Supplementary Online Content

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eFigure 1. LASSO Regression for Variable Selection

eFigure 2. HR of Exposure Factors for Dementia in Training Dataset of Men

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This supplementary material has been provided by the authors to give readers additional information about their work.
eFigure 1 LASSO regression for variable selection
eFigure 2 HR of exposure factors for dementia in training dataset of men
eFigure 3
HR of exposure factors for dementia in testing dataset of men

| Characteristics                        | Number (%) | HR (95% CI) | P-value |
|----------------------------------------|------------|-------------|---------|
| Age, mean ± SD                         |            |             |         |
| Age                                    | 56.77±8.18 | 1.14 (1.12, 1.17) | <0.001 |
| Education level, N (%)                 |            |             |         |
| Degree                                 | 21303 (34.6)| 1.14 (0.91, 1.42) | 0.27   |
| Non-Degree                             | 40253 (65.4)|             |         |
| BMI, N (%)                             |            |             |         |
| <18.5                                  | 15802 (25.0)| 1.78 (0.44, 7.26) | 0.42   |
| >18.5                                  | 110 (0.2)  | 0.72 (0.58, 0.91) | 0.005  |
| 35-30                                  | 1852 (2.9) | 0.64 (0.49, 0.84) | 0.001  |
| Employment status, N (%)               |            |             |         |
| Inpaid                                 | 37921 (61.6)| Reference   |         |
| Not in paid                            | 23635 (38.4)|             |         |
| Frequency of alcohol consumption, N (%)|            |             |         |
| Never                                  | 1451 (2.4) | Reference   |         |
| <3 times/week                          | 2644 (3.3) | 0.43 (0.24, 0.78) | 0.003  |
| >=3 times/week                         | 5806 (94.3)| 0.46 (0.30, 0.68) | <0.001 |
| Smoking, N (%)                         |            |             |         |
| Never                                  | 30316 (49.2)| Reference   |         |
| Previous                               | 23857 (38.8)|             |         |
| Now                                    | 7384 (12.0) | 1.10 (0.89, 1.35) | 0.37   |
| Early awakening, N (%)                 |            |             |         |
| Not very easy                          | 8175 (13.3) | Reference   |         |
| Very easy                              | 29876 (48.5)|             |         |
| Very easy                              | 23505 (38.2)|             |         |
| Sleepiness, N (%)                      |            |             |         |
| Never/rare                             | 45860 (74.5)| Reference   |         |
| Sometimes                              | 13842 (22.9)|             |         |
| Often/All of the time                  | 1854 (3.0) | 1.29 (1.05, 1.58) | 0.02   |
| Insomnia, N (%)                        |            |             |         |
| Never/rare                             | 19650 (30.9)| Reference   |         |
| Sometimes                              | 28281 (45.9)|             |         |
| Usually                                | 14225 (23.1)|             |         |
| Snore                                  |            |             |         |
| No                                     | 33037 (52.0)| Reference   |         |
| Yes                                    | 29519 (48.0)| 0.68 (0.56, 0.83) | <0.001 |
| Respiratory, N (%)                     |            |             |         |
| No                                     | 50688 (81.4)| Reference   |         |
| Yes                                    | 11468 (18.6)|             |         |
| Cancer, N (%)                          |            |             |         |
| No                                     | 51856 (84.2)| Reference   |         |
| Yes                                    | 9700 (15.8) | 0.74 (0.59, 0.93) | 0.01   |
| Cerebrovascular disease, N (%)         |            |             |         |
| No                                     | 59661 (96.9)| Reference   |         |
| Yes                                    | 1895 (3.1)  | 3.40 (2.66, 4.35) | <0.001 |
| Diabetes, N (%)                        |            |             |         |
| No                                     | 59943 (92.5)| Reference   |         |
| Yes                                    | 4013 (7.5)  | 1.61 (1.26, 2.06) | <0.001 |
| Hypertension, N (%)                    |            |             |         |
| No                                     | 45681 (74.2)| Reference   |         |
| Yes                                    | 15875 (25.8)| 1.39 (1.13, 1.72) | 0.002  |
### Figure 4
HR of exposure factors for dementia in training dataset of women

