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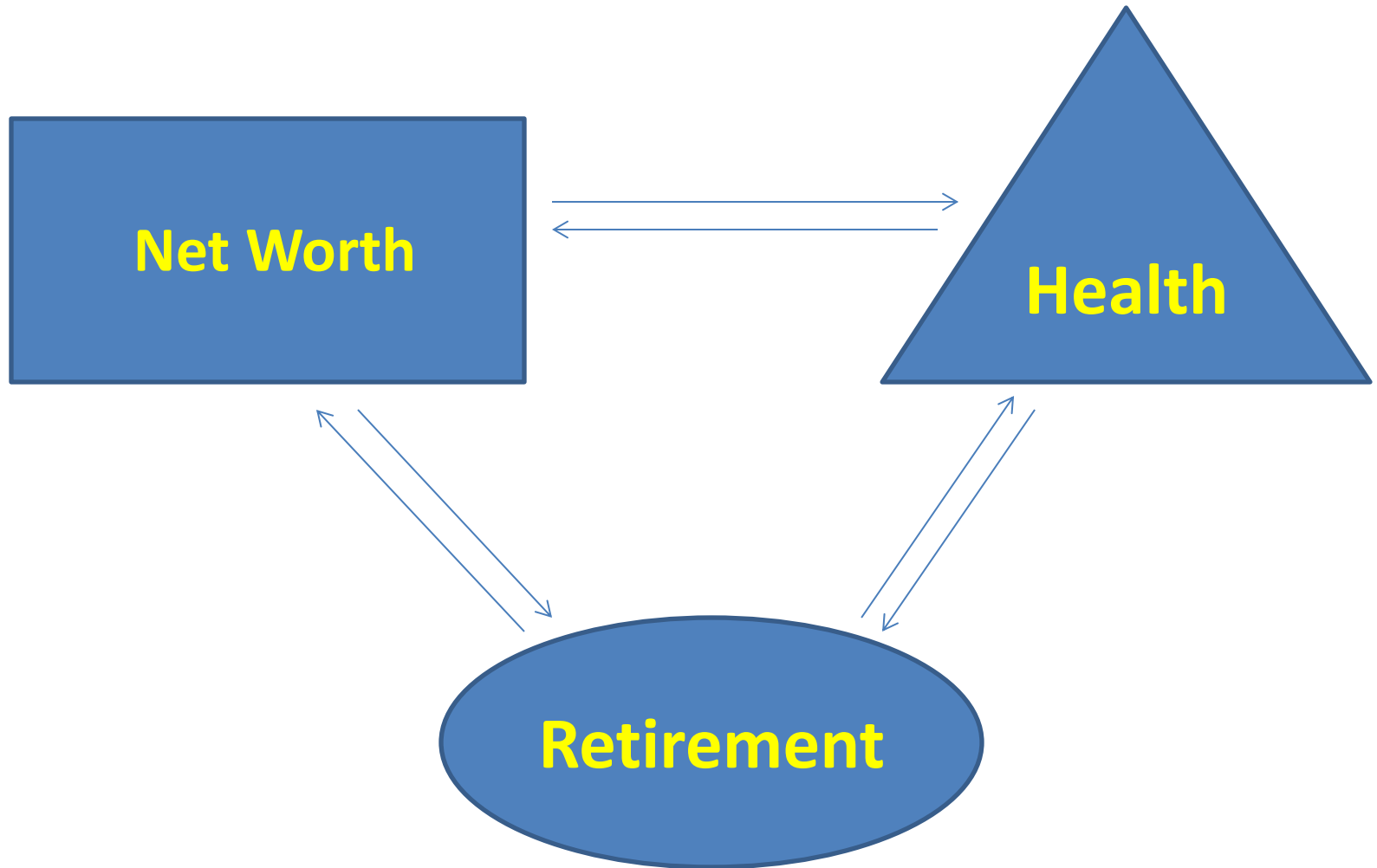
Dalton Conley

