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Figure S3. Association of TyG-related indices with all-cause mortality and cardiovascular mortality in hypertension-stratified population subgroups

Figure S4. Association of TyG-related indices with all-cause mortality and cardiovascular mortality in hyperlipidemia-stratified population subgroups

Figure S5. Association of TyG-related indices with all-cause mortality and cardiovascular mortality in smoking-stratified population subgroups

Table S1. Collinearity diagnostics of TyG-related indices

	TyG		TyG-ABSI		TyG-BMI	
	VIF ^a	Tolerance ^b	VIF ^a	Tolerance ^b	VIF ^a	Tolerance ^b
Index	1.30	0.77	1.14	0.88	1.19	0.84
Age (n)	1.07	0.93	1.07	0.93	1.07	0.93
Sex (n)	1.51	0.66	1.50	0.67	1.51	0.66
Uric Acid (umol/L)	1.10	0.91	1.09	0.92	1.12	0.89
TC (mg/dL)	1.44	0.70	1.30	0.77	1.25	0.80
HDL-C (mg/dL)	1.33	0.75	1.27	0.79	1.28	0.78
SBP (mmHg)	1.47	0.68	1.47	0.68	1.47	0.68
DBP (mmHg)	1.49	0.67	1.49	0.67	1.50	0.67
Alcohol consumption (n)	1.26	0.79	1.26	0.79	1.26	0.79
Smoking status (n)	1.26	0.80	1.26	0.80	1.26	0.79
Married status (n)	1.10	0.91	1.10	0.91	1.10	0.91
Education Level (n)	1.07	0.94	1.07	0.94	1.07	0.94

Variance inflation factor (VIF) is adopted to evaluate the multicollinearity among the variables of the regression models. It measures the extent of inflation of regression coefficients attributed to multicollinearity. VIF >10 is conventionally considered as an indication of strong multicollinearity. Tolerance is calculated as 1/VIF. Therefore, tolerance <0.1 indicates strong multicollinearity. Abbreviations: TC, total cholesterol; HDL-C, high-density lipoprotein cholesterol; SBP, systolic blood pressure; DBP, diastolic blood pressure; TyG, triglyceride-glucose index; ABSI, a body shape index; BMI, body mass index.

Table S2. Interaction of covariates with TyG-related indices on all-cause mortality and cardiovascular mortality

	<i>Interaction p value</i>		
	TyG	TyG-ABSI	TyG-BMI
<i>All-cause mortality</i>			
Sex (n)	<0.01	0.13	<0.001
Hypertension (n)	0.18	0.04	0.01
Hyperlipidemia (n)	0.20	0.91	0.03
Smoking status (n)	0.13	0.40	0.04
<i>Cardiovascular mortality</i>			
Age (n)	0.01	0.42	<0.001
Sex (n)	0.21	0.43	0.61
Hypertension (n)	0.07	0.06	0.35
Hyperlipidemia (n)	0.83	0.95	0.03
Smoking status(n)	0.38	0.26	0.58

Abbreviations: TyG, triglyceride-glucose index; ABSI, a body shape index; BMI, body mass index.

Table S3. Sensitivity analysis of association between TyG-related indices and mortality excluding early events (≤ 1 year)

	No. of deaths	Model 1		Model 2		Model 3	
		HR (95% CI)	P	HR (95% CI)	P	HR (95% CI)	P
All-cause mortality							
TyG							
Q1	1969	Reference		Reference		Reference	
Q2	1863	0.94 (0.88 – 1.00)	0.06	0.98 (0.92 – 1.05)	0.57	0.99 (0.93 – 1.06)	0.83
Q3	1788	0.90 (0.84 – 0.96)	<0.01	0.97 (0.91 – 1.04)	0.41	0.99 (0.93 – 1.06)	0.88
Q4	2093	1.07 (1.00 – 1.13)	0.04	1.22 (1.14 – 1.29)	<0.001	1.24 (1.16 – 1.33)	<0.001
P for trend			0.12		<0.001		<0.001
TyG-ABSI							
Q1	1802	Reference		Reference		Reference	
Q2	1729	0.96 (0.90 – 1.02)	0.19	0.97 (0.91 – 1.03)	0.34	0.99 (0.92 – 1.05)	0.66
Q3	1947	1.08 (1.02 – 1.16)	0.01	1.11 (1.04 – 1.18)	<0.01	1.13 (1.06 – 1.21)	<0.001
Q4	2235	1.26 (1.19 – 1.34)	<0.001	1.32 (1.24 – 1.41)	<0.001	1.35 (1.26 – 1.44)	<0.001
P for trend			<0.001		<0.001		<0.001
TyG-BMI							
Q1	2240	Reference		Reference		Reference	
Q2	1838	0.81 (0.76 – 0.86)	<0.001	0.83 (0.78 – 0.88)	<0.001	0.82 (0.77 – 0.87)	<0.001
Q3	1732	0.76 (0.71 – 0.80)	<0.001	0.79 (0.74 – 0.84)	<0.001	0.77 (0.72 – 0.82)	<0.001
Q4	1903	0.84 (0.79 – 0.89)	<0.001	0.91 (0.86 – 0.97)	<0.01	0.86 (0.80 – 0.92)	<0.001
P for trend			<0.001		<0.001		<0.001
Cardiovascular mortality							
TyG							
Q1	831	Reference		Reference		Reference	
Q2	798	0.96 (0.87 – 1.06)	0.42	0.99 (0.90 – 1.09)	0.82	0.97 (0.88 – 1.08)	0.61
Q3	783	0.94 (0.85 – 1.04)	0.21	1.00 (0.91 – 1.10)	0.99	0.98 (0.89 – 1.09)	0.72
Q4	968	1.17 (1.07 – 1.29)	<0.001	1.31 (1.19 – 1.44)	<0.001	1.25 (1.12 – 1.38)	<0.001
P for trend			<0.01		<0.001		<0.001
TyG-ABSI							
Q1	776	Reference		Reference		Reference	
Q2	744	0.96 (0.87 – 1.06)	0.40	0.96 (0.87 – 1.06)	0.46	0.97 (0.87 – 1.07)	0.53
Q3	835	1.08 (0.98 – 1.19)	0.13	1.09 (0.99 – 1.20)	0.10	1.08 (0.98 – 1.19)	0.14
Q4	1025	1.33 (1.22 – 1.47)	<0.001	1.36 (1.24 – 1.50)	<0.001	1.32 (1.20 – 1.46)	<0.001
P for trend			<0.001		<0.001		<0.001
TyG-BMI							
Q1	961	Reference		Reference		Reference	
Q2	781	0.81 (0.73 – 0.89)	<0.001	0.83 (0.75 – 0.91)	<0.001	0.80 (0.73 – 0.89)	<0.001
Q3	760	0.79 (0.71 – 0.86)	<0.001	0.82 (0.75 – 0.90)	<0.001	0.76 (0.69 – 0.84)	<0.001
Q4	878	0.91 (0.83 – 1.00)	0.04	0.98 (0.90 – 1.08)	0.74	0.86 (0.78 – 0.95)	<0.01
P for trend			0.03		0.62		<0.01

