Cognitive Decline and Dynamic Selection: APPENDIX*

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Table 1: Confidence Intervals for Figure 1

	NHATS							
	Age 72		Age 81		Age 90		Age 96+	
	LB	UB	LB	UB	LB	UB	LB	UB
66	9.863	10.841						
69	9.622	10.159						
72	8.886	9.331	9.526	10.162				
75			9.137	9.527				
78			8.484	8.834				
81			7.642	8.008	8.256	9.071		
84					8.050	8.503		
87					7.255	7.649	7.102	8.613
90					6.068	6.497	7.115	7.862
93							6.414	6.997
96							5.395	5.928
	HRS							
	Age 63		Age 72		Age 81		Age 90	
	LB	UB	LB	UB	LB	UB	LB	UB
57	10.803	11.444	11.869	12.215				
60	10.054	10.786	11.262	11.694				
63	9.765	10.368	10.787	11.205	11.253	11.596		
66			10.417	10.787	10.748	11.096		
69			9.713	10.106	10.310	10.618	10.154	11.707
72			9.145	9.540	9.867	10.189	10.062	10.829
75					9.212	9.507	9.637	10.317
78					8.429	8.717	9.239	9.790
81					7.363	7.672	8.569	9.109
84							7.761	8.194
87							6.768	7.205
90							5.294	5.692

Notes: The table provides 95% confidence intervals for Figure 1 of the main text. For each panel, the respective columns are labeled for the maximum age of observation. LB and UB stand for the 95% confidence lower bound and upper bound, respectively.

Table 2: Sample Construction

	NHATS	HRS	AHEAD
Total Sample	12,411	13,631	8,337
Potential Sample	8,245	12,402	7,291
Nonmissing Waves	7,366	9,462	6,482
Nonmissing Smoking	7,351	8,984	6,458
Nonmissing Chronic Health	7,046	8,981	6,458
Nonmissing Cognitive Health	5,933	7,440	4,192
Non-Proxy	5,750	.	.
Initial Age>50	.	7,077	4,185
Individual n	5,750	11,262	
Person/Wave n	28,429	76,831	

Notes: The table explains how each sample was constructed. The potential sample reflects the set of individuals who appeared at least once in each respective panel. The HRS and AHEAD potential samples are those that participated in least one wave starting at wave three. I combine HRS and AHEAD samples and label them the HRS sample.

Table 3: Chronic Conditions

NHATS	HRS
Heart Attack	High Blood Pressure
Heart Disease	Diabetes
High Blood Pressure	Cancer
Arthritis	Lung Disease
Osteoporosis	Heart Disease
Diabetes	Stroke
Lung Disease	Psychiatric Problems
Stroke	Arthritis
Cancer	

Notes: The table lists the chronic conditions that contribute to the count of chronic conditions variable H used throughout the text.

Table 4: IPW Probit Estimates

	NHATS, n=28,429		NHATS, n=76,831	
	Coef.	S.E.	Coef.	S.E.
Current Smoker $t = 1$	-0.192	0.035	-0.321	0.021
Former Smoker $t = 1$			-0.049	0.020
Word Recall Score $t = 1$	0.058	0.003	0.015	0.002
Chronic Health Conditions $t = 1$	-0.022	0.006	-0.128	0.006
Age/100 $t = 1$	-0.456	0.138	-3.705	0.153
College Graduate	0.156	0.024	0.081	0.020
Race				
Black	0.025	0.025	-0.029	0.022
Other	-0.137	0.035	-0.042	0.046
Female	0.041	0.020	0.130	0.015
Ahead			-0.137	0.030
Nonmetro Residence	0.049	0.024		
Constant	0.984	0.122	3.742	0.102

Notes: The table presents IPW probit estimates from NHATS and HRS samples. In both cases, the sample size includes all observations because the samples were constructed such that a person may die or attrit following the initial wave. The outcome is whether an individual exits the sample in wave t.

Table 5: Smoking Behavior: System

	NHATS		HRS	
	Est.	St. Err.	Est.	St. Err.
L. Current Smoker	7.356	0.108	8.212	0.165
L. Former Smoker			3.184	0.168
L. Word Recall Score	-0.148	0.033	-0.033	0.010
Chronic Conditions	-0.001	0.051	-0.050	0.016
Age/100	-9.058	1.411	-3.585	0.462
College Graduate	-0.242	0.212	-0.376	0.071
Race				
Black	-0.043	0.184	-0.054	0.072
Other	-0.680	0.348	0.173	0.144
Female	0.226	0.168	0.173	0.052
Nonmetro Residence	-0.145	0.205		
AHEAD			0.682	0.104
Avg. Cost Pack	-0.003	0.112		
Pack Sales Per Capita	-0.191	0.126		
Gross Rev.	-0.016	0.103		
Cons	3.126	1.264	-4.096	0.371
Permanent Mass Points				
μ_2^s	-0.114	0.345	0.349	0.201
μ_3^s	0.145	0.452	0.190	0.145
μ_4^s	-0.977	0.399	-0.148	0.328
μ_5^s	-0.337	0.265	0.207	0.136

Notes: The table presents estimates of the smoking logit equation from the DFRE estimator in which all equations are estimated jointly. Samples sizes are 28,429 and 76,831 person/year observations for NHATS and HRS, respectively.

