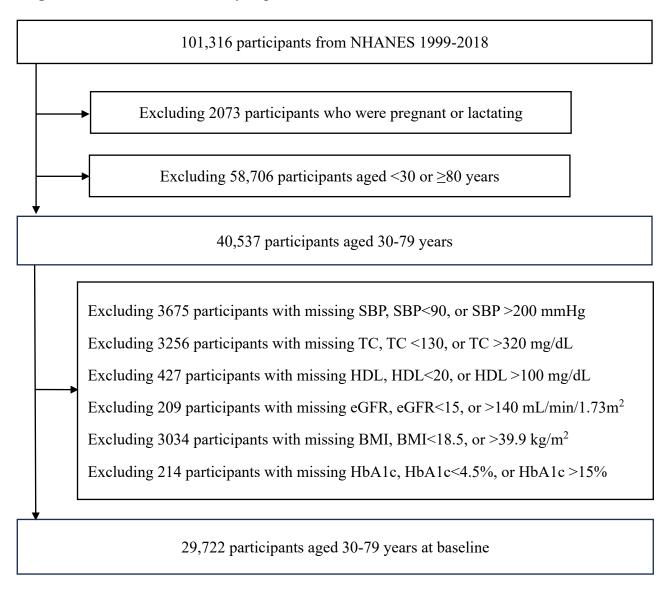
Supplemental Online Content

Zhu R, Wang R, He J, et al. Prevalence of cardiovascular-kidney-metabolic syndrome stages by social determinants of health. *JAMA Netw Open*. 2024;7(11):e2445309. doi:10.1001/jamanetworkopen.2024.45309

- **eFigure 1.** Flow Chart of the Study Population
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This supplemental material has been provided by the authors to give readers additional information about their work.

eFigure 1. Flow Chart of the Study Population



Abbreviations: BMI, body mass index; eGFR, estimated glomerular filtration rate; HbA1c, glycosylated hemoglobin A1c; HDL, high-density lipoprotein cholesterol; SBP, systolic blood pressure; TC, total cholesterol.

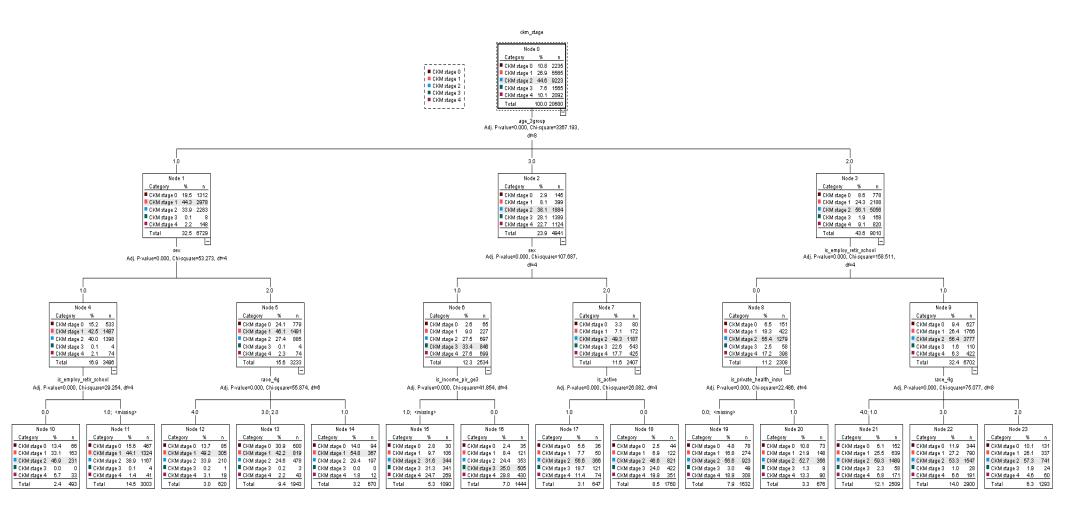
eFigure 2. Prevalence (95% CI) of Advanced Cardiovascular-Kidney-Metabolic Syndrome Stages by Social Determinants of Health, NHANES 2011-2018