Model 1: unadjusted; Model 2: adjusted for age and sex; Model 3: adjusted for age, sex, uric acid, total cholesterol, high-density lipoprotein cholesterol, systolic blood pressure, diastolic blood pressure, alcohol consumption, smoking status, marital status, and education level. Abbreviations: HR, hazard ratio; CI, confidence interval; SD, standard deviation; TyG, triglyceride-glucose index; ABSI, a body shape index; BMI, body mass index.

Table S4. Sensitivity analysis of association between TyG-related indices and mortality excluding early events (≤ 2 years)

	No. of	Model 1		Model 2		Model 3	
	deaths	HR (95% CI)	P	HR (95% CI)	P	HR (95% CI)	P
All-cause mortality							
TyG							
Q1	1582	Reference		Reference		Reference	
Q2	1512	0.95 (0.89 – 1.02)	0.18	1.00 (0.93 – 1.07)	0.90	1.01 (0.94 – 1.08)	0.81
Q3	1490	0.94 (0.87 – 1.01)	0.07	1.02 (0.95 – 1.09)	0.61	1.04 (0.97 – 1.13)	0.25
Q4	1738	1.11 (1.03 – 1.18)	<0.01	1.27 (1.18 – 1.36)	<0.001	1.30 (1.21 – 1.41)	<0.001
P for trend			0.01		<0.001		<0.001
TyG-ABSI							
Q1	1455	Reference		Reference		Reference	
Q2	1392	0.95 (0.89 – 1.03)	0.21	0.97 (0.90 – 1.04)	0.36	0.98 (0.91 – 1.06)	0.66
Q3	1627	1.13 (1.05 – 1.21)	<0.01	1.15 (1.07 – 1.24)	<0.001	1.18 (1.09 – 1.26)	<0.001
Q4	1848	1.29 (1.21 – 1.38)	<0.001	1.36 (1.27 – 1.46)	<0.001	1.39 (1.29 – 1.49)	<0.001
P for trend			<0.001		<0.001		<0.001
TyG-BMI							
Q1	1805	Reference		Reference		Reference	
Q2	1511	0.83 (0.77 – 0.88)	<0.001	0.85 (0.79 – 0.91)	<0.001	0.85 (0.79 – 0.91)	<0.001
Q3	1426	0.78 (0.72 – 0.83)	<0.001	0.82 (0.76 – 0.87)	<0.001	0.80 (0.74 – 0.86)	<0.001
Q4	1580	0.87 (0.81 – 0.93)	<0.001	0.95 (0.89 – 1.02)	0.13	0.90 (0.83 – 0.96)	<0.01
P for trend			<0.001		0.05		<0.01
Cardiovascular mortality							
TyG							
Q1	677	Reference		Reference		Reference	
Q2	637	0.94 (0.84 – 1.05)	0.27	0.97 (0.87 – 1.08)	0.60	0.96 (0.86 – 1.07)	0.44
Q3	672	0.99 (0.89 – 1.11)	0.90	1.06 (0.95 – 1.18)	0.27	1.04 (0.93 – 1.17)	0.46
Q4	804	1.20 (1.08 – 1.33)	<0.001	1.34 (1.21 – 1.49)	<0.001	1.29 (1.15 – 1.44)	<0.001
P for trend			<0.001		<0.001		<0.001
TyG-ABSI							
Q1	639	Reference		Reference		Reference	
Q2	609	0.95 (0.85 – 1.06)	0.38	0.96 (0.86 – 1.07)	0.44	0.96 (0.86 – 1.08)	0.49
Q3	697	1.09 (0.98 – 1.22)	0.10	1.10 (0.99 – 1.23)	0.08	1.09 (0.98 – 1.22)	0.12
Q4	845	1.33 (1.20 – 1.48)	<0.001	1.37 (1.24 – 1.52)	<0.001	1.33 (1.19 – 1.48)	<0.001
P for trend			<0.001		<0.001		<0.001
TyG-BMI							
Q1	781	Reference		Reference		Reference	
Q2	648	0.83 (0.74 – 0.92)	<0.001	0.85 (0.76 – 0.94)	0.00	0.82 (0.74 – 0.91)	<0.001
Q3	625	0.80 (0.72 – 0.88)	<0.001	0.83 (0.75 – 0.93)	<0.001	0.78 (0.70 – 0.87)	<0.001
Q4	736	0.94 (0.85 – 1.04)	0.23	1.02 (0.92 – 1.13)	0.70	0.90 (0.81 – 1.00)	0.05
P for trend			0.17		0.86		0.04