Table 6: Chronic Conditions: System

	NHATS		HRS	
	Est.	St. Err.	Est.	St. Err.
L. Chronic Conditions	0.944	0.003	0.974	0.002
L. Current Smoker	0.040	0.014	0.060	0.006
L. Former Smoker			0.026	0.005
L. Word Recall Score	-0.001	0.002	-0.002	0.001
Age/100	0.119	0.063	0.207	0.032
College Graduate	-0.009	0.010	-0.015	0.005
Race				
Black	-0.001	0.010	-0.011	0.006
Other	0.028	0.015	-0.029	0.013
Female	0.044	0.008	-0.014	0.004
Nonmetro Residence	0.014	0.009		
AHEAD			0.026	0.007
Constant	0.165	0.061	0.126	0.026
Permanent Mass Points				
μ_2^a	0.005	0.018	0.012	0.015
μ_3^a	0.006	0.020	0.000	0.010
μ_4^a	-0.009	0.020	1.097	0.024
μ_5^a	-0.009	0.014	-0.008	0.010

Notes: The table presents estimates of the general health H equation from the DFRE estimator in which all equations are estimated jointly. Samples sizes are 28,429 and 76,831 person/year observations for NHATS and HRS, respectively.

Table 7: Mortality and Attrition

	NHATS				HRS			
	Mortality		Attrition		Mortality		Attrition	
	Est.	St. Err.	Est.	St. Err.	Est.	St. Err.	Est.	St. Err.
Chronic Conditions	0.206	0.018	-0.115	0.024	0.364	0.010	-0.009	0.018
Current Smoker	0.585	0.115	0.288	0.139	0.814	0.047	0.046	0.079
Former Smoker					0.334	0.044	-0.099	0.061
Word Recall Score	-0.201	0.015	-0.027	0.013	-0.158	0.006	-0.067	0.010
Age/100	7.830	0.471	-1.796	0.579	4.217	0.259	-1.158	0.384
College Graduate	-0.200	0.081	-0.505	0.097	-0.116	0.044	0.028	0.067
Race								
Black	-0.238	0.077	0.095	0.095	0.028	0.042	-0.147	0.076
Other	-0.480	0.126	0.831	0.134	-0.135	0.100	0.214	0.132
Female	-0.312	0.060	0.040	0.080	-0.339	0.031	0.059	0.053
Nonmetro Residence	0.136	0.071	-0.245	0.098				
AHEAD					0.991	0.049	0.106	0.081
Constant	-8.005	0.477	-1.928	0.546	-5.579	0.201	-2.683	0.303
Permenant Mass Points								
$\mu_2^{\cdot}$	-10.283	0.000	3.769	0.176	0.544	0.117	0.509	0.261
$\mu_3^{\cdot}$	0.265	0.212	0.956	0.278	-0.010	0.079	0.465	0.177
$\mu_4^{\cdot}$	-0.343	0.164	1.664	0.229	1.568	0.153	1.823	0.295
$\mu_5^{\cdot}$	-0.314	0.127	-0.335	0.350	-0.233	0.076	0.309	0.185

Notes: The table presents estimates of the mortality and attrition logit equations from the DFRE estimator in which all equations are estimated jointly. Samples sizes are 28,429 and 76,831 person/year observations for NHATS and HRS, respectively.

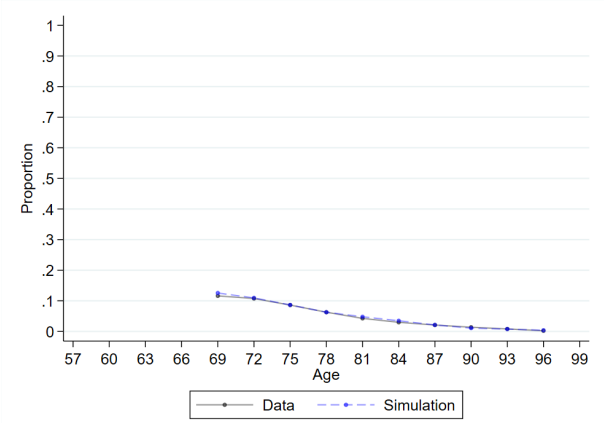
Table 8: Estimated Distribution of Unobserved Heterogeneity

