**Appendix Table 1.** Adjusted robust regression coefficient (95% CI) for z-score of lumbar volumetric bone mineral density (in mg/cc) by race/ethnicity and protein intake at baseline (n=1658)

|  |  |  |  |
| --- | --- | --- | --- |
|  | β (95% CI) | P value | |
| Female |  |  |
| White |  |  | |
| TP (30 gram) \* | -0.01 (-0.53, 0.53) | 0.99 | |
| AP (25 gram) † | -0.01 (-0.45, 0.43) | 0.98 | |
| VP (10 gram) ‡| | 0.04 (-0.25, 0.33) | 0.79 | |
| Chinese |  |  | |
| TP | 0.31 (-0.92, 1.54) | 0.62 | |
| AP | 0.08 (-0.95, 1.12) | 0.87 | |
| VP | 0.32 (-0.30, 0.93) | 0.31 | |
| Black |  |  | |
| TP | -0.15 (-0.78, 0.49) | 0.66 | |
| AP | -0.13 (-0.66, 0.41) | 0.65 | |
| VP | -0.01 (-0.38, 0.35) | 0.94 | |
| Hispanics |  |  | |
| TP | 0.29 (-0.28, 0.87) | 0.32 | |
| AP | 0.29 (-0.19, 0.76) | 0.24 | |
| VP | -0.01 (-0.37, 0.35) | 0.97 | |
| Male |  |  | |
| White |  |  | |
| TP | -0.18 (-0.59, 0.23) | 0.39 | |
| AP | -0.15 (-0.50, 0.20) | 0.39 | |
| VP | -0.05 (-0.26, 0.16) | 0.63 | |
| Chinese |  |  | |
| TP | 0.83 (-0.07, 1.74) | 0.07 | |
| AP | 0.64 (-0.13, 1.41) | 0.10 | |
| VP | 0.36 (-0.05, 0.77) | 0.08 | |
| Black |  |  | |
| TP | 0.69 (-0.02, 1.39) | 0.06 | |
| AP | 0.58 (-0.02, 1.18) | 0.07 | |
| VP | 0.20 (-0.15, 0.56) | 0.26 | |
| Hispanics |  |  | |
| TP | 0.17 (-0.47, 0.81) | 0.60 | |
| AP | 0.15 (-0.37, 0.66) | 0.57 | |
| VP | 0.15 (-0.21, 0.38) | 0.58 | |

AP, animal protein; CI, confidence interval; Q, quartile; TP, total protein; VP, vegetable protein.

\* Adjusted for age, total energy intake, body mass index, physical activity, sedentariness score, smoking, education, hormone therapy use (if applicable), age at menopause (if applicable), dietary carbohydrate as a gram, calcium, phosphorus, magnesium and alcohol.

† Additionally adjusted for vegetable protein intake as 10 gram, compared to b.

‡ Additionally adjusted for animal protein intake as 25 gram, compared to b.

