Supplementary Table S1. Serological parameters not penalized to zero by the LASSO model

serological parameters	regression coefficient
VitC	-0.002150863
ALP	0.001849605
ALB	-0.018755530
SCR	0.443612383
FIB-4	0.002219132
NFS	0.047963298

Supplementary Table S2. Demographics and clinical characteristics in MAFLD patients, by diabetes status.

	Overall cohort (n=4,599)	Non-DM cohort (n=3,387)	DM cohort (n=1,172)	P value
Male, gender (%)	2254 (49.4)	1734 (51.2)	520 (44.4)	< 0.001
Age, yrs	47 (35, 62)	42 (32, 57)	60 (48, 67)	< 0.001
Ethnicity (%)				0.571
Non-Hispanic white	1579 (34.6)	1189 (35.1)	390 (33.3)	
Non-Hispanic black	1088 (23.9)	812 (24.0)	276 (23.5)	
Mexican-American	1716 (37.6)	1256 (37.1)	460 (39.2)	
Other	176 (3.9)	130 (3.8)	46 (3.9)	
PIR (Poverty Income Ratio)				< 0.001
< 1	1099 (26.5)	794 (25.6)	305 (28.9)	
1 ⩽ PIR < median	990 (23.8)	702 (22.7)	288 (27.3)	
⩾ median	2063 (49.7)	1602 (51.7)	461 (43.7)	
Hypertension (%)	1292 (28.4)	819 (24.2)	473 (40.4)	< 0.001
BMI				< 0.001
< 25	830 (18.3)	695 (20.6)	135 (11.6)	
25 ⩽ BMI < 30	1666 (36.7)	1275 (37.7)	391 (33.5)	
⩾ 30	2049 (45.1)	1408 (41.7)	641 (54.9)	
ALT (U/L)	18 (12, 27)	18 (12, 27)	18 (13, 27)	0.273
AST (U/L)	21 (17, 27)	21 (17, 27)	20 (17, 27)	0.082
ALP (U/L)	87 (72, 105)	85 (71, 101)	95 (77, 117)	< 0.001
CRP (mg/dl)	0.2 (0.2, 0.6)	0.2 (0.2, 0.5)	0.4 (0.2, 0.9)	< 0.001
FRP (ng/mL)	87 (72, 105)	101 (47, 195)	153 (77, 285)	< 0.001
Vitamin A (umol/L)	2.0 (1.6, 2.3)	2.0 (1.6, 2.3)	1.95 (1.6, 2.4)	0.376
Vitamin C (umol/L)	35.8 (17.0, 52.2)	35.8 (17.0, 52.8)	35.8 (18.7, 51.7)	0.981
Vitamin E (umol/L)	35.8 (17.0, 52.2)	24.1 (19.6, 30.0)	27.2 (21.6, 35.0)	< 0.001
Serum selenium (nmol/L)	1.6 (1.4, 1.7)	1.6 (1.4,1.68)	1.6 (1.5, 1.7)	< 0.001
PLT (*10^9/L)	270.5 (228.5, 320.0)	272.0 (231.5, 321.0)	263 (220, 315)	< 0.001

