All or Nothing: Health and the U.S. Social Security Disability Insurance

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Public Disability Insurance Program in the US

- A fundamental question in health and public economics is how income from government programs influences beneficiaries' health
- The Social Security Disability Insurance (SSDI) program is the main disability insurance program in the US
- 10M Americans receive SSDI benefits at a cost of $12B/month
- The most recent reform of SSDI was introduced in 1999

Public Disability Insurance Program in the US

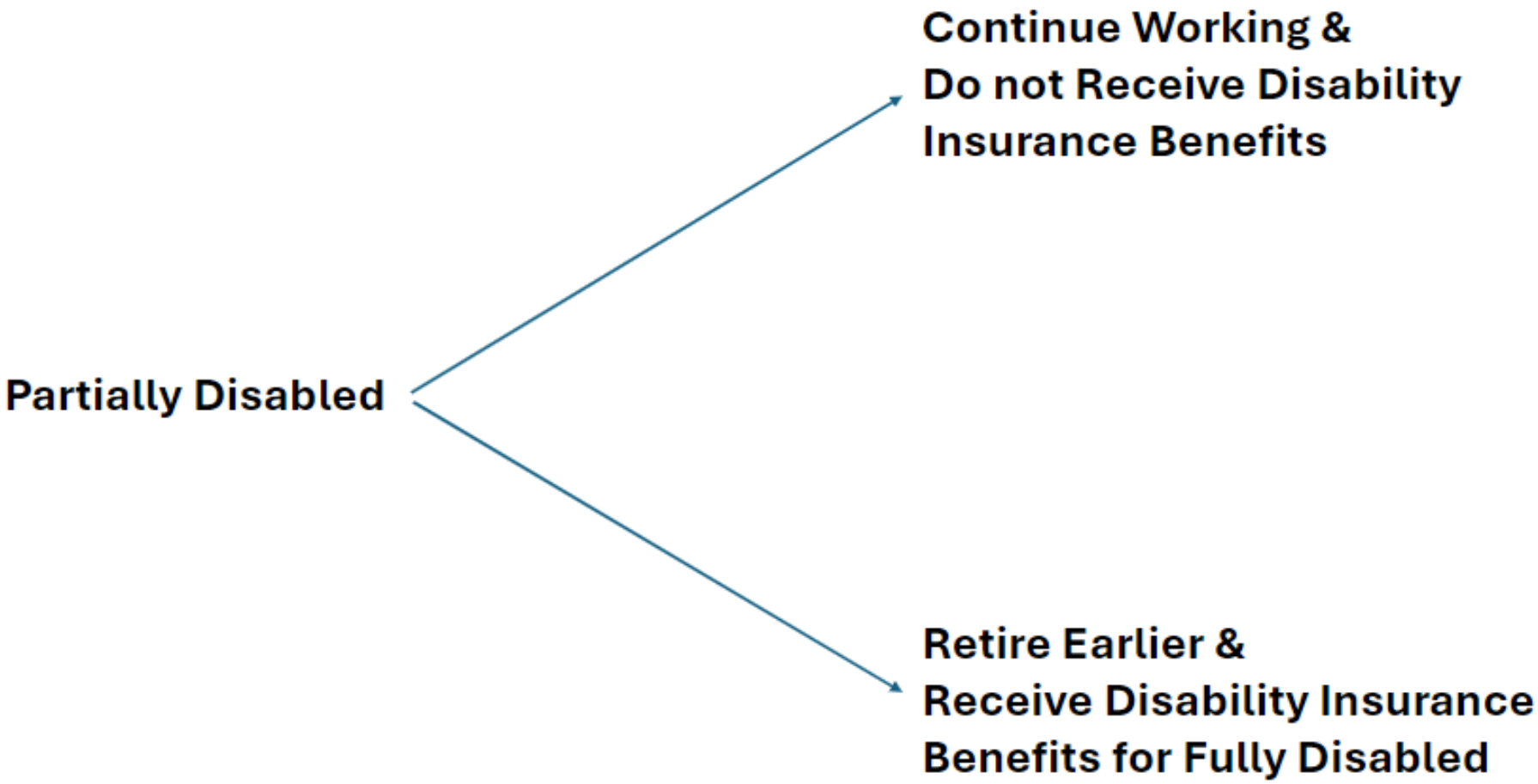
- SSDI eligibility criteria treat health as a binary outcome:
  a person is either considered to be fully disabled or not disabled

- This dichotomy incentivizes applicants to exaggerate or even exacerbate their health problems and leave the labor force prematurely

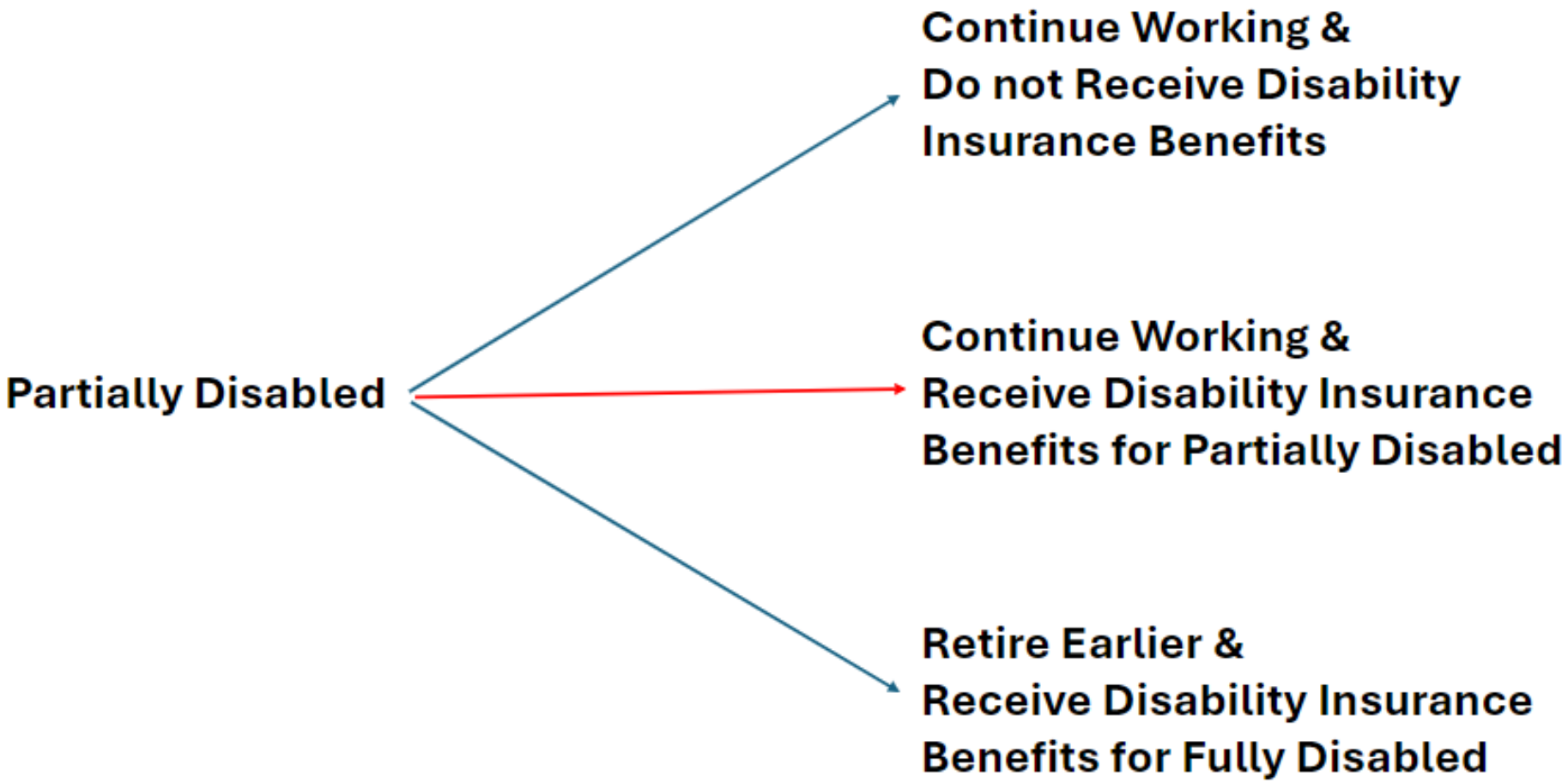
  - Around 20% of SSDI beneficiaries have some capability to return to work — they are not fully disabled (see Benitez-Silva et al., 2004)

  - Less than 1% of SSDI recipients return to the labor force

Public Disability Insurance Program in the US



Public Disability Insurance Program in Other Countries



Disability Insurance Program for the Partially Disabled

The extension of the SSDI program to the partially disabled will affect health through three main channels:

- Income (additional SSDI benefits)
- Labor supply (reservation wage changes)
- Health insurance coverage (employer-sponsored and early Medicare)

Research Question

How will the extension of disability insurance to individuals with partial disabilities impact the longevity and disability propensity of the elderly and the nearly elderly?

Summary of the Paper

- This paper is the first one to analyze the health effects of the introduction of disability insurance for the partially disabled in the US
- I reaffirm the existing results on the positive effects of this reform on the labor supply and the possible close-to-zero cost of the reform
- 6 different versions of the reform are discussed and analyzed
- According to the simulations, the reform will save tens of thousands of lives and will also improve the quality of life of Americans

Preview of the Results

The introduction of partial disability insurance (DI) in the US will

- Increase labor supply of partially disabled individuals:
  3M join the labor force and increase their earnings by a total of 100B
- Decrease the number of disabled Americans by around 1%
- Increase the life span of $\sim 40,000$ people
- Cost of extending the life of one person by one year is \$17K

Americans with Disabilities

- The SSDI program does not cover all existing demand for disability insurance
- The majority of SSDI applications are not approved
- Out-of-pocket medical costs are 2 times higher for Americans with disabilities (Kennedy et al., 2017)
- Earnings of employed partially disabled are almost 2 times lower than earnings of employed non-disabled

Americans with Disabilities

Table: Age Conditional Disability Transition Probabilities

	Not disabled	Partially disabled	Fully disabled	Deceased
Not disabled	0.861	0.087	0.048	**0.005**
Partially disabled	0.275	0.529	0.183	**0.012**
Fully disabled	0.177	0.313	0.492	0.018

Notes. The table shows the age-conditional health transition probability of a person whose current period's health is described in the first column and whose next period's health is described in the first row. HRS is biennial, and the period for this table is two years. The table is based on the Health and Retirement Study (HRS) Data

Americans with Disabilities

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Literature on Disability Insurance

Empirical approach	Focus on effects of disability insurance on	
	Health	Labor supply
Reduced form models	Borsch-Supan et al. (2017) Black et al. (2021) Gelber et al. (2023)	Gilleskie & Hoffman (2014)
Individual decision-making models that permit the prediction of effects of modifications of SSDI design	**This paper**	Yin (2015)

Literature on Health Effects of Disability Insurance

According to Gelber et al. (2023), "evidence on the overall impact of DI receipt on mortality — which reflects the combined effects of changes in income, work activity, and health insurance — is limited to a study by Black et al. (2021)"

- Black et al. (2021) show that individuals who are more unhealthy benefit from the DI award, while those who are more healthy experience reductions in health with DI
- Gelber et al. (2023) estimate that an additional \$1,000 in disability insurance payments/person can save 830–1,340 lives annually, i.e., $\sim$ \$10 M/life

Literature on The Welfare Effects of Disability Insurance and Bad Health

- The existing US public disability insurance programs provide valuable but incomplete insurance against health risks (Meyer and Mok, 2019)
- If disability insurance eligibility rules become less strict, or if its generosity increases, welfare increases too (Low and Pistaferri, 2015)
- Assuming savings of all households are zero has little effect on willingness to pay for disability insurance receipt (Autor et al., 2019)
- Major channel how bad health decreases welfare is the shortened life span (De Nardi et al., 2024)

Literature on Retirement

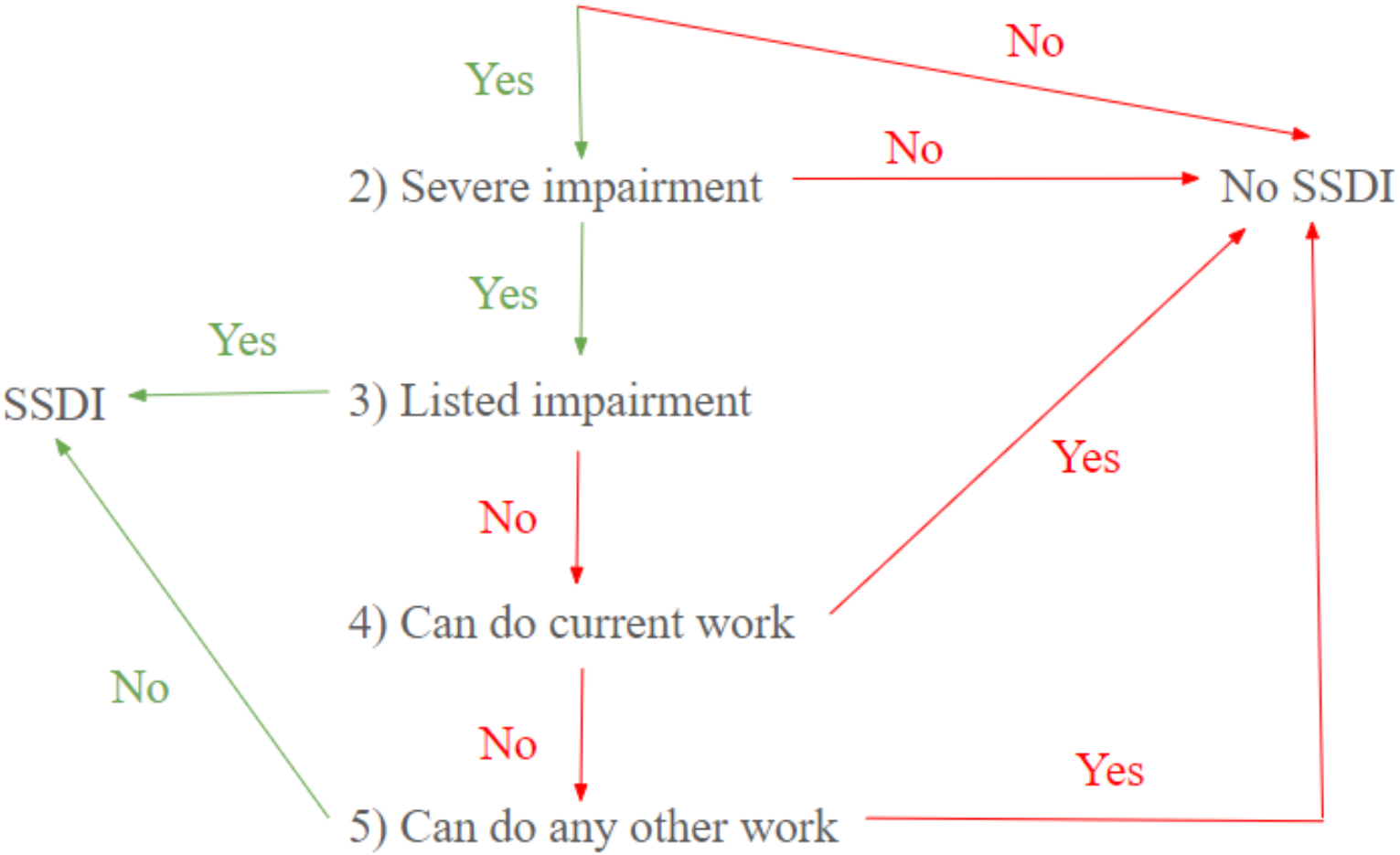
- Under the public disability insurance program for the partially disabled, partially disabled Americans will choose to retire at an older age (see Yin, 2015)
- With 10% higher Social Security benefits, people are 5% more likely to retire and 5% more likely to die in the next five years (see Snyder and Evans, 2006)
- In the month when Americans become eligible for Social Security Old Age, their mortality rate increases by 1.5% (see Fitzpatrick and Moore, 2018)
- Men retiring one year earlier live 2.2 months less (Kuhn et al., 2020)

Social Security Administration Demonstration Projects

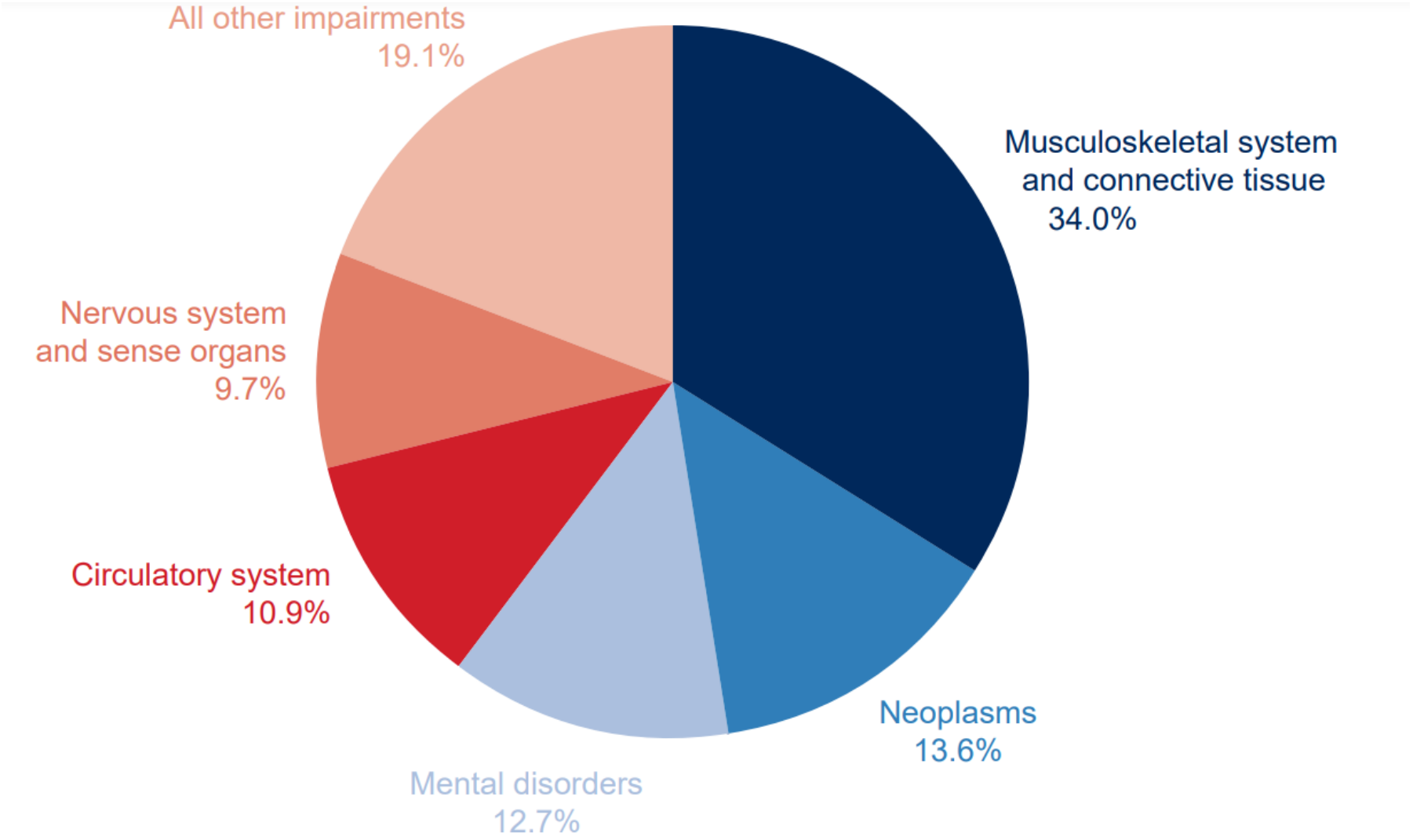
- In the last 15 years, the Social Security Administration ran 6 demonstration projects to analyze the effects of different modifications of the SSDI program
- 2 out of 6 of these projects analyzed the effects of the introduction of partial benefits for partially disabled people who already receive full SSDI benefits but choose to return to the labor force
- These projects offered *ex post* partial benefits for partially disabled — partial benefits offered after the approval of full SSDI benefits
- This paper discusses *ex ante* partial benefits for partially disabled — partial benefits offered before the approval of full SSDI benefits

