup of working-age adults that has opted to apply for disability benefits.  The project

examines a diverse set of health measures measured at the time of SSDI/SSI application,

including subjective health quality (on a five-point scale), self-reported work limitation, and

restrictions in Activities of Daily Living (ADLs).  The estimation uses Social Security

Administration (SSA) data on SSDI applications linked to demographics and health measures

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[2] Most existing studies use the *National Health Interview Survey*, which has more detailed health information on
respondents but no recent link to administrative data on SSDI or SSI activity.
[3] Hale (2001) echoes the suggestion of justification bias, and recommends researchers use survey questions that do
not ask about health in the context of work.  This project uses SIPP's measure of self-reported work limitation, but
also Activities of Daily Living that should be less affected by justification bias.

from the *Survey of Income and Program Participation* (SIPP) household survey to compare

health outcomes of SSDI and SSI applicants from recent cohorts to applicants from previous

cohorts, and whether the trends in these outcomes differ by age and whether the application is

ultimately successful.

The results find flat time trends for most health measures, with very little differential

change over time by age. Applicants are statistically significantly less likely to report work-

preventing health conditions in the 1-3 years before application, but work-limiting conditions are

unchanged, as are self-reports of fair or poor health or ADL or IADL limitations. While

policymakers have expressed concern in both directions – that the population as a whole has

grown unhealthier and therefore more likely to apply to SSDI or SSI, and that low wage growth

and decreasing availability of welfare benefits has pushed relatively-healthier individuals to

apply for disability benefits – these results suggest that the underlying health of SSDI and SSI

applicants has not changed in any substantial way.

**Data and Empirical Strategy**

The data on health outcomes and most personal characteristics derives from the SIPP,

which surveys households every four months about their labor market outcomes, other income

sources, and public program participation, as well as demographics and family structure. The

SIPP is designed as a panel-survey complement to the detailed labor supply information

available in the *Current Population Survey*; it therefore asks about whether a non-employed

individual is not working or limited in his ability to work by a health condition. These "core"

variables are supplemented with periodic topical modules, on topics such as assets and liabilities,

citizenship and, notably, a detailed module on health status and physical and mental limitations.

A new SIPP panel began in each year from 1990 through 1993, as well as in 1996, 2001, 2004, and 2008, each running for between two and five years.[4]

SIPP also collected Social Security numbers for many of the respondents in these panels,[5] allowing for Social Security Administration researchers to link detailed personal characteristics and economic variables from the SIPP to administrative data on Social Security benefit claiming from the SSA's *831 File*. The SSA data includes the application dates; their ages at application; whether they applied to SSDI, SSI, or both concurrently; and whether their applications were ultimately allowed. Whereas application data on its own has only limited information about the applicant, the linked data allows for a more complete picture of health status and application context for over 4,000 SIPP respondents who applied for SSDI and/or SSI benefits from 1989 to 2013.

The sample is limited to individuals age 18 to 64 who applied for SSDI and/or SSI benefits 1-3 years after the SIPP interview in which they were asked about their health status and health limitations, and had never applied before that date.[6] The one-year lead time after the SIPP health interview attempts to establish applicants' health status well in advance of their application; otherwise, if applicants reported their health status while their application is waiting to be evaluated, they may have an incentive to exaggerate their limitations. Furthermore, the one-year application lead time comes closer to putting allowed and denied applicants on equal footing; if health was measured closer to application, allowed applicants would be much less healthy than applicants who are denied benefits. On the other hand, limiting the sample of SSDI

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[4] SIPP has panels that start each year from 1984 through 1989 as well, but links to administrative data are not available. The 2014 panel also lacks a link to administrative data to this point.

[5] Previous work suggests that the SIPP-matched sample over-represents individuals who are more likely to apply (Bound et al. 2010), but given that our sample is limited to applicants, this concern should be less of an issue than it would be in a study of the application decision itself.

