

SUPPLEMENTARY DATA

**Supplementary Table 1. Associations of biomarkers of hyperglycemia with incident cardiovascular disease in black and white participants in ARIC**

	Model 1		Model 2		Model 3		Model 4	
	White (N=8,521)	Black (N=2,579)	White (N=8,521)	Black (N=2,579)	White (N=8,521)	Black (N=2,579)	White (N=8,521)	Black (N=2,579)
	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
<b>Fasting glucose</b>								
No diabetes								
<100 mg/dL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)			1 (Ref)	1 (Ref)
	1.20	0.90	1.10	0.83			1.05	0.80
100-125 mg/dL	(1.08, 1.33)	(0.75, 1.08)	(0.99, 1.22)	(0.69, 1.00)			(0.94, 1.17)	(0.67, 0.96)
≥126 mg/dL	1.58	1.35	1.29	1.16		--	0.94	0.91
	(1.30, 1.93)	(1.04, 1.75)	(1.06, 1.58)	(0.89, 1.51)			(0.76, 1.18)	(0.68, 1.22)
Diagnosed diabetes								
<149 mg/dL	2.12	1.74	1.74	1.54			1.46	1.33
	(1.66, 2.72)	(1.23, 2.47)	(1.35, 2.24)	(1.08, 2.19)			(1.13, 1.89)	(0.92, 1.90)
≥149 mg/dL	3.28	2.66	2.60	2.36			1.20	1.26
	(2.68, 4.02)	(2.10, 3.36)	(2.11, 3.20)	(1.84, 3.02)			(0.89, 1.62)	(0.87, 1.81)
<b>HbA1c</b>								
No diabetes								
<5.7 %	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)		
	1.62	1.37	1.37	1.19	1.36	1.18		
5.7-6.4%	(1.45, 1.80)	(1.15, 1.64)	(1.23, 1.53)	(0.99, 1.42)	(1.22, 1.53)	(0.98, 1.41)		
≥6.5%	1.99	1.96	1.57	1.78	1.52	1.64		
	(1.56, 2.55)	(1.51, 2.54)	(1.23, 2.02)	(1.37, 2.33)	(1.15, 2.00)	(1.24, 2.17)	--	
Diagnosed diabetes								
<7%	1.83	1.89	1.49	1.58	1.47	1.50		
	(1.43, 2.33)	(1.29, 2.76)	(1.17, 1.91)	(1.08, 2.32)	(1.14, 1.89)	(1.01, 2.21)		
≥7%	3.98	3.61	3.30	3.29	3.05	2.60		
	(3.29, 4.81)	(2.88, 4.53)	(2.71, 4.01)	(2.59, 4.18)	(2.22, 4.19)	(1.84, 3.67)		
<b>Fructosamine</b>								
No diabetes								
<239.8 mg/dL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
	0.90	0.77	0.97	0.79	0.95	0.77	0.92	0.76
239.8-268.6 mg/dL	(0.79, 1.02)	(0.64, 0.93)	(0.85, 1.10)	(0.66, 0.96)	(0.84, 1.08)	(0.64, 0.93)	(0.81, 1.05)	(0.63, 0.91)

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	1.52 (1.18, 1.97)	1.31 (1.01, 1.72)	1.36 (1.05, 1.77)	1.14 (0.87, 1.50)	1.23 (0.93, 1.63)	0.97 (0.73, 1.30)	0.97 (0.73, 1.29)	0.89 (0.66, 1.20)
Diagnosed diabetes								
<275.7 mg/dL	1.63 (1.29, 2.06)	1.72 (1.21, 2.45)	1.39 (1.10, 1.77)	1.51 (1.06, 2.15)	1.32 (1.04, 1.69)	1.39 (0.97, 2.00)	1.22 (0.96, 1.55)	1.34 (0.94, 1.92)
≥275.7 mg/dL	3.17 (2.62, 3.82)	2.50 (2.03, 3.07)	2.82 (2.32, 3.43)	2.42 (1.94, 3.01)	2.20 (1.61, 3.01)	1.56 (1.11, 2.19)	1.40 (1.04, 1.89)	1.28 (0.91, 1.81)
<b>Glycated albumin</b>								
No diabetes								
<13.52%	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
13.52-15.55%	0.86 (0.75, 0.98)	0.92 (0.77, 1.09)	0.98 (0.85, 1.12)	1.00 (0.83, 1.19)	0.97 (0.84, 1.11)	0.98 (0.82, 1.17)	0.93 (0.81, 1.07)	0.95 (0.80, 1.14)
≥15.56%	1.64 (1.27, 2.12)	1.35 (1.03, 1.76)	1.52 (1.18, 1.96)	1.29 (0.98, 1.69)	1.43 (1.08, 1.88)	1.12 (0.84, 1.49)	1.09 (0.81, 1.45)	1.02 (0.76, 1.37)
Diagnosed diabetes								
<16.46%	1.57 (1.24, 1.99)	1.69 (1.18, 2.43)	1.33 (1.05, 1.69)	1.54 (1.07, 2.21)	1.29 (1.01, 1.65)	1.45 (1.01, 2.09)	1.18 (0.92, 1.50)	1.40 (0.97, 2.02)
≥16.46%	3.29 (2.73, 3.97)	2.69 (2.18, 3.31)	3.01 (2.48, 3.65)	2.69 (2.16, 3.36)	2.60 (1.91, 3.55)	1.85 (1.31, 2.60)	1.60 (1.18, 2.17)	1.50 (1.06, 2.13)
<b>1,5-AG</b>								
No diabetes								
≥15.0 µg/mL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
7.9-14.9 µg/mL	1.10 (0.97, 1.24)	0.77 (0.63, 0.93)	1.15 (1.02, 1.29)	0.88 (0.72, 1.07)	1.13 (1.01, 1.28)	0.87 (0.72, 1.06)	1.11 (0.98, 1.25)	0.88 (0.72, 1.07)
<7.9 µg/mL	1.11 (0.85, 1.43)	0.87 (0.58, 1.29)	1.10 (0.85, 1.42)	0.92 (0.62, 1.37)	1.00 (0.77, 1.31)	0.77 (0.50, 1.17)	0.84 (0.63, 1.10)	0.67 (0.43, 1.04)
Diagnosed diabetes								
>9.2 µg/mL	1.73 (1.35, 2.21)	1.52 (1.11, 2.09)	1.47 (1.15, 1.88)	1.39 (1.01, 1.92)	1.37 (1.06, 1.76)	1.26 (0.91, 1.75)	1.30 (1.02, 1.67)	1.22 (0.88, 1.69)
≤9.2 µg/mL	3.01 (2.50, 3.62)	2.68 (2.17, 3.30)	2.66 (2.20, 3.22)	2.76 (2.21, 3.43)	1.93 (1.45, 2.56)	1.84 (1.28, 2.62)	1.31 (0.99, 1.74)	1.44 (0.99, 2.09)

Model 1: Adjustment for age, gender (male, female), BMI, BMI-squared

Model 2: Model 1 + LDL-c, HDL-c, triglycerides, cholesterol-lowering medication use (yes, no), systolic blood pressure, antihypertensive medication use (yes, no), eGFR, family history of diabetes (yes, no), education level (less than high school, high school or some college, college or more), alcohol consumption (current, former, never), cigarette smoking status (current, former, never), physical activity level

