Online-Only Supplemental Material

Supplementary Table 1: Baseline characteristics study population (N=6769)

Variables	**No diabetes (N=5916)**	**Diabetes (N=853)**
Age, years	62 (53-70)	66 (58-72)
Male	2746 (46)	448 (53)
Race/ethnicity		
Non-Hispanic white	2451 (41)	156 (18)
Non-Hispanic Asian	696 (12)	105 (12)
Non-Hispanic black	1544 (26)	329 (39)
Hispanic	1225 (21)	263 (31)
Current smoker	768 (13)	111 (13)
Missing	19 (0)	1 (0)
Body mass index, kg/m^2	27.3 (24.3-30.8)	29.8 (26.4-33.9)
Systolic blood pressure, mmHg	123 (111-139)	131 (117-147)
Missing	1 (0)	1 (0)
Diastolic blood pressure, mmHg	72 (65-79)	72 (65-79)
Missing	1 (0)	1 (0)
Antihypertensive treatment	1974 (33)	543 (64)
Missing	2 (0)	1 (0)
Total cholesterol, mmol/L	5.0 (4.4-5.6)	4.8 (4.2-5.4)
Missing	2 (0)	2 (0)
HDL cholesterol, mmol/L	1.3 (1.1-1.6)	1.1 (1.0-1.4)
Missing	5 (0)	2 (0)
Statins	785 (13)	220 (26)
Missing	12 (0)	3 (0)
CAC, Agatston score	0 (0-71)	23 (0-213)
CAC, Agatston score categories		
0	3077 (52)	315 (37)
1-100	1547 (26)	240 (28)
100+	1292 (22)	298 (35)

Values are presented as median (interquartile range) or count (%).
Abbreviations: CAC = coronary artery calcium; HDL = high density lipoprotein.

Supplementary Table 2: Logistic regression odds ratios (95% UI based on 1000 bootstrap datasets) for 30-day case fatality from the 10-year model

Variable	**Coronary heart disease (90/272)**	**Heart failure (15/201)**	**Stroke (32/186)**
Intercept	0.01 (0.00-0.05)	0.00 (0.00-0.15)	0.00 (0.00-0.02)
Age, 10 years	1.76 (1.35-2.34)	1.72 (0.88-4.23)	2.14 (1.36-3.97)

Supplementary Table 3: Cox regression hazard ratios (95% UI based on 1000 bootstrap datasets) for incident events from the 10-year model

Variable	**Coronary heart disease (272/6769)**	**Heart failure (201/6769)**	**Stroke (186/6769)**	**Other death (619/6769)**
Male	1.43 (1.07-1.88)	1.59 (1.14-2.17)	-	1.50 (1.24-1.78)
Race/ethnicity vs Non-Hispanic white				
Non-Hispanic Asian	0.68 (0.40-1.03)	0.59 (0.26-1.02)	0.56 (0.25-0.96)	0.70 (0.49-0.91)
Non-Hispanic black	1.12 (0.83-1.48)	1.08 (0.76-1.51)	1.05 (0.73-1.48)	1.22 (1.00-1.49)
Hispanic	1.21 (0.89-1.62)	0.90 (0.61-1.27)	1.19 (0.81-1.72)	0.92 (0.71-1.17)
Current smoker	2.04 (1.48-2.73)	1.84 (1.25-2.59)	1.61 (1.00-2.33)	2.34 (1.93-2.90)
Body mass index, 5 kg/m^2	-	1.33 (1.13-1.53)	-	0.39 (0.24-0.66)
Body mass index squared, 5 kg/m^2	-	-	-	1.02 (1.01-1.02)
Systolic blood pressure, 10 mmHg	1.09 (1.04-1.15)	1.14 (1.07-1.20)	1.18 (1.10-1.26)	-
Antihypertensive treatment		1.42 (1.03-1.99)	1.46 (1.05-2.06)	-
Total cholesterol, 0.259 mmol/L	1.04 (1.01-1.07)	-	1.03 (0.99-1.06)	0.97 (0.94-0.99)
HDL cholesterol, 0.259 mmol/L	0.89 (0.80-0.98)	-	0.88 (0.79-0.96)	-
Statins	-	0.77 (0.51-1.10)	0.70 (0.44-1.00)	0.69 (0.54-0.86)
Log(CAC+1) baseline	1.28 (1.21-1.36)	1.12 (1.05-1.20)	1.10 (1.03-1.17)	1.03 (1.00-1.07)
Diabetes at baseline	1.47 (1.10-1.91)	1.87 (1.34-2.60)	1.54 (1.04-2.21)	1.58 (1.27-1.97)
Incident diabetes	-	-	-	2.03 (1.34-3.10)
Incident cardiovascular event	-	-	-	3.11 (2.47-3.92)

Abbreviations: CAC = coronary artery calcium; HDL = high density lipoprotein.