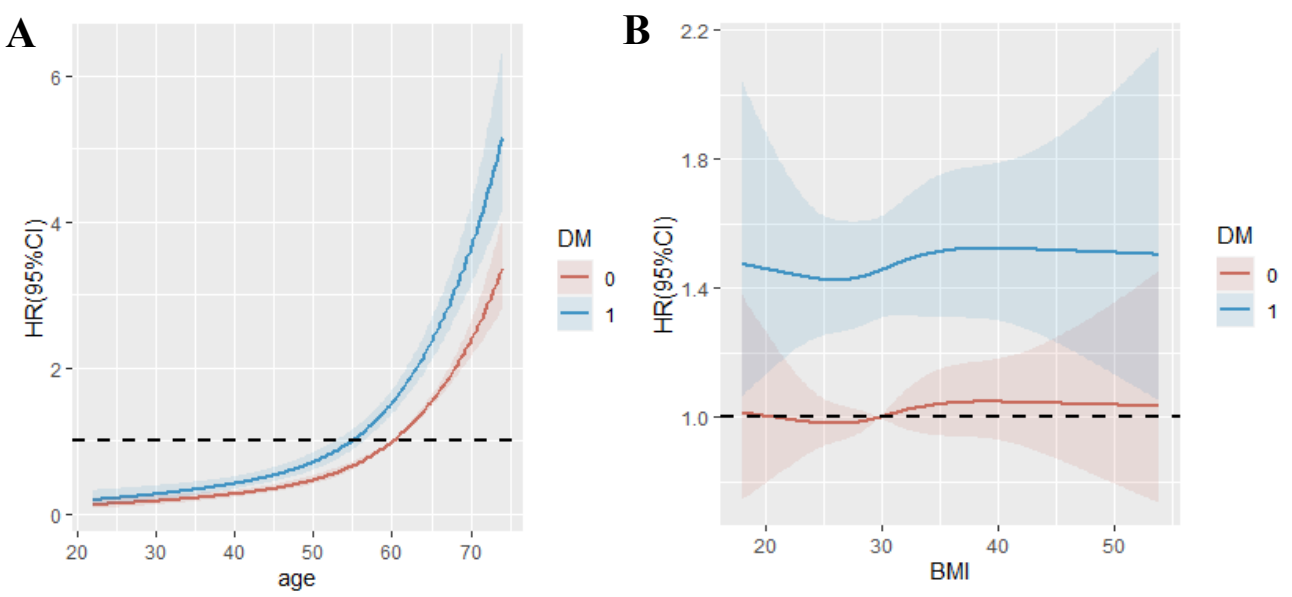
TC (mmol/L)	1.7 (1.1, 2.5)	1.6 (1.1, 2.3)	2.1 (1.5, 3.1)	< 0.001
TG (mmol/L)	5.4 (4.7, 6.2)	5.3 (4.6, 6.1)	5.64 (4.91, 6.44)	< 0.001
HDL-C (mmol/L)	1.1 (1.0, 1.4)	1.2 (1.0, 1.4)	1.1 (0.9, 1.3)	< 0.001
Total protein (g/L)	74 (71, 77)	74 (71, 77)	75 (72,78)	0.008
Albumin (g/L)	41 (39, 44)	41 (39, 44)	41 (38, 43)	< 0.001
UA (umol/L)	333.1 (273.6, 398.5)	339.0 (279.6, 398.5)	327.1 (261.7, 392.6)	0.002
Scr (mg/dl)	1.0 (0.9, 1.2)	1.0 (0.9, 1.2)	1.0 (0.9, 1.2)	0.158
eGFR Category (%)				< 0.001
⩾ 90(Stage 1 CKD)	1092 (24.9)	890 (27.4)	202 (17.7)	
60 ⩽ eGFR < 90(Stage 2 CKD)	2600 (59.3)	1944 (59.9)	656 (57.6)	
30 ⩽ eGFR < 60(Stage 3 CKD)	670 (15.3)	403 (12.4)	267 (23.4)	
< 30(Stage 4-5 CKD)	23 (0.5)	9 (0.3)	14 (1.2)	
FIB-4 Category (%)				< 0.001
< 1.3	3317 (76.3)	2589 (80.5)	728 (64.6)	
1.3 ⩽ FIB-4 < 2.67	913 (21.0)	564 (17.5)	349 (31.0)	
⩾ 2.67	115 (2.6)	65 (2.0)	50 (4.4)	
NFS Category (%)				< 0.001
< -1.455	2571 (58.6)	2305 (70.9)	266 (23.4)	
-1.455 ⩽ NFS < 0.676	1461 (33.3)	818 (25.2)	643 (56.5)	
⩾ 0.676	357 (8.1)	127 (3.9)	230 (20.2)	
Severity of hepatic steatosis (%)				< 0.001
Mild	1586 (34.8)	1295 (38.2)	291 (24.8)	
Moderate	1987 (43.6)	1432 (42.3)	555 (47.4)	
Severe	986 (21.6)	660 (19.5)	326 (27.8)	

