

Arm and Thigh to Waist Circumference Ratio (ATC/WC) and All-Cause Mortality, Cardiovascular Mortality, Hypertension, Diabetes, and Resting Tachycardia

Supplementary Methods 1

1.1. Limb and Waist Circumference Measurements

Trained healthcare professionals measured participants' right AC, right TC, and WC using standardized methods. If the right limb was unavailable due to amputation or other reasons, the left limb was measured. For AC measurement, participants stood with arms naturally hanging, elbows bent at 90°, and palms facing upward. AC was measured perpendicular to the long axis of the upper arm at the midpoint between the posterior edge of the acromion and the tip of the elbow. For TC measurement, participants first sat with knees bent at 90°, and a mark was made at the midpoint between the inguinal crease and the proximal edge of the patella. Participants then stood, shifted their weight to the left leg, slightly flexed the right leg forward, and had TC measured perpendicular to the long axis of the thigh at the marked point. WC was measured while standing by marking a horizontal line just above the right iliac crest and measuring WC along this line. All measurements were recorded to the nearest millimeter. ATC was defined as the sum of unilateral AC and TC, and ATC/WC was calculated as the ratio of ATC to WC.

1.2. All-Cause Mortality, Cardiovascular Mortality, and Cardiovascular Risk Factors

We linked participants to death records in the National Death Index (NDI) of the National Center for Health Statistics (NCHS) using unique identifiers, with death records available through December 31, 2019. Causes of death were classified according to the International Classification of Diseases, 10th Revision (ICD-10) codes, focusing on all-cause mortality and cardiovascular-specific mortality (ICD-10 codes I00–I09, I11, I13, and I20–I51).

Blood pressure, blood samples, resting heart rate measurements, and related questionnaire data were collected at baseline. Blood pressure was measured at the

Mobile Examination Center (MEC) using a mercury sphygmomanometer. After a 5-minute seated rest, the maximum inflation level was identified, followed by three measurements of systolic and diastolic blood pressure. If any measurement was interrupted or incomplete, a fourth attempt was made. The final blood pressure value was the average of the valid readings. Hypertension was defined as a systolic blood pressure exceeding 140 mmHg, a diastolic blood pressure exceeding 90 mmHg, or a self-reported physician diagnosis.

Blood samples were rapidly centrifuged after collection at the MEC and sent to Johns Hopkins Hospital (Baltimore, MD), where fasting glucose and hemoglobin A1c (HbA1c) levels were measured using a Hitachi automated analyzer. Diabetes was defined as a fasting glucose level over 7 mmol/L, an HbA1c above 6.5%, or a self-reported diagnosis, including the use of hypoglycemic medications or insulin therapy. Sample processing and assays adhered to NHANES standardized protocols. Resting heart rate was determined by counting the beats in 30 seconds and multiplying by two. According to the ESC Tachycardia Management Guidelines, resting tachycardia was defined as a heart rate exceeding 100 beats per minute.

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Table S1 Weighted generalized liner regression for ATC and various indicators and standards of obesity

Characteristics	ATC	
	OR (95%CI)	P value
BMI	1.63 (1.62 - 1.64)	<0.0001
WC	2.90 (2.84 - 2.97)	<0.0001
Obesity (BMI > 30 kg/m²)	1.37 (1.35 - 1.39)	<0.0001
Overweight (BMI > 25 kg/m²)	1.37 (1.36 - 1.39)	<0.0001
Abdominal obesity (WC > 102 cm for males; WC > 88 cm for females)	1.16 (1.15 - 1.17)	<0.0001

Assessed using univariable weighted generalized linear regression.

Table S2 Weighted generalized liner regression for ATC, ATC/WC, and cardiovascular risk factors

Characteristics	Model 1 ^a			Model 2 ^b			Model 3 ^c		
	β Coefficients	SE	P value	β Coefficients	SE	P value	β Coefficients	SE	P value
SBP									
ATC/ WC	-20.231	2.620	<0.0001	-17.291	2.648	<0.0001	-9.952	2.708	0.0007
ATC	0.185	0.016	<0.0001	0.178	0.016	<0.0001	-0.155	0.045	0.0013
DBP									
ATC/ WC	-9.216	1.428	<0.0001	-7.994	1.443	<0.0001	-3.693	1.469	0.0161
ATC	0.115	0.012	<0.0001	0.112	0.012	<0.0001	-0.012	0.027	0.6465
Heart rates									
ATC/ WC	-27.999	1.613	<0.0001	-26.230	1.634	<0.0001	-23.358	1.636	<0.0001
ATC	0.084	0.011	<0.0001	0.075	0.010	<0.0001	-0.241	0.028	<0.0001
Fasting glucose									
ATC/ WC	-58.863	5.344	<0.0001	-52.672	5.125	<0.0001	-38.446	4.965	<0.0001
ATC	0.348	0.028	<0.0001	0.331	0.029	<0.0001	-0.546	0.103	<0.0001

ATC/WC Q1 < 0.839, 0.839 ≤ ATC/WC Q2 < 0.902, 0.902 ≤ ATC/WC Q3 < 0.965, ATC/WC Q4 ≥ 0.965.

ATC Q1 < 78.4cm, 78.4 cm ≤ ATC Q2 < 85.3 cm, 85.3 cm ≤ ATC Q3 < 93.1cm, ATC Q4 ≥ 93.1cm.

Assessed using multivariable weighted generalized linear regression.

^a Model 1: adjusted for age, sex, race, marital status, education, family income-poverty ratio, smoking, and drinking.

^b Model 2: Model 1 plus further adjusted for creatinine, uACR, hyperlipidemia, comorbidity model.

^c Model 3: Model 2 plus further adjusted for BMI.

Table S3 Weighted Cox proportional hazards model for AC/WC, TC/WC and all-cause mortality

Characteristics	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 4 ^d
	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
AC/ WC				
Q1	Ref	Ref	Ref	Ref
Q2	0.38 (0.34–0.44)	0.70 (0.62–0.78)	0.74 (0.65–0.83)	0.73 (0.65 – 0.82)
Q3	0.23 (0.20–0.26)	0.57 (0.50–0.65)	0.63 (0.55–0.71)	0.62 (0.54 – 0.70)
Q4	0.15 (0.13–0.18)	0.54 (0.46–0.64)	0.59 (0.50–0.70)	0.58 (0.49 – 0.69)
TC/ WC				
Q1	Ref	Ref	Ref	Ref
Q2	0.34 (0.30 – 0.39)	0.65 (0.57 – 0.74)	0.73 (0.64 – 0.84)	0.71 (0.62 – 0.82)
Q3	0.19 (0.16 – 0.22)	0.60 (0.52 – 0.70)	0.71 (0.61 – 0.82)	0.67 (0.58 – 0.78)
Q4	0.09 (0.08 – 0.11)	0.44 (0.36 – 0.54)	0.53 (0.43 – 0.64)	0.50 (0.40 – 0.61)

AC/WC: Q1 < 0.322, 0.322 ≤ Q2 < 0.342, 0.342 ≤ Q3 < 0.363, Q4 ≥ 0.363.

TC/WC: Q1 < 0.514, 0.514 ≤ Q2 < 0.558, 0.558 ≤ Q3 < 0.606, Q4 ≥ 0.606.

Assessed using multivariable weighted Cox regression.

^a Model 1: unadjusted; ^b Model 2: adjusted for age, sex, race, marital status, education, family income-poverty ratio, smoking, and drinking; ^c

Model 3: Model 2 plus further adjusted for creatinine, uACR, hyperlipidemia, hypertension, diabetes, resting tachycardia, history of underlying diseases; ^d Model 4: Model 3 plus further adjusted for BMI.