Supplementary Table 4: Discriminative ability of the 10-year model at 10-year (internal validity) vs. at 15-year and 18-year follow-up (predictive validity)

Outcome	**C-statistic (95% CI) at 10-year**	**C-statistic (95% CI) at 15-year**	**C-statistic (95% CI) at 18-year**
Non-fatal/fatal CVD events			
Coronary heart disease	0.77 (0.74-0.79)	0.75 (0.72-0.77)	0.74 (0.71-0.76)
Heart failure	0.78 (0.75-0.81)	0.77 (0.74-0.79)	0.75 (0.73-0.77)
Stroke	0.74 (0.71-0.78)	0.71 (0.68-0.74)	0.69 (0.66-0.72)
Mortality			
All-cause	0.78 (0.76-0.79)	0.78 (0.77-0.79)	0.78 (0.77-0.79)
Fatal CVD	0.79 (0.76-0.83)	0.78 (0.75-0.80)	0.77 (0.74-0.79)
Other	0.76 (0.75-0.78)	0.77 (0.75-0.78)	0.76 (0.75-0.77)

Abbreviations: CVD = cardiovascular disease

Supplementary Table 5: Logistic regression odds ratios (95% UI based on 1000 bootstrap datasets) for 30-day case fatality from the final 15-year model

Variable	**Coronary heart disease (151/419)**	**Heart failure (23/275)**	**Stroke (49/288)**
Intercept	0.00 (0.00-0.00)	0.00 (0.00-0.00)	0.00 (0.00-0.00)
Age, 10 years	1.96 (1.61-2.48)	1.62 (0.99-2.84)	2.19 (1.53-3.45)

Supplementary Table 6: Cox regression hazard ratios (95% UI based on 1000 bootstrap datasets) for incident events from the final 15-year model

Variable	**Coronary heart disease (419/6769)**	**Heart failure (275/6769)**	**Stroke (288/6769)**	**Other death (1073/6769)**
Male	1.38 (1.10-1.73)	1.57 (1.19-2.04)	-	1.37 (1.19-1.56)
Race/ethnicity vs Non-Hispanic white				
Non-Hispanic Asian	0.78 (0.55-1.07)	0.64 (0.37-0.98)	0.60 (0.36-0.92)	0.73 (0.57-0.90)
Non-Hispanic black	1.11 (0.86-1.39)	0.93 (0.70-1.24)	1.11 (0.82-1.47)	1.15 (0.99-1.34)
Hispanic	1.16 (0.91-1.44)	0.81 (0.58-1.12)	1.30 (0.97-1.69)	0.91 (0.76-1.08)
Current smoker	1.72 (1.32-2.21)	1.76 (1.24-2.39)	1.39 (0.94-1.93)	2.39 (2.06-2.84)
Body mass index, 5 kg/m^2	-	1.31 (1.03-1.08)	-	0.48 (0.33-0.72)
Body mass index squared, 5 kg/m^2	-	-	-	1.01 (1.01-1.02)
Systolic blood pressure, 10 mmHg	1.10 (1.05-1.14)	1.13 (1.07-1.19)	1.13 (1.07-1.20)	-
Antihypertensive treatment	-	1.52 (1.16-2.01)	1.19 (0.91-1.55)	-
Total cholesterol, 0.259 mmol/L	1.02 (0.99-1.04)	-	1.02 (0.99-1.05)	0.97 (0.95-0.99)
HDL cholesterol, 0.259 mmol/L	0.90 (0.83-0.97)	-	0.90 (0.82-0.98)	-
Statins	-	0.76 (0.55-1.02)		0.74 (0.63-0.88)
Log(CAC+1) baseline	1.24 (1.19-1.30)	1.11 (1.05-1.19)	1.08 (1.03-1.14)	1.05 (1.02-1.07)
Diabetes at baseline	1.53 (1.20-1.88)	1.79 (1.32-2.36)	1.58 (1.18-2.09)	1.49 (1.27-1.77)
Incident diabetes	-	-	-	1.29 (1.04-1.62)
Incident cardiovascular event	-	-	-	3.21 (2.76-3.77)

