APPENDIX

Concepts and Variables

Table A1. Density Variables and their Sources

Variable	Definition	Type	Data Source
Density of Grocery Stores	Count of the number of grocery stores per sq mi	Basic Services	USDA SNAP Retailer Database
Density of Pharmacies	Count of the number of pharmacies per sq mi	Basic Services	NC OneMap Database
Density of Gas Stations	Count of the number of gas stations per sq mi	Basic services	NC OneMap Database
Density of Nursing Homes	Count of the number of nursing homes per sq mi	Basic Services	NC OneMap Database
Density of Parks/Rec Facilities	Count of the number of parks or recreation facilities per sq mi	Public Goods	ESRI Business Analyst Database
Density of Transit Stops	Count of the number of transit stops per sq mi	Public Goods	Bureau of Transportation Statistics Database
Density of Redlined Areas	Count of the number of redlined areas per sq mi	Historical	Mapping Inequality Database
Density of Fire Stations	Count of the number of fire stations per sq mi	Public Goods	NC OneMap Database
Density of Hospitals	Count of the number of hospitals per sq mi	Public Goods	NC OneMap Database
Density of Public Schools	Count of the number of public schools per sq mi	Public Goods	NC OneMap Database
Density of Medical Facilities	Count of the number of medical facilities per sq mi	Public Goods	NC OneMap Database
Density of Brownfields	Count of the number of brownfields per sq mi	Healthy Environments	NC OneMap Database
Density of Hazardous Waste Sites	Count of the number of hazardous waste sites per sq mi	Healthy Environments	NC OneMap Database
Density of NPDES	Count of the number of NPDESs per sq mi	Healthy Environments	NC OneMap Database
Density of Regional Underground Storage (RUS)	Count of the number of RUS sites per sq mi	Healthy Environments	NC OneMap Database
Density of Public Libraries	Count of the number of public libraries per sq mi	Cultural Goods	NC OneMap Database
Density of Colleges	Count of the number of colleges per sq mi	Cultural Goods	NC OneMap Database
Density of Jobs	Count of the number of Jobs per sq mi	Economic Opportunities	ESRI Business Analyst Database
Note: The variables will all be divided by the total square miles of the census tract, to convert them to densities.			

Table A2. Proximity Variables

Variable	Definition	Type	Data Source
Proximity to Nearest Grocery Store	Distance from a census tracts centroid to the closest grocery store	Basic Services	USDA SNAP Retailer Database
Proximity to Nearest Park/Rec Facility	Distance from a census tracts centroid to the closest park/rec facility	Public Goods	ESRI Business Analyst Database
Proximity to Nearest Hospital	Distance from a census tracts centroid to the closest hospital	Public Good	NC OneMap Database
Proximity to Nearest Medical Facility	Distance from a census tracts centroid to the closest medical facility	Public Good	NC OneMap Database
Proximity to Nearest Public Library	Distance from a census tracts centroid to the closest library	Public Good	NC OneMap Database
Proximity to Nearest Interstate	Distance from a census tracts centroid to the closest interstate	Public Good	NC OneMap Database
Proximity to Nearest Brownfield	Distance from a census tracts centroid to the closest brownfield	Healthy Environments	NC OneMap Database
Proximity to Nearest Hazardous Waste Site	Distance from a census tracts centroid to the closest hazardous waste site	Healthy Environments	NC OneMap Database
Proximity to Nearest Redlined Area	Distance from a census tracts centroid to the closest redlined area	Historical	Mapping Inequality Database
Proximity to Work	Percent of workers with commutes less than 15 minutes	Economic Opportunities	American Community Survey 5-Year Estimate Database

Table A3. Diversity Variables

Variable	Definition	Type	Data Source
Percent Impervious Surface	Percent of land that is covered by impervious surfaces	Environmental	Multi-Resolution Land Characteristics (MTLC) Consortium Database
Racial Segregation	Measured as the Isolation Index between black and white residents[1]	People	Decennial Census Database
Housing Stock Diversity	Measured as a Simpson's Index of diversity across the Census defined housing structure types[2]	Housing	American Community Survey 5-Year Estimate Database

