

**Supplementary Table S1. New Zealand European sample brain volumes by sociodemographic and clinical characteristics as reported in Yelanchezian et al.<sup>11</sup>**

| <i>Variable</i>                            | <i>Dementia (n=89)<br/>Mean (95% CI)</i> | <i>Non-dementia (n=79)<br/>Mean (95% CI)</i> | <i>p value for differences bet<br/>dementia and non-dement<br/>(unadjusted except *)</i> |
|--------------------------------------------|------------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------|
| <b>Total brain volume (cm<sup>3</sup>)</b> |                                          |                                              |                                                                                          |
| <i>All (unadjusted mean)</i>               | 993 (970-1015)                           | 1018 (994-1042)                              | 0.127                                                                                    |
| <i>Adjusted mean</i>                       | 998 (991-1006)                           | 1012 (1004-1020)                             | 0.013*                                                                                   |
| <b>Age</b>                                 |                                          |                                              |                                                                                          |
| <i>65-80 yrs (n=87)</i>                    | 1018 (980-1056)                          | 1030 (996-1064)                              | 0.636                                                                                    |
| <i>81+ yrs (n=81)</i>                      | 973 (948-998)                            | 999 (967-1032)                               | 0.204                                                                                    |
| <b>Gender</b>                              |                                          |                                              |                                                                                          |
| <i>Male (n=86)</i>                         | 1055 (1029-1080)                         | 1090 (1060-1119)                             | 0.037                                                                                    |
| <i>Female (n=82)</i>                       | 917 (894-941)                            | 955 (933-978)                                | 0.023                                                                                    |
| <b>Diagnosis</b>                           |                                          |                                              |                                                                                          |
| <i>Alzheimer's disease (n=32)</i>          | 1000 (963-1038)                          |                                              |                                                                                          |
| <i>Vascular dementia (n=33)</i>            | 992 (955-1029)                           |                                              |                                                                                          |
| <i>Mixed dementia (n=24)</i>               | 984 (940-1027)                           |                                              |                                                                                          |
| <i>Mild cognitive impairment (n=40)</i>    |                                          | 1019 (986-1053)                              |                                                                                          |
| <i>No neurocognitive disorder (n=39)</i>   |                                          | 1017 (983-1051)                              |                                                                                          |
| <b>Severity</b>                            |                                          |                                              |                                                                                          |
| <i>Mild severity (n=70)</i>                | 999 (975-1024)                           |                                              |                                                                                          |
| <i>Moderate severity (n=19)</i>            | 969 (923-1016)                           |                                              |                                                                                          |
| <b>Hippocampal volume (cm<sup>3</sup>)</b> |                                          |                                              |                                                                                          |
| <i>All (unadjusted mean)</i>               | 12.4 (11.9-12.8)                         | 13.5 (13.0-13.9)                             | <0.001                                                                                   |
| <i>Adjusted mean</i>                       | 12.5 (12.1-12.7)                         | 13.3 (13.0-13.7)                             | <0.001*                                                                                  |
| <b>Age</b>                                 |                                          |                                              |                                                                                          |
| <i>65-80 years (n=87)</i>                  | 12.5 (11.9-13.2)                         | 13.9 (13.3-14.5)                             | 0.003                                                                                    |
| <i>81+ years (n=81)</i>                    | 12.2 (11.7-12.7)                         | 12.8 (12.1-13.4)                             | 0.175                                                                                    |
| <b>Gender</b>                              |                                          |                                              |                                                                                          |
| <i>Male (n=86)</i>                         | 13.2 (12.7-13.8)                         | 14.4 (13.8-15.0)                             | 0.005                                                                                    |
| <i>Female (n=82)</i>                       | 11.3 (10.8-11.8)                         | 12.8 (12.2-13.2)                             | <0.001                                                                                   |
| <b>Diagnosis</b>                           |                                          |                                              |                                                                                          |
| <i>Alzheimer's disease (n=32)</i>          | 12.6 (11.9-13.3)                         |                                              |                                                                                          |
| <i>Vascular dementia (n=33)</i>            | 12.7 (12.0 -13.4)                        |                                              |                                                                                          |
| <i>Mixed dementia (n=24)</i>               | 11.5 (10.8-12.3)                         |                                              |                                                                                          |
| <i>Mild cognitive impairment (n=40)</i>    |                                          | 13.5 (12.7-14.3)                             |                                                                                          |
| <i>No neurocognitive disorder (n=39)</i>   |                                          | 13.5 (12.9-14.1)                             |                                                                                          |
| <b>Severity</b>                            |                                          |                                              |                                                                                          |
| <i>Mild severity (n=70)</i>                | 12.6 (12.1-13.0)                         |                                              |                                                                                          |
| <i>Moderate severity (n=19)</i>            | 11.6 (10.8-12.5)                         |                                              |                                                                                          |

