

The Mortality Consequences of Home Ownership: Evidence from Social Security Death Records

Prepared for Florida State University, Department of Sociology

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Background and Research Interests

Education and Research Experience

- ▶ Ph.D. Candidate, Department of Demography, UC Berkeley (May 2023)
 - ▶ MA, Department of Biostatistics, UC Berkeley (May 2020)

Two Lines of Research

- ▶ Health and Mortality Disparities
 - ▶ Large-scale administrative data + record linkage
- ▶ Network-based Sampling Methods

Motivation

- ▶ We are far from a complete understanding of the causal determinants of health and mortality in the United States

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- ▶ We are far from a complete understanding of the causal determinants of health and mortality in the United States
- ▶ Explosion of new administrative data has opened up new opportunities to study mortality and health disparities

Research Question

- ▶ What is the association between **homeownership** and longevity? How does it vary by race?
- ▶ What is the causal impact of homeownership on longevity?

Homeownership: Core component of the American Dream



- ▶ The home is the single largest source of wealth among U.S. adults

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- Introduction
Data and Methods
Results
Conclusion
Reserve slides
References

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Homeownership: Core component of the American Dream



- ▶ The home is the single largest source of wealth among U.S. adults
- ▶ Dominant narrative of success in the U.S. involves owning a home
- ▶ Striking historical disparities in who owns a home

Homeownership: Core component of the American Dream



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Yet homeownership and health is relatively understudied...

- ▶ Fundamental cause theory suggests that owning a home would be a key determinant of health ([Link and Phelan, 1995](#); [Finnigan, 2014](#))

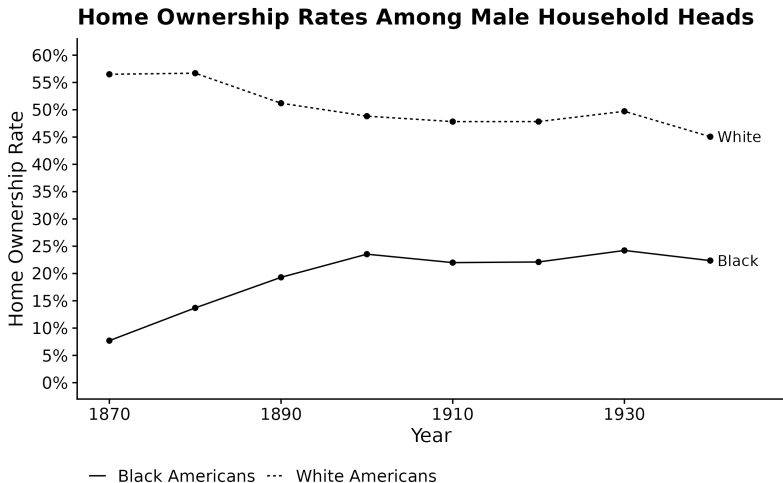
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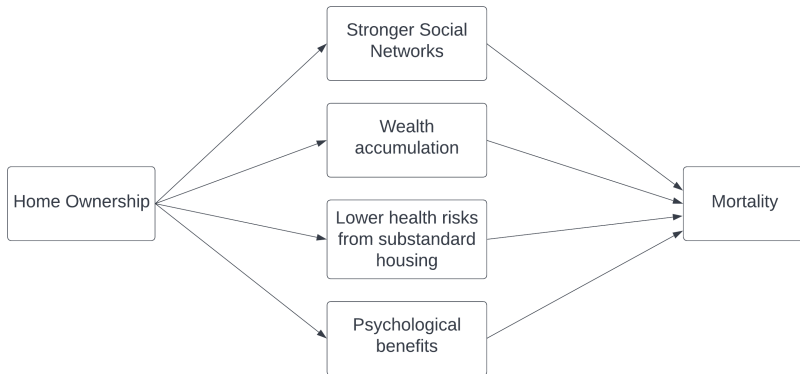
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- ▶ Homeownership associated with 30% lower mortality in Finland ([Laaksonen et al., 2008](#))
- ▶ Study of England's "Right to Buy" policy found homeownership increased self-rated health by 0.19 points (1-5 scale) ([Munford, Fichera and Sutton, 2020](#))

Massive Black-White disparities in homeownership



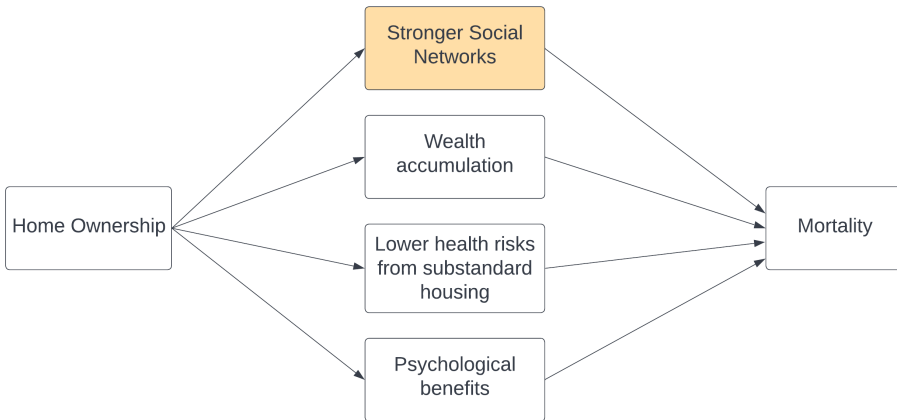
Source: IPUMS-USA Full Count Census Data

How does homeownership affect mortality?