Table A4. Connectivity Variables

Variable	Definition	Type	Data Source
Street Connectivity	Gamma index measuring street connections[3]	Built Environment	U.S. Census
Internet Fiber[4]	Percent of households with access to fiber	Digital	NC OneMap Database
Social Capital	Social capital, proxied with census return rates.[5]	Social	Census Planning Database
Internet Providers	Percent of households without access to an internet provider	Digital	NC OneMap Database
Transit Route	Indicator for whether a tract contains a public transit route	Built Environment	Bureau of Transportation Statistics Database
Interstate	Indicator for whether a tract contains an interstate access point	Built Environment	NC OneMap Database

[1] The isolation index is defined as $Iso = \sum \left(\frac{n_{i,b}}{N_b}\right)\left(\frac{n_{i,w}}{n_i}\right)$, where $n_{i,b}$ is the number of black residents in the *i*th block, and $n_{i,w}$ is the number of white residents in the *i*th block. N_b is the total number of black residents in the census tract. n_i is the total population in the *i*th block. Iso is the probability of isolation between the average black resident from the average white resident in a census tract. A value of 0.15, for example, suggests that the probability that the average black resident interacts with the average white person is 0.15. Block-level census data was downloaded from IPUMS NHGIS website.

[2] The Simpson's Index is defined as $SI = \sum_{i=1}^{T} p_i^2$, where p_i is the proportion of all the housing types (T) that are of the *i*th kind. For our study, we follow a similar approach as Chakraborty and McMillan (2022) in defining housing types by their Census designations. Hence, there are 6 types of housing kinds, which are single-family detached, single-family attached, small multi-family, medium multi-family, large multi-family, and other. Once we calculate SI, we subtract it from 1 so that higher values of the final index represent more diversity.

[3] We follow Molaei, Tang, and Hardie (2021) is measuring street connectivity with the Gamma Index.
$GI_i = \frac{STREETS_i}{3\times(INTERSECTIONS_i-2)}$, where $STREETS_i$ denotes the number of streets in the *i*th census tract and $INTERSECTIONS_i$ is the number of intersections in the *i*th census tract. GI_i is the ratio of streets to the maximum possible number of streets between intersections in the *i*th census tract (Molaei, Tang, and Hardie, 2021). For streets and intersections, we consider only Department of Transportation (DOT) roads.

[4] For the fiber and internet provider variables, they are made available at the census tract level but with the 2010 census tract boundaries. To convert them to 2020 boundaries, we use ariel interpolation.

[5] Census return rates have been used in numerous studies as a proxy for social capital (Smith and Blizard, 2021; Martin and Newman, 2015).

Normative Adjustments

Table A5: Explaining the Normative Adjustments

Variable	**Measure**	**Normative Explanation**	**Adjustment**
Density of Parks/Rec Facilities	Spatial Density	Higher density of parks/rec centers suggests ***greater*** spatial justice	None
Density of Transit Stops Facilities	Spatial Density	Higher density of transit stops suggests ***greater*** spatial justice	None
Density of Redlined Areas	Spatial Density	Higher density of redlined areas suggests ***lower*** spatial justice	Invert Distribution
Density of Brownfields	Spatial Density	Higher density of brownfields suggests ***lower*** spatial justice	Invert Distribution
Density of Colleges	Spatial Density	Higher density of colleges suggests ***higher*** spatial justice	None
Density of Medical Facilities	Spatial Density	Higher density of medical facilities suggests ***higher*** spatial justice	None
Density of Grocery Stores	Spatial Density	Higher density of grocery stores suggests ***greater*** spatial justice	None
Density of Gast Stations	Spatial Density	Higher density of grocery stores suggests ***greater*** spatial justice	None
Density of Hazardous Waste Sites	Spatial Density	Higher density of hazardous waste sites suggests ***lower*** spatial justice	Invert Distribution
Density of Hospitals	Spatial Density	Higher density of hospitals suggests ***higher*** spatial justice	None
Density of NPDES	Spatial Density	Higher density of NPDES suggests ***lower*** spatial justice	Invert Distribution
Density of Fire Stations	Spatial Density	Higher density of fire stations suggests ***greater*** spatial justice	None
Density of Pharmacies	Spatial Density	Higher density of pharmacies suggests ***greater*** spatial justice	None