Model 1: unadjusted; Model 2: adjusted for age and sex; Model 3: adjusted for age, sex, uric acid, total cholesterol, high-density lipoprotein cholesterol, systolic blood pressure, diastolic blood pressure, alcohol consumption, smoking status, marital status, and education level. Abbreviations: HR, hazard ratio; CI, confidence interval; SD, standard deviation; TyG, triglyceride-glucose index; ABSI, a body shape index; BMI, body mass index.

Table S5. Sensitivity analysis of association between TyG-related indices and mortality using multiple imputation approach

	No. of	Model 1		Model 2		Model 3	
	deaths	HR (95% CI)	P	HR (95% CI)	P	HR (95% CI)	P
All-cause mortality							
TyG							
Q1	2263	Reference		Reference		Reference	
Q2	2121	0.93 (0.88-0.99)	0.02	0.97 (0.91-1.03)	0.31	1.01 (0.95-1.08)	0.64
Q3	1985	0.86 (0.81-0.92)	<0.001	0.93 (0.88-0.99)	0.02	1.03 (0.97-1.10)	0.34
Q4	2291	1.01 (0.95-1.07)	0.79	1.15 (1.08-1.21)	<0.001	1.46 (1.34-1.58)	<0.001
P for trend			0.43		<0.001		<0.001
TyG-ABSI							
Q1	2069	Reference		Reference		Reference	
Q2	1956	0.94 (0.88-1.00)	0.05	0.95 (0.89-1.01)	0.11	0.99 (0.93-1.05)	0.76
Q3	2160	1.04 (0.98-1.11)	0.18	1.06 (1.00-1.13)	0.05	1.14 (1.07-1.22)	<0.001
Q4	2475	1.21 (1.14-1.28)	<0.001	1.27 (1.20-1.34)	<0.001	1.46 (1.36-1.56)	<0.001
P for trend			<0.001		<0.001		<0.001
TyG-BMI							
Q1	2569	Reference		Reference		Reference	
Q2	2088	0.79 (0.75-0.84)	<0.001	0.81 (0.77-0.86)	<0.001	0.81 (0.77-0.86)	<0.001
Q3	1929	0.73 (0.69-0.77)	<0.001	0.76 (0.72-0.81)	<0.001	0.75 (0.70-0.80)	<0.001
Q4	2074	0.79 (0.74-0.83)	<0.001	0.86 (0.81-0.91)	<0.001	0.82 (0.77-0.88)	<0.001
P for trend			<0.001		<0.001		<0.001
Cardiovascular mortality							
TyG							
Q1	969	Reference		Reference		Reference	
Q2	917	0.95 (0.86-1.03)	0.22	0.97 (0.89-1.06)	0.52	0.98 (0.89-1.07)	0.63
Q3	875	0.90 (0.82-0.98)	0.02	0.95 (0.87-1.04)	0.30	0.99 (0.89-1.09)	0.77
Q4	1079	1.12 (1.03-1.22)	0.01	1.24 (1.14-1.36)	<0.001	1.38 (1.22-1.55)	<0.001
P for trend			<0.01		<0.001		<0.001
TyG-ABSI							
Q1	904	Reference		Reference		Reference	
Q2	857	0.95 (0.86-1.04)	0.24	0.95 (0.87-1.04)	0.29	0.97 (0.88-1.07)	0.52
Q3	930	1.03 (0.94-1.13)	0.55	1.03 (0.94-1.13)	0.47	1.06 (0.97-1.17)	0.21
Q4	1149	1.28 (1.18-1.40)	<0.001	1.31 (1.20-1.42)	<0.001	1.36 (1.23-1.51)	<0.001
P for trend			<0.001		<0.001		<0.001
TyG-BMI							
Q1	1114	Reference		Reference		Reference	
Q2	901	0.80 (0.73-0.88)	<0.001	0.82 (0.75-0.90)	<0.001	0.80 (0.73-0.87)	<0.001
Q3	846	0.75 (0.69-0.82)	<0.001	0.79 (0.72-0.86)	<0.001	0.73 (0.66-0.80)	<0.001
Q4	979	0.87 (0.80-0.95)	<0.01	0.94 (0.86-1.03)	0.18	0.82 (0.75-0.91)	<0.001
P for trend			0.01		0.58		<0.01

Model 1: unadjusted; Model 2: adjusted for age and sex; Model 3: adjusted for age, sex, uric acid, total cholesterol, high-density lipoprotein cholesterol, systolic blood pressure, diastolic blood pressure, alcohol consumption, smoking status, marital status, and education level. Abbreviations: HR, hazard ratio; CI, confidence interval; SD, standard deviation; TyG, triglyceride-glucose index; ABSI, a body shape index; BMI, body mass index.

