EQUALITY OF OPPORTUNITY AND MORTALITY IN EUROPE

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Motivation

Our interest in individual-level consequences of intergenerational social mobility

- Negative ("falling from grace") effects
- Positive ("rising from rags") effects

Focus of our study

Equality of opportunity from societal perspective

- Individual effects → macro-level associations?

Methodological contribution

- Linking survey and registry data

Potential mechanisms

1. Health investments approach

2. Social justice approach

Research design

Five rounds (2002-2010) of the European Social Survey (ESS)

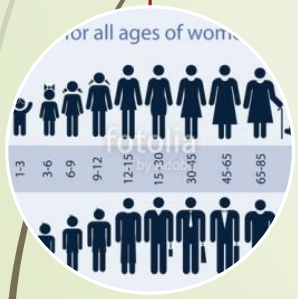
30 countries with 163,467 individuals

Mortality rates from Eurostat

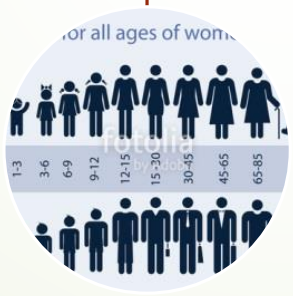
Years (5)

Countries (30)

Countries (30)



Age groups (12)



Age groups (12)

Age groups (12)

Equality of opportunity

- Equality of opportunity as relative intergenerational mobility in social status
- International Socio-Economic Index of Occupational Status (ISEI)
- Expressed in percentile terms (1-100)

Mortality data

3-year moving average of crude all-cause death rates (natural logarithm)

Death rates separately for males and females

Causes of mortality by International Statistical Classification of Diseases (ICD-10):

Covariates

1. Mean children's social status	9. Share religious
2. Mean parental social status	10. Share married
3. Share of males	11. Share living in city
4. Share with higher education	12. Mean political attitude
5. Mean ln household income	13. Mean household size
6. Share of unemployed	14. Share of households with children
7. Mean social trust	15. Share doing housework
8. Share of ethnic minority	

RESULTS

Achievement of bottom quartile and mortality in Europe

	b (95% CI)	Change in death rate from complete absence of equality of opportunity to full equality of opportunity, %	Within R-squared
Total death rate			
Unadjusted	**-0.20** (-0.34, -0.06)	-9.42	0.01
Adjusted	**-0.22** (-0.35, -0.10)	-10.6	0.09
Females			
Unadjusted	-0.08 (-0.22, 0.07)	-3.77	0.01
Adjusted	**-0.16** (-0.27, -0.04)	-7.54	0.22
Males			
Unadjusted	**-0.24** (-0.40, -0.09)	-11.4	0.01
Adjusted	**-0.25** (-0.39, -0.11)	-11.9	0.07
Note: Total number of observations is 1,200. Absence of equality of opportunity is defined as a mean achievement of 12.5 of those coming from the bottom quartile, while full equality of opportunity is defined as a mean achievement of 50 of those in the bottom quartile.			

Conclusions

One of the first evidence that societies with greater equality of opportunity have better health outcomes

Equality of opportunity was more consistently linked with mortality of men than women

Specific causes of mortality

Limitations and implications

We could not directly test the causal associations

Mortality rates are the only cross-nationally comparable administrative data for specific age groups

We conclude that equality of opportunity is not only fair but it is also good for health

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Research report

Equality of opportunity is linked to lower mortality in Europe

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Abstract

Background This study investigates if intergenerational equality of opportunity is linked to mortality in 30 European countries. Equality of opportunity may lead to greater returns on health investments and, consequently, improved health outcomes. In turn, a perceived lack of fairness in the distribution of life chances and limited possibilities for upward intergenerational mobility can cause anxiety among individuals and gradually compromise their health.

Methods We used information on 163 467 individuals' and their parents' Socio-Economic Index of Occupational Status from a large survey data set—the European Social Survey—to generate three complementary measures of equality of opportunity. We then linked these to administrative data on total, gender-specific and cause-specific mortality rates assembled by Eurostat from the national statistical offices.