			.10
12.1 (11.2, 13.1)	1.00 (Reference)	+	
16.2 (14.7, 17.7)	1.12 (0.98, 1.28)	 	
			<.001
11.9 (11.0, 12.8)	1.00 (Reference)	+	
14.7 (13.4, 16.1)	1.19 (1.08, 1.31)	H	
			<.001
9.5 (8.7, 10.5)	1.00 (Reference)	+	
16.6 (15.4, 17.9)	1.52 (1.34, 1.74)	├	
			<.001
11.2 (10.4, 11.9)	1.00 (Reference)	+	
18.6 (16.9, 20.6)	1.60 (1.37, 1.85)	⊢• -I	
			<.001
10.3 (9.4, 11.3)	1.00 (Reference)	+	
17.2 (15.9, 18.5)	1.42 (1.26, 1.59)	H=1	
			<.001
11.3 (10.5, 12.0)	1.00 (Reference)	+	
19.2 (17.3, 21.2)	1.81 (1.55, 2.10)	├	
			<.001
11.5 (10.8, 12.3)	1.00 (Reference)	+	
16.6 (15.3, 18.0)	1.31 (1.17, 1.46)	H=-1	
			<.001
13.1 (12.3, 14.0)	1.00 (Reference)	+	
7.9 (6.5, 9.5)	0.53 (0.39, 0.71)		
			<.001
9.9 (9.0, 11.0)	1.00 (Reference)	+	
16.0 (15.0, 17.1)	1.47 (1.31, 1.64)	H	
	16.2 (14.7, 17.7) 11.9 (11.0, 12.8) 14.7 (13.4, 16.1) 9.5 (8.7, 10.5) 16.6 (15.4, 17.9) 11.2 (10.4, 11.9) 18.6 (16.9, 20.6) 10.3 (9.4, 11.3) 17.2 (15.9, 18.5) 11.3 (10.5, 12.0) 19.2 (17.3, 21.2) 11.5 (10.8, 12.3) 16.6 (15.3, 18.0) 13.1 (12.3, 14.0) 7.9 (6.5, 9.5) 9.9 (9.0, 11.0)	16.2 (14.7, 17.7) 1.12 (0.98, 1.28) 11.9 (11.0, 12.8) 1.00 (Reference) 14.7 (13.4, 16.1) 1.19 (1.08, 1.31) 9.5 (8.7, 10.5) 1.00 (Reference) 16.6 (15.4, 17.9) 1.52 (1.34, 1.74) 11.2 (10.4, 11.9) 1.00 (Reference) 18.6 (16.9, 20.6) 1.00 (Reference) 17.2 (15.9, 18.5) 1.00 (Reference) 1.42 (1.26, 1.59) 11.3 (10.5, 12.0) 1.00 (Reference) 19.2 (17.3, 21.2) 1.81 (1.55, 2.10) 11.5 (10.8, 12.3) 1.00 (Reference) 1.31 (1.17, 1.46) 13.1 (12.3, 14.0) 1.00 (Reference) 7.9 (6.5, 9.5) 9.9 (9.0, 11.0) 1.00 (Reference)	16.2 (14.7, 17.7) 1.12 (0.98, 1.28) 11.9 (11.0, 12.8) 1.00 (Reference) 14.7 (13.4, 16.1) 1.19 (1.08, 1.31) 9.5 (8.7, 10.5) 1.00 (Reference) 16.6 (15.4, 17.9) 1.52 (1.34, 1.74) 11.2 (10.4, 11.9) 1.00 (Reference) 18.6 (16.9, 20.6) 1.60 (1.37, 1.85) 1.01 (Reference) 1.02 (15.9, 18.5) 1.03 (9.4, 11.3) 1.00 (Reference) 1.2 (15.9, 18.5) 1.3 (10.5, 12.0) 1.42 (1.26, 1.59) 1.5 (10.8, 12.3) 1.00 (Reference) 1.5 (10.8, 12.3) 1.00 (Reference) 1.31 (12.3, 14.0) 1.00 (Reference) 1.31 (12.3, 14.0) 1.00 (Reference) 7.9 (6.5, 9.5) 1.00 (Reference) 1.00 (Reference)

Abbreviations: CI, confidence interval; SDOHs, social determinants of health. Survey-weighted modified Poisson regression models adjusted for baseline age, sex, race/ethnicity, alcohol consumption, smoking status, and physical activity were used.

