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Supplementary Methods

Adults ≥ 18 years of age and only non-pregnant females were included in the study sample. The state-level data on healthcare and demographic characteristics which included age $(18-44, 45-64, \geq 65 \text{ years})$, sex (males/females), race (non-Hispanic Whites, non-Hispanic Blacks, Hispanics, and others), annual household income (<\$15,000, \$15,000-\$25,000, \$25,000-\$35,000, \$35,000-\$50,000, >\$50,000), health insurance status (yes/no), and education level (less than high school, high school, more than high school), were also obtained. The questions from the Behavioral Risk Factor Surveillance System (BRFSS), which were used to define the CVHI metrics, are described in Supplementary Table 1. Hypertension was defined as a "yes" response to the question, "Have you ever been told by a doctor, nurse or another health professional that you have high blood pressure?" Individuals with current insulin use or selfreported history of diabetes outside of pregnancy or were defined as having diabetes. Obesity was determined using body-mass index computed from self-reported height and weight. The respondents who reported having smoked at least 100 cigarettes in their lifetime and currently smoke were determined as current smokers. Cardiac disease was defined as individuals who reported having coronary heart disease or myocardial infarction. Those who reported having a stroke were ascertained as individuals with stroke.

Covariates

The covariates used in the statistical models were defined as follows: sex (binary categories: male [reference], female), race (ordinal categories: non-Hispanic Whites [reference], non-Hispanic Blacks, Hispanics, others), education (ordinal categories: less than high school, high school, more than high school [reference]), annual household income (ordinal categories:

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<\$15,000, \$15,000-\$25,000, \$25,000-\$35,000, \$35,000-\$50,000, >\$50,000 [reference]), health insurance status (binary categories: yes [reference], no).

Model Fit

Effect	F Value	Pr>F
Model	405.03	<.0001
Intercept	5633.41	<.0001
Year	21.06	<.0001
Sex	547.19	<.0001
Race	50.79	<.0001
Education	558.33	<.0001
Annual Household Income	338.51	<.0001
Health Insurance	131.56	<.0001
$R^2 = 0.14$		

The tests of model effects for trend analyses of CVHI are shown in the table below:

Cardiovascular **BRFSS** Question **Criteria for Ideal Cardiovascular** Health Index **Health Components** Component Have you ever been told by a doctor, nurse, or Blood Pressure Never been told by a health another health professional that you have high professional that they have high blood pressure? blood pressure Never been told by doctor that they Have you ever been told by a doctor that you Glucose have diabetes? have diabetes Cholesterol Blood cholesterol is a fatty substance reported Individual had previously had their in the blood. Have you ever had your blood cholesterol checked and never been cholesterol checked? Have you ever been told told by a health professional they by a doctor or other health professional that have high cholesterol your blood cholesterol is high? About how much do you weigh without shoes? Body mass index 18.5-24.9 kg/m² Body Mass Index About how tall are you without shoes? Have you smoked at least 100 cigarettes in The participant had not smoked at **Smoking Status** your entire life? Do you now smoke cigarettes least 100 cigarettes in their lifetime every day, some days, or not at all? or reported smoking 100 cigarettes in their lifetime but not currently smoking Physical Activity The participant did \geq 150 minutes a During the past 30 days, other than your regular job, did you participate in any physical week of moderate-intensity activity activities or exercise such as running, or, ≥75 minutes of vigorouscalisthenics, golf, gardening, or walking for intensity activity, or an equivalent exercise? How many times per week or per combination of physical activity month did you take part in this activity during the past month? And when you took part in this activity, for how many minutes or hours did you usually keep at it? Estimated Activity Intensity for First Activity (Calculated by BRFSS) How many times per week or per month did you take part in this activity during the past month? And when you took part in this activity, for how many minutes or hours did you usually keep at it? Estimated Activity Intensity for Second Activity (Calculated by BRFSS) Healthy Diet During the past month, not counting juice, how Consuming 5 or more servings of many times per day, week, or month did you fruits and vegetables per day eat fruit? Count fresh, frozen, or canned fruit. During the past month, how many times per day, week, or month did you eat orangecolored vegetables such as sweet potatoes, pumpkin, winter squash, or carrots? During the

Supplementary Table 1. Calculation of Cardiovascular Health Index

past month, how many times per day, week, or	
month did you eat dark green vegetables, for	
example, broccoli or dark leafy greens	
including romaine, chard, collard greens, or	
spinach? Not counting what you just told me	
about, during the past month, about how many	
times per day, week, or month did you eat	
other vegetables?	