5 Steps to Receive SSDI

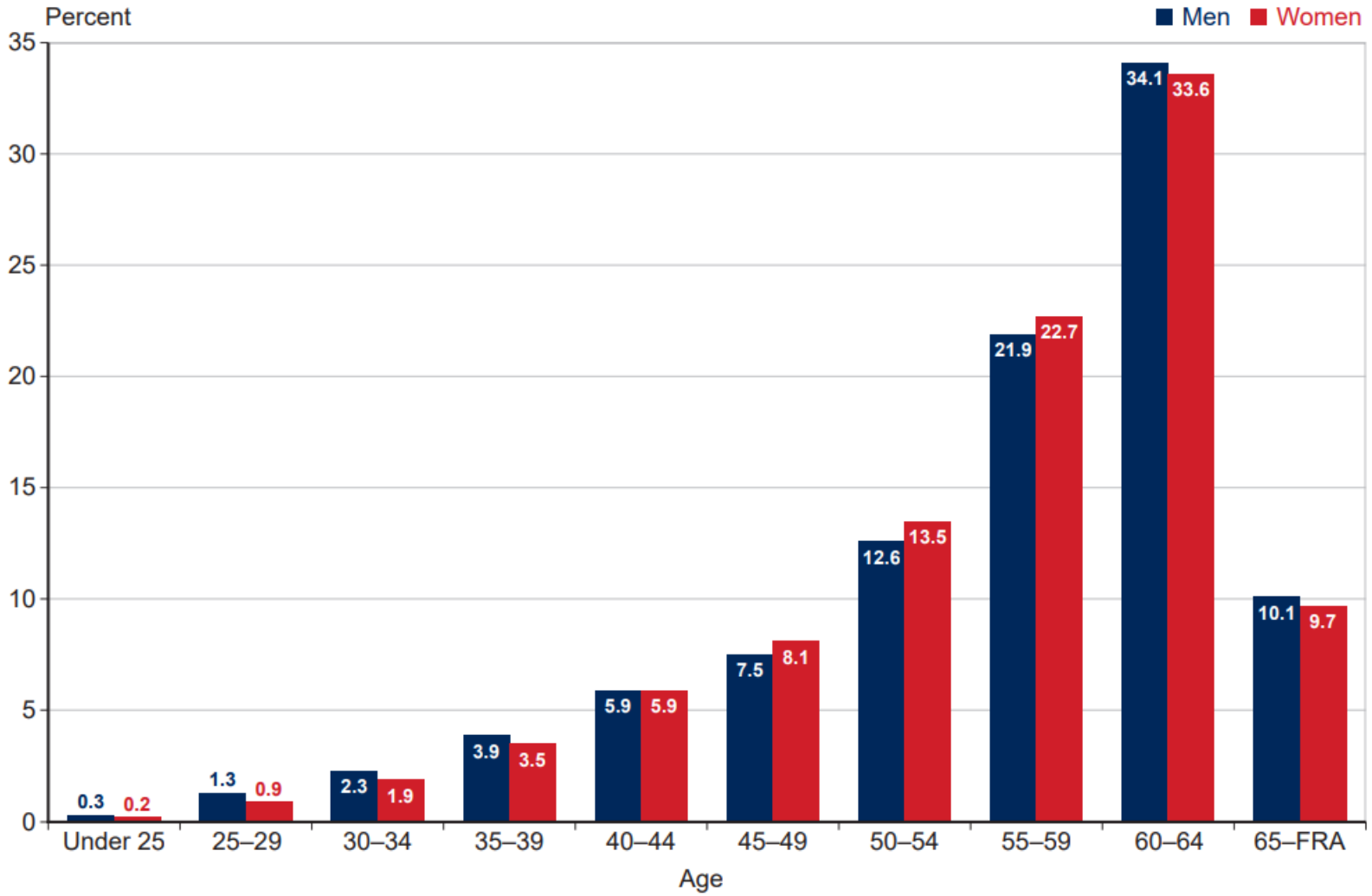
1) Earn less than Substantial Gainful Activity ($1,130/month in 2021)



SSDI Reasons (According to SSA Report on SSDI in 2022)



Age Distribution of SSDI Beneficiaries (According to SSA Report on SSDI in 2022)



Data and Sample Design

Two sources of data:

1. Health and Retirement Study (HRS) Public Survey Data (1994–2016)
2. Social Security Administration (SSA) Administrative Data

Estimation sample restrictions:

1. The age range is from 50 to 90
2. No missing data on key health-related variables and age
3. No missing initial conditions

HRS Questions on Disabilities Preventing Work

HRS has the following questions on disabilities preventing work:

- Do you have any impairment or health problem that limits the kind or amount of paid work you could do?
- Does this limitation keep you from working altogether?

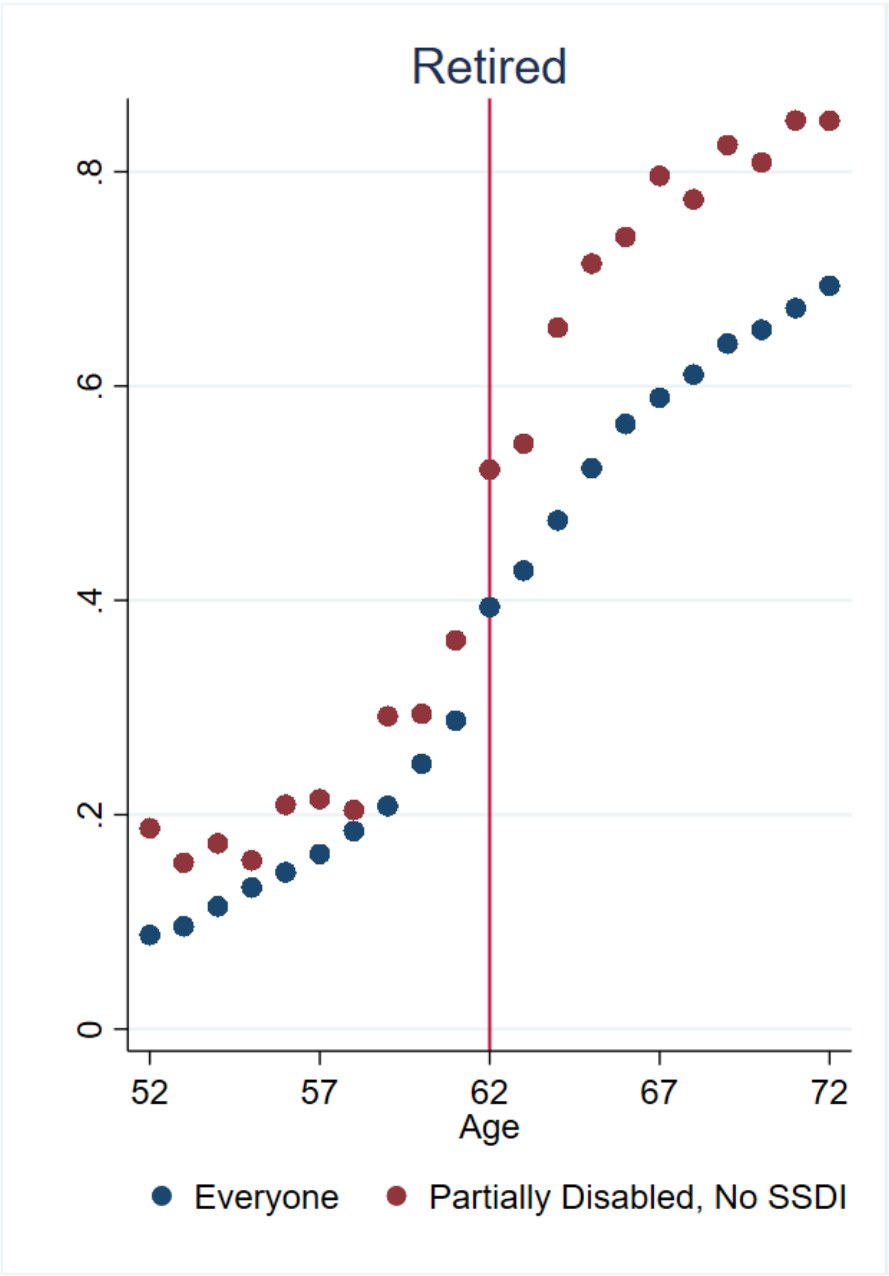
I classify individuals by disability statuses as follows:

- **partially disabled** — those who have limitations that limit their work but do not prevent them from working altogether
- **fully disabled** — those who have limitations keeping them from working altogether

Table: Summary Statistics

	Full Sample	Estimation Sample
Working Full-Time,(%)	38.75	39.83
Working Part-Time,(%)	15.28	15.71
Applied for SSDI,(%)	1.29	1.42
Receive SSDI,(%)	6.82	6.15
Partially Disabled,(%)	16.35	16.21
Fully Disabled,(%)	10.27	9.74
Annual Wage, (2018 $K)	52.43	52.16
Age	60.3	60.03
College, (%)	21.76	21.49
Number of Person-Years	147,612	121,348

Notes. Health and Retirement Study (HRS) Data. The full sample consists of all observations available on respondents from 51 to 70.


Retired
0
.2
.4
.6
.8
52
57
62
67
72
Age
Everyone
Partially Disabled, No SSDI

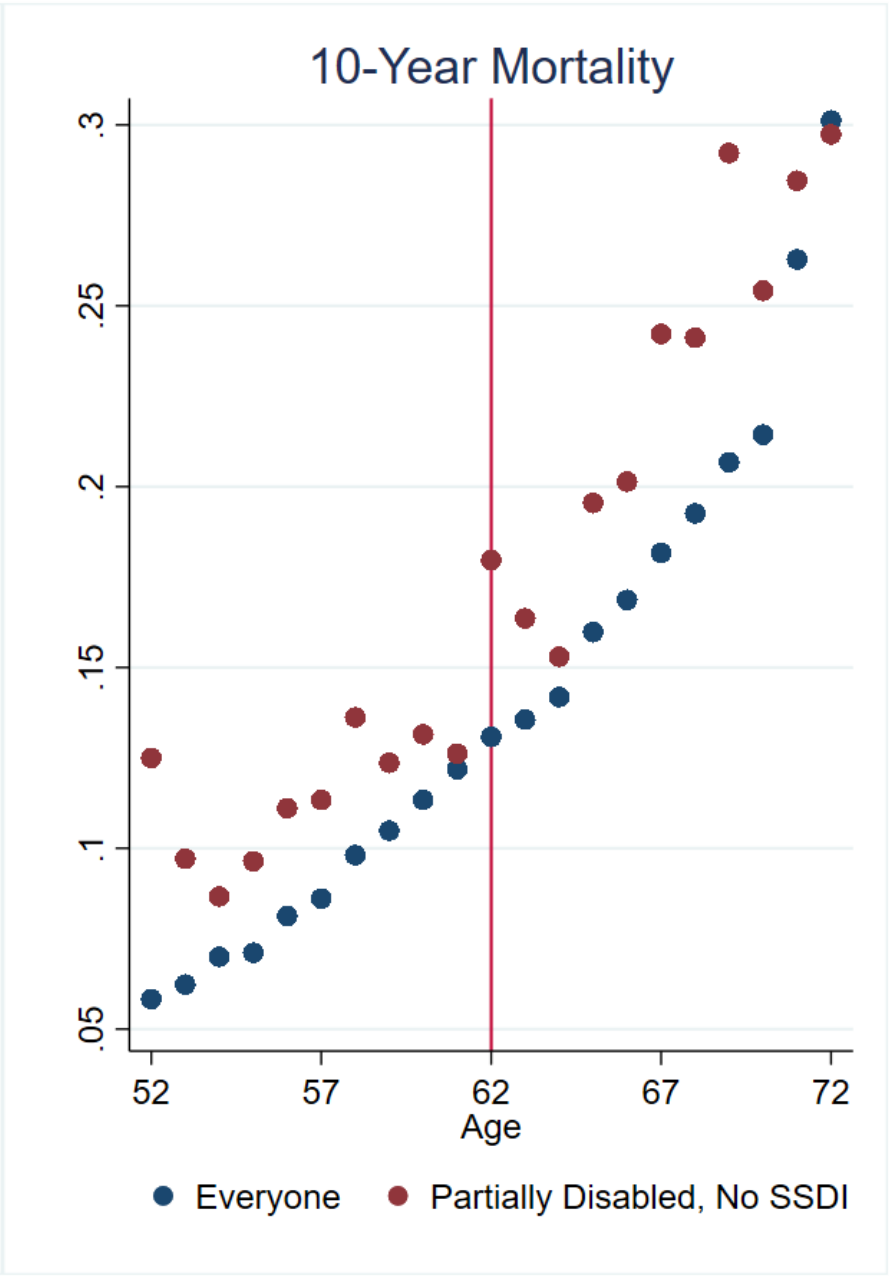

10-Year Mortality
.05
.1
.15
.2
.25
.3
52
57
62
67
72
Age
Everyone
Partially Disabled, No SSDI

Table: *Regression Estimates of Increase in* $10-Year$ *Mortality at Age* 62

	Quadratic Age	*Cubic Age*	*Quartic Age*
$1_{62} * 1_{Partially\ Disabled}$	$.046^{**}$	$.046^{**}$	$.046^{**}$
	$(.023)$	$(.023)$	$(.023)$
$1_{Partially\ Disabled}$	$.005$	$.005$	$.005$
	$(.003)$	$(.004)$	$(.004)$
1_{62}	$.005$	$.007$	$.005$
	$(.004)$	$(.004)$	$(.004)$
Age	$-.054^{***}$	$-.080^{***}$	1.186^{***}
	$(.001)$	$(.011)$	$(.108)$
Age^2	$.001^{***}$	$.001^{***}$	$-.027^{***}$
	$(.00001)$	$(.0001)$	$(.002)$
Age^3		$-.000002^{**}$	$.0003^{***}$
		$(.000001)$	$(.00002)$
Age^4			$-.000001^{***}$
			$(.0000001)$

Self-Reported Disability Status is Unreliable

Questions on disabilities preventing work are unreliable because:

- People report themselves in poor health as a rationalization for what might otherwise be seen as socially unacceptable early retirement (Bound, 1991)
- 20% of HRS respondents who reported receiving SSDI benefits also reported that their disability does not prevent them from working altogether (Benitez-Silva et al., 2004)
  - So, 20% of SSDI beneficiaries admit they are cheating
  - How many respondents decided not to admit their fraud?

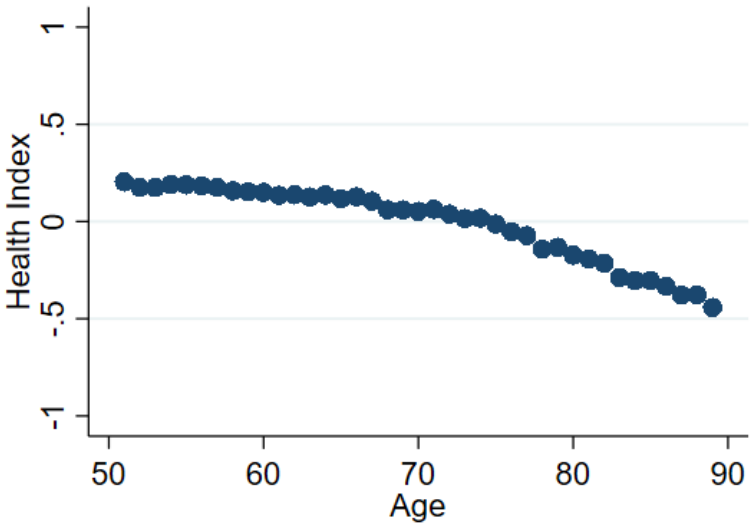
Health Index Construction

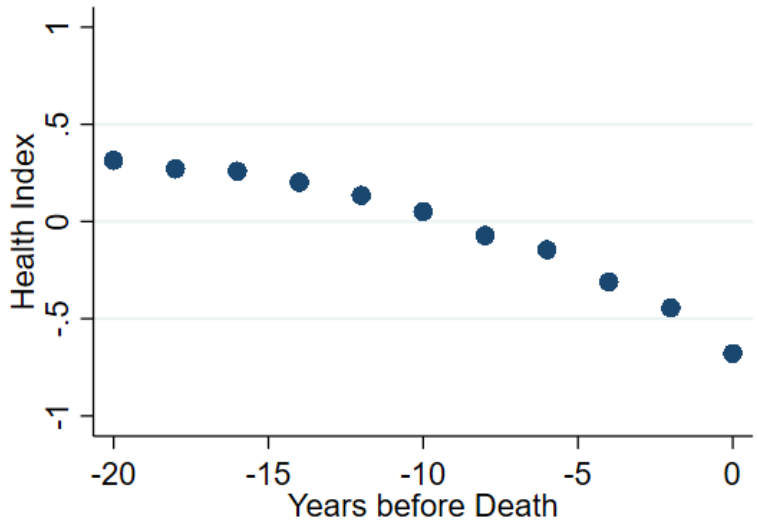
I construct a health index summarizing all available data on the individual health using principal component analysis for the following HRS health-related variables:

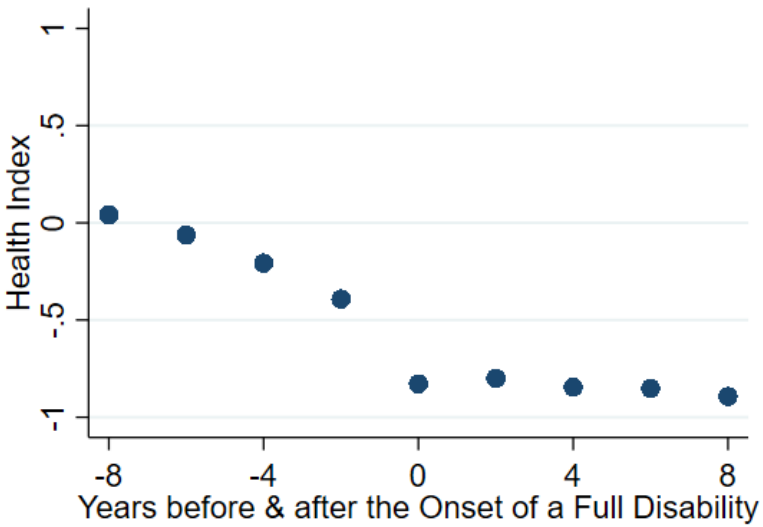
1. Self-reported health status (excellent/very good/good/fair/poor)
2. 2 variables related to healthcare utilization
3. 8 variables related to mental health issues
4. 8 variables related to doctor-diagnosed health problems
5. 10 variables related to difficulties with the activities of daily living and instrumental activities of daily living
6. Self-reported back pain

