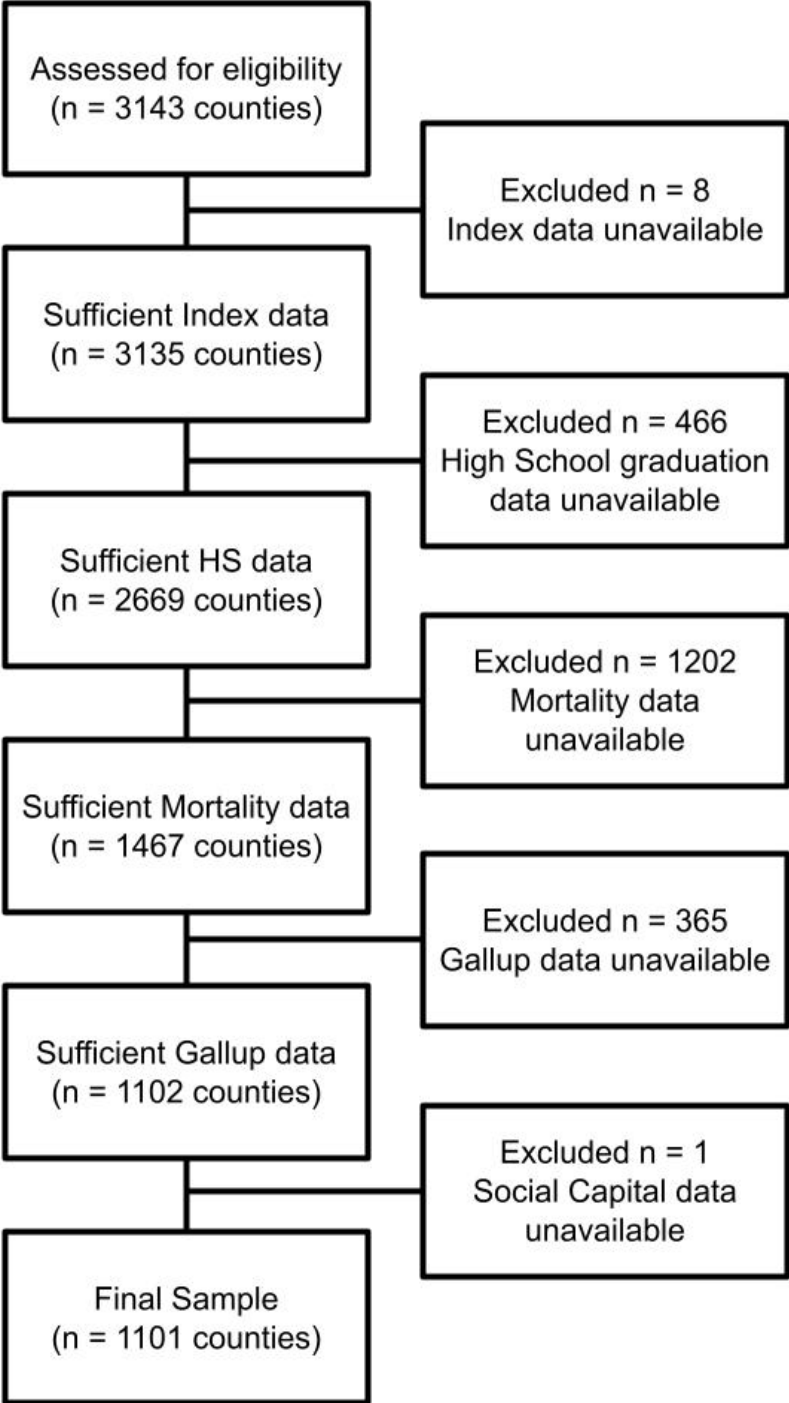Supplemental Materials

In Supplemental Tables S7 through S12 we include Moran's I as calculated across each model's residuals as well as its associated p-value. Moran's I (Moran, 1950) is a measure of spatial autocorrelation and ranges from -1 to 1, where values close to 1 indicate clustering, values close to -1 indicate dispersion, and values close to 0 indicate randomness. Spatially lagged models should account for spatial autocorrelation and therefore not violate the standard OLS assumptions.

Moran, P. A. (1950). Notes on continuous stochastic phenomena. Biometrika, 37(1/2), 17-23.

Supplemental Figure S1: *Data flow chart*

Supplemental Table S1: *Summary of indices*

	Social Vulnerability Index (SVI)	Social Vulnerability Index (SoVI)	Social Deprivation Index (SDI)	Area Deprivation Index (ADI)	Child Opportunity Index 2.0 (COI)
Source	https://www.atsdr.cdc.gov/placeandhealth/svi/index.html	https://sc.edu/study/colleges_schools/artsandsciences/centers_and_institutes/hvri/data_and_resources/sovi/index.php	https://www.graham-center.org/maps-data-tools/social-deprivation-index.html	https://www.neighborhoodatlas.medicine.wisc.edu/	https://www.diversitydatakids.org/child-opportunity-index
Creator/ host institution	CDC	University of South Carolina	Robert Graham Center	University of Wisconsin, Madison	Brandeis University
Variables	15	29	7	17	29
Level(s) available	County Census Tract	County	County Census Tract ZCTA PCSA	Census Block Group	Census Tract
Self-described domains	-SES -Household & Disability -Minority Status & Language -Housing & Transportation	-Wealth -Race & Social Status -Ethnicity & Insurance -Special needs -Employment -Age & Gender	-Income -Education -Employment -Housing -Household -Transportation	-Income -Education -Employment -Housing Quality	-Education -Health & Environment -Social & Economic