Continuous values are presented as medians (interquartile range) and categorical variables are presented as counts (percentages). DM, diabetes mellitus; Non-DM, patients without diabetes mellitus; BMI, body mass index; ALT, alanine transaminase; AST, aspartate transaminase; ALP, alkaline phosphatase; PLT, Serum selenium, platelet; TC, total cholesterol; TG, total triglyceride; HDL-C, high-density lipoprotein cholesterol; ALB, total protein, albumin; UA, uric acid; Scr, serum creatinine; eGFR, estimated glomerular filtration rate; NFS, NAFLD fibrosis score; FIB-4, Fibrosis-4 index.

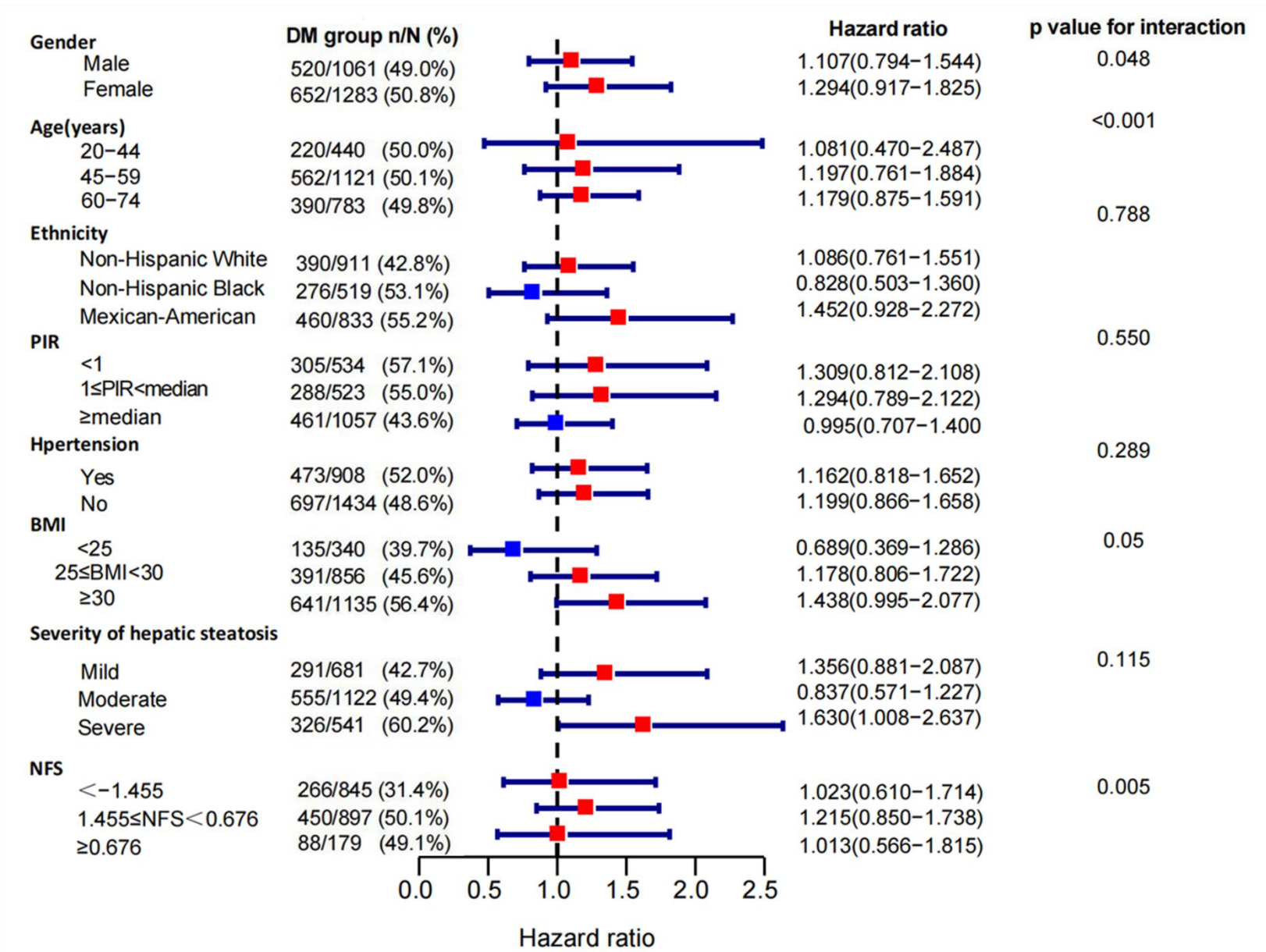
Supplementary Table S3. Cox survival analysis of risk factors for mortality in MAFLD patients

