Quick Background

- Medicaid is a means-tested health insurance program.
- Provides coverages for a lot of Americans.
- Began in 1965 as part of the "War on Poverty". Mostly as an afterthought (Medicare was a bigger deal)
- Many (most) recipients can automatically qualify by being in AFDC/TANF.
- Staggered adoption by states across years

Quick Background

- Some basic Public Econ-related questions:
  - Why provide health insurance instead of cash?
  - Labor supply effects? (as with any means-tested program)
  - Good to target the relatively sick with social welfare money? Lifestyle effects?
  - What good does is do?
    - More doctor's visits?
    - Improved health?
    - Lower mortality?
    - Less financial strain of health events?

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- What's the question?

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- What's the question?
  - How did medicaid introduction impact child mortality?

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- What's the contribution? Why is it interesting?

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- What's the contribution? Why is it interesting?
  - Uses unique identification strategy to measure *child* mortality response.
    - Prior AFDC receipt rates. High vs. low eligibilty states (dosage response)
  - Mortality is an important (the most imporant?) health outcome.
  - Instead of looking at expansions, focuses in initial introduction.
    - Isolates effect among the poorest. These are (presumably) the families we most care about creating the program for.

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    - Instead of looking at expansions, focuses in initial introduction.
        - Isolates effect among the poorest. These are (presumably) the families we most care about creating the program for.
    - Note: incredibly thorough usage of data. Nothing proprietary! Nothing fancy. Just a lot of hard work. You guys could write this!

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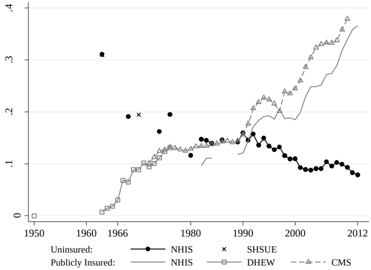
Notice the large jump in publicly insured children in the late 1960s/early 70s.

Figure 1. The Share of Uninsured and Publicly Insured Children, 1950-2012



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- Lets walk through how he does it and what he finds:

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- First question: uses variation in prior AFDC eligibilty by state as exogenous variation.
  - Is this exogenous?
  - Differential trends or levels in health or economic variables?

Nope! (surprising to me). Looking like credible variation so far.

Table 1. Balancing Test: The Relationship between Initial AFDC Rates and Pre-Medicaid State Characteristics in Levels and Trends

	(1)	(2)	(3)	(4)	(5)	(6)
	Nonwhite			White		
Dependent Variable	Pre-Medicaid Mean	Level $(AFDC_s^*)$	Trend $(AFDC_s^* \times \text{Year})$	Pre-Medicaid Mean	Level $(AFDC_s^*)$	Trend $(AFDC_s^* \times \text{Year})$
A. Demographic Outcomes 1950-1965 (measured by race)						
Child Mortality	425.5	1.75	0.13	206.8	2.22	0.06
		[2.61]	[0.15]		[2.83]	[0.71]
Infant Mortality	40.6	0.08	0.01	21.5	0.05	-0.03
		[0.22]	[0.01]		[0.22]	[0.07]
Very Low Birth Weight	23.2	0.12	0.0004	10.1	-0.09	-0.01
		[0.17]	[0.0066]		[0.15]	[0.01]
Low Birth Weight	138.6	-0.38	-0.07	71.6	2.23	-0.10
		[0.44]	[0.04]		[1.87]	[0.08]
B. Socioeconomic Outcomes 1950 and 1960 (measured by race)						
Poverty (0-14)	56.7	-0.80	-0.02	20.2	-0.53	-0.07
		[0.75]	[0.02]		[3.0]	[0.10]
Living w/o Father (0-14)	29.2	0.11	-0.009	7.4	1.00	0.03
		[0.13]	[0.017]		[0.43]	[0.03]
Median Earnings (25-44)	2,999	30.64	2.51	4,675	132.10	12.37
		[37.67]	[1.69]		[217.80]	[12.45]
Grade 12+ (25-44)	34.2	0.25	0.001	58.3	1.46	-0.03
		[0.45]	[0.01]		[2.41]	[0.07]
AFDC Benefit (1967)	153.9	2.91		147.4	10.85	
		[1.33]			[10.41]	
C. Other Outcomes (not measured by race)						
Log Public Exp. per 1,000 (1932, 42, 62)	-1.8	0.021	-0.001	-1.8	0.12	-0.005
		[0.03]	[0.001]		[0.25]	[0.006]
Hospital Beds per 1,000 (1950-1965)	4.9	0.03	-0.001	4.9	0.09	<0.0001
		[0.03]	[0.001]		[0.20]	[0.0119]
Hospital Ins. per 1,000 (1952-1965)	817.9	0.68	-0.32	817.9	-12.78	0.74
		[4.70]	[0.26]		[29.56]	[1.74]
Medical Ins. per 1,000 (1952-1965)	591.2	7.62	-0.04	591.2	51.56	-0.19
		[4.65]	[0.38]		[29.36]	[2.43]