[6] We collect information for the first application that fits these criteria.

applicants to those who apply no longer than 3 years after the health interview increases the

probability that any application that does happen is the result of health problems that may have

already manifested themselves by the time of the interview.[7]

The outcomes of interest, $H$, are measures of health for the individual at the time of the

SIPP health interview:

1) An indicator for reporting poor health on a five-point scale,

2) An indicator for reporting at least one limitation in the Activities of Daily Living

    (ADLs) or Instrumental Activities of Daily Living (IADLs),[8] and

3) The total number of ADLs plus IADLs reported.

4) An indicator for having a health condition that limits his ability to work,[9] and

5) An indicator for having a health condition that prevents him from working.

The basic form of the linear regression is:

$$H_{it} = f\left(\varphi Year_t + \sum_a [\beta_a AgeApp_i^a + \theta_a AgeApp_i^a Year_t] + \gamma Z_{it}\right) + \varepsilon_{it} \tag{1}$$

The key independent variables are one linear variable or four categorical variables for the age at

application, $AgeApp_i$; a linear time trend, i.e., the year of application, $Year_t$; and their

interactions.  A positive coefficient on the linear time trend indicates that more recent applicants

are in poorer health at the time of application.  The interaction effects are expected to each be

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[7] Results are similar with a window of 1-5 years after the health interview.
[8] ADL limitations include dressing, bathing, walking, using the toilet, and hygiene.  IADL limitations include using the telephone, managing money, shopping for groceries, and using transportation.
[9] The indicator for whether the respondent has a work-limiting health condition is the only outcome that derives from the SIPP core interview.  This indicator captures whether the respondent reported a work-limiting health condition in the same interview in which he was asked the health topical module.

positive, indicating that older applicants are in worse health on average, but with a negative trend over time, indicating that younger and older applicants' health has moved toward convergence.

The vector $Z$ includes indicators for sex, Hispanic origin, and public-sector employment in the SIPP window, as well as categorical variables for the primary disabling condition reported in their application (mental illness or musculoskeletal, with all other conditions as the omitted condition), race, citizenship, education, occupation, and family income relative to the poverty threshold, and net worth quintiles. $Z$ also includes a continuous variable for the number of months between the SIPP health interview and the disability application; though all applicants applied between 1 and 3 years after the health interview, this variable reflects that more recent interviews will be better measures of health at the time of application, while interviews that happened long before the application date would be a noisy measure of health at the application date. Summary statistics for these variables are reported in Appendix Table A1.

The study further examines the differences between SSDI and SSI awardees and denied applicants by estimating a triple-differences model, where an indicator for a denied application is fully interacted with age at application and year of application:

$$
\begin{aligned}
H_{it} = f \Big( &\alpha_0 Denied_i + \varphi Year_t + \tau Denied_i Year_t \\
&+ \sum_a [\beta_a AgeApp_i^a \\
&+ \theta_a AgeApp_i^a Year_t + \alpha_a AgeApp_i^a Denied_i \\
&+ \pi_a AgeApp_i^a Denied_i Year_t] + \gamma Z_{it} \Big) + \varepsilon_{it}
\end{aligned}
\tag{2}
$$

The coefficients on the triple interaction, $\pi_a$, represent the time trend in denied applicants by age. They are expected to be negative, indicating that denied applicants are healthier at any age

than allowed applicants at least one year before application, but their trend could be positive or negative depending on whether denied applicants are themselves getting less healthy with age.

**Results**

Figure 1 indicates that allowed and denied applicants are, at best, only slightly healthier over time, as measured 1-3 years before their application. Consistently, about half of applicants report poor health in their pre-application SIPP interview. In some respects, applicants seem to have become healthier in the years before applying: both allowed and denied applicants in 2008-2013 were about 5 percentage points less likely to report a work limitation than those applying in the 1990s, and the share reporting a work-preventing health condition was cut in half. In other respects, applicants in more recent cohorts were in worse health: the share with at least one ADL or IADL limitation and the mean number of ADL and IADL limitations both rose between the late 1990s and the 2008-2013 period, though remained slightly below their level from the early 1990s. Results are similar between allowed and denied applicants, and their differences offset; denied applicants are somewhat more likely to report a work-preventing condition than awardees, but somewhat less likely to report an ADL or IADL limitation.