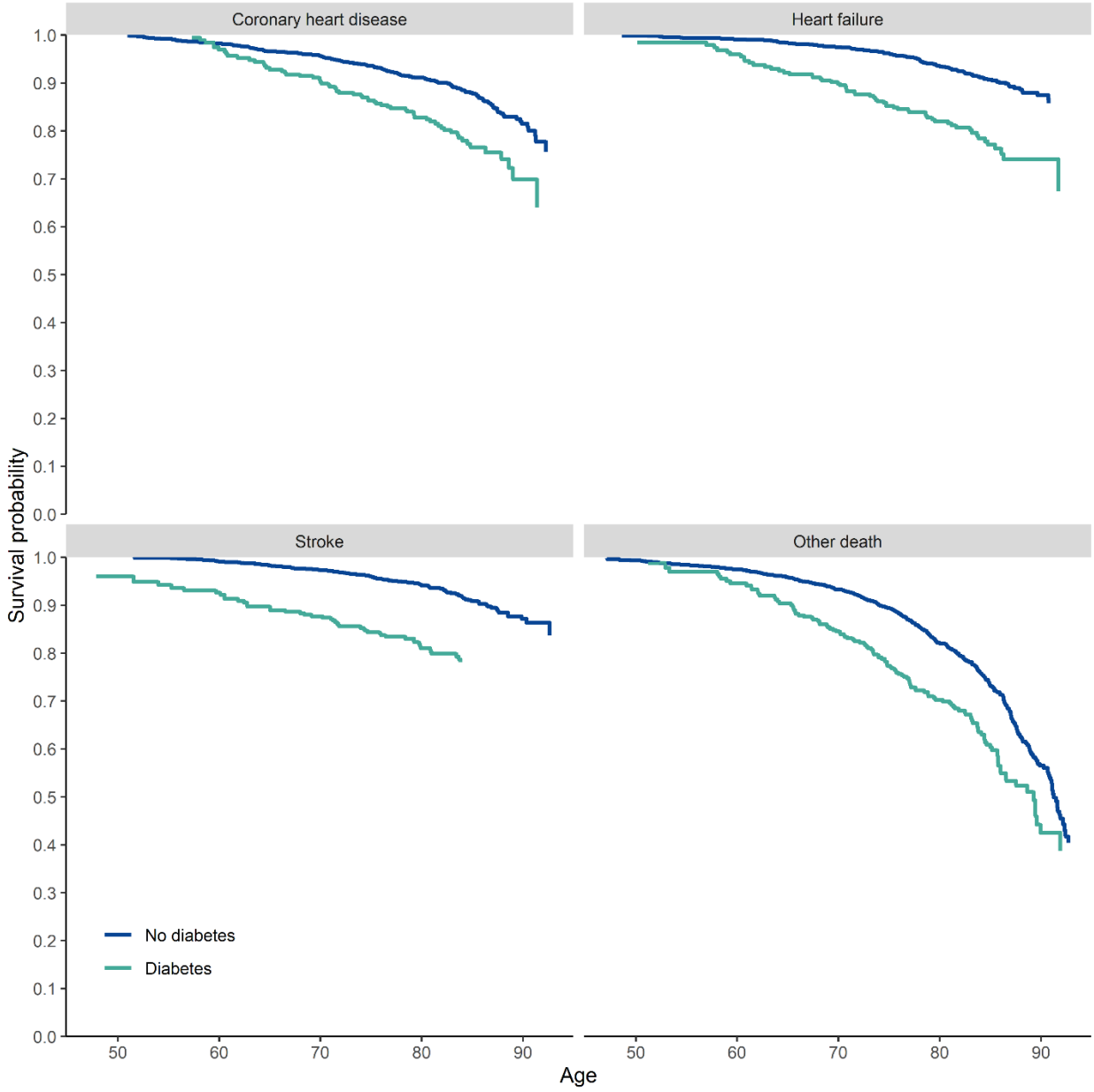
Abbreviations: CAC = coronary artery calcium; HDL = high density lipoprotein.

