

Supplementary Online Content

Song S, Ma G, Trisolini MG, et al. Evaluation of between-county disparities in premature mortality due to stroke in the US. *JAMA Netw Open*. 2021;4(5):e214488. doi:10.1001/jamanetworkopen.2021.4488

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This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1 Variables included in the regression analysis with data source and summary statistics

County Characteristics	Data source	Median (Interquartile ranges)
Demographic composition		
Rural, %, 2011-2017 ^g	CHRR ^a	48.04 (24.25, 69.18)
Female, %, 2011-2017 ^g	CPE ^b	50.63 (49.97, 51.25)
Aged >64 years, %, 2011-2017 ^g	CPE ^b	16.44 (14.29, 18.68)
Black/African American, %, 2011-2017 ^g	CPE ^b	4.34 (1.19, 15.38)
American Indian/Alaskan Native, %, 2011-2017 ^g	CPE ^b	0.52 (0.33, 1.01)
Asian, %, 2011-2017 ^g	CPE ^b	0.82 (0.50, 1.69)
Born outside the US, %, 2011-2017 ^g	ACS ^c	3.14 (1.55, 6.20)
Socioeconomic status		
Median household income, \$1000, 2011-2018	SAIPE ^d	45.94 (39.74, 54.41)
Unemployed, %, 2011-2017 ^g	CHRR ^a	6.39 (5.41, 7.48)
Uninsured rate, %, 2011-2017 ^g	SAHIE ^e	13.33 (10.19, 16.81)
Health care and environmental features		
Primary care physicians, per 100,000 population, 2011-2018	CHRR ^a	52.46 (36.88, 74.27)
Healthcare quality index, 2011-2015 ^{g,h}	DAHC ^f	0.11 (-0.15, 0.36)
Access to exercise opportunity, %, 2012-2018 ^{g,i}	CHRR ^a	65.10 (50.23, 79.04)
Food environment index, 2011-2016 ^{g,j,k}	CHRR ^a	7.48 (6.77, 8.03)
Population health		
Physical inactivity, %, 2011-2018	CHRR ^a	27.46 (23.76, 30.86)
Diabetes, %, 2011-2018	CHRR ^a	10.92 (9.44, 12.44)
Self-reported poor health status, %, 2011-2018	CHRR ^a	17.31 (13.94, 21.12)
Total Medicare reimbursements per enrollee, \$1000, 2011-2016 ^g	DAHC ^f	9.80 (8.94, 10.67)

Abbreviations: ACS, American Community Survey; CHRR, County Health Rankings & Roadmaps; CPE, Census Population Estimates; DAHC, Dartmouth Atlas of Health Care; SAHIE, Small Area Health Insurance Estimates; SAIPE, Small Area Income and Poverty Estimates.

^aCHRR database provides a model to help communities understand the factors influencing healthy residents. It summarizes many health outcome and health factors from other databases each year. Available at:

<http://www.countyhealthrankings.org> Accessed 06/20/2019.

^bAvailable at:<https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t> Accessed 06/20/2019.

^cACS, 5-year estimates. Available at:http://factfinder.census.gov/faces/nav/jsf/pages/download_center.xhtml Accessed 06/20/2019.

^d Available at:<https://www.census.gov/programs-surveys/saie/data/datasets.html> Accessed 06/20/2019.

^e Available at:<https://www.census.gov/programs-surveys/sahie.html> Accessed 06/20/2019.

^fAvailable at:<http://www.dartmouthatlas.org/downloads/tables/> Accessed 06/20/2019.

^gFor those variables restricted to year range, we conducted ordinary least square regression model to predict the missing value.

^hCalculated by taking the mean of the z-scores for six variables related to primary care access and quality among Medicare enrollees: the percent of enrollees who had an ambulatory care visit to a primary care clinician, the percent of diabetic enrollees who had an HbA1c test/an eye exam/an LDL-C test, the percent of female enrollees who had a mammogram; and the discharge rate for ambulatory care sensitive conditions.

ⁱThe 2014-2019 CHRR databases summarized this variable from OneSource Global Business Browser, DeLorme map data, Esri, and Census Bureau TIGER/Line files from 2012-2018.

^jThe 2014-2019 CHRR were used to summarize this variable from US Department of Agriculture Food Environment Atlas, Map the Meal Gap from 2011-2016.

^kCalculated as a composite score, ranging from 1 to 10, describing limits on access to healthy foods, with 1 indicating the lowest and 10 indicating the highest access to healthy foods.

eTable 2. County-level factors associated with mortality (per 100,000 population) due to stroke in the US residents aged 25-64 years by subtype, 2011-2018