Model 3: Model 2 + fasting glucose

Model 4: Model 2 + HbA1c

SUPPLEMENTARY DATA

**Supplementary Table 2. Associations of biomarkers of hyperglycemia with incident coronary heart disease in black and white participants in ARIC**

	Model 1		Model 2		Model 3		Model 4	
	White (N=8,521)	Black (N=2,579)	White (N=8,521)	Black (N=2,579)	White (N=8,521)	Black (N=2,579)	White (N=8,521)	Black (N=2,579)
	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
<b>Fasting glucose</b>								
No diabetes								
<100 mg/dL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)			1 (Ref)	1 (Ref)
100-125 mg/dL	1.41 (1.19, 1.66)	1.12 (0.82, 1.53)	1.25 (1.06, 1.48)	1.02 (0.75, 1.39)			1.20 (1.02, 1.42)	0.99 (0.73, 1.36)
≥126 mg/dL	1.61 (1.17, 2.21)	1.99 (1.32, 3.02)	1.27 (0.92, 1.75)	1.79 (1.18, 2.74)	--		0.93 (0.65, 1.31)	1.50 (0.96, 2.37)
Diagnosed diabetes								
<149 mg/dL	2.79 (1.96, 3.96)	2.34 (1.35, 4.08)	2.21 (1.55, 3.16)	2.06 (1.18, 3.60)			1.83 (1.27, 2.64)	1.83 (1.04, 3.24)
≥149 mg/dL	4.43 (3.34, 5.88)	3.66 (2.51, 5.32)	3.26 (2.43, 4.37)	3.24 (2.18, 4.81)			1.53 (1.00, 2.34)	1.99 (1.12, 3.56)
<b>HbA1c</b>								
No diabetes								
<5.7 %	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)		
5.7-6.4%	1.89 (1.61, 2.22)	1.68 (1.24, 2.26)	1.53 (1.29, 1.80)	1.43 (1.05, 1.93)	1.49 (1.26, 1.76)	1.41 (1.04, 1.92)		
≥6.5%	1.92 (1.29, 2.85)	2.95 (1.96, 4.45)	1.37 (0.92, 2.04)	2.56 (1.69, 3.86)	1.17 (0.75, 1.82)	2.33 (1.51, 3.60)	--	
Diagnosed diabetes								
<7%	2.38 (1.69, 3.36)	2.95 (1.69, 5.17)	1.95 (1.38, 2.75)	2.39 (1.35, 4.21)	1.81 (1.27, 2.59)	2.24 (1.26, 3.98)		
≥7%	4.84 (3.73, 6.29)	4.67 (3.25, 6.72)	3.60 (2.74, 4.73)	4.18 (2.84, 6.14)	2.64 (1.69, 4.12)	3.16 (1.83, 5.46)		
<b>Fructosamine</b>								
No diabetes								
<239.8 mg/dL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
239.8-268.6 mg/dL	0.84 (0.69, 1.03)	0.90 (0.67, 1.20)	0.85 (0.70, 1.04)	0.90 (0.67, 1.22)	0.83 (0.68, 1.01)	0.88 (0.65, 1.19)	0.81 (0.66, 0.99)	0.87 (0.64, 1.17)

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≥268.7 mg/dL	1.51 (1.02, 2.24)	1.40 (0.91, 2.15)	1.16 (0.77, 1.73)	1.14 (0.74, 1.76)	0.96 (0.63, 1.48)	0.97 (0.61, 1.53)	0.81 (0.52, 1.25)	0.92 (0.58, 1.46)
Diagnosed diabetes								
<275.7 mg/dL	1.92 (1.37, 2.69)	2.06 (1.18, 3.57)	1.65 (1.18, 2.32)	1.73 (0.99, 3.03)	1.50 (1.06, 2.13)	1.58 (0.90, 2.77)	1.43 (1.01, 2.02)	1.53 (0.87, 2.70)
≥275.7 mg/dL	3.72 (2.88, 4.81)	2.97 (2.16, 4.06)	2.93 (2.24, 3.84)	2.81 (2.01, 3.95)	1.90 (1.23, 2.93)	1.71 (1.01, 2.90)	1.41 (0.93, 2.14)	1.51 (0.88, 2.58)
<b>Glycated albumin</b>								
No diabetes								
<13.52%	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
13.52-15.55%	0.83 (0.68, 1.03)	1.01 (0.76, 1.35)	0.94 (0.76, 1.15)	1.11 (0.83, 1.48)	0.92 (0.74, 1.13)	1.09 (0.81, 1.46)	0.89 (0.72, 1.10)	1.06 (0.79, 1.42)
≥15.56%	1.58 (1.07, 2.35)	1.66 (1.10, 2.49)	1.32 (0.88, 1.96)	1.60 (1.05, 2.43)	1.16 (0.75, 1.78)	1.38 (0.89, 2.14)	0.93 (0.60, 1.45)	1.31 (0.83, 2.05)
Diagnosed diabetes								
<16.46%	1.83 (1.30, 2.57)	2.30 (1.34, 3.95)	1.54 (1.09, 2.17)	2.01 (1.16, 3.46)	1.44 (1.01, 2.05)	1.87 (1.08, 3.24)	1.35 (0.95, 1.92)	1.82 (1.05, 3.16)
≥16.46%	3.91 (3.03, 5.03)	3.12 (2.26, 4.32)	3.27 (2.51, 4.26)	3.12 (2.21, 4.41)	2.45 (1.59, 3.76)	2.04 (1.20, 3.46)	1.73 (1.13, 2.64)	1.81 (1.05, 3.12)
<b>1,5-AG</b>								
No diabetes								
≥15.0 µg/mL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
7.9-14.9 µg/mL	1.07 (0.89, 1.29)	0.73 (0.53, 1.01)	1.12 (0.93, 1.35)	0.79 (0.57, 1.10)	1.11 (0.92, 1.33)	0.79 (0.57, 1.10)	1.08 (0.90, 1.30)	0.80 (0.57, 1.11)
<7.9 µg/mL	0.92 (0.60, 1.41)	0.82 (0.42, 1.61)	0.87 (0.57, 1.34)	0.84 (0.43, 1.66)	0.77 (0.49, 1.19)	0.68 (0.33, 1.38)	0.65 (0.41, 1.03)	0.61 (0.29, 1.27)
Diagnosed diabetes								
>9.2 µg/mL	1.96 (1.38, 2.80)	1.63 (0.99, 2.68)	1.67 (1.17, 2.39)	1.47 (0.89, 2.45)	1.51 (1.05, 2.18)	1.32 (0.78, 2.21)	1.47 (1.03, 2.11)	1.30 (0.77, 2.17)
≤9.2 µg/mL	3.64 (2.83, 4.69)	3.04 (2.22, 4.16)	3.00 (2.31, 3.90)	3.00 (2.14, 4.19)	1.98 (1.33, 2.95)	1.85 (1.06, 3.24)	1.47 (0.99, 2.18)	1.55 (0.85, 2.82)

