Health, Wealth and Retirement Before and During the Great Recession: Analysis of the PSID

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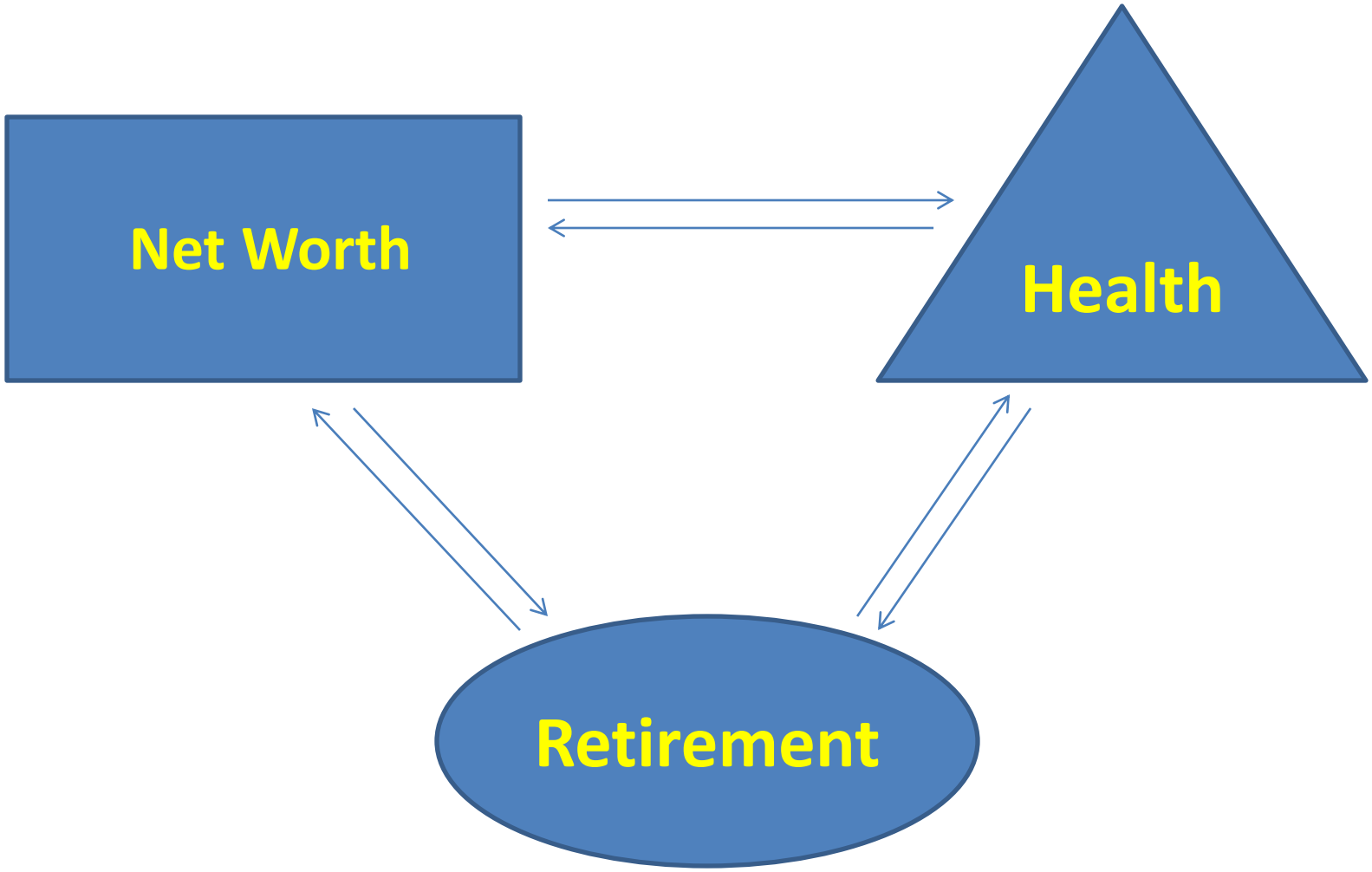
Which Way Does it Go?