Table S4 Weighted Cox proportional hazards model for AC/WC, TC/WC and cardiovascular mortality

Characteristics	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 4 ^d
	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
AC/ WC				
Q1	Ref	Ref	Ref	Ref
Q2	0.31 (0.25–0.39)	0.59 (0.47–0.74)	0.62 (0.49–0.79)	0.62 (0.49 – 0.79)
Q3	0.21 (0.16–0.26)	0.55 (0.44–0.69)	0.61 (0.48–0.78)	0.61 (0.48 – 0.78)
Q4	0.11 (0.07–0.17)	0.43 (0.27–0.70)	0.49 (0.30–0.80)	0.49 (0.30 – 0.80)
TC/ WC				
Q1	Ref	Ref	Ref	Ref
Q2	0.35 (0.29 – 0.42)	0.69 (0.58 – 0.83)	0.80 (0.66 – 0.97)	0.79 (0.65 – 0.97)
Q3	0.13 (0.09 – 0.19)	0.47 (0.32 – 0.69)	0.58 (0.39 – 0.87)	0.57 (0.37 – 0.87)
Q4	0.04 (0.03 – 0.06)	0.23 (0.15 – 0.35)	0.30 (0.20 – 0.46)	0.30 (0.19 – 0.46)

AC/WC: Q1 < 0.322, 0.322 ≤ Q2 < 0.342, 0.342 ≤ Q3 < 0.363, Q4 ≥ 0.363.

TC/WC: Q1 < 0.514, 0.514 ≤ Q2 < 0.558, 0.558 ≤ Q3 < 0.606, Q4 ≥ 0.606.

Assessed using multivariable weighted Cox regression.

^a Model 1: unadjusted; ^b Model 2: adjusted for age, sex, race, marital status, education, family income-poverty ratio, smoking, and drinking; ^c

Model 3: Model 2 plus further adjusted for creatinine, uACR, hyperlipidemia, hypertension, diabetes, resting tachycardia, history of underlying diseases; ^d Model 4: Model 3 plus further adjusted for BMI.

Table S5 Weighted generalized liner regression for AC/WC, TC/WC and hypertension

Characteristics	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 4 ^d
	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
AC/ WC				
Q1	Ref	Ref	Ref	Ref
Q2	0.49 (0.42 - 0.56)	0.71 (0.60 - 0.83)	0.74 (0.63 - 0.88)	0.81 (0.69 - 0.94)
Q3	0.37 (0.33 - 0.42)	0.65 (0.56 - 0.75)	0.69 (0.59 - 0.80)	0.78 (0.66 - 0.92)
Q4	0.25 (0.22 - 0.29)	0.53 (0.46 - 0.62)	0.57 (0.50 - 0.66)	0.67 (0.58 - 0.78)
TC/ WC				
Q1	Ref	Ref	Ref	Ref
Q2	0.40 (0.35 - 0.45)	0.59 (0.51 - 0.69)	0.62 (0.53 - 0.72)	0.72 (0.62 - 0.84)
Q3	0.22 (0.20 - 0.25)	0.42 (0.37 - 0.49)	0.46 (0.40 - 0.53)	0.60 (0.52 - 0.70)
Q4	0.12 (0.10 - 0.15)	0.26 (0.21 - 0.31)	0.29 (0.24 - 0.35)	0.42 (0.35 - 0.51)

AC/WC: Q1 < 0.322, 0.322 ≤ Q2 < 0.342, 0.342 ≤ Q3 < 0.363, Q4 ≥ 0.363.

TC/WC: Q1 < 0.514, 0.514 ≤ Q2 < 0.558, 0.558 ≤ Q3 < 0.606, Q4 ≥ 0.606.

Assessed using multivariable weighted generalized linear regression.

^a Model 1: unadjusted. ^b Model 2: adjusted for age, sex, race, marital status, education, family income-poverty ratio, smoking, and drinking. ^c

Model 3: Model 2 plus further adjusted for creatinine, uACR, hyperlipidemia, hypertension, diabetes, resting tachycardia, history of underlying diseases. ^d Model 4: Model 3 plus further adjusted for BMI.

Table S6 Weighted generalized liner regression for AC/WC, TC/WC and diabetes

Characteristics	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 4 ^d
	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
AC/ WC				
Q1	Ref	Ref	Ref	Ref
Q2	0.51 (0.43 - 0.61)	0.70 (0.58 - 0.85)	0.74 (0.61 - 0.90)	0.83 (0.68 - 1.01)
Q3	0.32 (0.28 - 0.38)	0.51 (0.43 - 0.60)	0.55 (0.46 - 0.66)	0.63 (0.53 - 0.76)
Q4	0.20 (0.16 - 0.26)	0.39 (0.30 - 0.51)	0.43 (0.33 - 0.57)	0.51 (0.38 - 0.68)
TC/ WC				
Q1	Ref	Ref	Ref	Ref
Q2	0.28 (0.24 - 0.33)	0.34 (0.28 - 0.41)	0.36 (0.29 - 0.43)	0.42 (0.35 - 0.51)
Q3	0.11 (0.09 - 0.15)	0.16 (0.12 - 0.22)	0.18 (0.13 - 0.24)	0.24 (0.18 - 0.33)
Q4	0.07 (0.05 - 0.09)	0.12 (0.08 - 0.17)	0.13 (0.09 - 0.19)	0.19 (0.13 - 0.28)

AC/WC: Q1 < 0.322, 0.322 ≤ Q2 < 0.342, 0.342 ≤ Q3 < 0.363, Q4 ≥ 0.363.

TC/WC: Q1 < 0.514, 0.514 ≤ Q2 < 0.558, 0.558 ≤ Q3 < 0.606, Q4 ≥ 0.606.

Assessed using multivariable weighted generalized linear regression.

^a Model 1: unadjusted. ^b Model 2: adjusted for age, sex, race, marital status, education, family income-poverty ratio, smoking, and drinking. ^c

Model 3: Model 2 plus further adjusted for creatinine, uACR, hyperlipidemia, hypertension, diabetes, resting tachycardia, history of underlying diseases. ^d Model 4: Model 3 plus further adjusted for BMI.

Table S7 Weighted generalized liner regression for AC/WC, TC/WC and resting tachycardia

Characteristics	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 4 ^d
	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
AC/ WC				
Q1	Ref	Ref	Ref	Ref
Q2	0.69 (0.52 - 0.92)	0.64 (0.48 - 0.86)	0.68 (0.51 - 0.92)	0.70 (0.52 - 0.95)
Q3	0.57 (0.42 - 0.78)	0.51 (0.37 - 0.69)	0.54 (0.40 - 0.74)	0.57 (0.42 - 0.76)
Q4	0.34 (0.25 - 0.47)	0.29 (0.20 - 0.42)	0.32 (0.22 - 0.46)	0.34 (0.23 - 0.48)
TC/ WC				
Q1	Ref	Ref	Ref	Ref
Q2	0.59 (0.44 - 0.79)	0.49 (0.37 - 0.66)	0.51 (0.38 - 0.69)	0.53 (0.39 - 0.72)
Q3	0.56 (0.42 - 0.74)	0.38 (0.28 - 0.51)	0.42 (0.31 - 0.57)	0.45 (0.32 - 0.62)
Q4	0.42 (0.30 - 0.58)	0.23 (0.15 - 0.36)	0.26 (0.17 - 0.41)	0.29 (0.19 - 0.43)

AC/WC: Q1 < 0.322, 0.322 ≤ Q2 < 0.342, 0.342 ≤ Q3 < 0.363, Q4 ≥ 0.363.

TC/WC: Q1 < 0.514, 0.514 ≤ Q2 < 0.558, 0.558 ≤ Q3 < 0.606, Q4 ≥ 0.606.

Assessed using multivariable weighted generalized linear regression.

^a Model 1: unadjusted. ^b Model 2: adjusted for age, sex, race, marital status, education, family income-poverty ratio, smoking, and drinking. ^c

Model 3: Model 2 plus further adjusted for creatinine, uACR, hyperlipidemia, hypertension, diabetes, resting tachycardia, history of underlying diseases. ^d Model 4: Model 3 plus further adjusted for BMI.