Supplemental Table S2: *Outcome Data Sources*

Variable	Source	Year	Level(s)
Mortality			
Diseases of the heart	CDC Wonder	2015	County
Malignant Neoplasms	CDC Wonder	2015	County
Chronic lower respiratory diseases	CDC Wonder	2015	County
Accidents (unintentional injuries)	CDC Wonder	2015	County
Opioid poisonings	CDC Wonder	2015	County
Cerebrovascular diseases	CDC Wonder	2015	County
Alzheimer's disease	CDC Wonder	2015	County
Diabetes mellitus	CDC Wonder	2015	County
Influenza and pneumonia	CDC Wonder	2015	County
Nephritis, nephrotic syndrome and nephrosis	CDC Wonder	2015	County
Intentional self-harm (suicide)	CDC Wonder	2015	County
Self-Reported Physical Health			
Percent Fair or Poor Health	BRFSS	2015	County
Physically Unhealthy Days	BRFSS	2015	County
Pain	Gallup	2015	County
Self-Reported Mental Health			
Mentally Unhealthy Days	BRFSS	2015	County
Depression	Gallup	2015	County
Well-Being			
Life Satisfaction today	Gallup	2009-2015	County
Life Satisfaction in 5 years	Gallup	2009-2015	County
Positive Emotions	Gallup	2009-2015	County
Negative Emotions	Gallup	2009-2015	County
Social Capital			
Economic Connectedness	Opportunity Insights	Measured on May 28 2022	County
Cohesiveness: Clustering	Opportunity Insights	Measured on May 28 2022	County
Cohesiveness: Support Ratio	Opportunity Insights	Measured on May 28 2022	County
Civic Engagement	Opportunity Insights	Measured on May 28 2022	County

Supplemental Table S3: *Questions for survey variables*

Variable	Source	Survey Question	Answer Choices
Self-Reported Physical Health			
Percent Fair or Poor Health	BRFSS	Would you say that in general your health is:	Excellent, Very good, Good, Fair, Poor, Don't know/Not sure, Refused, Not asked or missing
Physically Unhealthy Days	BRFSS	Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?	Number of days (1 - 30), None, Don't know/Not sure, Refused, Not asked or missing
Pain	Gallup	Did you experience the following feelings during A LOT OF THE DAY yesterday? How about physical pain?	Yes, No, Don't Know, Refused
Self-Reported Mental Health			
Mentally Unhealthy Days	BRFSS	Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?	Number of days (1 - 30), None, Don't know/Not sure, Refused, Not asked or missing
Depression	Gallup	Have you ever been told by a physician or nurse that you have any of the following, or not? How about Depression?	Yes, No, Don't know, Refused
Well-Being			
Life Satisfaction today	Gallup	Please imagine a ladder with steps numbered from zero at the bottom to ten at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you	0-10, Don't know, Refused

		personally feel you stand at this time?	
Life Satisfaction in 5 years	Gallup	Please imagine a ladder with steps numbered from zero at the bottom to ten at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step do you think you will stand about five years from now?	0-10, Don't know, Refused
Positive Emotions	Gallup	Average response for happiness, enjoyment, and laughter: Did you experience the following feelings during A LOT OF THE DAY yesterday? How about Enjoyment? How about Happiness? Now, please think about yesterday, from the morning until the end of the day. Think about where you were, what you were doing, who you were with, and how you felt. Did you smile or laugh a lot yesterday?	Yes, No, Don't know, Refused
Negative Emotions	Gallup	Average response to stress, worry, and sadness: Did you experience the following feelings during A LOT OF THE DAY yesterday? How about Stress? How about Worry? How about Sadness?	Yes, No, Don't know, Refused