Previous Literature: HRS, BHPS, PSID

- Health Shocks -> Retirement
  - Disney, Emmerson and Wakefield (2006)
  - Hagan et al. (2009)
  - But French (2010) finds little effect
- Retirement -> Health
  - Evans and Schneider (2006), (-)
  - Cai (2010): (+) women , (-) men

Previous Literature, Cnt'd

- Wealth -> Retirement
  - Stock / Housing Market Changes in 1990s (Coronado and Perozek 2003; Ratcliffe and Smith 2010; Goldstein 2008)
    - No competing substitution effect (c.f. wages)
    - Collective gains society-wide
  - Inheritance receipt as wealth IV, Brown et al (2010)
    - Problematic given exclusion restriction violation (i.e. folks may need to take care of ailing parent, etc.)
- Retirement -> Wealth
  - Lifecycle theory of savings

Previous Literature, Cont'd

- Health -> Wealth / Wealth -> Health
  - Meer, Miller and Rosen (2003)
    - Inheritance as IV
  - Monahan (2008)
    - Indian bus accidents
  - Thompson and Conley (2012)
    - PSID

Our Approach

- Panel Study of Income Dynamics
  - Covers Great Recession, 1999-2009
  - Wider age range than HRS analysis: Heads/Wives 40-60 in first wave of analysis
  - Inverse hyperbolic sine transformation (IHS) for income and wealth allows for full distribution
  - Inheritance included in reduced form
  - Ordered logit allows reentries into labor market
    - Occurs in 2.7 percent of person-waves

Our Approach Cont'd

- Key Estimation Strategy: Distinguishing between Acute and Chronic Health Conditions:
  - *Acute*: stroke, heart attack, heart disease, lung disease, cancer
  - *Chronic*: asthma, arthritis, diabetes, high blood pressure, learning disabilities, memory loss, psychiatric disorders, "other"
- Sensitivity Analysis:
  - All waves going back to 1984
  - Inclusion of all household members
  - Inclusion of primary home equity
  - Interactions with 2009 indicator variable
  - Separate analysis by gender / race

Table 2: Difference-in-Difference Ordered Logit Regressions of Retirement on Health

	Retirement																	
Model Number	1		2		3		4		5		6		7		8		9	
	Full		Black		White		Full		Black		White		Full		Black		White	
Acute Health Shock	0.118		0.443	*	-0.018		0.118		0.443	*	-0.016		0.121		0.443	*	-0.013	
	(0.096)		(0.177)		(0.112)		(0.096)		(0.177)		(0.112)		(0.096)		(0.177)		(0.112)	
Onset of Chronic Illnes	0.039		0.190		-0.036		0.030		0.188		-0.047		0.032		0.190		-0.045	
	(0.089)		(0.143)		(0.110)		(0.089)		(0.144)		(0.110)		(0.089)		(0.145)		(0.110)	
Married							-0.168		-0.023		-0.232		-0.178		-0.036		-0.241	
							(0.124)		(0.218)		(0.149)		(0.124)		(0.217)		(0.149)	
Total Family Wealth^													0.009		0.011		0.008	
													(0.005)		(0.008)		(0.006)	
2003	-0.184	*	-0.377	*	-0.122		-0.185	*	-0.377	*	-0.122		-0.182	*	-0.373	*	-0.120	
	(0.088)		(0.164)		(0.105)		(0.088)		(0.164)		(0.105)		(0.088)		(0.164)		(0.105)	
2005	-0.034		-0.026		-0.040		-0.035		-0.026		-0.041		-0.034		-0.019		-0.042	
	(0.089)		(0.169)		(0.105)		(0.089)		(0.169)		(0.105)		(0.089)		(0.169)		(0.105)	
2007	-0.085		-0.058		-0.105		-0.087		-0.058		-0.106		-0.083		-0.054		-0.102	
	(0.095)		(0.179)		(0.112)		(0.095)		(0.179)		(0.112)		(0.095)		(0.179)		(0.112)	
2009	0.572	***	0.440	**	0.623	***	0.568	***	0.439	**	0.618	***	0.578	***	0.455	**	0.626	***
	(0.091)		(0.169)		(0.108)		(0.091)		(0.169)		(0.108)		(0.091)		(0.170)		(0.108)	
Cut 1 Constant	-3.543		-3.664		-3.508		-3.544		-3.664		-3.509		-3.542		-3.661		-3.507	
	(0.073)		(0.140)		(0.085)		(0.073)		(0.140)		(0.085)		(0.073)		(0.140)		(0.085)	
Cut 2 Constant	2.839		2.874		2.823		2.839		2.873		2.824		2.844		2.882		2.827	
	(0.065)		(0.122)		(0.077)		(0.065)		(0.122)		(0.077)		(0.065)		(0.122)		(0.077)	
Observations	13,905		4,159		9,804		13,905		4,159		9,804		13,905		4,159		9,804	