Model 1: Adjustment for age, gender (male, female), BMI, BMI-squared

Model 2: Model 1 + LDL-c, HDL-c, triglycerides, cholesterol-lowering medication use (yes, no), systolic blood pressure, antihypertensive medication use (yes, no), eGFR, family history of diabetes (yes, no), education level (less than high school, high school or some college, college or more), alcohol consumption (current, former, never), cigarette smoking status (current, former, never), physical activity level

Model 3: Model 2 + fasting glucose

Model 4: Model 2 + HbA1c

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Supplementary Table 3. Associations of biomarkers of hyperglycemia with incident stroke in black and white participants in ARIC

	Model 1		Model 2		Model 3		Model 4	
	White (N=8,521)	Black (N=2,579)	White (N=8,521)	Black (N=2,579)	White (N=8,521)	Black (N=2,579)	White (N=8,521)	Black (N=2,579)
	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
<b>Fasting glucose</b>								
No diabetes								
<100 mg/dL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)			1 (Ref)	1 (Ref)
100-125 mg/dL	1.14 (0.92, 1.41)	0.87 (0.62, 1.21)	1.05 (0.85, 1.29)	0.81 (0.58, 1.14)			0.99 (0.80, 1.23)	0.75 (0.54, 1.06)
≥126 mg/dL	1.97 (1.36, 2.85)	1.91 (1.24, 2.95)	1.65 (1.13, 2.40)	1.65 (1.06, 2.56)	--		1.15 (0.76, 1.75)	0.95 (0.58, 1.55)
Diagnosed diabetes								
<149 mg/dL	1.85 (1.11, 3.06)	1.23 (0.59, 2.59)	1.60 (0.96, 2.68)	1.13 (0.54, 2.39)			1.30 (0.77, 2.19)	0.80 (0.37, 1.70)
≥149 mg/dL	3.28 (2.21, 4.85)	2.69 (1.77, 4.09)	2.74 (1.83, 4.11)	2.34 (1.51, 3.65)			1.09 (0.61, 1.97)	0.57 (0.30, 1.08)
<b>HbA1c</b>								
No diabetes								
<5.7 %	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)		
5.7-6.4%	1.60 (1.29, 1.99)	1.57 (1.12, 2.19)	1.43 (1.14, 1.78)	1.38 (0.98, 1.93)	1.42 (1.14, 1.78)	1.35 (0.96, 1.90)		
≥6.5%	2.66 (1.70, 4.15)	3.31 (2.15, 5.09)	2.18 (1.39, 3.43)	3.13 (2.02, 4.87)	2.13 (1.28, 3.53)	2.64 (1.65, 4.22)	--	
Diagnosed diabetes								
<7%	1.78 (1.08, 2.91)	1.65 (0.75, 3.62)	1.57 (0.95, 2.58)	1.43 (0.65, 3.16)	1.55 (0.93, 2.58)	1.25 (0.56, 2.79)		
≥7%	3.75 (2.59, 5.44)	3.94 (2.60, 5.97)	3.30 (2.25, 4.86)	3.56 (2.29, 5.54)	3.13 (1.70, 5.78)	2.13 (1.14, 4.00)		
<b>Fructosamine</b>								
No diabetes								
<239.8 mg/dL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
239.8-268.6 mg/dL	0.99 (0.78, 1.27)	0.89 (0.64, 1.25)	1.06 (0.83, 1.36)	0.94 (0.67, 1.32)	1.05 (0.82, 1.34)	0.90 (0.64, 1.27)	1.01 (0.79, 1.29)	0.85 (0.60, 1.19)

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≥268.7 mg/dL	2.00 (1.27, 3.15)	2.06 (1.35, 3.13)	1.83 (1.16, 2.91)	1.86 (1.21, 2.87)	1.67 (1.02, 2.75)	1.49 (0.94, 2.38)	1.20 (0.72, 2.02)	1.07 (0.65, 1.75)
Diagnosed diabetes								
<275.7 mg/dL	1.61 (1.00, 2.60)	0.91 (0.37, 2.25)	1.45 (0.89, 2.34)	0.88 (0.36, 2.17)	1.37 (0.84, 2.25)	0.78 (0.31, 1.92)	1.22 (0.74, 1.99)	0.68 (0.27, 1.68)
≥275.7 mg/dL	3.02 (2.09, 4.37)	2.75 (1.91, 3.96)	2.83 (1.93, 4.16)	2.61 (1.77, 3.85)	2.23 (1.23, 4.06)	1.40 (0.77, 2.55)	1.15 (0.64, 2.07)	0.71 (0.39, 1.29)
<b>Glycated albumin</b>								
No diabetes								
<13.52%	1 (Ref) 0.99 (0.77, 1.27)	1 (Ref) 1.15 (0.84, 1.59)	1 (Ref) 1.11 (0.86, 1.43)	1 (Ref) 1.32 (0.95, 1.82)	1 (Ref) 1.09 (0.84, 1.40)	1 (Ref) 1.28 (0.92, 1.77)	1 (Ref) 1.03 (0.80, 1.33)	1 (Ref) 1.19 (0.86, 1.64)
13.52-15.55%								
≥15.56%	1.66 (1.00, 2.75)	2.06 (1.33, 3.18)	1.54 (0.92, 2.55)	2.00 (1.28, 3.12)	1.33 (0.77, 2.31)	1.58 (0.98, 2.56)	0.88 (0.49, 1.57)	1.09 (0.65, 1.83)
Diagnosed diabetes								
<16.46%	1.68 (1.05, 2.67)	1.16 (0.51, 2.66)	1.50 (0.94, 2.41)	1.13 (0.49, 2.61)	1.40 (0.86, 2.26)	1.02 (0.44, 2.36)	1.22 (0.76, 1.98)	0.91 (0.39, 2.09)
≥16.46%	2.92 (2.01, 4.25)	2.99 (2.05, 4.35)	2.75 (1.87, 4.04)	2.94 (1.98, 4.39)	1.98 (1.07, 3.65)	1.53 (0.82, 2.85)	0.96 (0.52, 1.77)	0.74 (0.40, 1.38)
<b>1,5-AG</b>								
No diabetes								
≥15.0 µg/mL	1 (Ref) 1.09 (0.86, 1.38)	1 (Ref) 0.72 (0.50, 1.03)	1 (Ref) 1.15 (0.90, 1.45)	1 (Ref) 0.82 (0.56, 1.18)	1 (Ref) 1.13 (0.89, 1.44)	1 (Ref) 0.81 (0.56, 1.17)	1 (Ref) 1.10 (0.87, 1.40)	1 (Ref) 0.81 (0.56, 1.17)
7.9-14.9 µg/mL								
<7.9 µg/mL	1.72 (1.13, 2.63)	1.84 (1.09, 3.09)	1.74 (1.14, 2.66)	1.99 (1.18, 3.37)	1.60 (1.03, 2.48)	1.62 (0.92, 2.87)	1.25 (0.79, 2.00)	0.99 (0.53, 1.88)
Diagnosed diabetes								
>9.2 µg/mL	1.70 (1.04, 2.77)	0.72 (0.32, 1.63)	1.55 (0.95, 2.54)	0.67 (0.29, 1.52)	1.44 (0.87, 2.38)	0.58 (0.25, 1.34)	1.33 (0.81, 2.19)	0.50 (0.22, 1.15)
≤9.2 µg/mL	2.90 (2.01, 4.18)	2.90 (2.03, 4.16)	2.64 (1.81, 3.85)	2.89 (1.98, 4.23)	1.93 (1.12, 3.33)	1.75 (0.95, 3.23)	1.12 (0.65, 1.93)	0.78 (0.41, 1.48)