Density of Nursing Homes	Spatial Density	Higher density of nursing homes suggests ***greater*** spatial justice	None
Density of Public Libraries	Spatial Density	Higher density of public libraries suggests ***greater*** spatial justice	None
Density of Public Schools	Spatial Density	Higher density of public schools suggests ***greater*** spatial justice	None
Density of RUS Sites	Spatial Density	Higher density of RUS sites suggests ***lower*** spatial justice	Invert Distribution
Density of Jobs	Spatial Density	Higher density of jobs suggests ***greater*** spatial justice	None
Proximity to Work	Spatial Proximity	Higher percentages of workers with commutes less than 15 minutes suggest ***higher*** spatial justice	None
Proximity to Nearest Park/Rec Facility	Spatial Proximity	Higher distances to nearest rec facility/park suggest ***lower*** spatial justice	Invert Distribution
Proximity to Nearest Brownfield Site	Spatial Proximity	Higher distances to nearest brownfield suggest ***greater*** spatial justice	None
Proximity to Nearest Hazardous Waste Site	Spatial Proximity	Higher distances to nearest hazardous waste site suggest ***greater*** spatial justice	None
Proximity to Nearest Grocery Store	Spatial Proximity	Higher distances to nearest grocery store suggest ***lower*** spatial justice	Invert Distribution
Proximity to Nearest Redlined Area	Spatial Proximity	Higher distances to nearest redlined area suggest ***greater*** spatial justice	None
Proximity to Nearest Medical Facility	Spatial Proximity	Higher distances to nearest medical facility suggest ***lower*** spatial justice	Invert Distribution
Proximity to Nearest Hospital	Spatial Proximity	Higher distances to nearest hospital suggest ***lower*** spatial justice	Invert Distribution
Proximity to Nearest Public School	Spatial Proximity	Higher distances to nearest public school suggest ***lower*** spatial justice	Invert Distribution
Proximity to Nearest Interstate	Spatial Proximity	Higher distances to nearest interstate suggest ***lower*** spatial justice	Invert Distribution

Percent Impervious Surface	Spatial Diversity	Higher percentage of land covered by impervious surface suggests ***lower*** spatial justice	Invert Distribution
Racial Segregation	Spatial Diversity	Higher values of the Isolation Index suggest ***greater*** spatial justice.	None
Housing Stock Diversity	Spatial Diversity	Higher housing stock diversity suggests ***greater*** spatial justice	None
Internet Fiber	Spatial Connectivity	Higher percentages of the population with access to fiber suggests ***greater*** spatial justice	None
Internet Providers	Spatial Connectivity	Higher percentages of the population without an internet provider ***lower*** spatial justice	Invert Distribution
Interstate	Spatial Connectivity	The presence of interstate access suggests ***greater*** spatial justice	None
Transit Route	Spatial Connectivity	The presence of a transit route suggests ***greater*** spatial justice	None
Social Capital	Spatial Connectivity	Higher levels of social capital suggest ***greater*** spatial justice	None
Street Connectivity	Spatial Connectivity	Higher levels of street connectivity suggest ***greater*** spatial justice	None

PCA Output

Table A6: Eigenvalues for the PCA of Density-Related Variables

Components	Eigenvalue	Difference	Proportion	Cumulative
1	4.75541	3.00837	0.264	0.264
2	1.74704	0.45848	0.097	0.361
3	1.28855	0.04147	0.072	0.433
4	1.24709	0.08526	0.069	0.502
5	1.16182	0.16304	0.065	0.567
6	0.99878	0.05316	0.056	0.622
7	0.94562	0.05394	0.053	0.675
8	0.89169	0.09469	0.050	0.724
9	0.79700	0.08189	0.044	0.769
10	0.71511	0.07879	0.040	0.808
11	0.63632	0.07831	0.035	0.844
12	0.55801	0.03298	0.031	0.875
13	0.52503	0.09061	0.029	0.904
14	0.43442	0.04976	0.024	0.928
15	0.38467	0.07474	0.021	0.949
16	0.30993	0.00310	0.017	0.967
17	0.30683	0.01014	0.017	0.984
18	0.29669		0.017	1.000