Figure 2 indicates the changes over time in health status were similar across age groups. Applicants under 35 were in better health by each measure 1-3 years before applying; this finding indicates that they develop the health conditions associated with their application relatively quickly before applying. Applicants from other age groups, however, have similar levels of health before applying, and their pattern of health status over time moves in virtual lockstep.

The regression models confirm the patterns exhibited in the figures. Panel A of Table 1 shows the results without interactions; only the share with work-preventing health conditions, which have declined over time, has a statistically significant slope after accounting for changing demographics and economic conditions. The other year coefficients are small in magnitude and statistically insignificant.

The results are similar in Panel B, which adds an interaction between age and year to allow for the patterns over time to vary by age. Each of the interaction coefficients is minuscule and statistically insignificant. Work-preventing health conditions remain on a significantly negative trend, while the other year coefficients remain insignificant.

Table 2 allows the trends to differ both by age and between allowed and denied applicants. The uninteracted time trend coefficient is now statistically insignificant for work-preventing conditions, but is positive and statistically significant for the number of ADLs and IADLs, which indicates that allowed applicants are in worse health over time. The interaction between age and year is significant and negative for the count of ADLs and IADLs, as well as for work-preventing condition, which suggests that older and younger applicants converged over time in these health measures.

Denied applicants, in contrast, diverged from awardees in these two measures, as indicated by the large and statistically significant coefficient on the interaction between the year and denial indicators. But the sum of the year coefficient and the year*denied interaction is small and statistically insignificant, so, overall, denied applicant's pre-application health status has not changed over time in any significant way.

**Conclusions**

The growth in the disability rolls, which peaked in the early 2010s, is a subject of great debate: either this growth was foreseen by demographic trends, most notably the aging of the Baby Boom (Goss 2013), or it can be attributed to economic incentives, including stagnant wages for some of the workers most likely to consider disability benefits (Autor and Duggan 2006). What has been less clear is to what extent this growth can be attributed to declining health among potential applicants – or, alternatively, that more marginal applicants apply to SSDI and SSI because of weak job prospects and insufficient benefits through other public programs. This paper provides the first estimates of SSDI and SSI applicants' health before their application, taking advantage of a dataset that provides both administrative data on applications and their allowances or denials, and health measures that are more detailed than the limited outcomes that are usually available in administrative records.

The analysis finds little difference over time in applicants' health status in the years before they apply. Estimates indicate that applicants are less likely to report a work-preventing health condition, but the time trends are flat for related health measures such as work-limiting conditions, being in fair or poor health, or having an ADL or IADL limitation.

The results suggest that the underlying health of disability applicants has not changed in any perceptible way over the last two decades. While neither improvements nor declines in most health measures cannot be ruled out, the dueling concerns of policymakers do not appear to have played out during the growth of SSDI rolls between 1990 and 2013. The more likely result is that the health status of eventual applicants in the years before they apply has not changed substantially.

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Figure 1. Health Measures for SSDI and/or SSI Applicants, 1990-2013, by Application Result