	High School Graduation Rate	Diseases of the heart	Malignant Neoplasms (cancer)	Chronic lower respiratory diseases	Accidents (unintentional injuries)	Opioids	Cerebrovascular diseases	Alzheimer's disease	Diabetes mellitus	Influenza and pneumonia	Nephritis, nephrotic syndrome and nephrosis	Intentional self-harm (suicide)	Percent Fair or Poor Health	Physically Unhealthy Days	Pain	Mentally Unhealthy Days	Depression	Life Satisfaction today	Life Satisfaction in 5 years	Positive Emotions	Negative Emotions	Economic connectedness	Cohesiveness: Clustering	Cohesiveness: Support Ratio	Civic engagement
High School Graduation Rate	1.00																								
Diseases of the heart	0.02	1.00																							
Malignant Neoplasms (cancer)	0.00	0.58	1.00																						
Chronic lower respiratory diseases	0.04	0.46	0.54	1.00																					
Accidents (unintentional injuries)	-0.05	0.40	0.38	0.51	1.00																				
Opioids	0.06	0.40	0.49	0.48	0.76	1.00																			
Cerebrovascular diseases	0.01	0.46	0.46	0.37	0.33	0.23	1.00																		
Alzheimer's disease	0.09	0.22	0.24	0.28	0.22	0.03	0.30	1.00																	
Diabetes mellitus	-0.15	0.30	0.40	0.32	0.37	0.34	0.32	0.18	1.00																
Influenza and pneumonia	0.08	0.44	0.39	0.37	0.38	0.35	0.33	0.20	0.21	1.00															
Nephritis, nephrotic syndrome and nephrosis	0.00	0.54	0.52	0.37	0.32	0.33	0.40	0.18	0.31	0.48	1.00														
Intentional self-harm (suicide)	-0.09	0.19	0.20	0.38	0.55	0.35	0.14	0.13	0.17	0.22	0.11	1.00													
Percent Fair or Poor Health	-0.12	0.57	0.42	0.35	0.39	0.38	0.43	0.18	0.51	0.38	0.50	0.13	1.00												
Physically Unhealthy Days	-0.10	0.60	0.50	0.45	0.47	0.47	0.41	0.18	0.44	0.39	0.44	0.26	0.90	1.00											
Pain	-0.08	0.56	0.54	0.64	0.60	0.41	0.39	0.19	0.37	0.33	0.26	0.46	0.48	0.64	1.00										
Mentally Unhealthy Days	-0.15	0.56	0.49	0.40	0.39	0.46	0.35	0.12	0.36	0.32	0.37	0.21	0.76	0.91	0.60	1.00									
Depression	-0.07	0.48	0.53	0.61	0.52	0.41	0.39	0.25	0.35	0.35	0.24	0.32	0.46	0.59	0.76	0.57	1.00								
Life Satisfaction today	0.07	-0.48	-0.49	-0.49	-0.41	-0.35	-0.22	-0.03	-0.32	-0.28	-0.23	-0.24	-0.28	-0.41	-0.59	-0.42	-0.49	1.00							
Life Satisfaction in 5 years	-0.12	-0.34	-0.38	-0.49	-0.48	-0.35	-0.15	-0.06	-0.16	-0.21	-0.09	-0.44	-0.07	-0.29	-0.63	-0.31	-0.48	0.64	1.00						
Positive Emotions	0.06	-0.49	-0.44	-0.40	-0.33	-0.34	-0.20	0.05	-0.29	-0.30	-0.29	-0.07	-0.39	-0.43	-0.54	-0.45	-0.53	0.62	0.34	1.00					
Negative Emotions	-0.03	0.33	0.23	0.26	0.26	0.37	0.15	0.04	0.17	0.28	0.18	0.03	0.36	0.40	0.47	0.39	0.53	-0.47	-0.16	-0.64	1.00				
Economic connectedness	0.26	-0.50	-0.41	-0.30	-0.28	-0.16	-0.37	-0.14	-0.42	-0.28	-0.40	-0.10	-0.76	-0.73	-0.48	-0.69	-0.39	0.34	0.19	0.35	-0.21	1.00			
Cohesiveness: Clustering	0.03	0.39	0.35	0.25	0.40	0.48	0.33	0.21	0.43	0.42	0.51	0.28	0.39	0.36	0.31	0.28	0.29	-0.27	-0.51	-0.15	-0.01	-0.27	1.00		
Cohesiveness: Support Ratio	0.03	0.31	0.28	0.29	0.34	0.31	0.28	0.12	0.29	0.30	0.35	0.26	0.25	0.25	0.44	0.19	0.39	-0.31	-0.51	-0.17	0.02	-0.27	0.53	1.00	
Civic engagement	0.10	-0.14	-0.08	0.01	0.03	0.02	-0.13	-0.05	-0.14	-0.10	-0.18	0.19	-0.34	-0.23	0.03	-0.19	0.06	-0.01	-0.18	0.09	-0.04	0.39	-0.04	0.02	1.00

Supplemental Table S5: *ICD-10 Codes*

Mortality Cause	ICD-10 Codes
Diseases of heart	I00-I09, I11, I13, I20-I51
Malignant neoplasms	C00-C97
Chronic lower respiratory diseases	J40-J47
Accidents (unintentional injuries)	V01-X59, Y85-Y86
Opioids	T40.0-T40.4
Cerebrovascular diseases	I60-I69
Alzheimer's disease	G30
Diabetes mellitus	E10-E14
Influenza and pneumonia	J09-J18
Nephritis, nephrotic syndrome and nephrosis	N00-N07, N17-N19, N25-N27
Intentional self-harm (suicide)	U03, X60-X84, Y87.0

Source: NCHS, National Vital Statistics System, Mortality.

Supplemental Table S6: *Variables used to create the ADI and COI*

Index	Domain*	Sub-domain*	Variable	Description	Source
COI	SES	Poverty	Poverty rate[a]	Percent individuals living in households with incomes below 100% of the federal poverty threshold, reversed	ACS
	SES	Income	Median household income[a]	Median income of all households	ACS
	Education	Early childhood education (ECE)	Early Childhood Education (ECE) centers	Number of ECE centers within a 5-mile radius	own data collection from state and federal sources
	Education	Early childhood education (ECE)	High-quality ECE centers	Number of NAEYC accredited centers within a 5-mile radius	own data collection from state and federal sources
	Education	Early childhood education (ECE)	ECE enrollment	Percent 3- and 4-year-olds enrolled in nursery school, preschool or kindergarten	ACS
	Education	Elementary education	Third grade reading proficiency	Percent third graders scoring proficient on standardized reading tests, converted to NAEP scale score points	EDFacts, GS and SEDA

