SUPPLEMENTAL MATERIAL

Table S1. Comparison of people included and excluded at visit 5 (2011-2013).

Characteristics	Included in analyses (n=1818)	Excluded from analyses (n=4720)	P-value
Age, y	76.7 (5.2)	75.4 (5.2)	<0.001
Female (%)	56.1	58.4	0.047
Black (%)	17.1	21.9	<0.001
BMI (kg/m^2)	28.4 (5.6)	28.9 (5.8)	0.003
Current smoking	4.5%	6.2%	<0.001
Current drinking	50.2	50.7	0.075
SBP (mmHg)	129.9 (18.0)	130.6 (18.5)	0.155
DBP (mmHg)	65.2 (10.5)	66.7 (10.9)	<0.001
Triglycerides (mg/dl)	1.4 (0.6)	1.4 (0.8)	0.095
LDL (mg/dl)	2.7 (0.9)	2.7 (0.9)	0.067
HDL (mg/dl)	1.3 (0.4)	1.3 (0.4)	0.796
TC (mg/dl)	4.6 (1.1)	4.7 (1.1)	0.086
FBG (mmol/l)	6.3 (1.5)	6.3 (1.6)	0.234
Diabetes (%)	29.8	29.9	0.910
Hypertension (%)	74.3	74.1	0.878

Continuous variables are presented as mean (SD). P values were calculated by unpaired t test or χ^2 test. Abbreviations: SD, standard deviation; SBP, systolic blood pressure; DBP, diastolic blood pressure; LDL, low-density lipoprotein; HDL, high-density lipoprotein; TC, total cholesterol; FBG, fasting blood glucose.

Table S2. Relationship of time-averaged cumulative blood pressure with generalized arteriolar narrowing defined as narrowest quintile of CRAE.

Cumulative SBP	Generalized arteriolar narrowing		Cumulative DBP	Generalized arteriolar narrowing	
	Adjusted OR (95% CI)	*P*		Adjusted OR (95% CI)	*P*
Lowest quintile	1.00 (reference)	-	Lowest quintile	1.00 (reference)	-
Second quintile	1.26 (0.84, 1.87)	0.268	Second quintile	1.40 (0.94, 2.10)	0.102
Third quintile	1.74 (1.16, 2.61)	0.007	Third quintile	1.41 (0.94, 2.13)	0.096
Fourth quintile	1.39 (0.90, 2.14)	0.178	Fourth quintile	2.32 (1.54, 3.49)	<0.001
Highest quintile	1.24 (0.79, 1.96)	0.383	Highest quintile	1.97 (1.27, 3.05)	0.002
P for trend		0.399	*P* for trend		<0.001
Per 1 SD	1.06 (0.92, 1.22)	0.443	Per 1 SD	1.25 (1.09, 1.43)	0.001

Analyses were adjusted for age, sex, race, body mass index, visit center, smoking status, drinking status, triglycerides, low-density lipoprotein, high-density lipoprotein, prevalence of diabetes, prevalence of hypertension, and antihypertensive medication at visit 5.

Abbreviations: SD, standard deviation; SBP, systolic blood pressure; DBP, diastolic blood pressure; CRAE, central retinal arteriolar equivalent.