A.  Poor Health
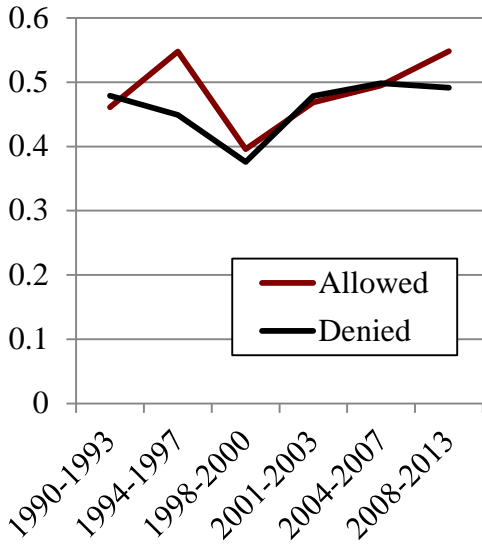
B. ADL or IADL
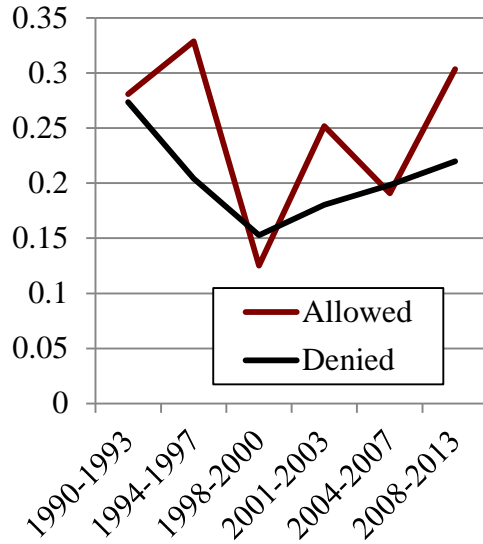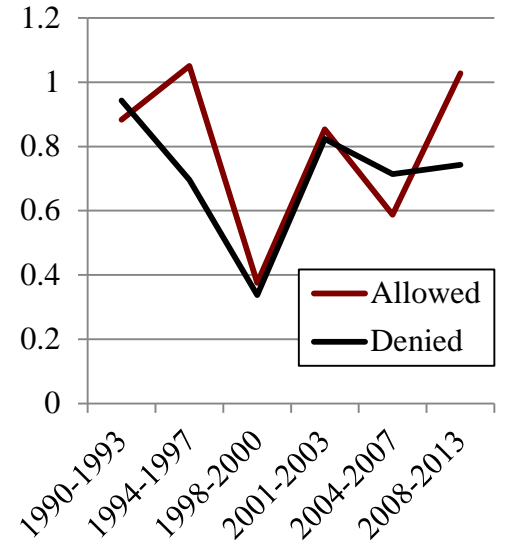
C. ADL/IADL Count

D. Work limitation

E. Work-preventing condition

*Source:* Authors' calculations from the *Survey of Income and Program Participation* (1990-2008 panels) linked to SSA Administrative Data.

Figure 2. Health Measures for SSDI and/or SSI Applicants, 1990-2013, by Age

A. Poor Health

B. ADL or IADL

C. ADL/IADL Count

Legend:
- All ages
- Ages 35-44
- Ages 55-64
- Ages 18-34
- Ages 45-54

D. Work limitation

E. Work-preventing condition

*Source:* Authors' calculations from the *Survey of Income and Program Participation* (1990-2008 panels) linked to SSA Administrative Data.