	Education	Elementary education	Third grade math proficiency	Percent third graders scoring proficient on standardized math tests, converted to NAEP scale score points	EDFacts, GS and SEDA
	Education	High school	High school graduation rate	Percent ninth graders graduating from high school on time	EDFacts and GS
	Education	High school	Advanced Placement (AP) course enrollment	Ratio of students enrolled in at least one AP course to the number of 11th and 12th graders	CRDC
	Education	College	College enrollment in nearby institutions	Percent 18-24 year-olds enrolled in college within 25-mile radius	ACS
	Education	College	Adult educational attainment	Percent adults ages 25 and over with a college degree or higher	ACS
	Education	School resources	School poverty	Percent students in elementary schools eligible for free or reduced-price lunches, reversed	NCES CCD
	Education	School resources	Teacher experience	Percent teachers in their first and second year, reversed	CRDC
	Employment	Employment status	Employment rate	Percent adults ages 25-54 who	ACS

			are employed	
Employment	Commute	Commute duration	Percent workers commuting more than one hour one way, reversed	ACS
Employment	Employment type	High-skill employment[a]	Percent individuals ages 16 and over employed in management, business, financial, computer, engineering, science, education, legal, community service, health care practitioner, health technology, arts and media occupations	ACS
Demographics	Single parent households	Single-headed households	Percent family households that are single-parent headed, reversed	ACS
Housing	% Renters/Home owners	Homeownership rate[a]	Percent owner-occupied housing units	ACS
Housing	Vacant housing	Housing vacancy rate	Percent housing units that are vacant, reversed	ACS
Resources	Health insurance	Health insurance coverage	Percent individuals ages 0-64 with health insurance coverage	ACS
Resources	Public	Public assistance	Percent	ACS

		assistance	rate[a]	households receiving cash public assistance or Food Stamps/Supplemental Nutrition Assistance Program, reversed	
	Environment	Healthy food access	Access to healthy food	Percent households without a car located further than a half-mile from the nearest supermarket, reversed	USDA
	Environment	Green space	Access to green space	Percent impenetrable surface areas such as rooftops, roads or parking lots, reversed	CDC
	Environment	Walkability	Walkability	EPA Walkability Index	EPA
	Environment	Toxic exposures	Hazardous waste dump sites	Average number of Superfund sites within a 2-mile radius, reversed	EPA
	Environment	Toxic exposures	Industrial pollutants in air, water or soil	Index of toxic chemicals released by industrial facilities, reversed	EPA
	Environment	Toxic exposures	Airborne microparticles	Mean estimated microparticle (PM2.5) concentration, reversed	CDC

	Environment	Toxic exposures	Ozone concentration	Mean estimated 8-hour average ozone concentration, reversed	EPA
	Environment	Toxic exposures	Extreme heat exposure	Summer days with maximum temperature above 90F, reversed	CDC
ADI	SES	Poverty	Families Below Poverty	Percent of families below the poverty level	ACS
	SES	Poverty	Population Below Poverty Threshold	Percent of population below 150% of the poverty threshold	ACS
	SES	Income	Median Family Income	Median family income	ACS
	SES	Income	Income Disparity	Income disparity (Defined by Singh as the log of 100 * the ratio of the number of households with <$10,000 in income to the number of households with $50,000 or more in income.)	ACS
	Education	High school	No High School Education	Percent of population aged >= 25 years with < 9 years of education	ACS
	Education	High school	Some High School Education	Percent of population aged >= 25 years with < a high school	ACS

				diploma	
	Employment	Employment Type	White-collar occupations	Percent of employed persons >=16 years of age in white-collar occupations	ACS
	Employment	Employment status	Unemployment Rate	Percent of civilian labor force population >= 16 years of age unemployed (unemployment rate)	ACS
	Demographics	Single parent households	Single-parent Households with children	Percent of single-parent households with children < 18 years of age	ACS
	Housing	Median home value	Median Home Value	Median home value	ACS
	Housing	Median rent/mortgage	Median Rent	Median gross rent	ACS
	Housing	Median rent/mortgage	Median Monthly Mortgage	Median monthly mortgage	ACS
	Housing	% Renters/Home owners	Owner occupied Housing	Percent owner-occupied housing units (home ownership rate)	ACS
	Housing	Incomplete plumbing	Households without plumbing	Percent of occupied housing units without complete plumbing	ACS
	Housing	Crowding	Crowded Households	Percent of households with more than one person per room	ACS

				(crowding)	
	Resources	No vehicle	Households without a motor vehicle	Percent of households without a motor vehicle	ACS
	Resources	No telephone	Households without a telephone	Percent of households without a telephone	ACS

^aThese five indicators are combined into an economic resource index by the original index creators.