		Northeast	Midwest	South	West
		Percentage (95% CI)	Percentage (95% CI)	Percentage (95% CI)	Percentage (95% CI)
	18-44 Years	36.5 (36.2-36.9)	35.8 (35.5-36.2)	38.0 (37.6-38.3)	39.0 (38.6-39.4)
	45-64 Yeas	40.1 (39.7-40.4)	40.6 (40.3-40.9)	38.9 (38.6-39.2)	38.8 (38.3-39.2)
Age Groups	>64 Years	23.4 (23.1-23.7)	23.6 (23.4-23.8)	23.1 (22.9-23.3)	22.3 (21.9-22.6)
	Females	51.3 (50.9-51.7)	50.9 (50.6-51.2)	51.3 (51.0-51.6)	50.4 (50.0-50.9)
	NH Whites	73.3 (72.9-73.6)	82.4 (82.1-82.7)	66.1 (65.8-66.4)	60.0 (59.5-60.4)
	NH Blacks	9.9 (9.6-10.1)	9.1 (8.8-9.3)	17.4 (17.2-17.7)	4.3 (4.1-4.5)
	Hispanics	10.3 (10.1-10.6)	5.1 (4.9-5.3)	12.2 (12.0-12.5)	22.7 (22.3-23.1)
Race/Ethnicity	Others	6.5 (6.3-6.8)	3.5 (3.4-3.6)	4.2 (4.1-4.3)	13.0 (12.6-13.3)
	>High School	61.0 (60.6-61.3)	60.9 (60.6-61.2)	59.1 (58.8-59.4)	65.5 (65.1-65.9)
	High School	28.6 (28.2-28.9)	29.5 (29.2-29.8)	27.7 (27.5-28.0)	21.9 (21.6-22.3)
Education	<high school<="" th=""><th>10.5 (10.2-10.7)</th><th>9.6 (9.3-9.8)</th><th>13.2 (12.9-13.4)</th><th>12.6 (12.2-12.9)</th></high>	10.5 (10.2-10.7)	9.6 (9.3-9.8)	13.2 (12.9-13.4)	12.6 (12.2-12.9)
	Health Insurance	92.5 (92.3-92.7)	91.7 (91.5-91.9)	86.9 (86.7-87.2)	90.1 (89.9-90.4)
	<\$15,000	55.0 (54.6-55.4)	50.9 (50.5-51.2)	46.8 (46.5-47.1)	52.9 (52.4-53.3)
	\$15,000-\$25,000	12.7 (12.5-13.0)	15.0 (14.7-15.2)	14.1 (13.9-14.4)	13.0 (12.7-13.3)
Annual	\$25,000-\$35,000	9.3 (9.1-9.6)	10.7 (10.5-10.9)	10.9 (10.7-11.1)	9.7 (9.5-10.0)
Household	\$35,000-\$50,000	14.4 (14.1-14.7)	15.3 (15.1-15.6)	17.5 (17.2-17.7)	13.4 (13.2-13.7)
Income	>\$50,000	8.5 (8.3-8.7)	8.1 (7.9-8.3)	10.7 (10.5-10.9)	10.9 (10.6-11.3)

Supplementary Table 2. Baseline Characteristics of the BRFSS Study Population: 2011-2017

^a Age-standardized as per 2010 United States Census population proportions. CI: Confidence Intervals.

CVHI and Cardiovascular Mortality	Correlation Coefficient	P-Value		
Northeast	·			
Overall	0.54	.14		
Sex				
Males	0.55	.12		
Females	0.56	.12		
Race/Ethnicity				
Non-Hispanic Whites	0.61	.08		
Non-Hispanic Blacks	0.11	.78		
Midwest				
Overall	0.88	<.001		
Sex				
Males	0.84	<.001		
Females	0.87	<.001		
Race/Ethnicity				
Non-Hispanic Whites	0.42	.17		
Non-Hispanic Blacks	0.86	<.001		
South				
Overall	0.70	.002		
Sex				
Males	0.67	.003		
Females	0.62	.009		
Race/Ethnicity				
Non-Hispanic Whites	0.80	<.001		
Non-Hispanic Blacks	0.32	.21		
West	·			
Overall	0.77	.002		
Sex				
Males	0.70	.008		
Females	0.62	.02		
Race/Ethnicity				
Non-Hispanic Whites	0.44	.14		
Non-Hispanic Blacks	0.21	.49		

Supplementary Table 3. Relationship of Cardiovascular Health Index and Cardiovascular Mortality: Stratified by Region, Sex, and Race



Supplementary Figure 1. Trends in Diabetes, Hypertension, Hypercholesterolemia, and Obesity



Supplementary Figure 2. Trends in Smoking, Physical Inactivity, and Poor Diet



Supplementary Figure 3. Trends in Stroke and Coronary Heart Disease/Myocardial Infarction



Supplementary Figure 4. Geographic Distribution of Prevalence of Diabetes: 2017



Supplementary Figure 5. Geographic Distribution of Prevalence of Hypertension: 2017



Supplementary Figure 6. Geographic Distribution of Prevalence of Hypercholesterolemia: 2017



Supplementary Figure 7. Geographic Distribution of Prevalence of Obesity: 2017



Supplementary Figure 8. Geographic Distribution of Prevalence of Smoking: 2017



Supplementary Figure 9. Geographic Distribution of Prevalence of Physical Inactivity: 2017



Supplementary Figure 10. Geographic Distribution of Prevalence of Poor Diet: 2017



Supplementary Figure 11. Geographic Distribution of Prevalence of Stroke: 2017



Supplementary Figure 12. Geographic Distribution of Prevalence of Myocardial Infarction/Coronary Heart Disease: 2017



Relationship of Cardiovascular Mortality and Prevalence of Poor Cardiovascular Health: Males

Supplementary Figure 13. Relationship of Cardiovascular Mortality and Prevalence of Poor Cardiovascular Health in Males



Relationship of Cardiovascular Mortality and Prevalence of Poor Cardiovascular Health: Females Supplementary Figure 14. Relationship of Cardiovascular Mortality and Prevalence of Poor Cardiovascular Health in

Females



Relationship of Cardiovascular Mortality and Prevalence of Poor Cardiovascular Health: Non-Hispanic Whites Supplementary Figure 15. Relationship of Cardiovascular Mortality and Prevalence of Poor Cardiovascular Health in Non-

Hispanic Whites



Relationship of Cardiovascular Mortality and Prevalence of Poor Cardiovascular Health: Non-Hispanic Blacks Supplementary Figure 16. Relationship of Cardiovascular Mortality and Prevalence of Poor Cardiovascular Health in Non-Hispanic Blacks