			NHATS		*HRS*	
			Coef.	S.E.	Coef.	S.E.
Type 2	Constant	ψ_0^2	0.250	0.551	0.152	0.434
	S_{i1}	ψ_1^2	-0.215	0.162	0.277	0.183
	F_{i1}	ψ_2^2	-0.049	0.093	0.036	0.151
	H_{i1}	ψ_3^2	0.065	0.029	-0.014	0.053
	C_{i1}	ψ_4^2	0.020	0.014	0.022	0.019
	Age_{i1}	ψ_5^2	-0.604	0.651	-1.292	0.634
Type 3	Constant	ψ_0^3	-1.507	1.032	0.527	0.475
	S_{i1}	ψ_1^3	-0.063	0.334	0.388	0.132
	F_{i1}	ψ_2^3	0.193	0.172	0.130	0.104
	H_{i1}	ψ_3^3	-0.023	0.056	-0.014	0.037
	C_{i1}	ψ_4^3	0.008	0.027	0.034	0.014
	Age_{i1}	ψ_5^3	0.059	1.216	0.434	0.731
Type 4	Constant	ψ_0^4	-0.745	0.845	-1.367	0.309
	S_{i1}	ψ_1^4	-0.278	0.264	0.558	0.259
	F_{i1}	ψ_2^4	-0.102	0.141	0.147	0.228
	H_{i1}	ψ_3^4	0.055	0.046	-0.019	0.075
	C_{i1}	ψ_4^4	0.003	0.022	0.028	0.028
	Age_{i1}	ψ_5^4	-0.494	0.991	-0.858	0.225
Type 5	Constant	ψ_0^5	0.628	0.708	0.436	0.422
	S_{i1}	ψ_1^5	-0.113	0.205	0.381	0.148
	F_{i1}	ψ_2^5	0.070	0.118	0.056	0.118
	H_{i1}	ψ_3^5	0.008	0.037	-0.039	0.042
	C_{i1}	ψ_4^5	0.002	0.019	0.033	0.015
	Age_{i1}	ψ_5^5	-1.239	0.839	0.894	0.635

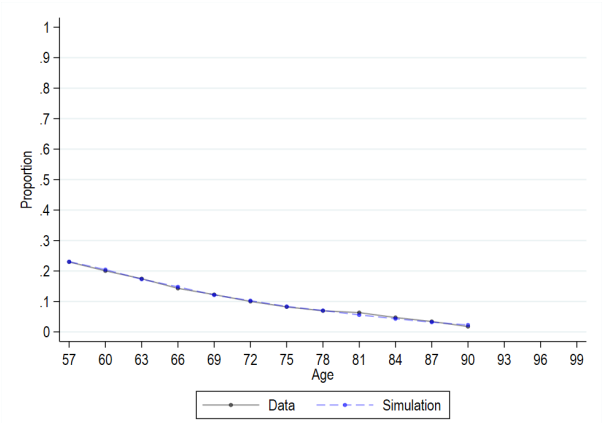
Notes: The table presents the estimates of the ψ parameters and the associated standard errors from the initial conditions equation. For types two through five, the probability of a given unobserved type is allowed to shift by realized values of the initial endogenous variables.