*As categorized by the current study, not original index creators

Supplemental Table S7: Baseline (HS) correlations with all outcomes. Benjamini Hochberg significance level: ***p < 0.001, **p<0.01, *p<0.05

		beta	95% CI	Moran's I
Mortality	Heart Disease	-0.06*	[-0.10,-0.01]	-0.14***
	Malignant neoplasms	-0.09**	[-0.14,-0.03]	-0.15***
	Respiratory diseases	-0.01	[-0.06,0.03]	-0.12***
	Accidents	-0.08**	[-0.12,-0.03]	-0.12***
	Opioids	-0.07*	[-0.12,-0.01]	-0.15***
	Cerebrovascular diseases	-0.03	[-0.08,0.02]	-0.13***
	Alzheimers	0.06*	[0.01,0.11]	-0.14***
	Diabetes	-0.14***	[-0.19,-0.09]	-0.10***
	Influenza	-0.03	[-0.08,0.02]	-0.14***
	Nephritis	-0.06*	[-0.11,-0.01]	-0.12***
	Suicide	-0.02	[-0.07,0.03]	-0.13***
Physical health	Perc Fair or Poor Health	-0.17***	[-0.21,-0.12]	-0.08***
	Physically Unhealthy Days	-0.14***	[-0.18,-0.09]	-0.07**
	Pain	-0.05	[-0.10, -0.00]	-0.14***
Mental health	Mentally Unhealthy Days	-0.14***	[-0.18,-0.09]	-0.05
	Depression	-0.09**	[-0.14, -0.04]	-0.13***
Well-being	Life Satisfaction today	0.10**	[0.04, 0.15]	-0.13***
	Life Satisfaction in 5 years	-0.08**	[-0.13, -0.03]	-0.15***
	Positive Emotions	0.09**	[0.04, 0.15]	-0.13***
	Negative Emotions	-0.06*	[-0.12, -0.01]	-0.13***
Social Capital	*Economic Connectedness*	0.28***	[0.23,0.33]	-0.09***

	Clustering	0.08**	[0.03,0.13]	-0.12***
	Support Ratio	-0.10***	[-0.14,-0.05]	-0.16***
	Civic Engagement	0.13***	[0.08,0.18]	-0.13***

Supplemental Table S8: ADI correlations with all outcomes. Benjamini Hochberg significance level: ***p < 0.001, **p<0.01, *p<0.05

		beta	95% CI	Moran's I
	Heart Disease	0.43***	[0.38,0.48]	0.07**
	Malignant neoplasms	0.46***	[0.41,0.51]	0.08***
	Respiratory diseases	0.45***	[0.40,0.50]	0.06**
	Accidents	0.27***	[0.22,0.32]	-0.02
	Opioids	0.09***	[0.04, 0.15]	-0.13***
Mortality	Cerebrovascular diseases	0.34***	[0.29,0.39]	-0.03
	Alzheimers	0.10***	[0.05,0.15]	-0.13***
	Diabetes	0.39***	[0.34,0.44]	0.04
	Influenza	0.22***	[0.17,0.27]	-0.08***
	Nephritis	0.31***	[0.26,0.35]	0.01
	Suicide	0.07**	[0.02,0.12]	-0.11***
Physical health	Perc Fair or Poor Health	0.44***	[0.39,0.48]	0.11***
	Physically Unhealthy Days	0.44***	[0.39,0.48]	0.12***
	Pain	0.40***	[0.35,0.45]	0.04

Mental health	Mentally Unhealthy Days	0.34***	[0.30,0.39]	0.09***
	Depression	0.36***	[0.31,0.41]	0.01
Well-being	Life Satisfaction today	-0.39***	[-0.44,-0.33]	0.01
	Life Satisfaction in 5 years	-0.29***	[-0.34,-0.23]	-0.08**
	Positive Emotions	-0.29***	[-0.34,-0.24]	-0.06**
	Negative Emotions	0.16***	[0.11,0.21]	-0.12***
Social Capital	*Economic Connectedness*	-0.49***	[-0.53,-0.44]	0.10***
	Clustering	0.23***	[0.18,0.28]	-0.07**
	Support Ratio	0.36***	[0.32,0.41]	-0.02
	Civic Engagement	-0.13***	[-0.18,-0.08]	-0.12***

Supplemental Table S9: COI correlations with all outcomes. Benjamini Hochberg significance level: ***p < 0.001, **p<0.01, *p<0.05

		beta	95% CI	Moran's I
Mortality	Heart Disease	0.44***	[0.40,0.49]	-0.01
	Malignant neoplasms	0.44***	[0.40,0.49]	-0.01
	Respiratory diseases	0.30***	[0.25,0.34]	-0.06**
	Accidents	0.30***	[0.26,0.35]	-0.06*
	Opioids	0.17***	[0.12, 0.22]	-0.13***
	Cerebrovascular diseases	0.34***	[0.29,0.38]	-0.07**
	Alzheimers	0.05	[-0.00,0.10]	-0.14***
	Diabetes	0.44***	[0.39,0.49]	-0.01
	Influenza	0.25***	[0.20,0.30]	-0.10***
	Nephritis	0.32***	[0.28,0.36]	-0.04
	Suicide	0.06*	[0.01,0.11]	-0.12***
Physical health	Perc Fair or Poor Health	0.66***	[0.63,0.70]	0.15***
	Physically Unhealthy Days	0.60***	[0.57,0.64]	0.10***
	Pain	0.44***	[0.40,0.49]	-0.04
Mental health	Mentally Unhealthy Days	0.50***	[0.46,0.54]	0.12***
	Depression	0.37***	[0.32,0.41]	-0.04
Well-being	Life Satisfaction today	-0.39***	[-0.44,-0.34]	-0.05*
	Life Satisfaction in 5 years	-0.11***	[-0.16,-0.06]	-0.15***
	Positive Emotions	-0.40***	[-0.46,-0.35]	-0.06*
	Negative Emotions	0.23***	[0.18,0.28]	-0.10***
Social Capital	Economic Connectedness	-0.70***	[-0.73,-0.66]	0.07***
	Clustering	0.13***	[0.08,0.18]	-0.12***