**Appendix Table 2.** Adjusted mean (95% CI) lumbar trabecular volumetric bone mineral density (in mg/cc) by race/ethnicity and protein intake at baseline using propensity score method. (n=1658)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Quartile of protein intake (% of energy intake)\* | | | | *P* for trend† |
|  | Q1 | Q2 | Q3 | Q4 |
| Women | | | | | |
| White |  |  |  |  |  |
| TP‡ | 101.6 (97.6, 105.7) | 98.9 (94.7, 103.3) | 97.4 (93.2, 101.6) | 98.7 (94.5, 102.9) | 0.74 |
| AP§ | 101.3 (97.2, 105.5) | 100.6 (96.4, 104.8) | 98.1 (93.8, 104.9) | 99.3 (94.9, 103.6) | 0.94 |
| VP|| | 94.6 (90.3, 98.8) | 98.7 (94.6, 102.9) | 99.3 (95.0, 103.6) | 106.6 (102.1, 111.1) | 0.06 |
| Chinese |  |  |  |  |  |
| TP | 116.6 (100.2, 133.0) | 122.3 (104.6, 139.9) | 111.4 (94.3, 128.6) | 103.9 (85.2, 122.6) | 0.10 |
| AP | 129.9 (112.9, 146.9) | 120.4 (104.0, 136.8) | 104.6 (88.0, 121.2) | 102.0 (83.2, 120.7) | 0.05 |
| VP | 112.3 (95.9, 128.7) | 108.0 (91.9, 124.1) | 115.8 (98.1, 133.6) | 120.4 (102.8, 138.0) | 0.09 |
| Black |  |  |  |  |  |
| TP | 122.0 (115.3, 128.6) | 145.5 (138.6, 152.3) | 124.5 (118.1, 130.9) | 129.5 (122.8, 136.1) | 0.59 |
| AP | 123.7 (116.7, 130.8) | 134.6 (127.5, 141.6) | 136.8 (130.0, 143.6) | 123.6 (116.4, 130.8) | 0.48 |
| VP | 136.4 (129.7, 143.2) | 128.9 (122.0, 135.8) | 124.8 (117.7, 131.8) | 128.7 (121.5, 136.0) | 0.40 |
| Hispanics |  |  |  |  |  |
| TP | 106.6 (99.8, 113.5) | 107.9 (101.8, 114.0) | 111.7 (105.2, 118.3) | 111.1 (104.1, 118.1) | 0.53 |
| AP | 104.3 (97.6, 111.1) | 105.0 (98.5, 111.4) | 112.9 (106.8, 118.9) | 113.6 (106.5, 120.8) | 0.08 |
| VP | 102.9 (96.4, 109.5) | 114.3 (107.8, 120.9) | 106.0 (99.7, 112.9) | 112.5 (106.0, 119.0) | 0.20 |
| Men | | | | | |
| White |  |  |  |  |  |
| TP | 110.4 (106.6, 114.1) | 110.6 (106.7, 114.5) | 110.0 (105.6, 114.5) | 107.6 (102.7, 112.5) | 0.85 |
| AP | 108.8 (104.9, 112.8) | 113.0 (109.0, 116.9) | 110.6 (106.3, 115.0) | 105.7 (100.5, 110.9) | 0.67 |
| VP | 110.9 (107.1, 114.6) | 109.9 (105.5, 114.3) | 113.4 (108.9, 117.9) | 104.0 (99.2, 108.8) | 0.32 |
| Chinese |  |  |  |  |  |
| TP | 109.8 (103.4, 116.1) | 113.1 (106.9, 119.2) | 118.9 (112.4, 125.4) | 106.0 (96.9, 115.0) | 0.77 |
| AP | 112.5 (105.4, 119.7) | 115.8 (110.2, 121.4) | 108.5 (100.4, 116.7) | 108.5 (99.7, 117.3) | 0.42 |
| VP | 114.0 (106.9, 121.1) | 112.1 (106.2, 117.9) | 105.5 (98.1, 113.0) | 113.7 (105.8, 121.5) | 0.84 |
| Black |  |  |  |  |  |
| TP | 141.9 (133.8, 150.1) | 137.9 (130.5, 145.3) | 143.4 (133.5, 153.3) | 152.2 (141.9, 162.5) | 0.27 |
| AP | 135.5 (127.1, 143.9) | 150.6 (142.4, 158.8) | 137.1 (126.1, 148.2) | 151.8 (142.0, 161.7) | 0.20 |
| VP | 133.7 (126.1, 141.2) | 145.3 (136.4, 154.2) | 154.6 (145.9, 163.2) | 141.4 (131.0, 151.8) | 0.59 |
| Hispanics |  |  |  |  |  |
| TP | 126.7 (120.9, 132.5) | 126.5 (121.8, 131.1) | 125.8 (120.7, 130.8) | 121.0 (115.4, 126.5) | 0.23 |
| AP | 119.5 (113.8, 125.1) | 129.6 (124.2, 135.1) | 126.3 (121.5, 131.1) | 123.6 (117.4, 129.7) | 0.49 |
| VP | 130.1 (124.8, 135.4) | 125.1 (120.2, 129.9) | 121.5 (116.4, 126.6) | 122.3 (116.2, 128.4) | 0.17 |

AP, animal protein; CI, confidence interval; Q, quartile; TP, total protein; VP, vegetable protein.