Event Study estimation strategy:

$$\ln(ASMR_{st}^{k}) = \boldsymbol{x}'_{st}\boldsymbol{\beta}_{k} + AFDC_{s}^{*}\left[\sum_{y=-17}^{-2} \pi_{y}^{k} 1\{t - t_{s}^{*} = y\} + \sum_{y=0}^{10} \gamma_{y}^{k} 1\{t - t_{s}^{*} = y\}\right] + e_{st}^{k} \quad (1)$$

- ASMR: age-adjusted mortality rate for state s, year t, group k (white vs nonwhite)
- AFDC: AFDC rate in year of Medicaid implementation for state s
  - Separate effects by year relative to implementation.
- Bunch of other control variables.

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- Next (First stage): Does AFDC usage rates predict Child Pubic Insurance Usage in pre- vs. post- Medicaid?
    - Need this to show Medicaid increased insurance coverage, working through the AFDC channel.

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Yep! In high AFDC states, child insurance coverage jumped by almost four percentage points following Medicaid introduction.

Table 2. First-Stage Estimates: The Relationship between Initial AFDC Rates and Children's Public Insurance Use

	(1)	(2)	(3)	(4)	(5)
Dependent Variable is Share of Children Who Used Public Insurance by Type of Service:	Any	Hospital	Doctor	Drugs	Dental
	A. Grouped Event-Study Estimates				
Pre-Medicaid					
(Years -3 to -2)×$AFDC_s^*$	0.26	-0.009	0.08	0.21	0.002
	[0.36]	[0.04]	[0.17]	[0.23]	[0.095]
Post-Medicaid					
(Year 0)×$AFDC_s^*$	3.80	0.42	2.04	2.11	0.67
	[1.18]	[0.11]	[0.47]	[0.51]	[0.38]
(Years 1 to 4)×$AFDC_s^*$	4.26	0.29	2.38	2.75	0.87
	[0.93]	[0.15]	[0.44]	[0.52]	[0.29]
(Years 5 to 6)×$AFDC_s^*$	4.28	0.14	1.66	2.22	0.75
	[1.03]	[0.24]	[0.73]	[0.72]	[0.29]
DD Test (*p*-value)	0.44	0.77	0.52	0.01	0.55
	B. Difference-in-Differences Estimates				
Post-Medicaid×$AFDC_s^*$	3.83	0.37	2.14	2.26	0.76
	[0.94]	[0.09]	[0.44]	[0.46]	[0.28]
Bootstrap *p*-value	(0.003)	(0.001)	(0.001)	(0.002)	(0.008)
Post-Medicaid Utilization	10.80	1.10	7.29	5.88	2.29

Notes: Panel A presents estimated coefficients on the interaction between groups of time-to-Medicaid dummies

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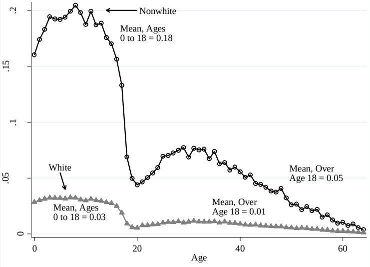
We can verify this graphically as well: difference between high- and low-AFDC states post- vs. pre- Medicaid. Particularly large increase of non-white kids being covered by public insurance.

Figure 2. The Share of Children Using Public Health Insurance Before and After Medicaid



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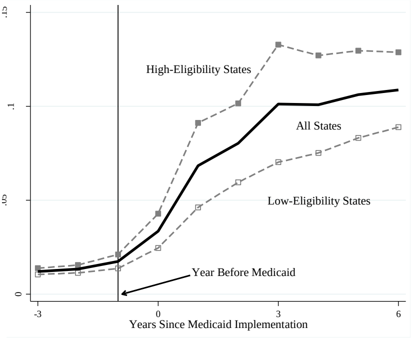
Similarly we can obeserve this over time in relation to Medicaid implementation year:

Figure 3. Medicaid Categorical Eligibility: The Rate of AFDC Receipt by Age and Race, December 1967



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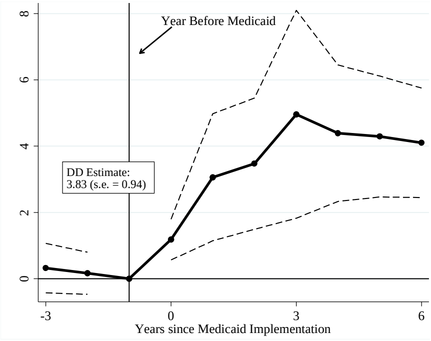
Regression estimates confirm all this. Large jump in child health care coverage in high AFDC states following Medicaid implementation.