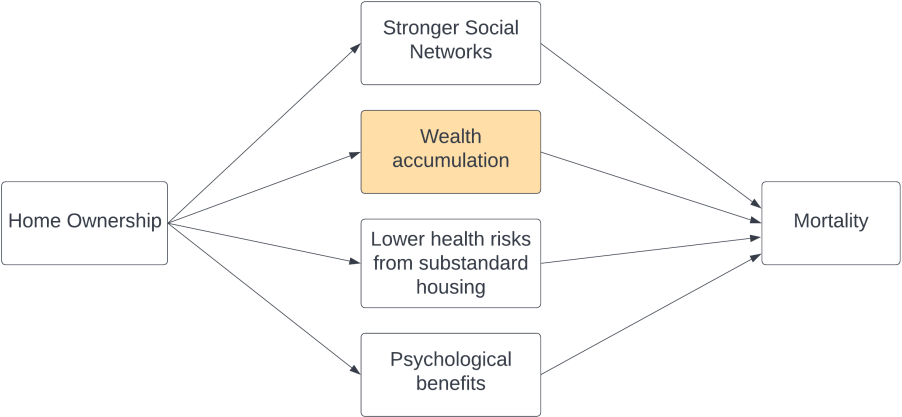
Causal pathways between homeownership and longevity

Causal pathways



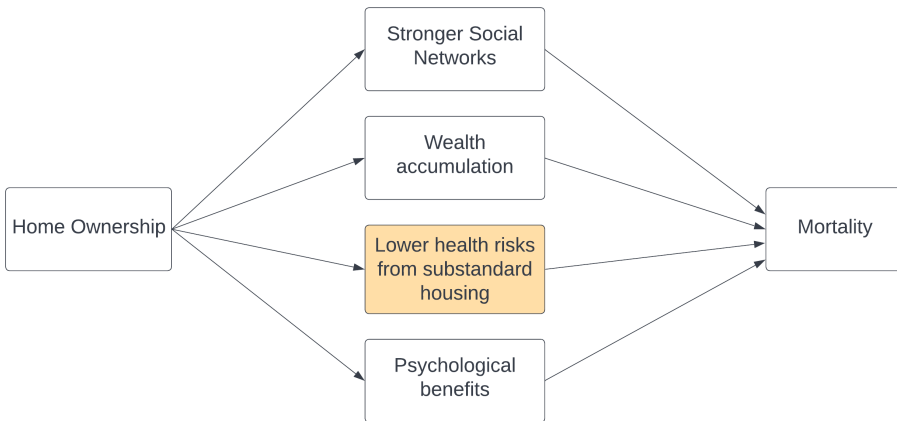
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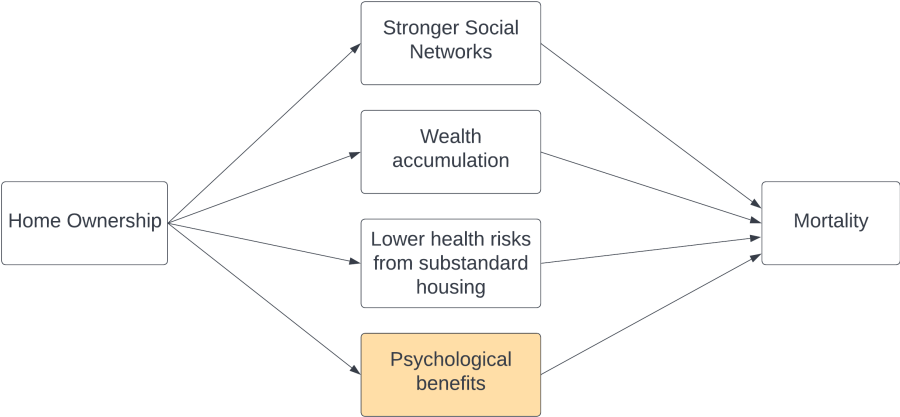
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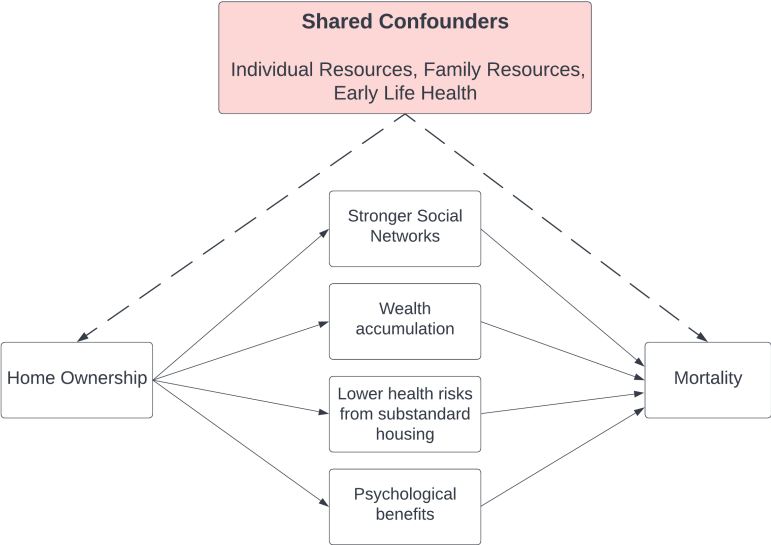
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Causal pathways between homeownership and longevity

