Supplementary Online Content

Murthy VL, Xia R, Baldridge AS, et al. Polygenic risk, fitness, and obesity in the Coronary Artery Risk Development in Young Adults (CARDIA) study. *JAMA Cardiol*. Published online January 8, 2020. doi:10.1001/jamacardio.2019.5220

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This supplementary material has been provided by the authors to give readers additional information about their work.

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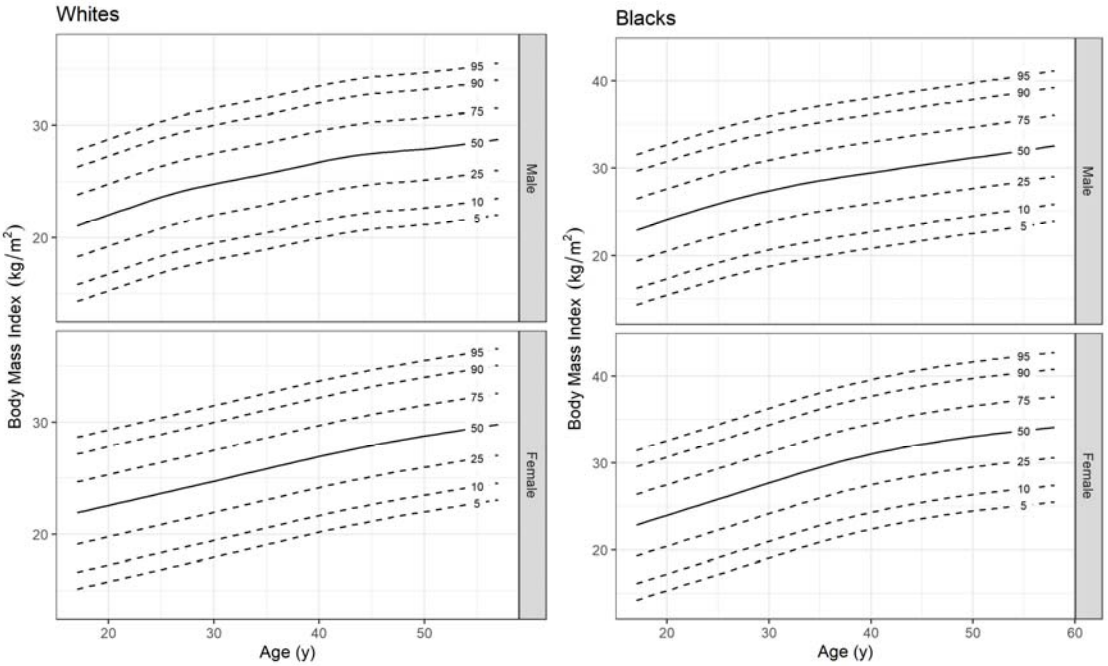
eFigure 1. Longitudinal Models for BMI Over Time in CARDIA. Sex-specific growth percentiles over time, modeled using longitudinal mixed effects generalized additive models



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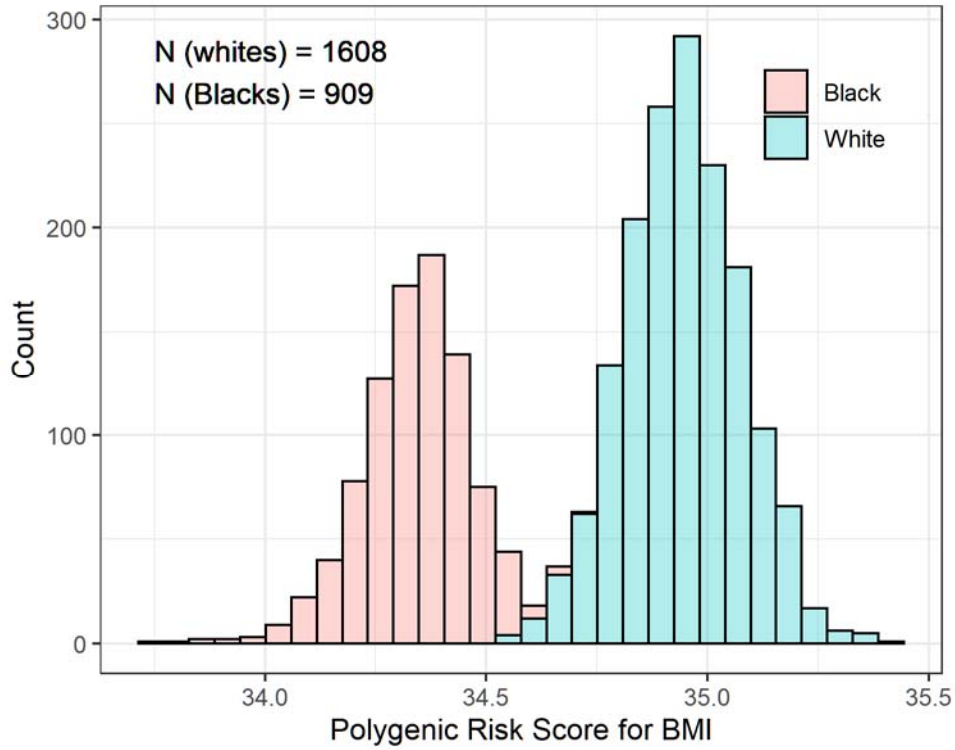
eFigure 2. Polygenic Risk Score for BMI. This histogram was constructed on all individuals at study entry.



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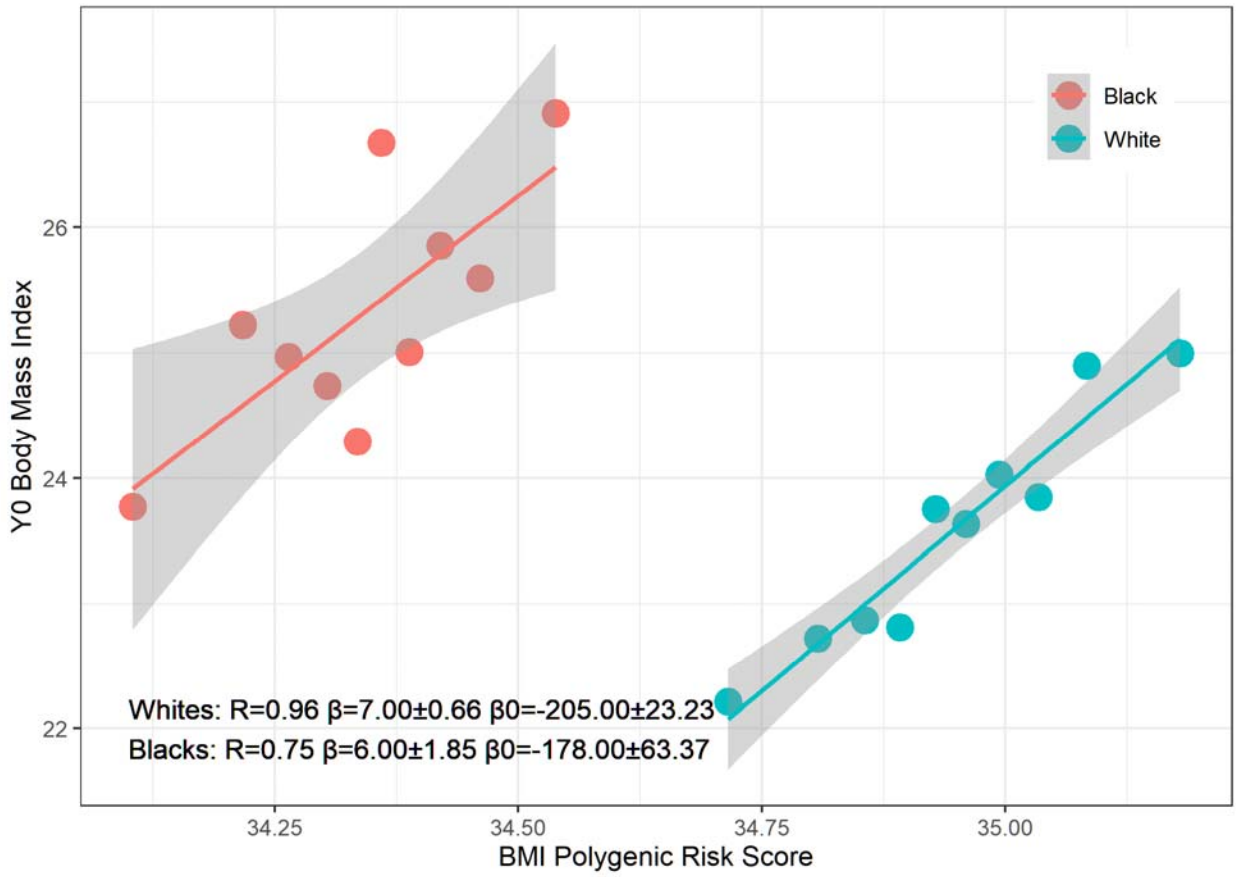
eFigure 3. Calibration of Polygenic Risk Score vs Body Mass Index (BMI) at Study Entry. Deciles of polygenic risk score were computed separately for Blacks and Whites. Mean polygenic risk score and mean observed BMI for each decile are plotted and demonstrate more similar calibration slopes but markedly different calibration intercepts with lower correlation among Blacks.