Table S8 Weighted Cox proportional hazards model for AC, TC and all-cause mortality

Characteristics	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 4 ^d	Sensitivity Model ^e
	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
AC					
Q1	Ref	Ref	Ref	Ref	Ref
Q2	0.91 (0.82–1.02)	0.74 (0.65–0.84)	0.72 (0.64–0.82)	0.66 (0.57 – 0.77)	0.62 (0.54–0.71)
Q3	0.73 (0.66–0.82)	0.65 (0.58–0.74)	0.60 (0.52–0.68)	0.51 (0.43 – 0.60)	0.46 (0.39–0.54)
Q4	0.74 (0.65–0.86)	0.82 (0.70–0.94)	0.68 (0.59–0.79)	0.51 (0.40 – 0.63)	0.43 (0.36–0.52)
TC					
Q1	Ref	Ref	Ref	Ref	Ref
Q2	0.52 (0.47 – 0.57)	0.69 (0.62 – 0.77)	0.68 (0.61 – 0.76)	0.64 (0.56 – 0.73)	0.61 (0.54 – 0.69)
Q3	0.43 (0.38 – 0.48)	0.70 (0.62 – 0.78)	0.68 (0.60 – 0.76)	0.60 (0.52 – 0.70)	0.56 (0.49 – 0.64)
Q4	0.36 (0.31 – 0.42)	0.78 (0.67 – 0.91)	0.71 (0.61 – 0.83)	0.57 (0.45 – 0.71)	0.51 (0.42 – 0.62)

AC: Q1 < 29.5cm, 29.5cm ≤ Q2 < 32.5cm, 32.5cm ≤ Q3 < 36.0cm, Q4 ≥ 36.0cm;

TC: Q1 < 48.6cm, 48.6cm ≤ Q2 < 52.8cm, 52.8cm ≤ Q3 < 57.4cm, Q4 ≥ 57.4cm.

Assessed using multivariable weighted Cox regression.

^a Model 1: unadjusted. ^b Model 2: adjusted for age, sex, race, marital status, education, family income-poverty ratio, smoking, and drinking. ^c

Model 3: Model 2 plus further adjusted for creatinine, uACR, hyperlipidemia, hypertension, diabetes, resting tachycardia, history of underlying diseases. ^d Model 4: Model 3 plus further adjusted for BMI.

^e Model 5: Model 3 plus further adjusted for WC.

Table S9 Weighted Cox proportional hazards model for AC, TC and cardiovascular mortality

Characteristics	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 4 ^d	Sensitivity Model ^e
	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
AC					
Q1	Ref	Ref	Ref	Ref	Ref
Q2	1.03 (0.84–1.27)	0.78 (0.65–0.93)	0.75 (0.62–0.90)	0.67 (0.54 – 0.83)	0.62 (0.50–0.76)
Q3	0.77 (0.62–0.95)	0.63 (0.50–0.79)	0.57 (0.45–0.72)	0.46 (0.36 – 0.60)	0.41 (0.31–0.52)
Q4	0.96 (0.74–1.24)	0.98 (0.77–1.25)	0.79 (0.60–1.03)	0.54 (0.35 – 0.83)	0.44 (0.30–0.64)
TC					
Q1	Ref	Ref	Ref	Ref	Ref
Q2	0.46 (0.39 – 0.54)	0.58 (0.49 – 0.69)	0.58 (0.48 – 0.69)	0.54 (0.44 – 0.66)	0.50 (0.41 – 0.61)
Q3	0.44 (0.34 – 0.55)	0.69 (0.54 – 0.89)	0.69 (0.53 – 0.90)	0.61 (0.46 – 0.80)	0.54 (0.41 – 0.72)
Q4	0.42 (0.33 – 0.54)	0.93 (0.72 – 1.19)	0.86 (0.65 – 1.12)	0.66 (0.46 – 0.95)	0.56 (0.40 – 0.78)

AC: Q1 < 29.5cm, 29.5cm ≤ Q2 < 32.5cm, 32.5cm ≤ Q3 < 36.0cm, Q4 ≥ 36.0cm.

TC: Q1 < 48.6cm, 48.6cm ≤ Q2 < 52.8cm, 52.8cm ≤ Q3 < 57.4cm, Q4 ≥ 57.4cm.

Assessed using multivariable weighted Cox regression.

^a Model 1: unadjusted. ^b Model 2: adjusted for age, sex, race, marital status, education, family income-poverty ratio, smoking, and drinking. ^c

Model 3: Model 2 plus further adjusted for creatinine, uACR, hyperlipidemia, hypertension, diabetes, resting tachycardia, history of underlying diseases. ^d Model 4: Model 3 plus further adjusted for BMI.

^e Model 5: Model 3 plus further adjusted for WC.

Table S10 Weighted generalized liner regression for AC, TC and hypertension

Characteristics	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 4 ^d	Sensitivity Model ^e
	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
AC					
Q1	Ref	Ref	Ref	Ref	Ref
Q2	1.05 (1.02 - 1.08)	1.25 (1.08 - 1.45)	1.22 (1.05 - 1.42)	0.90 (0.76 - 1.08)	0.89 (0.75 - 1.05)
Q3	1.10 (1.07 - 1.12)	1.73 (1.51 - 1.98)	1.65 (1.43 - 1.89)	0.95 (0.77 - 1.17)	0.93 (0.79 - 1.11)
Q4	1.23 (1.20 - 1.26)	3.36 (2.96 - 3.82)	3.08 (2.71 - 3.50)	1.13 (0.88 - 1.46)	1.14 (0.92 - 1.42)
TC					
Q1	Ref	Ref	Ref	Ref	Ref
Q2	0.96 (0.94 - 0.99)	1.13 (0.99 - 1.29)	1.14 (1.00 - 1.30)	0.79 (0.68 - 0.92)	0.82 (0.71 - 0.96)
Q3	0.98 (0.96 - 1.00)	1.45 (1.26 - 1.68)	1.42 (1.23 - 1.65)	0.72 (0.58 - 0.88)	0.78 (0.64 - 0.94)
Q4	1.04 (1.02 - 1.07)	2.43 (2.15 - 2.73)	2.29 (2.04 - 2.58)	0.58 (0.46 - 0.75)	0.73 (0.59 - 0.89)

AC: Q1 < 29.5cm, 29.5cm ≤ Q2 < 32.5cm, 32.5cm ≤ Q3 < 36.0cm, Q4 ≥ 36.0cm.

TC: Q1 < 48.6cm, 48.6cm ≤ Q2 < 52.8cm, 52.8cm ≤ Q3 < 57.4cm, Q4 ≥ 57.4cm.

Assessed using multivariable weighted generalized linear regression.

^a Model 1: unadjusted. ^b Model 2: adjusted for age, sex, race, marital status, education, family income-poverty ratio, smoking, and drinking. ^c

Model 3: Model 2 plus further adjusted for creatinine, uACR, hyperlipidemia, hypertension, diabetes, resting tachycardia, history of underlying

diseases. ^d Model 4: Model 3 plus further adjusted for BMI. ^e Model 5: Model 3 plus further adjusted for WC.

Table S11 Weighted generalized liner regression model for AC, TC and diabetes

Characteristics	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 4 ^d	Sensitivity Model ^e
	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
AC					
Q1	Ref	Ref	Ref	Ref	Ref
Q2	1.66 (1.30 - 2.12)	1.56 (1.22 - 1.99)	1.59 (1.22 - 2.06)	1.06 (0.80 - 1.41)	0.95 (0.72 - 1.25)
Q3	2.07 (1.67 - 2.56)	2.14 (1.74 - 2.62)	2.19 (1.77 - 2.71)	1.05 (0.80 - 1.38)	0.87 (0.68 - 1.11)
Q4	3.63 (2.87 - 4.59)	4.56 (3.63 - 5.72)	4.51 (3.56 - 5.71)	1.14 (0.79 - 1.64)	0.86 (0.62 - 1.19)
TC					
Q1	Ref	Ref	Ref	Ref	Ref
Q2	0.76 (0.65 - 0.88)	0.98 (0.83 - 1.15)	1.02 (0.87 - 1.19)	0.56 (0.47 - 0.68)	0.56 (0.47 - 0.68)
Q3	0.95 (0.81 - 1.12)	1.44 (1.22 - 1.70)	1.48 (1.24 - 1.75)	0.49 (0.38 - 0.62)	0.50 (0.40 - 0.64)
Q4	1.12 (0.92 - 1.37)	2.11 (1.67 - 2.66)	2.11 (1.67 - 2.67)	0.21 (0.14 - 0.32)	0.26 (0.18 - 0.37)

AC: Q1 < 29.5cm, 29.5cm ≤ Q2 < 32.5cm, 32.5cm ≤ Q3 < 36.0cm, Q4 ≥ 36.0cm.

TC: Q1 < 48.6cm, 48.6cm ≤ Q2 < 52.8cm, 52.8cm ≤ Q3 < 57.4cm, Q4 ≥ 57.4cm.

Assessed using multivariable weighted generalized linear regression.