	univariate		multivariate	
	HR, 95%CI	P value	HR, 95%CI	P value
age	1.324 (1.191, 1.472)	< 0.001	1.071 (1.063, 1.079)	< 0.001
gender	1.077 (1.071, 1.083)	< 0.001	1.478 (1.297, 1.686)	< 0.001
ethnicity	0.819 (0.774, 0.868)	< 0.001	0.860 (0.801, 0.923)	< 0.001
PIR	0.892 (0.836, 0.952)	0.001	0.796 (0.735, 0.860)	< 0.001
hypertension	1.936 (1.74, 2.154)	< 0.001	1.341 (1.190, 1.511)	< 0.001
DM	1.459 (1.31, 1.623)	< 0.001	1.416 (1.244, 1.611)	< 0.001
BMI	0.872 (0.81, 0.938)	< 0.001	0.841 (0.771, 0.917)	< 0.001
VitC	0.998 (0.995, 1.000)	0.045	0.995 (0.992, 0.998)	< 0.001
ALP	0.997 (0.996, 0.998)	< 0.001	1.001 (1.000, 1.003)	0.009
ALB	0.940 (0.926, 0.954)	< 0.001	0.949 (0.932, 0.967)	< 0.001
SCR	1.488 (1.404, 1.578)	< 0.001	1.303 (1.185, 1.433)	< 0.001
NFS	1.968 (1.817, 2.131)	< 0.001	1.315 (1.142, 1.513)	< 0.001

Supplementary Figure S1. Association of DM with all-cause mortality in MAFLD of different (A) ages and (B) BMI.



Supplementary Figure S2. Subgroup analysis of the association of DM with cancer related mortality in MAFLD patients.



Supplementary Figure S3. Subgroup analysis of the association of DM with non-cardiovascular related mortality in MAFLD patients.