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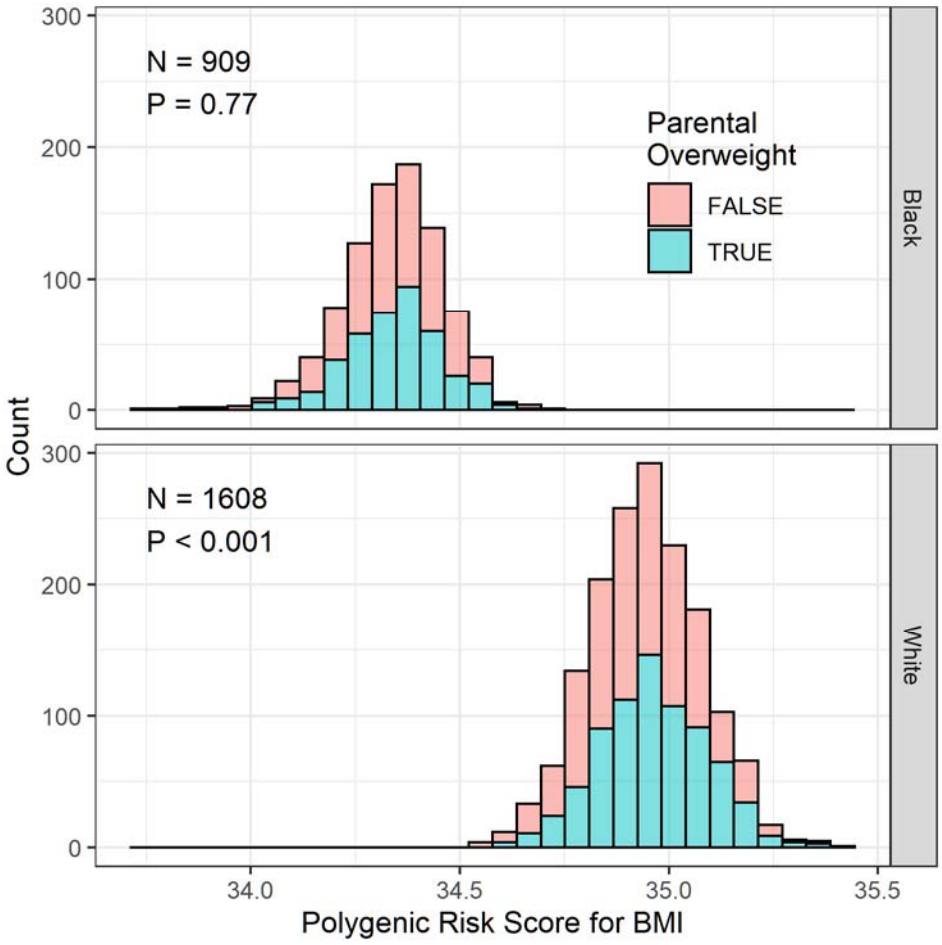
eFigure 4. Histogram of Polygenic Risk Score for Body Mass Index by Self-reported Parental Overweight/Obesity Status. Although among Whites, PRS differs based on whether parents were reported be overweight/obese (35.0±0.13) or not (34.9±0.13, p<0.001), the distributions are similar and not meaningfully different.



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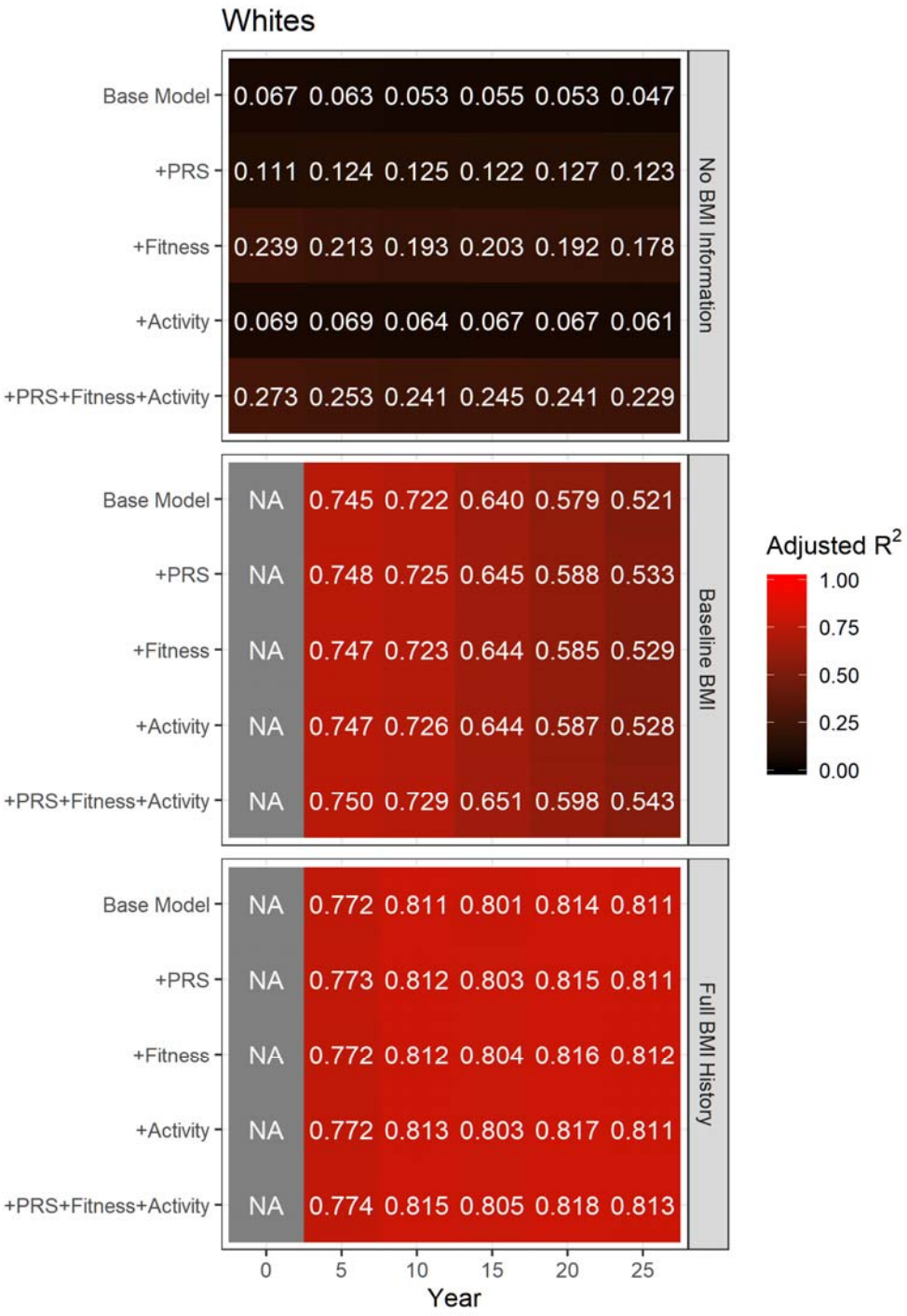
eFigure 5. Adjusted R^2 for Models of BMI at Various Time Points With Increasing Information. The base model included age, sex, and parental history of overweight. To this, polygenic risk score (PRS), fitness, and/or activity were added. In the second block, baseline BMI was added to the base model. In the third block, preceding BMI growth curve history was also added.



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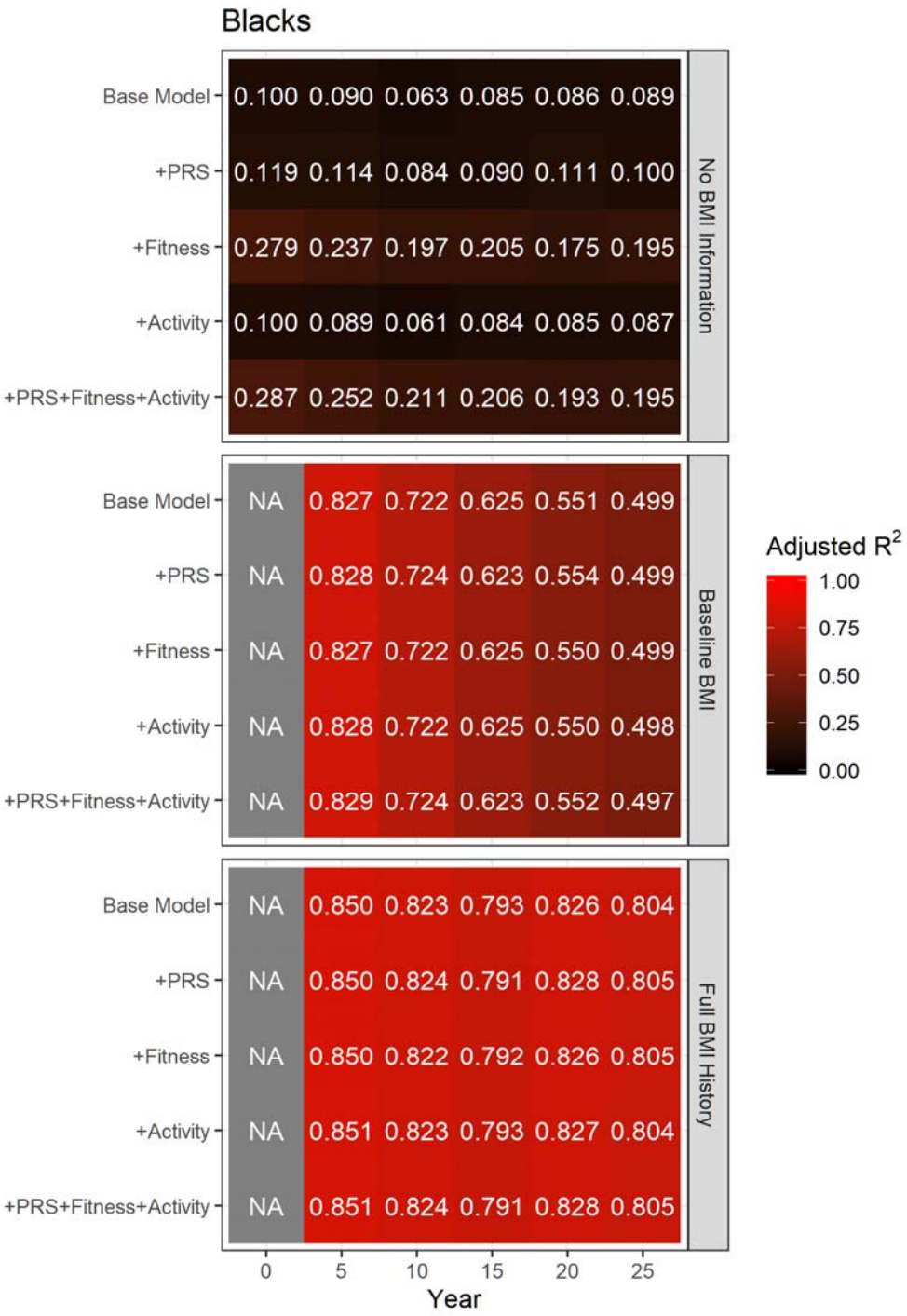