Supplementary Table 7: Baseline characteristics validation populations after matching

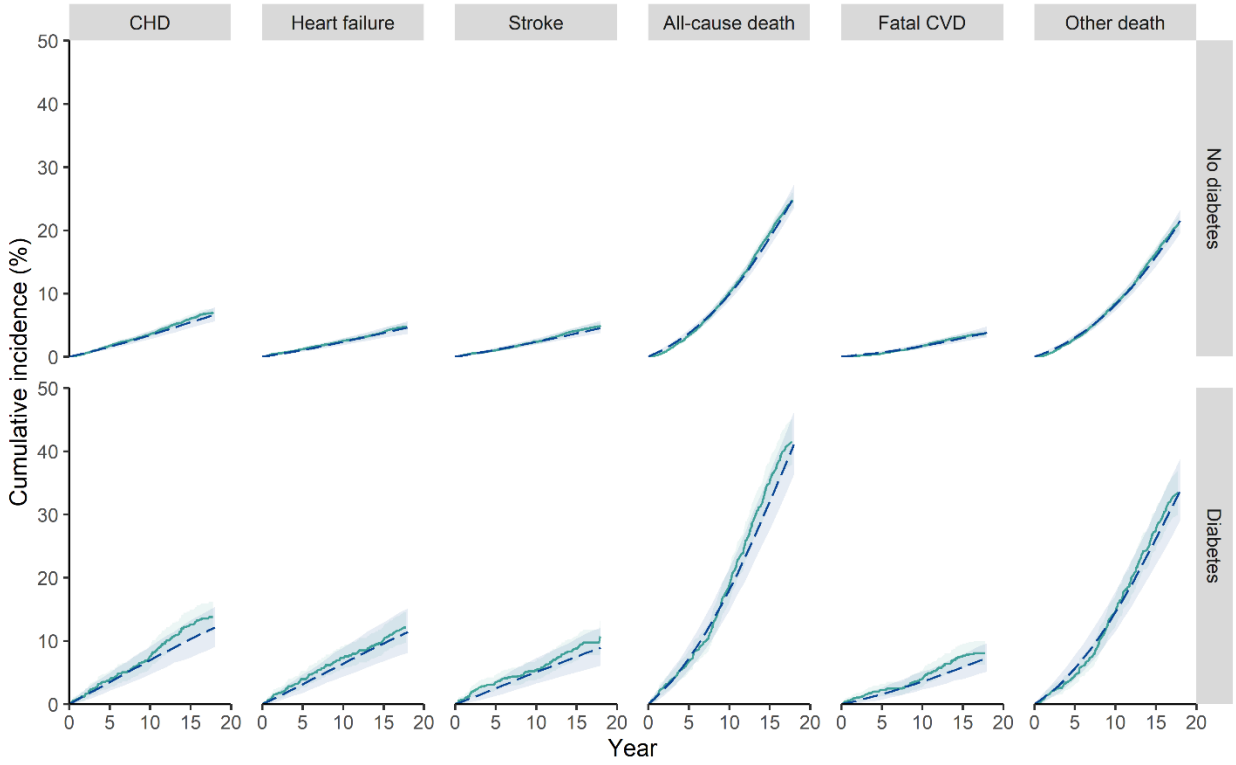
Variables	**MESA diabetes (N=353)**	**NHANES diabetes (N=353)**	**MESA no diabetes (N=3610)**	**NHANES no diabetes (N=3610)**
Age, years	63 (54-68)	64 (57-69)	57 (50-65)	58 (51-66)
Male	222 (63)	222 (63)	1667 (46)	1667 (46)
Race/ethnicity				
Non-Hispanic white	94 (27)	69 (20)	2027 (56)	2027 (56)
Non-Hispanic Asian/Other	10 (3)	35 (10)	108 (3)	108 (3)
Non-Hispanic black	122 (35)	122 (35)	656 (18)	656 (18)
Hispanic	127 (36)	127 (36)	819 (23)	819 (23)
Education				
Less than high school	135 (38)	135 (38)	610 (17)	610 (17)
High school	50 (14)	50 (14)	574 (16)	574 (16)
Some college	100 (28)	86 (24)	1009 (28)	1009 (28)
College or higher	68 (19)	82 (23)	1417 (39)	1417 (39)
Body mass index, kg/m^2	29.4 (27.2-32.7)	29.3 (25.6-32.5)	27.2 (24.7-29.8)	27.3 (24.7-30.3)
10-yr ASCVD risk score	0.23 (0.12-0.34)	0.23 (0.12-0.34)	0.06 (0.02-0.12)	0.06 (0.02-0.12)

Values are presented as median (interquartile range) or count (%). Abbreviations: ASCVD = atherosclerotic cardiovascular disease; CAC = coronary artery calcium; HDL = high density lipoprotein.