\* Upper and lower limits of each race/ethinic- and gender-specific quartile were shown in table 2.

† From trend test for median of bone mineral density in each quartile.

‡ Adjusted for age, total energy intake, body mass index, physical activity, sedentariness score, smoking, education, hormone therapy use (if applicable), age at menopause (if applicable), dietary carbohydrate as a percentage of energy, alcohol, and a propensity score of calcium, phosphorus and magnesium.

§ Additionally adjusted for vegetable protein intake as a percentage of energy, compared to b.

|| Additionally adjusted for animal protein intake as a percentage of energy, compared to b.

**Appendix Table 3.** Adjusted mean (95% CI) lumbar trabecular volumetric bone mineral density (in mg/cc) by race/ethnicity and protein intake at baseline using propensity score method. (n=1658)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Quartile of protein intake (% of energy intake)\* | | | | *P* for trend† |
|  | Q1 | Q2 | Q3 | Q4 |
| Women | | | | | |
| White |  |  |  |  |  |
| TP‡ | 101.7 (97.6, 105.7) | 98.9 (94.6, 103.2) | 97.4 (93.2, 101.6) | 98.5 (94.3, 102.8) | 0.72 |
| AP§ | 101.3 (97.2, 105.5) | 100.5 (96.3, 104.8) | 97.9 (93.8, 104.8) | 99.2 (94.8, 103.5) | 0.93 |
| VP|| | 94.3 (90.0, 98.6) | 98.7 (94.6, 102.9) | 99.3 (95.0, 103.6) | 106.6 (102.1, 111.1) | 0.06 |
| Chinese |  |  |  |  |  |
| TP | 121.2 (104.7, 137.7) | 125.9 (108.3, 143.5) | 116.9 (99.7, 134.1) | 111.6 (92.4, 130.7) | 0.22 |
| AP | 133.4 (116.5, 150.3) | 124.9 (108.5, 141.4) | 110.1 (93.3, 126.9) | 107.6 (88.7, 126.6) | 0.05 |
| VP | 115.9 (99.5, 132.2) | 114.3 (97.8, 130.8) | 121.0 (103.2, 138.9) | 124.5 (106.9, 142.1) | 0.09 |
| Black |  |  |  |  |  |
| TP | 122.0 (115.4, 128.7) | 144.9 (138.0, 151.8) | 124.5 (118.2, 130.9) | 129.3 (122.6, 135.9) | 0.60 |
| AP | 123.9 (116.9, 130.9) | 134.4 (127.3, 141.4) | 136.2 (129.4, 143.0) | 123.5 (116.3, 130.7) | 0.48 |
| VP | 136.4 (129.6, 143.1) | 128.3 (121.4, 135.2) | 124.6 (117.6, 131.6) | 128.8 (121.5, 136.0) | 0.39 |
| Hispanics |  |  |  |  |  |
| TP | 107.2 (100.4, 114.0) | 106.3 (100.3, 112.3) | 110.9 (104.4, 117.3) | 111.9 (105.1, 118.7) | 0.57 |
| AP | 103.9 (97.2, 110.6) | 104.3 (98.0, 110.6) | 111.6 (105.6, 117.5) | 114.6 (107.6, 121.6) | 0.07 |
| VP | 100.7 (94.2, 107.3) | 113.6 (107.0, 120.1) | 106.8 (100.6, 112.9) | 113.3 (107.0, 119.7) | 0.14 |
| Men | | | | | |
| White |  |  |  |  |  |
| TP | 110.4 (106.6, 114.2) | 111.5 (107.6, 115.4) | 110.5 (106.1, 114.9) | 109.4 (104.5, 114.3) | 0.99 |
| AP | 108.6 (104.6, 112.5) | 114.0 (110.0, 118.0) | 111.5 (107.2, 115.9) | 107.2 (102.0, 112.4) | 0.87 |
| VP | 111.6 (107.9, 115.3) | 110.7 (106.4, 115.1) | 113.6 (109.1, 118.1) | 105.3 (100.5, 110.1) | 0.71 |
| Chinese |  |  |  |  |  |
| TP | 110.0 (103.9, 116.2) | 112.2 (106.2, 118.1) | 120.4 (114.1, 126.7) | 105.4 (96.6, 114.2) | 0.77 |
| AP | 112.2 (105.3, 119.2) | 117.2 (111.7, 122.6) | 107.4 (99.5, 115.3) | 107.7 (99.1, 116.2) | 0.64 |
| VP | 114.2 (107.4, 121.1) | 113.4 (107.7, 119.1) | 105.5 (98.3, 112.8) | 111.1 (103.5, 118.8) | 0.80 |
| Black |  |  |  |  |  |
| TP | 141.0 (133.0, 149.0) | 136.7 (129.4, 144.0) | 144.9 (135.2, 154.6) | 156.6 (146.3, 166.9) | 0.23 |
| AP | 133.5 (125.2, 141.8) | 148.4 (140.3, 156.6) | 141.0 (129.9, 152.0) | 156.2 (146.3, 166.2) | 0.17 |
| VP | 134.5 (127.1, 141.9) | 146.6 (137.8, 155.3) | 156.4 (147.8, 164.9) | 141.6 (131.4, 151.8) | 0.66 |
| Hispanics |  |  |  |  |  |
| TP | 125.3 (119.6, 131.0) | 125.8 (121.2, 130.3) | 126.3 (121.3, 131.3) | 122.7 (117.2, 128.2) | 0.28 |
| AP | 119.8 (114.2, 125.3) | 128.9 (123.5, 134.2) | 126.7 (122.0, 131.4) | 124.5 (118.4, 130.6) | 0.41 |
| VP | 128.9 (123.7, 134.1) | 125.9 (121.1, 130.6) | 120.6 (115.6, 125.6) | 124.5 (118.4, 130.5) | 0.84 |