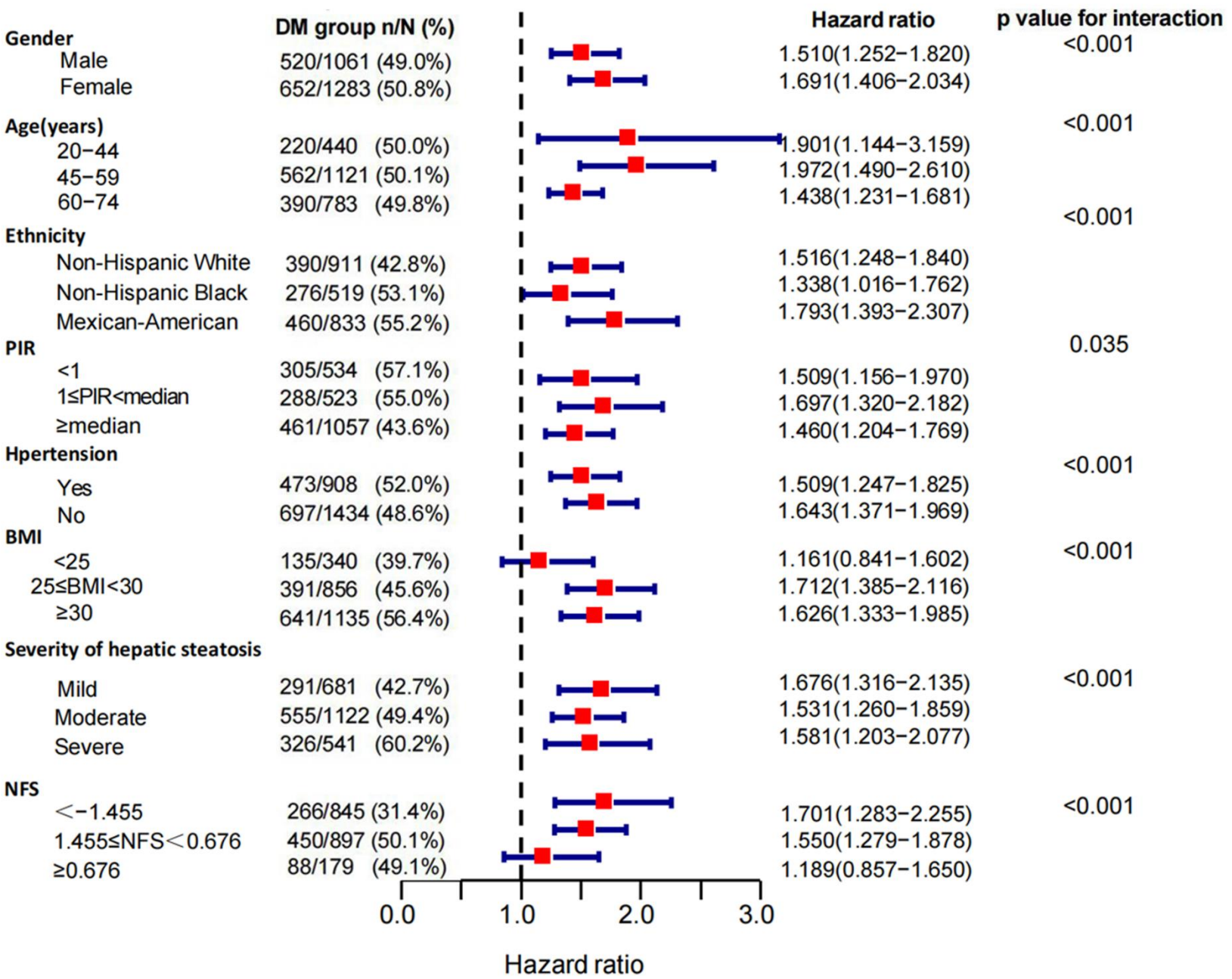


FIGURE LEGENDS

Supplementary Figure S1. Association of DM with all-cause mortality in MAFLD of different (A) ages and (B) BMI.

Supplementary Figure S2. Subgroup analysis of the association of DM with cancer related mortality in MAFLD patients.

Associations between DM and risk of cancer related mortality stratified by baseline age, gender, ethnicity, PIR (poverty income ratio), hypertension, BMI, severity of hepatic steatosis, and NFS scores in patients with MAFLD. The model was adjusted by age (not adjusted in subgroup analysis by age), gender (not adjusted in subgroup analysis by gender), ethnicity (not adjusted in subgroup analysis by ethnicity), PIR (not adjusted in subgroup analysis by PIR), hypertension (not adjusted in subgroup analysis by hypertension) and BMI (not adjusted in subgroup analysis by BMI). Diabetes, compared with non-diabetes patients.

Supplementary Figure S3. Subgroup analysis of the association of DM with non-cardiovascular related mortality in MAFLD patients.

Associations between DM and risk of non-cardiovascular related mortality stratified by baseline age, gender, ethnicity, PIR (poverty income ratio), hypertension, BMI, severity of hepatic steatosis, and NFS scores in patients with MAFLD. The model was adjusted by age (not adjusted in subgroup analysis by age), gender (not adjusted in subgroup analysis by gender), ethnicity (not adjusted in subgroup analysis by ethnicity), PIR (not adjusted in subgroup analysis by PIR), hypertension (not adjusted in subgroup analysis by hypertension) and BMI (not adjusted in subgroup analysis by BMI). Diabetes, compared with non-diabetes patients.