Causal pathways with shared confounders



This study exploits advances in data digitization and record linkage:

- ▶ Digitization of full-count Census records

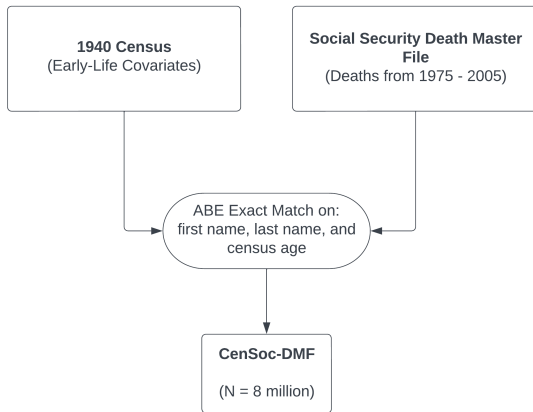
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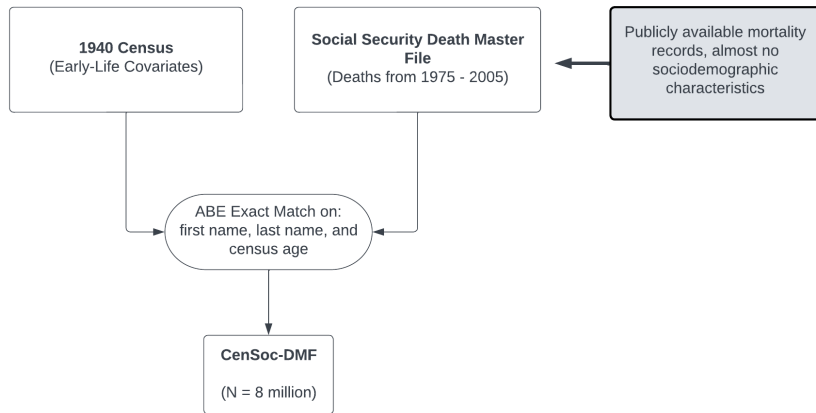
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- ▶ **Publicly Available:** Reproducible, extendable science. No barriers to entry.

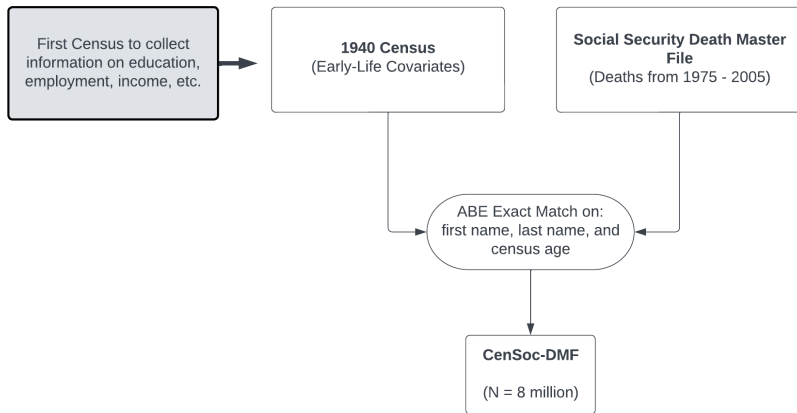
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1940 Census

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1940 Census

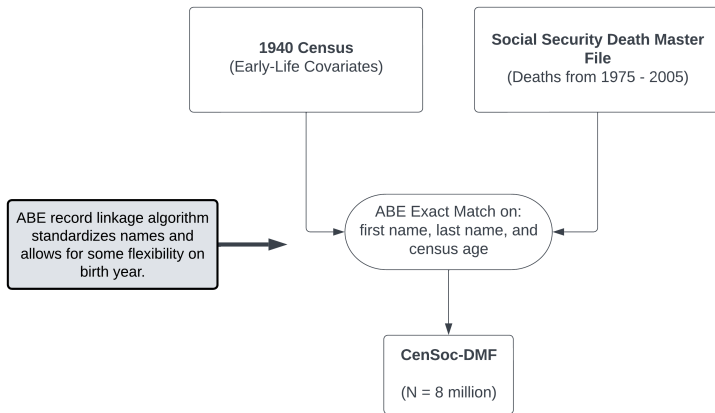
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- ▶ Question on homeownership status (rent vs. own) and estimate of home value for owners

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1940 Census Form

CenSoc-DMF: Linked census and mortality records



The association between homeownership and longevity

- ▶ This match results in a large-scale dataset ($N = 860,000$) that allows for the estimation of the association between homeownership and longevity
- ▶ Also allows for the estimation of the association by population subgroups (e.g., Black / White)
- ▶ This association doesn't necessarily imply a causal relationship

Is this relationship causal?