| <b>Grey Matter volume (cm<sup>3</sup>)</b>  |                 |               |         |
|---------------------------------------------|-----------------|---------------|---------|
| <i>All (unadjusted mean)</i>                | 798 (780-815)   | 815 (797-835) | 0.166   |
| <i>Adjusted mean</i>                        | 801 (793-809)   | 813 (804-821) | <0.001* |
| <b>Age</b>                                  |                 |               |         |
| <i>65-80 years (n=87)</i>                   | 817(787-846)    | 818(792-845)  | 0.943   |
| <i>81+ years (n=81)</i>                     | 782(762-804)    | 812(786-839)  | 0.085   |
| <b>Gender</b>                               |                 |               |         |
| <i>Male (n=86)</i>                          | 847(827-867)    | 872 (849-895) | 0.097   |
| <i>Female (n=82)</i>                        | 738(719-757)    | 766(748-784)  | 0.034   |
| <b>Diagnosis</b>                            |                 |               |         |
| <i>Alzheimer's disease (n=32)</i>           | 809(778-841)    |               |         |
| <i>Vascular dementia (n=33)</i>             | 801(772-830)    |               |         |
| <i>Mixed dementia (n=24)</i>                | 778(746-810)    |               |         |
| <i>Mild cognitive impairment (n=40)</i>     |                 | 819(797-842)  |         |
| <i>No neurocognitive disorder (n=39)</i>    |                 | 812(779-846)  |         |
| <b>Severity</b>                             |                 |               |         |
| <i>Mild severity (n=70)</i>                 | 805(786-824)    |               |         |
| <i>Moderate severity (n=19)</i>             | 770(730-812)    |               |         |
| <b>White Matter volume (cm<sup>3</sup>)</b> |                 |               |         |
| <i>All (unadjusted mean)</i>                | 550 (535-564)   | 573 (558-588) | 0.027   |
| <i>Adjusted mean</i>                        | 550 (548-560)   | 569 (562-575) | 0.001*  |
| <b>Age</b>                                  |                 |               |         |
| <i>65-80 years (n=87)</i>                   | 566(542-591)    | 587(565-609)  | 0.210   |
| <i>81+ years (n=81)</i>                     | 537(522-552)    | 551(533-571)  | 0.227   |
| <b>Gender</b>                               |                 |               |         |
| <i>Male (n=86)</i>                          | 586(568-635)    | 614(594-635)  | 0.038   |
| <i>Female (n=82)</i>                        | 505(490-520)    | 537(522-552)  | 0.004   |
| <b>Diagnosis</b>                            |                 |               |         |
| <i>Alzheimer's disease (n=32)</i>           | 555(529-582)    |               |         |
| <i>Vascular dementia (n=33)</i>             | 552(531-574)    |               |         |
| <i>Mixed dementia (n=24)</i>                | 538(5145-561)   |               |         |
| <i>Mild cognitive impairment (n=40)</i>     |                 | 571(552-590)  |         |
| <i>No neurocognitive disorder (n=39)</i>    |                 | 575(548-603)  |         |
| <b>Severity</b>                             |                 |               |         |
| <i>Mild severity (n=70)</i>                 | 1278(1265-1291) |               |         |
| <i>Moderate severity (n=19)</i>             | 1292(1259-1326) |               |         |