Robust standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

^Transformed using the inverse hyperbolic sine function

Table 3: Difference-in-Difference Ordered Logit Regressions of Retirement on Health for Men

	Retirement																	
Model Number	1		2		3		4		5		6		7		8		9	
	Full		Black		White		Full		Black		White		Full		Black		White	
Acute Health Shock	0.621	***	0.996	***	0.460	**	0.622	***	0.999	***	0.461	**	0.626	***	1.003	***	0.465	**
	(0.146)		(0.271)		(0.171)		(0.146)		(0.272)		(0.171)		(0.146)		(0.272)		(0.171)	
Onset of Chronic Illnes	-0.123		0.138		-0.252		-0.121		0.144		-0.251		-0.113		0.166		-0.247	
	(0.145)		(0.220)		(0.189)		(0.146)		(0.219)		(0.190)		(0.146)		(0.220)		(0.190)	
Married							0.077		0.112		0.057		0.041		0.052		0.034	
							(0.222)		(0.408)		(0.251)		(0.222)		(0.410)		(0.250)	
Total Family Wealth^													0.019	*	0.022		0.016	
													(0.008)		(0.015)		(0.008)	
2003	-0.370	*	-0.518	*	-0.308		-0.370	*	-0.515		-0.308		-0.368	*	-0.494		-0.311	
	(0.144)		(0.264)		(0.172)		(0.144)		(0.263)		(0.172)		(0.144)		(0.262)		(0.172)	
2005	-0.001		-0.102		0.034		0.000		-0.101		0.034		0.001		-0.085		0.032	
	(0.137)		(0.257)		(0.162)		(0.137)		(0.257)		(0.162)		(0.137)		(0.256)		(0.162)	
2007	-0.038		-0.237		0.052		-0.038		-0.236		0.052		-0.034		-0.225		0.054	
	(0.147)		(0.295)		(0.169)		(0.147)		(0.294)		(0.169)		(0.147)		(0.294)		(0.169)	
2009	0.501	***	0.199		0.615	***	0.504	***	0.208		0.616	***	0.524	***	0.246		0.630	***
	(0.147)		(0.283)		(0.172)		(0.147)		(0.279)		(0.172)		(0.147)		(0.281)		(0.172)	
Cut 1 Constant	-3.866		-3.759		-3.932		-3.866		-3.756		-3.932		-3.865		-3.747		-3.933	
	(0.119)		(0.232)		(0.140)		(0.119)		(0.232)		(0.140)		(0.119)		(0.232)		(0.140)	
Cut 2 Constant	2.855		2.776		2.898		2.856		2.780		2.898		2.866		2.806		2.904	
	(0.102)		(0.202)		(0.120)		(0.102)		(0.202)		(0.120)		(0.102)		(0.203)		(0.120)	
Observations	5,970		1,565		4,430		5,970		1,565		4,430		5,970		1,565		4,430	

