# Supplementary Online Content

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

**eTable 1: Factor loadings for Western and Prudent Diet Pattern Components According to Principal Components Analysis**

| Food category | Western | Prudent |
|---|---|---|
| Dairy | 0.023 | 0.334 |
| Fat | 0.189 | 0.178 |
| Fruit | -0.100 | 0.447 |
| Vegetable | 0.057 | 0.450 |
| Chicken | -0.036 | 0.333 |
| Meat | 0.459 | 0.054 |
| Fish | -0.035 | 0.351 |
| Eggs | 0.314 | 0.038 |
| Sweets | 0.213 | 0.053 |
| Nuts | 0.104 | 0.221 |
| French fries | 0.347 | -0.006 |
| Fried foods | 0.395 | -0.034 |
| Coffee | 0.115 | -0.023 |
| Tea | 0.065 | 0.069 |
| Diet soda | -0.013 | 0.136 |
| Soda | 0.258 | -0.149 |
| Juice | 0.146 | 0.015 |
| Alcohol | 0.038 | -0.058 |
| Refined grains | 0.439 | 0.027 |
| Whole grains | -0.079 | 0.338 |

**eTable 2: Estimated 20-year Change in Digit Symbol Substitution (DSS) by Tertile of Diet Pattern**

|  | Tertile 1 | Tertile 2 | Tertile 3 | p-trend |
|---|---|---|---|---|
| Western Diet Score |  |  |  |  |
| N | 4553 | 4541 | 4494 |  |
| Change in z-score | -0.77 (-0.80 to -0.75) | -0.73 (-0.75 to -0.70) | -0.68 (-0.70 to -0.66) | <0.001 |
| Model 1 | Reference | 0.01 (-0.02 to 0.04) | 0.02 (-0.02 to 0.05) | 0.340 |
| Model 2 | Reference | 0.00 (-0.03 to 0.03) | 0.01 (-0.02 to 0.04) | 0.635 |
|  |  |  |  |  |
| Prudent Diet Score |  |  |  |  |
| N | 4541 | 4536 | 4511 |  |
| Change in z-score | -0.69 (-0.71 to -0.67) | -0.73 (-0.75 to -0.70) | -0.76 (-0.79 to -0.74) | <0.001 |
| Model 1 | Reference | 0.01 (-0.02 to 0.04) | -0.01 (-0.04 to 0.02) | 0.639 |
| Model 2 | Reference | 0.01 (-0.02 to 0.04) | 0.00 (-0.03 to 0.03) | 0.994 |

Model 1: adjusted for age, sex, education, race-center, total calories
Model 2: adjusted for Model 1 and APOEe4 status, drinking history, smoking history, activity level, body mass index, total cholesterol, prevalent CHD, hypertension, diabetes, and stroke.
A linear trend was tested across the dietary tertiles using the median score of each tertile modeled as a continuous variable.

**eTable 3: Estimated 20-year Change in Delayed Word Recall (DWR) by Tertile of Diet Pattern**

| | Tertile 1 | Tertile 2 | Tertile 3 | p-trend |
|---|---|---|---|---|
| Western Diet Score | | | | |
| N | 4553 | 4541 | 4494 | |
| Change in z-score | -1.02 (-1.07 to -0.97) | -1.03 (-1.08 to -0.97) | -1.02 (-1.07 to -0.97) | 0.998 |
| Model 1 | Reference | -0.02 (-0.09 to 0.05) | -0.01 (-0.08 to 0.07) | 0.853 |
| Model 2 | Reference | -0.02 (-0.09 to 0.05) | -0.01 (-0.09 to 0.06) | 0.804 |
| | | | | |
| Prudent Diet Score | | | | |
| N | 4541 | 4536 | 4511 | |
| Change in z-score | -0.98 (-1.03 to -0.93) | -1.05 (-1.10 to -1.00) | -1.03 (-1.08 to -0.98) | 0.268 |
| Model 1 | Reference | -0.03 (-0.10 to 0.04) | -0.01 (-0.08 to 0.06) | 0.885 |
| Model 2 | Reference | -0.03 (-0.10 to 0.04) | -0.00 (-0.07 to 0.07) | 0.999 |

Model 1: adjusted for age, sex, education, race-center, total calories
Model 2: adjusted for Model 1 and APOEe4 status, drinking history, smoking history, activity level, body mass index, total cholesterol, prevalent CHD, hypertension, diabetes, and stroke.
A linear trend was tested across the dietary tertiles using the median score of each tertile modeled as a continuous variable.