Model 1: Adjustment for age, gender (male, female), BMI, BMI-squared

Model 2: Model 1 + LDL-c, HDL-c, triglycerides, cholesterol-lowering medication use (yes, no), systolic blood pressure, antihypertensive medication use (yes, no), eGFR, family history of diabetes (yes, no), education level (less than high school, high school or some college, college or more), alcohol consumption (current, former, never), cigarette smoking status (current, former, never), physical activity level

Model 3: Model 2 + fasting glucose

Model 4: Model 2 + HbA1c

SUPPLEMENTARY DATA

**Supplementary Table 4. Associations of biomarkers of hyperglycemia with incident heart failure in black and white participants in ARIC**

	Model 1		Model 2		Model 3		Model 4	
	White (N=8,521)	Black (N=2,579)	White (N=8,521)	Black (N=2,579)	White (N=8,521)	Black (N=2,579)	White (N=8,521)	Black (N=2,579)
	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
<b>Fasting glucose</b>								
No diabetes								
<100 mg/dL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)			1 (Ref)	1 (Ref)
	1.13	0.88	1.04	0.83			0.99	0.79
100-125 mg/dL	(0.98, 1.30)	(0.70, 1.11)	(0.90, 1.20)	(0.66, 1.04)			(0.86, 1.14)	(0.63, 1.00)
≥126 mg/dL	1.47	1.14	1.22	0.99			0.87	0.79
	(1.14, 1.90)	(0.82, 1.60)	(0.94, 1.58)	(0.70, 1.39)	--		(0.65, 1.15)	(0.55, 1.15)
Diagnosed diabetes								
<149 mg/dL	1.94	2.35	1.53	2.13			1.28	1.86
	(1.41, 2.66)	(1.58, 3.48)	(1.11, 2.12)	(1.43, 3.18)			(0.92, 1.77)	(1.24, 2.80)
≥149 mg/dL	3.77	3.33	3.07	2.99			1.37	1.70
	(2.97, 4.78)	(2.53, 4.39)	(2.40, 3.92)	(2.23, 4.02)			(0.95, 1.96)	(1.09, 2.65)
<b>HbA1c</b>								
No diabetes								
<5.7 %	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)		
	1.51	1.32	1.30	1.15	1.28	1.13		
5.7-6.4%	(1.31, 1.75)	(1.05, 1.65)	(1.12, 1.50)	(0.91, 1.45)	(1.10, 1.48)	(0.90, 1.42)		
≥6.5%	2.07	1.62	1.69	1.45	1.51	1.28		
	(1.53, 2.79)	(1.16, 2.27)	(1.25, 2.30)	(1.03, 2.03)	(1.07, 2.12)	(0.89, 1.82)	--	
Diagnosed diabetes								
<7%	1.68	2.59	1.35	2.25	1.27	2.07		
	(1.23, 2.30)	(1.71, 3.93)	(0.98, 1.85)	(1.47, 3.43)	(0.92, 1.76)	(1.34, 3.18)		
≥7%	4.78	4.46	4.08	4.06	3.23	2.86		
	(3.83, 5.96)	(3.42, 5.82)	(3.24, 5.13)	(3.05, 5.39)	(2.22, 4.70)	(1.90, 4.30)		
<b>Fructosamine</b>								
No diabetes								
<239.8 mg/dL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
	0.93	0.78	1.04	0.80	1.00	0.78	0.98	0.77
239.8-268.6 mg/dL	(0.79, 1.10)	(0.62, 1.00)	(0.87, 1.23)	(0.63, 1.02)	(0.84, 1.19)	(0.61, 0.99)	(0.83, 1.16)	(0.60, 0.98)

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≥268.7 mg/dL	1.27 (0.89, 1.82)	1.44 (1.04, 2.00)	1.20 (0.84, 1.73)	1.21 (0.86, 1.69)	0.97 (0.66, 1.44)	1.00 (0.70, 1.43)	0.81 (0.55, 1.21)	0.99 (0.69, 1.41)
Diagnosed diabetes								
<275.7 mg/dL	1.56 (1.16, 2.10)	2.50 (1.70, 3.69)	1.34 (1.00, 1.81)	2.30 (1.55, 3.41)	1.21 (0.89, 1.64)	2.13 (1.43, 3.16)	1.15 (0.85, 1.56)	2.11 (1.42, 3.14)
≥275.7 mg/dL	3.82 (3.07, 4.75)	3.27 (2.58, 4.15)	3.45 (2.75, 4.33)	3.14 (2.42, 4.06)	2.18 (1.50, 3.16)	1.94 (1.31, 2.87)	1.63 (1.14, 2.34)	1.89 (1.26, 2.83)
<b>Glycated albumin</b>								
No diabetes								
<13.52%	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
13.52-15.55%	0.87 (0.73, 1.04)	0.90 (0.72, 1.13)	1.00 (0.83, 1.19)	0.95 (0.75, 1.19)	0.97 (0.81, 1.16)	0.92 (0.74, 1.16)	0.94 (0.79, 1.13)	0.91 (0.72, 1.14)
≥15.56%	1.59 (1.15, 2.20)	1.40 (1.01, 1.94)	1.51 (1.09, 2.10)	1.26 (0.90, 1.76)	1.29 (0.91, 1.84)	1.06 (0.74, 1.51)	1.05 (0.73, 1.52)	1.04 (0.72, 1.49)
Diagnosed diabetes								
<16.46%	1.55 (1.15, 2.08)	2.46 (1.66, 3.64)	1.30 (0.97, 1.75)	2.27 (1.53, 3.37)	1.20 (0.89, 1.63)	2.12 (1.43, 3.16)	1.14 (0.84, 1.54)	2.11 (1.41, 3.14)
≥16.46%	3.91 (3.14, 4.85)	3.46 (2.71, 4.41)	3.64 (2.91, 4.56)	3.40 (2.62, 4.42)	2.60 (1.80, 3.76)	2.17 (1.45, 3.25)	1.89 (1.31, 2.73)	2.11 (1.39, 3.21)
<b>1,5-AG</b>								
No diabetes								
≥15.0 µg/mL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
7.9-14.9 µg/mL	1.14 (0.97, 1.33)	0.78 (0.61, 0.99)	1.18 (1.01, 1.38)	0.88 (0.68, 1.12)	1.16 (0.99, 1.36)	0.87 (0.68, 1.12)	1.13 (0.97, 1.33)	0.87 (0.68, 1.12)
<7.9 µg/mL	0.99 (0.69, 1.41)	0.75 (0.44, 1.29)	1.01 (0.71, 1.44)	0.82 (0.47, 1.40)	0.86 (0.60, 1.24)	0.66 (0.38, 1.17)	0.74 (0.51, 1.08)	0.66 (0.37, 1.17)
Diagnosed diabetes								
>9.2 µg/mL	1.63 (1.19, 2.23)	2.07 (1.45, 2.95)	1.35 (0.99, 1.85)	1.92 (1.34, 2.75)	1.21 (0.87, 1.66)	1.74 (1.21, 2.51)	1.18 (0.86, 1.62)	1.76 (1.22, 2.53)
≤9.2 µg/mL	3.63 (2.93, 4.51)	3.48 (2.73, 4.42)	3.30 (2.64, 4.13)	3.62 (2.80, 4.67)	2.05 (1.47, 2.88)	2.33 (1.53, 3.54)	1.59 (1.14, 2.23)	2.28 (1.47, 3.55)