Robust standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

^Transformed using the inverse hyperbolic sine function

Table 4: Difference-in-Difference Ordered Logit Regressions of Retirement on Health for Women

	Retirement																	
Model Number	1		2		3		4		5		6		7		8		9	
	Full		Black		White		Full		Black		White		Full		Black		White	
Acute Health Shock	-0.220		0.051		-0.325	*	-0.217		0.050		-0.318	*	-0.217		0.049		-0.317	*
	(0.118)		(0.219)		(0.138)		(0.118)		(0.219)		(0.138)		(0.118)		(0.219)		(0.138)	
Onset of Chronic Illnes	0.127		0.233		0.069		0.103		0.223		0.042		0.103		0.222		0.042	
	(0.111)		(0.187)		(0.135)		(0.112)		(0.192)		(0.134)		(0.112)		(0.192)		(0.134)	
Married							-0.322	*	-0.137		-0.385	*	-0.324	*	-0.137		-0.386	*
							(0.142)		(0.213)		(0.181)		(0.142)		(0.213)		(0.181)	
Total Family Wealth^													0.003		0.005		0.001	
													(0.006)		(0.009)		(0.007)	
2003	-0.082		-0.289		-0.027		-0.085		-0.290		-0.031		-0.084		-0.290		-0.030	
	(0.113)		(0.211)		(0.134)		(0.113)		(0.211)		(0.134)		(0.113)		(0.211)		(0.135)	
2005	-0.060		0.017		-0.090		-0.064		0.014		-0.093		-0.063		0.018		-0.093	
	(0.117)		(0.224)		(0.137)		(0.117)		(0.225)		(0.137)		(0.118)		(0.225)		(0.137)	
2007	-0.136		0.030		-0.224		-0.141		0.025		-0.225		-0.139		0.027		-0.224	
	(0.124)		(0.227)		(0.146)		(0.124)		(0.228)		(0.146)		(0.124)		(0.228)		(0.147)	
2009	0.614	***	0.591	**	0.625	***	0.609	***	0.591	**	0.617	***	0.613	***	0.598	**	0.619	***
	(0.117)		(0.211)		(0.140)		(0.117)		(0.211)		(0.140)		(0.117)		(0.212)		(0.140)	
Cut 1 Constant	-3.374		-3.633		-3.285		-3.378		-3.635		-3.289		-3.377		-3.633		-3.288	
	(0.093)		(0.177)		(0.110)		(0.093)		(0.178)		(0.110)		(0.093)		(0.178)		(0.110)	
Cut 2 Constant	2.839		2.958		2.777		2.840		2.957		2.779		2.842		2.960		2.780	
	(0.086)		(0.157)		(0.102)		(0.086)		(0.157)		(0.102)		(0.086)		(0.157)		(0.102)	
Observations	7,935		2,594		5,374		7,935		2,594		5,374		7,935		2,594		5,374	

Robust standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

^Transformed using the inverse hyperbolic sine function

Table 5: Difference-in-Difference OLS Regressions of Total Family Wealth on Health and Retirement