Figure 1: Model Fit: Smoking and Health

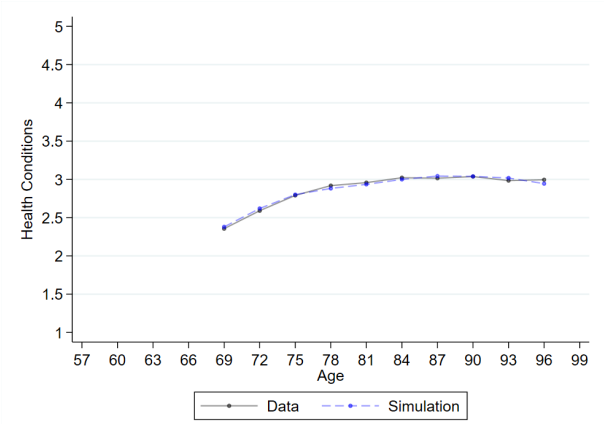
a. NHATS: Smoking



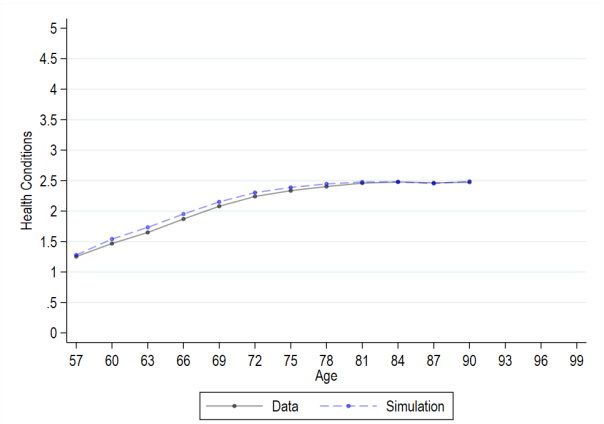
b. HRS: Smoking



c. NHATS: Health

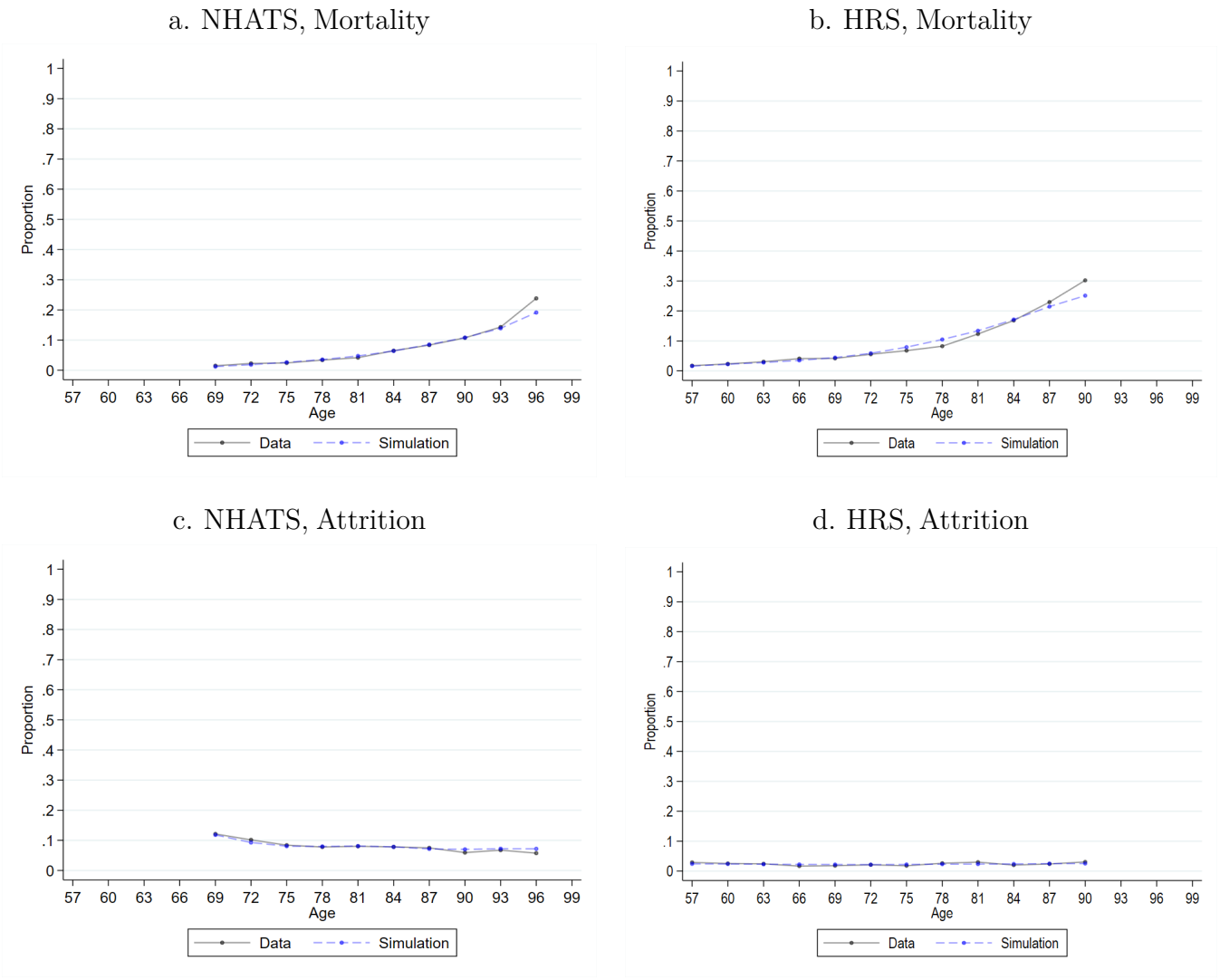


d. HRS: Health



Notes: The figure presents smoking behavior (a. and b.) and general health (c. and d.) for the NHATS and HRS samples. The black solid lines come directly from the data conditional on remaining in the sample data, and the blue dotted lines come from simulation, conditional on remaining in the simulated sample.

Figure 2: Model Fit: Death and Attrition



Notes: The figure presents mortality probabilities (a. and b.) and attrition probabilities (c. and d.) for the NHATS and HRS samples. The black solid lines come directly from the data conditional on remaining in the sample data, and the blue dotted lines come from simulation, conditional on remaining in the simulated sample.