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eFigure 3. Decision Tree Created Using the Chi-Squared Automatic Interaction Detection Model for Cardiovascular-Kidney-Metabolic Syndrome Stages, NHANES 1999-2018



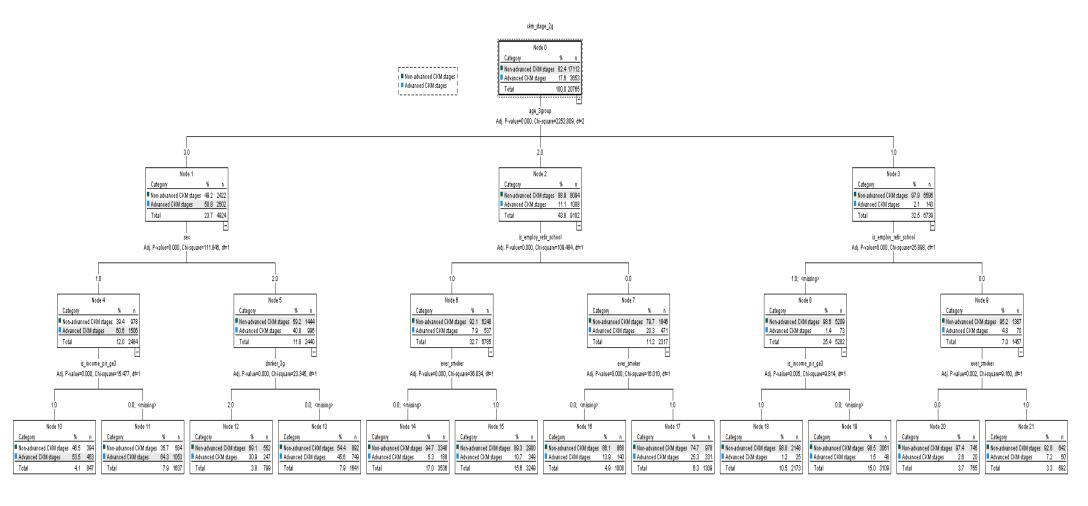
Abbreviation: CKM, cardiovascular-kidney-metabolic syndrome.

eFigure 4. Prevalence (95% CI) of Advanced Cardiovascular-Kidney-Metabolic Syndrome Stages by Social Determinants of Health Among Males and Females, NHANES 2011-2018

	Male			Female				
	Prevalence, % (95% CI)	Prevalence ratio, (95% C	CI)	P value	Prevalence, % (95% CI)	Prevalence ratio, (95% Cl)	P value
Education				.26				.11
High school graduate or higher	13.9 (12.8, 15.0)	1.00 (Reference)	1		10.0 (8.9, 11.2)	1.00 (Reference)	1	
Less than high school	17.4 (15.4, 19.5)	1.09 (0.94, 1.26)	+		14.4 (12.7, 16.3)	1.16 (0.96, 1.41)	+	
Marital status				.15				.002
Married or living with a partner	13.5 (12.5, 14.7)	1.00 (Reference)	1		8.9 (7.9, 10.0)	1.00 (Reference)	1	
Not married nor living with a partner	17.0 (14.8, 19.5)	1.13 (0.96, 1.32)	H 1		13.5 (12.0, 15.2)	1.27 (1.10, 1.47)	H-1	
Family income-to-poverty ratio				<.001				<.00
≥300%	11.6 (10.5, 12.9)	1.00 (Reference)	1		6.7 (5.8, 7.9)	1.00 (Reference)	1	
<300%	18.0 (16.3, 19.8)	1.36 (1.18, 1.56)	H-1		15.1 (13.6, 16.7)	1.77 (1.41, 2.23)		
Food security				.001				<.00
Full security	13.1 (12.1, 14.3)	1.00 (Reference)	1		8.7 (7.8, 9.6)	1.00 (Reference)	1	
Marginal, low, or very low security	19.6 (17.3, 22.0)	1.40 (1.15, 1.69)			17.6 (15.6, 19.8)	1.83 (1.54, 2.17)	₩	
Type of health insurance				.02				<.00
Private	12.6 (11.4, 14.0)	1.00 (Reference)	1		7.6 (6.6, 8.8)	1.00 (Reference)	+	
Government or none	18.0 (16.3, 19.8)	1.21 (1.03, 1.41)	⊢		16.0 (14.1, 18.1)	1.76 (1.43, 2.17)	⊢	
Employment status				<.001				<.00
Employed, student, or retired	13.0 (12.1, 14.0)	1.00 (Reference)	1		8.9 (8.0, 9.9)	1.00 (Reference)	1	
Unemployed	23.4 (20.4, 26.7)	1.78 (1.50, 2.12)	 		16.8 (14.6, 19.3)	1.85 (1.51, 2.26)	1	
Home ownership				.20				<.00
Own home	13.7 (12.6, 14.8)	1.00 (Reference)	1		9.0 (8.0, 10.0)	1.00 (Reference)	1	
Rent home or other arrangement	16.4 (14.5, 18.6)	1.13 (0.94, 1.37)	+		16.5 (14.8, 18.3)	1.55 (1.28, 1.87)	₩	
Regular health-care access				.003				.01
At least one regular health-care facility	15.1 (14.0, 16.1)	1.00 (Reference)	1		10.9 (9.9, 12.0)	1.00 (Reference)	•	
None or emergency room	8.5 (6.4, 11.4)	0.53 (0.35, 0.81)	├		6.7 (4.4, 10.1)	0.53 (0.32, 0.87)	└	
Cumulative unfavorable SDOHs				<.001				<.00
<2	11.9 (10.8, 13.1)	1.00 (Reference)	1		7.1 (6.0, 8.4)	1.00 (Reference)	1	
≥2	17.7 (16.2, 19.3)	1.39 (1.22, 1.58)	Н		14.4 (13.0, 15.8)	1.62 (1.35, 1.94)		