**eTable 4: 21-year Change in Word Fluency Test (WF) by Tertile of Diet Pattern**

| | Tertile 1 | Tertile 2 | Tertile 3 | p-trend |
|---|---|---|---|---|
| Western Diet Score | | | | |
| N | 4553 | 4541 | 4494 | |
| Change in z-score | -0.20 (-0.22 to -0.17) | -0.20 (-0.23 to -0.17) | -0.17 (-0.20 to -0.14) | 0.219 |
| Model 1 | Reference | -0.01 (-0.05 to 0.03) | 0.01 (-0.03 to 0.06) | 0.434 |
| Model 2 | Reference | -0.01 (-0.05 to 0.03) | 0.01 (-0.03 to 0.05) | 0.559 |
| | | | | |
| Prudent Diet Score | | | | |
| N | 4541 | 4536 | 4511 | |
| Change in z-score | -0.18 (-0.21 to -0.15) | -0.19 (-0.22 to -0.17) | -0.20 (-0.23 to -0.17) | 0.335 |
| Model 1 | Reference | -0.00 (-0.04 to 0.04) | -0.01 (-0.05 to 0.03) | 0.67 |
| Model 2 | Reference | 0.01 (-0.03 to 0.04) | 0.00 (-0.04 to 0.04) | 0.985 |

Model 1: adjusted for age, sex, education, race-center, total calories
Model 2: adjusted for Model 1 and APOEe4 status, drinking history, smoking history, activity level, body mass index, total cholesterol, prevalent CHD, hypertension, diabetes, and stroke
A linear trend was tested across the dietary tertiles using the median score of each tertile modeled as a continuous variable.

**eTable 5: Estimated 20-year Change in Cognitive Function by Tertile of Diet Pattern Using Non-Imputed Data**

|  | Tertile 1 | Tertile 2 | Tertile 3 | p-trend |
|---|---|---|---|---|
| Western Diet Score |  |  |  |  |
| N | 1998 | 1929 | 1788 |  |
| Change in z-score | -0.85 (-0.88 to -0.82) | -0.82 (-0.85 to -0.79) | -0.80 (-0.83 to -0.77) | 0.045 |
| Model 1 | Reference | 0.01 (-0.04 to 0.05) | 0.01 (-0.04 to 0.06) | 0.756 |
| Model 2 | Reference | -0.00 (-0.05 to 0.04) | 0.00 (-0.05 to 0.05) | 0.797 |
|  |  |  |  |  |
| Prudent Diet Score |  |  |  |  |
| N | 1844 | 1953 | 1918 |  |
| Change in z-score | -0.79 (-0.82 to -0.76) | -0.83 (-0.86 to -0.80) | -0.85 (-0.88 to -0.82) | 0.014 |
| Model 1 | Reference | -0.00 (-0.05 to 0.04) | -0.01 (-0.05 to 0.04) | 0.963 |
| Model 2 | Reference | -0.01 (-0.05 to 0.04) | -0.01 (-0.05 to 0.04) | 0.818 |

Model 1: adjusted for age, sex, education, race-center, total calories
Model 2: adjusted for Model 1 and APOEe4 status, drinking history, smoking history, activity level, body mass index, total cholesterol, prevalent CHD, history of hypertension, diabetes, and stroke
A linear trend was tested across the dietary tertiles using the median score of each tertile modeled as a continuous variable.