Model 1: Adjustment for age, gender (male, female), BMI, BMI-squared

Model 2: Model 1 + LDL-c, HDL-c, triglycerides, cholesterol-lowering medication use (yes, no), systolic blood pressure, antihypertensive medication use (yes, no), eGFR, family history of diabetes (yes, no), education level (less than high school, high school or some college, college or more), alcohol consumption (current, former, never), cigarette smoking status (current, former, never), physical activity level

Model 3: Model 2 + fasting glucose

Model 4: Model 2 + HbA1c



SUPPLEMENTARY DATA

**Supplementary Table 5. Associations of biomarkers of hyperglycemia with incident end-stage renal disease in black and white participants in ARIC**

	Model 1		Model 2		Model 3		Model 4	
	White (N=8,521)	Black (N=2,579)	White (N=8,521)	Black (N=2,579)	White (N=8,521)	Black (N=2,579)	White (N=8,521)	Black (N=2,579)
	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
<b>Fasting glucose</b>								
No diabetes								
<100 mg/dL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)			1 (Ref)	1 (Ref)
100-125 mg/dL	1.80 (0.93, 3.45)	1.21 (0.59, 2.49)	1.41 (0.72, 2.76)	1.22 (0.59, 2.53)			1.28 (0.65, 2.51)	1.15 (0.55, 2.39)
≥126 mg/dL	4.03 (1.60, 10.12)	2.79 (1.20, 6.49)	2.93 (1.14, 7.51)	3.03 (1.28, 7.15)		--	1.53 (0.56, 4.21)	2.30 (0.94, 5.67)
Diagnosed diabetes								
<149 mg/dL	8.90 (3.61, 21.92)	7.00 (2.87, 17.08)	6.74 (2.64, 17.19)	7.69 (3.05, 19.43)			4.22 (1.60, 11.16)	6.46 (2.52, 16.52)
≥149 mg/dL	15.67 (7.23, 33.98)	12.52 (6.22, 25.23)	11.37 (4.90, 26.40)	15.91 (7.37, 34.37)			2.01 (0.65, 6.27)	7.18 (2.52, 20.41)
<b>HbA1c</b>								
No diabetes								
<5.7 %	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)		
5.7-6.4%	3.16 (1.80, 5.57)	1.35 (0.68, 2.65)	2.40 (1.34, 4.30)	1.34 (0.67, 2.68)	2.32 (1.29, 4.16)	1.30 (0.65, 2.59)		
≥6.5%	5.62 (2.09, 15.10)	3.47 (1.58, 7.63)	5.01 (1.81, 13.87)	3.96 (1.78, 8.84)	3.86 (1.29, 11.53)	3.32 (1.46, 7.56)		
Diagnosed diabetes								
<7%	5.05 (1.92, 13.30)	6.20 (2.50, 15.37)	4.21 (1.58, 11.25)	6.79 (2.62, 17.60)	3.63 (1.33, 9.97)	6.10 (2.34, 15.92)		
≥7%	20.99 (11.25, 39.14)	13.70 (7.34, 25.56)	18.04 (9.03, 36.04)	17.91 (8.85, 36.24)	10.88 (3.84, 30.76)	10.22 (4.17, 25.07)		
<b>Fructosamine</b>								
No diabetes								
<239.8 mg/dL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
239.8-268.6 mg/dL	0.94	0.61	0.91	0.57	0.84	0.53	0.83	0.52

SUPPLEMENTARY DATA

	(0.50, 1.89)	(0.28, 1.35)	(0.45, 1.85)	(0.25, 1.27)	(0.41, 1.70)	(0.24, 1.19)	(0.41, 1.69)	(0.23, 1.17)
≥268.7 mg/dL	2.17	3.41	1.04	2.54	0.79	1.95	0.57	1.84
Diagnosed diabetes	(0.67, 7.03)	(1.69, 6.89)	(0.29, 3.70)	(1.23, 5.24)	(0.22, 2.79)	(0.92, 4.14)	(0.16, 2.07)	(0.85, 3.97)
<275.7 mg/dL	3.99	6.26	3.86	6.55	3.05	5.92	2.80	5.77
	(1.76, 9.05)	(2.94, 13.31)	(1.67, 8.92)	(2.98, 14.40)	(1.30, 7.17)	(2.69, 13.02)	(1.19, 6.56)	(2.61, 12.77)
≥275.7 mg/dL	11.10	9.29	8.42	10.82	2.67	4.94	1.29	4.43
	(6.27, 19.65)	(5.57, 15.49)	(4.41, 16.08)	(6.00, 19.52)	(0.93, 7.64)	(2.16, 11.30)	(0.46, 3.58)	(1.82, 10.76)
<b>Glycated albumin</b>								
No diabetes								
<13.52%	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
13.52-15.55%	1.55	0.84	1.63	0.93	1.53	0.91	1.45	0.88
	(0.82, 2.94)	(0.43, 1.63)	(0.85, 3.11)	(0.47, 1.84)	(0.80, 2.93)	(0.46, 1.81)	(0.76, 2.77)	(0.45, 1.74)
≥15.56%	3.14	2.19	3.06	1.95	2.21	1.59	1.35	1.53
	(1.11, 8.88)	(0.99, 4.86)	(1.06, 8.80)	(0.85, 4.43)	(0.73, 6.69)	(0.69, 3.69)	(0.42, 4.33)	(0.65, 3.62)
Diagnosed diabetes								
<16.46%	4.42	4.49	4.17	4.50	3.37	4.12	2.98	4.08
	(1.94, 10.11)	(1.94, 10.38)	(1.79, 9.68)	(1.88, 10.76)	(1.42, 8.04)	(1.71, 9.89)	(1.25, 7.07)	(1.70, 9.83)
≥16.46%	12.83	9.91	11.19	12.92	5.07	6.96	2.22	6.36
	(7.18, 22.92)	(5.91, 16.62)	(5.86, 21.38)	(7.06, 23.63)	(1.85, 13.89)	(3.02, 16.06)	(0.80, 6.14)	(2.49, 16.22)
<b>1,5-AG</b>								
No diabetes								
≥15.0 µg/mL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
7.9-14.9 µg/mL	1.03	0.63	1.06	0.67	1.02	0.67	0.98	0.66
	(0.51, 2.07)	(0.30, 1.31)	(0.53, 2.12)	(0.32, 1.42)	(0.51, 2.05)	(0.32, 1.40)	(0.49, 1.96)	(0.31, 1.39)
<7.9 µg/mL	2.16	1.26	1.49	1.48	1.20	1.18	0.89	1.16
	(0.77, 6.05)	(0.39, 4.11)	(0.49, 4.53)	(0.45, 4.91)	(0.39, 3.67)	(0.35, 4.03)	(0.29, 2.77)	(0.33, 4.01)
Diagnosed diabetes								
>9.2 µg/mL	4.17	3.63	3.65	3.97	2.87	3.57	2.77	3.54
	(1.76, 9.88)	(1.68, 7.84)	(1.52, 8.76)	(1.77, 8.90)	(1.17, 7.03)	(1.58, 8.07)	(1.14, 6.72)	(1.57, 8.01)
≤9.2 µg/mL	10.61	9.38	8.99	11.74	3.67	6.24	1.75	5.80
	(5.99, 18.79)	(5.77, 15.24)	(4.81, 16.79)	(6.68, 20.64)	(1.43, 9.43)	(2.74, 14.18)	(0.68, 4.51)	(2.31, 14.56)