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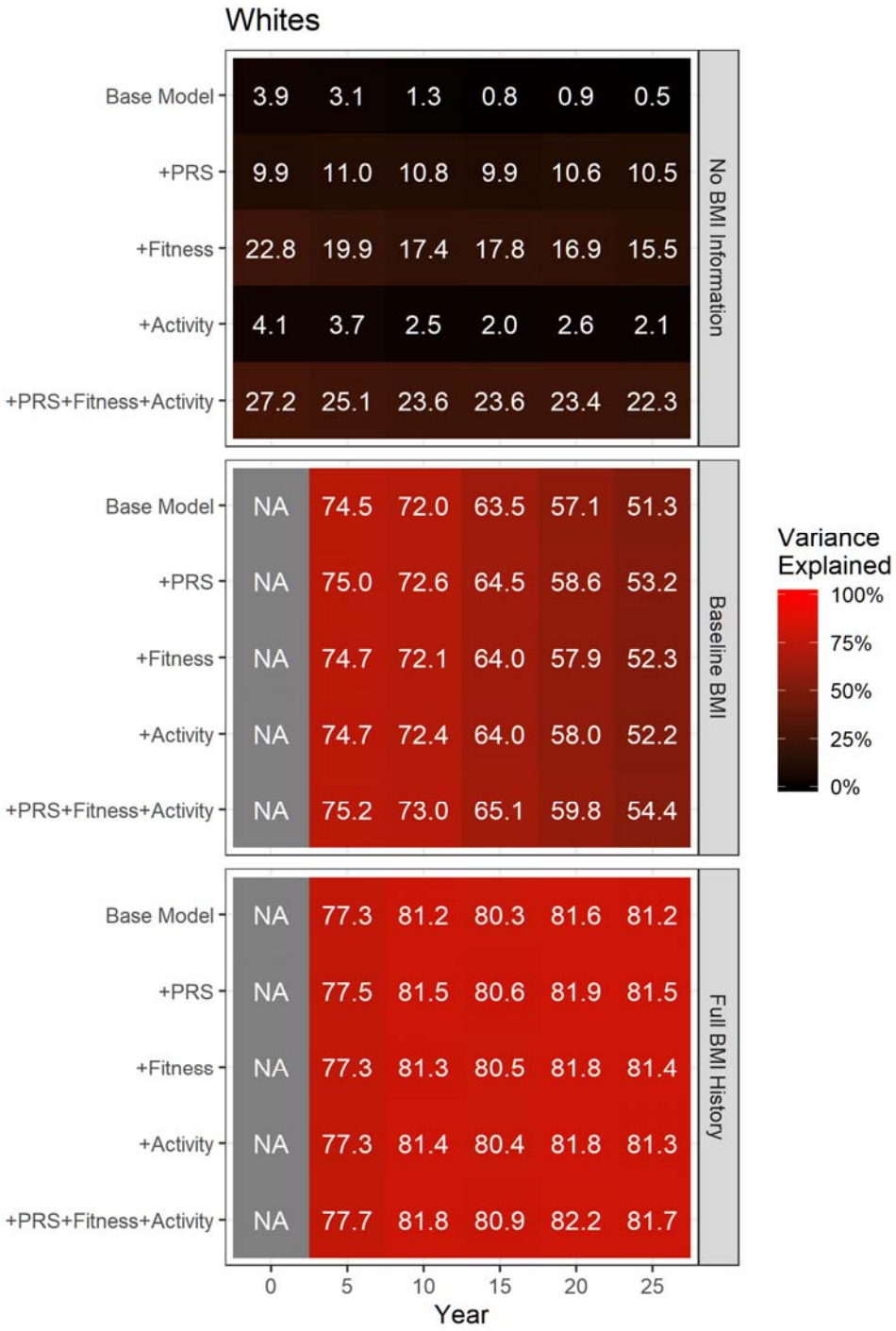
eFigure 6. Variance in BMI at Various Time Points Explained by Models With Increasing Information. The base model included age and sex, but not parental history of overweight (in contrast to Figure 2). To this, polygenic risk score (PRS), fitness, and/or activity were added. In the second block, baseline BMI was added to the base model. In the third block, preceding BMI growth curve history was also added. Variance explained is represented as a percentage (%).



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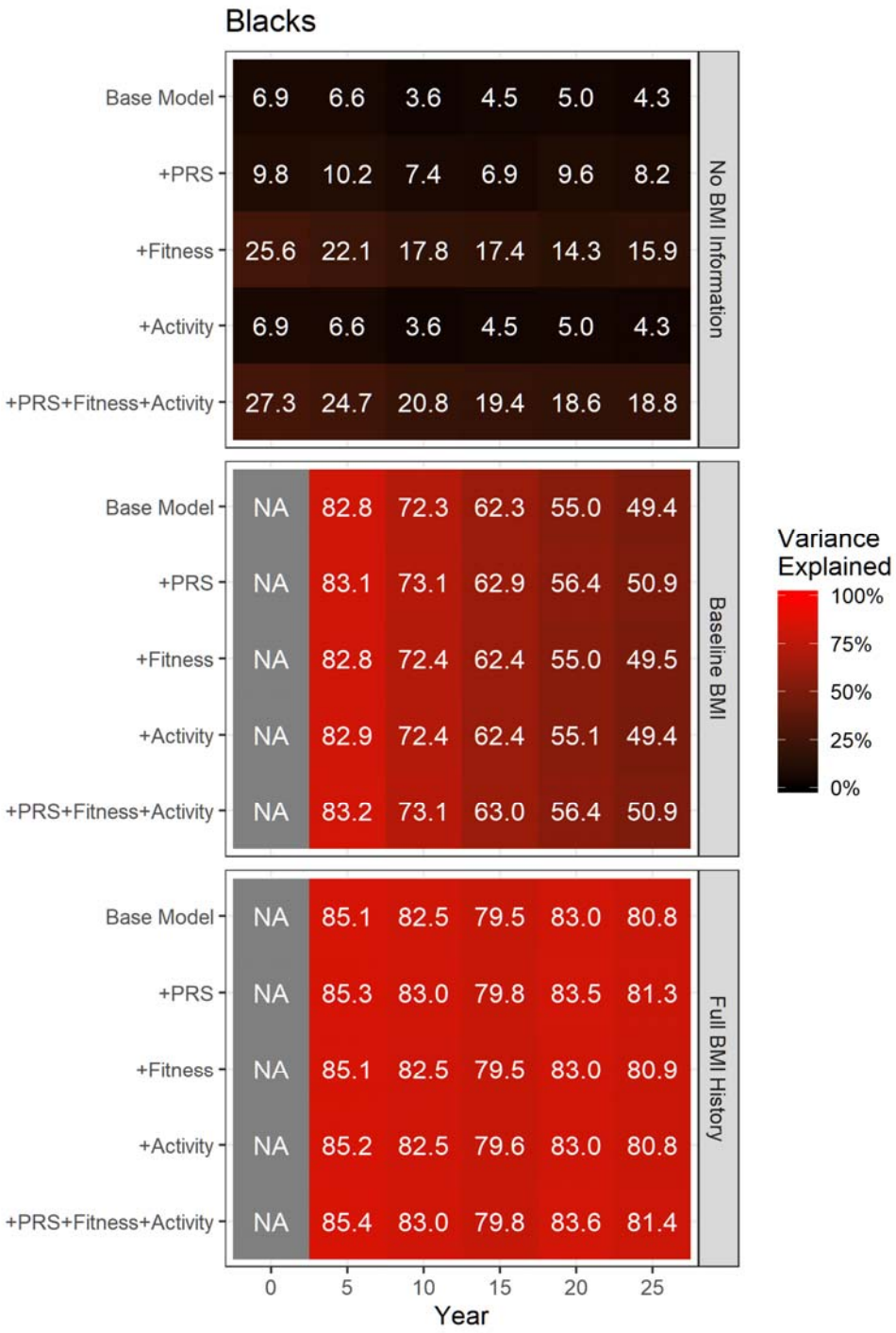