AP, animal protein; CI, confidence interval; Q, quartile; TP, total protein; VP, vegetable protein.

\* Upper and lower limits of each race/ethinic- and gender-specific quartile were shown in table 2.

† From trend test for median of bone mineral density in each quartile.

‡ Adjusted for age, total energy intake, body mass index, physical activity, sedentariness score, smoking, education, hormone therapy use (if applicable), age at menopause (if applicable), dietary carbohydrate as a percentage of energy, alcohol, estimated glomerular filtration rate (CKD-EPI equation), and a propensity score of calcium, phosphorus and magnesium.

§ Additionally adjusted for vegetable protein intake as a percentage of energy, compared to b.

|| Additionally adjusted for animal protein intake as a percentage of energy, compared to b.

**Appendix Table 4.** Adjusted mean (95% CI) lumbar trabecular volumetric bone mineral density (in mg/cc) by race/ethnicity and protein intake at baseline (n=1658)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Quartile of protein intake (% of energy intake)\* | | | | *P* for trend† |
|  | Q1 | Q2 | Q3 | Q4 |
| Women | | | | | |
| White |  |  |  |  |  |
| TP‡ | 102.9 (94.3, 111.5) | 99.6 (91.7, 107.5) | 96.9 (89.3, 104.5) | 98.0 (88.9, 107.0) | 0.52 |
| AP§ | 100.8 (92.2, 109.3) | 100.5 (92.7, 108.2) | 97.9 (90.3, 105.4) | 99.1 (89.5, 108.7) | 0.77 |
| VP|| | 94.3 (86.0, 102.6) | 98.1 (90.6, 105.7) | 99.0 (91.3, 106.7) | 106.8 (98.2, 115.5) | 0.04 |
| Chinese |  |  |  |  |  |
| TP | 122.0 (91.4, 152.7) | 130.4 (97.7, 163.1) | 117.3 (85.1, 149.6) | 113.3 (74.4, 152.0) | 0.30 |
| AP | 134.5(101.6, 167.4) | 126.9 (95.1, 158.7) | 113.8 (80.5, 147.2) | 113.5 (74.2, 152.7) | 0.04 |
| VP | 117.5 (85.9, 149.0) | 117.7 (85.7, 149.8) | 126.5 (90.1, 162.0) | 127.1 (90.5, 163.6) | 0.09 |
| Black |  |  |  |  |  |
| TP | 116.0 (101.7, 132.1) | 144.0 (131.1, 156.9) | 126.0 (114.0, 138.1) | 134.1 (119.3, 149.0) | 0.42 |