Results We found that lower equality of opportunity, measured by the attainment of individuals from the lowest and highest

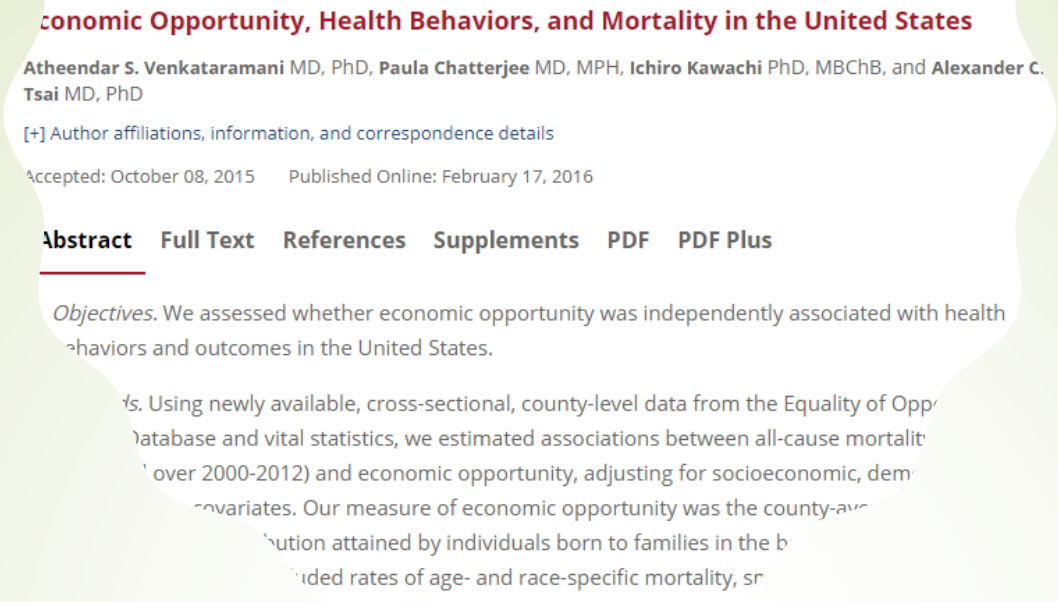
Work in progress – equality of opportunity and mortality in the world

	b (95% CI)	Change in death rate from 1 SD change in relative mobility, %	Within R-squared
	Correlation of parental and child achievement		
Unadjusted	0.041 (-0.450, 0.531)	0.474	0.819
Adjusted	0.071 (-0.439, 0.581)	0.830	0.859
	Probability of bottom halve to bottom quartile		
Unadjusted	**0.817** (0.497, 1.137)	5.698	0.820
Adjusted	**0.895** (0.519, 1.271)	6.261	0.865
	Probability of bottom halve to top quartile		
Unadjusted	**-1.010** (-1.657, -0.362)	-4.946	0.820
Adjusted	**-1.244** (-1.915, -0.572)	-6.058	0.868

Note: Country-level random effects estimations. Total N is 773. Confidence intervals are computed using standard errors clustered at the age group and country level. Unadjusted estimates include controls for age and sex fixed effects. Adjusted estimates additionally include mean education, ln(GDP per capita), unemployment rate, spending on health as fraction of GDP, income inequality (GINI), political freedoms (freedom house index).

Thank you!

Two recent publications in public health journals



conomic Opportunity, Health Behaviors, and Mortality in the United States

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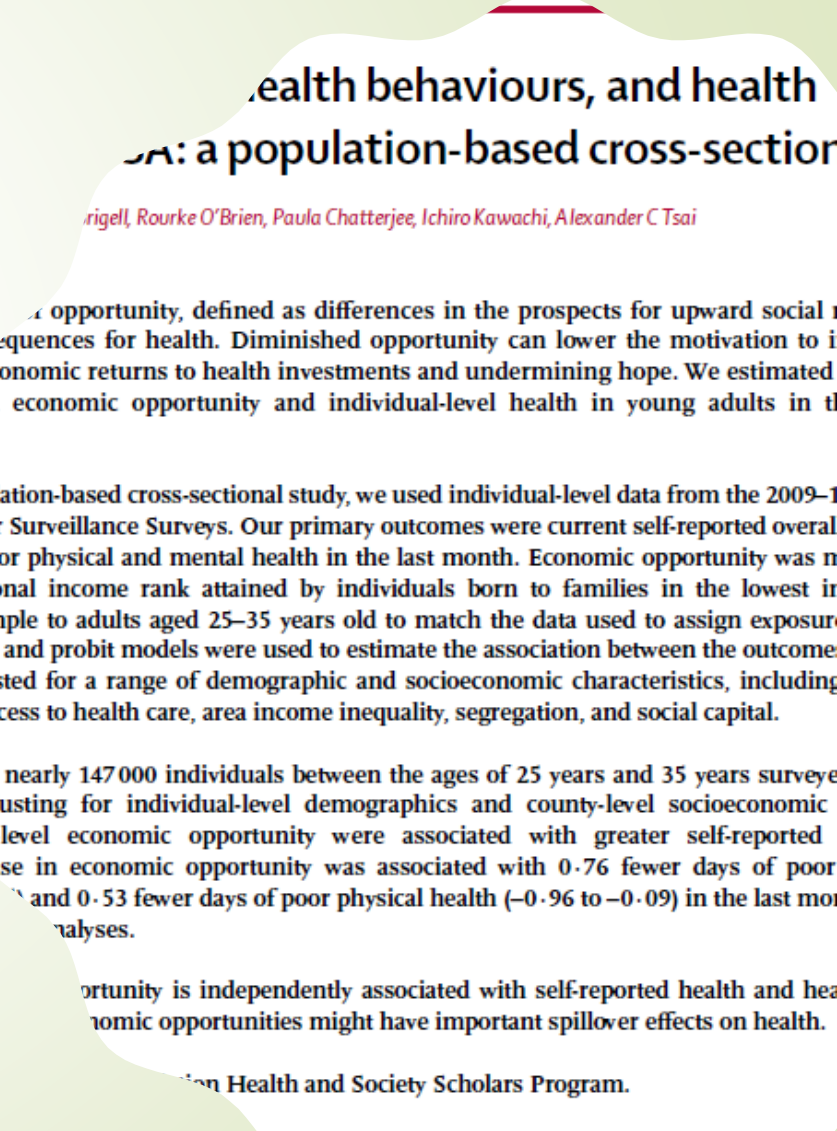
Abstract Full Text References Supplements PDF PDF Plus

