Table S1. Unadjusted Cox Proportional Hazard Ratio for Cardiovascular Disease Mortality associated with each STANDARDIZED[a] metabolic component by gender- National Health and Nutrition Examination Survey III, United States

	Men					Women				
	N	# of events	HR[b]	95% CI	P-value	N	# of events	HR[b]	95% CI	P-value
All	2721	220				3038	203			
Waist circumference			1.12	(0.852, 1.473)	0.418			1.23	(1.015, 1.499)	0.035
Systolic blood pressure			1.53	(1.142, 2.045)	0.004			1.41	(1.226, 1.621)	0.000
Diastolic blood pressure			1.41	(1.117, 1.783)	0.004			1.28	(1.062, 1.533)	0.009
HDL cholesterol			0.95	(0.689, 1.315)	0.765			1.02	(0.788, 1.327)	0.867
Triglycerides			1.12	(1.104, 1.133)	0.000			1.21	(1.000, 1.465)	0.050
Plasma glucose			1.16	(0.986, 1.370)	0.074			1.12	(0.978, 1.281)	0.101
Non-Hispanic white	1126	122				1318	125			
Waist circumference			1.22	(0.894, 1.672)	0.208			1.19	(0.945, 1.496)	0.140
Systolic blood pressure			1.53	(1.049, 2.237)	0.027			1.35	(1.150, 1.592)	0.000
Diastolic blood pressure			1.41	(1.059, 1.876)	0.019			1.25	(1.014, 1.535)	0.037
HDL cholesterol			0.81	(0.542, 1.196)	0.283			1.04	(0.776, 1.398)	0.786
Triglycerides			1.13	(1.109, 1.142)	0.000			1.23	(0.998, 1.524)	0.053
Plasma glucose			1.15	(0.931, 1.421)	0.193			1.13	(0.959, 1.325)	0.147
Non-Hispanic black	762	55				902	54			
Waist circumference			0.89	(0.620, 1.265)	0.504			1.39	(1.012, 1.919)	0.042
Systolic blood pressure			1.52	(1.127, 2.047)	0.006			1.52	(1.265, 1.817)	0.000
Diastolic blood pressure			1.53	(1.212, 1.924)	0.000			1.29	(1.022, 1.638)	0.032
HDL cholesterol			1.31	(1.040, 1.657)	0.022			0.92	(0.669, 1.271)	0.620
Triglycerides			0.80	(0.453, 1.400)	0.429			1.41	(0.909, 2.179)	0.125
Plasma glucose			1.20	(1.037, 1.392)	0.015			1.02	(0.887, 1.180)	0.751
Mexican-American	833	43				818	24			
Waist circumference			0.81	(0.425, 1.524)	0.505			1.52	(0.978, 2.351)	0.063
Systolic blood pressure			1.39	(0.830, 2.324)	0.211			2.22	(1.343, 3.684)	0.002
Diastolic blood pressure			0.97	(0.693, 1.344)	0.835			1.51	(0.667, 3.415)	0.323
HDL cholesterol			0.81	(0.353, 1.850)	0.614			0.74	(0.489, 1.111)	0.145
Triglycerides			1.32	(0.924, 1.895)	0.127			1.16	(0.836, 1.604)	0.378
Plasma glucose			1.09	(0.793, 1.501)	0.594			1.38	(1.129, 1.678)	0.002

Abbreviations: HR, hazard ratio; CI, confidence interval

[a] All metabolic components were standardized to the normal distribution for the purpose of coefficient comparison across models.

[b] Models adjusted for age.

Table S2. P-values for testing differences in structural equation models by gender and race

	Gender		Race		Men Race		Women Race	
	Score Test[a]	Wald Test[b]	Score Test[a]	Wald Test[b]	Score Test[a]	Wald Test[b]	Score Test[a]	Wald Test[b]
Waist circumference	<0.0001	<0.0001	0.015	<0.0001	0.658	0.0016	0.0001	<0.0001
Systolic blood pressure	<0.0001	<0.0001	0.012	<0.0001	0.338	0.0010	0.110	0.0001
Diastolic blood pressure	0.732	0.040	<0.0001	<0.0001	<0.0001	<0.0001	0.006	<0.0001
HDL cholesterol	0.018	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.003	<0.0001
Triglycerides	<0.0001	<0.0001	0.001	<0.0001	0.415	<0.0001	<0.0001	<0.0001
Fasting glucose	0.043	0.012	<0.0001	<0.0001	0.394	<0.0001	<0.0001	<0.0001

NOTE: Testing differences in structural equation models could not be performed in the survey setting. Therefore, these results do not consider sampling design or weights.

[a] Score test reported for testing difference in factor loadings across groups. The null hypothesis is that the factor loadings are equal.

[b] Wald test reported for testing difference in the variance for parameters across groups. The null hypothesis is that the variance is equal across groups.

