Supplementary Table 1. Characteristics of the study population, stratified by obesity status.

Variables	BMI<28 kg/m^2	BMI>=28 kg/m^2
Age	57.7±10	58.5±9.7
Sex		
Female	5266(62.5)	819(68.9)
Male	3165(37.5)	370(31.1)
Body mass index, kg/m^2	23.3±2.5	30.1±2.1
Waist circumference, cm	81.3±8.3	96±6.8
Waist-to-hip ratio	0.88±0.07	0.93±0.06
LDL cholesterol, mg/dl	126.1±29.8	130.3±31.8
HDL cholesterol, mg/dl	62±13.6	56±11.7
Triglycerides, mg/dl	116.9±80.1	154±85.9
Triglycerides/HDL cholesterol ratio	2.1±1.9	3±2.1
Systolic blood pressure, mmHg	133.1±20.4	141.7±21
Diastolic blood pressure, mmHg	84±11	89.2±11.5
Fasting blood glucose, mg/dl	97.1±29.4	104.7±31.5
Metabolic disorders		
Increased LDL cholesterol	3364(39.9)	553(46.5)
Decreased HDL cholesterol	815(9.7)	246(20.7)
Increased triglycerides	1650(19.6)	475(39.9)
Central obesity	3490(41.4)	1165(98)
Increased blood pressure	5124(60.8)	952(80.1)
Increased fasting blood glucose	2234(26.5)	517(43.5)
Medications		
Lipid-lowering drugs	140(1.7)	43(3.6)
Anti-diabetic drugs	585(6.9)	166(14)
Anti-hypertensive drugs	1241(14.7)	375(31.5)
Smoking		
Never	76(0.9)	902(75.9)
Former	751(8.9)	85(7.1)
Current	1584(18.8)	180(15.1)
Unknown	120(1.4)	22(1.9)
Alcohol drinking		
Never	6991(82.9)	978(82.3)
Former	243(2.9)	40(3.4)
Current	997(11.8)	142(11.9)
Unknown	200(2.4)	29(2.4)

Abbreviations: LDL, low-density lipoprotein; HDL, high-density lipoprotein.

Supplementary Table 2. Slopes (95% CIs) of the linear association between anthropometric indices and lipids.

Variables	Slope (95% CI)*	*P* value
LDL cholesterol		
BMI (kg/m^2)	0.71(0.51,0.91)	<0.001
WC (cm)	0.29(0.23,0.35)	<0.001
WHR	47.20(37.48,56.92)	<0.001
HDL cholesterol		
BMI (kg/m^2)	-1.10(-1.18,-1.02)	<0.001
WC (cm)	-0.40(-0.42,-0.38)	<0.001
WHR	-47.9(-52.04,-43.76)	<0.001
Triglycerides		
BMI (kg/m^2)	4.29(3.80,4.78)	<0.001
WC (cm)	1.70(1.52,1.88)	<0.001
WHR	230.9(205.81,255.99)	<0.001
Triglycerides/HDL cholesterol ratio		
BMI (kg/m^2)	0.14(0.12,0.16)	<0.001
WC (cm)	0.05(0.05,0.05)	<0.001
WHR	6.98(6.35,7.61)	<0.001

* Adjusted for age, sex and number of metabolic disorders (excluding central obesity and the lipid of focus). Abbreviations: BMI, body mass index; CI, confidence interval; LDL, low-density lipoprotein; HDL, high-density lipoprotein; WC, waist circumference; WHR, waist-to-hip ratio.

Supplementary Table 3. Slopes (95% CIs) of the association between anthropometric indices and lipids below or above the estimated break point in prospective study among population with repeated measurements.

Variables	Break-point	Below break-point		Above break-point	
		Slope (95% CI)*	*P* value	Slope (95% CI)*	*P* value
LDL cholesterol					
BMI (kg/m^2)	22	2.03(0.46,3.60)	0.011	0.16(-0.33,0.65)	0.539
WC (cm)	79	0.59(0.20,0.98)	0.003	0.04(-0.18,0.26)	0.671
WHR	0.9	72.0(38.9,105.1)	<0.001	19.2(-23.9,62.3)	0.383
HDL cholesterol					
BMI (kg/m^2)	27	-1.51(-1.73,-1.29)	<0.001	-0.36(-0.87,0.15)	0.164
WC (cm)	96	-0.54(-0.60,-0.48)	<0.001	0.22(-0.13,0.57)	0.232
WHR	1.0	-59.92(-67.9,-51.9)	<0.001	12.5(-75.1,100.1)	0.780
Triglycerides					
BMI (kg/m^2)	26	4.47(2.80,6.14)	<0.001	3.47(0.88,6.06)	0.009
WC (cm)	86	2.00(1.45,2.55)	<0.001	1.00(0,2.00)	0.049
WHR	1.0	220.0(169.0,270.9)	<0.001	577.5(8.3,1146.7)	0.049
Triglycerides/HDL cholesterol ratio					
BMI (kg/m^2)	26	0.14(0.10,0.18)	<0.001	0.09(0.03,0.15)	0.008
WC (cm)	95	0.06(0.05,0.07)	<0.001	-0.001(-0.06,0.06)	0.975
WHR	1.0	6.80(5.57,8.03)	<0.001	8.66(-4.67,21.99)	0.205

* Adjusted for age, sex and number of metabolic disorders (excluding central obesity and the lipid of focus). Abbreviations: BMI, body mass index; CI, confidence interval; LDL, low-density lipoprotein; HDL, high-density lipoprotein; WC, waist circumference; WHR, waist-to-hip ratio.

Supplementary Table 4. Characteristics of women in the study population, stratified by menopause.

Variables	Post-menopause(N=4415)	Pre-menopause(N=1577)
Age	61.0±60.8	44.9±44.6
Body mass index, kg/m2	24.5±24.4	23.7±23.5
Waist circumference,cm	83.3±83.0	78.0±77.6
Waist-to-hip ratio	0.9±0.9	0.8±0.8
LDL cholesterol, mg/dl	132.4±131.5	114.1±112.7
HDL cholesterol, mg/dl	64.2±63.8	63.6±63.0
Triglycerides, mg/dl	125.8±123.3	98.6±95.0
Triglycerides/HDL cholesterol ratio	2.2±1.9	1.7±1.7