Table S6. Sensitivity analysis of association between TyG-related indices and mortality using competing risk models

	No. of deaths	Model 1		Model 2		Model 3	
		HR (95% CI)	P	HR (95% CI)	P	HR (95% CI)	P
All-cause mortality							
TyG							
Q1	2238	Reference		Reference		Reference	
Q2	2102	0.93 (0.88 – 0.99)	0.02	0.97 (0.92 – 1.03)	0.34	0.98 (0.92 – 1.04)	0.55
Q3	1960	0.86 (0.81 – 0.91)	<0.001	0.93 (0.88 – 0.99)	0.02	0.95 (0.89 – 1.01)	0.12
Q4	2273	1.01 (0.95 – 1.07)	0.70	1.15 (1.08 – 1.22)	<0.001	1.18 (1.10 – 1.26)	<0.001
P for trend			0.68		<0.001		<0.001
TyG-ABSI							
Q1	2052	Reference		Reference		Reference	
Q2	1937	0.94 (0.88 – 1.00)	0.04	0.95 (0.89 – 1.01)	0.10	0.97 (0.91 – 1.03)	0.30
Q3	2127	1.03 (0.97 – 1.10)	0.28	1.05 (0.99 – 1.12)	0.09	1.08 (1.02 – 1.15)	0.01
Q4	2457	1.21 (1.14 – 1.29)	<0.001	1.27 (1.20 – 1.35)	<0.001	1.30 (1.22 – 1.38)	<0.001
P for trend			<0.001		<0.001		<0.001
TyG-BMI							
Q1	2549	Reference		Reference		Reference	
Q2	2067	0.79 (0.75 – 0.84)	<0.001	0.81 (0.77 – 0.86)	<0.001	0.81 (0.76 – 0.86)	<0.001
Q3	1894	0.72 (0.68 – 0.76)	<0.001	0.75 (0.71 – 0.80)	<0.001	0.73 (0.69 – 0.78)	<0.001
Q4	2063	0.79 (0.74 – 0.83)	<0.001	0.86 (0.81 – 0.91)	<0.001	0.81 (0.76 – 0.86)	<0.001
P for trend			<0.001		<0.001		<0.001
Cardiovascular mortality							
TyG							
Q1	960	Reference		Reference		Reference	
Q2	908	0.95 (0.86 – 1.04)	0.23	0.97 (0.89 – 1.06)	0.51	0.95 (0.87 – 1.05)	0.32
Q3	868	0.90 (0.82 – 0.99)	0.02	0.95 (0.87 – 1.05)	0.32	0.93 (0.85 – 1.03)	0.17
Q4	1068	1.12 (1.02 – 1.22)	0.01	1.24 (1.14 – 1.36)	<0.001	1.18 (1.07 – 1.30)	<0.01
P for trend			0.04		<0.001		<0.01
TyG-ABSI							
Q1	899	Reference		Reference		Reference	
Q2	849	0.94 (0.86 – 1.04)	0.21	0.95 (0.86 – 1.04)	0.25	0.95 (0.87 – 1.05)	0.31
Q3	916	1.02 (0.93 – 1.12)	0.70	1.02 (0.93 – 1.12)	0.62	1.02 (0.93 – 1.12)	0.70
Q4	1140	1.28 (1.17 – 1.40)	<0.001	1.30 (1.19 – 1.42)	<0.001	1.26 (1.15 – 1.38)	<0.001
P for trend			<0.001		<0.001		<0.001
TyG-BMI							
Q1	1108	Reference		Reference		Reference	
Q2	888	0.79 (0.73 – 0.87)	<0.001	0.82 (0.75 – 0.89)	<0.001	0.79 (0.72 – 0.87)	<0.001
Q3	835	0.75 (0.68 – 0.82)	<0.001	0.78 (0.71 – 0.85)	<0.001	0.72 (0.66 – 0.79)	<0.001
Q4	973	0.87 (0.80 – 0.95)	<0.01	0.94 (0.87 – 1.03)	0.19	0.83 (0.75 – 0.91)	<0.001
P for trend			<0.001		0.10		<0.001

Model 1: unadjusted; Model 2: adjusted for age and sex; Model 3: adjusted for age, sex, uric acid, total cholesterol, high-density lipoprotein cholesterol, systolic blood pressure, diastolic blood pressure, alcohol consumption, smoking status, marital status, and education level. Abbreviations: HR, hazard ratio; CI, confidence interval; SD, standard deviation; TyG, triglyceride-glucose index; ABSI, a body shape index; BMI, body mass index.