Figure 5. Regression-Adjusted Estimates of Medicaid's Effect on Children's Public Insurance Use



- Ok, now the big question. Did this increase in insurance lead to lower child mortality?

Looks like it across variety of specifications. Little effect in pre-medicaid period, with substantial jump in post-medicaid.

Table 3. Reduced Form Estimates: The Relationship between Initial AFDC Rates and Log Nonwhite Age-Adjusted Child Mortality by Specification, Coefficients × 100

	(1)	(2)	(3)	(4)	(5)	(6)
	A. Grouped Event-Study Estimates					
Pre-Medicaid						
(Years -16 to -12)×$AFDC_s^*$	-0.11	-0.006	-0.65	0.83	0.28	1.12
	[0.37]	[0.69]	[0.67]	[0.72]	[0.77]	[0.99]
(Years -11 to -8)×$AFDC_s^*$	-0.02	-0.008	-0.28	0.47	0.11	-0.15
	[0.28]	[0.4]	[0.52]	[0.46]	[0.44]	[0.85]
(Years -7 to -2)×$AFDC_s^*$	0.07	0.17	-0.21	0.34	0.04	-0.60
	[0.25]	[0.24]	[0.39]	[0.26]	[0.28]	[0.69]
Post-Medicaid						
(Year 0)×$AFDC_s^*$	-0.07	-0.82	-0.53	-0.84	-1.06	-1.13
	[0.2]	[0.25]	[1.1]	[0.26]	[0.43]	[0.42]
(Years 1 to 4)×$AFDC_s^*$	-0.67	-1.07	-1.64	-1.21	-1.14	-1.50
	[0.22]	[0.34]	[0.56]	[0.4]	[0.4]	[0.48]
(Years 5 to 9)×$AFDC_s^*$	-0.82	-1.59	-1.58	-1.88	-1.78	-1.45
	[0.35]	[0.51]	[0.51]	[0.69]	[0.49]	[0.81]
R^2	0.78	0.96	0.86	0.97	1.00	0.95
DD Test (*p*-value)	0.80	0.20	0.90	0.28	0.98	0.05
	B. Difference-in-Differences Estimates					
Post-Medicaid×$AFDC_s^*$	-0.75	-1.41	-1.27	-1.26	-1.57	-1.46
	[0.24]	[0.34]	[0.43]	[0.51]	[0.47]	[0.4]
Bootstrap *p*-value	(0.06)	(0.003)	(0.001)	(0.03)	(0.002)	(0.015)
R^2	0.78	0.96	0.86	0.97	1.00	0.96
Observations	1,418	1,418	1,350	1,418	2,828	1,407
Covariates	High-AFDC FE, Time-to-Medicaid Dummies	(1) + State FE, Medicaid-timing-by-year FE, region-by-year FE, X_{st}	(2), unweighted	(2) + state-specific linear trends	Pooled Races, (2)*Nonwhite + state-by-year FE	(2), IV using 1958 AFDC Rates
Mortality Rate in *t*-1*	391.5 deaths per 100,000					

Notes: Panel A presents estimated coefficients on the interaction between groups of time-to-Medicaid dummies

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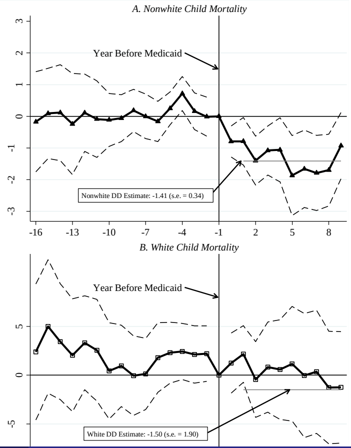
- Again, visualizing the effect is helpful.
- Effect occurs relatiely quickly after Medicaid adoption.
- Concentrated among non-white child mortality rates.

Figure 6. Regression-Adjusted Estimates of Medicaid's Intention-to-Treat Effect on Child Mortality by Race



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- Lets dig deeper. Where was the effect concentrated (and will this make sense given our treatment)
  - Effect by age?
  - By cause of death

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- Concentrated among very young kids (age 1-4)
- Largest among Treatable and Internal causes of death.

Table 7. The Relationship between Initial AFDC Rates and Log Nonwhite Child Mortality by Age and Cause, Coefficients × 100