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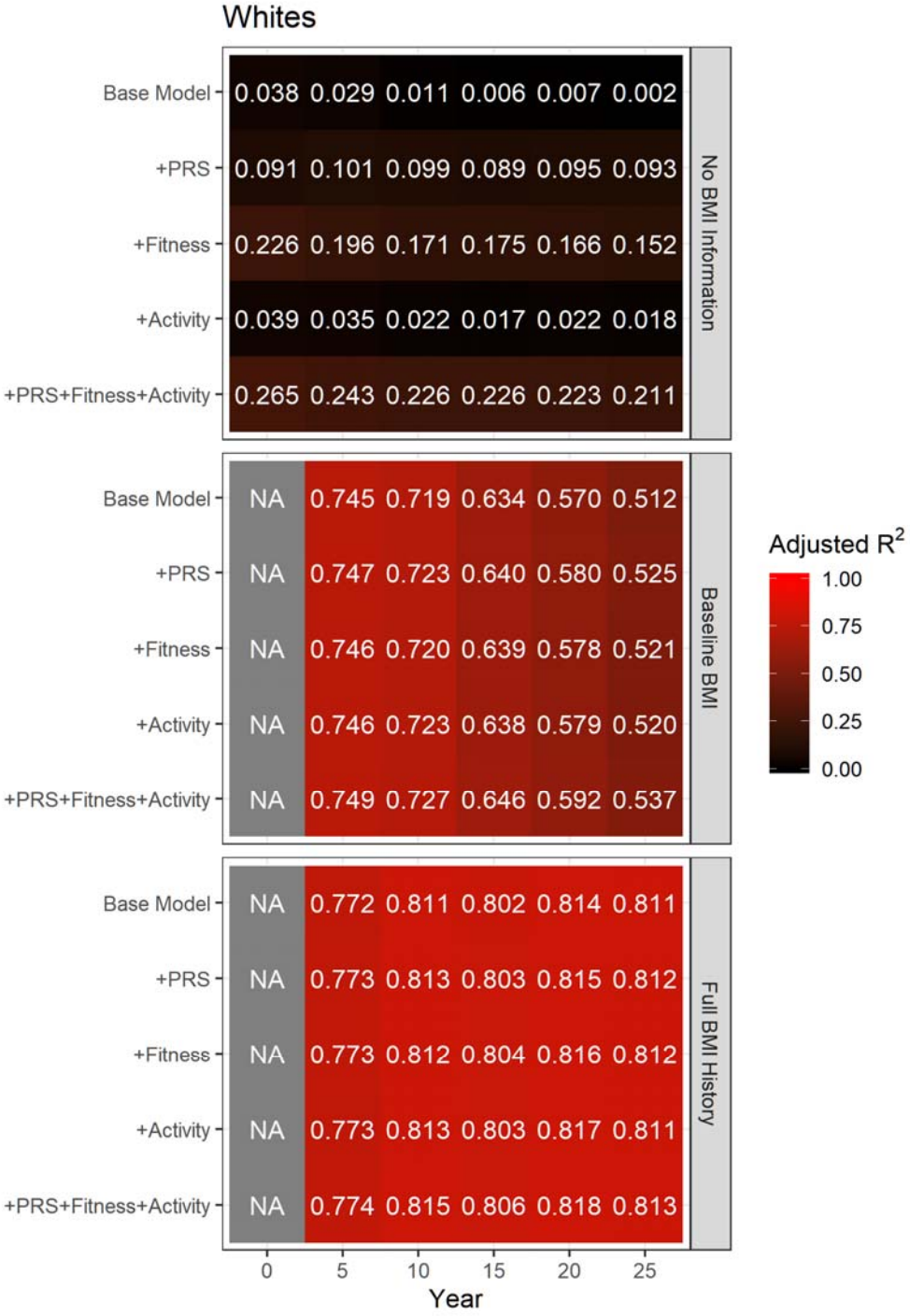
eFigure 7. Adjusted R^2 for Models of BMI at Various Time Points With Increasing Information. The base model included age and sex, but not parental history of overweight (in contrast to Supplemental eFigure 4). To this, polygenic risk score (PRS), fitness, and/or activity were added. In the second block, baseline BMI was added to the base model. In the third block, preceding BMI growth curve history was also added.



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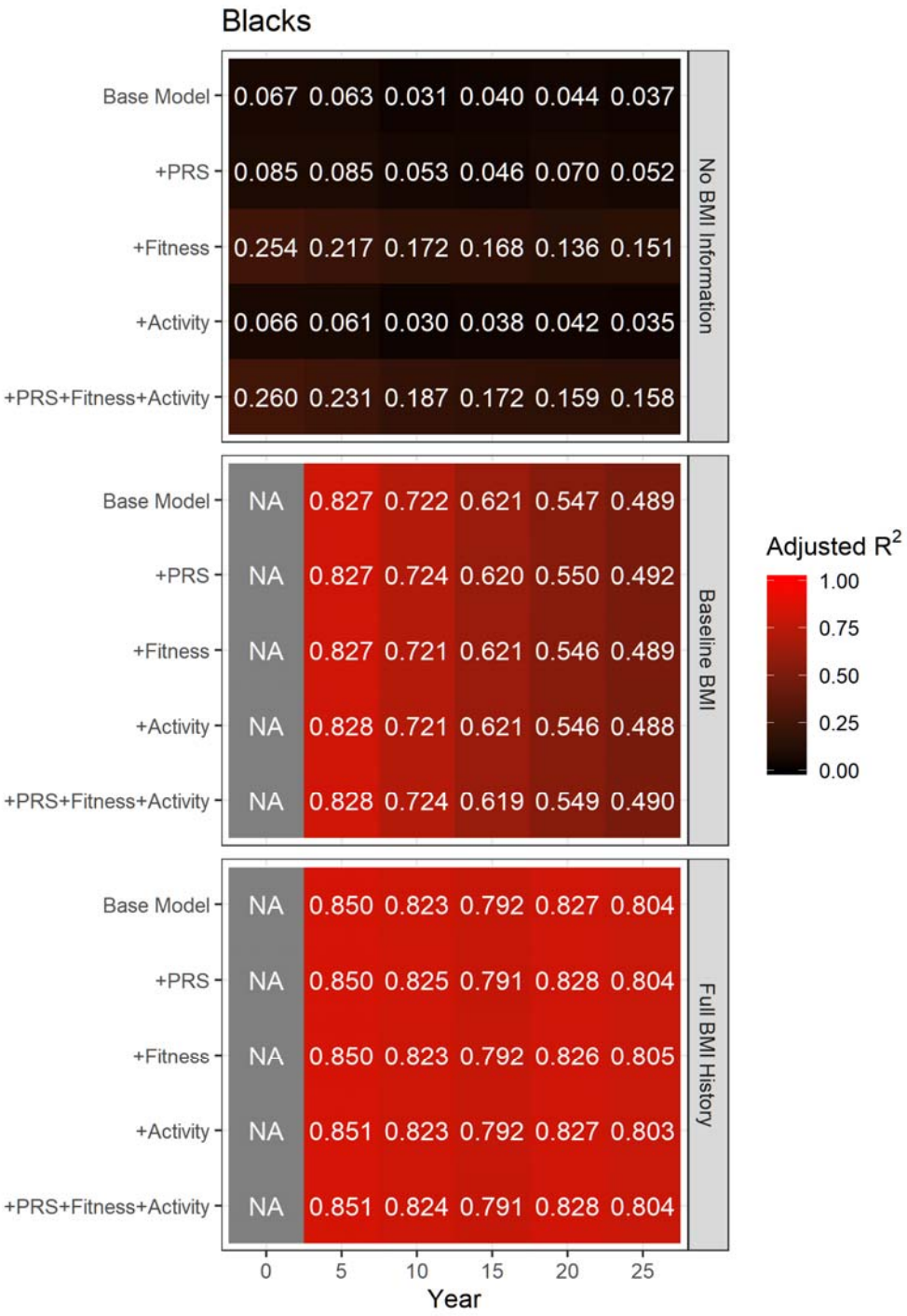

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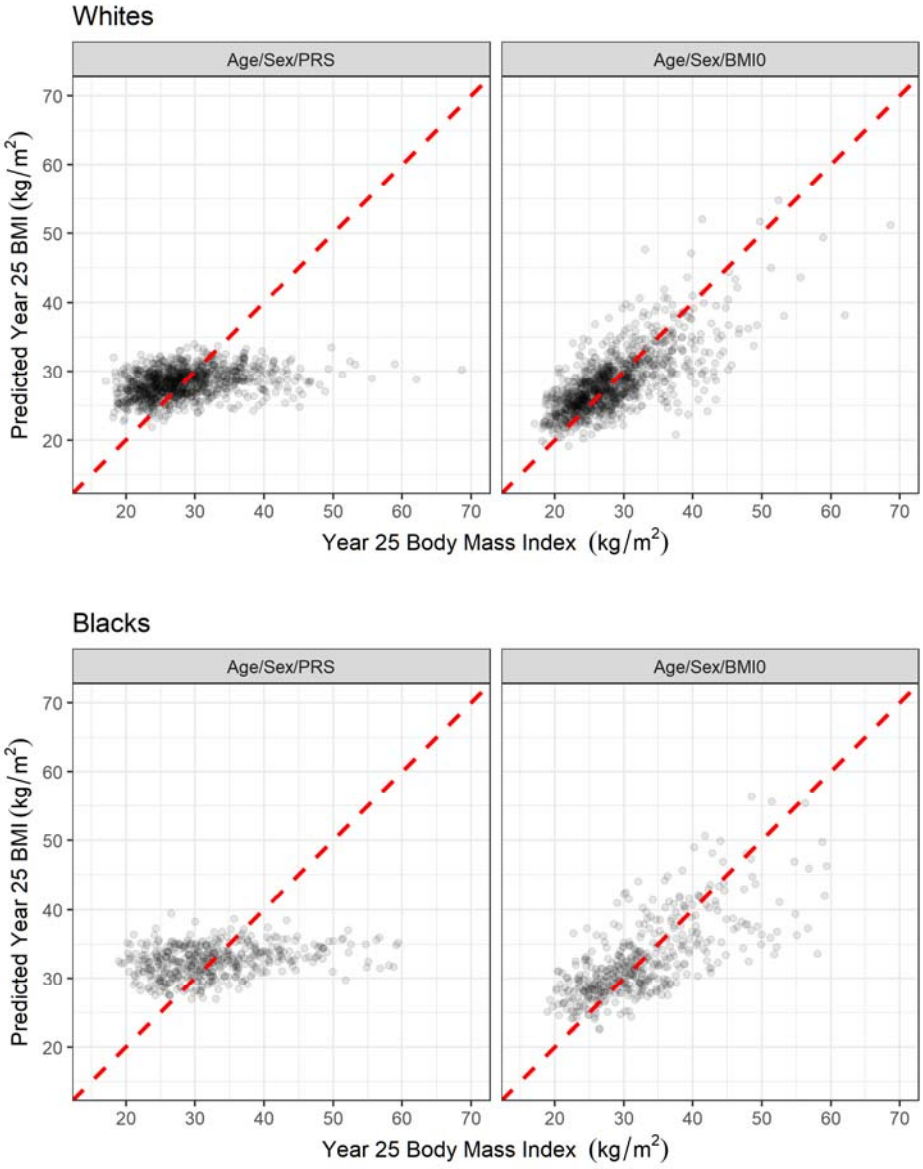
eFigure 8. Predictive Accuracy of PRS in CARDIA, Relative to Clinical Risk Model Including Baseline and Serial BMI Assessment. This figure is analogous to figure 3 from the main text except parental history of overweight/obesity was not included in models.