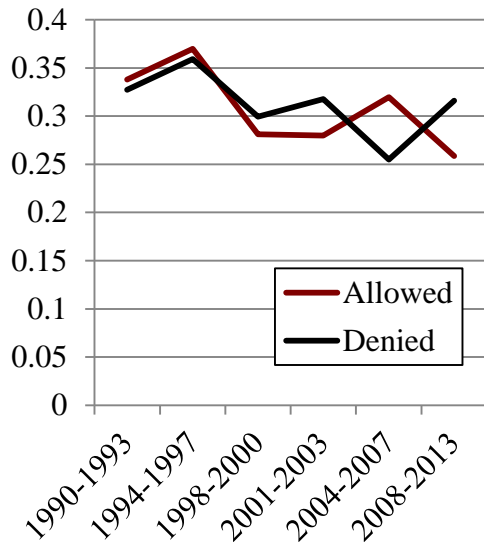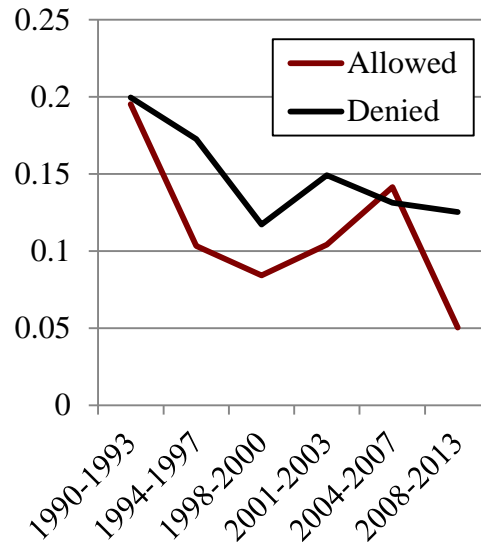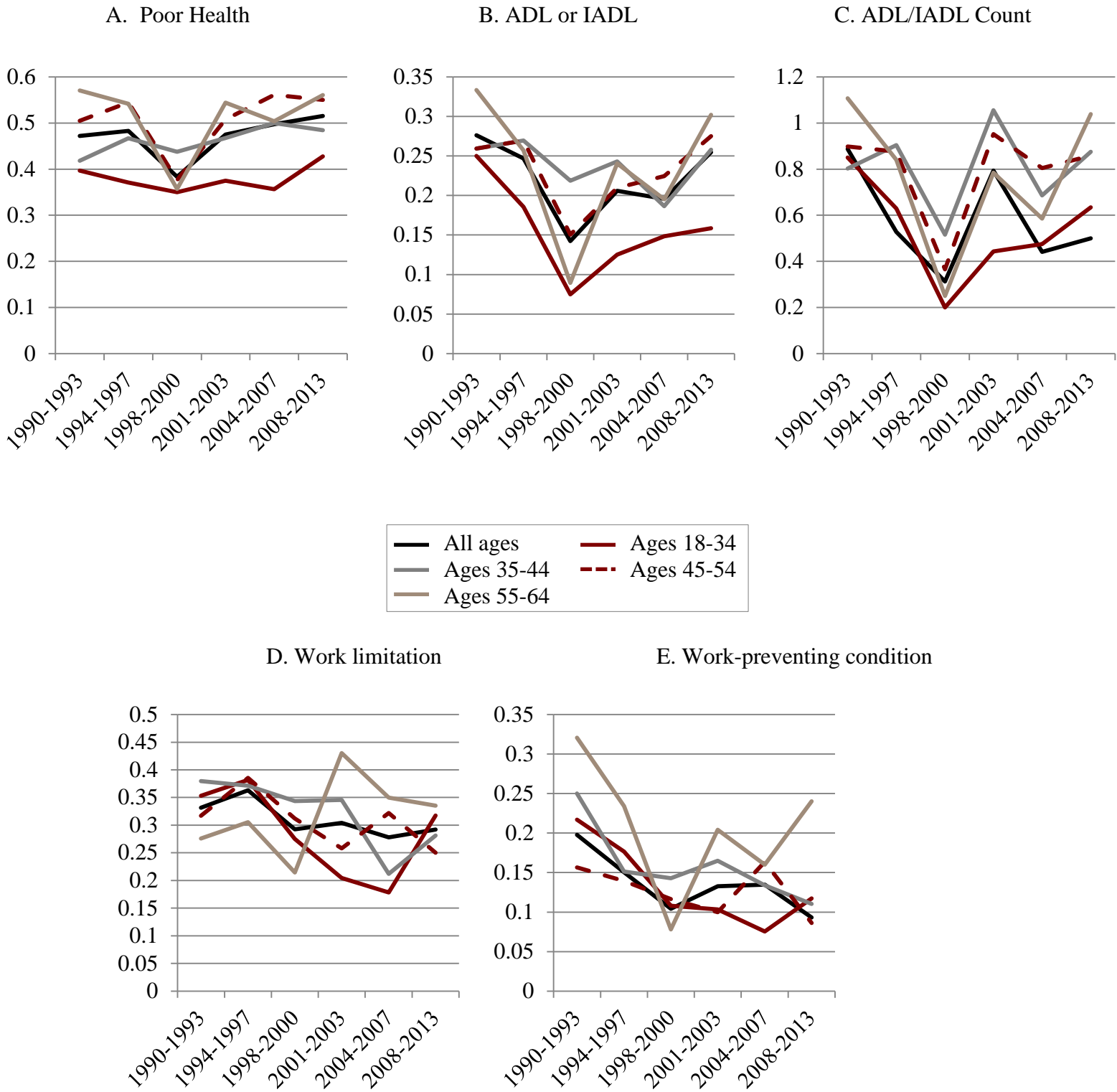Table 1. *Estimates from Regressions of Health Measures on Age and Year of Application*