Abbreviations: LDL, low-density lipoprotein; HDL, high-density lipoprotein.
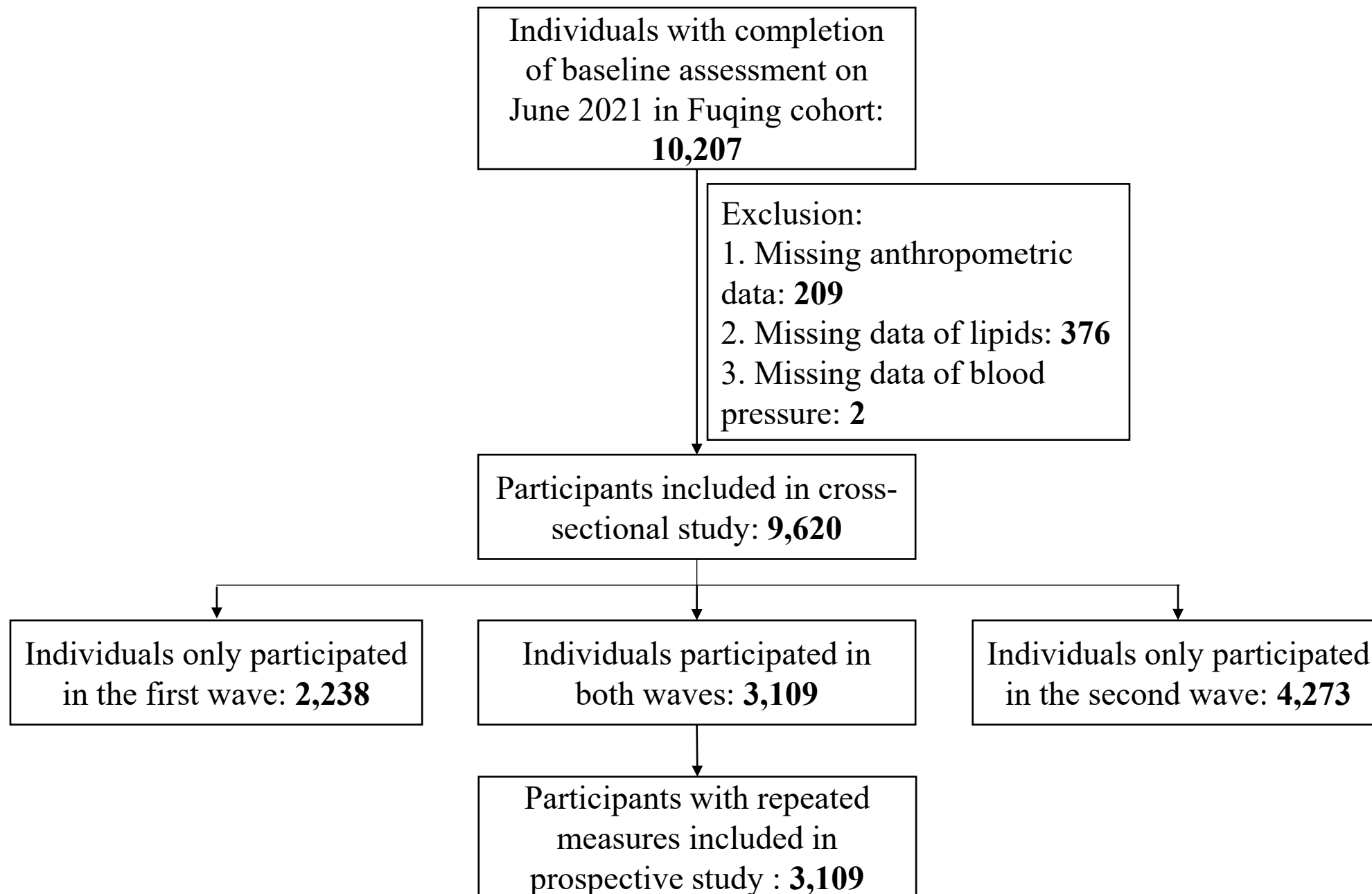
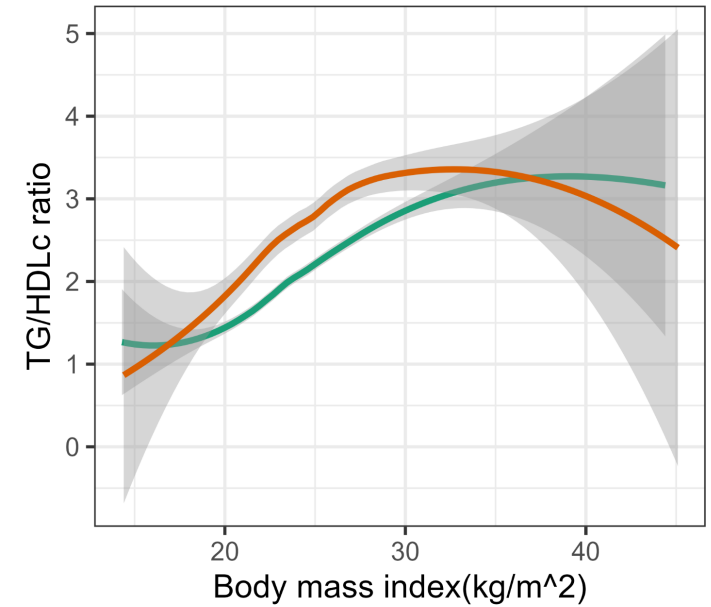**Supplementary Figure 1.** Flowchart of the study population.
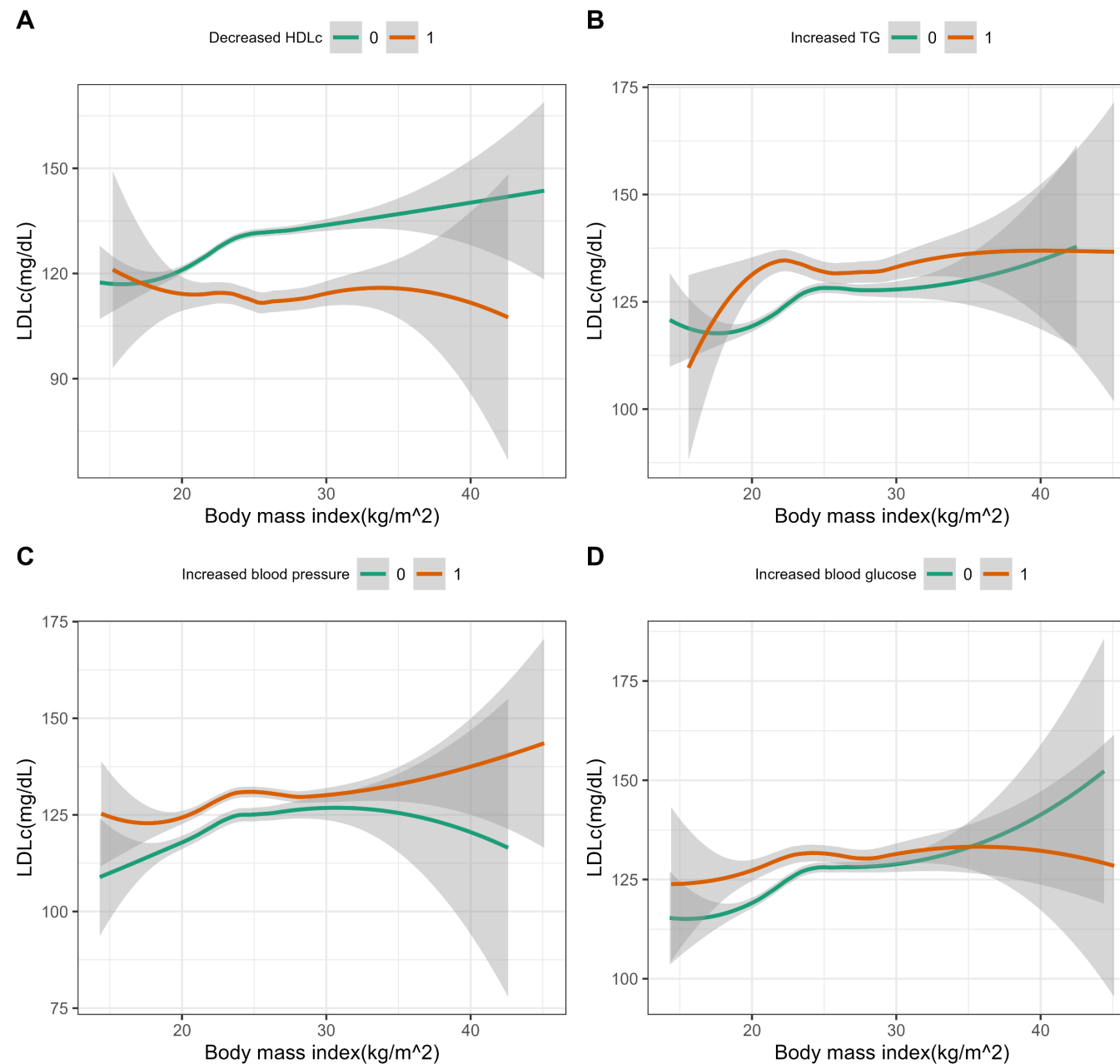
Supplementary Figure 2. Loess regressions between body mass index and LDL cholesterol stratified by specific metabolic disorder.