Figure S1. Definition of time-averaged cumulative systolic blood pressure (SBP).
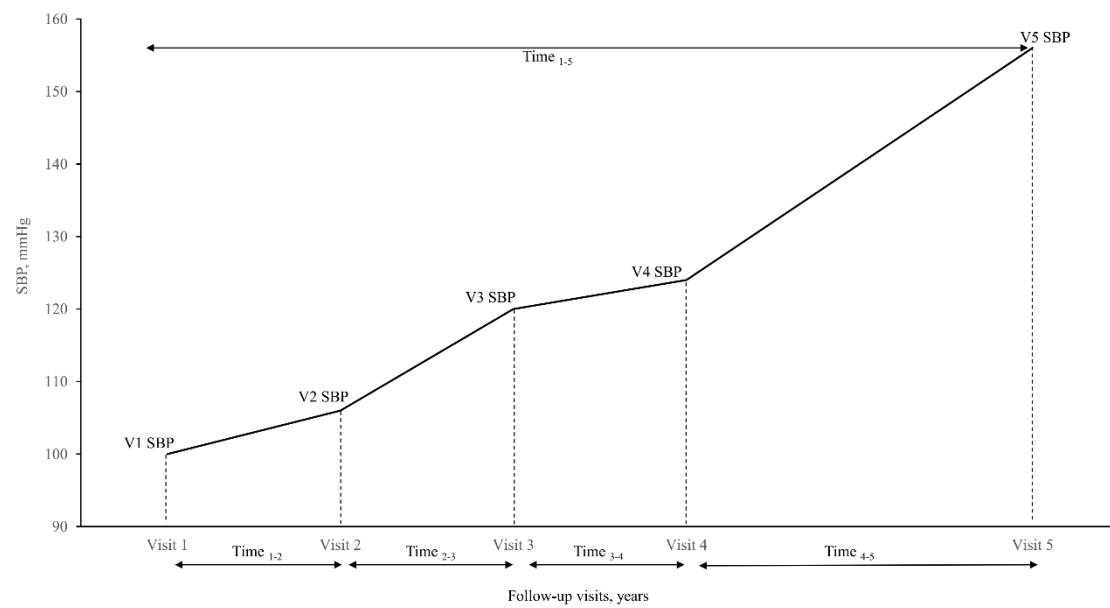
Time-averaged cumulative SBP over the 5 study visits was area under the curve index to total expose time (time $_{1-5}$)

Examples:

One patient's SBP was 100mmHg, 106mmHg,120mmHg,124mmHg, and 156mmHg, respectively, from visit1 to visit5 (Y_{1987}, Y_{1990}, Y_{1993}, Y_{1996}, Y_{2011})

Time-averaged cumulative SBP= [3*(100 + 106)/2 + 3*(106 + 120)/2 + 3*(120 + 124) /2 + 15*(124 + 156)/2] ÷ 24 = 129.8 mmHg