Table A7: Eigenvectors for the PCA of the Density-Related Variables

Variable	PC1	PC2	PC3	PC4
Density of Grocery Stores	0.3183	0.1265	0.3840	0.1240
Density of Pharmacies	0.3080	0.2571	-0.1238	0.1479
Density of Gas Stations	0.1924	0.3339	0.4611	0.0015
Density of Nursing Homes	0.0745	0.4301	-0.1533	0.0866
Density of Parks/Rec Facilities	0.3068	-0.2746	-0.0234	0.1543
Density of Transit Stops	0.1586	0.0468	-0.1095	0.0481
Density of Redlined Areas	-0.3075	0.2511	0.0024	0.1562
Density of Fire Stations	0.1104	-0.0704	0.1826	-0.0013
Density of Hospitals	0.1286	0.3606	-0.5112	-0.0623
Density of Public Schools	0.1768	0.0628	0.1611	-0.4943
Density of Medical Facilities	0.2311	0.3939	-0.0201	-0.0614
Density of Brownfields	-0.2190	0.1956	-0.0496	0.4079
Density of Hazardous Waste Sites	-0.3222	0.0608	0.0341	-0.0390

Density of NPDES	-0.0601	0.2608	0.2996	-0.1973
Density of Regional Underground Storage (RUS)	-0.3514	0.1456	-0.0322	-0.0278
Density of Public Libraries	0.2301	-0.2067	0.0822	0.4029
Density of Colleges	0.1157	-0.1031	-0.2363	-0.5197
Density of Jobs	0.2980	-0.0456	-0.3325	0.1128

Table A8: Descriptive Statistics for the Standardized Density-Related Components

Variable	Mean	Standard Deviation	Minimum	Maximum
Standardized PC1	100	25	78.76	428.47
Standardized PC2	100	25	-127.17	284.80
Standardized PC3	100	25	-135.69	221.75
Standardized PC4	100	25	-188.48	459.11
N = 1,343				

Table A9: Eigenvalues for the PCA of Proximity-Related Variables

Component	Eigenvalue	Difference	Proportion	Cumulative
1	3.53582	1.32803	0.35360	0.35360
2	2.20779	1.31608	0.22080	0.57440
3	0.89171	0.11728	0.08920	0.66350
4	0.77443	0.17574	0.07740	0.74100
5	0.59869	0.04506	0.05990	0.80080
6	0.55363	0.05188	0.05540	0.85620
7	0.50175	0.07458	0.05020	0.90640
8	0.42717	0.01906	0.04270	0.94910
9	0.40811	0.30721	0.04080	0.98990
10	0.10090		0.01010	1.00000

Table A10: Eigenvectors for the PCA of the Proximity-Related Variables

Variable	PC1	PC2
Proximity to Nearest Grocery Store	0.3332	0.2673
Proximity to Nearest Park/Rec Facility	0.2517	-0.0138
Proximity to Nearest Hospital	0.3208	0.1525
Proximity to Nearest Medical Facility	0.3679	0.1900
Proximity to Nearest Public Library	0.3521	0.2355
Proximity to Nearest Interstate	0.2947	-0.4974
Proximity to Nearest Brownfield	-0.3497	0.2577
Proximity to Nearest Hazardous Waste Site	-0.3992	-0.1662
Proximity to Nearest Redlined Area	-0.2997	0.5024
Proximity to Work	0.0716	0.4688

Table A11: Descriptive Statistics for the Standardized Proximity-Related Components

Variable	Mean	Standard Deviation	Minimum	Maximum
Standardized PC1	100	25	-61.86	136.70
Standardized PC2	100	25	14.77	239.90

Table A12: Eigenvalues for the PCA of Diversity-Related Variables

Component	Eigenvalue	Difference	Proportion	Cumulative
1	1.65194	0.89407	0.55060	0.55060
2	0.75787	0.16768	0.25260	0.80330
3	0.59019		0.19670	1.00000

Table A13: Eigenvectors for the PCA of the Diversity-Related Variables

Variable	PC1
Percent Impervious Surface	0.6187
Racial Segregation	0.5756
Housing Stock Diversity	-0.5346

Table A14: Descriptive Statistics for the Standardized Diversity-Related Components

Variable	Mean	Standard Deviation	Minimum	Maximum
Standardized PC1	100	25	39.59	161.90

Table A15: Eigenvalues for the PCA of Connectivity-Related Variables

Component	Eigenvalue	Difference	Proportion	Cumulative
1	1.89276	0.58311	0.31550	0.31550
2	1.30964	0.30757	0.21830	0.53370
3	1.00208	0.05042	0.16700	0.70070
4	0.95165	0.25460	0.15860	0.85940
5	0.69705	0.55023	0.11620	0.97550
6	0.14682		0.02450	1.00000