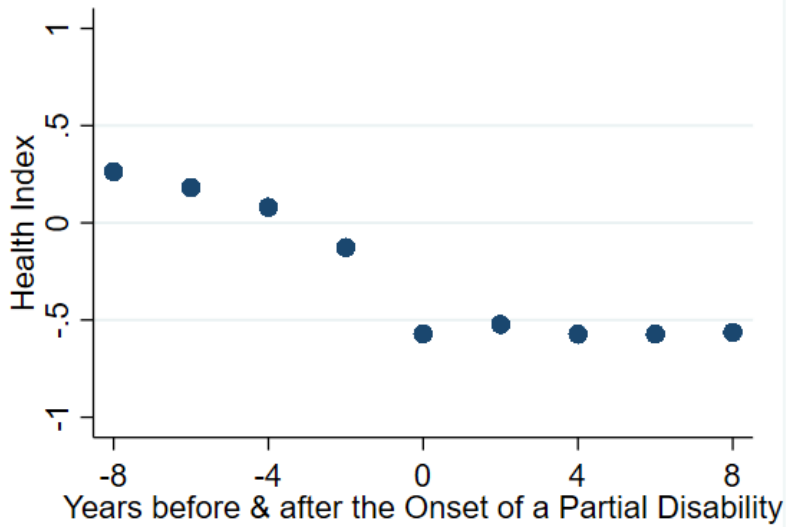
The Percentage of HRS Respondents Who Experienced Health Shocks by 2010 by Health Index Quintile in 1994

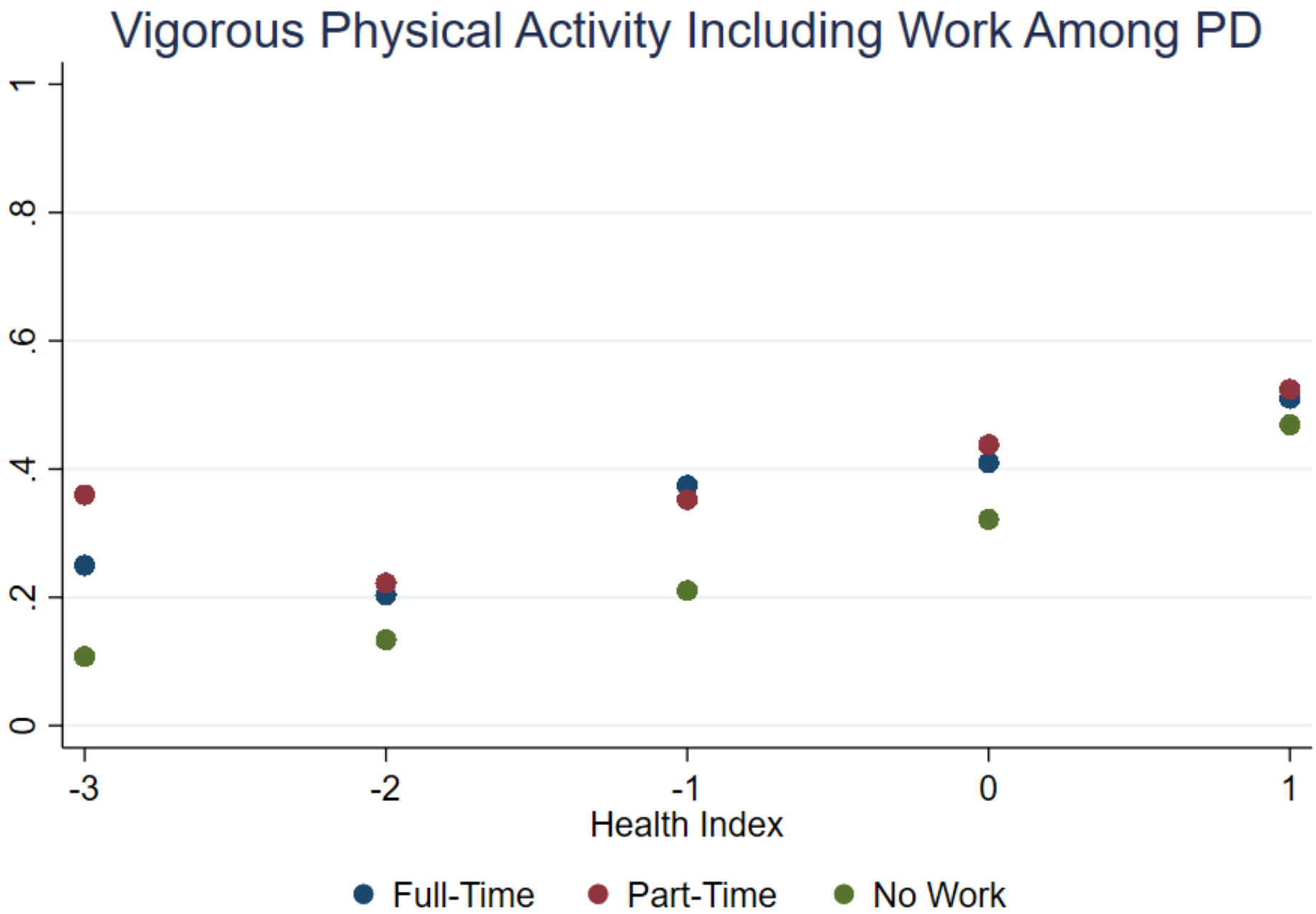
Health Index Dynamics

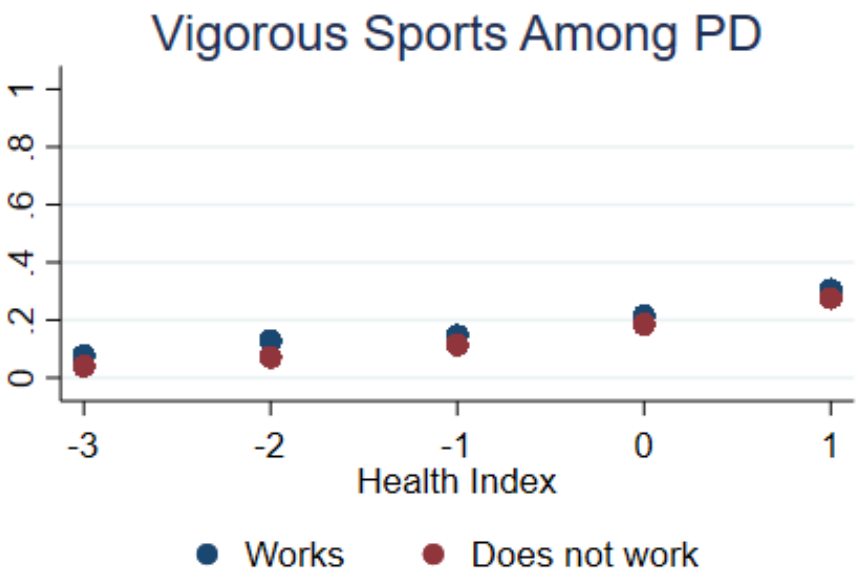


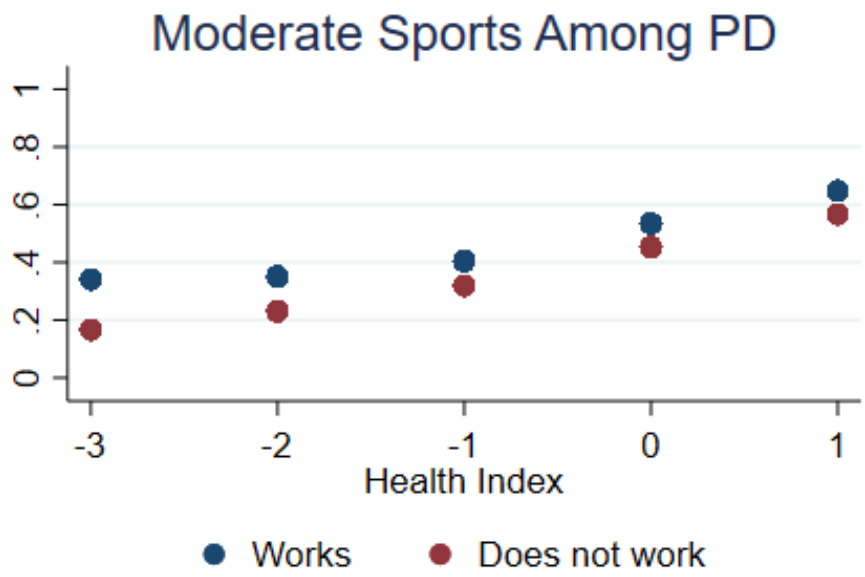


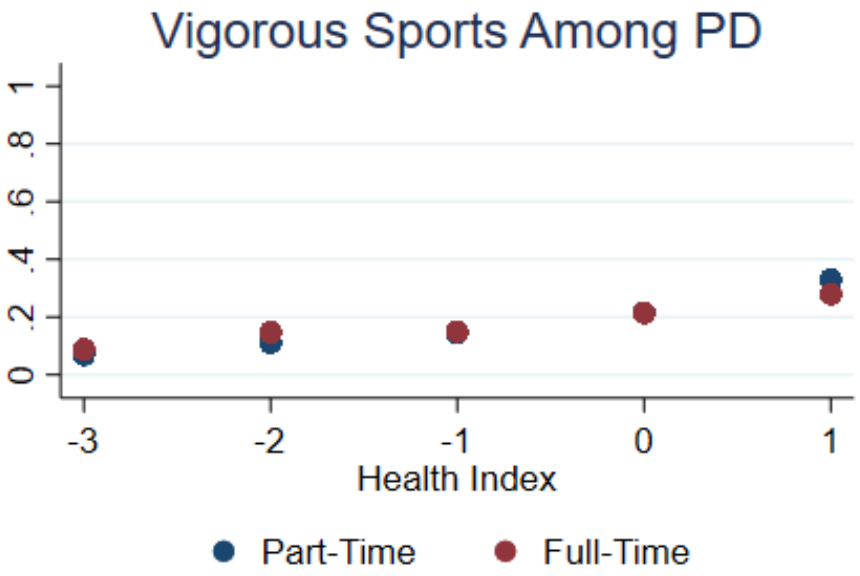


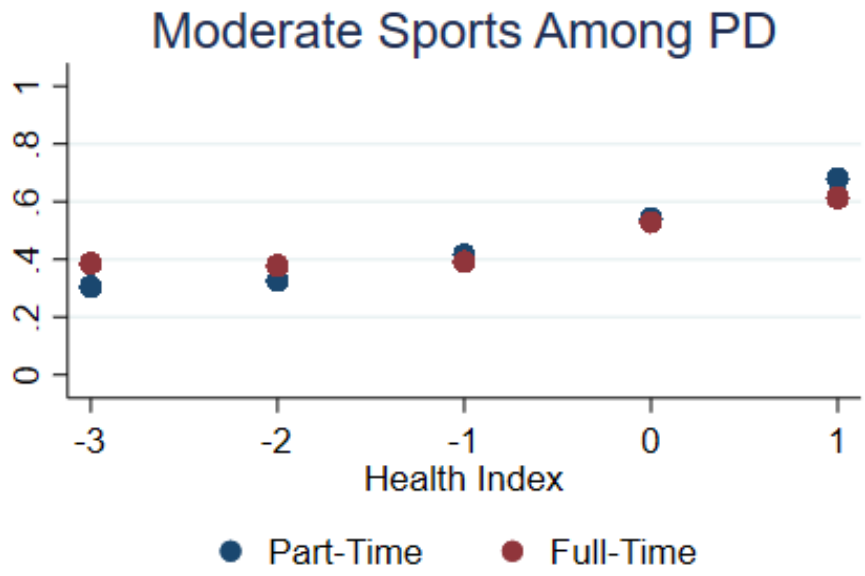


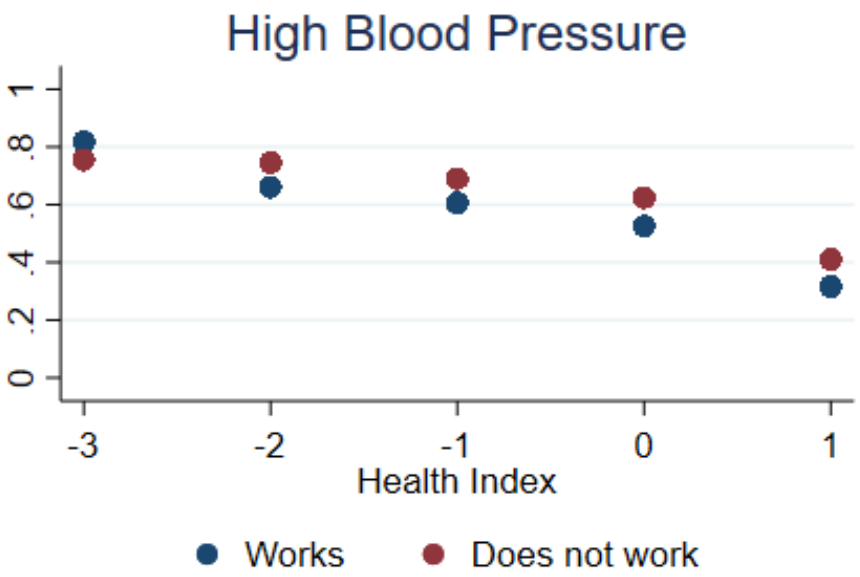

Vigorous Physical Activity Including Work Among PD
0
.2
.4
.6
.8
1
-3
-2
-1
0
1
Health Index
Full-Time
Part-Time
No Work

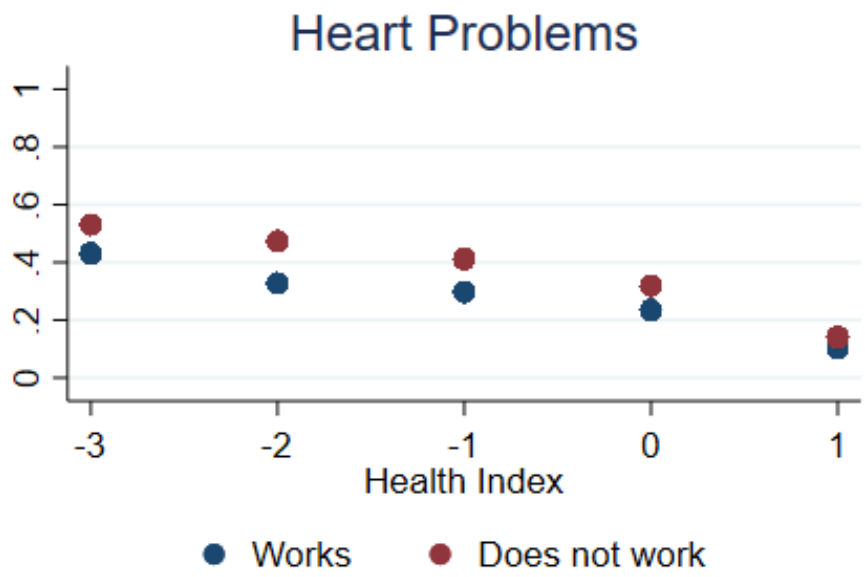

Vigorous Sports Among PD
0
.2
.4
.6
.8
1
-3
-2
-1
0
1
Health Index
Works
Does not work

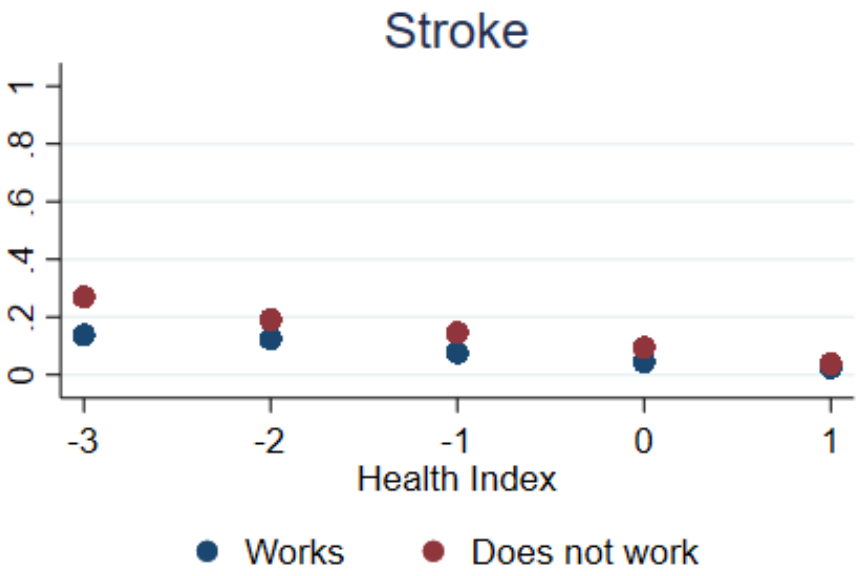

Moderate Sports Among PD
0
.2
.4
.6
.8
1
-3
-2
-1
0
1
Health Index
Works
Does not work

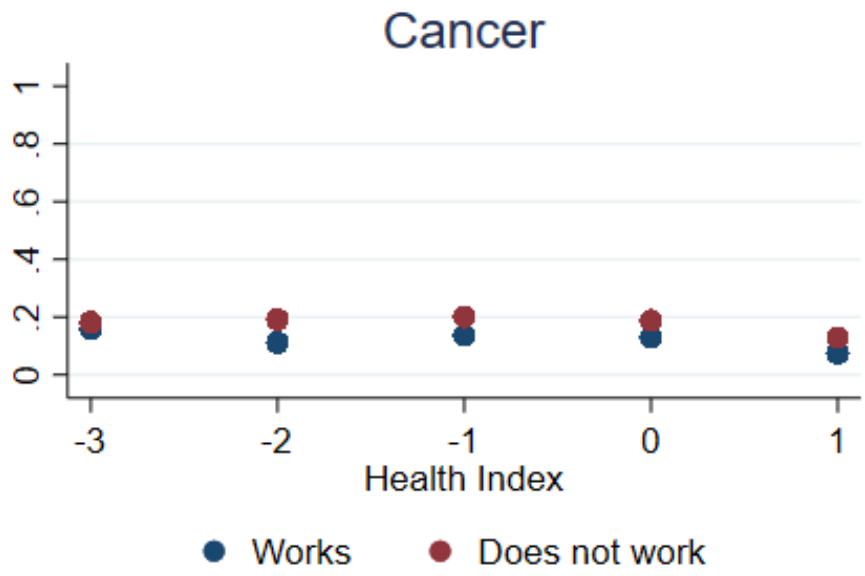

Vigorous Sports Among PD
0
.2
.4
.6
.8
1
-3
-2
-1
0
1
Health Index
Part-Time
Full-Time