Model 1: Adjustment for age, gender (male, female), BMI, BMI-squared

Model 2: Model 1 + LDL-c, HDL-c, triglycerides, cholesterol-lowering medication use (yes, no), systolic blood pressure, antihypertensive medication use (yes, no), eGFR, family history of diabetes (yes, no), education level (less than high school, high school or some college, college or more), alcohol consumption (current, former, never), cigarette smoking status (current, former, never), physical activity level

Model 3: Model 2 + fasting glucose

Model 4: Model 2 + HbA1c

SUPPLEMENTARY DATA

Supplementary Table 6. Associations of biomarkers of hyperglycemia with prevalent retinopathy in black and white participants in ARIC

	Model 1		Model 2		Model 3		Model 4	
	White (N=6,878)	Black (N=1,737)	White (N=6,878)	Black (N=1,737)	White (N=6,878)	Black (N=1,737)	White (N=6,878)	Black (N=1,737)
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
<b>Fasting glucose</b>								
No diabetes								
<100 mg/dL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)			1 (Ref)	1 (Ref)
100-125 mg/dL	1.64 (1.04, 2.57)	1.06 (0.56, 2.01)	1.59 (1.01, 2.50)	0.99 (0.52, 1.89)			1.42 (0.90, 2.25)	0.92 (0.48, 1.75)
≥126 mg/dL	2.23 (1.02, 4.86)	1.82 (0.75, 4.45)	2.01 (0.91, 4.45)	1.65 (0.66, 4.11)			0.88 (0.36, 2.13)	0.94 (0.35, 2.55)
Diagnosed diabetes								
<149 mg/dL	4.63 (2.05, 10.46)	4.29 (1.58, 11.59)	4.11 (1.79, 9.44)	4.12 (1.49, 11.38)			2.30 (0.95, 5.52)	2.91 (1.02, 8.27)
≥149 mg/dL	36.20 (21.47, 61.03)	21.53 (11.25, 41.19)	33.06 (18.95, 57.67)	20.00 (9.97, 40.13)			5.74 (2.54, 12.96)	5.58 (2.11, 14.72)
<b>HbA1c</b>								
No diabetes								
<5.7 %	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)		
5.7-6.4%	0.96 (0.58, 1.59)	1.25 (0.69, 2.28)	0.92 (0.55, 1.54)	1.13 (0.61, 2.06)	0.83 (0.50, 1.40)	1.08 (0.59, 1.98)		
≥6.5%	1.84 (0.72, 4.72)	1.31 (0.47, 3.61)	1.60 (0.61, 4.16)	1.10 (0.39, 3.09)	0.83 (0.30, 2.31)	0.73 (0.25, 2.17)		
Diagnosed diabetes								
<7%	1.11 (0.35, 3.60)	2.05 (0.59, 7.14)	1.02 (0.31, 3.31)	1.80 (0.51, 6.42)	0.74 (0.22, 2.45)	1.33 (0.36, 4.89)		
≥7%	30.73 (20.22, 46.69)	24.33 (13.51, 43.80)	28.98 (18.28, 45.94)	23.12 (12.24, 43.66)	8.26 (3.85, 17.73)	7.98 (3.22, 19.82)		
<b>Fructosamine</b>								
No diabetes								
<239.8 mg/dL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)

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239.8-268.6 mg/dL	1.69 (1.08, 2.67)	1.06 (0.57, 1.98)	1.69 (1.06, 2.68)	1.07 (0.57, 2.03)	1.54 (0.97, 2.45)	1.00 (0.53, 1.89)	1.51 (0.95, 2.40)	1.00 (0.53, 1.89)
≥268.7 mg/dL	2.37 (0.94, 5.98)	1.54 (0.58, 4.06)	2.16 (0.84, 5.53)	1.39 (0.52, 3.73)	1.23 (0.45, 3.36)	0.91 (0.32, 2.59)	0.99 (0.34, 2.83)	0.85 (0.29, 2.48)
Diagnosed diabetes								
<275.7 mg/dL	1.92 (0.76, 4.90)	1.88 (0.55, 6.42)	1.82 (0.71, 4.67)	1.96 (0.56, 6.80)	1.41 (0.54, 3.67)	1.58 (0.45, 5.61)	1.35 (0.52, 3.50)	1.63 (0.47, 5.74)
≥275.7 mg/dL	35.61 (23.43, 54.11)	21.98 (13.04, 37.08)	33.13 (21.05, 52.13)	20.93 (11.84, 36.99)	10.23 (4.82, 21.70)	7.35 (3.13, 17.23)	8.19 (3.81, 17.62)	7.13 (2.99, 17.03)
<b>Glycated albumin</b>								
No diabetes								
<13.52%	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
13.52-15.55%	0.69 (0.37, 1.27)	1.35 (0.73, 2.48)	0.68 (0.36, 1.26)	1.35 (0.73, 2.52)	0.62 (0.33, 1.16)	1.29 (0.69, 2.40)	0.60 (0.32, 1.11)	1.27 (0.68, 2.36)
≥15.56%	2.48 (1.06, 5.81)	2.63 (1.10, 6.28)	2.24 (0.95, 5.30)	2.49 (1.03, 6.06)	1.29 (0.51, 3.27)	1.73 (0.68, 4.44)	0.98 (0.36, 2.63)	1.64 (0.62, 4.30)
Diagnosed diabetes								
<16.46%	1.56 (0.61, 3.97)	2.18 (0.63, 7.55)	1.45 (0.56, 3.74)	2.19 (0.62, 7.71)	1.11 (0.43, 2.91)	1.85 (0.52, 6.61)	1.05 (0.40, 2.78)	1.89 (0.53, 6.70)
≥16.46%	31.92 (21.21, 48.06)	25.92 (14.86, 45.23)	29.34 (18.86, 45.63)	25.24 (13.85, 45.99)	9.23 (4.38, 19.46)	10.22 (4.29, 24.33)	7.13 (3.27, 15.58)	10.15 (4.18, 24.65)
<b>1,5-AG</b>								
No diabetes								
≥15.0 µg/mL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
7.9-14.9 µg/mL	1.13 (0.68, 1.86)	0.82 (0.41, 1.65)	1.16 (0.70, 1.92)	0.81 (0.40, 1.65)	1.12 (0.67, 1.85)	0.80 (0.39, 1.62)	1.08 (0.65, 1.79)	0.80 (0.40, 1.63)
<7.9 µg/mL	2.39 (1.08, 5.28)	3.36 (1.43, 7.91)	2.46 (1.11, 5.46)	3.31 (1.38, 7.92)	1.61 (0.69, 3.75)	2.48 (0.98, 6.24)	1.33 (0.54, 3.23)	2.33 (0.90, 6.03)
Diagnosed diabetes								
>9.2 µg/mL	1.66 (0.59, 4.62)	2.31 (0.79, 6.78)	1.49 (0.53, 4.21)	2.30 (0.77, 6.86)	1.11 (0.39, 3.17)	1.93 (0.64, 5.82)	1.14 (0.40, 3.25)	2.03 (0.68, 6.09)
≤9.2 µg/mL	28.34 (18.88, 42.53)	23.42 (13.89, 39.51)	27.94 (17.94, 43.53)	23.14 (13.11, 40.82)	8.80 (4.46, 17.36)	10.24 (4.50, 23.31)	7.30 (3.59, 14.83)	10.55 (4.48, 24.83)