- ▶ We use a **sibling-based identification strategy** to control for shared family background and genetics
- ▶ Unfortunately, 1940 Census doesn't collect information about adult siblings. . .

Creating longitudinal panel of brothers ($N = 80,000$)

- Identify same-household brothers in Full-Count 1920 Census (IPUMS-USA)

Creating longitudinal panel of brothers ($N = 80,000$)

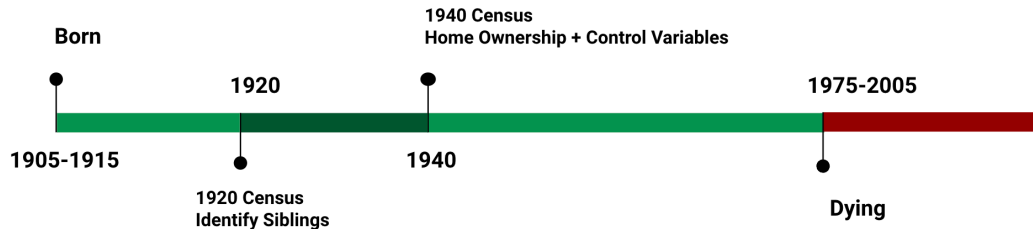
- ▶ Identify same-household brothers in Full-Count 1920 Census ([IPUMS-USA](#))
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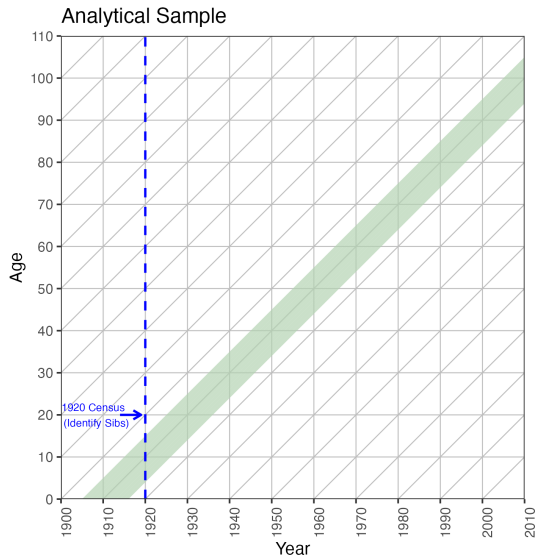
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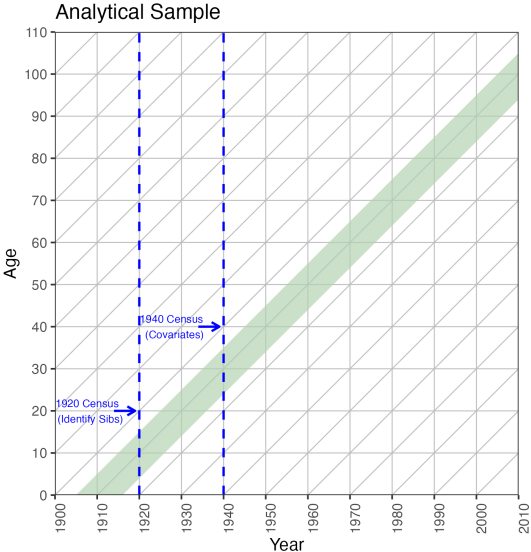
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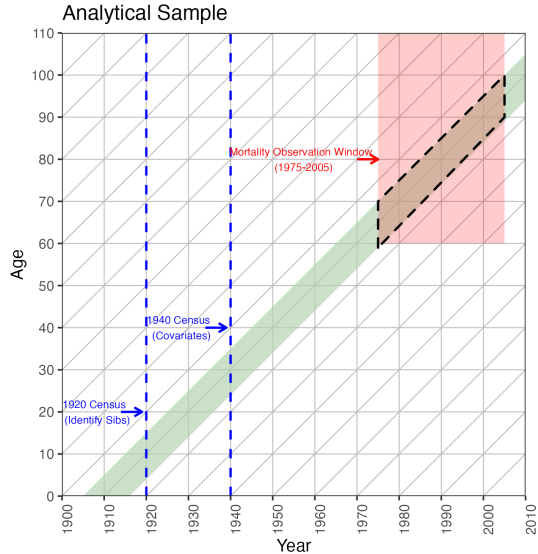
Lexis diagrams