Moderate Sports Among PD
0
.2
.4
.6
.8
1
-3
-2
-1
0
1
Health Index
Part-Time
Full-Time

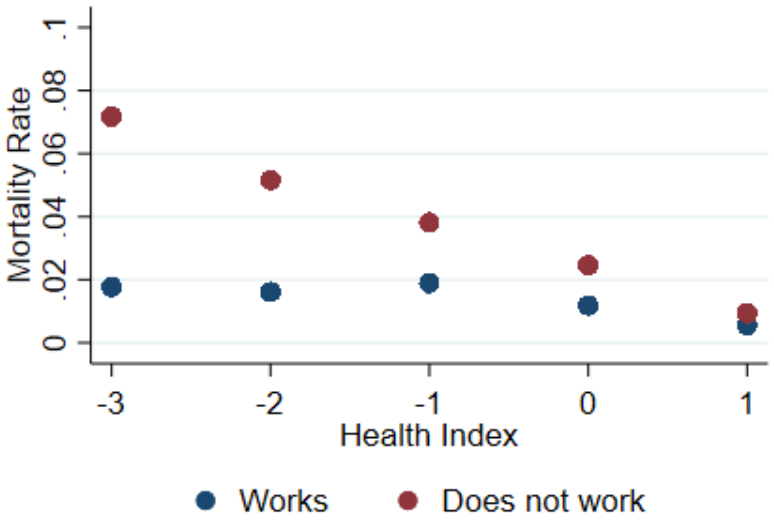

High Blood Pressure
0 .2 .4 .6 .8 1
-3 -2 -1 0 1
Health Index
Works
Does not work

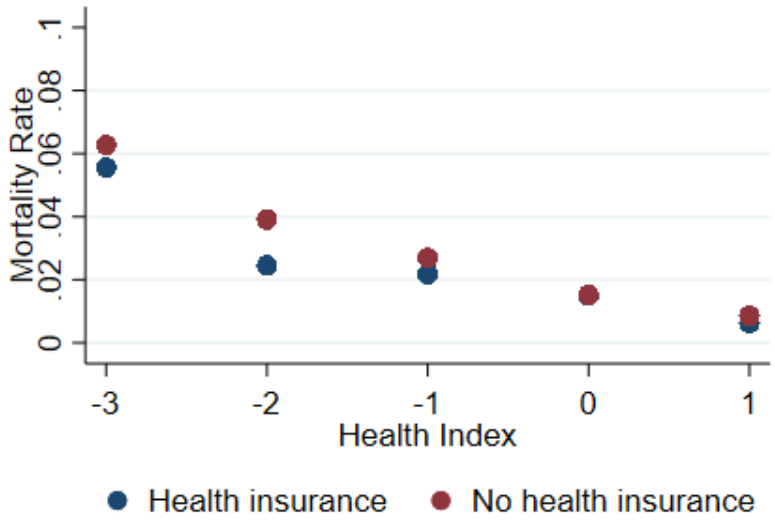

Heart Problems
0 .2 .4 .6 .8 1
-3 -2 -1 0 1
Health Index
Works
Does not work

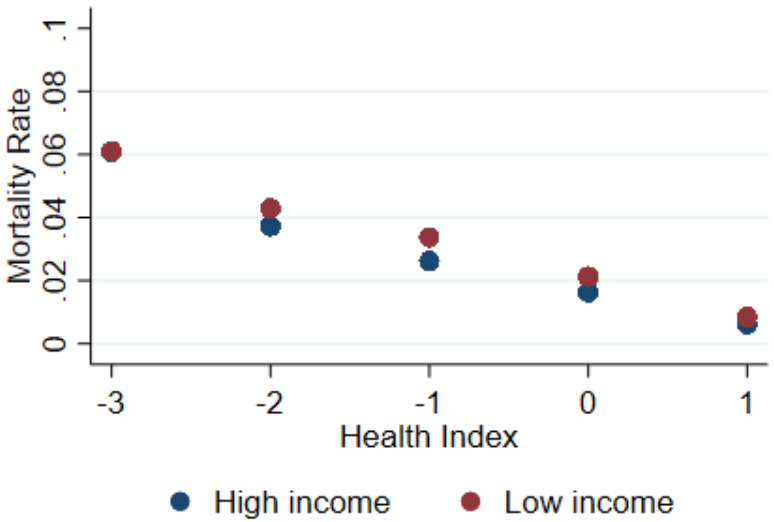

Stroke
0 .2 .4 .6 .8 1
-3 -2 -1 0 1
Health Index
Works
Does not work

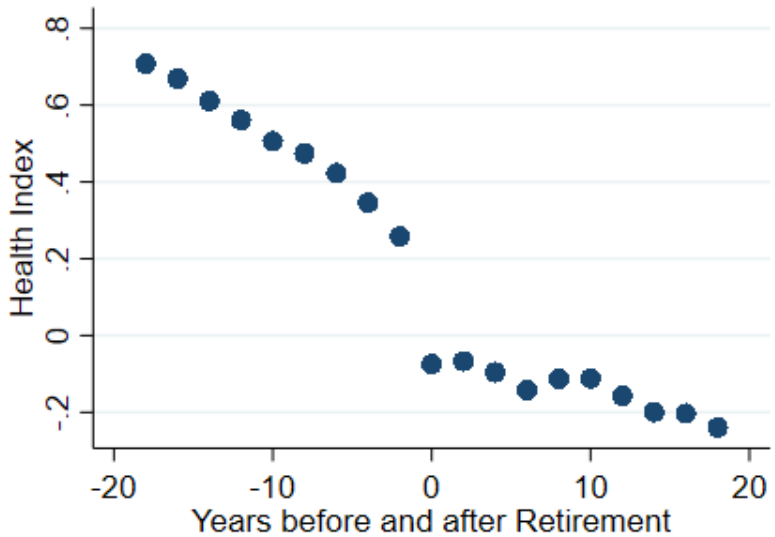

Cancer
0 .2 .4 .6 .8 1
-3 -2 -1 0 1
Health Index
Works
Does not work

Mortality Rates and Health Index



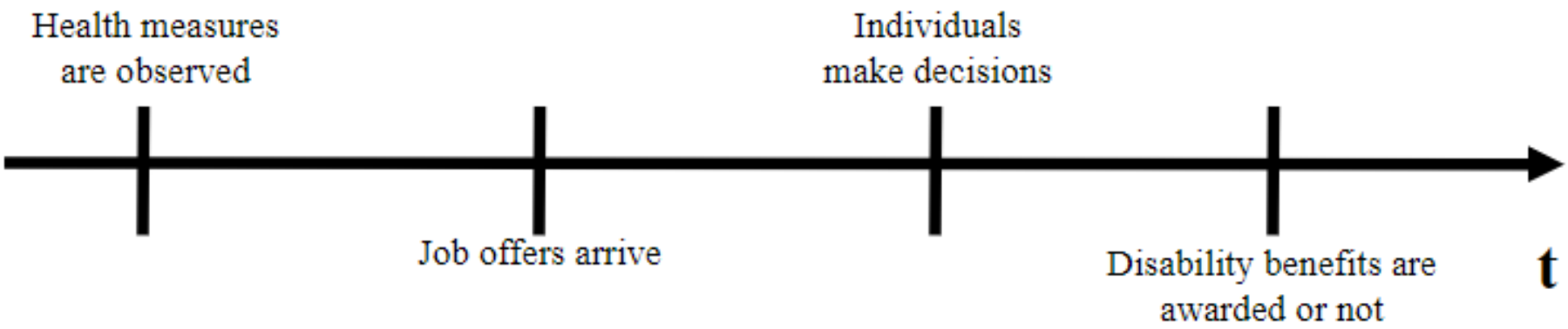






Model

Timing and Initial Conditions



Individuals make decisions when they are between 51 and 70

The set of initial conditions, $\Omega^i_{t_0}$, consists of initial year of observation, t_0, age, $A^i_{t_0}$, disability , $D^i_{t_0}$, and SSDI recipiency statuses, $SSDI^i_{t_0}$, and average indexed monthly earnings (AIME), $AIME^i_{t_0}$, at the initial period t_0 for an individual j

After a successful application, SSDI benefits are received starting the next period

Model

Decisions of Agents and Health Measures

- Agents make decisions about:
  - Labor supply: full-time, $w_t^i = FT$, part-time, $w_t^i = PT$, no work, $w_t^i = NW$
  - Disability insurance benefits application, a_t^i:
    - $a_t^i = 1$, if an individual is eligible for full SSDI benefits and claims them
    - $a_t^i = 2$, if an individual is eligible for partial SSDI benefits and claims them
    - $a_t^i = 0$, otherwise
  - Social Security Old-age (SSOA) benefits receipt starting year, s_t^i
    - $s_t^i = 1$, if an individual is eligible for SSOA benefits and starts benefits this year
    - $s_t^i = 1$, otherwise
- Health measures
  - Disability status: fully disabled (FD), $D_t^i = 1$, partially disabled (PD), $D_t^i = 2$, not disabled, $D_t^i = 0$
  - Health index, H_t^i, a continuous measure of health

Model

Utility Function

Utility=log(Consumption)(Marginal utility of consumption) +

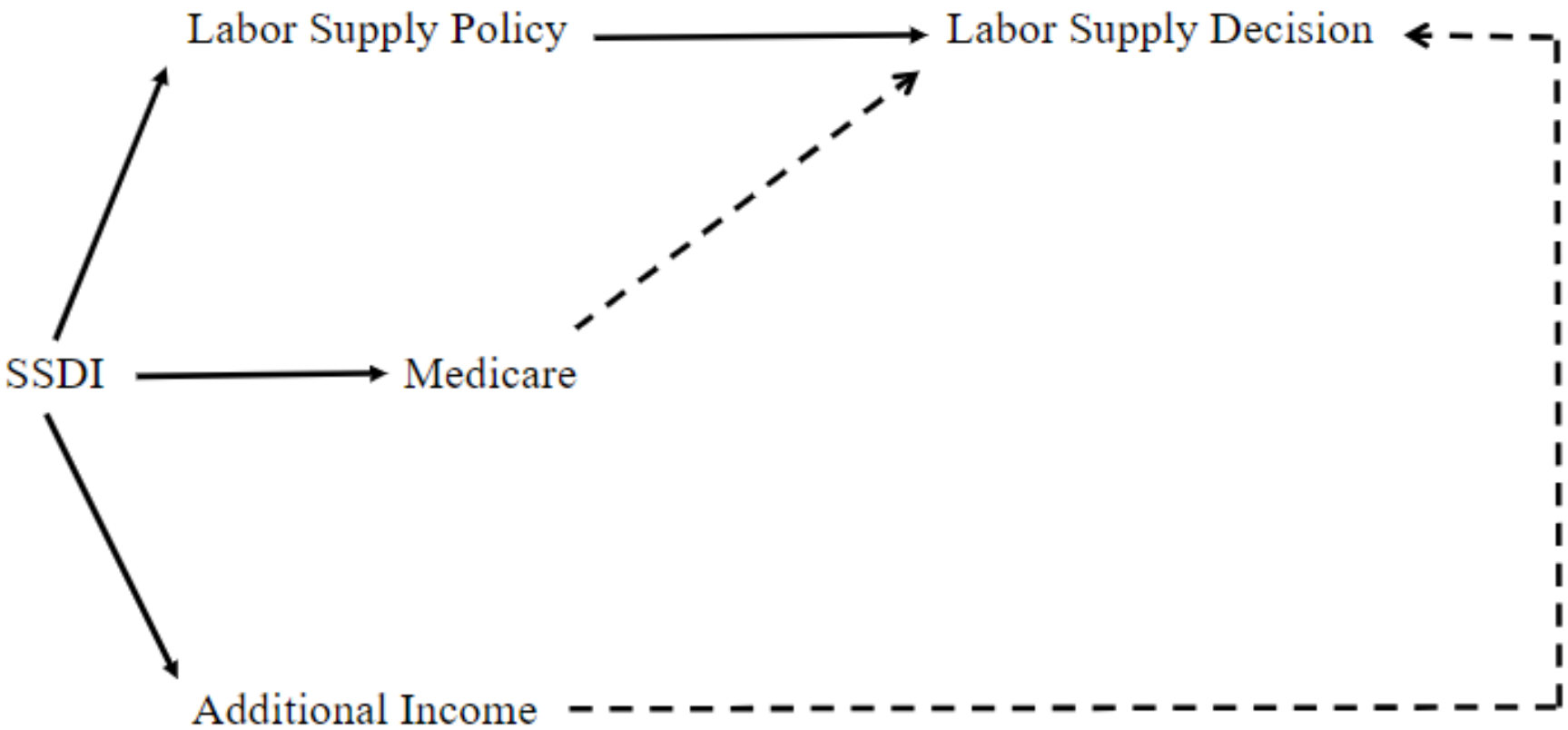
+ Utility of employment transitions +

+ Utility of SSDI application by disability and SSOA statuses,

All utilities are the sums of a constant and a coefficient times the health index

Model

SSDI and Labor Supply Decision



Model

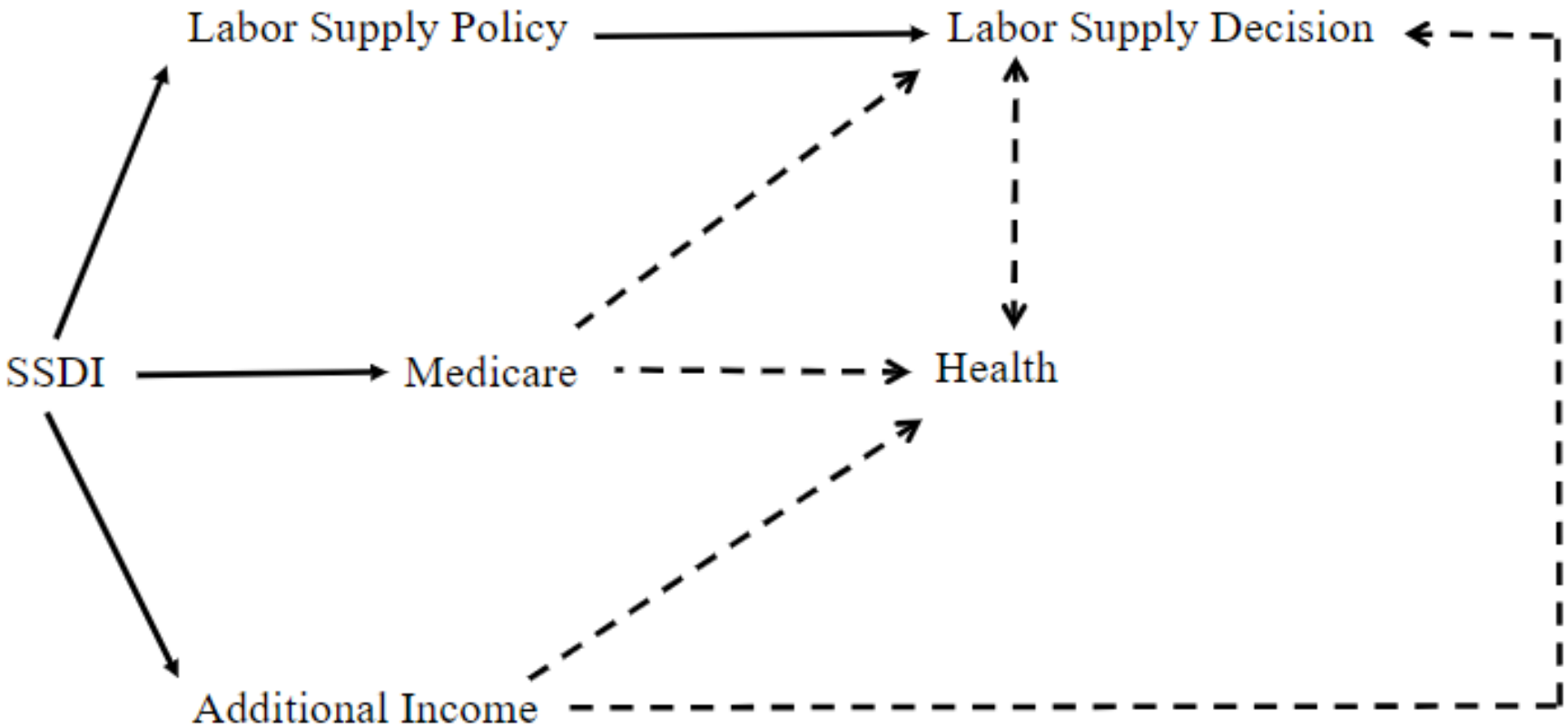
SSDI and Labor Supply Decision

SSDI affects labor supply decisions through

- restrictions on earnings: to be eligible for full SSDI, agents must not work $work_t^i$=0
- additional income: Social Security benefits, $SSB_t^i = SSB(SSDI_t^i, AIME_t^i, t)$, depend on
  - Social Security Administration decision on the application, $SSDI_t^i$
  - Average Indexed Monthly Earnings, $AIME_t^i$
  - Current year, t

Model

Labor Supply Decision and Health



Model

Health measures

Mortality rate, $M^i_{t+1}(\cdot)$, disability status, $D^i_{t+1}(\cdot)$, health index, $H^i_{t+1}(\cdot)$, are functions of previous

- labor supply decisions, w^i_t, by disability status, D^i_t, and education, E^i_t
- health insurance: I^i_t
- consumption: C^i_t
- disability status: D^i_t
- health index: H^i_t
- age: A^i_t
- college education: E^i_t