^a Model 1: unadjusted. ^b Model 2: adjusted for age, sex, race, marital status, education, family income-poverty ratio, smoking, and drinking. ^c

Model 3: Model 2 plus further adjusted for creatinine, uACR, hyperlipidemia, hypertension, diabetes, resting tachycardia, history of underlying diseases. ^d Model 4: Model 3 plus further adjusted for BMI. ^e Model 5: Model 3 plus further adjusted for WC.

Table S12 Weighted generalized liner regression for AC, TC and resting tachycardia

Characteristics	Model 1 ^a	Model 2 ^b	Model 3 ^c	Model 4 ^d	Sensitivity Model ^e
	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)	HR (95% CI)
AC					
Q1	Ref	Ref	Ref	Ref	Ref
Q2	0.68 (0.50 - 0.93)	0.78 (0.56 - 1.08)	0.76 (0.54 - 1.06)	0.56 (0.40 - 0.80)	0.48 (0.34 - 0.67)
Q3	0.64 (0.46 - 0.91)	0.80 (0.53 - 1.19)	0.75 (0.50 - 1.13)	0.44 (0.30 - 0.64)	0.32 (0.22 - 0.47)
Q4	0.98 (0.68 - 1.41)	1.19 (0.81 - 1.75)	1.09 (0.75 - 1.59)	0.39 (0.21 - 0.71)	0.23 (0.13 - 0.39)
TC					
Q1	Ref	Ref	Ref	Ref	Ref
Q2	0.68 (0.47 - 0.96)	0.76 (0.53 - 1.09)	0.77 (0.53 - 1.11)	0.65 (0.45 - 0.93)	0.58 (0.41 - 0.82)
Q3	0.88 (0.65 - 1.21)	1.04 (0.74 - 1.45)	1.03 (0.72 - 1.45)	0.75 (0.51 - 1.10)	0.60 (0.42 - 0.86)
Q4	1.14 (0.78 - 1.67)	1.29 (0.87 - 1.90)	1.22 (0.83 - 1.79)	0.63 (0.38 - 1.05)	0.42 (0.27 - 0.65)

AC: Q1 < 29.5cm, 29.5cm ≤ Q2 < 32.5cm, 32.5cm ≤ Q3 < 36.0cm, Q4 ≥ 36.0cm.

TC: Q1 < 48.6cm, 48.6cm ≤ Q2 < 52.8cm, 52.8cm ≤ Q3 < 57.4cm, Q4 ≥ 57.4cm.

Assessed using multivariable weighted generalized linear regression.

^a Model 1: unadjusted. ^b Model 2: adjusted for age, sex, race, marital status, education, family income-poverty ratio, smoking, and drinking. ^c

Model 3: Model 2 plus further adjusted for creatinine, uACR, hyperlipidemia, hypertension, diabetes, resting tachycardia, history of underlying

diseases. ^d Model 4: Model 3 plus further adjusted for BMI. ^e Model 5: Model 3 plus further adjusted for WC.

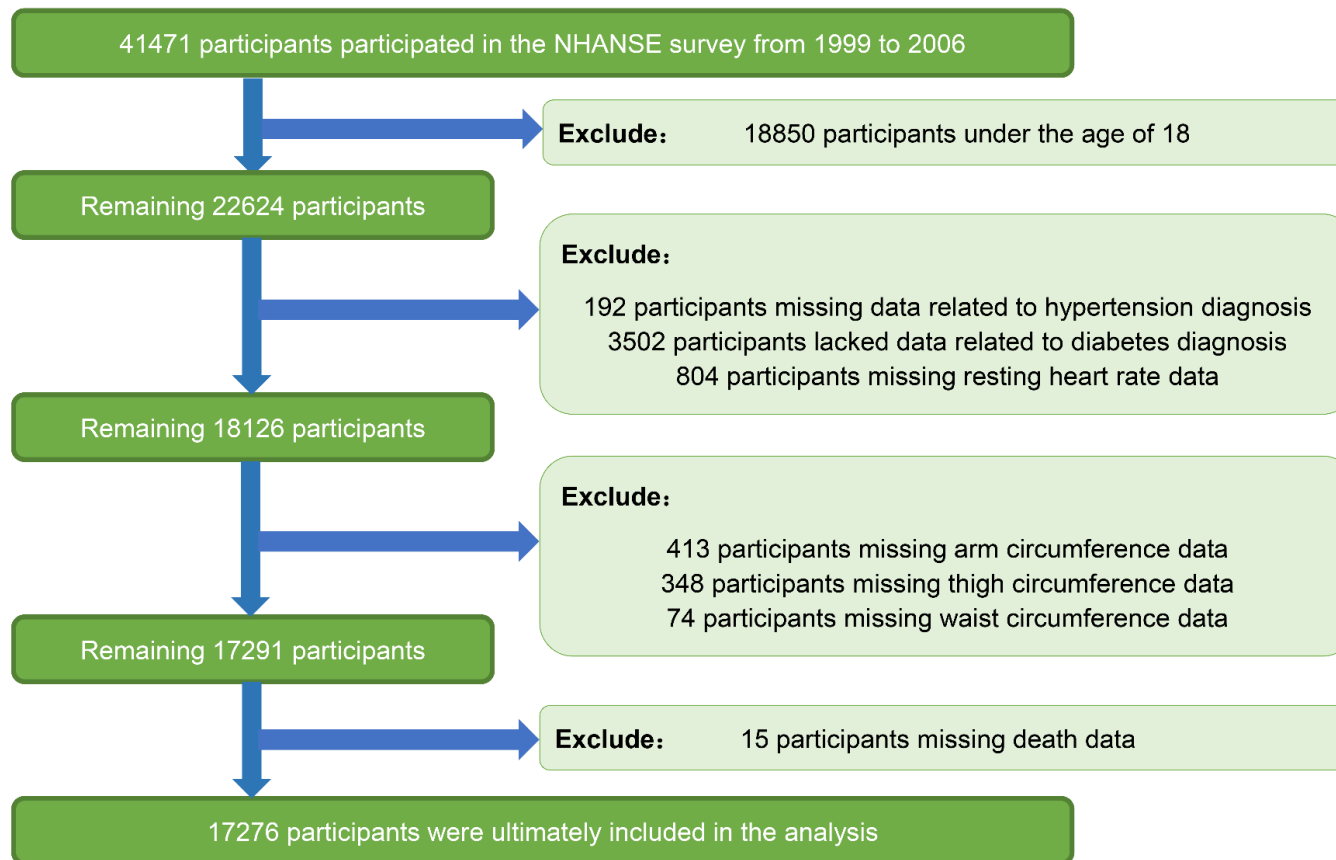


Figure S1 The flow chart of participants inclusion and exclusion in current study.