	Total Family Wealth^																				
Model Number	1		2		3		4		5		6		7		8		9	
	Full		Black		White		Full		Black		White		Full		Black		White	
Total Family Income^	0.392	*	0.168		0.879	**	0.387	*	0.162		0.882	**	0.383	*	0.133		0.883	**
	(0.178)		(0.130)		(0.305)		(0.180)		(0.129)		(0.305)		(0.180)		(0.134)		(0.305)	
Married	0.949	**	0.970		0.836	*	0.930	**	0.936		0.823	*	0.933	**	0.951		0.821	*
	(0.308)		(0.572)		(0.349)		(0.308)		(0.574)		(0.350)		(0.309)		(0.574)		(0.350)	
Unemployed	-0.525		-0.664		-0.405		-0.535		-0.679		-0.413		-0.533		-0.670		-0.414	
	(0.280)		(0.433)		(0.363)		(0.280)		(0.434)		(0.363)		(0.281)		(0.434)		(0.363)	
Retired	0.195		0.376		0.125		0.198		0.388		0.120		0.235		0.675		0.092	
	(0.138)		(0.381)		(0.119)		(0.137)		(0.381)		(0.119)		(0.140)		(0.392)		(0.123)	
Acute Health Shock							-0.222		-0.072		-0.309	*	-0.167		0.193		-0.360	*
							(0.128)		(0.292)		(0.132)		(0.157)		(0.334)		(0.168)	
Onset of Chronic Illnes							-0.197		-0.306		-0.197		-0.196		-0.311		-0.199	
							(0.154)		(0.363)		(0.151)		(0.154)		(0.363)		(0.151)	
Acute Health Shock *													-0.238		-1.445	*	0.206	
Retired													(0.247)		(0.689)		(0.226)	
2003	-0.390	**	-0.495		-0.334	*	-0.404	**	-0.512		-0.351	*	-0.403	**	-0.524		-0.353	*
	(0.143)		(0.347)		(0.142)		(0.143)		(0.348)		(0.141)		(0.143)		(0.348)		(0.142)	
2005	-0.163		-0.688	*	0.074		-0.180		-0.713	*	0.056		-0.178		-0.708	*	0.055	
	(0.144)		(0.341)		(0.144)		(0.144)		(0.342)		(0.145)		(0.144)		(0.342)		(0.145)	
2007	-0.435	**	-0.530		-0.367	**	-0.469	**	-0.570		-0.405	**	-0.469	**	-0.576		-0.406	**
	(0.142)		(0.344)		(0.140)		(0.143)		(0.347)		(0.142)		(0.143)		(0.347)		(0.142)	
2009	-1.138	***	-1.590	***	-0.955	***	-1.169	***	-1.633	***	-0.986	***	-1.167	***	-1.644	***	-0.988	***
	(0.154)		(0.363)		(0.156)		(0.154)		(0.364)		(0.157)		(0.154)		(0.364)		(0.157)	
Constant	0.408		0.590		0.315		0.453		0.652		0.363		0.452		0.653		0.364	
	(0.102)		(0.252)		(0.100)		(0.106)		(0.260)		(0.103)		(0.106)		(0.260)		(0.103)	
Observations	13,536		4,043		9,551		13,536		4,043		9,551		13,536		4,043		9,551	
R-squared	0.009		0.008		0.011		0.009		0.008		0.012		0.009		0.01		0.012	

Robust standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

^Transformed using the inverse hyperbolic sine function

Table 6: Difference-in-Difference OLS Regressions of Total Family Wealth on Lagged Health and Retirement