A. Stratified by decreased HDL cholesterol; B. Stratified by increased triglycerides; C. Stratified by increased blood pressure ;
D. Stratified by increased blood glucose.
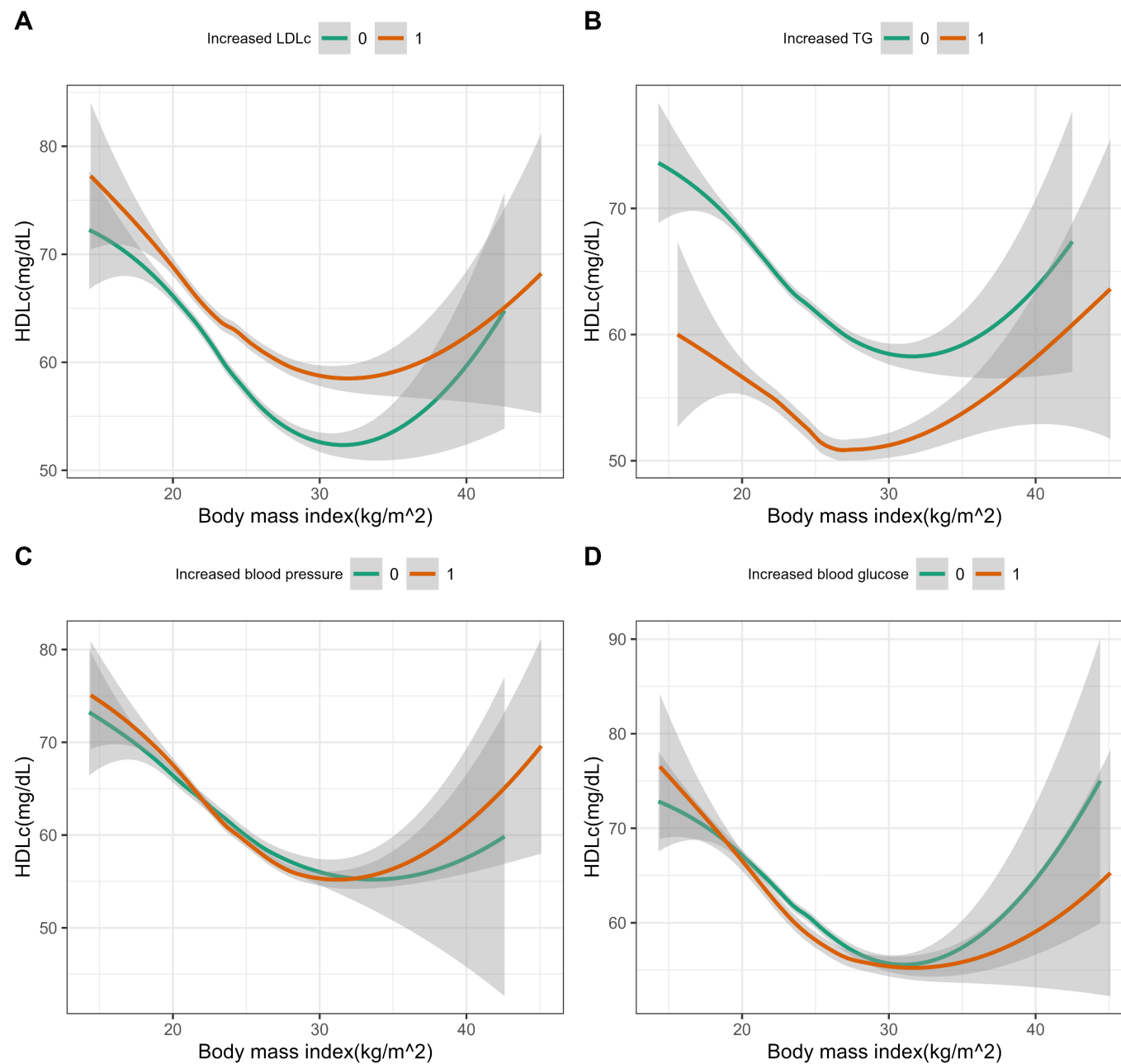
Supplementary Figure 3. Loess regressions between body mass index and HDL cholesterol stratified by specific metabolic disorder.
A. Stratified by increased LDL cholesterol; B. Stratified by increased triglycerides; C. Stratified by increased blood pressure ;