Objectives. We assessed whether economic opportunity was independently associated with health behaviors and outcomes in the United States.

Methods. Using newly available, cross-sectional, county-level data from the Equality of Opp database and vital statistics, we estimated associations between all-cause mortalit over 2000-2012) and economic opportunity, adjusting for socioeconomic, dem covariates. Our measure of economic opportunity was the county-av bution attained by individuals born to families in the b ided rates of age- and race-specific mortality, sr



ealth behaviours, and health
A: a population-based cross-sectio

rigell, Rourke O'Brien, Paula Chatterjee, Ichiro Kawachi, Alexander C Tsai

opportunity, defined as differences in the prospects for upward social
equences for health. Diminished opportunity can lower the motivation to i
economic returns to health investments and undermining hope. We estimated
vel economic opportunity and individual-level health in young adults in t

pulation-based cross-sectional study, we used individual-level data from the 2009–1
ctor Surveillance Surveys. Our primary outcomes were current self-reported overal
of poor physical and mental health in the last month. Economic opportunity was m
national income rank attained by individuals born to families in the lowest ir
ur sample to adults aged 25–35 years old to match the data used to assign exposur
uares and probit models were used to estimate the association between the outcome
djusted for a range of demographic and socioeconomic characteristics, including
access to health care, area income inequality, segregation, and social capital.

ed nearly 147 000 individuals between the ages of 25 years and 35 years surveye
adjusting for individual-level demographics and county-level socioeconomic
ty-level economic opportunity were associated with greater self-reported
ase in economic opportunity was associated with 0·76 fewer days of poor
and 0·53 fewer days of poor physical health (–0·96 to –0·09) in the last mo
nalyses.

rtunity is independently associated with self-reported health and hea
omic opportunities might have important spillover effects on health.

on Health and Society Scholars Program.

Finding: income mobility is related to mortality

TABLE 2—Unadjusted and Adjusted Association Between Economic Opportunity and Standardized, All-Cause Mortality: United States, 2000–2012

Variable	Economic Opportunity,[a] b (95% CI)	Change From 1 SD Increase,[b] %	No.	R^2
All Ages (Unadjusted)	−0.019 (−0.022, −0.016)	−10.3	2697	0.295
All Ages (Adjusted)	−0.012 (−0.014, −0.009)	−6.5	2697	0.776

The county-averaged rank (range = 1–100) in income for individuals born to families in the lowest quartile.