Model

Health measures

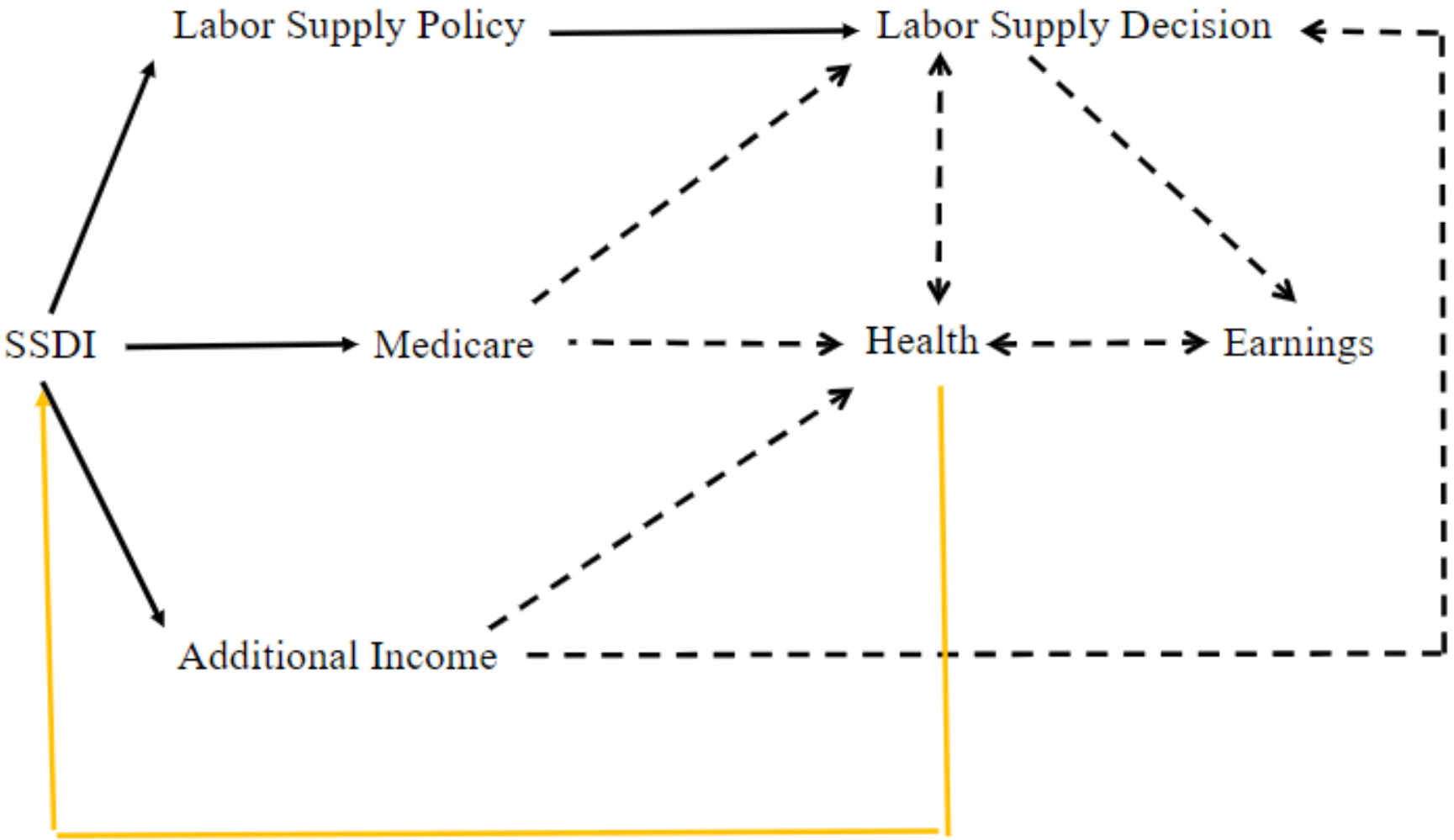
The effects of labor supply (w_t^i) on mortality rate, $M_{t+1}^i(\cdot)$, disability status, $D_{t+1}^i(\cdot)$, and health index, $H_t^i(\cdot)$, are β_t^{wli}, where $w \in \{FT, PT, NW\}$ and $l \in \{M, D, H\}$

These effects are heterogeneous for the partially disabled:

$$\beta_{it}^{wl} = \gamma^{wl} + \epsilon_{it}^{wl},$$

where γ^{wl} is a constant and ϵ_{it}^{wl} is i.i.d. normal shock

Model


Labor Supply Policy
Labor Supply Decision
SSDI
Medicare
Health
Earnings
Additional Income

Model

The probability of SSDI award, $\pi_t^{ai}(D_t^i, H_t^i, A_t^i, E_t^i)$, is determined based on a logistic function of

- disability status: D_t^i
- health index: H_t^i
- age: A_t^i
- college education: E_t^i

The probability of health insurance enrollment, $I_{t+1}^i(w_t^i, C_t^i, D_t^i, H_t^i, A_t^i, E_t^i)$, depends on the same variables as health outcomes

The earnings,$W_t^i(w_t^i, D_t^i, H_t^i, A_t^i, E_t^i, \epsilon_t^{Wi})$, are simulated as a linear combination of the same inputs as health outcomes, excluding consumption and health insurance, but including an i.i.d. normal shock, ϵ_t^{Wi}

Model Solution

The model is solved numerically by backward recursion:

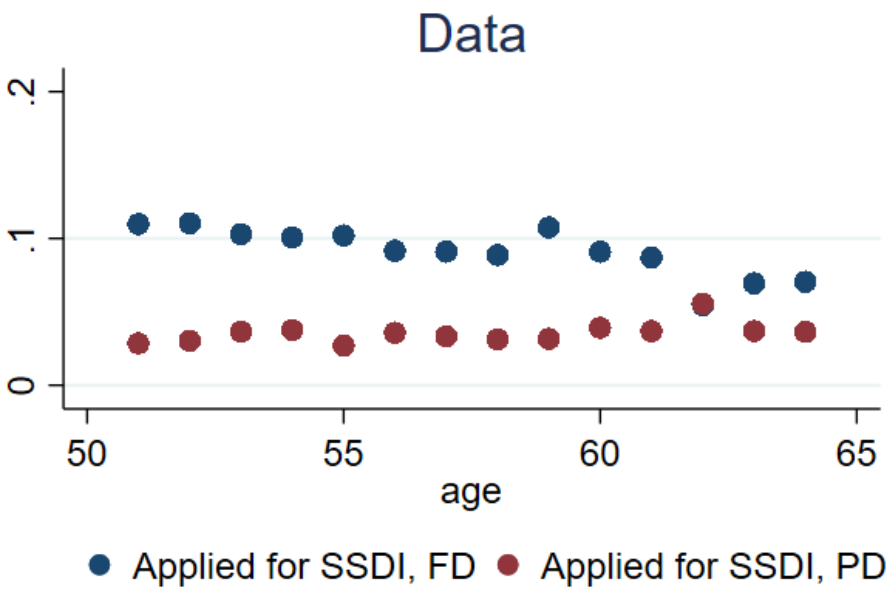
- At age $t_{max} - 1$, an individual makes optimal work and SS application decisions to maximize $V_{t_{max}-1}$
- The expected value of $V_{t_{max}-1}$, $EV_{t_{max}-1}$, is approximated by Monte Carlo integration, i.e., by taking draws from the shock vector distribution and averaging. 10 Monte Carlo draws for health and earnings shocks are used
- The calculations are done at a set of all possible deterministic state points (health index and AIME values are discretized into 4 values)
- This procedure is repeated at age $t_{max} - 2$

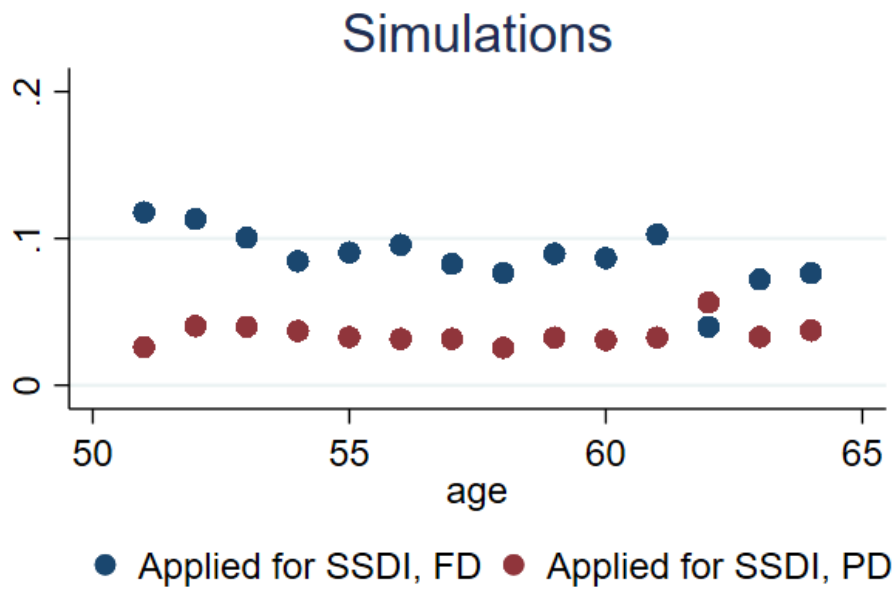
The approximations of EV_t are the solution to the optimization problem

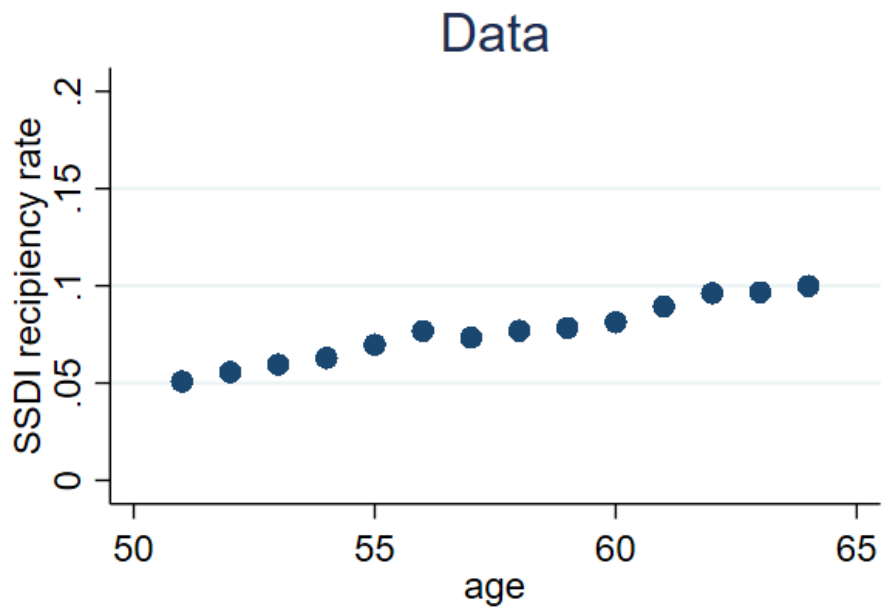
Parameter Estimation

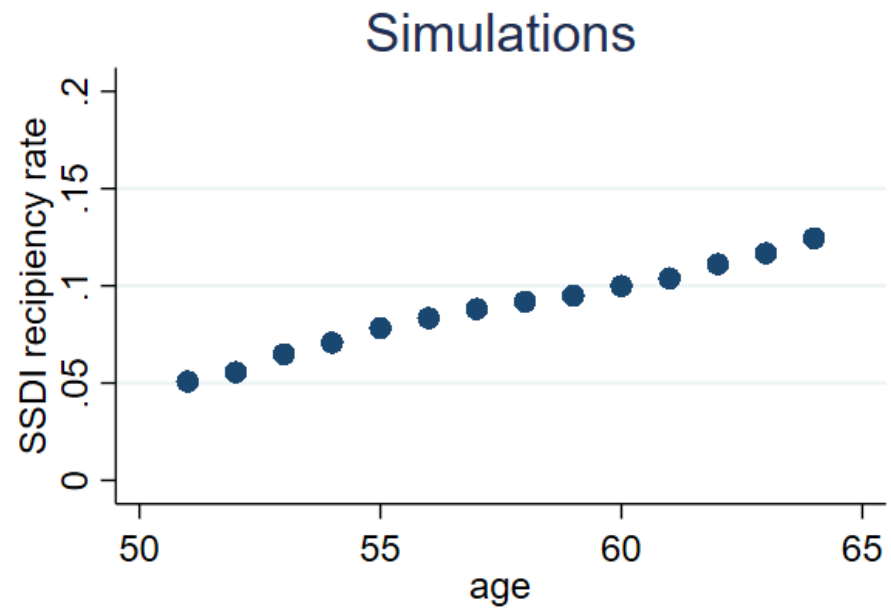
- The parameters are estimated based on the method of simulated moments

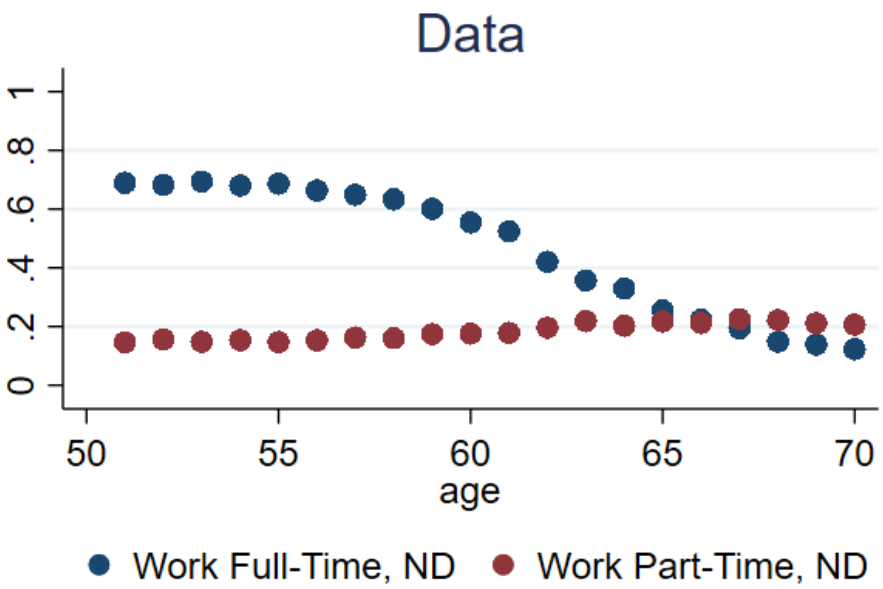
- 160 model parameters are estimated using 287 moments pertaining to:
  - Full-time/part-time employment levels by disability status at each age
  - SSDI application rates by disability status at each age
  - SSDI recipiency rates by age, disability status, and education
  - Shares of partially or fully disabled respondents, their mortality, wage, and health insurance enrollment by age, employment, disability, and education statuses