D. Stratified by increased blood glucose.
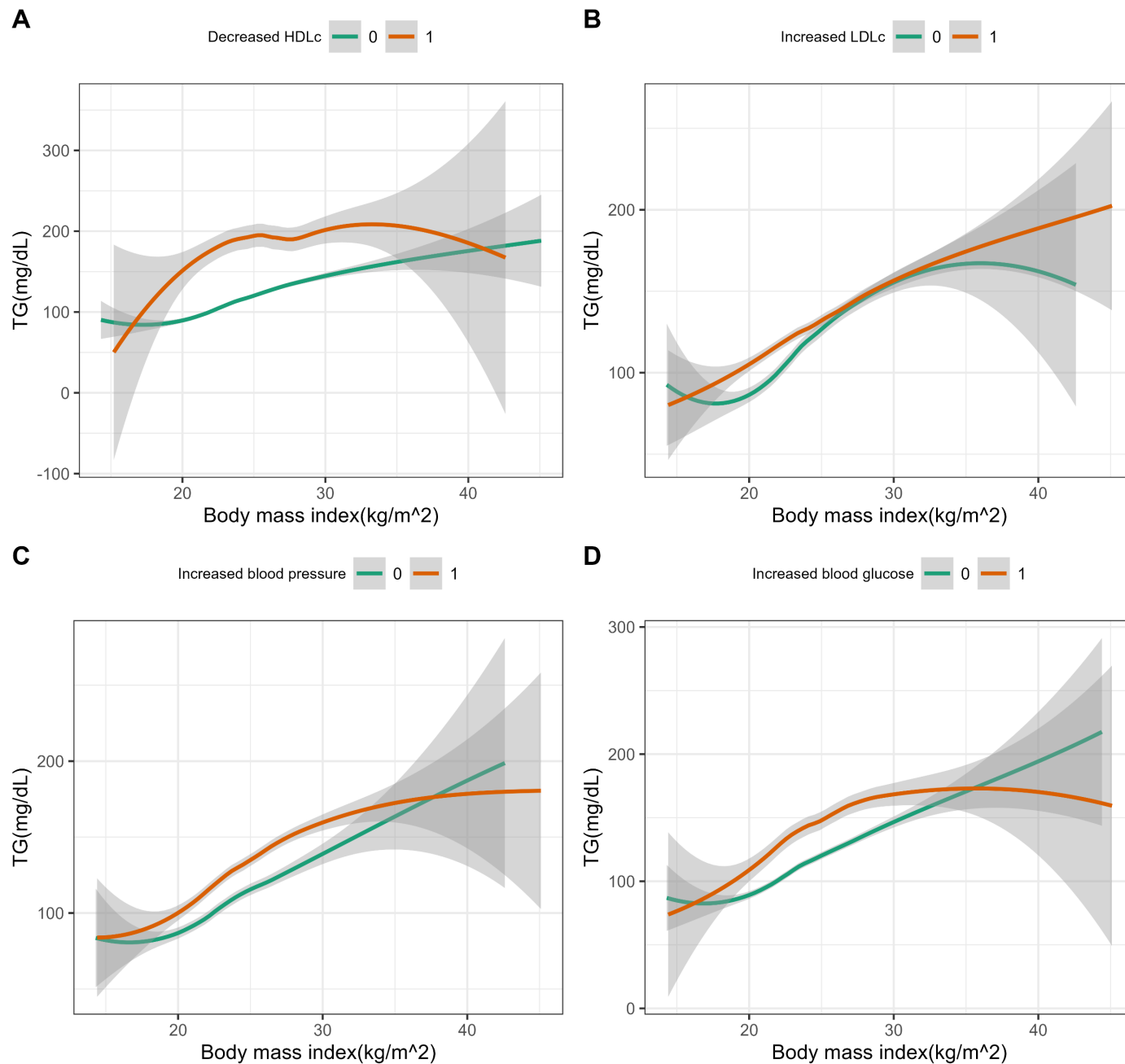
Supplementary Figure 4. Loess regressions between body mass index and triglyerides stratified by specific metabolic disorder. A. Stratified by decreased HDL cholesterol; B. Stratified by increased LDL cholesterol; C. Stratified by increased blood pressure ; D. Stratified by increased blood glucose.