Achievement of bottom/top quartile:

- *The mean percentile in socio-economic status attained in the distribution of the children's generation by those whose parents were in the bottom/top quartile of the parental distribution*

Correlation of parental and child achievement:

- *Correlation between parental socio-economic status percentile and children's socio-economic status percentile*

Three alternative measures

Statistical analysis

Age-groups, countries, and years fixed effects models

Running models separately for men's and women's mortality

Heteroskedasticity robust standard errors clustered at the year and age-group level

Design- and population-weights for ESS data and population-weights for Eurostat data

Equality of opportunity and causes of mortality in Europe

	Achievement of bottom quartile		Achievement of top quartile		Correlation of parental and child achievement	
	b (95% CI)	R^2	b (95% CI)	R^2	b (95% CI)	R^2
Diseases of the nervous system and the sense organs	**-0.28** (-0.48, -0.09)	0.24	0.19 (-0.04, 0.42)	0.24	**0.16** (0.06, 0.26)	0.24
Diseases of the respiratory system	**-0.46** (-0.76, -0.16)	0.26	**0.46** (0.18, 0.74)	0.26	**0.28** (0.14, 0.42)	0.27
External causes of mortality	**-0.25** (-0.44, -0.07)	0.17	0.24 (-0.01, 0.48)	0.17	**0.14** (0.02, 0.25)	0.17

Appendix

Table 1 Descriptive statistics				
	Mean	SD	Min	Max
Dependent Variables				
ln deathrate (total)	5.91	1.36	3.58	9.39
ln deathrate (females)	5.48	1.44	3.06	9.30
ln deathrate (males)	6.22	1.36	3.84	9.65
Key independent variables				
Mean achievement of bottom parental quartile	39.97	5.49	18.69	73.08
Mean achievement of top parental quartile	63.75	5.51	34.62	87.66
Correlation in social status across parental and children's generation	0.32	0.11	-0.64	0.83
Mean children's social status	42.41	3.74	24.47	52.61
Mean parental social status	40.46	5.72	22.73	54.82
Note: Death rates taken from Eurostat, all other variables taken from ESS. Overall N is 1,200. For ESS data, means and standard deviations are computed using population and design weights.				

Controls	Mean	SD	Min	Max
Share of males	52.10	5.09	32.70	87.70
Share with higher education	28.21	13.84	0.00	71.27
Mean ln household income	10.70	0.88	7.44	16.87
Share of unemployed	6.06	5.16	0.00	34.47
Mean social trust	4.80	0.74	2.56	7.99
Share of ethnic minority	4.75	4.11	0.00	30.86
Share religious	63.64	19.64	10.18	100.00
Share married	64.95	15.12	8.55	94.10
Share living in city	64.04	10.46	22.91	97.18
Mean political attitude	4.98	0.49	2.83	6.87
Mean household size	2.81	0.66	1.29	4.85
Share of households with children	46.42	25.45	0.00	91.99
Share doing housework	21.14	11.98	0.00	73.56
Further variables of interest				
Mean age	50.21	15.33	26.44	82.41
Year	2006.12	2.83	2002.00	2010.00
Number of individual observations in macro-level observations	161.82	57.68	9.00	323.00

Note: Death rates taken from Eurostat, all other variables taken from ESS. Overall N is 1,200. For ESS data, means and standard deviations are computed using population and design weights. All regressions additionally include 12 5-year age group fixed effects, 5 year fixed effects, and 30 country fixed effects.

Leads and lags of equality of opportunity

	Achievement of bottom quartile		Achievement of top quartile		Correlation of parental and child achievement	
	b (95% CI)	R^2	b (95% CI)	R^2	b (95% CI)	R^2
Lags of mobility						
Contemporaneous	**-0.23** (-0.36, -0.10)		**0.28** (0.11, 0.46)		**0.13** (0.05, 0.20)	
Five years younger	**-0.21** (-0.37, -0.05)		**0.25** (0.08, 0.43)		**0.12** (0.05, 0.20)	
Ten years younger	**-0.28** (-0.45, -0.12)		0.10 (-0.07, 0.27)		**0.12** (0.04, 0.20)	
Total effect	**-0.72** (-0.98, -0.46)	0.16	**0.64** (0.35, 0.93)	0.154	**0.37** (0.23, 0.50)	0.16
Leads of mobility						
Contemporaneous	**-0.20** (-0.34, -0.06)		0.15 (-0.03, 0.33)		0.07 (-0.02, 0.157)	
Five years older	-0.06 (-0.22, 0.10)		**0.22** (0.03, 0.41)		0.08 (-0.02, 0.175)	
Ten years older	-0.09 (-0.23, 0.06)		**0.23** (0.06, 0.40)		**0.10** (0.01, 0.181)	
Total effect	**-0.35** (-0.61, -0.09)	0.09	**0.60** (0.28, 0.92)	0.108	**0.24** (0.09, 0.401)	0.10

Note: Total N is 1,200. Confidence intervals are computed using heteroskedasticity-robust standard corrected for clustering at the agegroup and country level. Regressions are population weighted. Regressors from ESS are additionally design-weighted. All regressions are from adjusted models including all controls described in Methods section. Reported R-squared are 'within' R-squared. Signifcant associations are shown in bold.