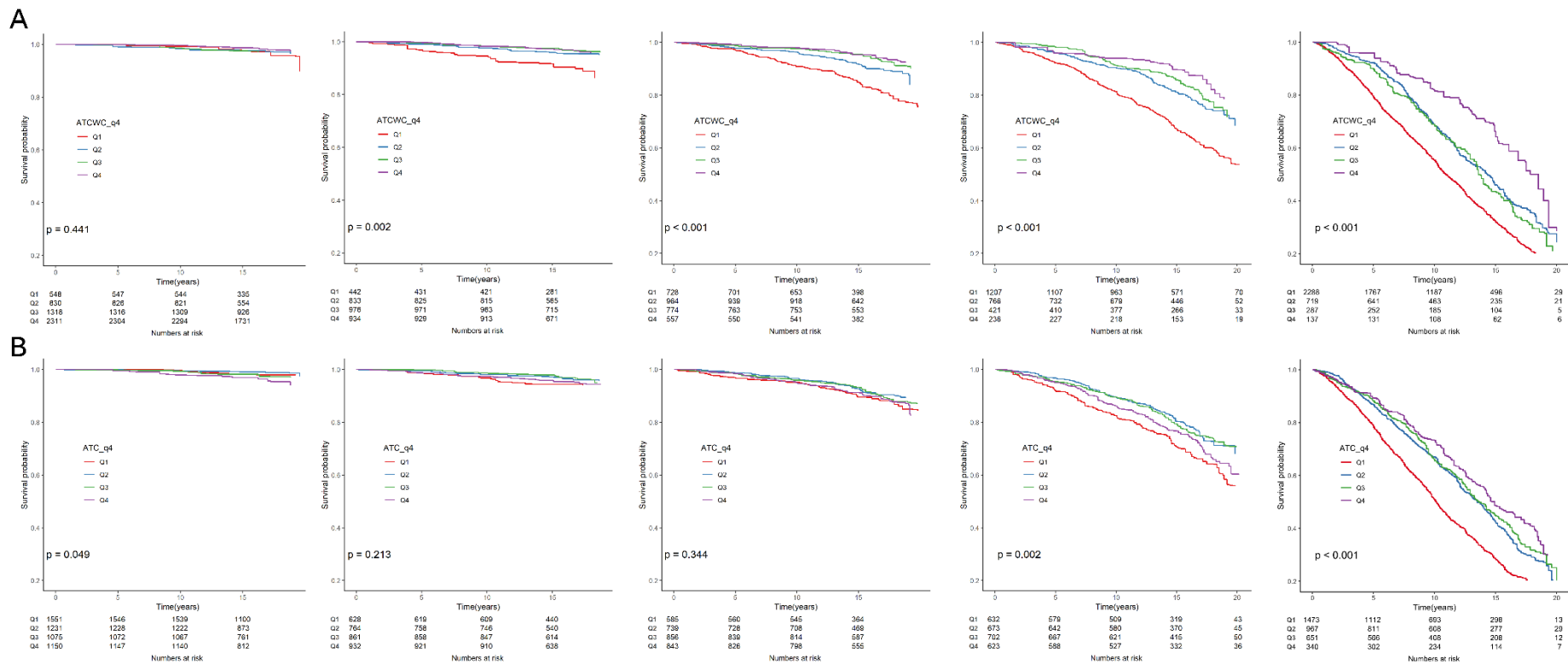


Figure S2 Kaplan Meier curves of ATC/WC, ATC, and all-cause mortality rate. Using Kaplan-Meier curves to evaluate the association of ATC/WC and ATC with all-cause mortality among five age subgroups: 18–30 years, 30–42 years, 42–54 years, 54–66 years, and >66 years.

Figure S2A Association between ATC/WC and all-cause mortality. **Figure S2B** Relationship between ATC and all-cause mortality. Within both figures, the age subgroups are sequentially arranged from left to right.

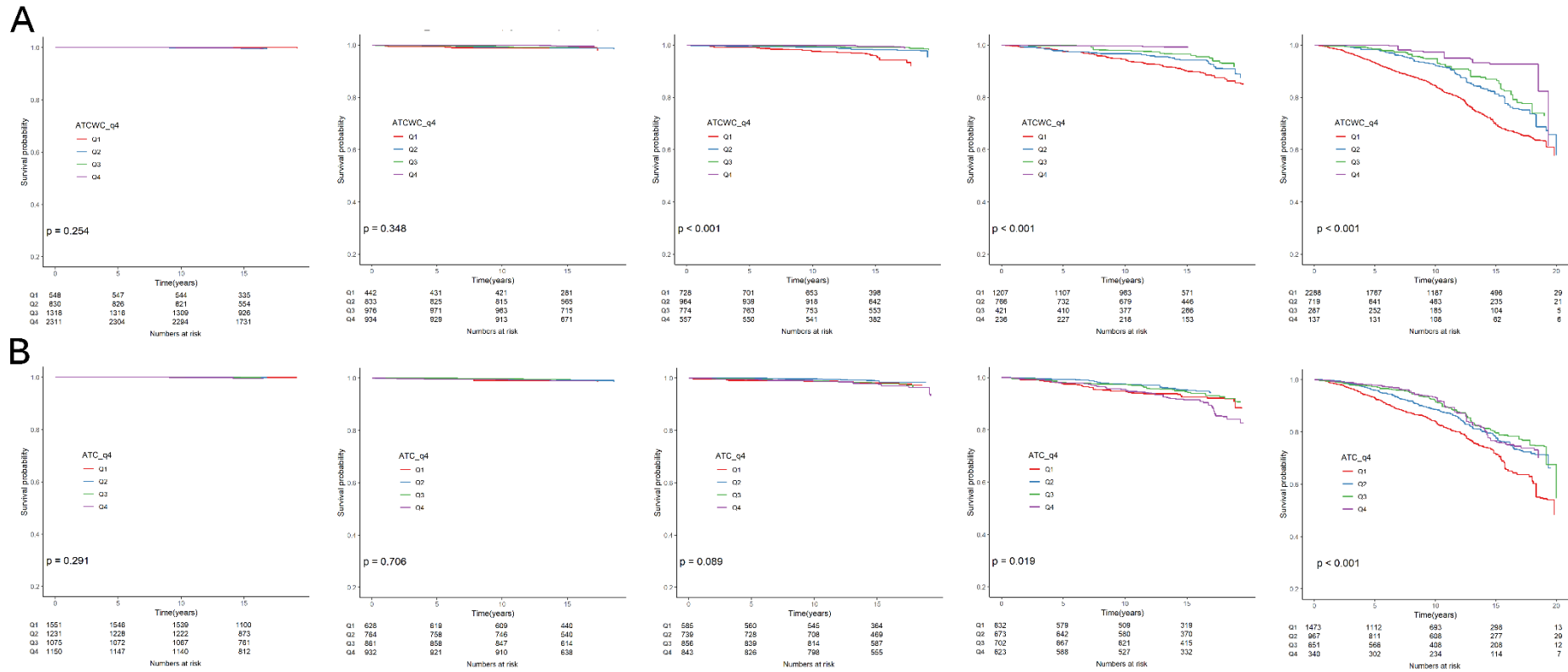


Figure S3 Kaplan Meier curves of ATC/WC, ATC, and cardiovascular mortality rate

Using Kaplan-Meier curves to evaluate the association of ATC/WC and ATC with cardiovascular mortality among five age subgroups: 18–30 years, 30–42 years, 42–54 years, 54–66 years, and >66 years. **Figure S3A** Association between ATC/WC and cardiovascular mortality. **Figure S3B** Relationship between ATC and cardiovascular mortality. Within both figures, the age subgroups are sequentially arranged from left to right.