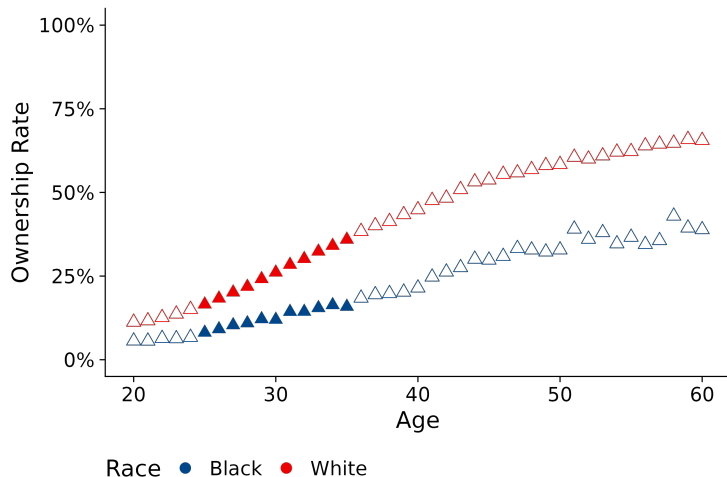
Lexis diagrams



Lexis diagrams



Homeownership in 1940



Proportion of male household heads who own their home in 1940

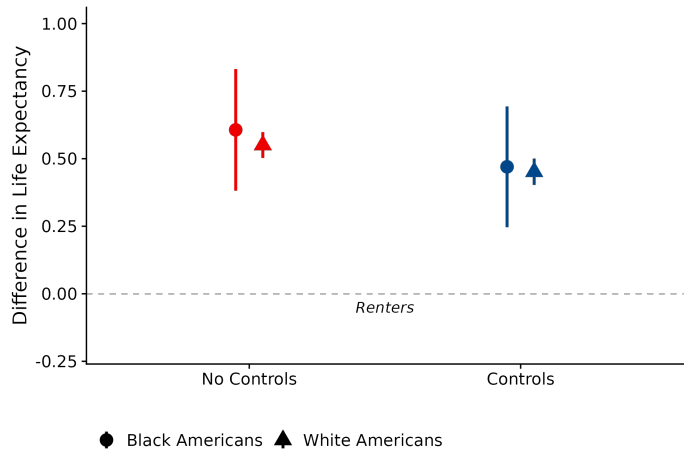
Methods: OLS regression on age of death

$$\text{Death age} = \beta_0 + \lambda_{\text{year}} + \delta_{\text{homeown}} + \epsilon \quad (\text{Model 1})$$

$$\text{Death age} = \beta_0 + \lambda_{\text{year}} + \delta_{\text{homeown}} + \beta Z_{\text{controls}} + \epsilon \quad (\text{Model 2})$$

- ▶ Controls: education, income, occupation, marital status, state, and urbanicity
- ▶ Fit separately for White (N = 821k) and Black Americans (N = 34k)

Full sample results: similar association for Blacks and Whites



Causal identification with sibling subsample

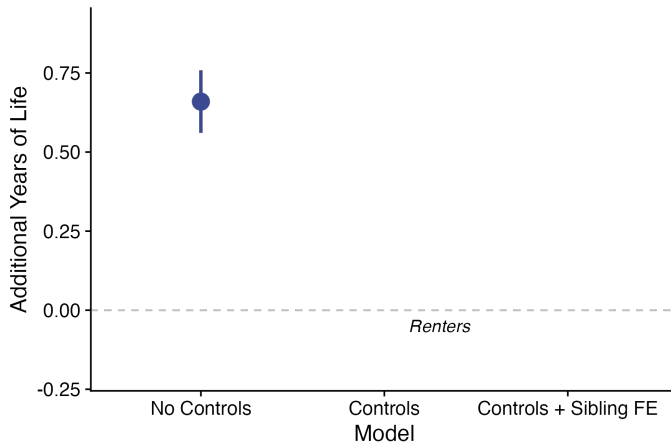
Sibling fixed effects identification strategy: control for hard-to-measure confounders (e.g., family wealth).

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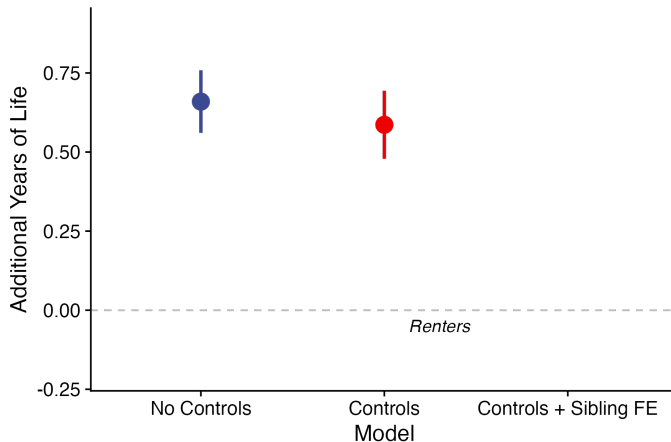
$$\text{Death age} = \beta_0 + \lambda_{\text{year}} + \delta_{\text{homeown}} + \beta Z_{\text{controls}} + \Omega_{\text{FamilyFE}} + \epsilon \quad (\text{Model 3})$$

Mortality advantage of homeowners



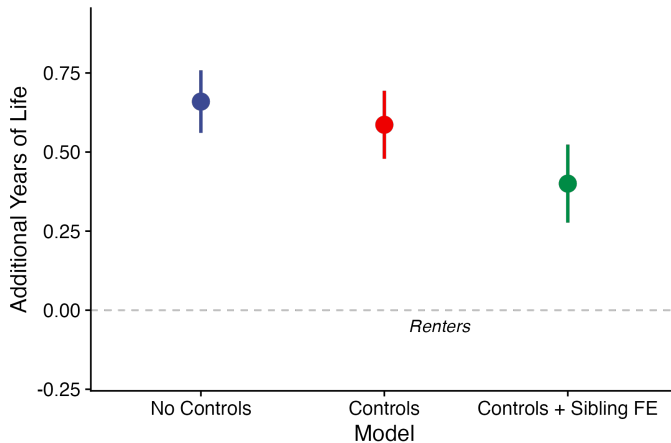
Baseline model with birth year fixed effects

