

## Appendix

**Table S1**

Data Collection

Data	Year	Source
U.S. major cities boundary	2019	U.S. Centers for Disease Control and Prevention 500 Cities Program
U.S. COVID-19 data	2020	New York Times
Exposure indices	2020	PlaceIQ Movement Data
Population estimates by age, sex, race, and Hispanic origin	2019	U.S. Census Bureau
Life expectancy	2015	U.S. Small-area Life Expectancy Estimates Project
Unemployment rate	2018	U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS)
Median household income	2018	Census Bureau, Small Area Income and Poverty Estimates (SAIPE) Program
County business patterns	2020	U.S. Census Bureau
County boundary	2017	U.S. Census Bureau TIGER/Line Shapefile
Education attainment	2018	American Community Survey 5-year average county-level estimates