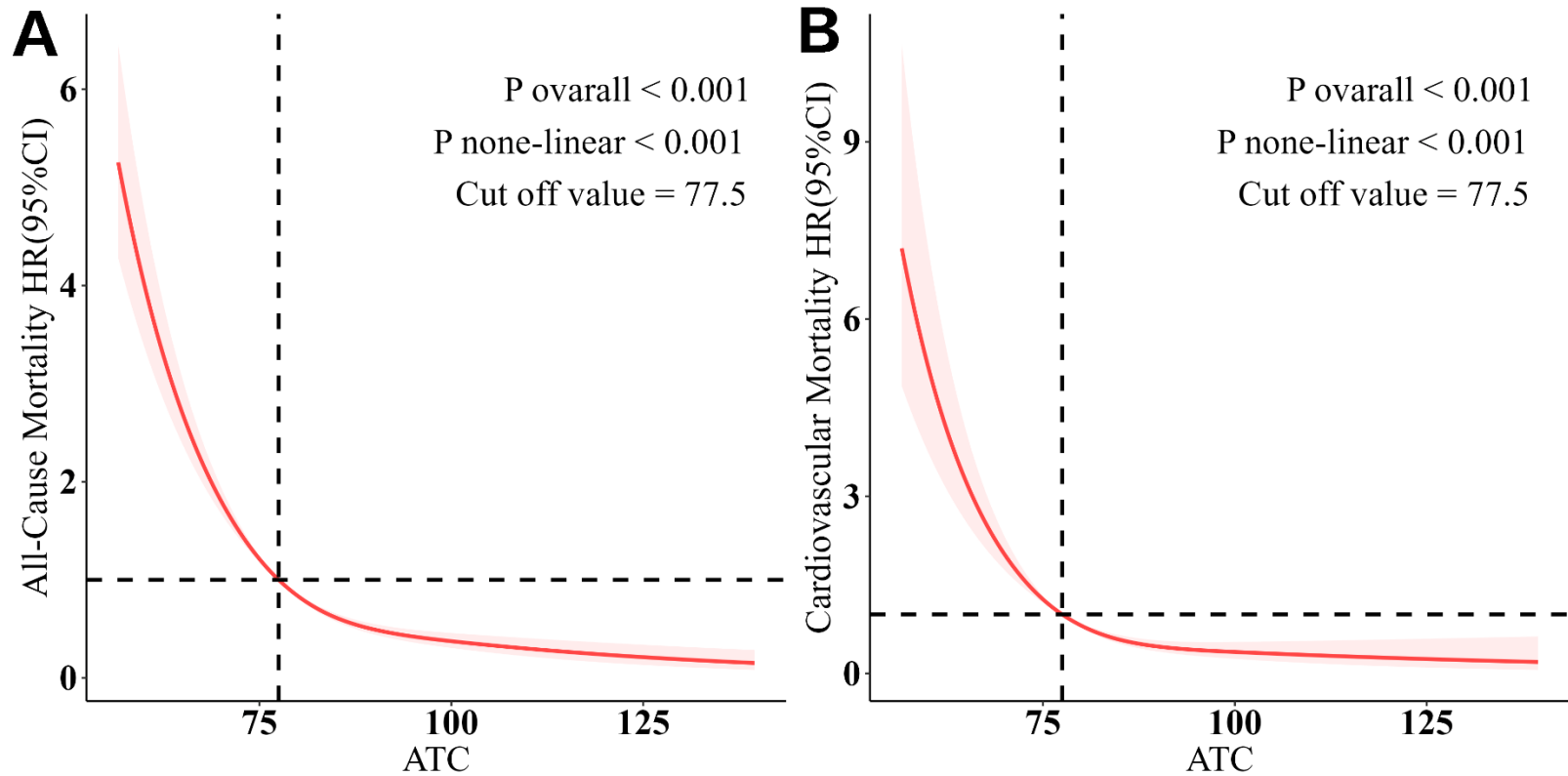


Figure S4. Association of ATC with all-cause mortality and cardiovascular mortality. The vertical axis represents the hazards ratio (HR) value. Shaded areas indicate 95% confidence intervals. The association was analyzed using a restricted cubic spline model, adjusted for age, sex, race, marital status, education, family income-poverty ratio, BMI, smoking, drinking, creatinine, uACR, hyperlipidemia, hypertension, diabetes, resting tachycardia, history of underlying diseases. **A** Association between ATC and all-cause mortality. **B** Association between ATC and cardiovascular mortality.

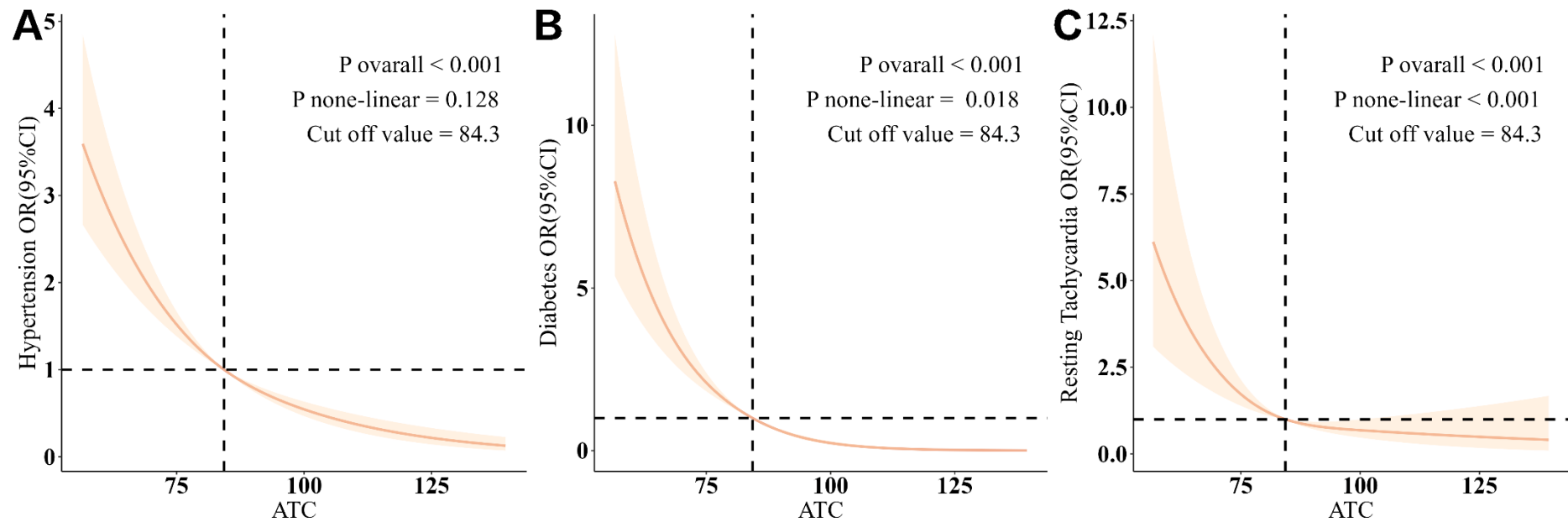


Figure S5. Association of ATC with hypertension, diabetes, and resting tachycardia. The vertical axis represents the odds ratio (OR) value. Shaded areas indicate 95% confidence intervals. The association was analyzed using a restricted cubic spline model, adjusted for age, sex, race, marital status, education, family income-poverty ratio, BMI, smoking, drinking, creatinine, uACR, hyperlipidemia, history of underlying diseases. **A** Association between ATC and hypertension. **B** Association between ATC and diabetes. **C** Association between ATC and resting tachycardia.

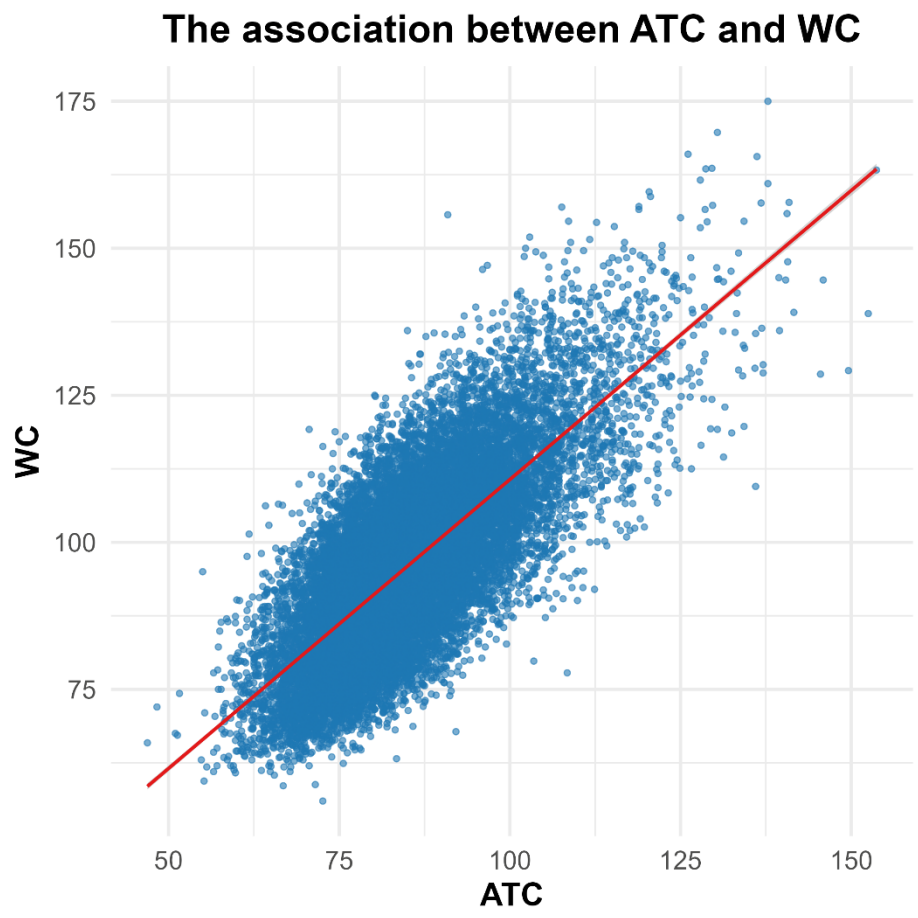
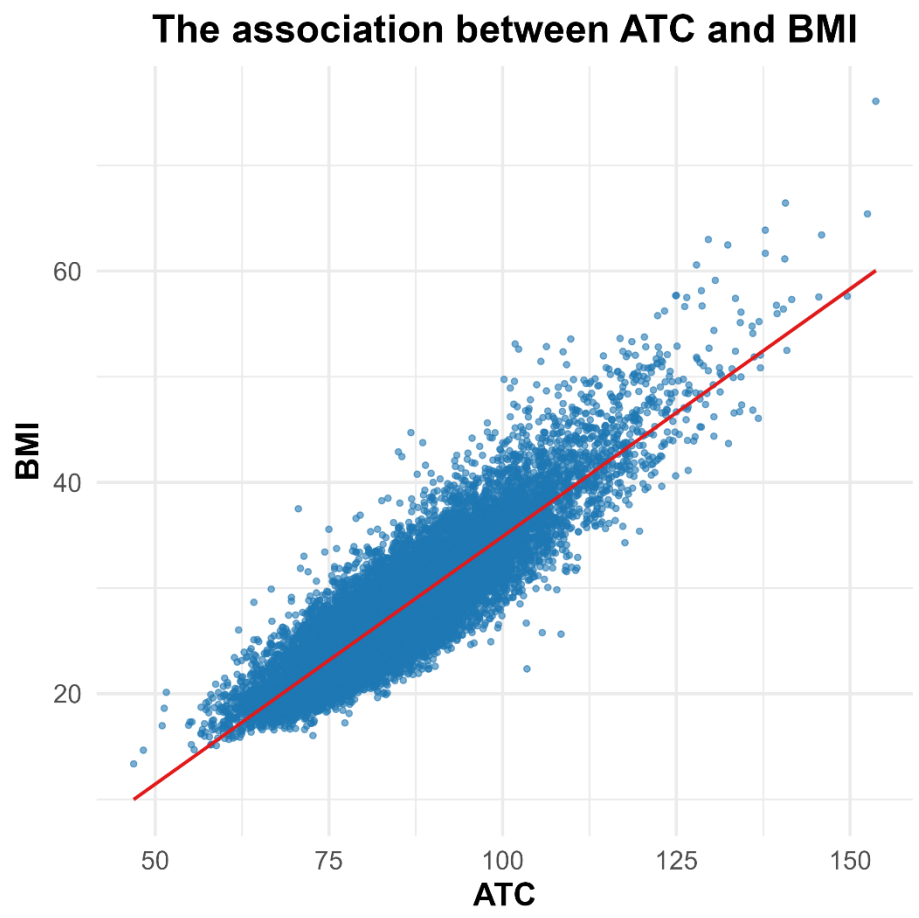