**Supplementary Table S2. Comparison of adjusted brain volumes between European and Pacific samples by dementia status after adjustment for age and total intracranial volume**

| <i>Variable</i>                             | <i>European sample (n=168)<br/>Mean (95% CI)</i> | <i>Pacific sample (n=204)<br/>Mean (95% CI)</i> | <i>p value for differences<br/>between Pacific and<br/>European samples</i> |
|---------------------------------------------|--------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------|
| <b><i>Dementia</i></b>                      |                                                  |                                                 |                                                                             |
| <i>Total brain volume (cm<sup>3</sup>)</i>  | 988 (981- 995)                                   | 987 (981-993)                                   | 0.836                                                                       |
| <i>Hippocampal volume (cm<sup>3</sup>)</i>  | 12.4 (12.0-12.7)                                 | 12.3 (12.0-12.6)                                | 0.692                                                                       |
| <i>Grey matter volume (cm<sup>3</sup>)</i>  | 794 (785-802)                                    | 788 (781- 795)                                  | 0.295                                                                       |
| <i>White matter volume (cm<sup>3</sup>)</i> | 547 (541- 553)                                   | 542 (537-547)                                   | 0.194                                                                       |
| <b><i>Non dementia</i></b>                  |                                                  |                                                 |                                                                             |
| <i>Total brain volume (cm<sup>3</sup>)</i>  | 1036 (1028-1045)                                 | 1042 (1033-1051)                                | 0.380                                                                       |
| <i>Hippocampal volume (cm<sup>3</sup>)</i>  | 13.9 (13.5- 14.2)                                | 13.5 (13.1-13.8)                                | 0.150                                                                       |
| <i>Grey matter volume (cm<sup>3</sup>)</i>  | 829 (820-839)                                    | 831 (822-840)                                   | 0.815                                                                       |
| <i>White matter volume (cm<sup>3</sup>)</i> | 585 (578 -593)                                   | 575 (567-582)                                   | 0.075                                                                       |

**Supplementary Table S3. Logistic regression analyses of total brain, hippocampal, and combined volumetric measures as predictors of dementia among Pacific peoples, adjusted for age, total intracranial volume (TIV), and socioeconomic deprivation (NZDep)**