Supplementary Figure 1: Baseline survival curves by baseline diabetes status in 6769 MESA participants based on 10-year follow-up data

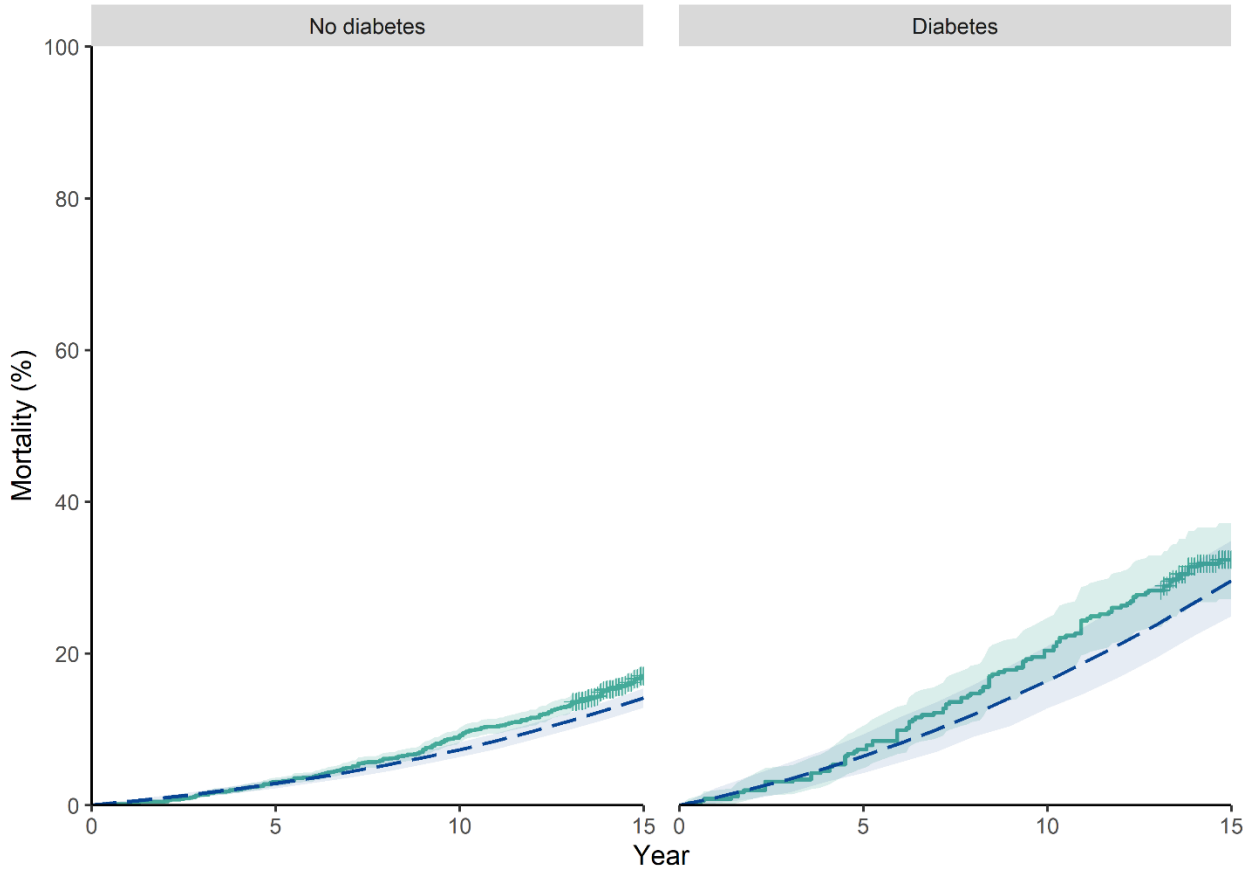


Supplementary Figure 2: Cumulative incidence curves of coronary heart disease, stroke, heart failure, all-cause mortality, fatal CVD, and other mortality for internal and predictive validity extending to 18-year follow-up