Table A16: Eigenvectors for the PCA of Connectivity-Related Variables

Variable	PC1	PC2
Street Connectivity	0.6892	-0.0884
Internet Fiber	0.1017	0.6880
Social Capital	0.0107	0.6633
Internet Providers	-0.0564	-0.0141
Transit Route	0.1884	0.2634
Interstate	0.6898	-0.0966

Table A17: Descriptive Statistics for the Standardized Connectivity-Related Components

Variable	Mean	Standard Deviation	Minimum	Maximum
Standardized PC1	100	25	79.84	198.31
Standardized PC2	100	25	11.73	162.63

Correlations

Table A18. Correlations Between the Density Variables

	Grocery Stores	Pharmacies	Gas Stations	Nursing Homes	Parks/Rec Facilities	Transit Stops	Redlined Areas	Fire Stations	Hospitals	Public Schools	Medical Facilities	Brownfields	Hazardous Waste Sites	NPDES	RUS	Public Libraries	Colleges	Jobs
Grocery Stores	1.000	0.482***	0.569***	0.098***	0.351***	0.141***	0.370***	0.147***	0.043	0.227***	0.358***	0.252***	0.468***	0.041	0.463***	0.319***	0.031	0.314***
Pharmacies	0.482***	1.000	0.290***	0.222***	0.312***	0.210***	0.306***	0.083***	0.394***	0.226***	0.372***	0.146***	0.477***	0.001	0.353***	0.328***	0.084***	0.425***
Gas Stations	0.569***	0.290***	1.000	0.138***	0.101***	0.125***	0.101***	0.096***	0.085***	0.206***	0.315***	0.086***	0.217***	-0.070***	0.260***	0.065**	0.021	0.121***
Nursing Homes	0.098***	0.222***	0.138***	1.000	0.008	0.036	-0.010	0.016	0.185***	0.000	0.356***	0.000	0.030	-0.030	0.042	0.000	0.004	0.066**
Parks/Rec Facilities	0.351***	0.312***	0.101***	0.008	1.000	0.333***	0.528***	0.194***	0.028	0.141***	0.160***	0.281***	0.400***	0.132***	0.521***	0.462***	0.147***	0.395***
Transit Stops	0.141***	0.210***	0.125***	0.036	0.333***	1.000	0.000	0.173***	0.117***	0.153***	0.118***	0.072***	0.247***	-0.020	0.187***	0.076***	0.085***	0.273***
Redlined Areas	0.370***	0.306***	0.101***	-0.010	0.528***	0.000	1.000	0.121***	0.100***	0.223***	0.248***	0.519***	0.357***	0.106***	0.546***	0.337***	0.184***	0.380***
Fire Stations	0.147***	0.083***	0.096***	0.016	0.194***	0.173***	0.121***	1.000	-0.010	0.092***	0.055**	0.127***	0.141***	0.013	0.127***	0.083***	0.018	0.105***
Hospitals	0.043	0.394***	0.085***	0.185***	0.028	0.117***	0.100***	-0.010	1.000	0.054**	0.300***	0.028	0.157***	-0.030	0.102***	-0.020	0.111***	0.284***
Public Schools	0.227***	0.226***	0.206***	0.000	0.141***	0.153***	0.223***	0.092***	0.054**	1.000	0.225***	0.197***	0.206***	-0.050**	0.232***	0.085***	0.257***	0.136***
Medical Facilities	0.358***	0.372***	0.315***	0.356***	0.160***	0.118***	0.248***	0.055**	0.300***	0.225***	1.000	0.170***	0.230***	-0.040	0.304***	0.119***	0.047*	0.250***
Brownfields	0.252***	0.146***	0.086***	0.000	0.281***	0.072***	0.519***	0.127***	0.028	0.197***	0.170***	1.000	0.318***	0.046*	0.372***	0.030	0.155***	0.239***
Hazardous Waste Sites	0.468***	0.477***	0.217***	0.030	0.400***	0.247***	0.357***	0.141***	0.157***	0.206***	0.230***	0.318***	1.000	0.114***	0.472***	0.355***	0.211***	0.417***
NPDES	0.041	0.001	-0.070***	-0.030	0.132***	-0.020	0.106***	0.013	-0.030	-0.055**	-0.040	0.046*	0.114***	1.000	0.090***	0.104***	0.084***	0.223***
RUS	0.463***	0.353***	0.260***	0.042	0.521***	0.187***	0.546***	0.127***	0.102***	0.232***	0.304***	0.372***	0.472***	0.090***	1.000	0.424***	0.166***	0.533***
Public Libraries	0.319***	0.328***	0.065**	0.000	0.462***	0.076***	0.337***	0.083***	-0.020	0.085***	0.119***	0.030	0.355***	0.104***	0.424***	1.000	0.039	0.210***
Colleges	0.031	0.084***	0.021	0.004	0.147***	0.085***	0.184***	0.018	0.111***	0.257***	0.047*	0.155***	0.211***	0.084***	0.166***	0.039	1.000	0.108***
Jobs	0.314***	0.425***	0.121***	0.066**	0.395***	0.273***	0.380***	0.105***	0.284***	0.136***	0.250***	0.239***	0.417***	0.223***	0.533***	0.210***	0.108***	1.000