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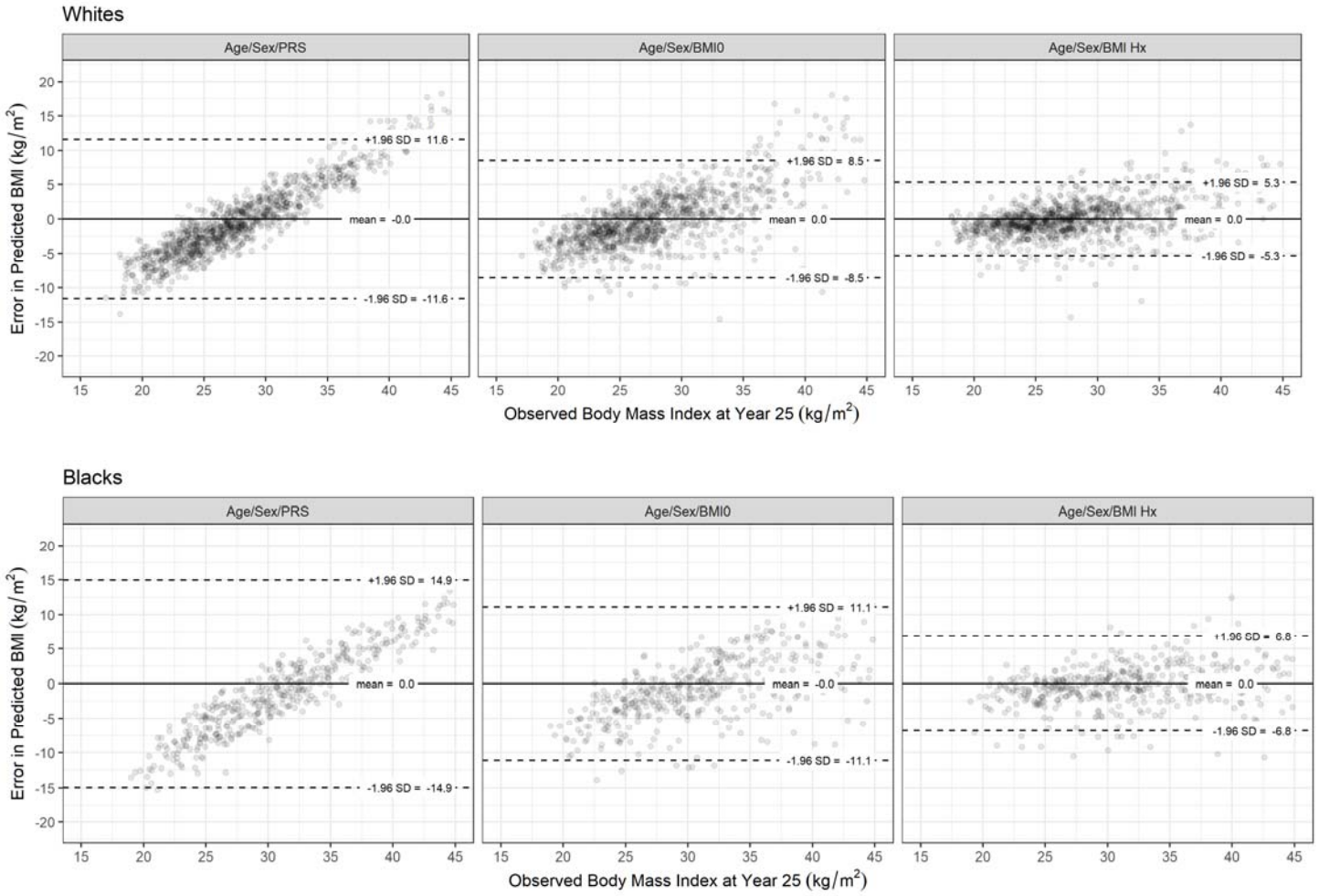
eFigure 9. Error in BMI Prediction With PRS vs Clinical Models. This figure depicts the error in BMI prediction at Year 25 vs. the observed Year 25 BMI in three models (PRS, left; baseline BMI, middle; serial BMI, right). This figure is analogous to figure 4 from the main text except parental history of overweight/obesity was not included in models.



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eTable 1. Characteristics of Analytic Cohort Over Time. There was attrition over follow-up in CARDIA. The cohorts for year 5-25 subset those people who have all intervening BMI values also (starting from the baseline analytic sub-sample, N=1608). For each subsequent time point after Year 0, only individuals with a complete set of intervening BMI measurements was included. Each column represents the subsample for models that correspond to that time-point. Values are expressed as mean (standard deviation) or frequency (percentage). Exercise treadmill time and PA were measured at study entry (Year 0).

Whites:

Characteristic	Year 0 (n=1608)	Year 5 (n=1494)	Year 10 (n=1311)	Year 15 (n=1249)	Year 20 (n=1148)	Year 25 (n=1072)
Age, years						
Year 0	25.6 (3.34)	25.6 (3.30)	25.7 (3.27)	25.8 (3.24)	25.9 (3.20)	25.9 (3.18)
Year 25	50.8 (3.33)	50.8 (3.30)	50.9 (3.26)	50.9 (3.24)	51.0 (3.22)	51.0 (3.22)
Sex						
Male	760 (47.3%)	704 (47.1%)	637 (48.6%)	613 (49.1%)	563 (49.0%)	524 (48.9%)
Female	848 (52.7%)	790 (52.9%)	674 (51.4%)	636 (50.9%)	585 (51.0%)	548 (51.1%)
Body mass index, kg/m^2						
Year 0	23.6 (3.84)	23.6 (3.80)	23.5 (3.78)	23.6 (3.77)	23.5 (3.61)	23.5 (3.58)
Year 2	24.2 (4.11)	24.2 (4.11)	24.1 (4.11)	24.2 (4.10)	24.1 (3.97)	24.1 (3.95)
Year 5	24.8 (4.43)	24.8 (4.42)	24.7 (4.47)	24.8 (4.50)	24.7 (4.36)	24.7 (4.34)
Year 7	25.3 (4.89)	25.3 (4.87)	25.3 (4.90)	25.3 (4.93)	25.2 (4.74)	25.2 (4.70)
Year 10	25.8 (5.18)	25.8 (5.19)	25.8 (5.17)	25.9 (5.17)	25.8 (4.98)	25.8 (4.96)
Year 15	27.0 (5.65)	27.0 (5.66)	27.1 (5.68)	27.1 (5.68)	27.0 (5.55)	27.0 (5.53)
Year 20	27.8 (5.82)	27.7 (5.81)	27.6 (5.81)	27.7 (5.85)	27.7 (5.85)	27.7 (5.84)
Year 25	28.2 (6.10)	28.3 (6.12)	28.3 (6.18)	28.3 (6.21)	28.3 (6.25)	28.3 (6.25)
Fitness and activity						
Exercise treadmill time (seconds)	645 (155)	647 (156)	652 (155)	654 (155)	656 (153)	657 (152)
Moderate-to-vigorous PA (exercise units)	460 (285)	463 (286)	464 (286)	464 (287)	463 (281)	464 (283)
Self-reported parental history of overweight						
Yes	747 (46.5%)	690 (46.2%)	598 (45.6%)	570 (45.6%)	519 (45.2%)	479 (44.7%)

Blacks

Characteristic	Year 0 (n=909)	Year 5 (n=743)	Year 10 (n=631)	Year 15 (n=587)	Year 20 (n=502)	Year 25 (n=449)
Age, years						
Year 0	24.4 (3.84)	24.5 (3.83)	24.5 (3.88)	24.5 (3.89)	24.5 (3.88)	24.6 (3.91)
Year 25	49.4 (3.86)	49.5 (3.86)	49.5 (3.86)	49.5 (3.88)	49.6 (3.86)	49.6 (3.87)

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Sex						
Male	361 (39.7%)	287 (38.6%)	243 (38.5%)	228 (38.8%)	184 (36.7%)	161 (35.9%)
Female	548 (60.3%)	456 (61.4%)	388 (61.5%)	359 (61.2%)	318 (63.3%)	288 (64.1%)
Body mass index, kg/m^2						
Year 0	25.3 (5.41)	25.4 (5.36)	25.4 (5.27)	25.5 (5.32)	25.4 (5.18)	25.5 (5.18)
Year 2	26.3 (5.84)	26.4 (5.88)	26.4 (5.76)	26.4 (5.81)	26.4 (5.71)	26.5 (5.76)
Year 5	27.3 (6.28)	27.5 (6.26)	27.4 (6.18)	27.5 (6.22)	27.3 (6.09)	27.5 (6.12)
Year 7	28.1 (6.54)	28.3 (6.55)	28.2 (6.48)	28.3 (6.55)	28.1 (6.36)	28.2 (6.36)
Year 10	29.0 (6.65)	29.1 (6.72)	29.1 (6.70)	29.2 (6.75)	29.0 (6.59)	29.2 (6.60)
Year 15	30.4 (7.14)	30.6 (7.20)	30.6 (7.14)	30.6 (7.14)	30.6 (7.14)	30.7 (7.13)
Year 20	31.4 (7.40)	31.6 (7.54)	31.5 (7.42)	31.7 (7.51)	31.7 (7.51)	31.8 (7.49)
Year 25	32.2 (7.68)	32.4 (7.88)	32.5 (7.78)	32.6 (7.89)	32.5 (7.96)	32.5 (7.96)
Fitness and activity						
Exercise treadmill time (seconds)	532 (168)	532 (167)	531 (165)	529 (163)	528 (163)	528 (163)
Moderate-to-vigorous PA (exercise units)	375 (304)	379 (314)	377 (315)	373 (316)	362 (309)	360 (307)
Self-reported parental history of overweight						
Yes	407 (44.8%)	350 (47.1%)	303 (48.0%)	284 (48.4%)	236 (47.0%)	212 (47.2%)

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eTable 2. Characteristics of Subjects Included and Excluded From Analytic Cohort by Race. Values are expressed as mean (standard deviation) or frequency (percentage). Exercise treadmill time and PA were measured at study entry (Year 0).