NYU & NBER

Jason Thompson

NYU

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

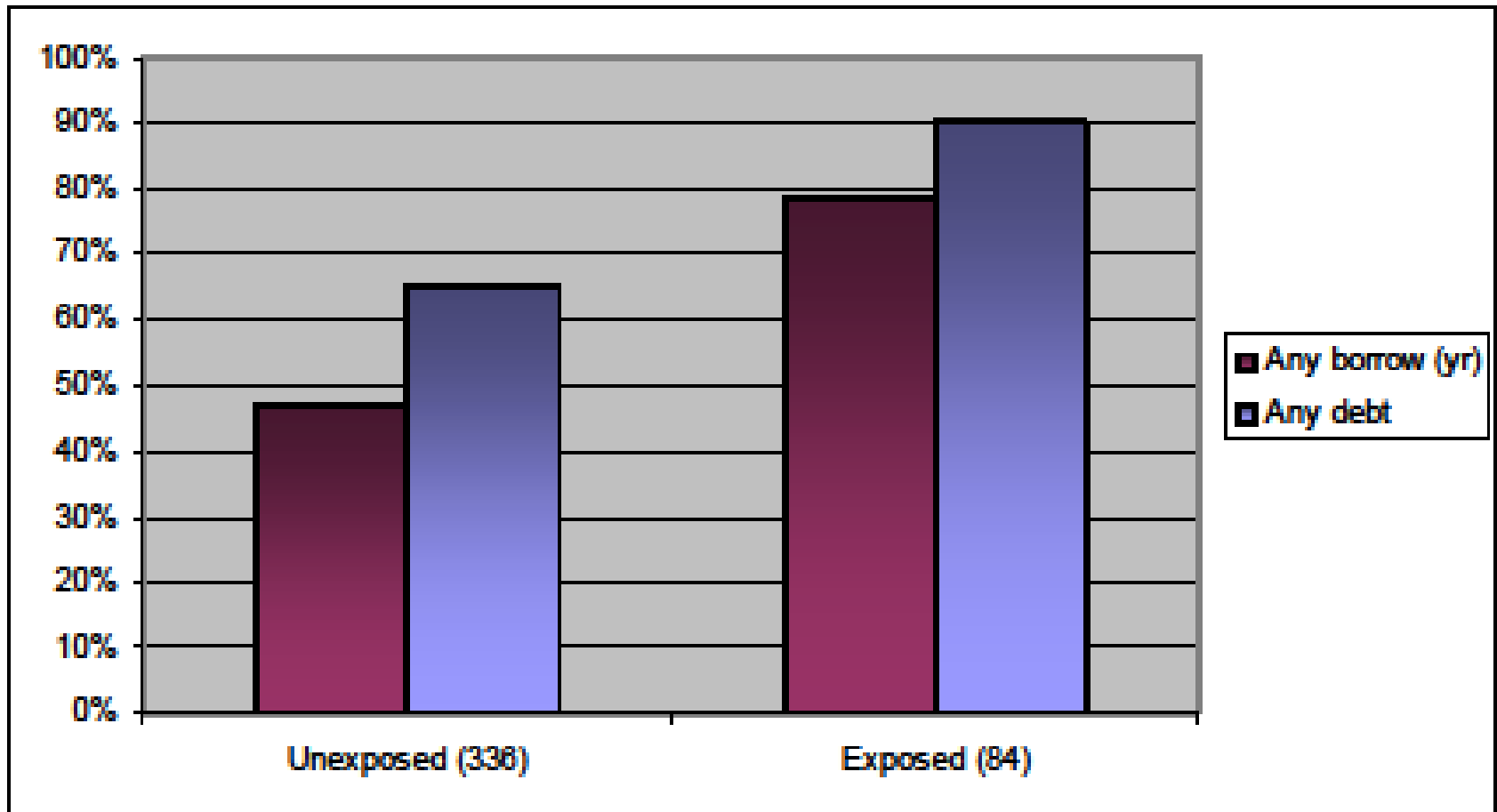# Previous Literature, Cont'd

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

Exogenous Health Shock: Monahan (2008)

FIGURE 3

SHARE OF HOUSEHOLDS WITH DEBT AND BORROWING IN PAST YEAR

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

Median Wealth Drops
(including Home)

Wave	Full Sample		Black Families		White Families	
	N	Median	N	Median	N	Median
1989	659	-23,063	180	-11,613	462	-28,641
1994	716	-36,541	208	-14,171	488	-47,342
1999	677	-41,449	217	-26,486	448	-58,471
2001	779	-36,841	220	-19,139	542	-52,215
2003	825	-45,838	235	-27,165	564	-55,450
2005	738	-35,524	230	-19,650	483	-55,771
2007	790	-49,824	242	-23,331	531	-65,011
All	5,184	-37,488	1,532	-19,362	3,518	-50,510

Median Wealth Drops (Financial)

Wave	Full Sample		Black Families		White Families	
	N	Median	N	Median	N	Median
1989	711	-14,834	201	-7,246	494	-20,196
1994	722	-23,439	210	-11,164	488	-29,153
1999	722	-33,140	224	-16,231	485	-46,108
2001	852	-28,872	225	-12,920	607	-41,970
2003	904	-35,784	246	-13,297	632	-50,048
2005	842	-30,496	237	-14,378	580	-39,249
2007	832	-33,161	255	-13,361	558	-50,763
All	5,585	-27,988	1,598	-12,398	3,844	-39,247

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 Illness	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 * Retired							-0.238	-1.445 *	0.206
							(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 * Retired							-0.169	0.218	-0.369
							(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!