Mortality advantage of homeowners



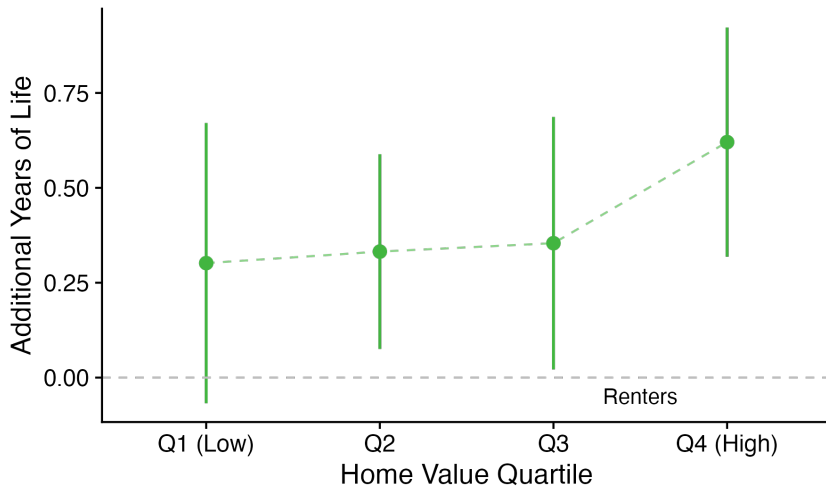
Add controls for education, race, income, occupation, marital status, state, and urbanicity

Mortality advantage of homeowners



Baseline model + controls + sibling fixed effects + birth order

Does the effect vary by home value?



model  Controls + Family FE

Considerations and future directions

- ▶ Threats to causal inference: **residual confounding** within brothers

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- ▶ Threats to causal inference: **residual confounding** within brothers
- ▶ Homeownership is dynamic – longitudinally track homeownership
- ▶ Future work could investigate other historical time periods and cohorts

Conclusions

- ▶ There is a **causal impact** of homeownership in early adulthood (for men) on longevity

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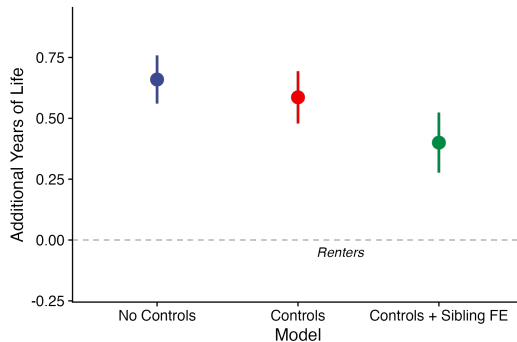
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- ▶ Black-White disparities in homeownership partially account for Black-White disparities in mortality

Conclusions


- ▶ There is a **causal impact** of homeownership in early adulthood (for men) on longevity
- ▶ Black-White disparities in homeownership partially account for Black-White disparities in mortality
- ▶ **Policy implications:** policies that subsidize and facilitate homeownership can help mitigate mortality disparities

Thank You

► Questions?

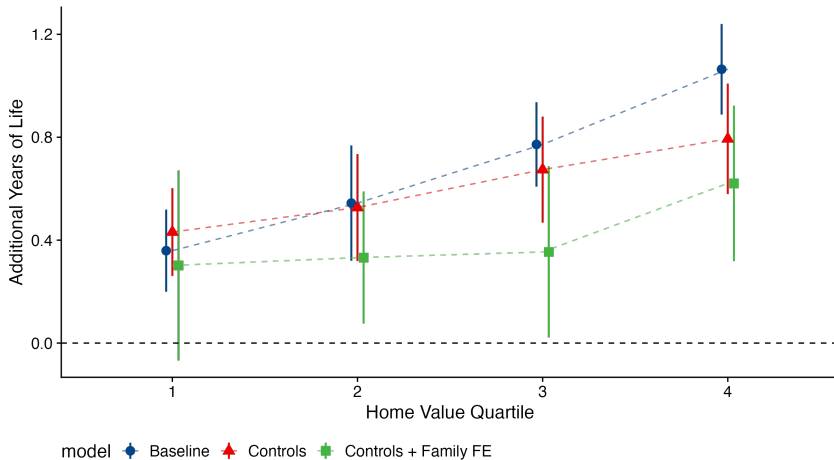


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Reserve Slides

Does the effect vary by home value?