		beta	95% CI	Moran's I
Mortality	Heart Disease	0.44***	[0.40,0.49]	-0.01
	Malignant neoplasms	0.44***	[0.40,0.49]	-0.01
	Respiratory diseases	0.30***	[0.25,0.34]	-0.06**
	Accidents	0.30***	[0.26,0.35]	-0.06*
	Opioids	0.17***	[0.12, 0.22]	-0.13***
	Cerebrovascular diseases	0.34***	[0.29,0.38]	-0.07**
	Alzheimers	0.05	[-0.00,0.10]	-0.14***
	Diabetes	0.44***	[0.39,0.49]	-0.01
	Influenza	0.25***	[0.20,0.30]	-0.10***
	Nephritis	0.32***	[0.28,0.36]	-0.04
	Suicide	0.06*	[0.01,0.11]	-0.12***
	Support Ratio	0.33***	[0.28,0.37]	-0.08**
	Civic Engagement	-0.22***	[-0.27,-0.18]	-0.10***

Supplemental Table S10: SDI correlations with all outcomes. Benjamini Hochberg significance level: ***p < 0.001, **p<0.01, *p<0.05

		beta	95% CI	Moran's I
Mortality	Heart Disease	0.30***	[0.25,0.34]	-0.10***
	Malignant neoplasms	0.28***	[0.23,0.33]	-0.11***
	Respiratory diseases	0.13***	[0.08,0.17]	-0.11***

	Accidents	0.13***	[0.09,0.18]	-0.11***
	Opioids	0.09**	[0.04, 0.14]	-0.15***
	Cerebrovascular diseases	0.28***	[0.23,0.33]	-0.09***
	Alzheimers	0.04	[-0.01,0.09]	-0.14***
	Diabetes	0.36***	[0.31,0.41]	-0.06*
	Influenza	0.18***	[0.13,0.23]	-0.12***
	Nephritis	0.25***	[0.21,0.30]	-0.08***
	Suicide	-0.10***	[-0.15,-0.06]	-0.13***
Physical health	Perc Fair or Poor Health	0.66***	[0.62,0.69]	0.15***
	Physically Unhealthy Days	0.52***	[0.48,0.55]	0.08***
	Pain	0.21***	[0.16,0.25]	-0.12***
Mental health	Mentally Unhealthy Days	0.42***	[0.38,0.45]	0.10***
	Depression	0.27***	[0.22,0.32]	-0.09***
Well-being	Life Satisfaction today	-0.23***	[-0.28,-0.17]	-0.12***
	Life Satisfaction in 5 years	0.11***	[0.07,0.16]	-0.15***
	Positive Emotions	-0.32***	[-0.38,-0.27]	-0.10***
	Negative Emotions	0.28***	[0.23,0.33]	-0.09***
Social Capital	Economic Connectedness	-0.61***	[-0.65,-0.58]	0.04*
	Clustering	0.00	[-0.05,0.05]	-0.13***
	Support Ratio	0.21***	[0.16,0.25]	-0.13***
	Civic Engagement	-0.26***	[-0.31,-0.21]	-0.10***

Supplemental Table S11: SVI correlations with all outcomes. Benjamini Hochberg significance level: ***p < 0.001, **p<0.01, *p<0.05

		beta	95% CI	Moran's I
Mortality	Heart Disease	0.33***	[0.29,0.37]	-0.06*
	Malignant neoplasms	0.32***	[0.27,0.37]	-0.07**
	Respiratory diseases	0.21***	[0.16,0.25]	-0.08***
	Accidents	0.20***	[0.16,0.25]	-0.09***
	Opioids	0.11***	[0.05, 0.16]	-0.15***
	Cerebrovascular diseases	0.29***	[0.24,0.34]	-0.07**
	Alzheimers	0.06*	[0.01,0.11]	-0.14***
	Diabetes	0.37***	[0.32,0.41]	-0.03
	Influenza	0.20***	[0.15,0.25]	-0.11***
	Nephritis	0.25***	[0.20,0.29]	-0.06**
	Suicide	-0.01	[-0.06,0.04]	-0.13***
Physical health	Perc Fair or Poor Health	0.67***	[0.64,0.71]	0.21***
	Physically Unhealthy Days	0.55***	[0.51,0.58]	0.14***
	Pain	0.32***	[0.28,0.37]	-0.07**
Mental health	Mentally Unhealthy Days	0.42***	[0.38,0.46]	0.13***
	Depression	0.31***	[0.26,0.35]	-0.06*
Well-being	Life Satisfaction today	-0.29***	[-0.34,-0.23]	-0.09***
	Life Satisfaction in 5 years	-0.03	[-0.08,0.01]	-0.16***
	Positive Emotions	-0.34***	[-0.40,-0.29]	-0.08**
	Negative Emotions	0.25***	[0.20,0.30]	-0.09***

	Economic Connectedness	-0.69***	[-0.73,-0.66]	0.16***
Social Capital	Clustering	0.07**	[0.02,0.12]	-0.13***
	Support Ratio	0.27***	[0.22,0.31]	-0.10***
	Civic Engagement	-0.26***	[-0.31,-0.21]	-0.08***