Note: Cells contain the Pearson correlation coefficient estimate. *** $p < 0.01$, ** $0.01 \leq p < 0.05$, * $p \leq 0.05$

Table A19. Correlations Between the Proximity Variables

	Proximity to Nearest Grocery Store	Proximity to Nearest Park/Rec Facility	Proximity to Nearest Hospital	Proximity to Nearest Medical Facility	Proximity to Nearest Public Library	Proximity to Nearest Interstate	Proximity to Nearest Brownfield	Proximity to Nearest Hazardous Waste Site	Proximity to Nearest Redlined Area	Proximity to Work
Proximity to Nearest Grocery Store	1.000	0.242***	0.306***	0.464***	0.470***	0.065**	0.221***	0.546***	0.063**	-0.240***
Proximity to Nearest Park/Rec Facility	0.242***	1.000	0.226***	0.246***	0.246***	0.190***	0.180***	0.303***	0.234***	0.026
Proximity to Nearest Hospital	0.306***	0.226***	1.000	0.407***	0.338***	0.155***	0.319***	0.391***	0.176***	-0.280***
Proximity to Nearest Medical Facility	0.464***	0.246***	0.407***	1.000	0.507***	0.178***	0.267***	0.510***	0.153***	-0.160***
Proximity to Nearest Public Library	0.470***	0.246***	0.338***	0.507***	1.000	0.097***	0.299***	0.487***	0.113***	-0.250***
Proximity to Nearest Interstate	0.065**	0.190***	0.155***	0.178***	0.097***	1.000	0.555***	0.218***	0.895***	0.298***
Proximity to Nearest Brownfield	0.221***	0.180***	0.319***	0.267***	0.299***	0.555***	1.000	0.346***	0.556***	0.085***
Proximity to Nearest Hazardous Waste Site	0.546***	0.303***	0.391***	0.510***	0.487***	0.218***	0.346***	1.000	0.232***	-0.220***
Proximity to Nearest Redlined Area	0.063**	0.234***	0.176***	0.153***	0.113***	0.895***	0.556***	0.232***	1.000	0.327***
Proximity to Work	-0.240***	0.026	-0.280***	-0.165***	-0.250***	0.298***	0.085***	-0.220***	0.327***	1.000

Note: Cells contain the Pearson correlation coefficient estimate. *** $p < 0.01$, ** $0.01 \leq p < 0.05$, * $p \leq 0.05$

Table A20. Correlations Between the Diversity Variables

	Percent Impervious Surface	Racial Segregation	Housing Stock Diversity
Percent Impervious Surface	1.000	-0.392***	0.332***
Racial Segregation	-0.392***	1.000	-0.248***
Housing Stock Diversity	0.332***	-0.248***	1.000

Note: Cells contain the Pearson correlation coefficient estimate. *** $p < 0.01$, ** $0.01 \leq p < 0.05$, * $p \leq 0.05$

Table A21. Correlations Between the Connectivity Variables

	Street Connectivity	Internet Fiber	Social Capital	Internet Providers	Transit Route	Interstate
Street Connectivity	1	0.048*	-0.011	0.031	0.108***	0.853***
Internet Fiber	0.048*	1	0.284***	0.004	0.125***	0.045*
Social Capital	-0.011	0.284***	1	0.002	0.024	-0.024
Internet Providers	0.031	0.004	0.002	1	0.026	0.035
Transit Route	0.108***	0.125***	0.024	0.026	1	0.115***
Interstate	0.853***	0.045*	-0.024	0.035	0.115***	1