Figure S2. Unadjusted mean systolic blood pressure (SBP), and diastolic blood pressure (DBP) values with increasing age for whites and blacks.
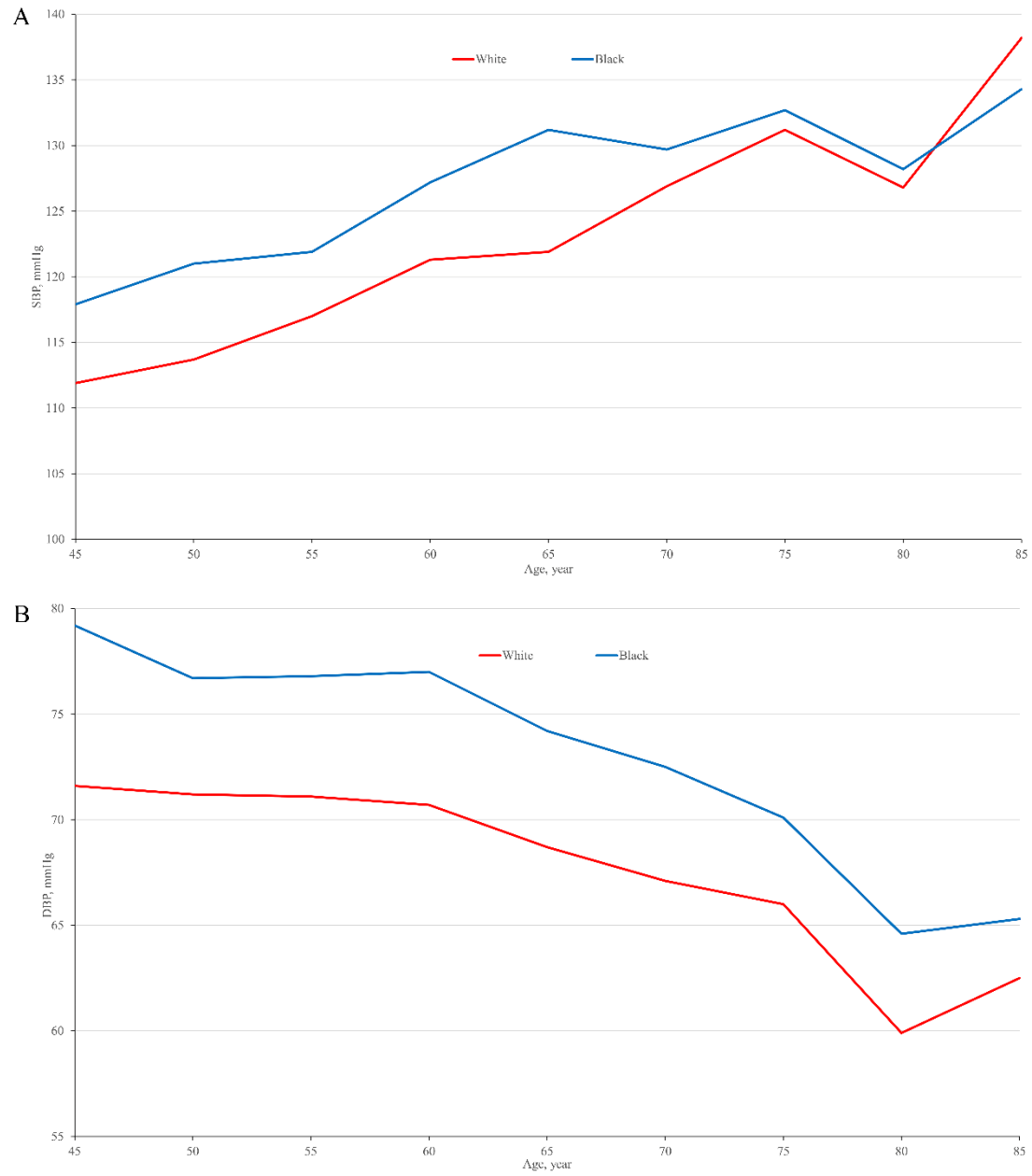
Figure S3. Relationship between time-averaged cumulative blood pressure and CRVE, stratified by race. Model was unadjusted and 95% confidence interval was displayed by dashed lines. Abbreviation: CRVE, central retinal venular equivalent; SBP, systolic blood pressure; DBP, diastolic blood pressure.
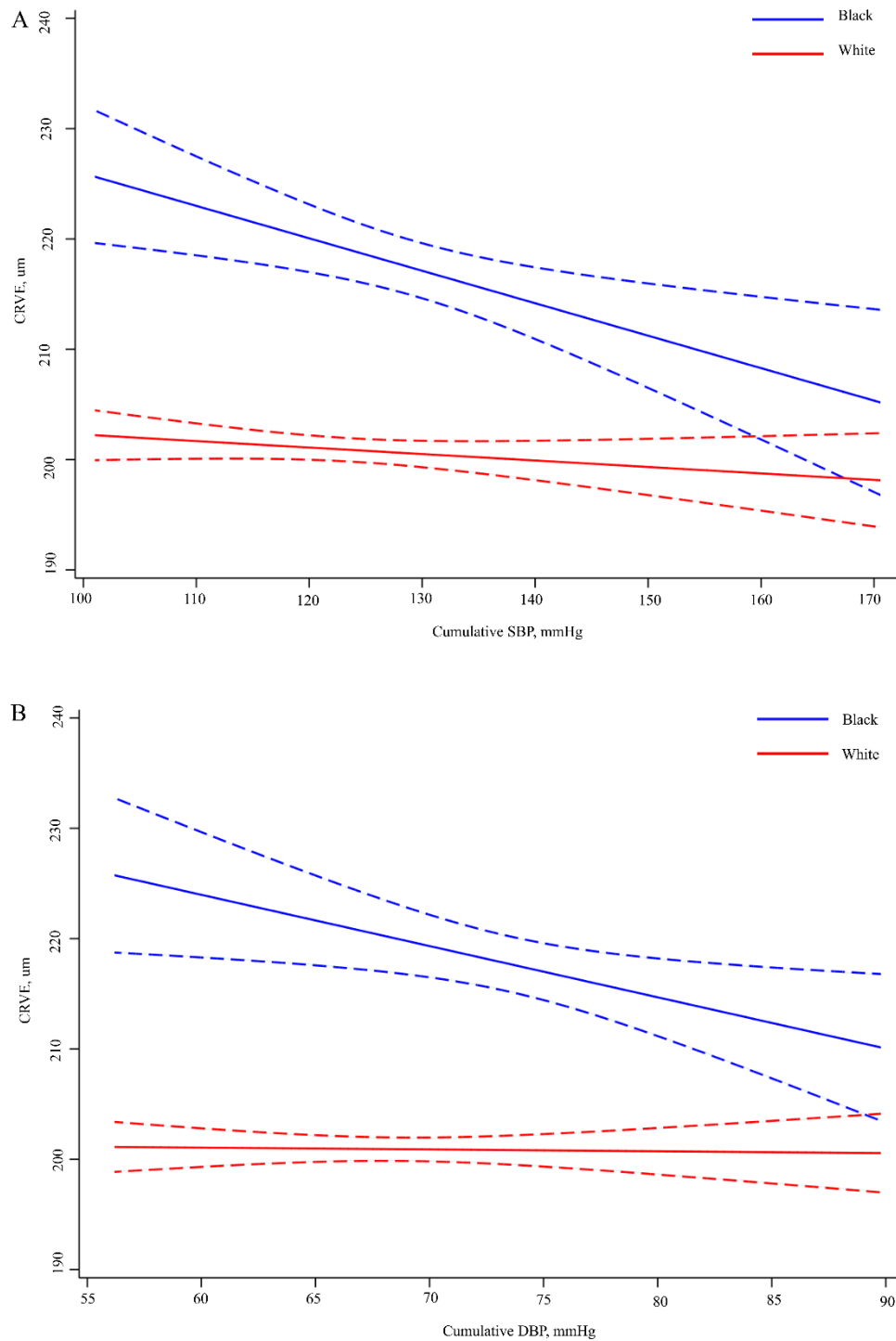
Figure S4. Association between cumulative blood pressure over 25 years with retinal phenotypes, stratified by diabetes. The β represents unstandardized regression coefficients. Retinal phenotypes were transformed to z-scores. All analyses were adjusted for age, sex, race, body mass index, visit center, smoking status, drinking status, triglycerides, low-density lipoprotein, high-density lipoprotein, prevalence of diabetes, prevalence of hypertension, and antihypertensive medication at visit 5. Abbreviations: SBP, systolic blood pressure; DBP, diastolic blood pressure; CRAE, central retinal arteriolar equivalent; CRVE, central retinal venular equivalent; AVR, arteriole: venule ratio.