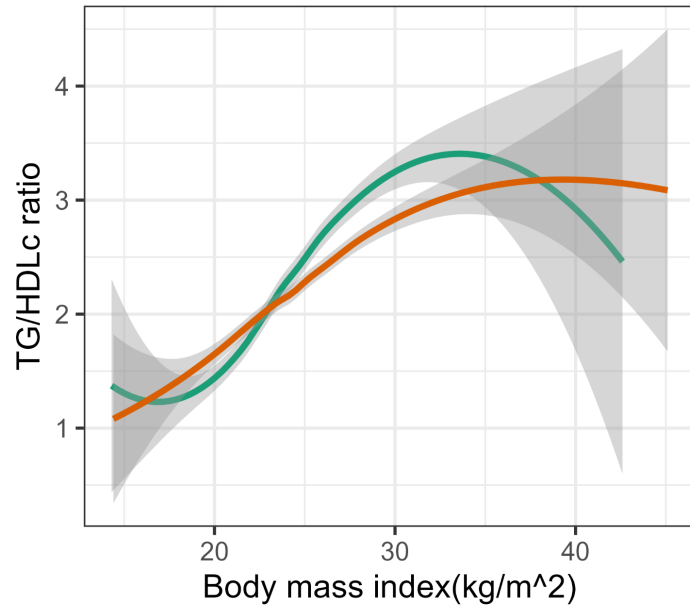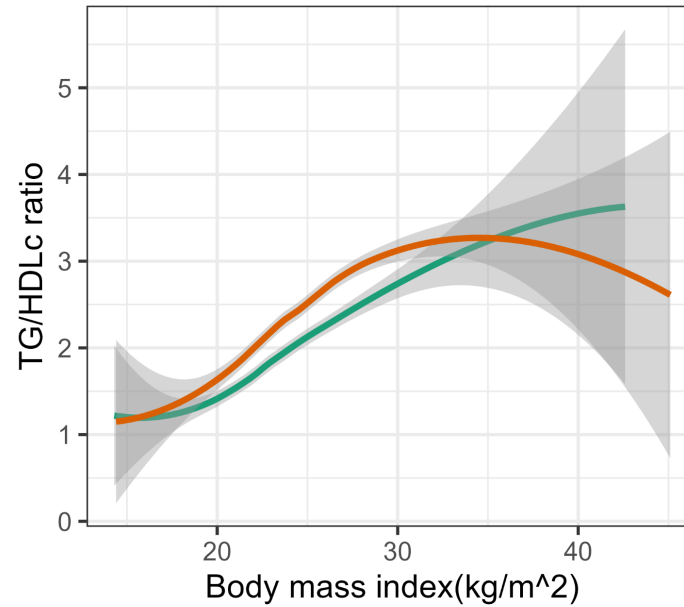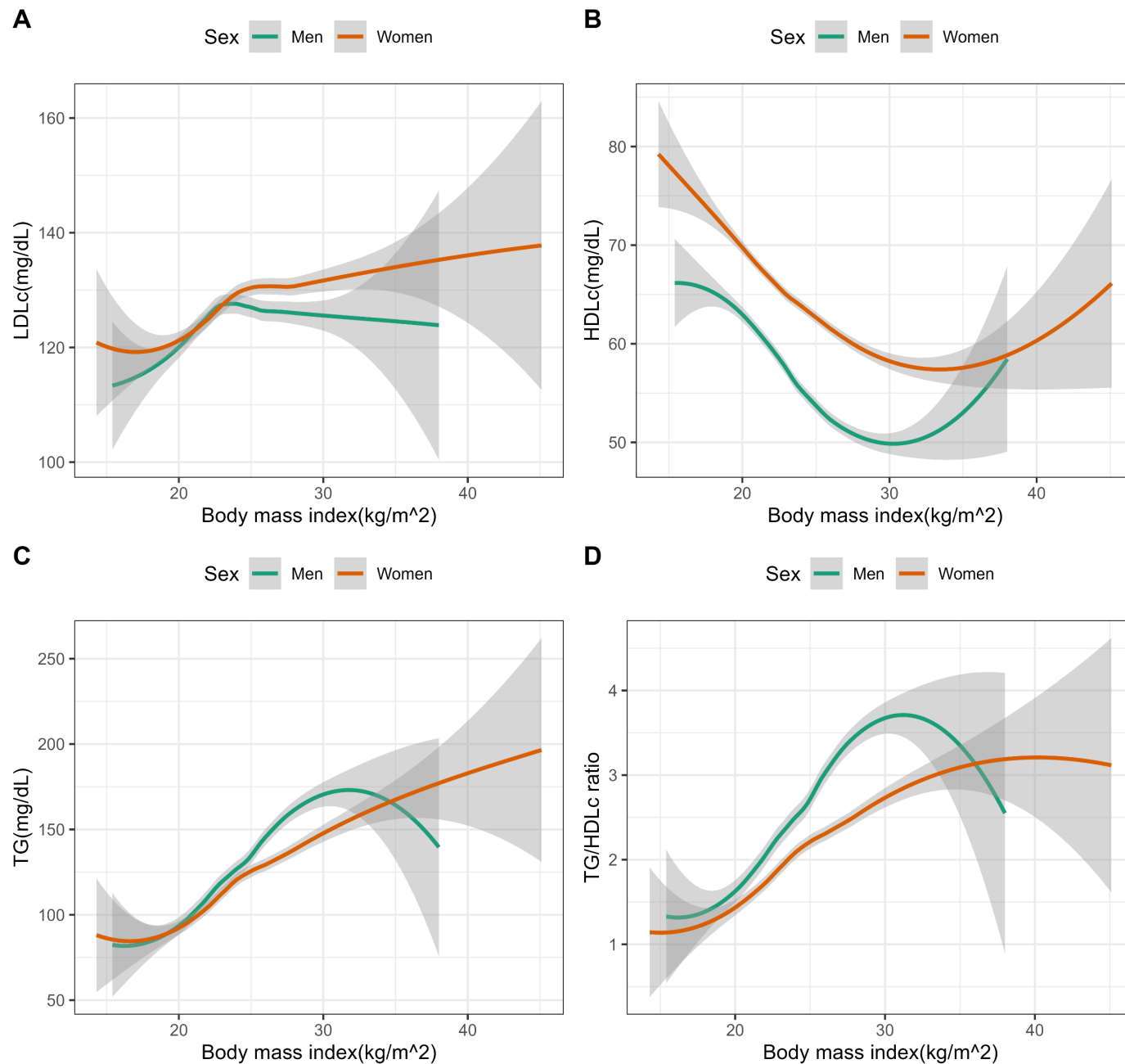
Supplementary Figure 5. Loess regressions between body mass index and triglycerides-to-HDL cholesterol ratio stratified by specific metabolic disorder. A. Stratified by increased LDL cholesterol; B. Stratified by increased blood pressure; C. Stratified by increased blood glucose.