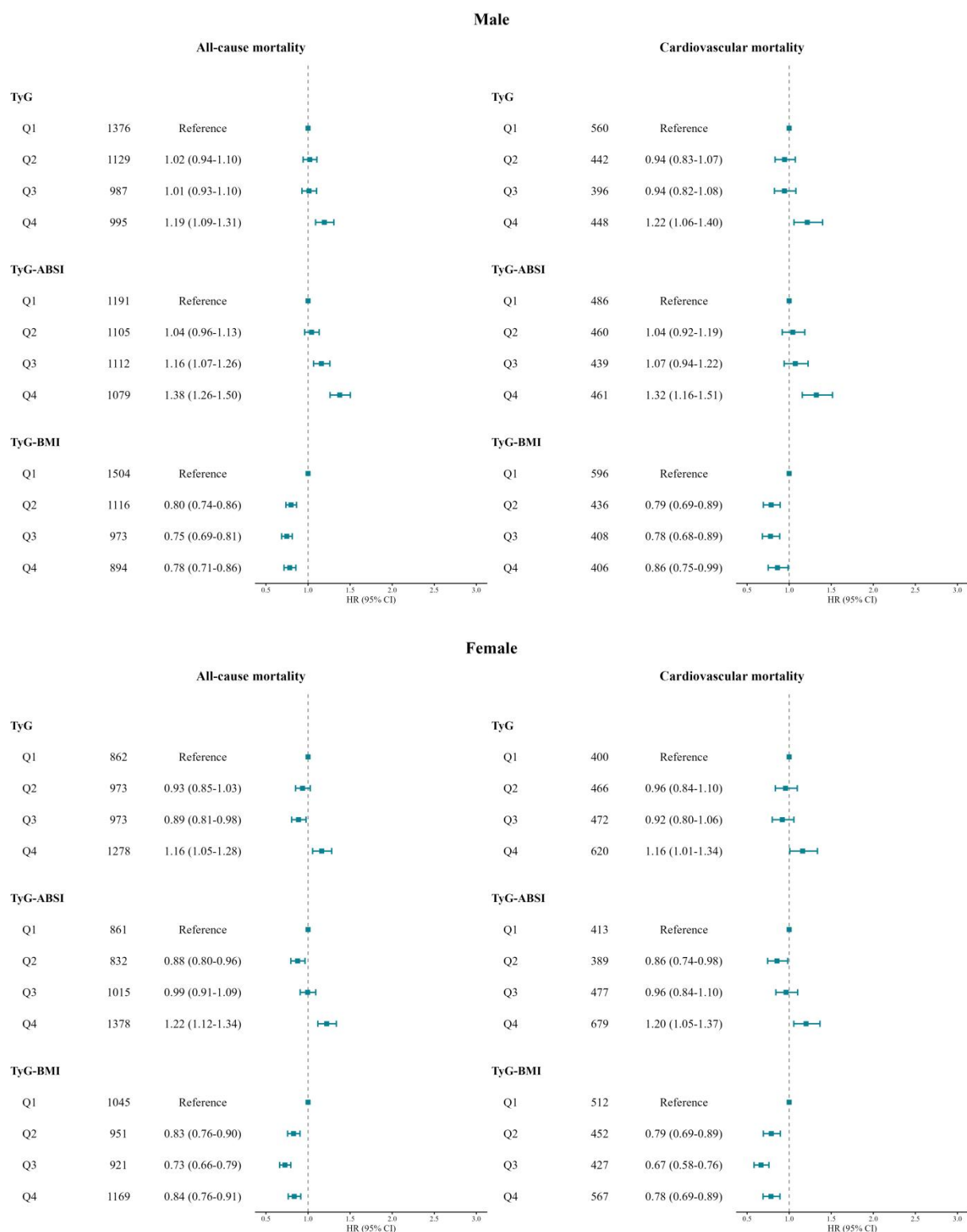


Figure S1. Association of TyG-related indices with all-cause mortality and cardiovascular mortality in sex-stratified population subgroups. Data are presented as hazard ratios with 95% confidence intervals. Models were adjusted for age, uric acid, total cholesterol, high-density lipoprotein cholesterol, systolic blood pressure, diastolic blood pressure, alcohol consumption, smoking status, marital status, and education level, except for the stratification variable to avoid over-adjustment. Abbreviations: TyG, triglyceride-glucose index; ABSI, a body shape index; BMI, body mass index.