Representativeness of samples

	General Pop		CenSoc-DMF		CenSoc-DMF Siblings	
	No.	%	No.	%	No.	%
Educational Attainment						
<High School	4951782	67.3	608639	64.7	26137	66.7
High School or some college	1783203	24.3	247103	26.3	10133	25.9
Bachelors Degree	339072	4.6	48024	5.1	1664	4.2
Advanced Degree	162122	2.2	24559	2.6	820	2.1
NA	117086	1.6	12091	1.3	441	1.1
Race						
Black	656027	8.9	34159	3.6	278	0.7
Other	27778	0.4	3296	0.4	43	0.1
White	6669460	90.7	902961	96.0	38874	99.2
Marital Status						
Married	7013184	95.4	905924	96.3	38102	97.2
Not married	340081	4.6	34492	3.7	1093	2.8
Homeownership						
Homeowner	1780906	24.2	249379	26.5	11553	29.5
Not Homeowner	5572359	75.8	691037	73.5	27642	70.5
Socioeconomic Status Indicator						
Sei 1-9	1293523	17.6	138209	14.7	5513	14.1
Sei 10-14	1170543	15.9	149673	15.9	7962	20.3
Sei 15-25	1862967	25.3	246484	26.2	10028	25.6
Sei 26+	2776321	37.8	380226	40.4	14745	37.6
NA	249911	3.4	25824	2.7	947	2.4
Rural						
Rural	3183160	43.3	397739	42.3	19754	50.4
Urban	4170105	56.7	542677	57.7	19441	49.6

Robustness checks

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Robustness checks

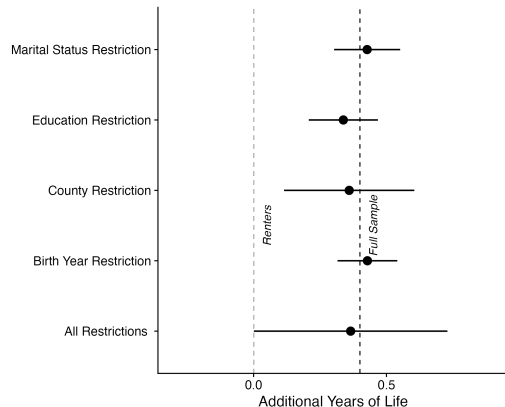
- ▶ Restrict to brothers living in the same county in 1940
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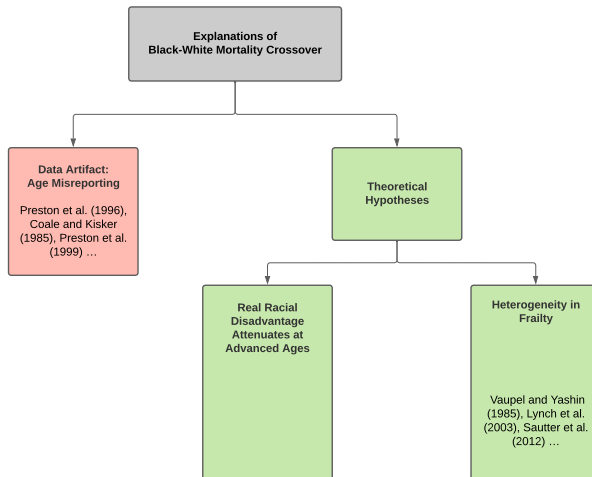
Full regression output

Dependent Variable: Model:	(1)	Age of Death (2)	(3)
<i>Variables</i>			
Own Home	0.6595*** (0.0505)	0.5823*** (0.0551)	0.3933*** (0.0626)
Education (Years)		0.1663*** (0.0123)	0.1425*** (0.0221)
Race (White)		-0.0952 (0.1804)	-0.4184 (0.7135)
Urban		-0.3318*** (0.0729)	-0.0377 (0.1051)
<i>Fixed-effects</i>			
Birth Year	Yes	Yes	Yes
Occupation, Marital Status		Yes	Yes
State		Yes	Yes
Family Fixed Effects			Yes
Birth Order			Yes
<i>Fit statistics</i>			
Observations	79,679	78,426	78,426
R ²	0.03276	0.04670	0.55442
Within R ²	0.00141	0.00386	0.00154

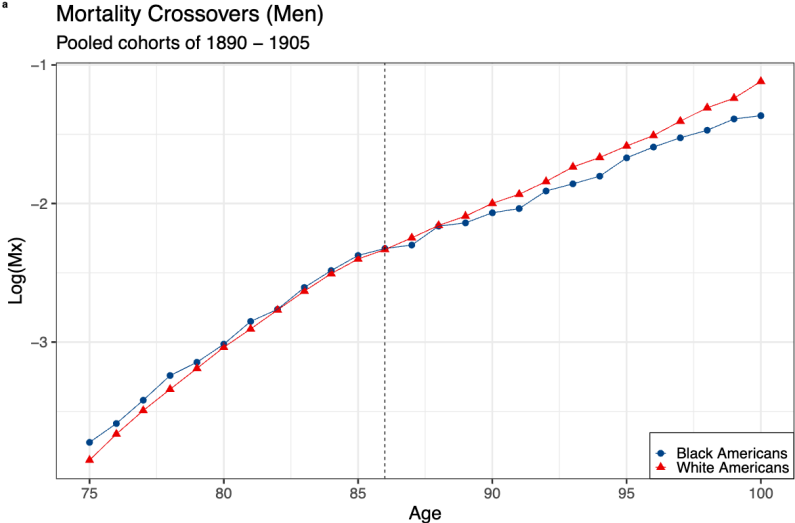
Clustered (by year) standard-errors in parentheses