County characteristics	Subarachnoid Hemorrhage		Intracerebral Hemorrhage		Cerebral Infarction		Stroke, Not Specified as Hemorrhage or Infarction		Other and Sequelae of Cerebrovascular Disease	
	Standard Dominance Statistic	Coefficient (95% CI)	Standard Dominance Statistic	Coefficient (95% CI)	Standard Dominance Statistic	Coefficient (95% CI)	Standard Dominance Statistic	Coefficient (95% CI)	Standard Dominance Statistic	Coefficient (95% CI)
Demographic composition										
Rural, %	0.146 (33.6%)	0.007*** (-0.002, -0.016)	0.221 (33.5%)	0.002* (0.000, 0.004)	0.260 (38.8%)	0.013** (0.0004, 0.025)	0.209 (30.6%)	0.003*** (0.001, 0.005)	0.159 (37.9%)	0.013*** (0.006, 0.020)
Female, %		-0.013 (-0.120, 0.091)		-0.006 (-0.026, 0.015)		-0.11 (-0.250, 0.036)		0.018* (-0.002, 0.037)		-0.041 (-0.120, 0.034)
Aged >64 years, %		0.016 (-0.011, 0.043)		0.010* (-0.001, 0.021)		0.012 (-0.029, 0.053)		0.014*** (0.004, 0.023)		0.014 (-0.015, 0.043)
Black/African American, %		0.004 (-0.007, 0.014)		0.009*** (0.006, 0.012)		0.001 (-0.013, 0.015)		0.007*** (0.004, 0.010)		0.001 (-0.008, 0.010)
American Indian/Alaskan Native, %		-0.006 (-0.028, 0.017)		-0.013*** (-0.021, -0.005)		-0.045 (-0.180, 0.089)		-0.009** (-0.016, -0.001)		-0.028** (-0.056, -0.001)
Asian, %		0.013 (-0.013, 0.038)		0.028*** (0.016, 0.040)		0.003 (-0.035, 0.041)		0.020*** (0.006, 0.035)		0.019 (-0.011, 0.048)
Foreign born, %		-0.008 (-0.032, 0.015)		-0.019*** (-0.029, -0.010)		-0.016 (-0.050, 0.019)		-0.024*** (-0.034, -0.015)		-0.028** (-0.052, -0.003)

Socioeconomic status										
Median household income, \$1000	0.079 (18.3%)	-0.006 (-0.017, 0.005)	0.109 (16.5%)	-0.007*** (-0.012, -0.002)	0.089 (13.2%)	-0.004 (-0.023, 0.016)	0.111 (16.3%)	-0.010*** (-0.015, -0.006)	0.059 (14.1%)	0.001 (-0.012, 0.014)
Unemployed, %		0.007 (-0.057, 0.071)		0.022* (-0.001, 0.045)		0.004 (-0.110, 0.120)		-0.002 (-0.024, 0.019)		-0.015 (-0.074, 0.044)
Uninsured rate, %		0.007 (-0.021, 0.035)		0.020*** (0.009, 0.030)		0.019 (-0.024, 0.063)		0.021*** (0.012, 0.031)		0.014 (-0.014, 0.041)
Health care and environmental features										
Primary care physicians per 100,000 population	0.100 (23.1%)	-0.001 (-0.003, 0.003)	0.150 (22.7%)	0.001 (-0.001, 0.001)	0.170 (25.4%)	0.001 (-0.004, 0.005)	0.172 (25.2%)	-0.001 (-0.002, 0.001)	0.104 (24.7%)	0.001 (-0.002, 0.004)
Healthcare quality index		-0.077 (-0.300, 0.150)		-0.130*** (-0.220, -0.045)		-0.069 (-0.440, 0.310)		-0.130*** (-0.210, -0.051)		-0.051 (-0.280, 0.170)
Access to exercise opportunities, %		-0.001 (-0.012, 0.010)		-0.002 (-0.005, 0.001)		0.002 (-0.014, 0.018)		-0.001 (-0.003, 0.002)		0.007 (-0.003, 0.017)
Food environment index		0.053 (-0.140, 0.250)		0.036 (-0.019, 0.092)		-0.084 (-0.360, 0.190)		-0.012 (-0.058, 0.034)		-0.200** (-0.370, -0.031)
Population health										
Physical inactivity, %	0.109 (25.1%)	0.014 (-0.024, 0.052)	0.180 (27.3%)	0.003 (-0.010, 0.015)	0.152 (22.6%)	0.016 (-0.041, 0.073)	0.189 (27.8%)	0.026*** (0.015, 0.038)	0.099 (23.4%)	0.007 (-0.030, 0.044)
Diabetes, %		-0.022 (-0.130, 0.090)		0.012 (-0.024, 0.049)		0.048 (-0.110, 0.210)		0.003 (-0.030, 0.037)		-0.004 (-0.110, 0.100)
Self-reported poor health status, %		0.018 (-0.026, 0.063)		0.022*** (0.009, 0.035)		0.018 (-0.048, 0.085)		0.007 (-0.005, 0.019)		0.055*** (0.015, 0.096)
Total Medicare reimbursements per enrollee,		-0.037 (-0.130, 0.054)		-0.004 (-0.034, 0.026)		-0.064 (-0.200, 0.073)		0.017 (-0.009, 0.043)		-0.008 (-0.084, 0.069)

\$1,000											
Adjusted R²	0.410		0.654		0.649		0.675		0.395		

Note: We combined the data on mortality from CDC wonder and data on county characteristics from the multiple county-level databases in 2011-2018.

Dominance statistics can be used as an index of effect size, and are derived as a weighted average marginal/incremental contribution to the overall fit statistic an independent variable makes across all models in which the independent variable is included. The percent of dominance statistics can describe the contribution of the four sets of factors associated with the premature stroke mortality.

*** P<0.01, ** P<0.05, * P<0.10

eFigure. Trends in crude county-level mortality (per 100,000 population) due to stroke, and distribution of place of death and subtype in the US residents aged 25-64 years, 1999-2018.