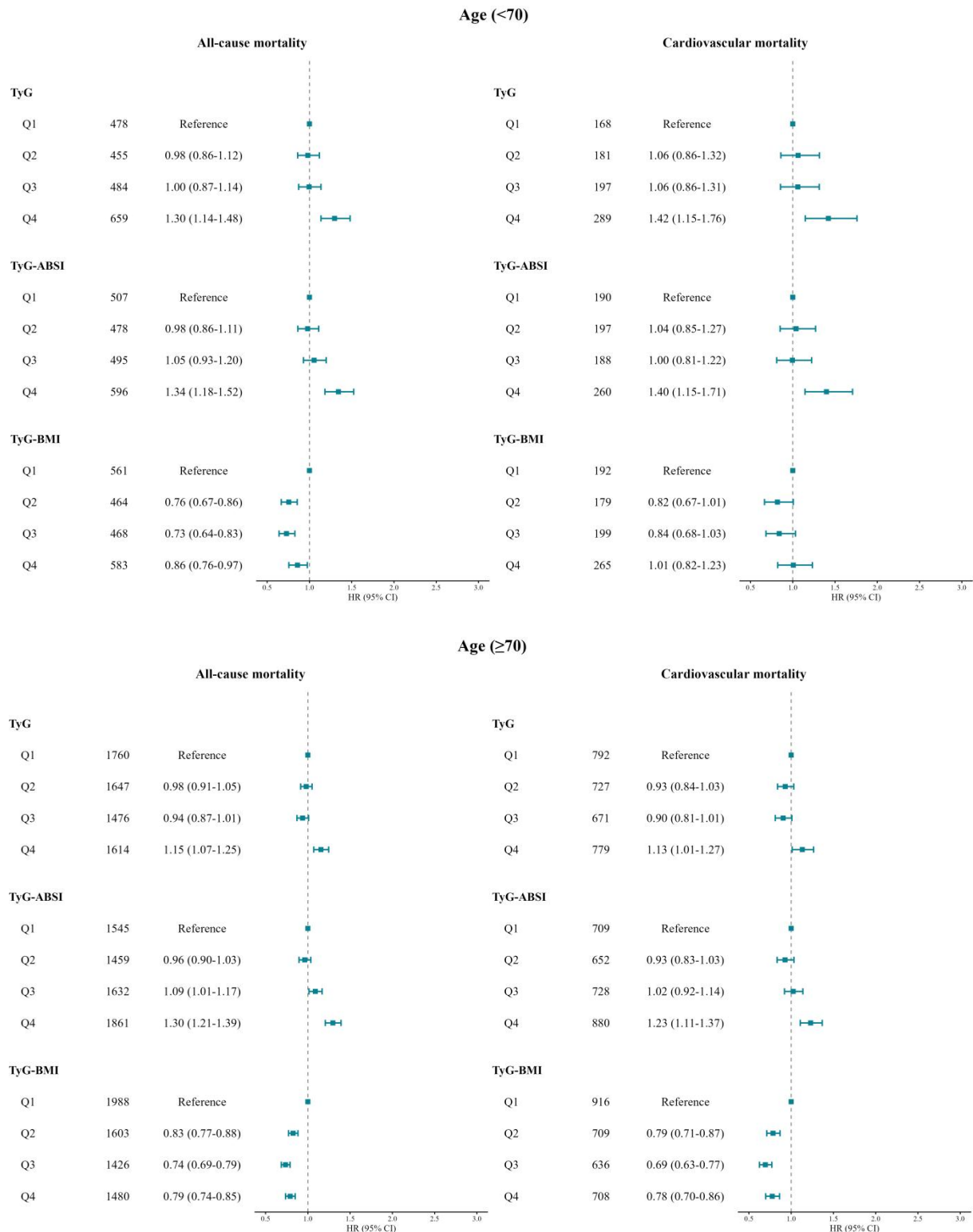


Figure S2. Association of TyG-related indices with all-cause mortality and cardiovascular mortality in age-stratified population subgroups. Data are presented as hazard ratios with 95% confidence intervals. Models were adjusted for sex, uric acid, total cholesterol, high-density lipoprotein cholesterol, systolic blood pressure, diastolic blood pressure, alcohol consumption, smoking status, marital status, and education level, except for the stratification variable to avoid over-adjustment. Abbreviations: TyG, triglyceride-glucose index; ABSI, a body shape index; BMI, body mass index.