Table S3. Unadjusted Cox proportional hazard ratio[a] for the association between Metabolic syndrome (score and traditional definition) and CVD mortality stratified by gender and race – National Health and Nutrition Examination Survey III, United States

	N	# of events	Metabolic Score[b]			Metabolic Syndrome			# of Metabolic Components		
			HR	95% CI	P-value	HR	95% CI	P-value	HR	95% CI	P-value
Men	2721	220	1.43	(1.140, 1.801)	0.002	1.35	(0.979, 1.859)	0.067	1.13	(0.986, 1.298)	0.079
Non-Hispanic white	1126	122	1.61	(1.254, 2.064)	0.0002	1.50	(1.033, 2.169)	0.033	1.16	(0.994, 1.359)	0.060
Non-Hispanic black	762	55	0.97	(0.672, 1.384)	0.845	0.93	(0.517, 1.668)	0.804	1.06	(0.858, 1.316)	0.578
Mexican-American	833	43	1.06	(0.602, 1.870)	0.839	0.75	(0.313, 1.782)	0.511	0.98	(0.712, 1.336)	0.876
Women	3038	203	1.40	(1.143, 1.714)	0.001	1.46	(1.067, 1.988)	0.018	1.20	(1.103, 1.314)	<0.0001
Non-Hispanic white	1318	125	1.33	(1.081, 1.644)	0.007	1.34	(0.963, 1.873)	0.082	1.19	(1.086, 1.299)	0.0002
Non-Hispanic black	902	54	2.03	(1.304, 3.163)	0.002	2.51	(1.467, 4.300)	0.001	1.37	(1.141, 1.646)	0.001
Mexican-American	818	24	2.44	(1.684, 3.523)	<0.0001	2.33	(0.733, 7.383)	0.152	1.34	(1.085, 1.658)	0.007

Abbreviations: HR, hazard ratio; CI, confidence interval

[a] Models adjusted for age.

[b] Metabolic score used in the models were derived specifically for each individual subgroup.

Table S4. Goodness-of-fit and Predictability Results for the Comparison Between Models Using Metabolic Score, Metabolic Syndrome, or Number of Metabolic Components by Gender-Race Subgroups

	Metabolic Score					Metabolic Syndrome Prevalence				
	AIC	BIC	C statistic	K statistic	R square	AIC	BIC	C statistic	K statistic	R square
Men										
Non-Hispanic white	578.58	623.81	0.881	0.848	0.561	581.24	626.48	0.881	0.847	0.553
Non-Hispanic black	442.48	484.21	0.865	0.799	0.692	442.71	484.43	0.864	0.802	0.691
Mexican-American	253.32	295.85	0.875	0.806	0.558	253.44	295.97	0.872	0.800	0.557
Women										
Non-Hispanic white	723.51	770.16	0.915	0.868	0.716	725.38	772.03	0.915	0.866	0.712
Non-Hispanic black	465.18	508.42	0.912	0.819	0.898	463.83	507.07	0.912	0.809	0.900
Mexican-American	140.55	178.20	0.922	0.842	0.800	151.40	193.76	0.916	0.829	0.720