Note: Cells contain the Pearson correlation coefficient estimate. *** $p < 0.01$, ** $0.01 \leq p < 0.05$, * $p \leq 0.05$

Validation and Robustness Output

Correlations

Table A22. Correlations with the Spatial Justice Index

Variables	Pearson Coefficients	*p*	Expected Sign?
Median Household Income ($)	0.31005	< 0.001	Yes
Median Home Value ($)	0.25012	< 0.001	Yes
Household Poverty Rate (%)	-0.31742	< 0.001	Yes
Homeownership Rate (%)	0.34849	< 0.001	Yes
Housing Vacancy Rate (%)	-0.26307	< 0.001	Yes
Percent of the Population that is White	0.40404	< 0.001	Yes
Percent of the Population that is Non-White	-0.40404	< 0.001	Yes
Unemployment Rate (%)	-0.24949	< 0.001	Yes

Item Analysis

Density-Related

Table A23: Item Analysis for the Density-Related Variables and the SJ Index

Standardized Variables	Pearson Coefficient	*p*	Expected Sign?
Density of Grocery Stores	0.0575	0.035	Yes
Density of Pharmacies	0.1585	< 0.001	Yes
Density of Gas Stations	0.1002	< 0.001	Yes
Density of Nursing Homes	0.0777	0.004	Yes
Density of Parks/Rec Facilities	0.0823	0.003	Yes
Density of Transit Stops	0.0792	0.004	Yes
Density of Redlined Areas	-0.0370	0.176	Yes
Density of Fire Stations	0.0578	0.034	Yes
Density of Hospitals	0.0253	0.354	Yes
Density of Public Schools	-0.1042	< 0.001	No
Density of Medical Facilities	0.0366	0.180	Yes
Density of Brownfields	-0.1262	< 0.001	Yes
Density of Hazardous Waste Sites	0.0124	0.649	No
Density of NPDES	-0.0754	0.006	Yes
Density of Regional Underground Storage (RUS)	0.0835	0.002	No
Density of Public Libraries	0.1237	< 0.001	Yes
Density of Colleges	-0.2728	< 0.001	No
Density of Jobs	0.0330	0.227	Yes

Proximity-Related

Table A24: Item Analysis for the Proximity-Related Variables and the SJ Index

Variable	Pearson Coefficient	*p*	Expected Sign?
Proximity to Nearest Grocery Store	0.128	< 0.001	Yes
Proximity to Nearest Park/Rec Facility	0.189	< 0.001	Yes
Proximity to Nearest Hospital	0.238	< 0.001	Yes
Proximity to Nearest Medical Facility	0.232	< 0.001	Yes
Proximity to Nearest Public Library	0.195	< 0.001	Yes
Proximity to Nearest Interstate	0.122	< 0.001	Yes
Proximity to Nearest Brownfield	-0.123	< 0.001	Yes
Proximity to Nearest Hazardous Waste Site	-0.198	< 0.001	Yes
Proximity to Nearest Redlined Area	-0.139	< 0.001	Yes
Proximity to Work	-0.012	0.656	No

Diversity-Related

Table A25: Item Analysis for the Diversity-Related Variables and the SJ Index

Variables	Pearson Coefficient	*p*	Expected Sign?
Percent Impervious Surface	-0.12504	< 0.001	Yes
Racial Segregation	0.42496	< 0.001	Yes
Housing Stock Diversity	-0.32432	< 0.001	No

Connectivity-Related

Table A26: Item Analysis for the Connectivity-Related Variables and the SJ Index

Variable	Pearson Coefficient	*p*	Expected Sign?
Street Connectivity	0.28907	< 0.001	Yes
Internet Fiber	0.38127	< 0.001	Yes
Social Capital	0.49878	< 0.001	Yes
Internet Providers	-0.02541	0.352	Yes
Transit Route	0.17966	< 0.001	Yes
Interstate	0.26362	< 0.001	Yes

Sensitivity

Table A27. Correlation Between Original and Modified Indices

Pearson Correlation Coefficient	*p*
0.630	< 0.001

Figure A1. Plot of the Original and Modified Indices