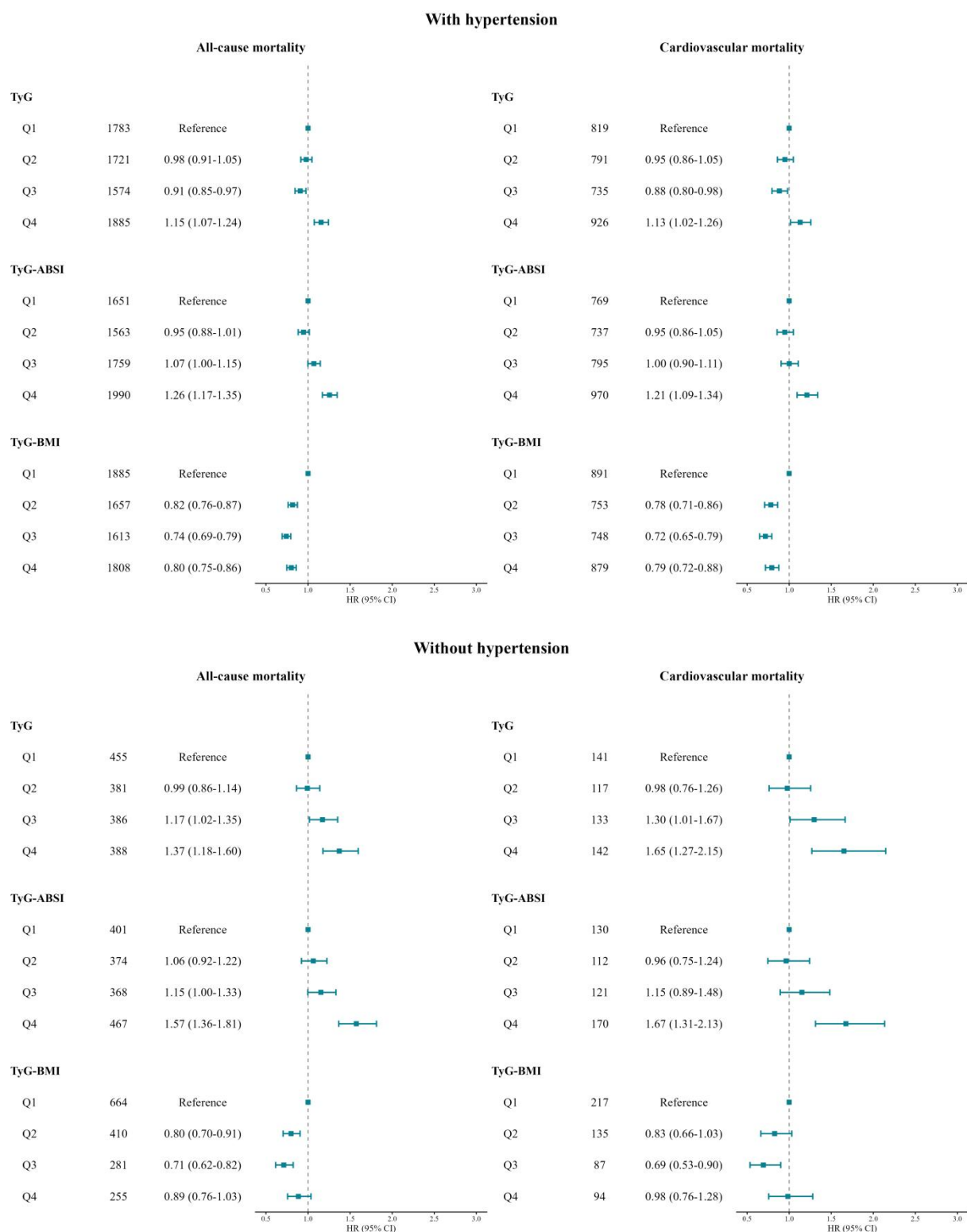


Figure S3. Association of TyG-related indices with all-cause mortality and cardiovascular mortality in hypertension-stratified population subgroups. Data are presented as hazard ratios with 95% confidence intervals. Models were adjusted for sex, age, uric acid, total cholesterol, high-density lipoprotein cholesterol, systolic blood pressure, diastolic blood pressure, alcohol consumption, smoking status, marital status, and education level, except for the stratification variable to avoid over-adjustment. Abbreviations: TyG, triglyceride-glucose index; ABSI, a body shape index; BMI, body mass index.