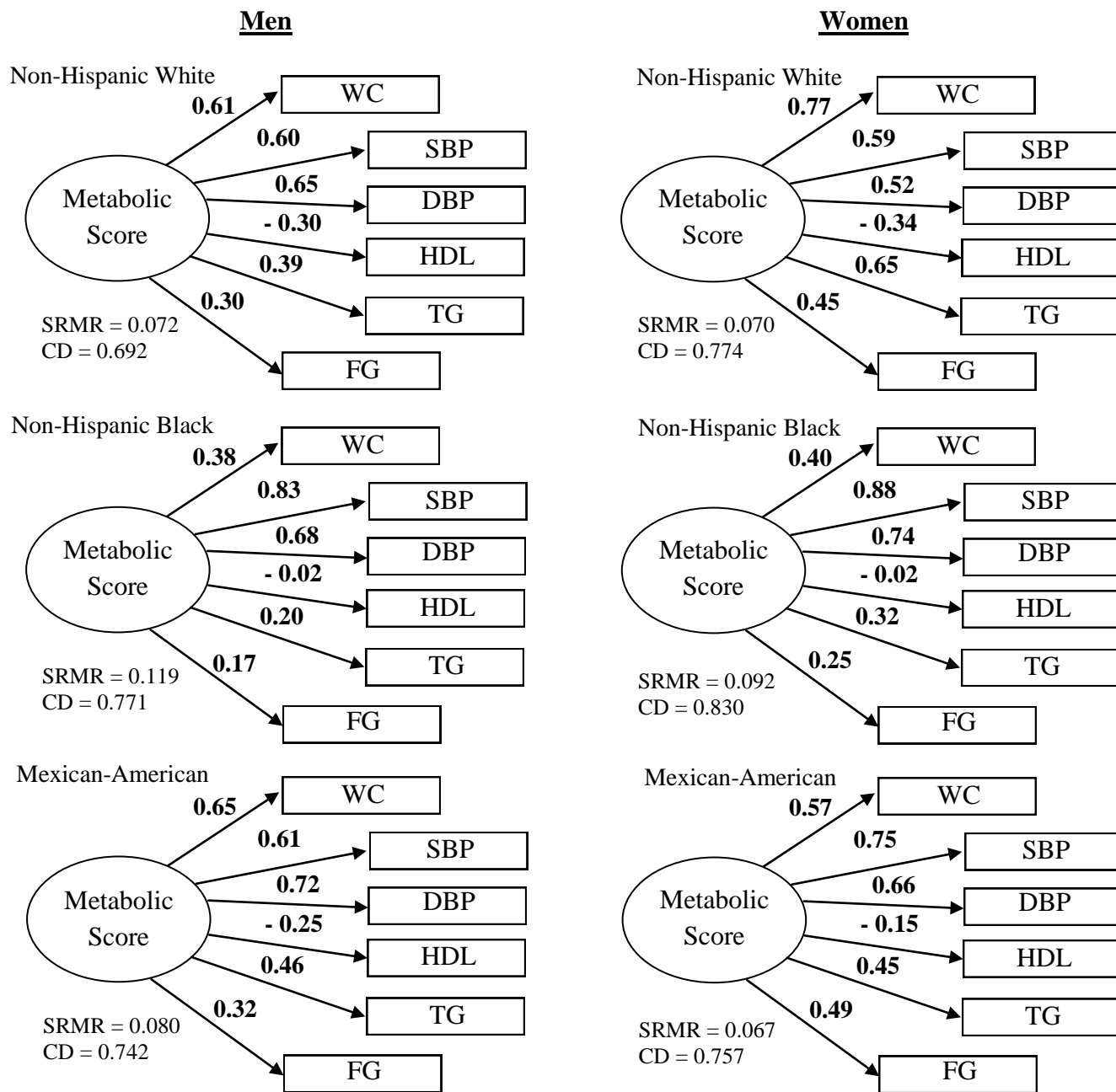|	# of Metabolic Components					All components in model				
	AIC	BIC	C statistic	K statistic	R square	AIC	BIC	C statistic	K statistic	R square
Men										
Non-Hispanic white	581.33	626.57	0.881	0.847	0.553	366.74	433.17	0.888	0.851	0.576
Non-Hispanic black	442.80	484.52	0.864	0.802	0.690	355.26	417.09	0.899	0.815	0.805
Mexican-American	253.63	296.16	0.872	0.799	0.556	195.37	257.12	0.881	0.795	0.614
Women										
Non-Hispanic white	723.74	770.39	0.916	0.868	0.716	478.31	547.49	0.928	0.873	0.764
Non-Hispanic black	466.69	509.93	0.908	0.810	0.895	315.56	379.19	0.921	0.817	0.920
Mexican-American	150.97	193.33	0.917	0.829	0.725	93.38	154.54	0.925	0.852	0.883

AIC, Akaike Information Criterion; BIC, Bayesian Information Criterion; C statistic, Harrell's C-coefficient; K statistic, Gönen and Heller's K-coefficient; R square, Royston's R-square

For both AIC and BIC, smaller number is a better fit.

For R-square, C- and K- statistics, the larger number is a better predictor.

All components in the model include: waist circumference, systolic blood pressure, diastolic blood pressure, HDL cholesterol, triglycerides, and fasting glucose as proxy for metabolic syndrome along with

Supplemental Figure 1. Metabolic Score Path Diagrams with Standardized Factor Loadings for Each Gender-Race Subgroup without Correlated Errors

Men

Non-Hispanic White

Metabolic Score
- 0.61 → WC
- 0.60 → SBP
- 0.65 → DBP
- -0.30 → HDL
- 0.39 → TG
- 0.30 → FG

SRMR = 0.072
CD = 0.692

Non-Hispanic Black

Metabolic Score
- 0.38 → WC
- 0.83 → SBP
- 0.68 → DBP
- -0.02 → HDL
- 0.20 → TG
- 0.17 → FG

SRMR = 0.119
CD = 0.771

Mexican-American

Metabolic Score
- 0.65 → WC
- 0.61 → SBP
- 0.72 → DBP
- -0.25 → HDL
- 0.46 → TG
- 0.32 → FG

SRMR = 0.080
CD = 0.742

Women

Non-Hispanic White

Metabolic Score
- 0.77 → WC
- 0.59 → SBP
- 0.52 → DBP
- -0.34 → HDL
- 0.65 → TG
- 0.45 → FG

SRMR = 0.070
CD = 0.774

Non-Hispanic Black

Metabolic Score
- 0.40 → WC
- 0.88 → SBP
- 0.74 → DBP
- -0.02 → HDL
- 0.32 → TG
- 0.25 → FG

SRMR = 0.092
CD = 0.830

Mexican-American

Metabolic Score
- 0.57 → WC
- 0.75 → SBP
- 0.66 → DBP
- -0.15 → HDL
- 0.45 → TG
- 0.49 → FG

SRMR = 0.067
CD = 0.757

SRMR (Standardized root mean squared residuals)
CD (Coefficient of determination)