| AP | 120.7 (104.6, 136.7) | 133.9 (120.7, 147.2) | 137.1 (124.2, 150.0) | 126.5 (109.9, 143.0) | 0.25 |
| VP | 137.8 (123.7, 151.9) | 128.7 (115.7, 141.7) | 123.7 (110.4, 137.0) | 128.0 (112.5, 143.5) | 0.25 |
| Hispanics |  |  |  |  |  |
| TP | 105.7 (91.8, 119.6) | 105.7 (94.3, 117.1) | 112.6 (100.8, 124.4) | 113.0 (99.3, 126.8) | 0.51 |
| AP | 98.5 (84.7, 112.2) | 103.6 (91.9, 115.3) | 112.0 (101.2, 122.7) | 121.3 (107.0, 135.6) | 0.04 |
| VP | 101.0 (87.7, 114.3) | 113.7 (101.6, 125.7) | 105.8 (94.6, 117.0) | 114.9 (102.5, 127.2) | 0.18 |
| Men | | | | | |
| White |  |  |  |  |  |
| TP | 113.3 (106.6, 120.4) | 111.7 (104.0, 119.5) | 113.8 (105.8, 121.9) | 103.3 (94.5, 112.1) | 0.79 |
| AP | 111.3 (103.0, 119.5) | 115.4 (108.1, 122.8) | 111.4 (103.6, 119.2) | 104.3 (93.7, 114.7) | 0.24 |
| VP | 106.8 (98.9, 114.7) | 119.1 (111.6, 126.5) | 114.9 (107.7, 122.0) | 105.0 (97.1, 112.9) | 0.58 |
| Chinese |  |  |  |  |  |
| TP | 107.1 (93.6, 120.6) | 111.6 (100.5, 122.7) | 122.1 (109.7, 134.6) | 108.6 (88.3, 128.7) | 0.42 |
| AP | 111.9 (96.0, 127.8) | 117.0 (106.6, 127.5) | 106.3 (90.4, 122.3) | 108.0 (85.6, 130.4) | 0.61 |
| VP | 113.5 (99.3, 127.6) | 113.5 (102.6, 124.1) | 104.7 (90.3, 119.1) | 111.7 (94.9, 128.4) | 0.53 |
| Black |  |  |  |  |  |
| TP | 141.2 (123.0, 159.4) | 135.9 (122.2, 149.6) | 145.1 (126.5, 163.8) | 157.8 (135.1, 180.5) | 0.28 |
| AP | 132.0 (114.3, 149.6) | 148.0 (132.6, 163.3) | 140.7 (119.7, 161.7) | 159.3 (136.0, 182.7) | 0.27 |
| VP | 134.6 (119.3, 150.0) | 146.4 (129.6, 162.9) | 156.2 (139.7, 172.6) | 143.0 (122.1, 163.8) | 0.70 |
| Hispanics |  |  |  |  |  |
| TP | 120.3 (108.0, 132.7) | 124.7 (116.5, 133.0) | 126.3 (117.6, 135.7) | 127.5 (115.6, 139.4) | 0.24 |
| AP | 116.3 (105.2, 127.5) | 128.9 (119.1, 138.6) | 127.2 (118.6, 135.7) | 130.1 (117.2, 143.0) | 0.20 |
| VP | 125.3 (115.4, 135.2) | 125.2 (116.6, 133.8) | 121.9 (112.8, 130.9) | 130.6 (118.0, 142.2) | 0.44 |

AP, animal protein; CI, confidence interval; Q, quartile; TP, total protein; VP, vegetable protein.