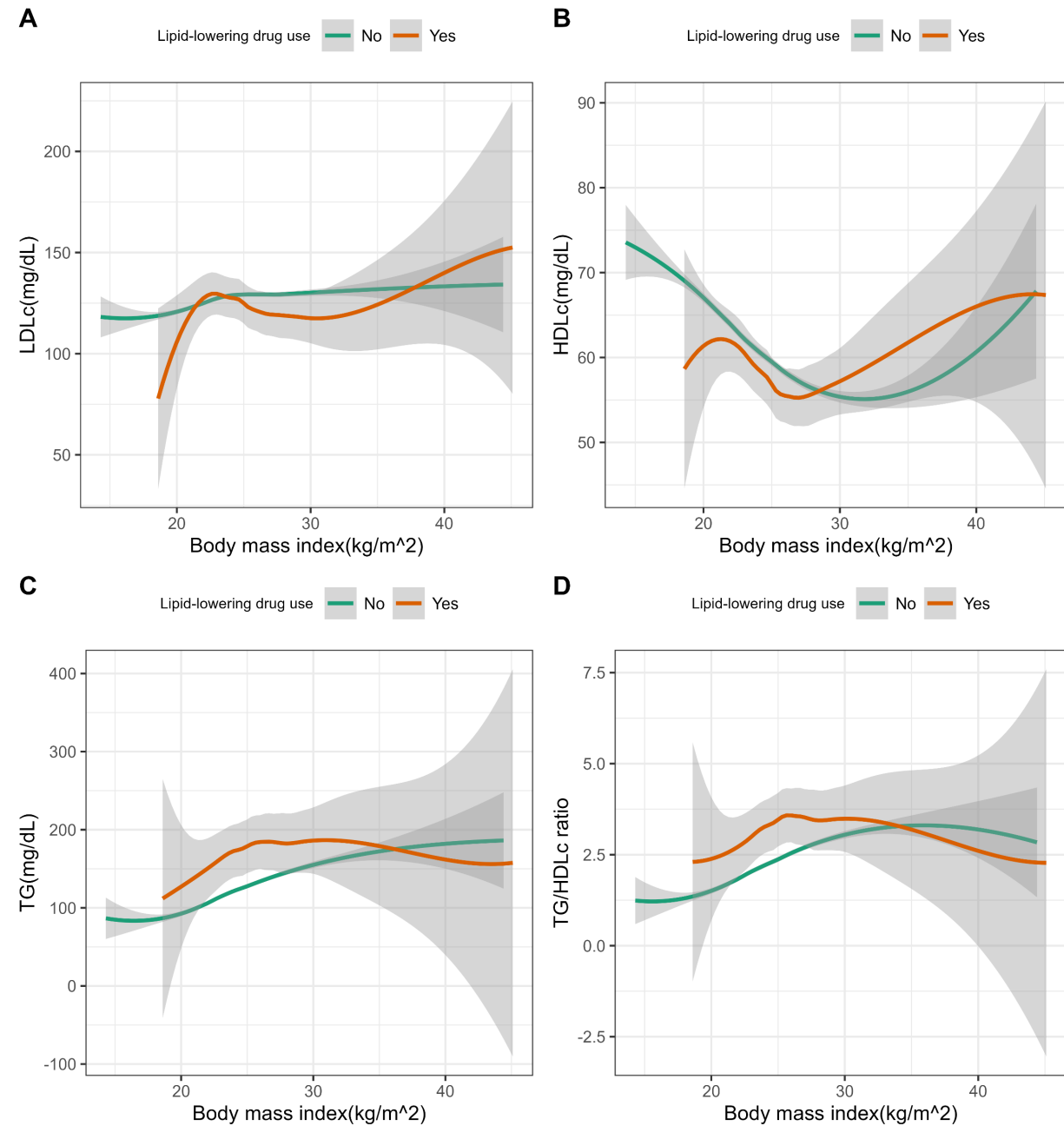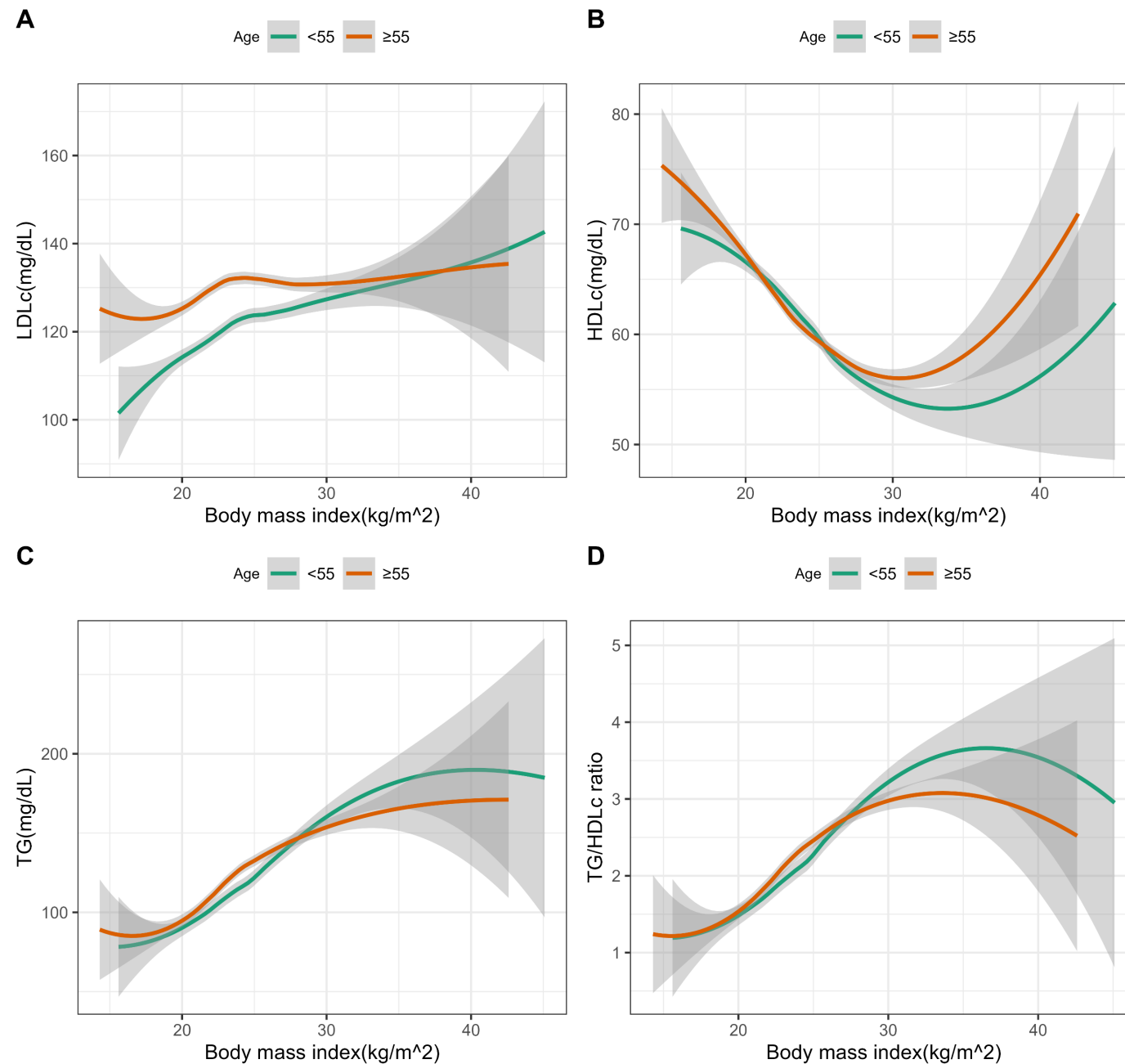
Supplementary Figure 6. Loess regressions between body mass index and lipids, stratified by using lipid-lowering drugs or not.
A. Body mass index and LDL cholesterol; B. Body mass index and HDL cholesterol; C. Body mass index and triglycerides;
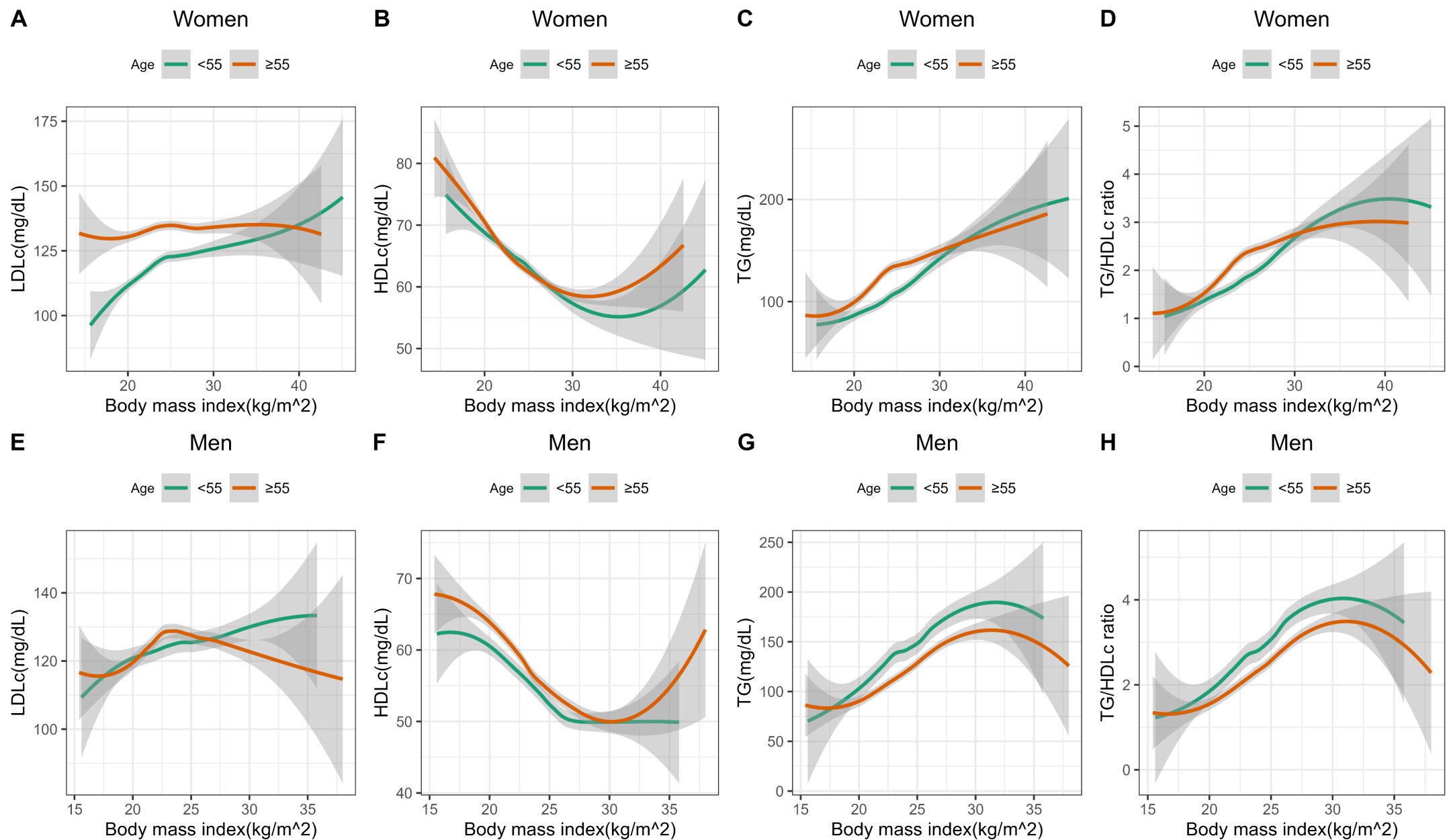D. Body mass index and triglycerides-to-HDL cholesterol ratio.