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent Variable is the log Mortality Rate for:	Ages 1-4	Ages 5-9	Ages 10-14	Internal Causes, Ages 1-14	External Causes, Ages 1-14	Treatable Causes, Ages 1-14	Untreatable Causes, Ages 1-14
				A. Grouped Event-Study Estimates			
Pre-Medicaid							
(Years -16 to -12)×$AFDC_s^*$	-0.75	0.17	-1.31	-0.34	-0.96		
	[0.92]	[0.86]	[1.1]	[0.88]	[0.79]		
(Years -11 to -8)×$AFDC_s^*$	-0.41	0.80	-0.47	0.11	-0.25		
	[0.89]	[0.73]	[1.05]	[0.66]	[0.88]		
(Years -7 to -2)×$AFDC_s^*$	-0.77	0.75	-0.34	-0.15	-0.31	-0.35	0.73
	[0.72]	[0.71]	[0.99]	[0.77]	[0.87]	[0.89]	[1.37]
Post-Medicaid							
(Year 0)×$AFDC_s^*$	-1.90	-1.38	-1.27	-1.05	-2.04	-1.22	-0.61
	[1.06]	[0.96]	[1.29]	[0.85]	[0.97]	[0.93]	[1.58]
(Years 1 to 4)×$AFDC_s^*$	-2.27	0.11	-0.57	-1.67	-0.90	-1.85	-0.63
	[0.72]	[0.82]	[1.05]	[0.68]	[0.71]	[0.78]	[1.08]
(Years 5 to 9)×$AFDC_s^*$	-3.38	-0.02	-0.77	-2.33	-1.83	-3.11	-0.30
	[0.93]	[0.91]	[1.12]	[0.72]	[0.98]	[0.78]	[1.11]
DD Test (*p*-value)	*0.25*	*0.53*	*0.56*	*0.68*	*0.53*	*0.06*	*0.85*
				B. Difference-in-Differences Estimates			
Post-Medicaid×$AFDC_s^*$	-2.23	-0.51	-0.13	-1.88	-0.96	-2.16	-1.09
	[0.55]	[0.40]	[0.56]	[0.41]	[0.55]	[0.51]	[0.80]
Bootstrap *p*-value	(0.001)	(0.18)	(0.81)	(0.001)	(0.12)	(0.002)	(0.28)
Observations	1,362	1,305	1,279	1,349	1,357	929	849
Rate in *t*-1*	153.5	58.5	55.1	48.0	39.2	35.7	12.3

Notes: For details on the specification, see notes to figure 6. Columns 1 - 3 contain estimates for the log of age-group-specific mortality rates for nonwhite children. Columns 4 and 5 contain estimates for the log of age-adjusted internal- and external-cause mortality rates (see notes to figure 4). Columns 6 and 7 contain estimates for the log of age-

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- Push even further on age aspect. When and why are young kids most affected?

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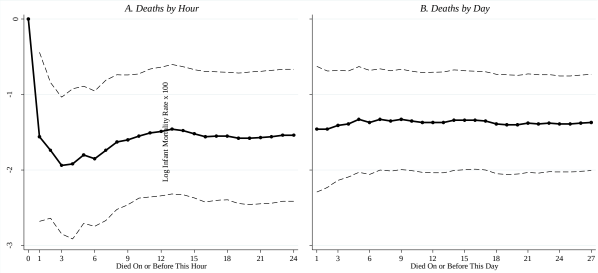
- Almost the entire effect is instantaneous at birth!

Figure 8. Regression-Adjusted Estimates of Medicaid's Intention-to-Treat Effect on Cumulative Nonwhite Infant Mortality by Hour and Day of Death



Notes: The figure plots DD estimates of Medicaid's effect on nonwhite infant mortality rates that include the same covariates used in figure 6. The dependent variable is the log of

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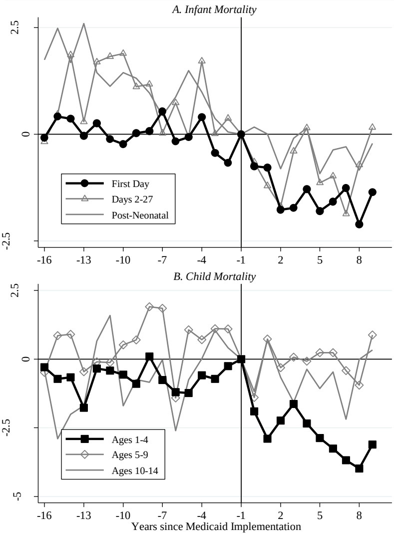
Looking at effect over time by age group confirms this.

Figure 7. Regression-Adjusted Estimates of Medicaid's Intention-to-Treat Effect on Nonwhite Child Mortality by Age



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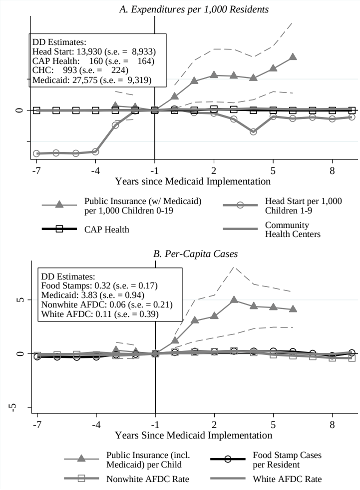
- Can this effect be explained by expansions/expenditures on other social programs that could help child health?
- Relates to initial quesiton of AFDC random assignment. High AFDC implies high other social programs?
- Food stamps, Head start, ect.?