\* Upper and lower limits of each race/ethinic- and gender-specific quartile were shown in table 2.

† From trend test for median of bone mineral density in each quartile.

‡ Adjusted for age, total energy intake, body mass index, physical activity, sedentariness score, smoking, education, hormone therapy use (if applicable), age at menopause (if applicable), dietary carbohydrate as a percentage of energy, calcium, phosphorus, magnesium, alcohol, and estimated glomerular filtration rate (CKD-EPI equation).

§ Additionally adjusted for vegetable protein intake as a percentage of energy, compared to b.

|| Additionally adjusted for animal protein intake as a percentage of energy, compared to b.

**Appendix Table 5.** Adjusted robust regression coefficient (95% CI) for z-score of lumbar trabecular volumetric bone mineral density among women (highest quartile vs. lowest quartile of protein intake; N=801)

|  |  |  |
| --- | --- | --- |
|  | Beta (95% CI) | *P*§ |
| Total Protein\* |  |  |
| White | -0.14 (-0.52, 0.24) | 0.48 |
| Chinese | -0.01 (-0.66, 0.63) | 0.97 |
| Black | 0.45 (-0.05, 0.96) | 0.08 |
| Hispanic | 0.20 (-0.27, 0.68) | 0.40 |
| Animal Protein† |  |  |
| White | -0.23 (-0.62, 0.16) | 0.25 |
| Chinese | -0.35 (-1.01, 0.31) | 0.29 |
| Black | 0.28 (-0.28, 0.84) | 0.33 |
| Hispanic | 0.38 (-0.11, 0.87) | 0.13 |
| Vegetable Protein‡ |  |  |
| White | 0.35 (0.00, 0.71) | 0.05 |
| Chinese | 0.02 (-0.56, 0.60) | 0.95 |
| Black | -0.11 (-0.60, 0.39) | 0.67 |
| Hispanic | 0.16 (-0.28, 0.59) | 0.48 |

CI, confidence interval.

\* Adjusted for age, total energy intake, body mass index, physical activity, sedentariness score, smoking, education, hormone therapy use, age at menopause, dietary carbohydrate as a percentage of energy, calcium, phosphorus, magnesium, alcohol, and estimated glomerular filtration rate (CKD-EPI equation).

† Additionally adjusted for vegetable protein intake as a percentage of energy, compared to b.

‡ Additionally adjusted for animal protein intake as a percentage of energy, compared to b.

§ From adjusted robust regression analyses.

**Appendix Table 6.** Adjusted robust regression coefficient (95% CI) for z-score of lumbar volumetric bone mineral density (in mg/cc) by race/ethnicity and protein intake at baseline (n=1658)