Figure S6. Association between ATC, BMI and WC. Described the distribution using a scatter plot.

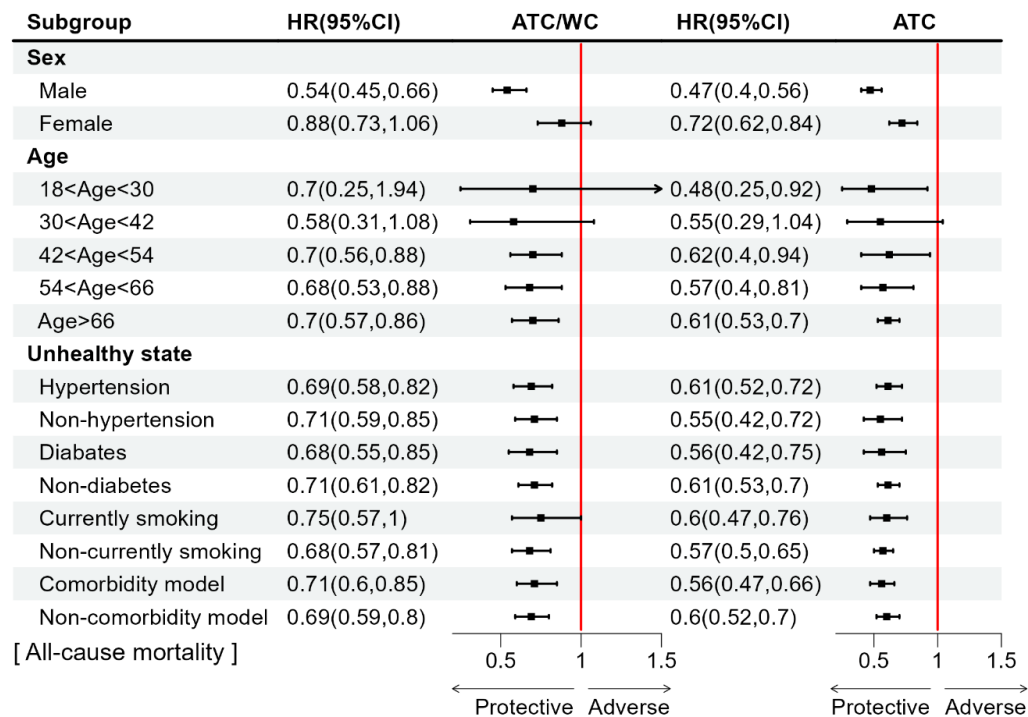


Figure S7. Subgroup analysis of the relationship between ATC/WC and ATC and all-cause mortality. All estimates accounted for complex survey designs. A total of 17,276 participants were included in the study. Assessed using multivariable weighted Cox regression. Adjusted for age, sex, race, marital status, education, family income-poverty ratio, BMI, smoking, drinking, creatinine, uACR, hyperlipidemia, hypertension, diabetes, resting tachycardia, history of underlying diseases. History of underlying diseases included any of the following: coronary artery disease, congestive heart failure, stroke, chronic bronchitis, asthma, or cancer. When a factor is treated as a subgroup variable, it is no longer adjusted for.

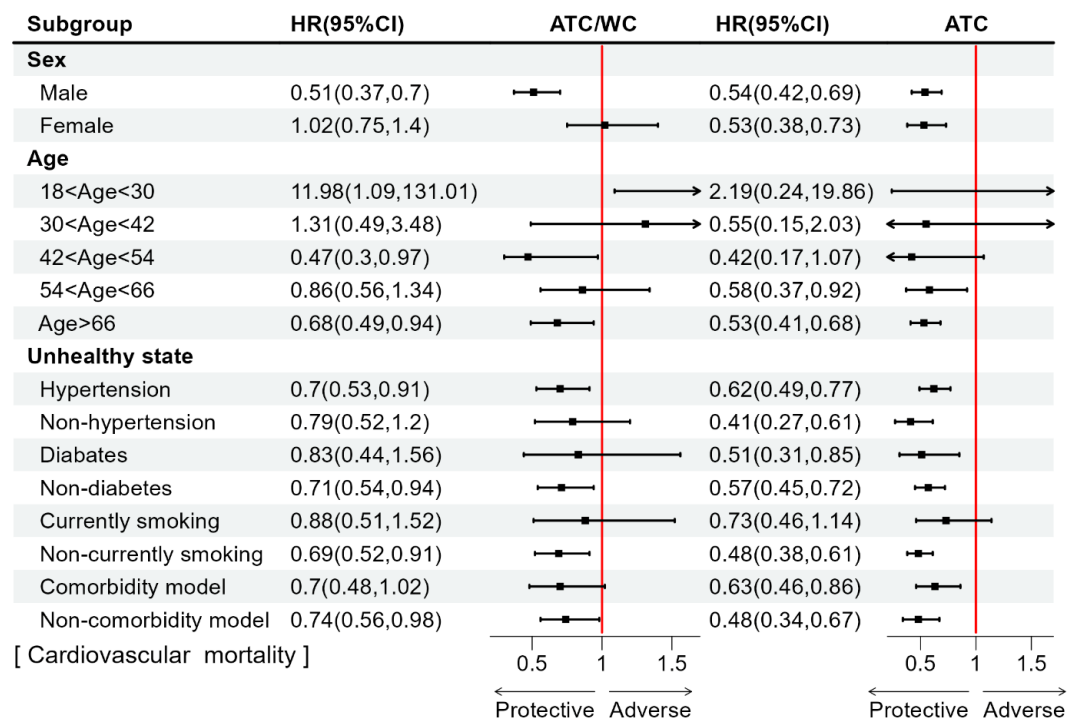


Figure S8. Subgroup analysis of the relationship between ATC/WC and ATC and cardiovascular mortality. All estimates accounted for complex survey designs. A total of 17,276 participants were included in the study. Assessed using multivariable weighted Cox regression. Adjusted for age, sex, race, marital status, education, family income-poverty ratio, BMI, smoking, drinking, creatinine, uACR, hyperlipidemia, hypertension, diabetes, resting tachycardia, history of underlying diseases. History of underlying diseases included any of the following: coronary artery disease, congestive heart failure, stroke, chronic bronchitis, asthma, or cancer. When a factor is treated as a subgroup variable, it is no longer adjusted for.