Retinal Phenotypes	β (95% CI)	*P* Value		*P* for interaction
CRAE	-0.035 (-0.100, 0.030)	0.294		0.699
	-0.029 (-0.127, 0.069)	0.559		
CRVE	-0.027 (-0.091, 0.038)	0.417		0.613
	-0.103 (-0.204, -0.002)	0.046		
AVR	-0.004 (-0.071, 0.062)	0.894		0.929
	0.081 (-0.018 0.180)	0.110		

Cumulative SBP, mmHg

CRAE	-0.133 (-0.195, -0.071)	<0.001		0.427
	-0.094 (-0.192,0.004)	0.059		
CRVE	-0.028 (-0.089, 0.034)	0.374		0.512
	-0.108 (-0.209, -0.006)	0.038		
AVR	-0.120 (-0.183, -0.057)	<0.001		0.098
	0.016 (-0.084, 0.116)	0.753		

● No Diabetes ■ Diabetes

Cumulative DBP, mmHg

Figure S5. Association between cumulative blood pressure over 25 years with retinal phenotypes, stratified by hypertension. The β represents unstandardized regression coefficients. Retinal phenotypes were transformed to z-scores. All analyses were adjusted for age, sex, race, body mass index, visit center, smoking status, drinking status, triglycerides, low-density lipoprotein, high-density lipoprotein, prevalence of diabetes, prevalence of hypertension, and antihypertensive medication at visit 5. Abbreviations: SBP, systolic blood pressure; DBP, diastolic blood pressure; CRAE, central retinal arteriolar equivalent; CRVE, central retinal venular equivalent; AVR, arteriole: venule ratio.
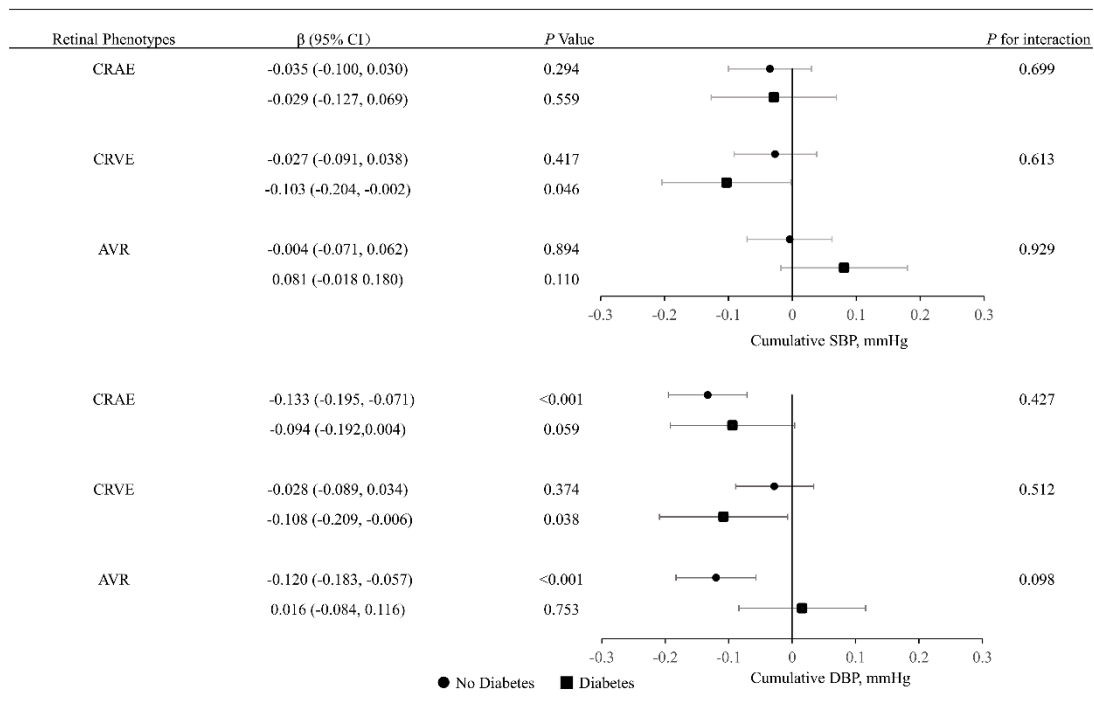
Retinal Phenotypes	β (95% CI)	P Value		P for interaction
CRAE	-0.112 (-0.250, 0.026)	0.111		0.289
	-0.026 (-0.086, 0.033)	0.381		
CRVE	-0.012 (-0.147, 0.122)	0.859		0.514
	-0.052 (-0.112, 0.007)	0.085		
AVR	-0.100 (-0.239, 0.040)	0.162		0.065
	0.030 (-0.030, 0.091)	0.327		
			Cumulative SBP, mmHg	
CRAE	-0.122 (-0.236, -0.007)	0.037		0.577
	-0.124 (-0.183, -0.066)	<0.001		
CRVE	-0.022 (-0.134, 0.089)	0.694		0.518
	-0.056 (-0.116, 0.003)	0.063		
AVR	-0.117 (-0.232, -0.001)	0.048		0.876
	-0.077 (-0.138, -0.017)	0.012		
			Cumulative DBP, mmHg	

● No Hypertension ■ Hypertension