	Total Family Wealth^																	
Model Number	1		2		3		4		5		6		7		8		9	
	Full		Black		White		Full		Black		White		Full		Black		White	
Total Family Income^	-0.348		-0.328		-0.405		-0.347		-0.331		-0.405		-0.349		-0.327		-0.407	
	(0.183)		(0.211)		(0.294)		(0.183)		(0.209)		(0.294)		(0.182)		(0.211)		(0.294)	
Married	-0.356		-0.614		-0.183		-0.358		-0.612		-0.188		-0.355		-0.612		-0.181	
	(0.338)		(0.605)		(0.394)		(0.337)		(0.607)		(0.392)		(0.337)		(0.607)		(0.392)	
Unemployed	-0.076		-0.396		0.181		-0.076		-0.392		0.182		-0.075		-0.392		0.186	
	(0.327)		(0.474)		(0.447)		(0.327)		(0.475)		(0.447)		(0.327)		(0.475)		(0.447)	
Retired	-0.178		-0.575		-0.016		-0.178		-0.571		-0.017		-0.152		-0.615		0.034	
	(0.154)		(0.418)		(0.132)		(0.154)		(0.418)		(0.132)		(0.157)		(0.441)		(0.135)	
Acute Health Shock							0.053		-0.163		0.170		0.089		-0.198		0.255	
							(0.146)		(0.344)		(0.147)		(0.173)		(0.387)		(0.176)	
Onset of Chronic Illness							-0.018		0.099		-0.040		-0.017		0.099		-0.037	
							(0.158)		(0.345)		(0.166)		(0.158)		(0.345)		(0.166)	
Acute Health Shock *													-0.169		0.218		-0.369	
Retired													(0.292)		(0.772)		(0.286)	
2003	0.260		-0.204		0.445	**	0.261		-0.205		0.450	**	0.262		-0.203		0.455	**
	(0.143)		(0.338)		(0.146)		(0.143)		(0.339)		(0.145)		(0.143)		(0.338)		(0.145)	
2005	0.013		0.010		0.029		0.011		0.019		0.027		0.012		0.018		0.030	
	(0.140)		(0.333)		(0.141)		(0.140)		(0.333)		(0.141)		(0.140)		(0.333)		(0.141)	
2007	-0.734	***	-1.086	**	-0.616	***	-0.733	***	-1.083	**	-0.610	***	-0.733	***	-1.083	**	-0.610	***
	(0.153)		(0.359)		(0.157)		(0.153)		(0.360)		(0.158)		(0.153)		(0.360)		(0.158)	
Constant	-0.028		0.041		-0.059		-0.027		0.027		-0.060		-0.028		0.027		-0.062	
	(0.100)		(0.241)		(0.100)		(0.103)		(0.247)		(0.103)		(0.103)		(0.247)		(0.103)	
Observations	10,666		3,179		7,532		10,666		3,179		7,532		10,666		3,179		7,532	
R-squared	0.006		0.006		0.007		0.006		0.006		0.008		0.006		0.006		0.008	

Robust standard errors in parentheses

*** p<0.001, ** p<0.01, * p<0.05

^Transformed using the inverse hyperbolic sine function

Conclusions

- Men demonstrate greater wealth elasticity of retirement than do women
- Black men's labor force participation particularly elastic to acute health shocks
  - Perhaps due to aspects of job such as physical requirements, benefits, leave policy, etc.
- Retirement reduces white wealth
- Retirement lowers black wealth only when combined with an acute health shock
- Great Recession Impacted All Equally, net of other household factors—i.e. no interaction

Thanks!

Descriptives

Table 1: Weighted Descriptive Statistics--Means and (Standard Deviations) by Survey Wave

	1999			2001			2003		
	Full	Black	White	Full	Black	White	Full	Black	White
Black	0.124	1.000	0.002	0.124	1.000	0.002	0.126	1.000	0.002
	(0.330)	0.000	(0.049)	(0.329)	0.000	(0.049)	(0.332)	0.000	(0.049)
Male	0.425	0.318	0.439	0.426	0.320	0.440	0.428	0.330	0.441
	(0.494)	(0.466)	(0.496)	(0.495)	(0.467)	(0.497)	(0.495)	(0.471)	(0.497)
Age	51.675	49.977	51.907	53.747	52.091	53.972	55.683	53.862	55.936
	(8.443)	(7.984)	(8.475)	(8.446)	(7.989)	(8.478)	(8.403)	(8.023)	(8.420)
Married	0.658	0.385	0.697	0.649	0.361	0.690	0.634	0.353	0.674
	(0.474)	(0.487)	(0.460)	(0.477)	(0.481)	(0.463)	(0.482)	(0.478)	(0.469)
Total Family Income	88,419	48,175	94,117	90,546	49,451	96,325	91,901	50,051	97,879
	(90,630)	(31,761)	(94,642)	(96,068)	(32,762)	(100,450)	(100,038)	(33,891)	(104,754)
Total Family Wealth	419,654	68,670	469,203	461,773	93,799	513,499	489,663	103,516	544,682
	(1,470,809)	(323,880)	(1,559,037)	(1,771,370)	(195,510)	(1,883,182)	(1,796,024)	(390,370)	(1,906,739)
Median Total Family Wealth	143,979	30,759	180,470	159,113	36,946	188,424	169,431	31,161	202,014
Years of Education	13.363	12.466	13.488	13.395	12.532	13.514	13.392	12.584	13.506
	(2.629)	(2.501)	(2.621)	(2.568)	(2.446)	(2.561)	(2.623)	(2.474)	(2.623)
Retired	0.125	0.096	0.128	0.157	0.161	0.157	0.177	0.155	0.179
	(0.331)	(0.295)	(0.335)	(0.364)	(0.368)	(0.364)	(0.381)	(0.362)	(0.384)
Acute Health Shock	0.035	0.042	0.034	0.087	0.096	0.085	0.096	0.094	0.096
	(0.184)	(0.201)	(0.181)	(0.281)	(0.294)	(0.279)	(0.295)	(0.292)	(0.295)
Chronic Health Condition Ons	0.138	0.154	0.135	0.188	0.219	0.183	0.180	0.228	0.173
	(0.345)	(0.361)	(0.342)	(0.391)	(0.414)	(0.387)	(0.385)	(0.420)	(0.378)