Medicaid effect clearly not driven by spending on other programs.

Figure 9. The Relationship between Medicaid Implementation and Health-Related Programs



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- Takeaways:
  - Mortality among nonwhite children on Medicaid fell by 20 percent (10 percent reduction in nonwhite mortality overall)

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- Takeaways:
  - Aggregate costs and benefits.
    - Through 1976 cost $5.8 billion for all children.
    - Saved 2.3 million life-years among nonp-white children.
    - Translates to cost per life-year saved of $64,000, or per death of $1.83 million.
    - Infant deaths cheaper. Cost per infant death avoided is $160,000 for nonwhites.
    - Much lower than similar estimates from 1980s Medicaid expansion (Currie and Gruber 1996)

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    - Much lower than similar estimates from 1980s Medicaid expansion (Currie and Gruber 1996)

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- However:
  - Valuing child (infant) lives can be particularly difficult for an economist.
  - A consideration: given an age distribution, if you can only save one life, which would it be?
    - Infant at birth saves most life-years. (But then should we discouraging abortion?)
    - Early career adult? Most investment with least return.
    - Prime age household head? Has most other people depending on them.

Scholz Seshadri Khitatrakun 2006

- Research Question:

Scholz Seshadri Khitatrakun 2006

- Research Question:
  - Are Americans saving “optimally” for retirement?
  - BIG question. Ambitious. Difficult.
  - How much should someone have saved by the time they retire?

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- Think of all the factors that affects your savings pattern over your lifetime.
- Can feel overwhelming to answer this question, but start simple and build complexity.

Scholz Seshadri Khitatrakun 2006

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Scholz Seshadri Khitatrakun 2006

- Think of all the factors that affects your savings pattern over your lifetime.
- Can feel overwhelming to answer this question, but start simple and build complexity.
- Suppose you know you will live 80 years and earn \$2.5 million. What will spending path look like?
- What happens if you add kids? Health shocks? Income growth? Uncertainty? Government taxes and transfers?

Scholz Seshadri Khitatrakun 2006

- Why is it important?

Scholz Seshadri Khitatrakun 2006

- Why is it important?
  - Social Security (among others) exists as forced savings mechanism. Is that necessary?
  - Broader question: Do people act “rationally” on big questions?
  - Savings statements often difficult to interpret directly. Current savings rate is 6.6%. Median 65 year-old has \$209k in non-pension wealth (SCF) and will live about 20 years. Should they have saved more?

- How do they do it?

Scholz Seshadri Khitatrakun 2006

- How do they do it?
  - Use panel data from the 1992 HRS (ages 51-61) along with earnings records.
  - Model optimal wealth accumulation.
    - Parameterize from other papers, solve model.
    - Then fill in realized values from HRS, compare to optimal values.

Scholz Seshadri Khitatrakun 2006

- How do they do it?

Scholz Seshadri Khitatrakun 2006

- How do they do it?
  - Model features:
    - Dynamic choice model of utility maximization, longevity uncertainty.
    - Given kids, marital status, retirement, risk preferences.
    - Expecations on wages, health expenditures, consumption floor (SSI), bequest.

Scholz Seshadri Khitatrakun 2006

- Solve model recursively. Retired households problem:

$$
\begin{aligned}
V_R(e_R,\ E_R,\ a_j,\ j,\ m_j,\ 3) = \max_{c_j, a_{j+1}} \Bigg\{ & n_j U\left(\frac{c_j}{n_j}\right) \\
& + \beta p_{hj} p_{wj} \int V_R(e_R, E_R, a_{j+1}, j+1, m_{j+1}, 3)\, d\Omega_j(m_{j+1}|m_j) \\
& + \beta p_{hj}(1 - p_{wj}) \int V_R\left(e_R, E_R, a_{j+1}, j+1, \frac{m_{j+1}}{2}, 1\right) d\Omega_j(m_{j+1}|m_j) \\
& + \beta p_{wj}(1 - p_{hj}) \int V_R\left(e_R, E_R, a_{j+1}, j+1, \frac{m_{j+1}}{2}, 2\right) d\Omega_j(m_{j+1}|m_j) \Bigg\} \quad (2)
\end{aligned}
$$

subject to

$$
\begin{aligned}
y &= \mathrm{SS}(E_R) + \mathrm{DB}(e_R) + ra_j + T_R(e_R,\ E_R,\ a_j,\ n_j,\ m_j), \\
c_j + a_{j+1} + m_j &= y_j + a_j - \tau(\Psi(\mathrm{SS}(E_R)) + \mathrm{DB}(e_R) + ra_j). \quad (3)
\end{aligned}
$$

- Choices: consumption c_j and assets a_{j+1} subject to budget constraint.
- State variables: earnings e_R, lifetime earnings E_R, Assets a_j, age j, medical expenses m, household composition (3 for both alive).
- Continuation probabilities p and discount factor β. Certain death at age D, but uncertainty in living until then.