Supplemental Table S12: SoVI correlations with all outcomes. Benjamini Hochberg significance level: ***p < 0.001, **p<0.01, *p<0.05

		beta	95% CI	Moran's I
Mortality	Heart Disease	0.20***	[0.15,0.25]	-0.10***
	Malignant neoplasms	0.21***	[0.16,0.26]	-0.10***
	Respiratory diseases	0.08**	[0.03,0.13]	-0.11***
	Accidents	0.21***	[0.17,0.26]	-0.08**
	Opioids	0.13***	[0.07,0.18]	-0.13***
	Cerebrovascular diseases	0.14***	[0.09,0.19]	-0.11***
	Alzheimers	-0.05*	[-0.10,-0.00]	-0.14***
	Diabetes	0.27***	[0.22,0.32]	-0.06*
	Influenza	0.14***	[0.10,0.19]	-0.12***
	Nephritis	0.13***	[0.08,0.17]	-0.10***
	Suicide	0.08**	[0.03,0.13]	-0.12***
Physical health	Perc Fair or Poor Health	0.47***	[0.43,0.51]	0.09***
	Physically Unhealthy Days	0.43***	[0.39,0.47]	0.06**

	Pain	0.26***	[0.22,0.31]	-0.09***
Mental health	Mentally Unhealthy Days	0.35***	[0.31,0.39]	0.08***
	Depression	0.23***	[0.19,0.28]	-0.08***
Well-being	Life Satisfaction today	-0.23***	[-0.29,-0.18]	-0.10***
	Life Satisfaction in 5 years	-0.13***	[-0.18,-0.08]	-0.15***
	Positive Emotions	-0.24***	[-0.30,-0.19]	-0.10***
	Negative Emotions	0.13***	[0.07,0.18]	-0.12***
Social Capital	Economic Connectedness	-0.54***	[-0.58,-0.50]	0.08***
	Clustering	0.10***	[0.05,0.14]	-0.12***
	Support Ratio	0.30***	[0.26,0.34]	-0.06*
	Civic Engagement	-0.17***	[-0.22,-0.12]	-0.11***

Supplemental Table S13: ADI variables predicting average mortality: Results from backwards feature importance algorithm. The final remaining subdomain is % Renter/Owner-occupied housing.

Average Mortality (full model AIC = 1779.56; R² = .72)		
Removed variable	**AIC**	**R²**
Secondary education (high school)	1968.11	0.66
Employment Type	2061.51	0.63
Poverty	2124.68	0.61
Income	2170.99	0.59
Median rent/mortgage	2199.93	0.58
Median home value	2356.50	0.51
Single or two-parent households	2469.48	0.46

Employment Status	2547.63	0.42
No Telephone	2576.52	0.4
No Vehicle	2584.90	0.39
Incomplete Plumbing	2595.56	0.39
Crowding	2594.10	0.39

Supplemental Table S14: ADI variables predicting average physical health: Results from backwards feature importance algorithm. The final remaining subdomain is Median rent/mortgage.

Average Physical Health (full model AIC = 1353.35, R² = 0.81)		
Removed variable	**AIC**	**R²**
Poverty	1451.43	0.79
Secondary education (high school)	1638.67	0.75
Income	1858.70	0.69
Employment Type	1922.07	0.67
Crowding	2028.30	0.64
Employment Status	2120.11	0.61

Single or two-parent households	2186.34	0.58
No Vehicle	2222.00	0.57
% Renter/Owner-occupied housing	2328.65	0.52
No Telephone	2339.28	0.52
Incomplete Plumbing	2365.94	0.50
Median home value	2374.39	0.50

Supplemental Table S15: ADI variables predicting average mental health: Results from backwards feature importance algorithm. The final remaining subdomain is Crowding.

Average Mental Health (full model AIC = 1814.36, R^2 = 0.71)		
Removed variable	**AIC**	**R^2**
Secondary education (high school)	1894.67	0.68
Poverty	1959.62	0.66
Income	2099.59	0.61
Employment Status	2144.49	0.60
Employment Type	2183.30	0.58

Single or two-parent households	2216.03	0.57
No Vehicle	2268.14	0.55
% Renter/Owner-occupied housing	2319.23	0.53
Median rent/mortgage	2343.79	0.51
Median home value	2489.48	0.44
No Telephone	2513.92	0.43
Incomplete Plumbing	2523.29	0.42

Supplemental Table S16: ADI variables predicting average subjective well-being: Results from backwards feature importance algorithm. The final remaining subdomain is Crowding.

Average Subjective Well-Being (full model AIC = 2415.70, R² = 0.49)		
Removed variable	**AIC**	**R²**
Single or two-parent households	2478.73	0.46
Secondary education (high school)	2529.48	0.43
Employment Type	2579.18	0.41
% Renter/Owner-occupied housing	2661.23	0.36

Income	2692.66	0.34
Employment Status	2705.52	0.33
Poverty	2735.88	0.31
No Vehicle	2767.09	0.29
Median rent/mortgage	2784.21	0.27
Median home value	2872.16	0.21
No Telephone	2881.74	0.20
Incomplete Plumbing	2884.97	0.20

Supplemental Table S17: ADI variables predicting average social capital: Results from backwards feature importance algorithm. The final remaining variable is Incomplete Plumbing.