| | Fair or Poor Health | | ADL or IADL | | ADL/IADL Count | | Work Limitation | Work-Preventing Condition | |
|---|---|---|---|---|---|---|---|---|---|
| *Panel A. No interactions* | | | | | | | | | |
| Year of application | 0.0024 | | -0.00015 | | 0.0061 | | 0.00063 | -0.0132 | *** |
| | (0.0016) | | (0.00149) | | (0.0042) | | (0.00256) | (0.0026) | |
| Age at application | 0.0050 | *** | 0.0017 | ** | 0.0037 | * | 0.0000 | -0.0002 | |
| | (0.0008) | | (0.0007) | | (0.0021) | | (0.0014) | (0.0014) | |
| Denied | -0.013 | | -0.068 | *** | -0.242 | *** | -0.034 | 0.066 | ** |
| | (0.019) | | (0.017) | | (0.047) | | (0.031) | (0.031) | |
| Sample size | 3,234 | | 2,914 | | 2,914 | | 878 | 880 | |
| $R^2$ | 0.079 | | 0.081 | | 0.000 | | 0.105 | 0.340 | |
| | | | | | | | | | |
| *Panel B. Age and year interacted* | | | | | | | | | |
| Year of application | 0.0010 | | -0.0022 | | 0.0027 | | -0.0077 | -0.0165 | * |
| | (0.0052) | | (0.0049) | | (0.0147) | | (0.0086) | (0.0086) | |
| Age at application | 0.0047 | *** | 0.0012 | | 0.0029 | | -0.0021 | -0.0010 | |
| | (0.0014) | | (0.0014) | | (0.0040) | | (0.0025) | (0.0025) | |
| Age × year | 0.0000 | | 0.0000 | | 0.0001 | | 0.0002 | 0.0001 | |
| | (0.0001) | | (0.0001) | | (0.0003) | | (0.0002) | (0.0002) | |
| Denied | -0.0127 | | -0.0680 | *** | -0.2408 | *** | -0.0308 | 0.0669 | ** |
| | (0.0190) | | (0.0169) | | (0.0472) | | (0.0313) | (0.0313) | |
| Sample size | 3,234 | | 2,914 | | 2,914 | | 878 | 880 | |
| $R^2$ | 0.079 | | 0.081 | | 0.000 | | 0.107 | 0.340 | |

*Notes:* See text for full model specifications. ***p<0.01, ** p<0.05, *** p<0.01.
*Source:* Authors' estimates from the *Survey of Income and Program Participation* (1990-2008 panels) linked to SSA Administrative Data.

Table 2. *Estimates from Regression of Health Measures on Age and Year of Application, Application Denial, and Their Interactions*