- Working Household Problem:

$$V(e_j, E_{j-1}, a_j, j) =$$

$$\max_{c_j, a_{j+1}} \left\{ n_j U\left(\frac{c_j}{n_j}\right) + \beta \int V(e_{j+1}, E_j, a_{j+1}, j+1) d\Phi_j(e_{j+1}|e_j) \right\} \qquad (4)$$

subject to

$$y_j = e_j + ra_j + T(e_j, a_j, n_j),$$

$$c_j + a_{j+1} = y_j + a_j - \tau(e_j + ra_j),$$

and

$$E_j = E_{j-1} + e_j.$$

- Choices: consumption c_j and assets a_{j+1} subject to budget constraint.
- Similar state variables: earnings, assets, age. No medical expenses or mortality risk.
- Retirement age R is known.

- Earnings process is exogenous in this model: quadratic function of age, household-specific component, and a random component.
- Note that the transfer function has a consumption floor (SSI) in retirement:

$$T(e_j,\ a_j,\ n_j) = \max\left\{0,\ \underline{c} \times \frac{n_j}{g(1,\ 2)} - [e_j + (1+r)a_j]\right\},$$

whereas the transfer that the household will receive upon retiring is

$$T_R(e_R,\ E_R,\ a_j,\ n_j,\ m_j) =$$

$$\max\left\{0,\ \underline{c} \times \frac{n_j}{g(1,\ 2)} + m_j - [\mathrm{SS}(E_R) + \mathrm{DB}(e_R) + (1+r)a_j]\right\}.$$

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- Medical Expenses similar to earnings process: household-specific component, quadratic in age, and a random component.

$$\log m_t = \beta_0 + \beta_1 \text{AGE}_t + \beta_2 \text{AGE}_t^2 + u_t,$$

$$u_t = \rho u_{t-1} + \epsilon_t, \quad \epsilon_t \sim N(0, \sigma_\epsilon^2),$$

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HRS Descriptive statistics: Median household (56 years old) has about $217,000 in wealth.

TABLE 1
DESCRIPTIVE STATISTICS FOR THE HEALTH AND RETIREMENT STUDY (Dollar Amounts in 1992 Dollars)

Variable	Mean	Median	Standard Deviation
1991 earnings	$35,958	$28,976	$39,368
Present discounted value of lifetime earnings	$1,718,932	$1,541,555	$1,207,561
Defined-benefit pension wealth	$106,041	$17,327	$191,407
Social security wealth	$107,577	$97,726	$65,397
Net worth	$225,928	$102,600	$464,314
Mean age (years)	55.7		4.7
Mean education (years)	12.7		3.4
Fraction male	.70		.46
Fraction black	.11		.31
Fraction Hispanic	.06		.25
Fraction couple	.66		.48
No high school diploma	.22		.41
High school diploma	.55		.50
College graduate	.12		.33
Postcollege education	.10		.30
Fraction self-employed	.15		.35
Fraction partially or fully retired	.29		.45

SOURCE.—Authors' calculations from the 1992 HRS. The table is weighted by the 1992 HRS household analysis weights.

Wealth Distribution:

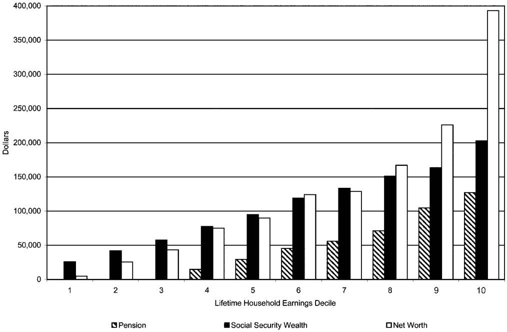

Fig. 1.—Median defined-benefit pension wealth, social security wealth, and net worth (excluding defined-benefit pensions) by lifetime earnings decile (1992 dollars).

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- Comparison of optimal and realized wealth.
- Only 16% of households below optimal wealth target.
- Over-savers more likely high-earners.

TABLE 2

OPTIMAL NET WORTH (Excluding Social Security and Defined-Benefit Pensions) AND THE PERCENTAGE OF POPULATION FAILING TO MEET OPTIMAL TARGETS (Dollar Amounts in 1992 Dollars)