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

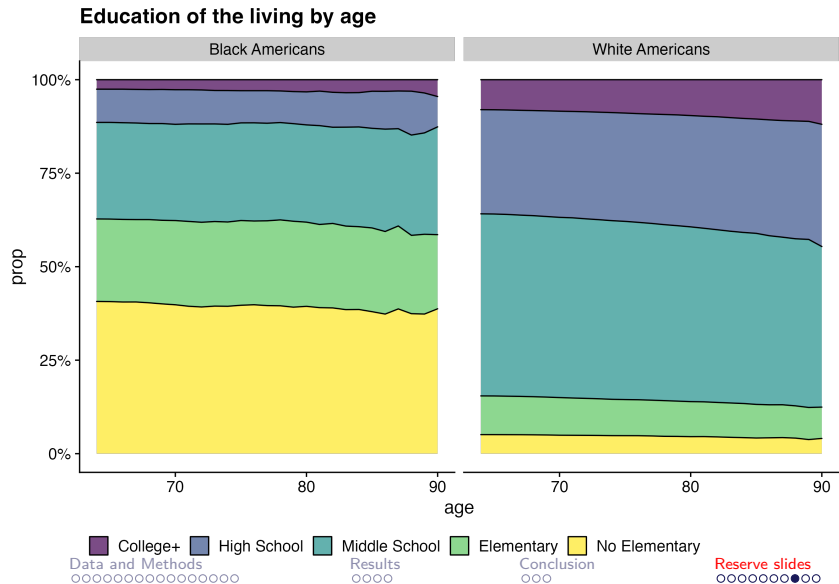
Explanations for the Black-White Mortality Crossover



Black-White Mortality Crossover in CenSoc (not artifact)

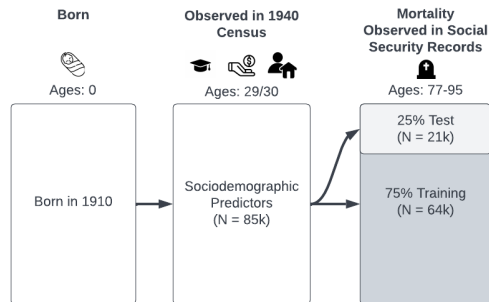


We observe little mortality selection ...



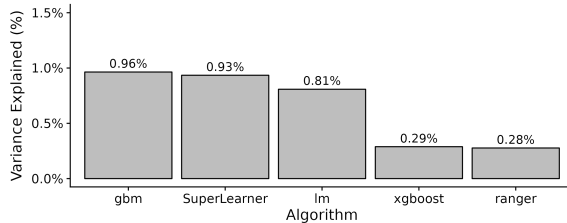
Can we predict later-life longevity using early-life characteristics?

- ▶ Researchers are increasingly seeking to pose and answer research questions about prediction at the individual-level (e.g., [Salganik et al. 2020](#), [Hofman et al. 2017](#), [Arpino et al. 2022](#))
- ▶ **Machine learning approach:** allows for detection of interaction terms and higher order effects

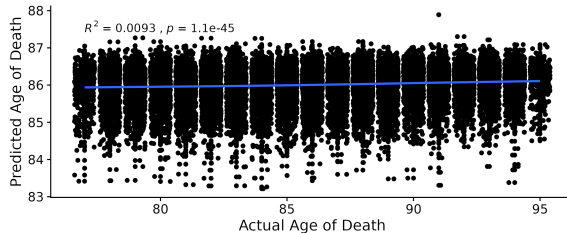


Best model explains less than 1% of variation in age of death

A Algorithm Performance (R^2)

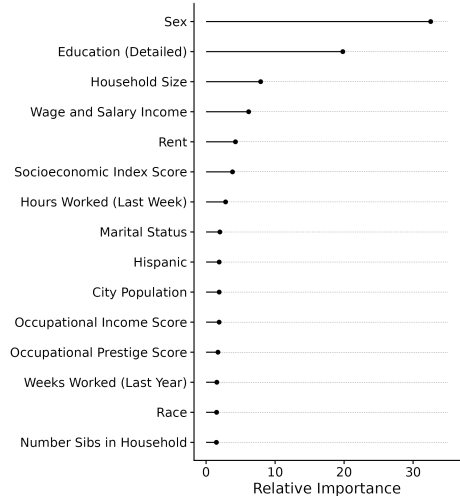


B Superlearner: Predicted vs. Observed Age of Death



C

Variable Importance



References

- Finnigan, Ryan. 2014. "Racial and Ethnic Stratification in the Relationship Between Homeownership and Self-Rated Health." *Social science & medicine* (1982) 115:72–81.
- Laaksonen, M., P. Martikainen, E. Nihtilä, O. Rahkonen and E. Lahelma. 2008. "Home Ownership and Mortality: A Register-Based Follow-up Study of 300,000 Finns." *Journal of Epidemiology and Community Health* 62(4):293–297.
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