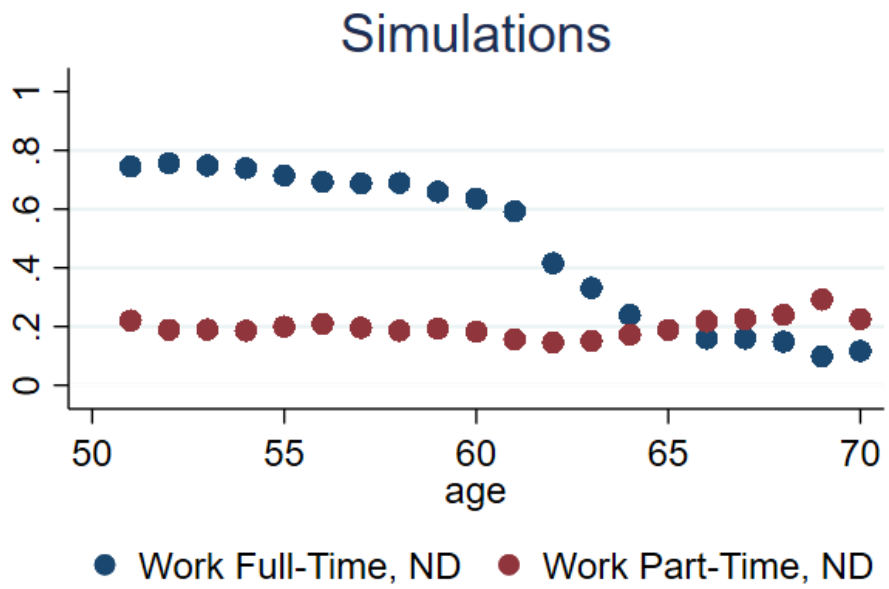

Data
0
.1
.2
50
55
60
65
age
Applied for SSDI, FD
Applied for SSDI, PD

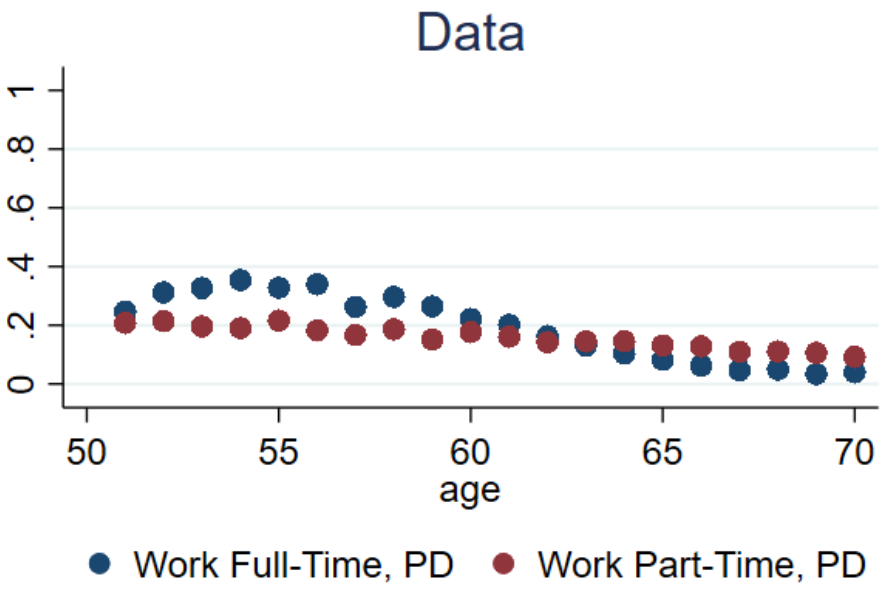

Simulations
0
.1
.2
50
55
60
65
age
Applied for SSDI, FD
Applied for SSDI, PD

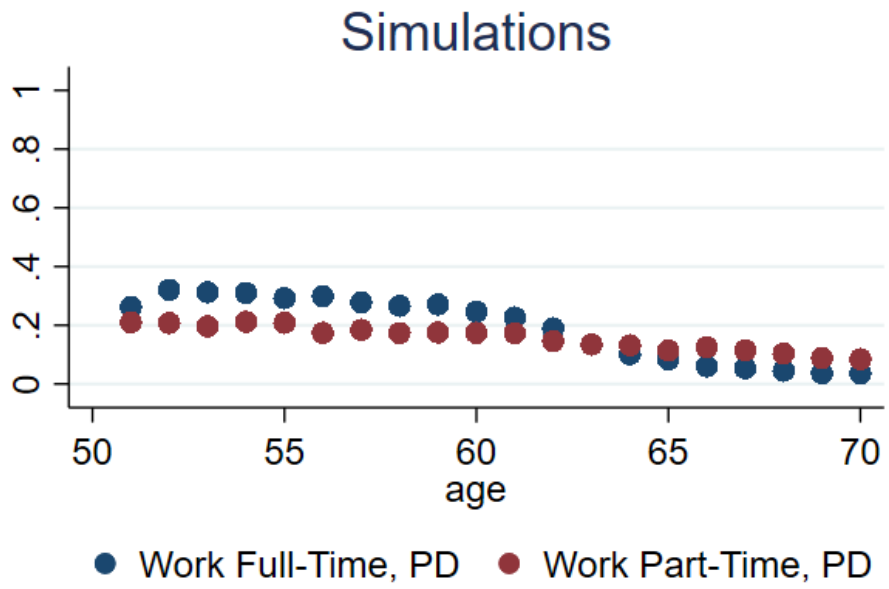

Data
SSDI recipiency rate
0
.05
.1
.15
.2
50
55
60
65
age

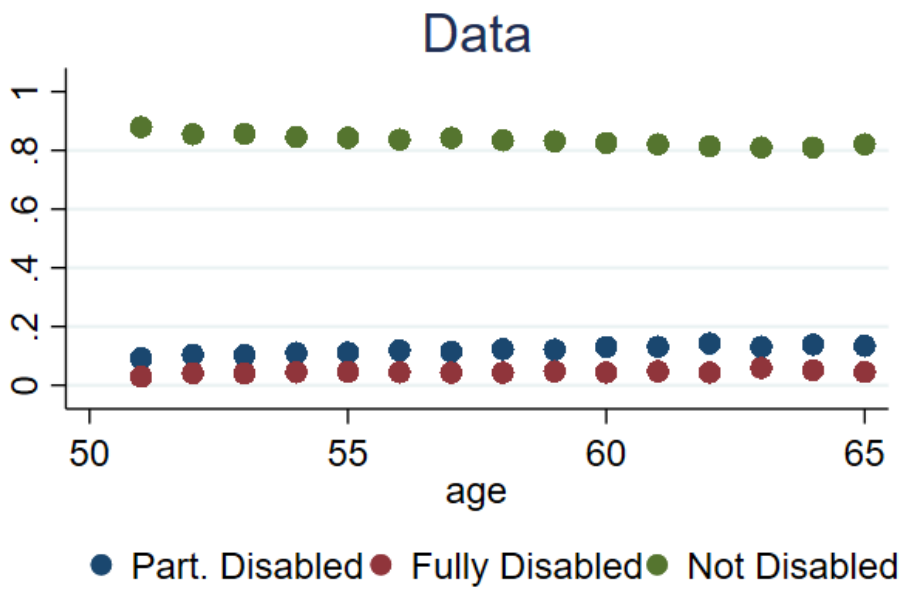

Simulations
SSDI recipiency rate
0
.05
.1
.15
.2
50
55
60
65
age

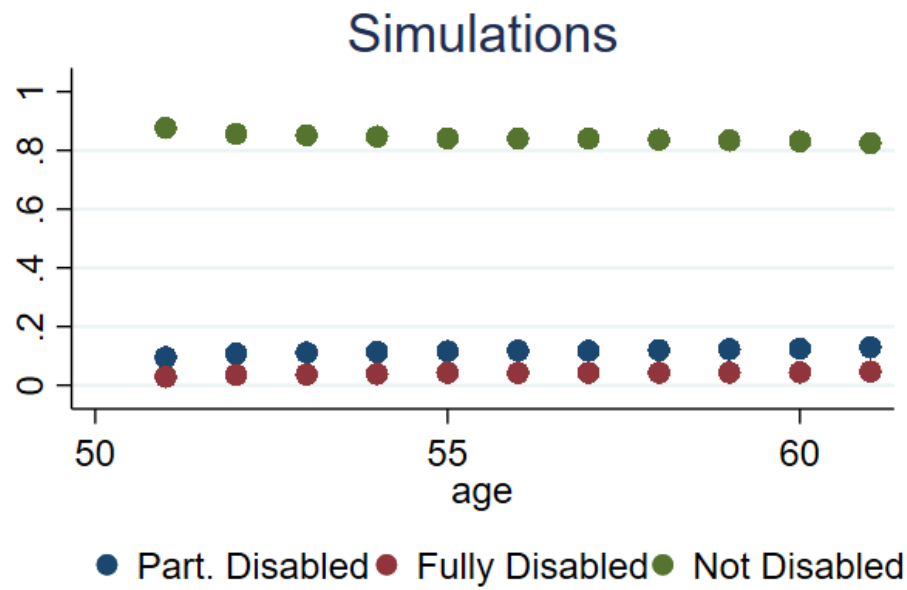

Data
0 .2 .4 .6 .8 1
50 55 60 65 70
age
Work Full-Time, ND
Work Part-Time, ND

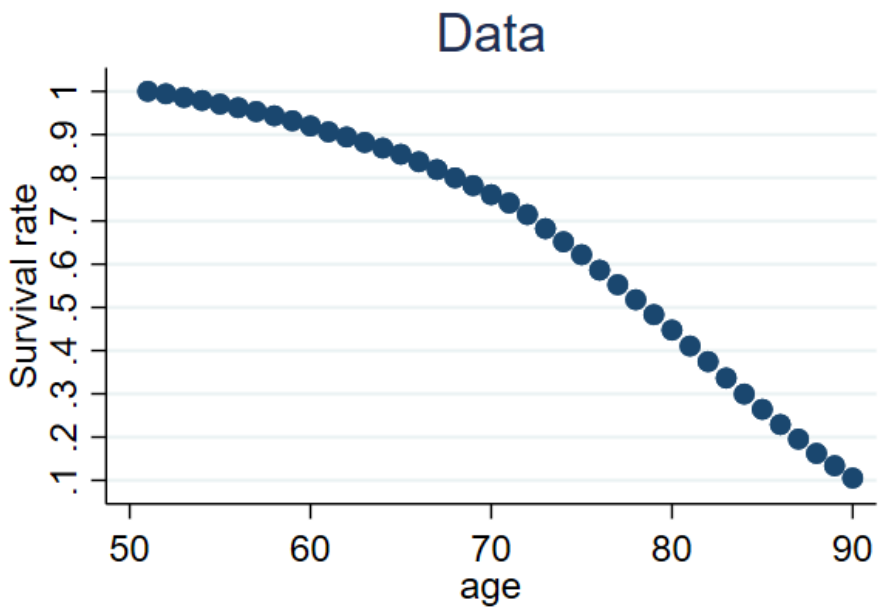

Simulations
0 .2 .4 .6 .8 1
50 55 60 65 70
age
Work Full-Time, ND
Work Part-Time, ND

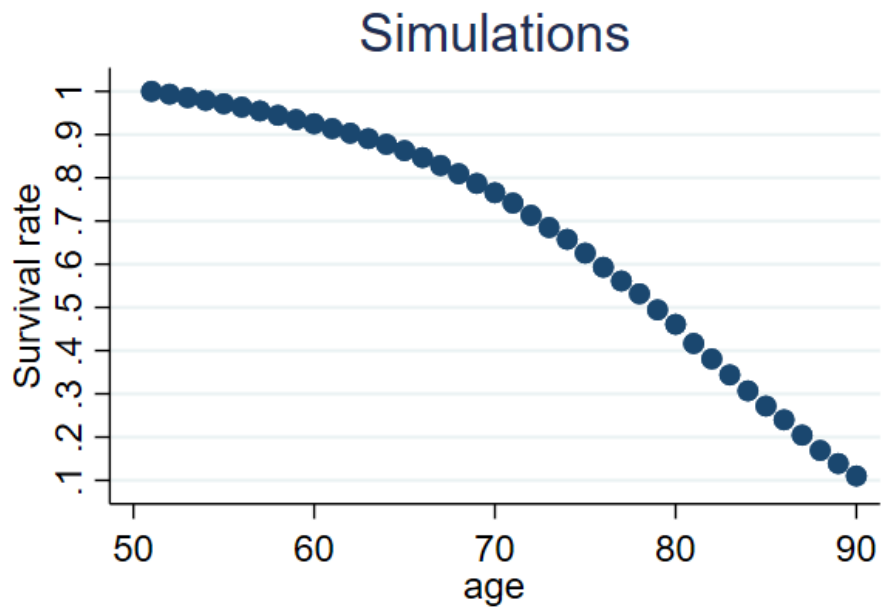

Data
0 .2 .4 .6 .8 1
50 55 60 65 70
age
Work Full-Time, PD
Work Part-Time, PD

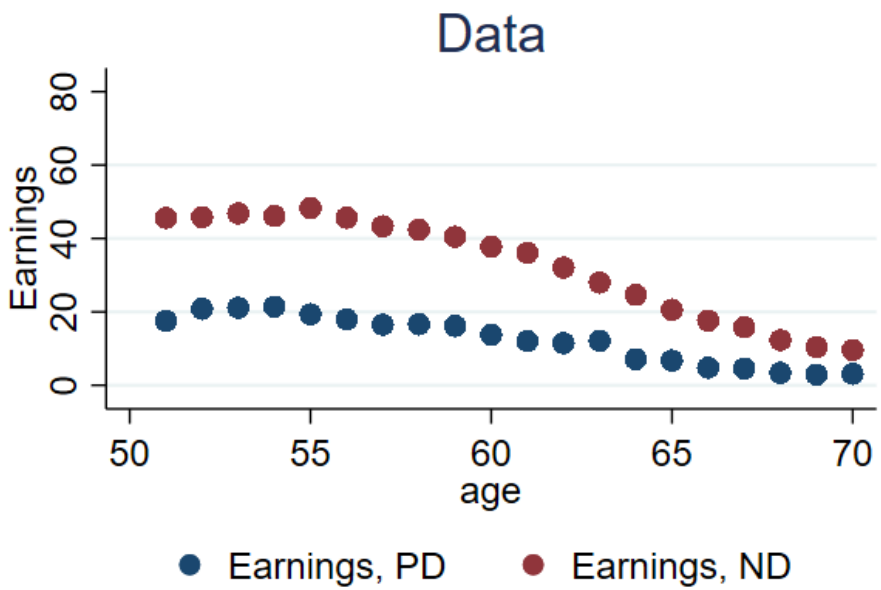

Simulations
0 .2 .4 .6 .8 1
50 55 60 65 70
age
Work Full-Time, PD
Work Part-Time, PD

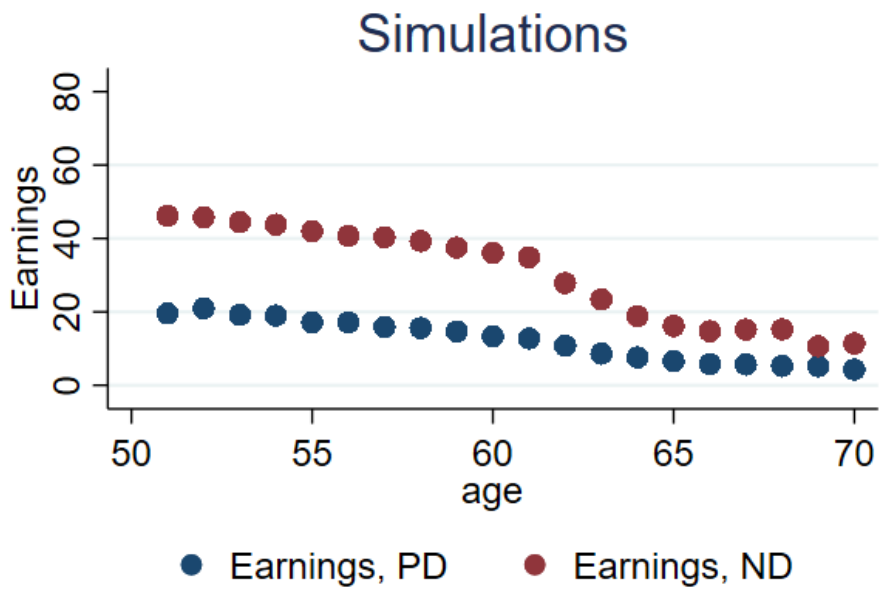

Data
0 .2 .4 .6 .8 1
50 55 60 65
age
Part. Disabled
Fully Disabled
Not Disabled

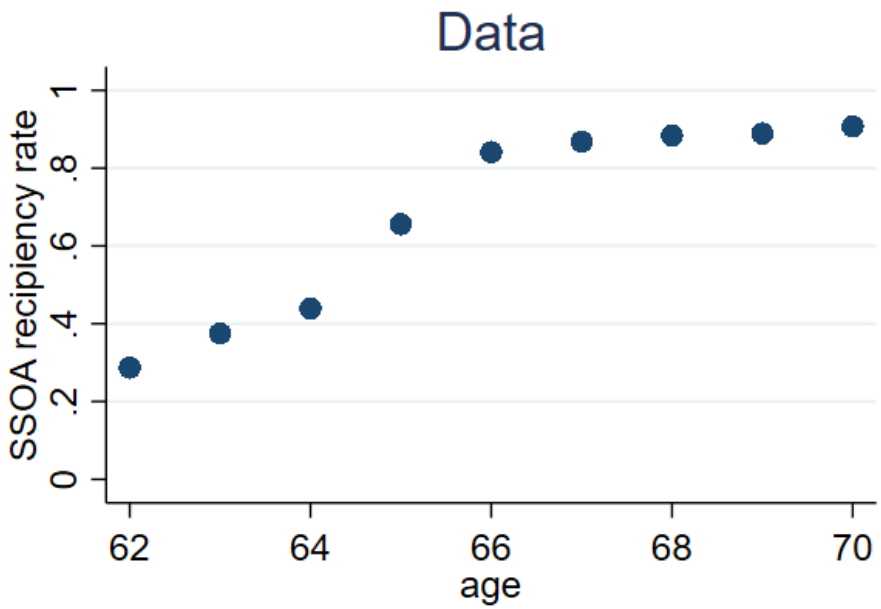

Simulations
0 .2 .4 .6 .8 1
50 55 60
age
Part. Disabled
Fully Disabled
Not Disabled

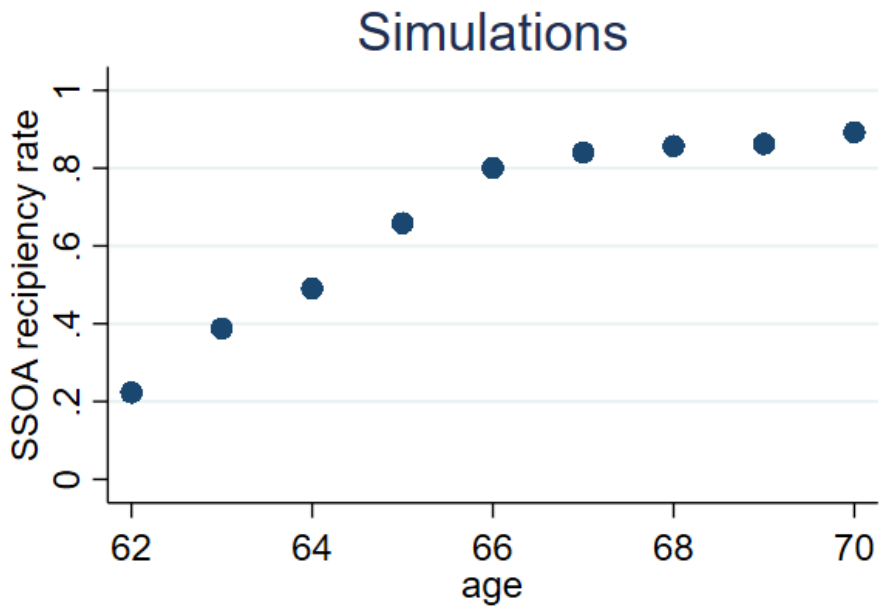

Data
Survival rate
.1 .2 .3 .4 .5 .6 .7 .8 .9 1
50 60 70 80 90
age


Simulations
Survival rate
.1 .2 .3 .4 .5 .6 .7 .8 .9 1
50 60 70 80 90
age


Data
Earnings
0
20
40
60
80
50
55
60
65
70
age
Earnings, PD
Earnings, ND


Simulations
Earnings
0
20
40
60
80
50
55
60
65
70
age
Earnings, PD
Earnings, ND


Data
SSOA recipiency rate
0
.2
.4
.6
.8
1
62
64
66
68
70
age


Simulations
SSOA recipiency rate
0
.2
.4
.6
.8
1
62
64
66
68
70
age

Mortality probability (M)		
	AME of γ^{MJ},%	AAME of ϵ_{it}^{MJ},%
Full time work	-2.409282	.2707464
Part time work	-1.471762	.2931913
	AME,%	
Consumption	-.0050716	
Health insurance	-.0000634	
Partial disability	2.569958	
Full disability	2.0878	
Health index	-.2482256	
Age	.0628084	

Notes: Health effects of full-time (FT) and part-time (PT) work are heterogeneous for partially disabled (PD): $\beta_{it}^{MJ} = \gamma^{MJ} + \epsilon_{it}^{MJ}$, $\epsilon_{it}^{MJ} \overset{\text{iid}}{\sim} N(0, \sigma_{MJ}^2), J \in \{FT, PT\}$, AAME — average absolute marginal effect of ϵ_{it}^{MJ}, AME — average marginal effect, consumption is in tens of thousands of 2018 US dollars.

Partial disability probability (P)		
	AME of γ^{PJ},%	AAME of ϵ_{it}^{PJ},%
Full time work	-7.127741	.5382868
Part time work	.5819776	4.622073
	AME,%	
Consumption	-.0096583	
Health insurance	-4.510421	
Partial disability	26.01821	
Full disability	.003477	
Health index	-96.46203	
Age	.1877393	

Notes: Health effects of full-time (FT) and part-time (PT) work are heterogeneous for partially disabled (PD): $\beta_{it}^{PJ} = \gamma^{PJ} + \epsilon_{it}^{PJ}$, $\epsilon_{it}^{PJ} \overset{\text{iid}}{\sim} N(0, \sigma_{PJ}^2), J \in \{FT, PT\}$, AAME — average absolute marginal effect of ϵ_{it}^{PJ}, AME — average marginal effect, consumption is in tens of thousands of 2018 US dollars.

Full disability probability (F)		
	AME of γ^{FJ},%	AAME of ϵ_{it}^{FJ},%
Full time work	-12.41317	.3865917
Part time work	.258383	4.878659
	AME,%	
Consumption	-.0000672	
Health insurance	-2.871482	
Partial disability	.0067609	
Full disability	16.31637	
Health index	-20.5101	
Age	.041951	

Notes: Health effects of full-time (FT) and part-time (PT) work are heterogeneous for partially disabled (PD): $\beta_{it}^{FJ} = \gamma^{FJ} + \epsilon_{it}^{FJ}$, $\epsilon_{it}^{FJ} \overset{\text{iid}}{\sim} N(0, \sigma_{FJ}^2), J \in \{FT, PT\}$, AAME — average absolute marginal effect of ϵ_{it}^{FJ}, AME — average marginal effect, consumption is in tens of thousands of 2018 US dollars.