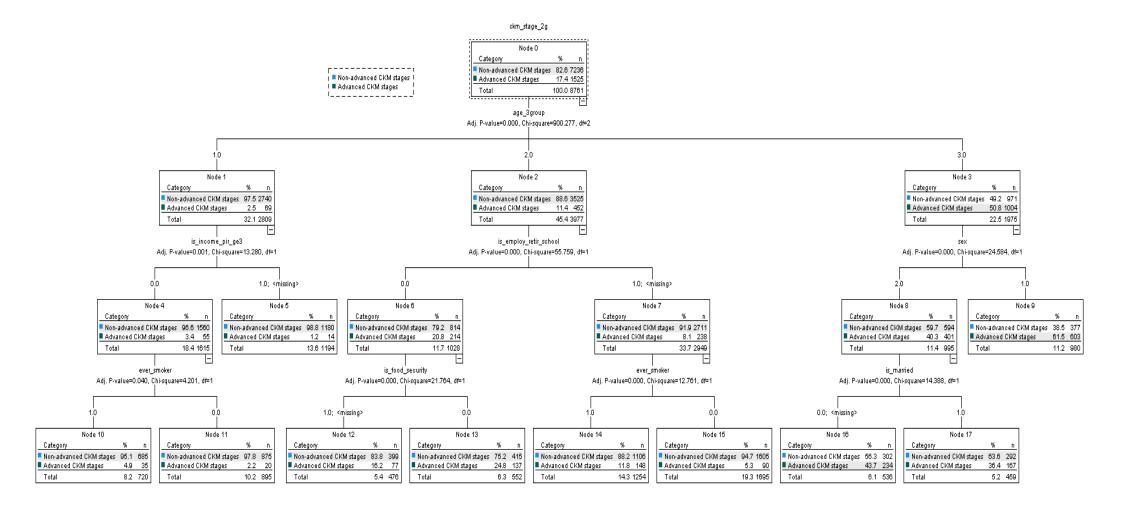
Abbreviations: CI, confidence interval; SDOHs, social determinants of health. Survey-weighted modified Poisson regression models adjusted for baseline age, race/ethnicity, alcohol consumption, smoking status, and physical activity were used.

eFigure 5. Decision Tree Created Using the Chi-Squared Automatic Interaction Detection Model for Advanced vs Nonadvanced Cardiovascular-Kidney-Metabolic Syndrome Stages, NHANES 1999-2018



Abbreviation: CKM, cardiovascular-kidney-metabolic syndrome.

eFigure 6. Decision Tree Created Using the Chi-Squared Automatic Interaction Detection Model for Advanced vs Nonadvanced Cardiovascular-Kidney-Metabolic Syndrome Stages, NHANES 2011-2018



Abbreviation: CKM, cardiovascular-kidney-metabolic syndrome.