	White		Black		Overall	
Characteristic	**Included (n=1608)**	**Excluded (n=869)**	**Included (n=909)**	**Excluded (n=1728)**	**Included (n=2517)**	**Excluded (n=2598)**
Age, years						
Year 0	25.6 (3.34)	25.2 (3.47)	24.4 (3.84)	24.3 (3.81)	25.1 (3.57)	24.6 (3.72)
Year 25	50.8 (3.33)	50.6 (3.50)	49.4 (3.86)	49.6 (3.78)	50.3 (3.57)	49.9 (3.72)
Sex						
Male	760 (47.3%)	410 (47.2%)	361 (39.7%)	796 (46.1%)	1121 (44.5%)	1206 (46.4%)
Female	848 (52.7%)	459 (52.8%)	548 (60.3%)	932 (53.9%)	1396 (55.5%)	1391 (53.5%)
Body mass index, kg/m^2						
Year 0	23.6 (3.84)	23.8 (4.45)	25.3 (5.41)	25.3 (5.86)	24.2 (4.54)	24.8 (5.48)
Year 2	24.2 (4.11)	24.4 (4.79)	26.3 (5.84)	26.1 (6.27)	24.9 (4.89)	25.5 (5.84)
Year 5	24.8 (4.43)	25.3 (5.46)	27.3 (6.28)	27.5 (6.89)	25.6 (5.28)	26.7 (6.51)
Year 7	25.3 (4.89)	25.9 (5.60)	28.1 (6.54)	28.2 (6.95)	26.3 (5.66)	27.4 (6.61)
Year 10	25.8 (5.18)	26.6 (6.04)	29.0 (6.65)	29.2 (7.60)	26.9 (5.94)	28.3 (7.22)
Year 15	27.0 (5.65)	27.9 (6.84)	30.4 (7.14)	30.5 (7.52)	28.2 (6.42)	29.7 (7.41)
Year 20	27.8 (5.82)	28.0 (6.21)	31.4 (7.40)	31.2 (7.79)	29.0 (6.62)	30.2 (7.46)
Year 25	28.2 (6.10)	28.8 (6.57)	32.2 (7.68)	32.2 (7.72)	29.6 (6.93)	31.1 (7.52)
Fitness and activity						
Exercise treadmill time (seconds)	645 (155)	598 (202)	532 (168)	525 (191)	604 (169)	550 (198)
Moderate-to-vigorous PA (exercise units)	460 (285)	436 (287)	375 (304)	399 (315)	429 (295)	412 (306)
Self-reported parental history of overweight						
Yes	747 (46.5%)	418 (48.1%)	407 (44.8%)	753 (43.6%)	1154 (45.8%)	1171 (45.1%)

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eTable 3. Linear Regression Models for BMI at Specific CARDIA Follow-up Times. The dependent variable outcome is the BMI at the specified "Outcome Year." Regression coefficients (in units of kg/m^2 per SD for continuous variables and kg/m^2 for binary variables). P-values are indicated in parenthesis. Models with PRS are also adjusted for ten principal components of ancestry (not shown).

Whites

Outcome Year	Female Sex	Parental Hx Overweight	Y0 Age	BMI PRS	Fitness	Activity	Delta Age	Y0 BMI	Y2 BMI Residual	Y5 BMI Residual	Y7 BMI Residual	Y10 BMI Residual	Y15 BMI Residual	Y20 BMI Residual
0	-3.53±0.20 (< 0.001)	0.70±0.17 (< 0.001)	0.29±0.08 (< 0.001)	0.66±0.09 (< 0.001)	-1.99±0.11 (< 0.001)	0.38±0.09 (< 0.001)	NA	NA	NA	NA	NA	NA	NA	NA
5	-3.84±0.24 (< 0.001)	0.94±0.20 (< 0.001)	0.13±0.10 (0.18)	0.93±0.10 (< 0.001)	-2.03±0.13 (< 0.001)	0.20±0.11 (0.069)	0.07±0.10 (0.46)	NA	NA	NA	NA	NA	NA	NA
5	-0.53±0.15 (< 0.001)	0.21±0.12 (0.078)	-0.11±0.06 (0.052)	0.24±0.06 (< 0.001)	-0.17±0.08 (0.043)	-0.14±0.06 (0.029)	0.20±0.06 (< 0.001)	3.66±0.07 (< 0.001)	NA	NA	NA	NA	NA	NA
5	-0.55±0.15 (< 0.001)	0.02±0.11 (0.83)	-0.10±0.06 (0.060)	0.19±0.06 (0.002)	-0.13±0.08 (0.098)	-0.10±0.06 (0.085)	0.19±0.05 (< 0.001)	3.55±0.06 (< 0.001)	-0.72±0.06 (< 0.001)	NA	NA	NA	NA	NA
10	-3.80±0.31 (< 0.001)	1.28±0.26 (< 0.001)	0.02±0.13 (0.89)	1.16±0.13 (< 0.001)	-2.20±0.16 (< 0.001)	0.03±0.14 (0.81)	-0.04±0.13 (0.74)	NA	NA	NA	NA	NA	NA	NA
10	-0.13±0.20 (0.51)	0.53±0.15 (< 0.001)	-0.27±0.08 (< 0.001)	0.34±0.08 (< 0.001)	-0.10±0.11 (0.33)	-0.31±0.08 (< 0.001)	0.07±0.07 (0.36)	4.20±0.09 (< 0.001)	NA	NA	NA	NA	NA	NA
10	-0.22±0.16 (0.17)	0.10±0.13 (0.45)	-0.20±0.06 (0.002)	0.24±0.07 (< 0.001)	-0.09±0.09 (0.31)	-0.24±0.07 (< 0.001)	0.08±0.06 (0.23)	3.89±0.07 (< 0.001)	-1.35±0.07 (< 0.001)	-0.32±0.07 (< 0.001)	0.72±0.07 (< 0.001)	NA	NA	NA
15	-3.92±0.34 (< 0.001)	1.63±0.29 (< 0.001)	-0.01±0.14 (0.97)	1.20±0.15 (< 0.001)	-2.52±0.19 (< 0.001)	0.08±0.15 (0.62)	-0.12±0.14 (0.39)	NA	NA	NA	NA	NA	NA	NA
15	-0.18±0.25 (0.49)	0.81±0.20 (< 0.001)	-0.26±0.10 (0.007)	0.37±0.10 (< 0.001)	-0.36±0.14 (0.010)	-0.29±0.10 (0.005)	-0.05±0.10 (0.64)	4.24±0.11 (< 0.001)	NA	NA	NA	NA	NA	NA
15	-0.44±0.19 (0.020)	0.08±0.15 (0.58)	-0.22±0.07 (0.002)	0.17±0.08 (0.026)	-0.28±0.10 (0.007)	-0.14±0.08 (0.077)	0.00±0.07 (> 0.99)	3.72±0.09 (< 0.001)	-1.93±0.08 (< 0.001)	-0.73±0.08 (< 0.001)	0.12±0.08 (0.16)	0.43±0.08 (< 0.001)	NA	NA
20	-4.02±0.37 (< 0.001)	1.65±0.31 (< 0.001)	-0.07±0.15 (0.62)	1.26±0.16 (< 0.001)	-2.39±0.20 (< 0.001)	-0.10±0.16 (0.53)	-0.01±0.15 (0.96)	NA	NA	NA	NA	NA	NA	NA
20	-0.31±0.29 (0.29)	1.02±0.23 (< 0.001)	-0.34±0.11 (0.002)	0.44±0.12 (< 0.001)	-0.42±0.15 (0.007)	-0.44±0.12 (< 0.001)	-0.04±0.11 (0.74)	4.08±0.13 (< 0.001)	NA	NA	NA	NA	NA	NA
20	-0.55±0.20 (0.005)	0.12±0.15 (0.44)	-0.26±0.08 (< 0.001)	0.18±0.08 (0.029)	-0.22±0.10 (0.034)	-0.25±0.08 (0.002)	0.04±0.07 (0.63)	3.55±0.09 (< 0.001)	-1.95±0.10 (< 0.001)	-0.40±0.09 (< 0.001)	-0.32±0.08 (< 0.001)	0.19±0.08 (0.019)	0.96±0.10 (< 0.001)	NA
25	-3.85±0.41 (< 0.001)	1.76±0.35 (< 0.001)	-0.11±0.17 (0.50)	1.40±0.18 (< 0.001)	-2.50±0.22 (< 0.001)	-0.07±0.18 (0.71)	0.02±0.17 (0.92)	NA	NA	NA	NA	NA	NA	NA
25	-0.12±0.35 (0.73)	1.08±0.27 (< 0.001)	-0.36±0.13 (0.005)	0.60±0.14 (< 0.001)	-0.55±0.19 (0.003)	-0.41±0.14 (0.004)	0.11±0.13 (0.42)	4.08±0.15 (< 0.001)	NA	NA	NA	NA	NA	NA