Private health insurance logistic regression

Parameter	Estimate
Full-time work for non-disabled AME	42.55%
Full-time work for partially disabled AME	30.13%
Part-time work for non-disabled AME	22.52%
Part-time work for partially disabled AME	14.03%

Earnings (in 2018 $K) regression

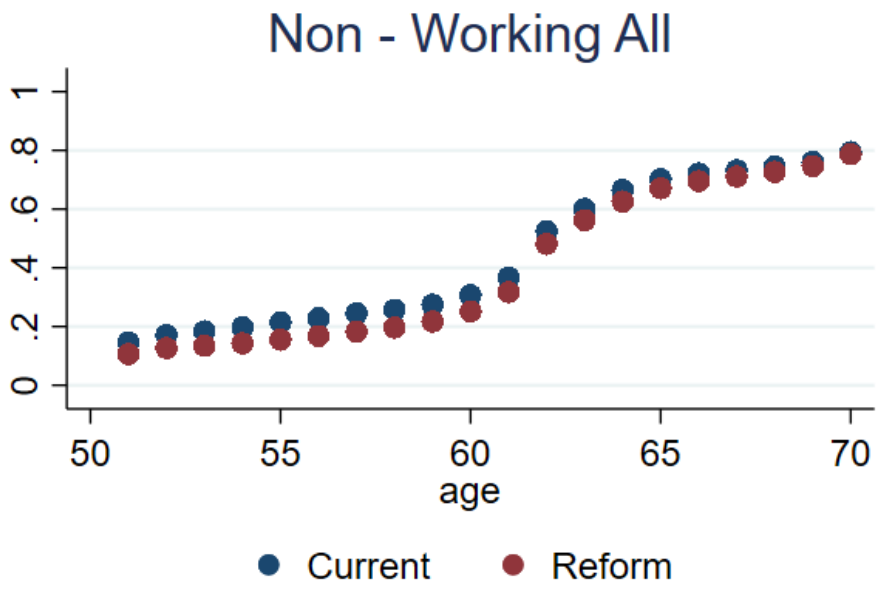
Parameter	Estimate
Full-time work for non-disabled	61.756
Full-time work for partially disabled	46.180
Part-time work for non-disabled	10.544
Part-time work for partially disabled	10.330

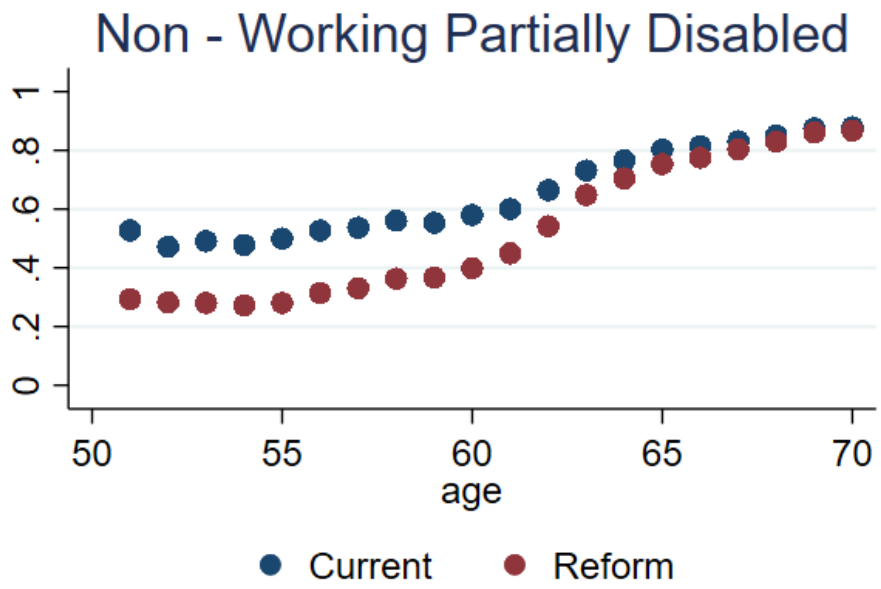
Counterfactual Partial Disability Insurance Reform

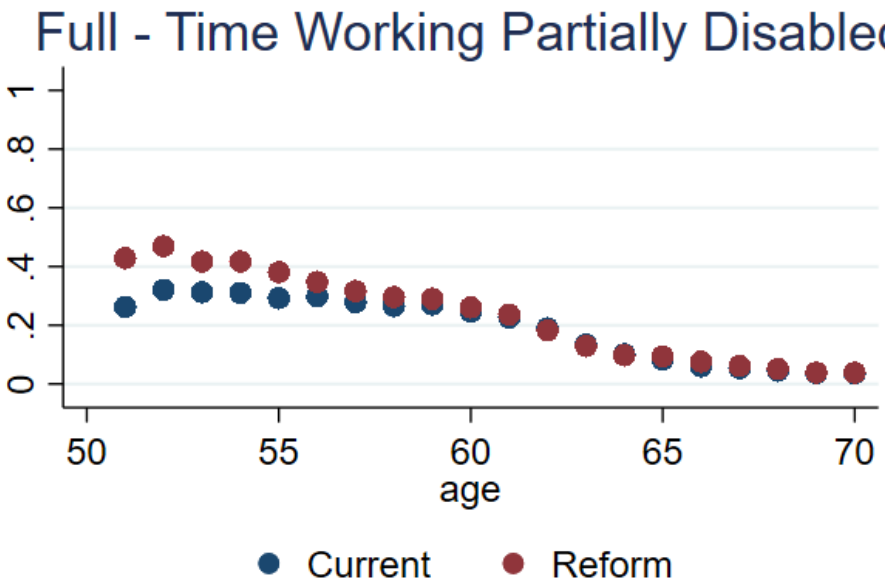
- As before, partially or fully disabled can apply for full disability insurance benefits
- Partially disabled can now apply for partial disability insurance benefits
- Partially disabled individuals applying for partial disability insurance benefits endure the same disutility as the fully disabled applying for fully disabled
- Partially disabled individuals applying for partial disability insurance (DI) benefits, on average, have the same probability of receiving partial DI benefits as the fully disabled applicants receiving full DI benefits

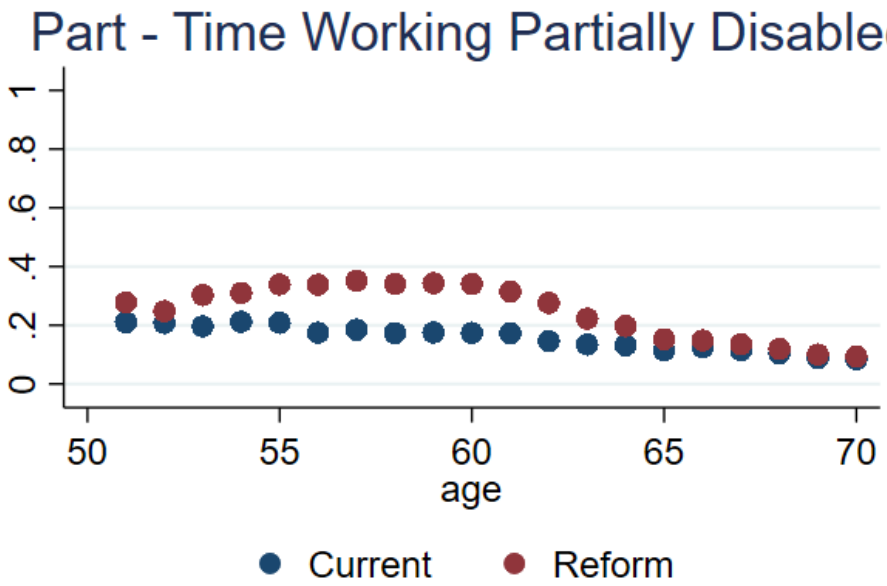
Counterfactual Partial Disability Insurance Reform

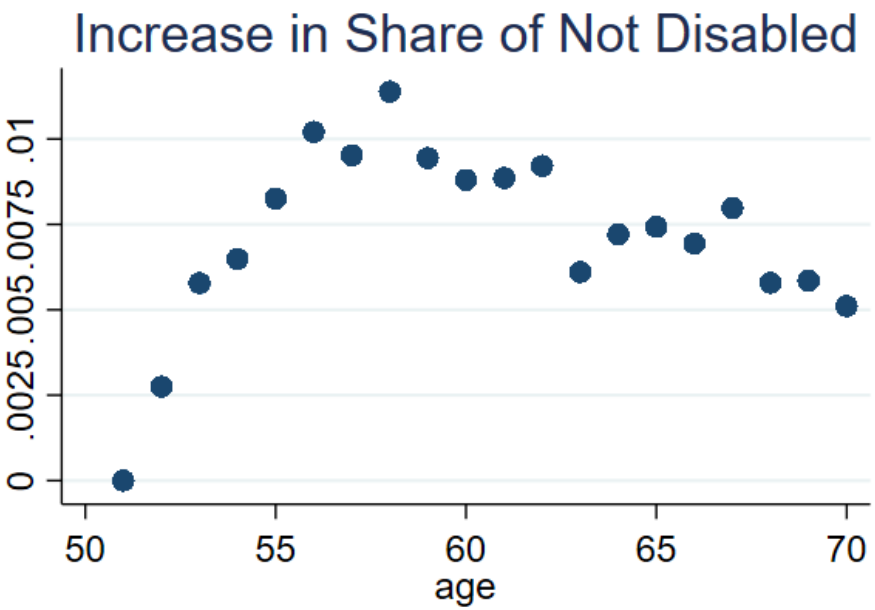
- Those who apply for and those who receive partial DI must continue working (either part-time or full-time)
- If earnings of a partially disabled person are above SGA amount (Substantial Gainful Activity amount, \$1,130/month in 2018), then their benefits are decreased by \$1 for each extra \$1
- Partial DI beneficiaries are not awarded Medicare
- If the partial disability insurance recipients claim they developed full disability and applied for full SSDI benefits, they are granted full SSDI benefits for the period of application

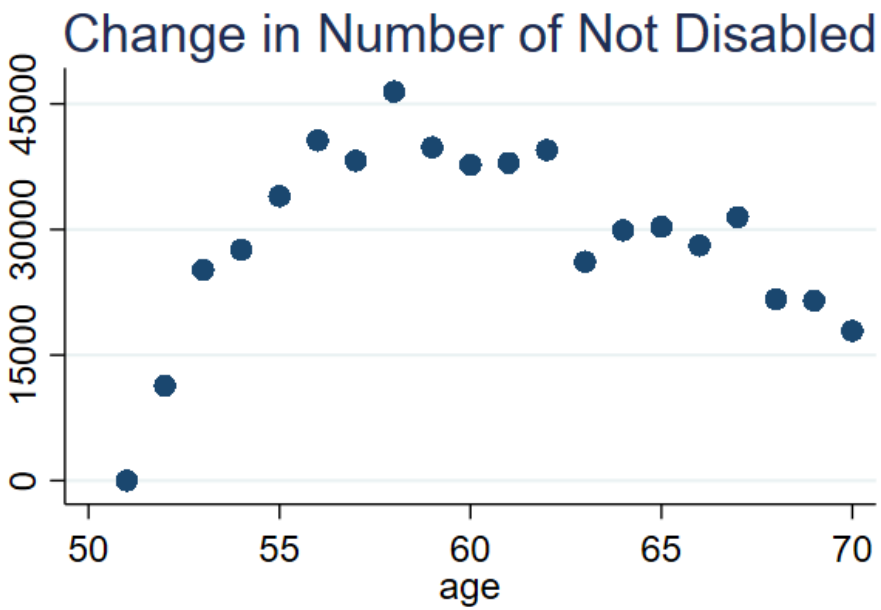

Non - Working All
0
.2
.4
.6
.8
1
50
55
60
65
70
age
Current
Reform

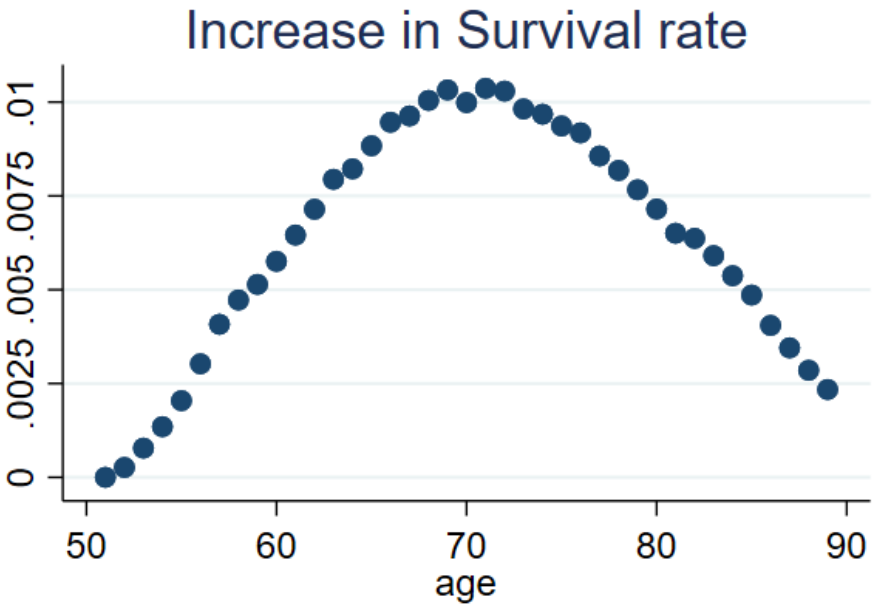

Non - Working Partially Disabled
0
.2
.4
.6
.8
1
50
55
60
65
70
age
Current
Reform

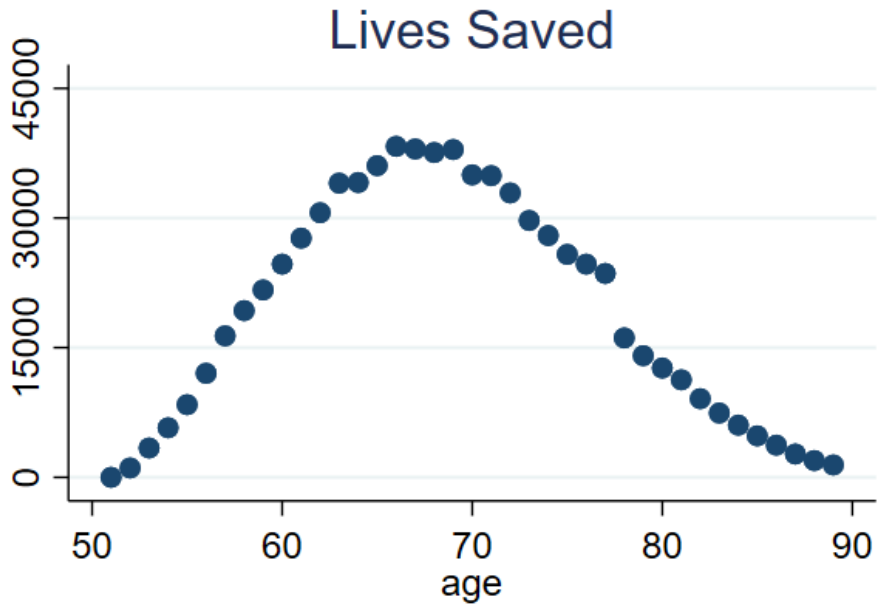

Full - Time Working Partially Disabled
0
.2
.4
.6
.8
1
50
55
60
65
70
age
Current
Reform


Part - Time Working Partially Disabled
0
.2
.4
.6
.8
1
50
55
60
65
70
age
Current
Reform


Increase in Share of Not Disabled
0
.0025
.005
.0075
.01
50
55
60
65
70
age


Change in Number of Not Disabled
0
15000
30000
45000
50
55
60
65
70
age


Increase in Survival rate
0
.0025
.005
.0075
.01
50
60
70
80
90
age


Lives Saved
0
15000
30000
45000
50
60
70
80
90
age

Alternative Versions of Partial Disability Insurance Reform

Alternative reforms with different parameters directly related to the channels of health effects of disability insurance (income, health insurance, and labor supply):

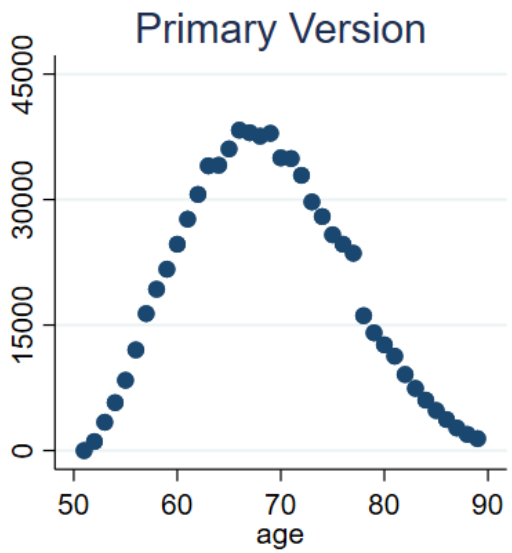
- Partial DI benefits are taxes that the partially disabled pay
- Partial DI recipients are eligible for early access to Medicare after a two-year waiting period
- Work is not required for benefits

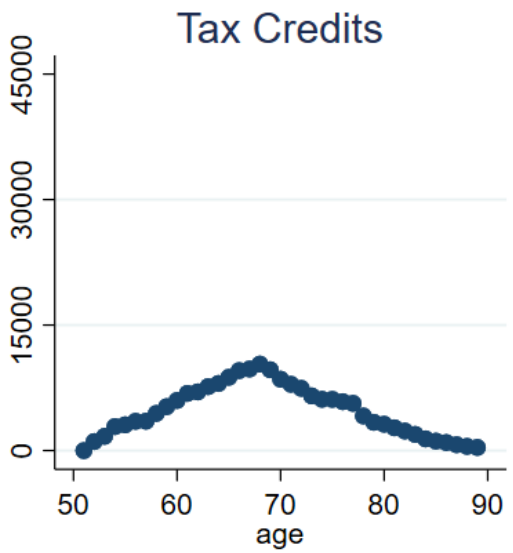
Alternative Versions of Partial Disability Insurance Reform

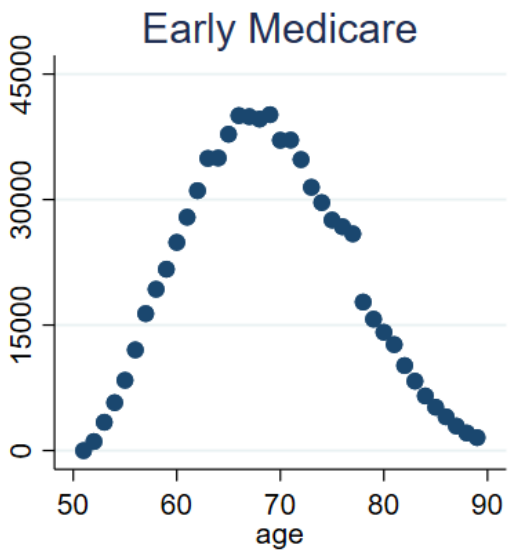
Alternative reforms with differences in the partial DI application process:

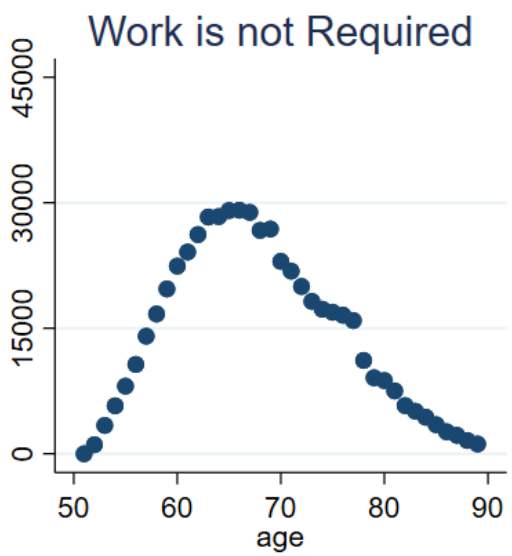
- No utility cost of applying for partial disability insurance benefits
- Receiving partial disability insurance benefits is as difficult as receiving full disability insurance benefits for the partially disabled