| <i>Predictor</i>          | <i>Estimate (β)</i>    | <i>SE</i>             | <i>Z</i> | <i>p-value</i> | <i>OR per SD (95% CI)</i>                                        |
|---------------------------|------------------------|-----------------------|----------|----------------|------------------------------------------------------------------|
| <b>Total brain volume</b> |                        |                       |          |                |                                                                  |
| <i>Intercept</i>          | 10.5                   | 7.60                  | 1.38     | 0.166          | -                                                                |
| <i>Age</i>                | $1.67 \times 10^{-2}$  | $2.57 \times 10^{-2}$ | 0.651    | 0.515          | 0.880 (0.597–1.29)                                               |
| <i>TIV</i>                | $1.52 \times 10^{-5}$  | $4.00 \times 10^{-6}$ | 3.79     | <0.001         | 0.101 ( $3.10 \times 10^{-2}$ –0.332)                            |
| <i>TBV</i>                | $-3.00 \times 10^{-5}$ | $8.84 \times 10^{-6}$ | -3.39    | <0.001         | 32.2 (4.34–239)                                                  |
| <i>NZDep</i>              | -0.589                 | 0.782                 | -0.754   | 0.451          | 3.99 (0.109–146)                                                 |
| <i>TBV × NZDep</i>        | $5.34 \times 10^{-7}$  | $7.70 \times 10^{-7}$ | 0.693    | 0.488          | -                                                                |
| <b>Hippocampal volume</b> |                        |                       |          |                |                                                                  |
| <i>Intercept</i>          | 1.54                   | 5.08                  | 0.303    | 0.762          | -                                                                |
| <i>Age</i>                | $5.90 \times 10^{-2}$  | $2.27 \times 10^{-2}$ | 2.60     | 0.009          | 0.636 (0.452–0.894)                                              |
| <i>TIV</i>                | $-9.86 \times 10^{-8}$ | $1.24 \times 10^{-6}$ | -0.079   | 0.937          | 1.01 (0.703–1.47)                                                |
| <i>HV</i>                 | $-3.56 \times 10^{-4}$ | $3.45 \times 10^{-3}$ | -1.03    | 0.302          | 2.04 (0.527–7.87)                                                |
| <i>NZDep</i>              | $4.91 \times 10^{-2}$  | 0.526                 | 0.093    | 0.926          | 0.891 (0.0792–10.0)                                              |
| <i>HV × NZDep</i>         | $-9.20 \times 10^{-6}$ | $3.80 \times 10^{-5}$ | -0.242   | 0.809          | -                                                                |
| <b>Combined volumes</b>   |                        |                       |          |                |                                                                  |
| <i>Intercept</i>          | 16.5                   | 10.8                  | 1.53     | 0.126          | -                                                                |
| <i>Age</i>                | $1.25 \times 10^{-2}$  | $2.73 \times 10^{-2}$ | 0.456    | 0.648          | 0.909 (0.603–1.37)                                               |
| <i>TIV</i>                | $1.45 \times 10^{-5}$  | $4.41 \times 10^{-6}$ | 3.30     | 0.001          | 0.112 ( $3.03 \times 10^{-2}$ –0.411)                            |
| <i>HV</i>                 | $-2.26 \times 10^{-4}$ | $6.13 \times 10^{-4}$ | -0.368   | 0.713          | 1.57 (0.142–17.4)                                                |
| <i>TBV</i>                | $-8.19 \times 10^{-5}$ | $7.07 \times 10^{-5}$ | -1.16    | 0.247          | $1.31 \times 10^4$ ( $1.42 \times 10^{-3}$ – $1.2 \times 10^8$ ) |
| <i>GMV</i>                | $7.17 \times 10^{-5}$  | $5.61 \times 10^{-5}$ | 1.28     | 0.201          | $1.56 \times 10^{-3}$ ( $7.71 \times 10^{-8}$ – $31$ )           |
| <i>WMV</i>                | $-1.27 \times 10^{-5}$ | $6.75 \times 10^{-5}$ | -0.187   | 0.851          | 2.29 ( $3.92 \times 10^{-4}$ – $1.34 \times 10^3$ )              |
| <i>NZDep</i>              | -1.04                  | 1.12                  | -0.926   | 0.355          | 11.4 (0.066–1.98 $\times 10^2$ )                                 |
| <i>HV × NZDep</i>         | $-1.72 \times 10^{-5}$ | $6.61 \times 10^{-5}$ | -0.260   | 0.795          | -                                                                |
| <i>TBV × NZDep</i>        | $5.34 \times 10^{-6}$  | $7.43 \times 10^{-6}$ | 0.718    | 0.473          | -                                                                |
| <i>GMV × NZDep</i>        | $-6.74 \times 10^{-6}$ | $5.97 \times 10^{-6}$ | -1.13    | 0.258          | -                                                                |
| <i>WMV × NZDep</i>        | $2.19 \times 10^{-6}$  | $7.20 \times 10^{-6}$ | 0.304    | 0.761          | -                                                                |

Note. Odds ratios (ORs) represent the change in odds of dementia per 1 standard deviation decrease in brain volume.

Abbreviations: total brain volume (TBV), total intracranial volume (TIV), hippocampal volume (HV), grey matter volume (GMV), white matter volume (WMV), odds ratio (OR), and New Zealand Deprivation Index (NZDep)

**Supplementary Table S4. Model fit and predictive performance of logistic regression models for dementia among Pacific peoples**

| <i>Model</i>                     | <i>N</i> | <i>Events</i> | <i>AIC</i> | <i>McFadden R<sup>2</sup></i> | <i>Mean predicted probability (cases)</i> | <i>Mean predicted probability (controls)</i> |
|----------------------------------|----------|---------------|------------|-------------------------------|-------------------------------------------|----------------------------------------------|
| <i>Total brain volume model</i>  | 204      | 127           | 232        | 0.184                         | 0.709                                     | 0.481                                        |
| <i>Hippocampal volume model</i>  | 204      | 127           | 243        | 0.155                         | 0.695                                     | 0.503                                        |
| <i>Combined volumetric model</i> | 204      | 127           | 231        | 0.234                         | 0.731                                     | 0.444                                        |