Average Social Capital (full model AIC = 1801.83, R² = 0.71)		
Removed variable	**AIC**	**R²**
Secondary education (high school)	1920.39	0.68
Employment Type	2023.15	0.64
% Renter/Owner-occupied housing	2114.53	0.61

Median rent/mortgage	2182.71	0.58
Single or two-parent households	2209.81	0.57
Income	2235.14	0.56
Poverty	2352.90	0.51
Median home value	2573.89	0.40
Employment Status	2662.38	0.35
No Telephone	2697.28	0.33
No Vehicle	2707.23	0.32
Crowding	2708.32	0.32

Supplemental Table S18: COI variables predicting average mortality: Results from backwards feature importance algorithm. The final remaining subdomain is incomplete Health Insurance.

Average Mortality (full model AIC = 1663.95, R² = 0.72)		
Removed variable	**AIC**	**R²**
Postsecondary education (college)	1763.02	0.72
Toxic exposures	1800.87	0.7

Unoccupied / vacant housing	1855.30	0.69
School resources	1897.91	0.67
Employment type	1943.17	0.66
Employment status	1969.52	0.65
Receiving public assistance	2003.89	0.64
Commute duration	2046.21	0.62
Secondary Education	2074.78	0.61
Early childhood education (ECE)	2101.44	0.6
Income	2148.47	0.58
Green space	2180.79	0.57
Walkability	2213.86	0.55
% Renter/Owner-occupied housing	2325.52	0.5
Access to healthy food	2345.39	0.49
Single or two-parent households	2361.07	0.48
Poverty	2415.26	0.46
Elementary education	2480.14	0.42

Supplemental Table S19: COI variables predicting average physical health: Results from backwards feature importance algorithm. The final remaining subdomain is Green Space.

Average Physical Health (full model AIC = 1188.93, R² = 0.83)		
Removed variable	**AIC**	**R²**

Poverty	1253.35	0.82
Receiving public assistance	1389.49	0.8
Employment status	1498.39	0.78
Postsecondary education (college)	1574.81	0.76
School resources	1641.18	0.74
Commute duration	1704.78	0.73
Health insurance	1750.20	0.72
Employment type	1813.81	0.7
Income	1884.63	0.68
Early childhood education (ECE)	1947.73	0.66
Unoccupied / vacant housing	2004.68	0.64
Single or two-parent households	2041.61	0.62
Access to healthy food	2115.60	0.6
Elementary education	2193.74	0.56
Secondary Education	2328.90	0.5
% Renter/Owner-occupied housing	2443.19	0.45
Toxic exposures	2486.27	0.42
Walkability	2499.79	0.41

Supplemental Table S20: COI variables predicting average mental health: Results from backwards feature importance algorithm. The final remaining subdomain is Walkability.

Average Mental Health (full model AIC = 1666.62, R² = 0.74)		
Removed variable	**AIC**	**R²**
Receiving public assistance	1722.53	0.73
Postsecondary education (college)	1761.28	0.72
Employment status	1805.88	0.7
Commute duration	1850.47	0.69
Poverty	1908.52	0.67
School resources	1964.15	0.65
Income	1987.58	0.65
Unoccupied / vacant housing	2012.65	0.64
Toxic exposures	2040.43	0.62
Access to healthy food	2084.13	0.61
Single or two-parent households	2134.21	0.59
Employment type	2203.50	0.56
% Renter/Owner-occupied housing	2239.54	0.54
Elementary education	2285.35	0.52
Health insurance	2345.93	0.49
Secondary Education	2411.56	0.46
Early childhood education (ECE)	2464.38	0.43
Green space	2464.11	0.43

Supplemental Table S21: COI variables predicting average subjective well-being: Results from backwards feature importance algorithm. The final remaining subdomain is Single or two-parent households.

Average Subjective Well-being (full model AIC = 2267.08, R² = 0.55)		
Removed variable	**AIC**	**R²**
Postsecondary education (college)	2341.44	0.51
Toxic exposures	2379.50	0.49
Receiving public assistance	2421.57	0.47
Commute duration	2462.67	0.45
Employment type	2503.24	0.43
% Renter/Owner-occupied housing	2551.15	0.40
Employment status	2587.37	0.38
School resources	2625.36	0.35
Unoccupied / vacant housing	2636.31	0.35
Secondary Education	2646.72	0.34
Income	2660.28	0.33
Early childhood education (ECE)	2700.85	0.30
Green space	2729.24	0.28
Walkability	2757.94	0.26
Poverty	2767.70	0.25
Access to healthy food	2783.36	0.24
Health insurance	2792.43	0.23
Elementary education	2801.30	0.22

Supplemental Table S22: COI variables predicting average social capital: Results from backwards feature importance algorithm. The final remaining subdomain is the Commute duration.

Average Social Capital (full model AIC = 1836.07, R² = 0.70)		
Removed variable	AIC	R²
School resources	1873.64	0.69
Single or two-parent households	1907.25	0.67
Access to healthy food	1938.98	0.66
Employment status	1961.22	0.66
Early childhood education (ECE)	1978.84	0.65
Employment type	1994.70	0.64
Postsecondary education (college)	2039.91	0.63
Receiving public assistance	2091.31	0.61
Elementary education	2130.03	0.59
Secondary Education	2158.13	0.58
Income	2226.22	0.55
Poverty	2327.85	0.51
Unoccupied / vacant housing	2445.93	0.45
Health insurance	2543.80	0.4
% Renter/Owner-occupied housing	2580.35	0.37
Toxic exposures	2609.51	0.35
Walkability	2628.15	0.34
Green space	2656.83	0.32