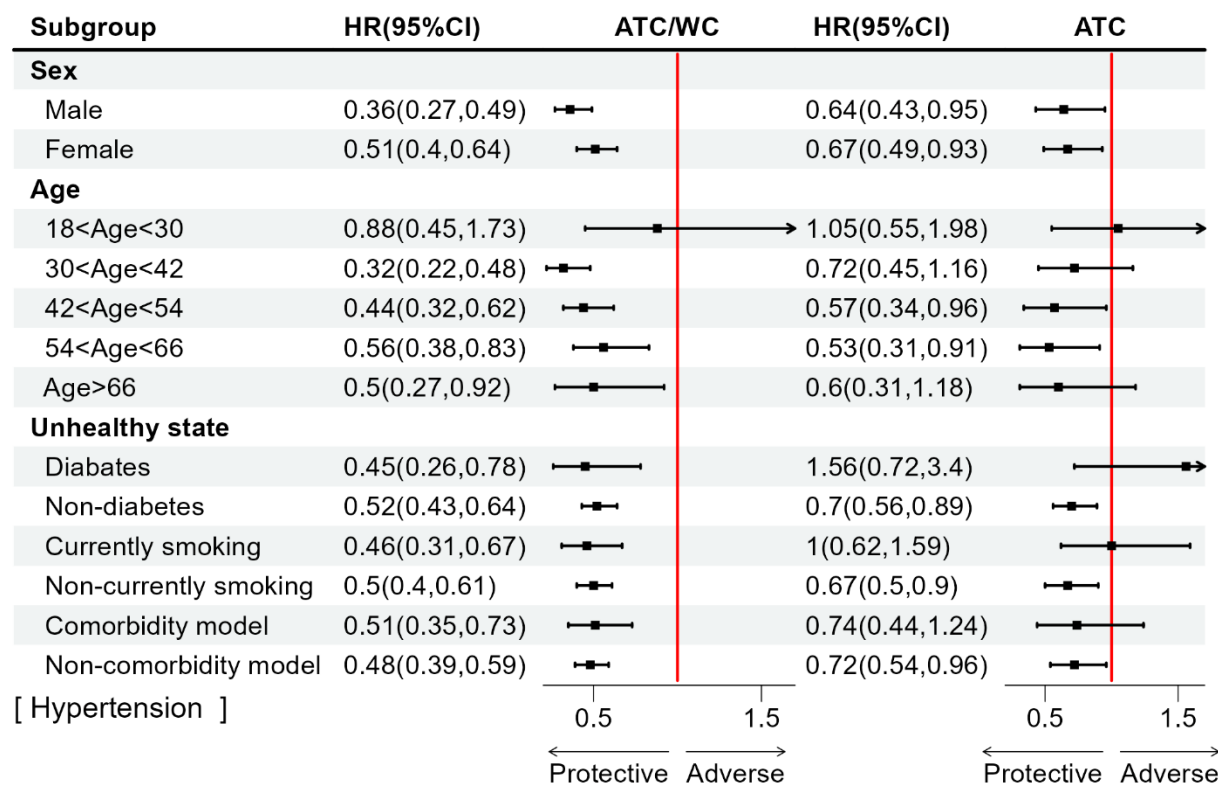


Figure S9. Subgroup analysis of the relationship between ATC/WC and ATC and hypertension (Q4 vs Q1). All estimates accounted for complex survey designs. A total of 17,276 participants were included in the study. Assessed using multivariable weighted generalized linear regression. Adjusted for age, sex, race, marital status, education, family income-poverty ratio, BMI, smoking, drinking, creatinine, uACR, hyperlipidemia, history of underlying diseases. History of underlying diseases included any of the following: coronary artery disease, congestive heart failure, stroke, chronic bronchitis, asthma, or cancer. When a factor is treated as a subgroup variable, it is no longer adjusted for.

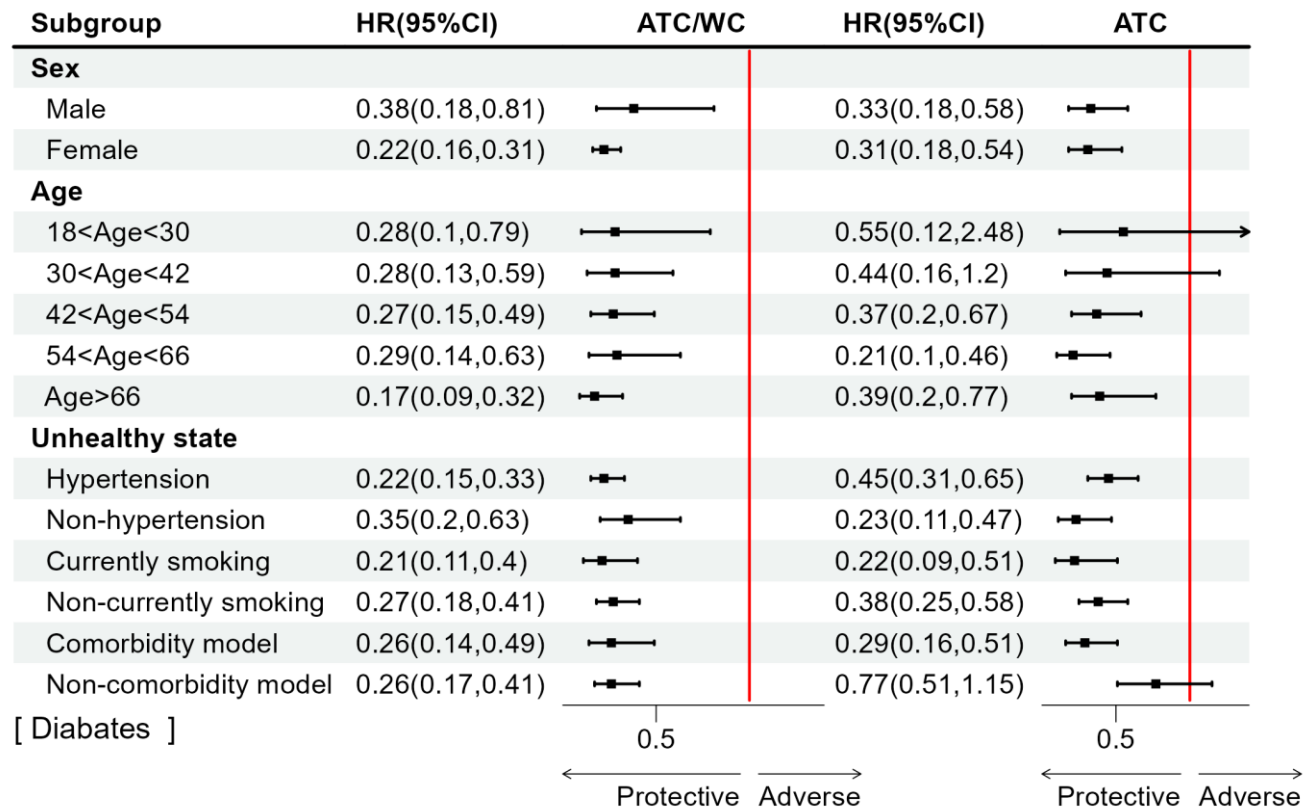


Figure S10. Subgroup analysis of the relationship between ATC/WC and ATC and diabetes (Q4 vs Q1). All estimates accounted for complex survey designs. A total of 17,276 participants were included in the study. Assessed using multivariable weighted generalized linear regression. Adjusted for age, sex, race, marital status, education, family income-poverty ratio, BMI, smoking, drinking, creatinine, uACR, hyperlipidemia, history of underlying diseases. History of underlying diseases included any of the following: coronary artery disease, congestive heart failure, stroke, chronic bronchitis, asthma, or cancer. When a factor is treated as a subgroup variable, it is no longer adjusted for.