**eTable 6: Participant Characteristics by Tertile of Prudent Diet Score**

| | | Total | Tertile 1 | Tertile 2 | Tertile 3 | p-value |
|---|---|---|---|---|---|---|
| N | | 13588 | 4541 | 4536 | 4511 | |
| Age (mean, SD) | | 54.6 (5.7) | 54.1 (5.7) | 54.8 (5.7) | 54.9 (5.7) | <0.001 |
| Women | | 7588 (55.8%) | 2316 (51.0%) | 2570 (56.7%) | 2702 (59.9%) | <0.001 |
| Black | | 3191 (23.5%) | 1316 (29.0%) | 1000 (22.0%) | 875 (19.4%) | <0.001 |
| Study center | Forsyth County NC | 3537 (26.0%) | 1127 (24.8%) | 1213 (26.7%) | 1197 (26.5%) | <0.001 |
| | Jackson MS | 2844 (20.9%) | 1211 (26.7%) | 903 (19.9%) | 730 (16.2%) | |
| | Minneapolis MN | 3698 (27.2%) | 1073 (23.6%) | 1263 (27.8%) | 1362 (30.2%) | |
| | Washington County MD | 3509 (25.8%) | 1130 (24.9%) | 1157 (25.5%) | 1222 (27.1%) | |
| Education | Below High school | 2856 (21.0%) | 1144 (25.2%) | 934 (20.6%) | 778 (17.2%) | <0.001 |
| | High school | 5683 (41.8%) | 1976 (43.5%) | 1870 (41.2%) | 1837 (40.7%) | |
| | College or above | 5049 (37.2%) | 1421 (31.3%) | 1732 (38.2%) | 1896 (42.0%) | |
| Cigarette smoking | Current | 3297 (24.3%) | 1442 (31.8%) | 1010 (22.3%) | 845 (18.7%) | <0.001 |
| | Former | 4468 (32.9%) | 1386 (30.5%) | 1507 (33.2%) | 1575 (34.9%) | |
| | Never | 5817 (42.8%) | 1709 (37.7%) | 2018 (44.5%) | 2090 (46.3%) | |
| Alcohol use | Current | 7828 (57.6%) | 2674 (58.9%) | 2614 (57.6%) | 2540 (56.3%) | 0.14 |
| | Former | 2388 (17.6%) | 771 (17.0%) | 786 (17.3%) | 831 (18.4%) | |
| | Never | 3372 (24.8%) | 1096 (24.1%) | 1136 (25.0%) | 1140 (25.3%) | |
| Activity level | 1st tertiles | 5461 (40.3%) | 2154 (47.6%) | 1769 (39.1%) | 1538 (34.2%) | <0.001 |
| | 2nd tertiles | 4157 (30.7%) | 1359 (30.0%) | 1414 (31.2%) | 1384 (30.8%) | |
| | 3rd teritles | 3931 (29.0%) | 1010 (22.3%) | 1345 (29.7%) | 1576 (35.0%) | |
| BMI, mean, SD (kg/m$^2$) | | 27.6 (5.3) | 27.4 (5.2) | 27.5 (5.2) | 27.9 (5.4) | <0.001 |
| Calories, mean, SD (kcal/day) | | 1629 (605) | 1346 (504) | 1566 (514) | 1978 (613) | <0.001 |
| History of CAD | | 605 (4.5%) | 171 (3.8%) | 193 (4.3%) | 241 (5.3%) | <0.001 |
| Total cholesterol, mean, SD (mmol/L) | | 5.56 (1.08) | 5.56 (1.10) | 5.56 (1.05) | 5.57 (1.08) | 0.98 |
| History of hypertension | | 4470 (33.0%) | 1487 (32.9%) | 1512 (33.5%) | 1471 (32.7%) | 0.74 |
| History of diabetes | | 1437 (10.7%) | 394 (8.8%) | 472 (10.5%) | 571 (12.7%) | <0.001 |
| # of APOE ε4 allele | 0 | 9125 (69.3%) | 3011 (68.4%) | 3081 (70.1%) | 3033 (69.6%) | 0.21 |
| | 1 | 3695 (28.1%) | 1284 (29.2%) | 1191 (27.1%) | 1220 (28.0%) | |
| | 2 | 339 (2.6%) | 109 (2.5%) | 124 (2.8%) | 106 (2.4%) | |
| Prevalent stroke through Visit 2 | | 224 (1.6%) | 81 (1.8%) | 75 (1.7%) | 68 (1.5%) | 0.59 |
| Western Diet Score (mean, SD) | | -0.03 (1.54) | -0.00 (1.43) | -0.08 (1.50) | -0.00 (1.69) | 0.020 |
| Prudent Diet Score (mean, SD) | | 0.03 (1.41) | -1.35 (0.47) | -0.16 (0.33) | 1.59 (1.14) | <0.001 |
| Cohort Attrition | Missing visit 5 cognitive test | 7873 (57.9%) | 2697 (59.4%) | 2583 (56.9%) | 2593 (57.5%) | 0.05 |
| | Death | 3880 (28.6%) | 1345 (29.6%) | 1263 (27.8%) | 1272 (28.2%) | 0.14 |

Values shown are No. (%) unless otherwise specified
P-value represents chi-squared or two-sided t-tests as appropriate