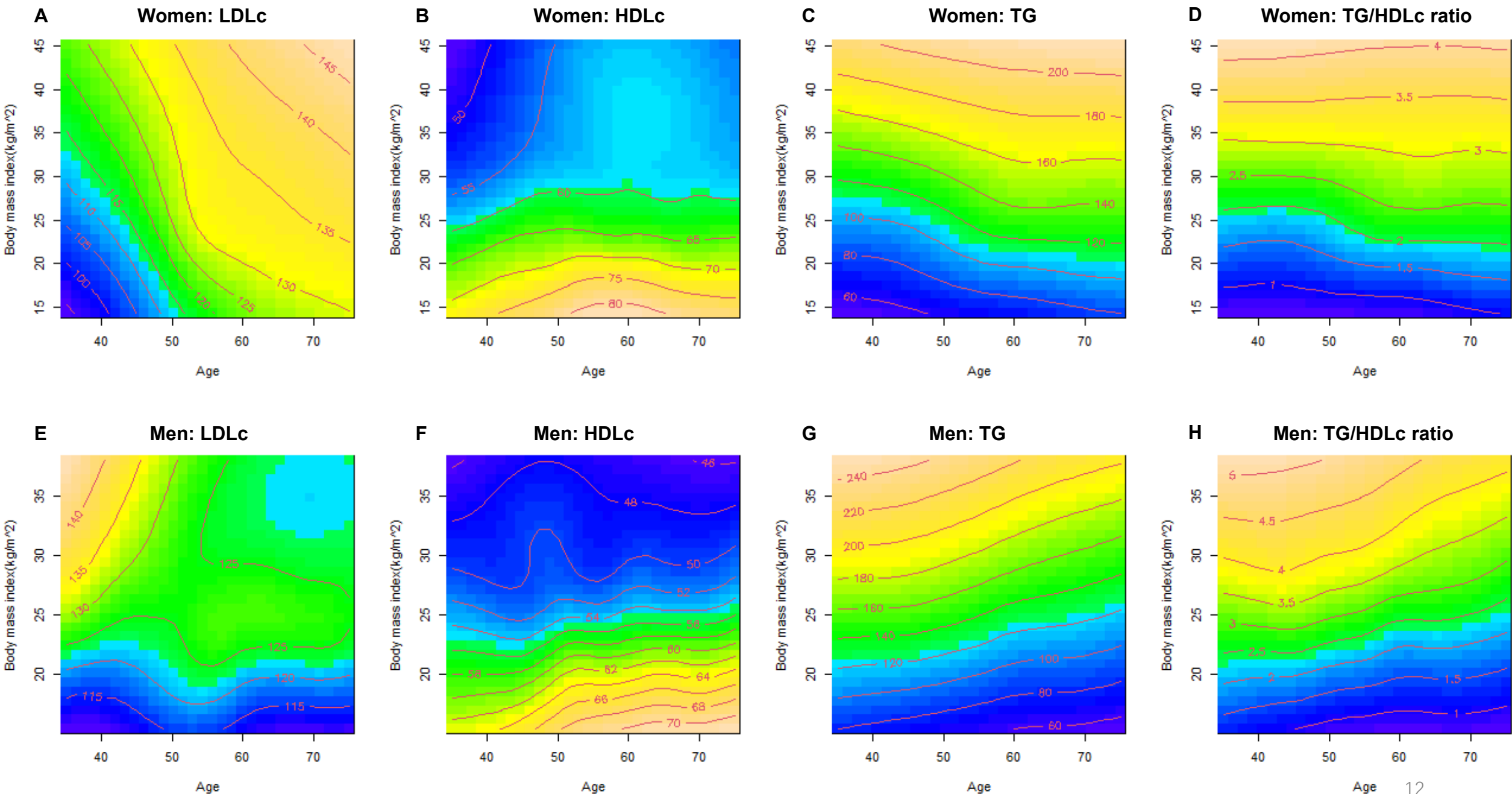
Supplementary Figure 7. Contour plots between age, body mass index and lipids in women and men respectively. A. LDL cholesterol in women; B. HDL cholesterol in women; C. Triglycerides in women; D. Triglycerides-to-HDL cholesterol ratio in women; E. LDL cholesterol in men; F. HDL cholesterol in men; G. Triglycerides in men; H. Triglycerides-to-HDL cholesterol ratio in men.