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25	-0.29±0.22 (0.19)	0.05±0.17 (0.79)	-0.24±0.09 (0.005)	0.30±0.09 (0.001)	-0.25±0.12 (0.034)	-0.12±0.09 (0.19)	0.09±0.08 (0.27)	3.51±0.10 (< 0.001)	-1.36±0.13 (< 0.001)	-0.51±0.11 (< 0.001)	-0.10±0.10 (0.30)	0.20±0.09 (0.030)	0.22±0.11 (0.045)	1.90±0.13 (< 0.001)

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Blacks

Outcome Year	Female Sex	Parental Hx Overweight	Y0 Age	BMI PRS	Fitness	Activity	Delta Age	Y0 BMI	Y2 BMI Residual	Y5 BMI Residual	Y7 BMI Residual	Y10 BMI Residual	Y15 BMI Residual	Y20 BMI Residual
0	-3.04±0.45 (< 0.001)	1.80±0.31 (< 0.001)	0.72±0.16 (< 0.001)	0.61±0.18 (< 0.001)	-3.21±0.22 (< 0.001)	0.23±0.17 (0.18)	NA	NA	NA	NA	NA	NA	NA	NA
5	-2.64±0.59 (< 0.001)	1.89±0.41 (< 0.001)	0.80±0.21 (< 0.001)	0.79±0.24 (0.001)	-3.37±0.29 (< 0.001)	0.41±0.22 (0.068)	0.44±0.20 (0.030)	NA	NA	NA	NA	NA	NA	NA
5	0.47±0.29 (0.10)	0.23±0.20 (0.25)	-0.14±0.10 (0.15)	0.13±0.12 (0.28)	-0.09±0.15 (0.55)	0.26±0.11 (0.014)	-0.02±0.10 (0.82)	5.62±0.11 (< 0.001)	NA	NA	NA	NA	NA	NA
5	0.17±0.27 (0.52)	0.02±0.18 (0.90)	-0.22±0.09 (0.020)	0.09±0.11 (0.41)	-0.05±0.14 (0.74)	0.25±0.10 (0.012)	-0.01±0.09 (0.90)	5.65±0.11 (< 0.001)	-0.96±0.09 (< 0.001)	NA	NA	NA	NA	NA
10	-2.73±0.72 (< 0.001)	2.14±0.49 (< 0.001)	0.17±0.25 (0.50)	0.87±0.29 (0.003)	-3.49±0.35 (< 0.001)	0.38±0.27 (0.16)	0.14±0.25 (0.57)	NA	NA	NA	NA	NA	NA	NA
10	0.71±0.44 (0.11)	0.35±0.29 (0.23)	-0.60±0.15 (< 0.001)	0.18±0.17 (0.30)	-0.19±0.23 (0.42)	0.15±0.16 (0.33)	-0.12±0.15 (0.40)	5.61±0.17 (< 0.001)	NA	NA	NA	NA	NA	NA
10	0.16±0.35 (0.64)	-0.12±0.23 (0.62)	-0.69±0.12 (< 0.001)	0.14±0.14 (0.31)	-0.05±0.18 (0.79)	0.13±0.13 (0.31)	-0.14±0.12 (0.22)	5.56±0.13 (< 0.001)	-1.96±0.12 (< 0.001)	-0.46±0.13 (< 0.001)	0.78±0.13 (< 0.001)	NA	NA	NA
15	-2.33±0.79 (0.003)	2.73±0.54 (< 0.001)	0.10±0.27 (0.72)	0.88±0.32 (0.007)	-3.51±0.38 (< 0.001)	0.38±0.30 (0.21)	0.50±0.27 (0.061)	NA	NA	NA	NA	NA	NA	NA
15	0.95±0.56 (0.090)	0.99±0.38 (0.009)	-0.76±0.19 (< 0.001)	0.18±0.22 (0.43)	-0.29±0.29 (0.32)	0.16±0.21 (0.45)	-0.01±0.19 (0.97)	5.46±0.22 (< 0.001)	NA	NA	NA	NA	NA	NA
15	0.09±0.42 (0.83)	0.32±0.28 (0.26)	-0.90±0.15 (< 0.001)	0.14±0.17 (0.40)	-0.10±0.22 (0.63)	0.17±0.15 (0.27)	-0.02±0.14 (0.89)	5.48±0.16 (< 0.001)	-2.46±0.15 (< 0.001)	-0.95±0.16 (< 0.001)	0.12±0.16 (0.45)	0.42±0.15 (0.006)	NA	NA
20	-1.49±0.93 (0.11)	2.88±0.62 (< 0.001)	0.12±0.31 (0.70)	1.24±0.38 (0.001)	-3.21±0.45 (< 0.001)	0.43±0.35 (0.22)	-0.43±0.31 (0.17)	NA	NA	NA	NA	NA	NA	NA
20	1.87±0.71 (0.009)	1.01±0.47 (0.034)	-0.66±0.24 (0.006)	0.28±0.29 (0.32)	-0.14±0.37 (0.70)	0.16±0.26 (0.52)	-0.62±0.23 (0.008)	5.29±0.27 (< 0.001)	NA	NA	NA	NA	NA	NA
20	0.54±0.44 (0.23)	0.18±0.30 (0.54)	-0.80±0.15 (< 0.001)	0.31±0.18 (0.085)	-0.12±0.23 (0.60)	0.24±0.16 (0.13)	-0.20±0.14 (0.17)	5.32±0.17 (< 0.001)	-2.46±0.18 (< 0.001)	-0.96±0.17 (< 0.001)	-0.47±0.16 (0.004)	0.15±0.15 (0.34)	1.40±0.18 (< 0.001)	NA
25	-2.17±1.07 (0.044)	3.20±0.70 (< 0.001)	-0.05±0.35 (0.89)	0.89±0.42 (0.033)	-3.74±0.51 (< 0.001)	0.34±0.38 (0.37)	-0.02±0.35 (0.95)	NA	NA	NA	NA	NA	NA	NA
25	1.60±0.88 (0.071)	1.52±0.56 (0.007)	-0.75±0.28 (0.008)	-0.03±0.33 (0.93)	-0.40±0.45 (0.37)	0.04±0.30 (0.89)	-0.09±0.27 (0.75)	5.22±0.32 (< 0.001)	NA	NA	NA	NA	NA	NA
25	-0.19±0.56 (0.73)	0.55±0.35 (0.12)	-0.82±0.19 (< 0.001)	0.01±0.21 (0.97)	-0.37±0.28 (0.20)	0.11±0.19 (0.58)	0.15±0.17 (0.40)	5.35±0.20 (< 0.001)	-2.22±0.27 (< 0.001)	-0.83±0.23 (< 0.001)	0.24±0.21 (0.25)	-0.12±0.19 (0.51)	0.51±0.22 (0.020)	2.02±0.29 (< 0.001)

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eTable 4. Linear Regression Models for BMI at Specific CARDIA Follow-up Times. The dependent variable outcome is the BMI a the specified "Outcome Year." Regression coefficients (in units of kg/m^2 per SD for continuous variables and kg/m^2 for binary variables). P-values are indicated in parenthesis. Models with PRS are also adjusted for ten principal components of ancestry (not shown). These are from analogous models as Supplementary Table 1 except parental history of overweight/obesity was not included.