Group	Median Optimal Wealth Target (1)	Mean Optimal Wealth Target (2)	Percentage below Optimal Target (3)	Median Deficit (Conditional) (4)	Median Net Worth (5)	Median Social Security Wealth (6)	Median Defined-Benefit Pension Wealth (7)
All households	$63,116	$157,246	15.6%	$5,260	$102,600	$97,726	$17,327
No high school diploma	20,578	70,711	18.6	2,632	36,800	72,561	0
High school diploma	63,426	139,732	15.6	5,702	102,885	97,972	21,290
College degree	128,887	243,706	12.7	14,092	209,616	127,704	60,752
Postcollege education	158,926	333,713	13.2	23,234	253,000	129,320	152,781
Earnings decile:							
Lowest	2,050	48,445	30.4	2,481	5,000	26,202	0
2nd	13,781	55,898	28.7	3,328	25,500	42,159	0
3rd	26,698	84,582	21.8	5,948	43,485	57,844	0
4th	43,566	123,441	19.4	4,730	75,000	77,452	14,830
Middle	53,709	128,285	16.9	6,979	90,000	94,929	29,497
6th	76,462	131,565	10.8	10,000	124,348	119,011	45,613
7th	80,402	154,891	9.9	11,379	128,580	133,451	56,033
8th	101,034	180,643	5.5	21,036	167,000	151,397	71,373
9th	136,075	238,186	4.4	5,206	226,000	163,639	104,657
Highest	238,073	463,807	5.4	25,855	393,000	202,659	126,998

SOURCE.—Authors' calculations as described in the text.

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Scatterplot of observed vs. optimal wealth:

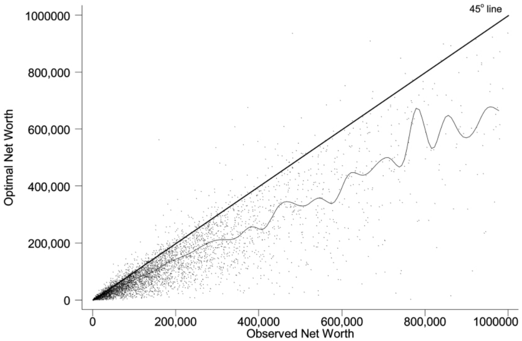

FIG. 2.—Scatter plot of optimal and actual wealth. Observed net wealth is constructed from the 1992 HRS. Optimal net worth comes from solving the baseline model described in the text.

Savings adequecy by earnings decile:

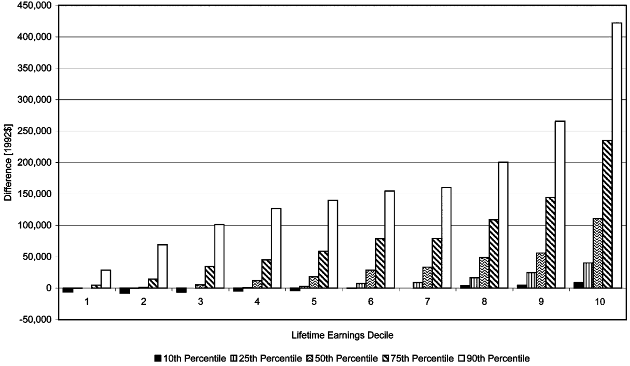

FIG. 3.—Distribution of "saving adequacy" (observed minus simulated optimal net worth, excluding defined-benefit pensions, by lifetime earnings decile, 1992 dollars).

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- Sensitivity analysis:
- Simple savings models increase fraction of under-savers (but worse model fit)
- Parameter alterations change prediction (no surprise) – but never more than half are under-savers.

TABLE 4
Alternative Models and Sensitivity Analysis

Parameter Value	Percentage Failing to Meet Optimal Target	Measure of Fit: R^2(%)	Deficit Conditional on Failing to Meet Optimal Target (1992 Dollars)
Baseline: $\beta = 0.96$, $\gamma = 3$, $r =$ 4%	15.6	86.0	5,260
	A. Alternative Models		
Naive:			
Save a constant fraction of Y_t	71.9	15.5	114,335
Save an income- and age-varying fraction of Y_t	75.7	15.8	160,676
Modigliani (annual consumption a function of lifetime resources)	48.7	6.5	89,129
Constant α	35.1	45.2	30,411
Regression with 41 years of earnings	59.4	29.2	109,212
Regression with quadratic terms for 41 years of earnings	60.2	35.3	101,229
Monte Carlo draws on earnings sequences	32.2	45.2	28,623
	B. Parameter Sensitivity of Baseline Model		
$\beta = 1.0$	21.1	87.7	5,483
$\beta = 0.93$	11.9	83.6	5,919
$r = 5\%$	20.0	87.2	5,500
$r = 7\%$	35.9	76.7	15,955
$\gamma = 1.5$	11.8	91.9	4,699
$\gamma = 5$	31.6	85.9	9,087
$\rho = 0.9$	25.8	69.1	16,103
5% chance of 4 years of $60,000 end-of-life medical expenses	20.5	85.1	4,800

Source.—Authors' calculations as described in the text.

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- Takeaways:
  - Little evidence of chronic undersaving in the US.
  - Life-cycle model can explain 87 percent of variation in wealth for married households.