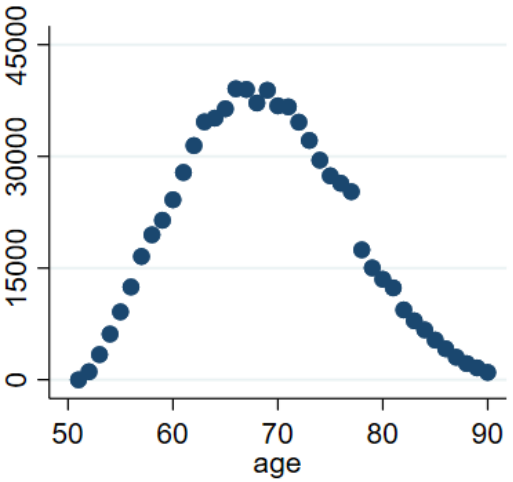
Number of Lives Saved

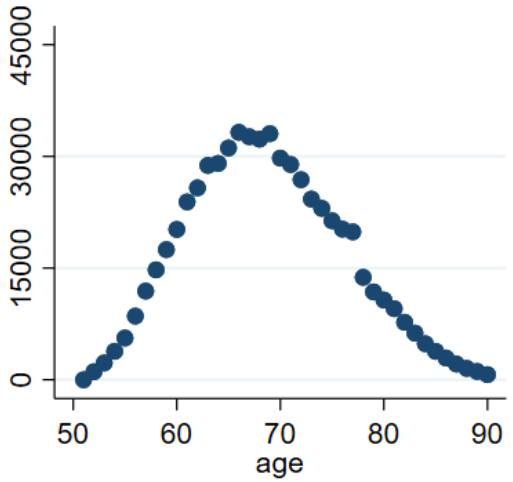












Changes in Decisions under 6 Alternatives

Partial disability insurance beneficiaries:

- switchers from full to partial disability insurance programs
- partially disabled who did not apply for full disability insurance benefits but chose to apply for partial disability insurance benefits (induced entry)

Reform	Life-Years	Switchers	New Applicants
Primary Version	753,594	72%	115%
Tax Credits	186,197	13%	37%
Early Medicare	791,644	72%	115%
Work is not Required	562,647	87%	196%
No Application Disutility	781,756	75%	666%
Low Award Probability	626,671	69%	38%

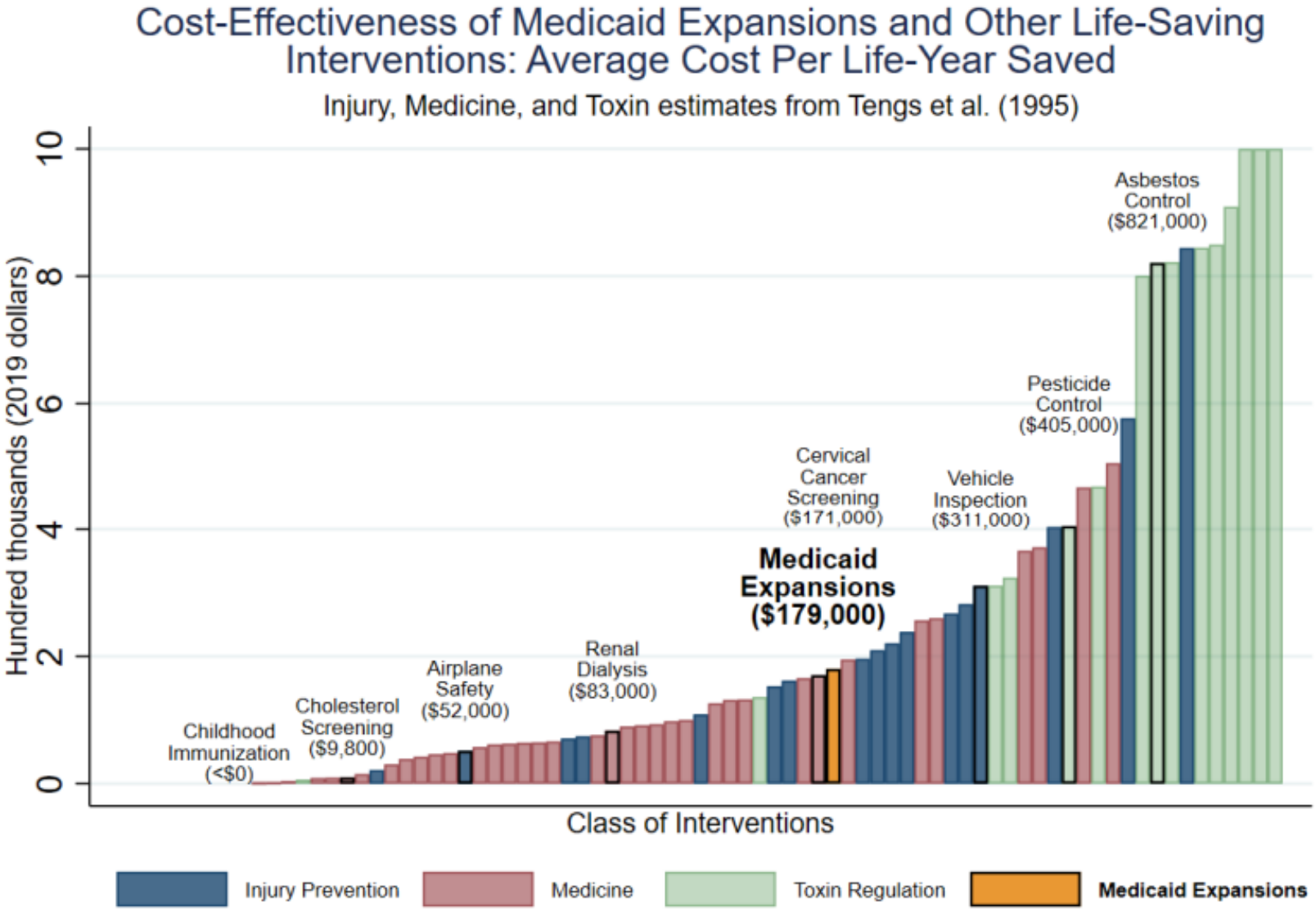
Costs and Benefits of 6 Alternatives

Reform	Life-Years	People	Cost/Life-Year
Primary Version	753,594	38,296	\$17K
Tax Credits	186,197	10,341	-
Early Medicare	791,644	40,147	\$59K
Work is not Required	562,647	29,107	\$61K
No Application Disutility	781,756	39,081	\$72K
Low Award Probability	626,671	33,228	-

The value of a life-year is:

- $>$ \$100K for people below 90 (Murphy and Topel, 2006)
- \$120K (Miller et al., 1990)
- \$175K (Moore and Viscusi, 1988)

Wyse and Meyer (2023)

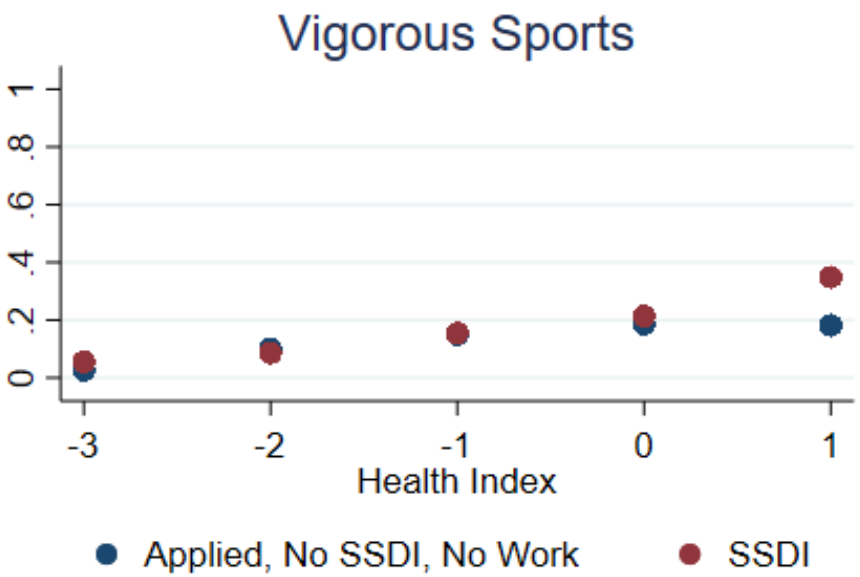


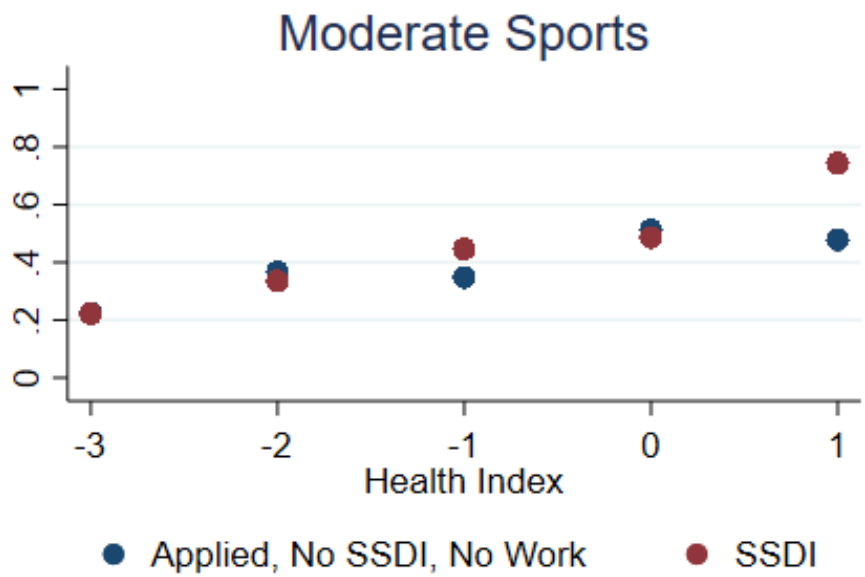
Partial Disability Insurance Reform Benefits

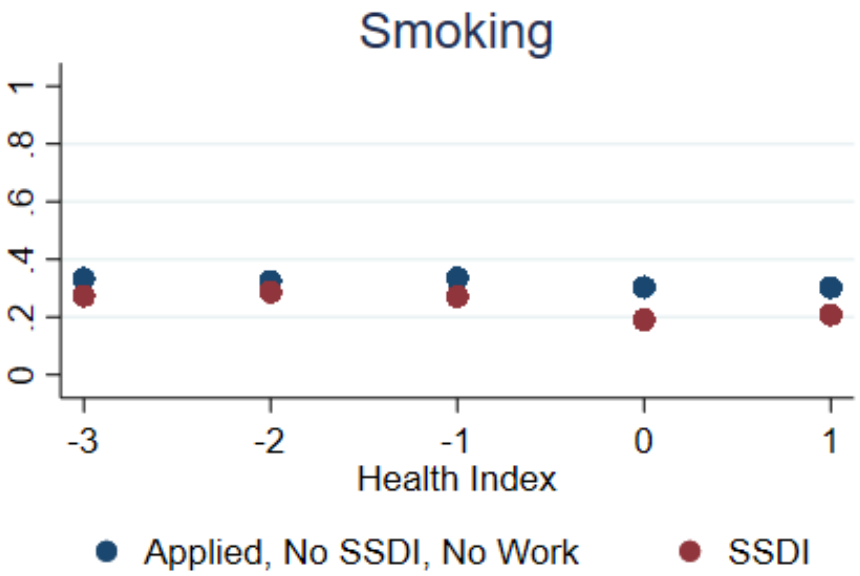
- The partially disabled increase their labor supply and postpone retirement if work is required
- Share of individuals who are not disabled decreases.
  For 60-year-olds, this share decreases by ~ 1 p.p.
- Survival rate rises. For 70-year-olds, the survival rate increases by ~ 1 p.p.
- If the decrease in the share of disabled individuals and the survival rate is multiplied by the number of Americans of a given age in 2022, we can see that the introduction of partial disability insurance
  - Saves $\sim 40,000$ lives of 70-year-old Americans
  - Decreases the number of disabled 60-year-old Americans by $\sim 45,000$

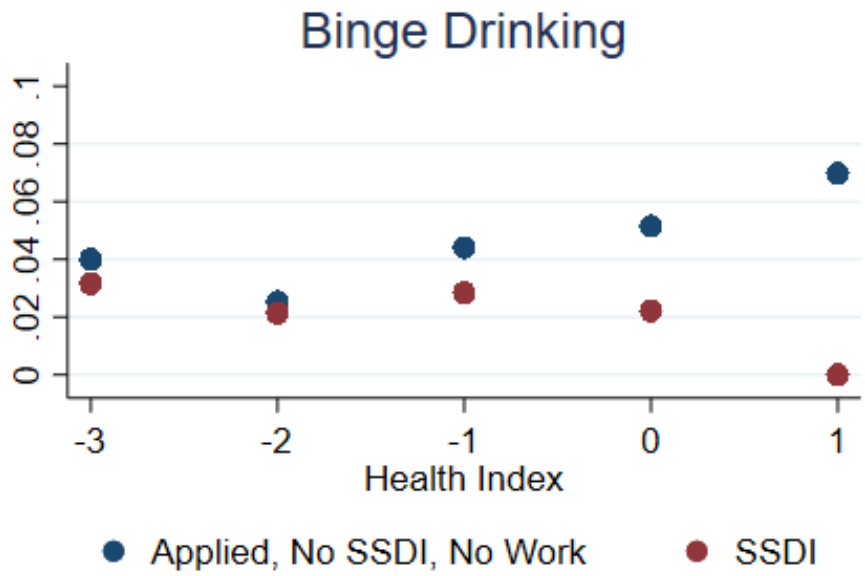
Partial Disability Insurance Reform Drawbacks

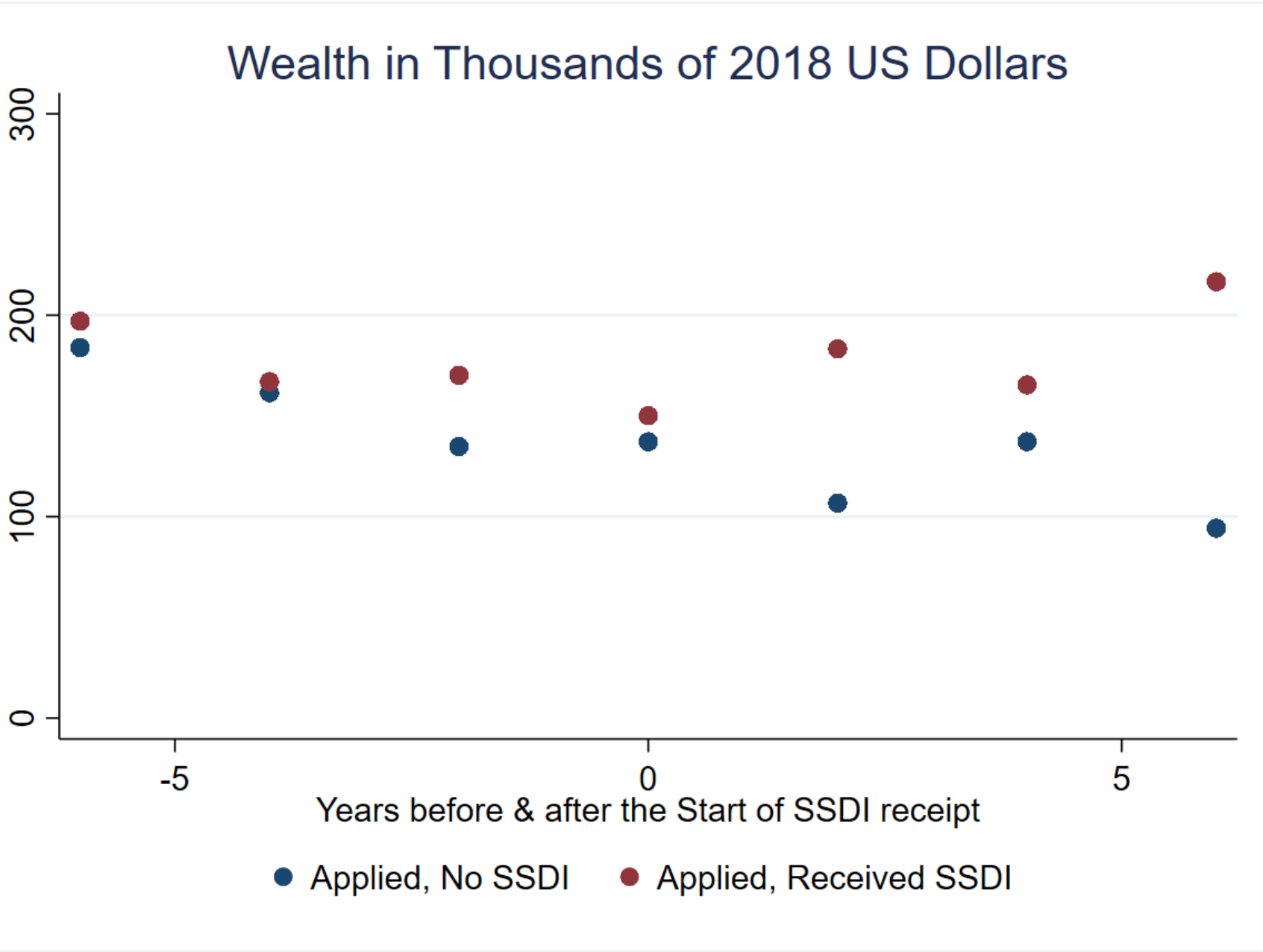
- The number of disability insurance applications increases by 60%
- After accounting for the increase in income taxes, the total cost of benefits increased by 9%
- The Social Security Administration will have to distinguish between fully disabled and partially disabled individuals
- Partially disabled individuals are more likely to fully recover in comparison with fully disabled ones


Vigorous Sports
0 .2 .4 .6 .8 1
-3 -2 -1 0 1
Health Index
Applied, No SSDI, No Work
SSDI


Moderate Sports
0 .2 .4 .6 .8 1
-3 -2 -1 0 1
Health Index
Applied, No SSDI, No Work
SSDI


Smoking
0 .2 .4 .6 .8 1
-3 -2 -1 0 1
Health Index
Applied, No SSDI, No Work
SSDI


Binge Drinking
0 .02 .04 .06 .08 .1
-3 -2 -1 0 1
Health Index
Applied, No SSDI, No Work
SSDI


Wealth in Thousands of 2018 US Dollars
300
200
100
0
-5
0
5
Years before & after the Start of SSDI receipt
Applied, No SSDI
Applied, Received SSDI

Partial Disability Insurance Reform Conclusion

The introduction of partial disability insurance (DI) in the US will

- Increase labor supply of partially disabled individuals:
  3M join the labor force and increase their earnings by a total of 100B
- Increase the life span of $\sim 40,000$ people
- Decrease the number of disabled Americans by around 1%
- Cost of extending the life of one person by one year is \$17K

Comparison with Reduced-Form Evidence

Fitzpatrick and Moore (2018) imply that 1–2 out of 100 Americans retiring earlier have shorter lifespans:

- ∼1M retiring at 62 translates into 10K additional deaths for 62-year-olds
- ∼1.2M retiring at 62 or 63 leads to 22K additional deaths for 62–63-year-olds

My results imply a similar magnitude of health effects of changes in retirement behavior. Under the reform:

- 3M partially disabled postpone retirement
- Around 40K people have longer lives

Plans

The following papers can expand the research on disability insurance:

- Disability Insurance for the Partially Disabled Would Come Handy During COVID-19 Pandemic
- Early Medicare Saves Lives
- How do the Effects of Disability Insurance on Health Vary with Gender, Race, and Education?
- How The Value of Private Disability Insurance Varies With Occupation and Industry?