

Introduction

- Obesity epidemic: Over 40% of U.S. adults obese
- Previous studies: elevation negatively correlates with body weight
- Limited causal evidence on environmental obesity drivers
- We examine elevation and environmental contamination effects

Research Question

- Does geography causally affect obesity rates?
- 1. County-level: do elevation and oil extraction correlate with obesity?
- 2. Individual-level: do movers' weights change with elevation?
- 3. Mechanisms: environmental contamination vs. behavioral factors?

Data

County-level data (2010–2022):

- Obesity rates (County Health Rankings & Roadmaps)
- Elevation & watershed boundaries
- Oil/gas wells & mines
- Demographics & local economy

Individual-level data:

- NLSY79, NLSY79-YA, NLSY97
- Body weight, height, county of residence over time
- Geocoded data for mover analysis

Sample sizes:

- County-years: 37,150 (3,110 counties)
- Individual-years: 352,174
- Movers: 14,574 geographic movers

https://tyleransom.github.io

Elevation in Obesity: Uncovering the Geographical Aspects of Health

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Geographic variation in obesity, elevation, watersheds, and oil & gas



Major Watersheds (WS)

Results: County-level obesity rate (%) regressions

	(1)	(2)	(3)	(4)	(5)
Elevation (1,000 ft)	-1.210***	-0.719***	-0.364***	-0.762***	-0.363***
	(0.044)	(0.034)	(0.043)	(0.040)	(0.043)
Log No. Oil Wells (if any)		-0.082**	-0.051*	-0.048	-0.055**
		(0.034)	(0.026)	(0.033)	(0.027)
Log No. Gas Wells (if any)		0.107***	0.091***	0.095***	0.078***
		(0.031)	(0.024)	(0.031)	(0.026)
Pct. bachelor's degree		-0.265***	-0.271***	-0.237***	-0.261***
		(0.020)	(0.021)	(0.021)	(0.021)
Log median income		-0.794***	0.618**	-0.663**	0.482*
		(0.265)	(0.244)	(0.275)	(0.248)
Coastal (i.e. touches ocean)		-0.776***	-0.630***	-0.668***	-0.640***
		(0.162)	(0.161)	(0.156)	(0.160)
Observations	37,156	37,150	37,150	37,150	37,150
Counties	3,111	3,110	3,110	3,110	3,110
R^2	0.1714	0.6316	0.7006	0.6488	0.7040
Controls		\checkmark	\checkmark	\checkmark	\checkmark
Fixed Effects			State	WS Reg	State \times WS Reg
Dep. var. is obesity rate (%). All regressions include year dummies, race/ethnicity rates, sectoral em					

ployment shares, and other demographic characteristics (e.g. age, population, etc.). Robust standard errors in parentheses. *** p<0.01; ** p<0.05; * p<0.10

Oil Wells (count)

Research methods



Mover design event study (NLSY79)

	4
	3.5
	3
(sc	2.5
	2
ght	1.5
,ei	1
3	0.5
(bc	0
q	-0.5
<u> </u>	—1
ge	-1.5
an	-2
Ч С	-2.5
Ŭ	-3
	-3.5
	Λ

Note: Results are relative to a cross-county move that has an elevation change of -500–0 feet. 95% confidence intervals included.

Conclusion

Disclaimer

This research uses restricted-use geocode data from the National Longitudinal Surveys (NLSY) provided under a legal agreement with the Bureau of Labor Statistics (BLS). The data contain detailed geographic information that is confidential and protected by federal law, including the CIPSEA and the Privacy Act. All results have been reviewed and approved by BLS to ensure that no confidential information is disclosed. The opinions and conclusions expressed herein are those of the authors and do not necessarily reflect the views of the Bureau of Labor Statistics. The authors and their institution have agreed to comply with all confidentiality and data security requirements as agents of BLS.

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- County-level cross-sectional
 - regressions (2010–2022)
- Individual-level panel regressions
 - (NLSY surveys)
- Event study design for geographic
 - movers (NLSY surveys)
- Control for demographics, local
 - economy, and environmental factors



Strong county-level elevation-obesity correlations persist with controls Individual mover analysis shows mixed causal evidence Geographic patterns don't guarantee individual-level interventions work