Whites

Outcome Year	Female Sex	Y0 Age	BMI PRS	Fitness	Activity	Delta Age	Y0 BMI	Y2 BMI Residual	Y5 BMI Residual	Y7 BMI Residual	Y10 BMI Residual	Y15 BMI Residual	Y20 BMI Residual
0	-3.56±0.20 (< 0.001)	0.31±0.08 (< 0.001)	0.71±0.09 (< 0.001)	-2.05±0.11 (< 0.001)	0.39±0.09 (< 0.001)	NA	NA	NA	NA	NA	NA	NA	NA
5	-3.89±0.24 (< 0.001)	0.17±0.10 (0.098)	0.98±0.11 (< 0.001)	-2.11±0.13 (< 0.001)	0.22±0.11 (0.046)	0.08±0.10 (0.42)	NA	NA	NA	NA	NA	NA	NA
5	-0.52±0.15 (< 0.001)	-0.11±0.06 (0.065)	0.25±0.06 (< 0.001)	-0.18±0.08 (0.031)	-0.13±0.06 (0.033)	0.20±0.06 (< 0.001)	3.67±0.07 (< 0.001)	NA	NA	NA	NA	NA	NA
5	-0.55±0.15 (< 0.001)	-0.10±0.06 (0.061)	0.19±0.06 (0.001)	-0.13±0.08 (0.094)	-0.10±0.06 (0.086)	0.19±0.05 (< 0.001)	3.55±0.06 (< 0.001)	-0.72±0.06 (< 0.001)	NA	NA	NA	NA	NA
10	-3.85±0.31 (< 0.001)	0.06±0.13 (0.66)	1.23±0.13 (< 0.001)	-2.32±0.16 (< 0.001)	0.08±0.14 (0.58)	-0.04±0.13 (0.74)	NA	NA	NA	NA	NA	NA	NA
10	-0.13±0.20 (0.53)	-0.25±0.08 (< 0.001)	0.37±0.08 (< 0.001)	-0.14±0.11 (0.20)	-0.30±0.08 (< 0.001)	0.07±0.08 (0.36)	4.23±0.09 (< 0.001)	NA	NA	NA	NA	NA	NA
10	-0.22±0.16 (0.18)	-0.20±0.06 (0.002)	0.25±0.07 (< 0.001)	-0.10±0.09 (0.28)	-0.23±0.07 (< 0.001)	0.08±0.06 (0.23)	3.90±0.07 (< 0.001)	-1.35±0.07 (< 0.001)	-0.32±0.07 (< 0.001)	0.72±0.07 (< 0.001)	NA	NA	NA
15	-3.97±0.35 (< 0.001)	0.04±0.14 (0.76)	1.30±0.15 (< 0.001)	-2.65±0.19 (< 0.001)	0.12±0.15 (0.43)	-0.12±0.14 (0.40)	NA	NA	NA	NA	NA	NA	NA
15	-0.16±0.26 (0.54)	-0.24±0.10 (0.014)	0.41±0.10 (< 0.001)	-0.40±0.14 (0.004)	-0.27±0.11 (0.009)	-0.04±0.10 (0.65)	4.29±0.11 (< 0.001)	NA	NA	NA	NA	NA	NA
15	-0.44±0.19 (0.021)	-0.22±0.07 (0.003)	0.18±0.08 (0.023)	-0.28±0.10 (0.006)	-0.14±0.08 (0.082)	0.00±0.07 (> 0.99)	3.72±0.09 (< 0.001)	-1.93±0.08 (< 0.001)	-0.73±0.08 (< 0.001)	0.12±0.08 (0.16)	0.43±0.08 (< 0.001)	NA	NA
20	-4.07±0.37 (< 0.001)	-0.02±0.15 (0.92)	1.35±0.16 (< 0.001)	-2.52±0.20 (< 0.001)	-0.08±0.16 (0.64)	-0.04±0.15 (0.78)	NA	NA	NA	NA	NA	NA	NA
20	-0.29±0.29 (0.32)	-0.31±0.11 (0.006)	0.49±0.12 (< 0.001)	-0.48±0.16 (0.002)	-0.43±0.12 (< 0.001)	-0.06±0.11 (0.59)	4.13±0.13 (< 0.001)	NA	NA	NA	NA	NA	NA
20	-0.54±0.20 (0.006)	-0.25±0.08 (< 0.001)	0.18±0.08 (0.025)	-0.23±0.10 (0.029)	-0.25±0.08 (0.002)	0.03±0.07 (0.65)	3.55±0.09 (< 0.001)	-1.96±0.10 (< 0.001)	-0.41±0.09 (< 0.001)	-0.32±0.08 (< 0.001)	0.19±0.08 (0.019)	0.96±0.10 (< 0.001)	NA
25	-3.88±0.42 (< 0.001)	-0.05±0.17 (0.75)	1.50±0.18 (< 0.001)	-2.64±0.22 (< 0.001)	-0.05±0.19 (0.79)	-0.06±0.17 (0.75)	NA	NA	NA	NA	NA	NA	NA

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Outcome Year	Female Sex	Y0 Age	BMI PRS	Fitness	Activity	Delta Age	Y0 BMI	Y2 BMI Residual	Y5 BMI Residual	Y7 BMI Residual	Y10 BMI Residual	Y15 BMI Residual	Y20 BMI Residual
25	-0.09±0.35 (0.80)	-0.33±0.13 (0.012)	0.65±0.14 (< 0.001)	-0.61±0.19 (0.001)	-0.40±0.14 (0.005)	0.06±0.13 (0.63)	4.14±0.15 (< 0.001)	NA	NA	NA	NA	NA	NA
25	-0.29±0.22 (0.19)	-0.24±0.09 (0.006)	0.30±0.09 (< 0.001)	-0.25±0.12 (0.033)	-0.12±0.09 (0.19)	0.09±0.08 (0.28)	3.51±0.10 (< 0.001)	-1.37±0.13 (< 0.001)	-0.51±0.11 (< 0.001)	-0.10±0.10 (0.30)	0.20±0.09 (0.030)	0.22±0.11 (0.045)	1.90±0.13 (< 0.001)

Blacks

Outcome Year	Female Sex	Y0 Age	BMI PRS	Fitness	Activity	Delta Age	Y0 BMI	Y2 BMI Residual	Y5 BMI Residual	Y7 BMI Residual	Y10 BMI Residual	Y15 BMI Residual	Y20 BMI Residual
0	-3.04±0.46 (< 0.001)	0.85±0.16 (< 0.001)	0.63±0.19 (< 0.001)	-3.29±0.23 (< 0.001)	0.27±0.17 (0.12)	NA	NA	NA	NA	NA	NA	NA	NA
5	-2.66±0.60 (< 0.001)	0.91±0.21 (< 0.001)	0.81±0.25 (0.001)	-3.46±0.29 (< 0.001)	0.43±0.23 (0.056)	0.39±0.20 (0.058)	NA	NA	NA	NA	NA	NA	NA
5	0.48±0.29 (0.098)	-0.13±0.10 (0.18)	0.12±0.12 (0.29)	-0.09±0.15 (0.56)	0.27±0.11 (0.014)	-0.03±0.10 (0.75)	5.65±0.11 (< 0.001)	NA	NA	NA	NA	NA	NA
5	0.18±0.27 (0.52)	-0.22±0.09 (0.020)	0.09±0.11 (0.41)	-0.05±0.14 (0.74)	0.25±0.10 (0.012)	-0.01±0.09 (0.89)	5.65±0.10 (< 0.001)	-0.96±0.09 (< 0.001)	NA	NA	NA	NA	NA
10	-2.68±0.73 (< 0.001)	0.33±0.25 (0.19)	0.90±0.30 (0.003)	-3.58±0.35 (< 0.001)	0.43±0.27 (0.11)	0.08±0.25 (0.76)	NA	NA	NA	NA	NA	NA	NA
10	0.74±0.44 (0.091)	-0.58±0.15 (< 0.001)	0.18±0.17 (0.30)	-0.18±0.23 (0.43)	0.16±0.16 (0.31)	-0.13±0.15 (0.36)	5.64±0.16 (< 0.001)	NA	NA	NA	NA	NA	NA
10	0.15±0.35 (0.66)	-0.69±0.12 (< 0.001)	0.14±0.14 (0.31)	-0.05±0.18 (0.78)	0.13±0.13 (0.31)	-0.14±0.12 (0.23)	5.55±0.13 (< 0.001)	-1.96±0.12 (< 0.001)	-0.46±0.13 (< 0.001)	0.78±0.13 (< 0.001)	NA	NA	NA
15	-2.28±0.81 (0.005)	0.29±0.28 (0.29)	0.91±0.33 (0.006)	-3.65±0.39 (< 0.001)	0.46±0.30 (0.13)	0.53±0.27 (0.054)	NA	NA	NA	NA	NA	NA	NA
15	1.03±0.56 (0.066)	-0.71±0.19 (< 0.001)	0.17±0.23 (0.44)	-0.28±0.29 (0.34)	0.18±0.21 (0.38)	-0.01±0.19 (0.96)	5.56±0.21 (< 0.001)	NA	NA	NA	NA	NA	NA
15	0.11±0.42 (0.79)	-0.89±0.15 (< 0.001)	0.14±0.17 (0.40)	-0.10±0.22 (0.65)	0.18±0.15 (0.25)	-0.02±0.14 (0.88)	5.52±0.16 (< 0.001)	-2.47±0.15 (< 0.001)	-0.96±0.16 (< 0.001)	0.12±0.16 (0.44)	0.41±0.15 (0.006)	NA	NA
20	-1.30±0.95 (0.17)	0.30±0.32 (0.34)	1.25±0.39 (0.001)	-3.33±0.45 (< 0.001)	0.55±0.35 (0.12)	-0.44±0.32 (0.16)	NA	NA	NA	NA	NA	NA	NA
20	2.01±0.71 (0.005)	-0.61±0.24 (0.010)	0.26±0.29 (0.36)	-0.12±0.37 (0.75)	0.20±0.26 (0.44)	-0.63±0.23 (0.007)	5.40±0.26 (< 0.001)	NA	NA	NA	NA	NA	NA
20	0.56±0.44 (0.21)	-0.79±0.15 (< 0.001)	0.30±0.18 (0.088)	-0.11±0.23 (0.62)	0.25±0.16 (0.12)	-0.20±0.14 (0.17)	5.35±0.16 (< 0.001)	-2.47±0.18 (< 0.001)	-0.96±0.17 (< 0.001)	-0.47±0.16 (0.004)	0.14±0.15 (0.35)	1.40±0.18 (< 0.001)	NA
25	-2.09±1.10 (0.058)	0.18±0.36 (0.62)	0.95±0.42 (0.025)	-3.93±0.52 (< 0.001)	0.48±0.39 (0.22)	0.03±0.36 (0.93)	NA	NA	NA	NA	NA	NA	NA

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25	1.75±0.88 (0.048)	-0.66±0.28 (0.019)	-0.03±0.34 (0.93)	-0.39±0.46 (0.40)	0.09±0.30 (0.76)	-0.06±0.28 (0.82)	5.38±0.32 (< 0.001)	NA	NA	NA	NA	NA	NA
25	-0.15±0.56 (0.79)	-0.80±0.19 (< 0.001)	0.01±0.21 (0.97)	-0.36±0.28 (0.21)	0.12±0.19 (0.51)	0.16±0.17 (0.36)	5.41±0.20 (< 0.001)	-2.26±0.27 (< 0.001)	-0.83±0.23 (< 0.001)	0.24±0.21 (0.26)	-0.14±0.19 (0.46)	0.52±0.22 (0.019)	2.01±0.29 (< 0.001)

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