## SUPPLEMENTARY DATA

Model 1: Adjustment for age, gender (male, female), BMI, BMI-squared

Model 2: Model 1 + LDL-c, HDL-c, triglycerides, cholesterol-lowering medication use (yes, no), systolic blood pressure, antihypertensive medication use (yes, no), eGFR, family history of diabetes (yes, no), education level (less than high school, high school or some college, college or more), alcohol consumption (current, former, never), cigarette smoking status (current, former, never), physical activity level

Model 3: Model 2 + fasting glucose

Model 4: Model 2 + HbA1c

SUPPLEMENTARY DATA

**Supplementary Table 7. Associations of biomarkers of hyperglycemia with incident CVD, incident ESRD, and prevalent retinopathy in black and white participants in ARIC, censoring or excluding participants who developed diabetes after baseline**

	Incident CVD*		Incident ESRD*		Prevalent Retinopathy*	
	White (N=8,521)	Black (N=2,579)	White (N=8,521)	Black (N=2,579)	White (N=5,285)	Black (N=1,195)
	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	OR (95% CI)	OR (95% CI)
<b>Fasting glucose</b>						
No diabetes						
<100 mg/dL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
100-125 mg/dL	1.00 (0.87, 1.15)	0.87 (0.68, 1.10)	1.22 (0.51, 2.92)	1.17 (0.39, 3.55)	1.47 (0.88, 2.44)	1.06 (0.49, 2.30)
≥126 mg/dL	0.95 (0.66, 1.36)	1.37 (0.91, 2.07)	3.34 (0.68, 16.30)	1.81 (0.20, 15.96)	3.33 (0.95, 11.65)	6.83 (1.95, 23.91)
Diagnosed diabetes						
<149 mg/dL	2.41 (1.86, 3.13)	2.24 (1.54, 3.26)	10.43 (3.63, 30.02)	14.99 (4.69, 47.96)	4.15 (1.77, 9.72)	4.53 (1.56, 13.20)
≥149 mg/dL	3.53 (2.82, 4.42)	3.25 (2.45, 4.30)	26.14 (9.65, 70.84)	34.94 (12.35, 98.89)	34.92 (19.18, 63.57)	22.01 (10.10, 47.97)
<b>HbA1c</b>						
No diabetes						
<5.7 %	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
5.7-6.4%	1.36 (1.17, 1.58)	1.24 (0.98, 1.58)	3.24 (1.47, 7.17)	1.67 (0.55, 5.05)	0.35 (0.13, 0.98)	1.90 (0.91, 3.95)
≥6.5%	1.55 (0.92, 2.62)	2.84 (1.92, 4.22)	N/A†	5.50 (1.02, 29.60)	4.04 (0.48, 34.12)	N/A†
Diagnosed diabetes						
<7%	2.24 (1.74, 2.90)	2.35 (1.57, 3.51)	8.35 (2.87, 24.31)	16.23 (5.02, 52.49)	1.02 (0.31, 3.36)	2.23 (0.59, 8.39)
≥7%	4.63 (3.76, 5.71)	4.56 (3.47, 5.99)	42.56 (18.64, 97.15)	46.41 (17.51, 123.0)	29.56 (17.89, 48.82)	30.37 (14.51, 63.59)
<b>Fructosamine</b>						
No diabetes						
<239.8 mg/dL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
239.8-268.6 mg/dL	0.89	0.85	0.65	0.16	1.48	1.50

SUPPLEMENTARY DATA

	(0.75, 1.07)	(0.66, 1.10)	(0.22, 1.92)	(0.02, 1.26)	(0.82, 2.65)	(0.70, 3.22)
≥268.7 mg/dL	1.17	1.44	N/A†	2.05	2.37	1.06
	(0.74, 1.86)	(0.96, 2.17)		(0.44, 9.51)	(0.54, 10.32)	(0.13, 8.36)
Diagnosed diabetes						
<275.7 mg/dL	2.12	2.21	7.10	12.11	1.98	2.07
	(1.66, 2.70)	(1.53, 3.20)	(2.83, 17.83)	(4.77, 30.79)	(0.76, 5.14)	(0.57, 7.55)
≥275.7 mg/dL	4.00	3.39	18.57	22.27	34.53	22.68
	(3.25, 4.92)	(2.65, 4.34)	(8.70, 39.64)	(10.34, 47.95)	(20.82, 57.25)	(11.77, 43.72)
<b>Glycated albumin</b>						
No diabetes						
<13.52%	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
	0.98	1.09	1.35	0.56	0.74	1.92
13.52-15.55%	(0.81, 1.18)	(0.86, 1.39)	(0.53, 3.45)	(0.15, 2.04)	(0.36, 1.53)	(0.88, 4.16)
≥15.56%	1.46	1.59	N/A†	0.89	1.68	5.60
	(0.92, 2.31)	(1.06, 2.39)		(0.10, 7.68)	(0.22, 12.84)	(1.44, 21.74)
Diagnosed diabetes						
<16.46%	2.05	2.28	7.59	8.49	1.66	2.36
	(1.60, 2.62)	(1.56, 3.33)	(3.00, 19.23)	(3.08, 23.42)	(0.63, 4.33)	(0.63, 8.81)
≥16.46%	4.30	3.75	23.73	28.09	31.19	28.86
	(3.50, 5.28)	(2.92, 4.80)	(11.11, 50.66)	(12.77, 61.81)	(19.06, 51.02)	(14.33, 58.13)
<b>1,5-AG</b>						
No diabetes						
≥15.0 µg/mL	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)	1 (Ref)
	1.13	0.85	1.34	1.50	0.81	0.85
7.9-14.9 µg/mL	(0.96, 1.34)	(0.65, 1.11)	(0.53, 3.35)	(0.50, 4.53)	(0.41, 1.60)	(0.35, 2.05)
<7.9 µg/mL	0.83	1.25	N/A†	2.45	1.40	5.67
	(0.53, 1.30)	(0.72, 2.20)		(0.30, 19.77)	(0.33, 5.86)	(1.75, 18.37)
Diagnosed diabetes						
>9.2 µg/mL	2.21	1.97	7.50	12.41	1.55	2.32
	(1.71, 2.85)	(1.40, 2.75)	(2.89, 19.48)	(4.49, 34.29)	(0.54, 4.43)	(0.75, 7.19)
≤9.2 µg/mL	3.91	3.70	23.30	39.04	28.25	23.32
	(3.19, 4.80)	(2.90, 4.72)	(10.90, 49.79)	(17.02, 89.53)	(17.26, 46.26)	(12.17, 44.71)