	2005			2007			2009		
	Full	Black	White	Full	Black	White	Full	Black	White
Black	0.129	1.000	0.003	0.129	1.000	0.002	0.129	1.000	0.003
	(0.335)	0.000	(0.051)	(0.335)	0.000	(0.050)	(0.335)	0.000	(0.051)
Male	0.425	0.332	0.439	0.433	0.337	0.446	0.431	0.333	0.444
	(0.495)	(0.471)	(0.496)	(0.496)	(0.473)	(0.497)	(0.495)	(0.472)	(0.497)
Age	57.597	55.573	57.888	59.546	57.473	59.843	61.527	59.556	61.809
	(8.446)	(8.018)	(8.462)	(8.412)	(7.965)	(8.429)	(8.414)	(7.949)	(8.437)
Married	0.616	0.341	0.657	0.605	0.322	0.647	0.574	0.293	0.616
	(0.486)	(0.475)	(0.475)	(0.489)	(0.468)	(0.478)	(0.495)	(0.456)	(0.487)
Total Family Income	92,635	50,453	98,816	92,538	50,632	98,685	90,858	49,210	96,959
	(114,121)	(36,528)	(120,102)	(122,728)	(38,196)	(129,391)	(135,077)	(38,049)	(142,784)
Total Family Wealth	529,782	118,689	590,725	601,431	148,669	669,778	696,538	121,235	780,637
	(1,604,460)	(283,655)	(1,705,619)	(1,702,961)	(383,965)	(1,808,785)	(4,323,745)	(262,494)	(4,619,354)
Median Total Family Wealth	199,442	34,263	242,188	214,511	38,827	265,510	188,947	36,077	228,150
Years of Education	13.405	12.532	13.531	13.402	12.536	13.526	13.381	12.666	13.484
	(2.646)	(2.678)	(2.616)	(2.655)	(2.676)	(2.627)	(2.714)	(2.515)	(2.725)
Retired	0.194	0.190	0.196	0.219	0.218	0.219	0.308	0.304	0.309
	(0.396)	(0.393)	(0.397)	(0.414)	(0.413)	(0.413)	(0.462)	(0.460)	(0.462)
Acute Health Shock	0.123	0.144	0.120	0.110	0.112	0.110	0.120	0.101	0.123
	(0.329)	(0.352)	(0.325)	(0.313)	(0.316)	(0.313)	(0.325)	(0.302)	(0.328)
Chronic Health Condition Ons	0.101	0.114	0.100	0.075	0.106	0.070	0.064	0.048	0.067
	(0.302)	(0.318)	(0.300)	(0.264)	(0.308)	(0.256)	(0.246)	(0.214)	(0.250)

Note: Standard deviations in parenthesis. All monetary values reported in 2009 dollars. Sample restricted to ages 40-70 in 1999 and 50-80 in 2009.