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- Other Comments:
  - This focused on the Great-Depression generation. Do results still hold up for more recent generations? (Yes through 2004)
  - Does value of consumption change as you age? (this could lead to more over-savers)
  - Note: saving is never actually observed in data. Rate of return assumed but could vary systematically (esp. by income). Did this generation get lucky?
  - Interesting interaction with social security for lower-wealth households. Large portion of retirement wealth is forced. Would they compensate if this were reduced?

Framing Social Security Reform: Behavioral Responses to Changes in the Full Retirement Age

Luc Behaghel and David Blau

Social Security

- People can begin claiming Social Security benefits at any time between 62 and 70.
- The financial benefit from delay is constant
- Yet we see large claiming spikes at 62 and 65 (FRA). Why?

Social Security

- Social Security frames benefits relative to “Full Retirement Age”. Used to be 65 but has shift upwards.
- Research Question: How does calling an age the “Full Retirement Age” change claiming behavior

Social Security

- Social Security frames benefits relative to “Full Retirement Age”. Used to be 65 but has shift upwards.
- Research Question: How does calling an age the “Full Retirement Age” change claiming behavior
  - Taken as suggestion?
  - Implicit advice?
  - Reference point with loss aversion?

Social Security

- What do they do?
- Social Security changed the FRA (gradually) from 65 to 66.
- Look at how claiming behavior changes in response to this policy change.

Social Security

- Here are Social Security benefits as a function of claiming age
- Policy change across cohorts:

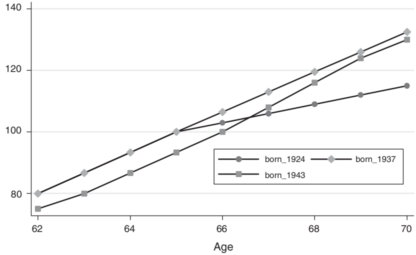

FIGURE 1. RELATIONSHIP BETWEEN SOCIAL SECURITY BENEFIT CLAIMING AGE AND BENEFIT LEVEL AS A PERCENT OF THE PRIMARY INSURANCE AMOUNT FOR THREE BIRTH COHORTS

Social Security

- Here is how claiming distribution changed across cohorts
- Dotted line is control group

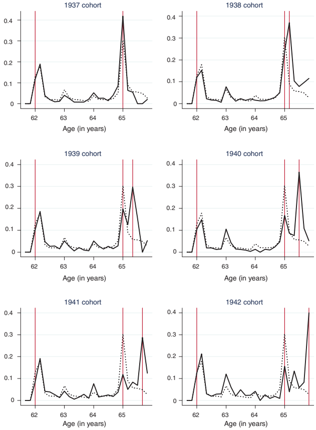

Figure 2. Social Security Benefit Claiming Hazard

Social Security

- Estimating Equation:

$$P_{iac} = \theta FRA_{iac} + x_{iac}\gamma + \beta_a + \delta_c + \varepsilon_{iac}, \tag{1}$$

Social Security

- Finds that picking an age as the FRA increasing claiming at that age by about 14 percent.

Table 1—Impact of the FRA on OASI Benefit Claiming Hazard

	Claiming social security (OASI) benefits			
	(1)	(2)	(3)	(4)
FRA	13.8***	13.6***	13.3***	13.6***
	(1.9)	(1.9)	(1.9)	(1.9)
SS earnings test removal				3.2***
				(1.0)
Controls	No	Yes	Yes	Yes
Age range	64–66	64–66	62–66	64–66
Observations	25,801	25,801	89,348	25,801
R^2	0.146	0.154	0.162	0.155

Social Security

- How did policy change retirement behavior?

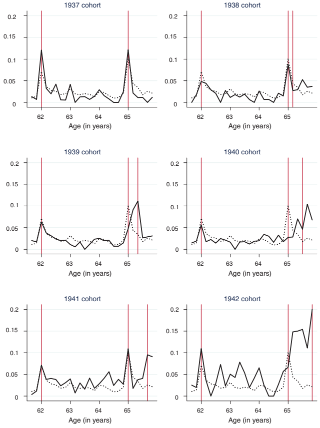

Figure 4. Hazard of Retirement

Social Security

- Estimate: still increased by 1.1 percent
- But much smaller than claiming change

TABLE 3—IMPACT OF THE FRA ON THE HAZARD OF RETIREMENT

	Retirement			
	(1)	(2)	(3)	(4)
FRA	1.5	1.1	1.1	1.1
	(1.6)	(1.6)	(1.6)	(1.6)
SS earnings test removal				2.2**
				(1.1)
Controls	No	Yes	Yes	Yes
Age range	64–66	64–66	62–66	64–66
Observations	16,387	16,387	16,387	16,387
R^2	0.056	0.082	0.085	0.083

Social Security

- They also separate their sample based on a cognitive ability score
- Find greater FRA effect among the higher cognitive group
- Overall, study suggests Social Security framing matters considerably on claiming behavoir