| | Fair or Poor Health | | ADL or IADL | | ADL/IADL Count | | Work Limitation | | Work-Preventing Condition | |
|---|---|---|---|---|---|---|---|---|---|---|
| Year of application | 0.012 | | -0.0051 | | 0.0542 | ** | -0.0198 | | 0.0132 | |
| | (0.010) | | (0.0095) | | (0.0256) | | (0.0158) | | (0.0158) | |
| Age at application | 0.0051 | ** | -0.0001 | | 0.0027 | | -0.0050 | | 0.0045 | |
| | (0.0023) | | (0.0024) | | (0.0066) | | (0.0039) | | (0.0039) | |
| Age × year | -0.00017 | | 0.00009 | | -0.00095 | * | 0.00035 | | -0.00059 | * |
| | (0.00019) | | (0.00018) | | (0.00049) | | (0.00031) | | (0.00030) | |
| Denied | 0.021 | | -0.161 | | -0.214 | | -0.273 | | 0.466 | * |
| | (0.141) | | (0.145) | | (0.417) | | (0.241) | | (0.240) | |
| Age × denied | -0.0004 | | 0.0017 | | -0.0015 | | 0.0036 | | -0.0099 | ** |
| | (0.0029) | | (0.0029) | | (0.0083) | | (0.0050) | | (0.0050) | |
| Year × denied | -0.015 | | 0.003 | | -0.087 | *** | 0.015 | | -0.048 | ** |
| | (0.012) | | (0.011) | | (0.032) | | (0.019) | | (0.019) | |
| Age × year × denied | 0.00027 | | -0.00005 | | 0.0018 | *** | -0.0002 | | 0.0011 | *** |
| | (0.00023) | | (0.00022) | | (0.0006) | | (0.0004) | | (0.0004) | |
| Sample size | 3,234 | | 2,914 | | 2,914 | | 878 | | 880 | |
| $R^2$ | 0.080 | | 0.081 | | 0.000 | | 0.109 | | 0.348 | |

*Notes:* See text for full model specifications. ***p<0.01, ** p<0.05, *** p<0.01.
*Source:* Authors' estimates from the *Survey of Income and Program Participation* (1990-2008 panels) linked to SSA Administrative Data

Appendix Table A1. *Summary Statistics for Control Variables*

|  | All Applicants | | SSDI Applicants | |
| --- | --- | --- | --- | --- |
|  | Mean | S.D. | Mean | S.D. |
| Female | 0.55 | 0.50 | 0.45 | 0.50 |
| Asian | 0.02 | 0.13 | 0.02 | 0.13 |
| Black | 0.21 | 0.40 | 0.16 | 0.36 |
| Hispanic | 0.06 | 0.23 | 0.05 | 0.23 |
| Non citizen | 0.04 | 0.20 | 0.03 | 0.16 |
| Naturalized | 0.04 | 0.19 | 0.05 | 0.21 |
| Less than HS | 0.28 | 0.45 | 0.22 | 0.42 |
| HS grad only | 0.35 | 0.48 | 0.35 | 0.48 |
| Some college | 0.27 | 0.45 | 0.30 | 0.46 |
| College | 0.09 | 0.29 | 0.13 | 0.33 |
| Manager | 0.03 | 0.18 | 0.04 | 0.20 |
| White Collar | 0.38 | 0.49 | 0.44 | 0.50 |
| Blue Collar | 0.23 | 0.42 | 0.29 | 0.45 |
| Married | 0.51 | 0.50 | 0.57 | 0.50 |
| # months since health interview | 24.4 | 6.9 | 24.5 | 7.0 |
| Net worth |  |  |  |  |
| Lowest quintile | 0.29 | 0.45 | 0.20 | 0.40 |
| 2nd lowest | 0.21 | 0.41 | 0.16 | 0.37 |
| Middle | 0.17 | 0.37 | 0.19 | 0.40 |
| 2nd highest | 0.14 | 0.35 | 0.19 | 0.39 |
| Highest quintile | 0.10 | 0.30 | 0.16 | 0.37 |
| N/A | 0.09 | 0.29 | 0.09 | 0.28 |
| Family income as a percent of the poverty threshold |  |  |  |  |
| < 100 percent | 0.25 | 0.44 | 0.13 | 0.33 |
| 100 - 200 percent | 0.23 | 0.42 | 0.21 | 0.40 |
| 200 - 300 percent | 0.19 | 0.39 | 0.20 | 0.40 |
| 300 - 400 percent | 0.12 | 0.32 | 0.15 | 0.36 |
| 400 percent or more | 0.21 | 0.41 | 0.32 | 0.47 |
| Sample size | 3,250 |  | 1,044 |  |

*Source:* Authors' calculations from the *Survey of Income and Program Participation* (1990-2008 panels) linked to SSA Administrative Data