|  |  |  |  |
| --- | --- | --- | --- |
|  | β (95% CI) | P value | |
| Female | | |
| White |  |  | |
| TP (30 gram) \* | -0.01 (-0.54, 0.53) | 0.99 | |
| AP (25 gram) † | -0.01 (-0.46, 0.43) | 0.95 | |
| VP (10 gram) ‡| | 0.03 (-0.25, 0.32) | 0.81 | |
| Chinese |  |  | |
| TP | 0.23 (-1.01, 1.46) | 0.72 | |
| AP | 0.02 (-1.01, 1.06) | 0.96 | |
| VP | 0.33 (-0.28, 0.95) | 0.29 | |
| Black |  |  | |
| TP | -0.16 (-0.79, 0.48) | 0.63 | |
| AP | -0.13 (-0.66, 0.40) | 0.63 | |
| VP | -0.01 (-0.37, 0.34) | 0.95 | |
| Hispanics |  |  | |
| TP | 0.36 (-0.22, 0.93) | 0.22 | |
| AP | 0.33 (-0.15, 0.80) | 0.18 | |
| VP | 0.05 (-0.31, 0.41) | 0.78 | |
| Male | | | |
| White |  |  | |
| TP | -0.15 (-0.56, 0.26) | 0.49 | |
| AP | -0.13 (-0.48, 0.22) | 0.48 | |
| VP | -0.05 (-0.25, 0.16) | 0.67 | |
| Chinese |  |  | |
| TP | 0.81 (-0.09, 1.71) | 0.08 | |
| AP | 0.61 (-0.15, 1.38) | 0.12 | |
| VP | 0.38 (-0.03, 0.79) | 0.07 | |
| Black |  |  | |
| TP | 0.83 (-0.11, 1.84) | 0.10 | |
| AP | 0.68 (-0.08, 1.28) | 0.08 | |
| VP | 0.34 (-0.02, 0.70) | 0.07 | |
| Hispanics |  |  | |
| TP | 0.21 (-0.42, 0.84) | 0.51 | |
| AP | 0.17 (-0.34, 0.68) | 0.52 | |
| VP | 0.14 (-0.15, 0.43) | 0.35 | |

AP, animal protein; CI, confidence interval; Q, quartile; TP, total protein; VP, vegetable protein.

\* Adjusted for age, total energy intake, body mass index, physical activity, sedentariness score, smoking, education, hormone therapy use (if applicable), age at menopause (if applicable), dietary carbohydrate as a gram, calcium, phosphorus, magnesium, alcohol, and estimated glomerular filtration rate (CKD-EPI equation).

† Additionally adjusted for vegetable protein intake as 10 gram, compared to b.

‡ Additionally adjusted for animal protein intake as 25 gram, compared to b.

**Appendix Table 7.** Adjusted robust regression coefficient (95% CI) for z-score of lumbar volumetric bone mineral density (in mg/cc) by race/ethnicity and protein intake at baseline (n=1658)

|  |  |  |  |
| --- | --- | --- | --- |
|  | β (95% CI) | P value | |
| Female | | |
| White |  |  | |
| TP (30 gram) \* | -0.01 (-0.49, 0.49) | 0.91 | |
| AP (25 gram) † | -0.01 (-0.41, 0.39) | 0.90 | |
| VP (10 gram) ‡| | 0.03 (-0.17, 0.24) | 0.65 | |
| Chinese |  |  | |
| TP | 0.30 (-0.87, 1.48) | 0.55 | |
| AP | 0.08 (-0.90, 1.08) | 0.78 | |
| VP | 0.30 (-0.22, 0.83) | 0.29 | |
| Black |  |  | |
| TP | -0.12 (-0.70, 0.42) | 0.56 | |
| AP | -0.12 (-0.67, 0.40) | 0.62 | |
| VP | -0.01 (-0.35, 0.36) | 0.94 | |
| Hispanics |  |  | |
| TP | 0.25 (-0.23, 0.77) | 0.26 | |
| AP | 0.28 (-0.15, 0.73) | 0.22 | |
| VP | 0.01 (-0.31, 0.32) | 0.78 | |
| Male | | | |
| White |  |  | |
| TP | -0.18 (-0.54, 0.19) | 0.35 | |
| AP | -0.15 (-0.45, 0.20) | 0.33 | |
| VP | -0.03 (-0.21, 0.16) | 0.59 | |
| Chinese |  |  | |
| TP | 0.81 (-0.07, 1.66) | 0.07 | |
| AP | 0.57 (-0.13, 1.31) | 0.10 | |
| VP | 0.34 (-0.05, 0.74) | 0.07 | |
| Black |  |  | |
| TP | 0.68 (-0.03, 1.40) | 0.06 | |
| AP | 0.57 (-0.02, 1.17) | 0.07 | |
| VP | 0.20 (-0.15, 0.56) | 0.25 | |
| Hispanics |  |  | |
| TP | 0.17 (-0.46, 0.81) | 0.60 | |
| AP | 0.15 (-0.36, 0.66) | 0.57 | |
| VP | 0.14 (-0.20, 0.43) | 0.58 | |

AP, animal protein; CI, confidence interval; Q, quartile; TP, total protein; VP, vegetable protein.