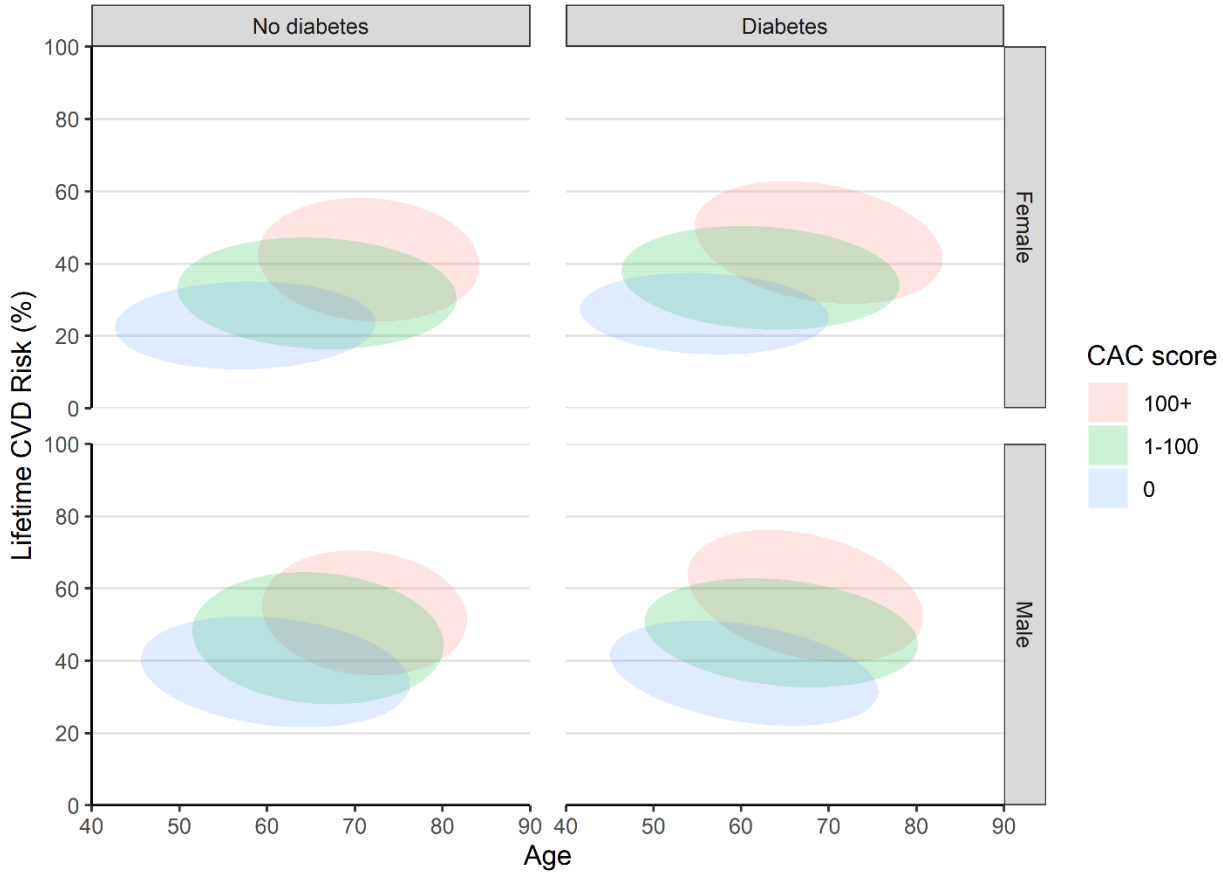
Model predictions (dashed blue line) and observed in MESA (solid green line) with 95% UIs indicated by grey shaded areas. Abbreviations: CHD = coronary heart disease; CVD = cardiovascular disease.

Supplementary Figure 3: Cumulative incidence curves of all-cause mortality for external validity



Model predictions (dashed blue line) and observed in NHANES (solid green line) with 95% UIs indicated by grey shaded areas.

Supplementary Figure 4: Microsimulations of the lifetime cumulative incidence of cardiovascular disease (CVD) by baseline age, gender, diabetes, and CAC scores



Cardiovascular disease (CVD) is defined as a composite endpoint of coronary heart disease, heart failure and stroke. Ellipses depict 80% of the model's lifetime CVD risk predictions among 6769 MESA participants stratified by baseline diabetes, gender, and CAC score categories. Abbreviations: CAC = coronary artery calcium; CVD = cardiovascular disease.