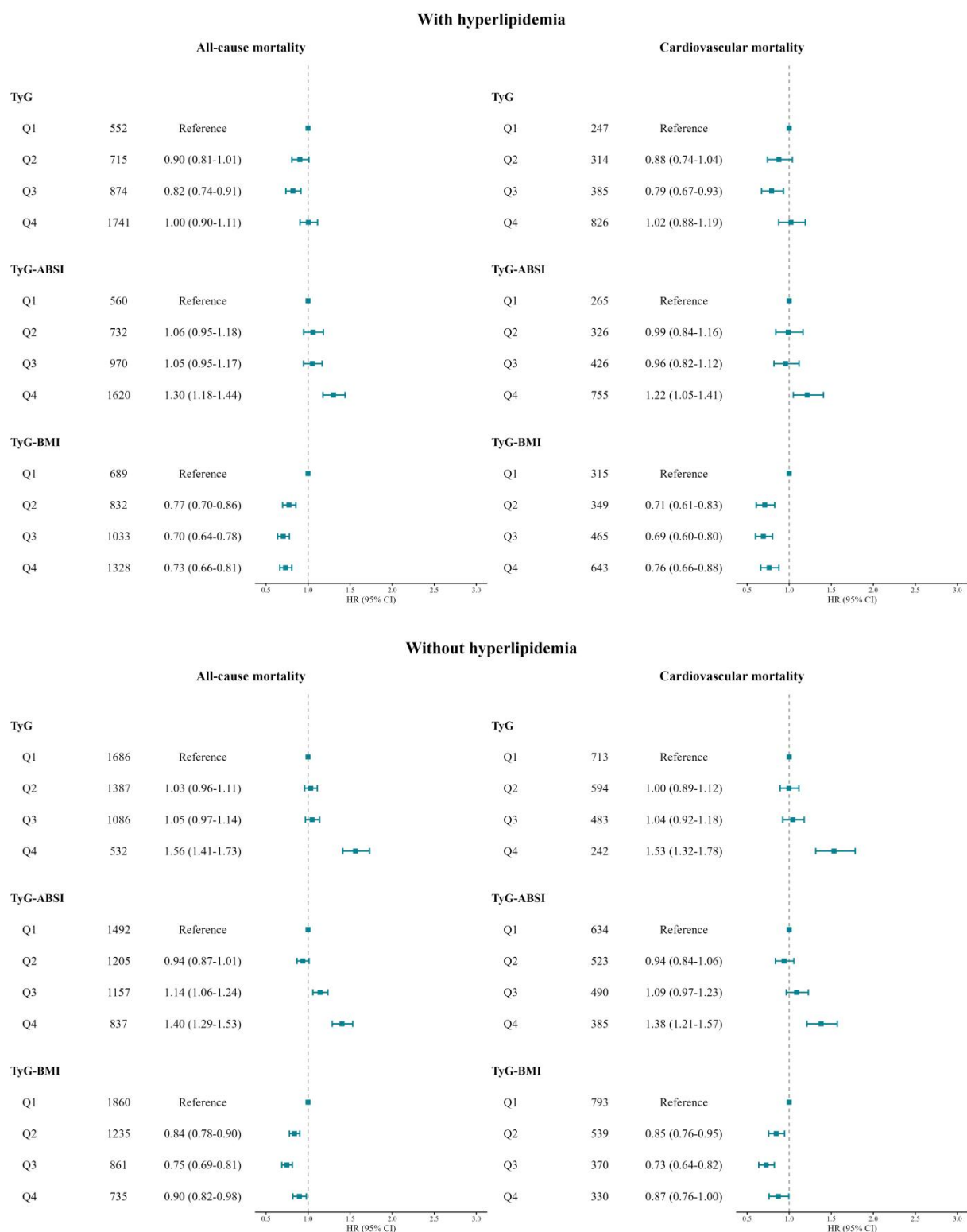


Figure S4. Association of TyG-related indices with all-cause mortality and cardiovascular mortality in hyperlipidemia-stratified population subgroups. Data are presented as hazard ratios with 95% confidence intervals. Models were adjusted for sex, age, uric acid, total cholesterol, high-density lipoprotein cholesterol, systolic blood pressure, diastolic blood pressure, alcohol consumption, smoking status, marital status, and education level, except for the stratification variable to avoid over-adjustment. Abbreviations: TyG, triglyceride-glucose index; ABSI, a body shape index; BMI, body mass index.

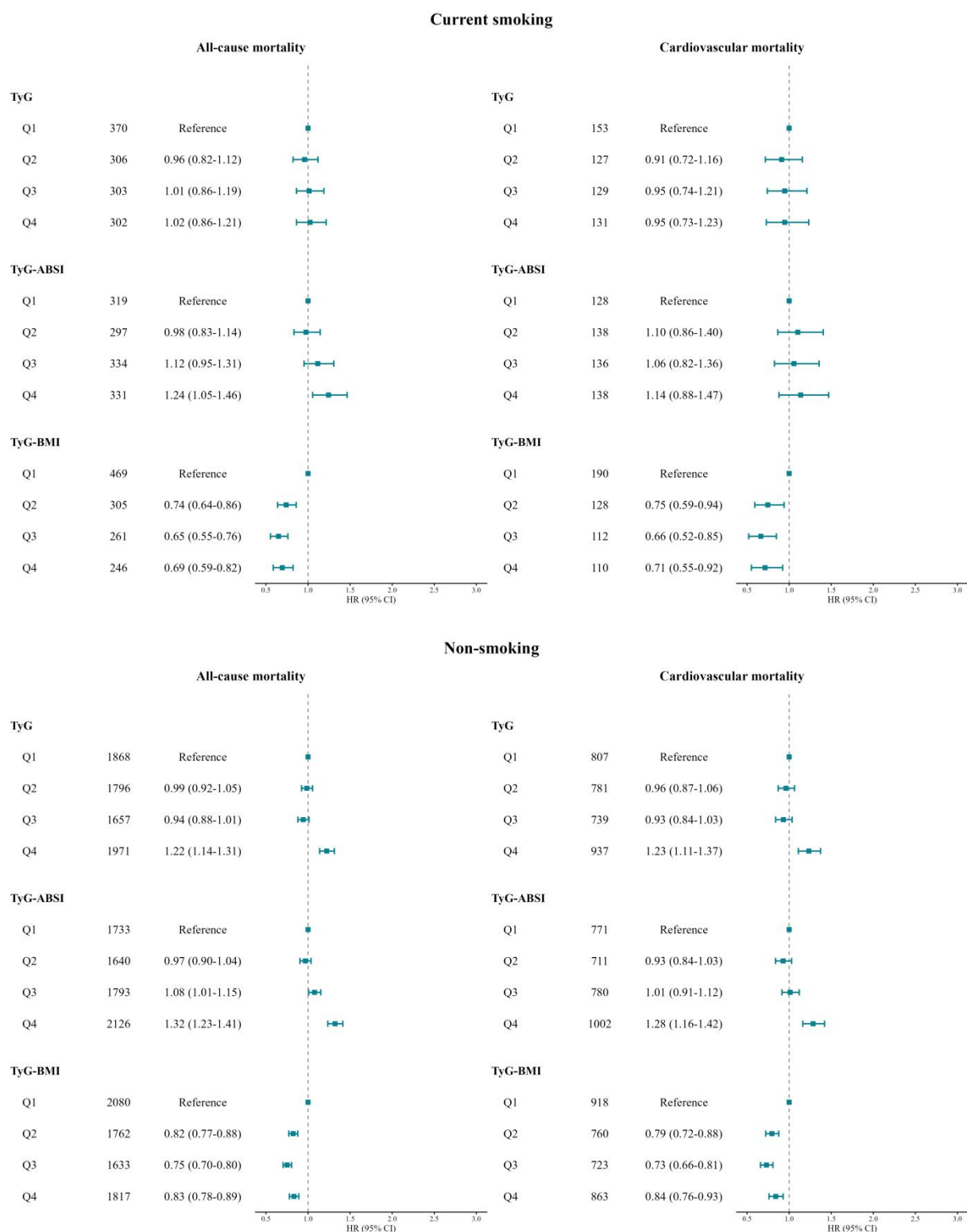


Figure S5. Association of TyG-related indices with all-cause mortality and cardiovascular mortality in smoking-stratified population subgroups. Data are presented as hazard ratios with 95% confidence intervals. Models were adjusted for sex, age, uric acid, total cholesterol, high-density lipoprotein cholesterol, systolic blood pressure, diastolic blood pressure, alcohol consumption, marital status, and education level, except for the stratification variable to avoid over-adjustment. Abbreviations: TyG, triglyceride-glucose index; ABSI, a body shape index; BMI, body mass index.