\*Models include adjustment for age, gender (male, female), BMI, BMI-squared, LDL-c, HDL-c, triglycerides, cholesterol-lowering medication use (yes, no), systolic blood pressure, antihypertensive medication use (yes, no), eGFR, family history of diabetes (yes, no), education level (less than high school, high school or some college, college or more), alcohol consumption (current, former, never), cigarette smoking status (current, former, never), and physical activity level.

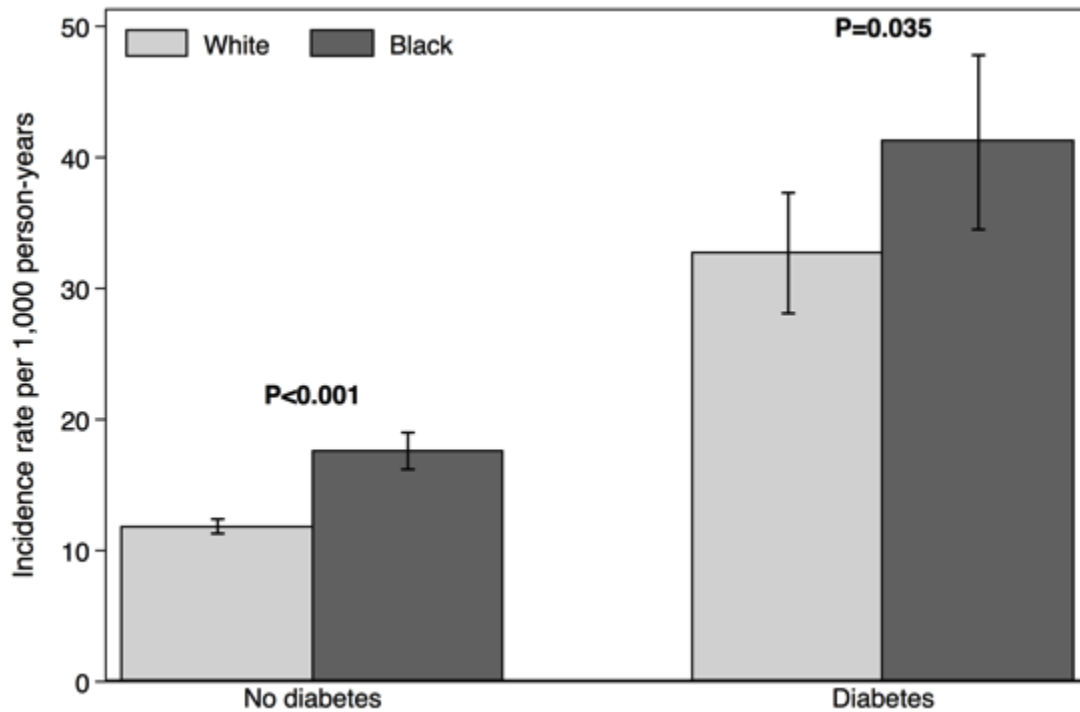
† Since many participants were excluded from the analyses for retinopathy (or were no longer considered as having experienced the event of interest for CVD or ESRD), for some of the categories, there were no participants who experienced the event of interest. Therefore, HRs and ORs were unable to be estimated, indicated as “N/A”.

## SUPPLEMENTARY DATA

### Supplementary Figure 1. Age- and sex-adjusted incidence rates for cardiovascular disease and end-stage renal disease and prevalence of retinopathy by race

Adjusted incidence rates for CVD and ESRD are per 1,000 person-years. Error bars represent 95% confidence intervals for incidence rates and prevalence. P-values were calculated using Wald tests to test for differences in incidence rates and prevalence between whites and blacks. Abbreviations: CVD, cardiovascular disease; ESRD, end-stage renal disease.

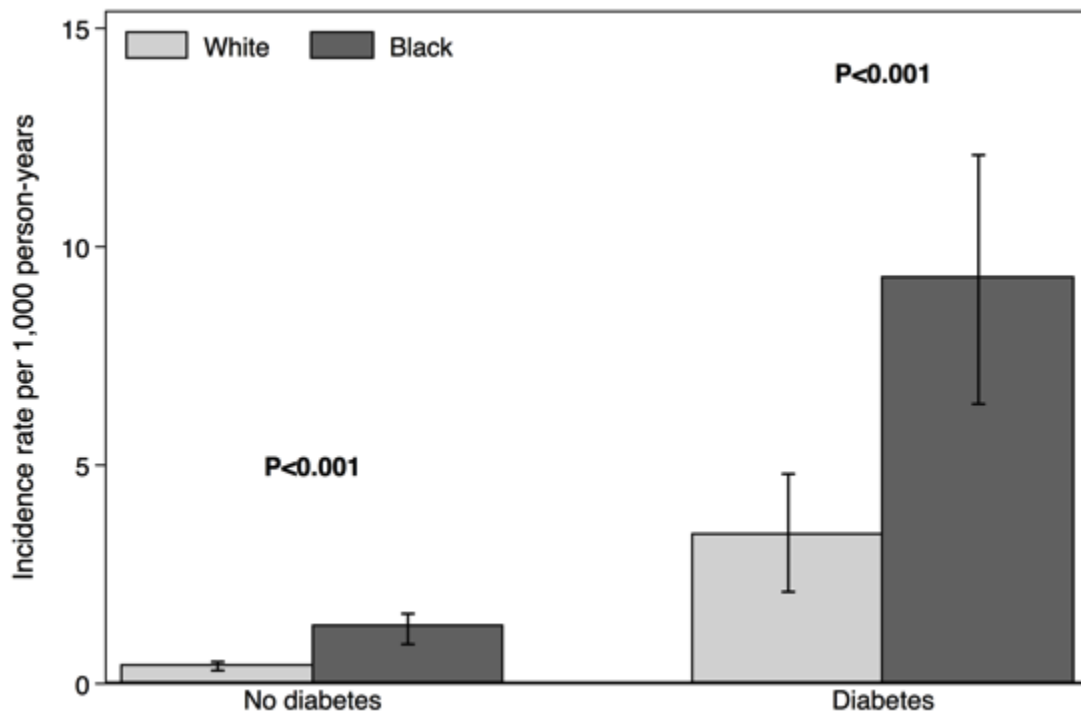
#### Panel A. CVD





SUPPLEMENTARY DATA

Panel B. ESRD



SUPPLEMENTARY DATA

Panel C. Retinopathy