\* Adjusted for age, total energy intake, body mass index, physical activity, sedentariness score, smoking, education, hormone therapy use (if applicable), age at menopause (if applicable), dietary carbohydrate as a gram, alcohol, and a propensity score of calcium, phosphorus and magnesium

† Additionally adjusted for vegetable protein intake as 10 gram, compared to b.

‡ Additionally adjusted for animal protein intake as 25 gram, compared to b.

**Appendix Table 8.** Adjusted robust regression coefficient (95% CI) for z-score of lumbar volumetric bone mineral density (in mg/cc) by race/ethnicity and protein intake at baseline (n=1658)

|  |  |  |  |
| --- | --- | --- | --- |
|  | β (95% CI) | P value | |
| Female | | |
| White |  |  | |
| TP (30 gram) \* | -0.01 (-0.52, 0.51) | 0.99 | |
| AP (25 gram) † | -0.01 (-0.45, 0.43) | 0.93 | |
| VP (10 gram) ‡| | 0.03 (-0.25, 0.32) | 0.81 | |
| Chinese |  |  | |
| TP | 0.23 (-1.00, 1.46) | 0.71 | |
| AP | 0.02 (-1.00, 1.06) | 0.93 | |
| VP | 0.32 (-0.27, 0.95) | 0.28 | |
| Black |  |  | |
| TP | -0.15 (-0.77, 0.47) | 0.60 | |
| AP | -0.13 (-0.65, 0.40) | 0.62 | |
| VP | -0.01 (-0.37, 0.33) | 0.92 | |
| Hispanics |  |  | |
| TP | 0.35 (-0.21, 0.91) | 0.21 | |
| AP | 0.33 (-0.15, 0.79) | 0.18 | |
| VP | 0.05 (-0.30, 0.40) | 0.76 | |
| Male | | | |
| White |  |  | |
| TP | -0.16 (-0.56, 0.24) | 0.48 | |
| AP | -0.13 (-0.46, 0.22) | 0.48 | |
| VP | -0.05 (-0.22, 0.22) | 0.64 | |
| Chinese |  |  | |
| TP | 0.80 (-0.06, 1.66) | 0.07 | |
| AP | 0.59 (-0.15, 1.35) | 0.11 | |
| VP | 0.38 (-0.03, 0.79) | 0.07 | |
| Black |  |  | |
| TP | 0.83 (-0.10, 1.84) | 0.10 | |
| AP | 0.68 (-0.07, 1.28) | 0.08 | |
| VP | 0.34 (-0.01, 0.69) | 0.07 | |
| Hispanics |  |  | |
| TP | 0.21 (-0.36, 0.79) | 0.45 | |
| AP | 0.17 (-0.33, 0.67) | 0.51 | |
| VP | 0.14 (-0.15, 0.42) | 0.35 | |

AP, animal protein; CI, confidence interval; Q, quartile; TP, total protein; VP, vegetable protein.

\* Adjusted for age, total energy intake, body mass index, physical activity, sedentariness score, smoking, education, hormone therapy use (if applicable), age at menopause (if applicable), dietary carbohydrate as a gram, calcium alcohol, estimated glomerular filtration rate (CKD-EPI equation), and a propensity score of calcium, phosphorus and magnesium.

† Additionally adjusted for vegetable protein intake as 10 gram, compared to b.

‡ Additionally adjusted for animal protein intake as 25 gram, compared to b.