Supplementary Figure 8. Loess regressions between body mass index and lipids, stratified by sex.
A. Body mass index and LDL cholesterol; B. Body mass index and HDL cholesterol; C. Body mass index and triglycerides; D. Body mass index and triglycerides-to-HDL cholesterol ratio.

Supplementary Figure 9. Loess regressions between body mass index and lipids, stratified by age.
A. Body mass index and LDL cholesterol; B. Body mass index and HDL cholesterol; C. Body mass index and triglycerides; D. Body mass index and triglycerides-to-HDL cholesterol ratio.
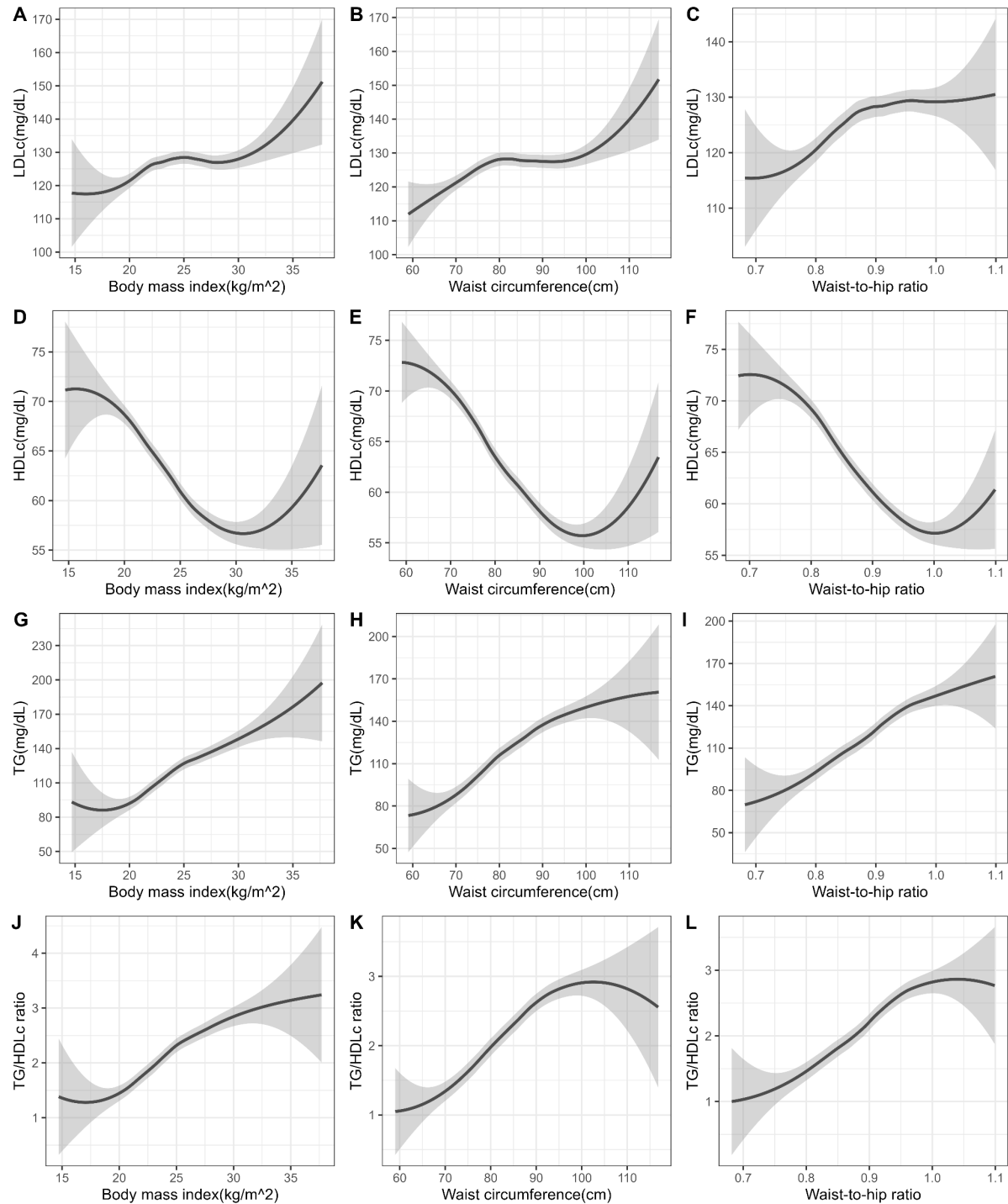
Supplementary Figure 10. Loess regressions between body mass index and lipids stratified by sex and age.
A. Body mass index and LDL cholesterol in women; B. Body mass index and HDL cholesterol in women; C. Body mass index and triglycerides in women;
D. Body mass index and triglycerides-to-HDL cholesterol ratio in women; E. Body mass index and LDL cholesterol in men; F. Body mass index and HDL cholesterol in men; G. Body mass index and triglycerides in men; H. Body mass index and triglycerides-to-HDL cholesterol ratio in men.

Supplementary Figure 11. Loess regressions between anthropometric indices and lipids in prospective study.

A. Body mass index and LDL cholesterol; B. Waist circumference and LDL cholesterol; C. Waist-to-hip ratio and LDL cholesterol; D. Body mass index and HDL cholesterol; E. Waist circumference and HDL cholesterol; F. Waist-to-hip ratio and HDL cholesterol; G. Body mass index and triglycerides; H. Waist circumference and triglycerides; I. Waist-to-hip ratio and triglycerides; J. Body mass index and triglycerides-to-HDL cholesterol ratio; K. Waist circumference and triglycerides-to-HDL cholesterol ratio; L. Waist-to-hip ratio and triglycerides-to-HDL cholesterol ratio.