| Characteristics | Number (%) | HR (95% CI) | P-value |
|-----------------|------------|-------------|---------|
| **Age, mean ± SD** |            |             |         |
| Age             | 56.20 ± 7.99 | 1.18 (1.16, 1.20) | <0.001 |
| **Education level, N (%)** |            |             |         |
| Degree          | 33270 (32.0) | Reference   |         |
| Non-Degree      | 113936 (68.9) | 1.35 (1.13, 1.61) | <0.001 |
| BMI, N (%)      |            |             |         |
| 18.5–25         | 66099 (35.6) | Reference   |         |
| < 18.5          | 1245 (0.7)   | 1.30 (0.69, 2.45) | 0.42   |
| 25–30           | 61574 (36.7) | 0.76 (0.65, 0.88) | <0.001 |
| >= 30           | 38418 (22.5) | 0.57 (0.48, 0.69) | <0.001 |
| **Employment status, N (%)** |            |             |         |
| In paid         | 93750 (55.9) | Reference   |         |
| Not in paid     | 73906 (44.1) | 1.55 (1.26, 1.89) | <0.001 |
| **Frequency of alcohol consumption, N (%)** |            |             |         |
| Never           | 9107 (5.4)   | Reference   |         |
| < 3 times/week  | 5999 (3.4)   | 1.20 (0.87, 1.66) | 0.28   |
| >=3 times/week  | 152850 (91.2) | 0.78 (0.62, 0.98) | 0.03   |
| **Smoking, N (%)** |            |             |         |
| Never           | 100053 (59.7) | Reference   |         |
| Previous        | 53296 (31.8) | 1.15 (0.99, 1.32) | 0.06   |
| Now             | 14307 (8.5)  | 1.18 (0.92, 1.50) | 0.18   |
| **Early awakening, N (%)** |            |             |         |
| Not very easy   | 34488 (20.8) | Reference   |         |
| Fairly easy     | 86056 (51.3) | 0.80 (0.66, 0.96) | 0.02   |
| Very easy       | 46752 (27.9) | 0.81 (0.67, 0.98) | 0.03   |
| **Sleepiness, N (%)** |            |             |         |
| Never/arely     | 131088 (78.2) | Reference   |         |
| Sometimes       | 32572 (19.4) | 1.11 (0.96, 1.30) | 0.17   |
| Often/All of the time | 3996 (2.4) | 1.51 (1.10, 2.06) | 0.01   |
| **Insomnia, N (%)** |            |             |         |
| Never/arely     | 32153 (19.2) | Reference   |         |
| Sometimes       | 83064 (49.5) | 0.53 (0.45, 0.63) | <0.001 |
| Usually         | 52469 (31.3) | 0.45 (0.38, 0.54) | <0.001 |
| **Respiratory, N (%)** |            |             |         |
| No              | 140051 (83.5) | Reference   |         |
| Yes             | 27665 (16.5) | 1.49 (1.28, 1.73) | <0.001 |
| **Cerebrovascular disease, N (%)** |            |             |         |
| No              | 164795 (98.3) | Reference   |         |
| Yes             | 2861 (1.7)   | 2.98 (2.42, 3.68) | <0.001 |
| **Diabetes, N (%)** |            |             |         |
| No              | 160621 (95.3) | Reference   |         |
| Yes             | 7035 (4.2)   | 1.79 (1.46, 2.19) | <0.001 |
| **Hypertension, N (%)** |            |             |         |
| No              | 136377 (81.3) | Reference   |         |
| Yes             | 31279 (18.7) | 1.64 (1.41, 1.91) | <0.001 |
| **Cardiovascular disease, N (%)** |            |             |         |
| No              | 161069 (96.1) | Reference   |         |
| Yes             | 6587 (3.9)   | 1.47 (1.21, 1.79) | <0.001 |
Figure 5
HR of exposure factors for dementia in testing dataset of women

| Characteristics                              | Number (%) | HR (95% CI) | P-value |
|----------------------------------------------|------------|-------------|---------|
| **Age, mean ± SD**                           |            |             |         |
| Age                                          | 56.20 ± 8.03 | 1.17 (1.14, 1.20) | <0.001 |
| **Education level, N (%)**                   |            |             |         |
| Degree                                       | 23810 (31.7) | Reference   |         |
| Non-Degree                                   | 49042 (68.3) | 1.43 (1.08, 1.90) | 0.01   |
| **BMI, N (%)**                               |            |             |         |
| 18.5–25                                      | 28569 (39.8) | Reference   |         |
| < 18.5                                       | 516 (0.7)   | 1.63 (1.67, 4.01) | 0.28   |
| 25–30                                        | 26454 (36.8) | 0.92 (0.72, 1.17) | 0.5    |
| >= 30                                        | 16293 (22.7) | 0.75 (0.57, 1.00) | 0.65   |
| **Employment status, N (%)**                 |            |             |         |
| In paid                                      | 40025 (55.7) | Reference   |         |
| Not in paid                                  | 31827 (44.3) | 1.97 (1.41, 2.76) | <0.001 |
| **Frequency of alcohol consumption, N (%)**  |            |             |         |
| Never has more than 1 drink/day              | 3756 (52)   | Reference   |         |
| < 3 times/week                               | 2532 (3.5)  | 0.84 (0.51, 1.39) | 0.5    |
| >= 3 times/week                              | 61552 (91.2) | 0.67 (0.48, 0.93) | 0.02   |
| **Smoking, N (%)**                           |            |             |         |
| Never                                        | 43087 (60.0) | Reference   |         |
| Previous                                     | 23557 (31.4) | 1.00 (0.81, 1.25) | 0.97   |
| Now                                          | 6208 (8.6)  | 0.89 (0.59, 1.33) | 0.57   |
| **Early awakening, N (%)**                   |            |             |         |
| Not very easy                                | 15000 (20.9) | Reference   |         |
| Fairly easy                                  | 36961 (51.4) | 0.98 (0.72, 1.34) | 0.9    |
| Very easy                                    | 19891 (27.7) | 1.18 (0.86, 1.62) | 0.31   |
| **Sleepiness, N (%)**                        |            |             |         |
| Never/never                                  | 56093 (78.1) | Reference   |         |
| Sometimes                                    | 13971 (19.4) | 1.12 (0.89, 1.42) | 0.32   |
| Other/All of the time                        | 1788 (2.5)  | 1.86 (1.19, 2.90) | 0.01   |
| **Insomnia, N (%)**                          |            |             |         |
| Never/usually                                | 13835 (19.3) | Reference   |         |
| Sometimes                                    | 35625 (49.6) | 0.60 (0.47, 0.78) | <0.001 |
| Usually                                      | 23392 (31.2) | 0.42 (0.31, 0.56) | <0.001 |
| **Respiratory, N (%)**                       |            |             |         |
| No                                           | 69143 (83.7) | Reference   |         |
| Yes                                          | 11704 (16.3) | 1.82 (1.46, 2.27) | <0.001 |
| **Cerebrovascular disease, N (%)**           |            |             |         |
| No                                           | 70582 (98.2) | Reference   |         |
| Yes                                          | 1270 (1.8)  | 4.04 (2.01, 5.43) | <0.001 |
| **Diabetes, N (%)**                          |            |             |         |
| No                                           | 68528 (95.9) | Reference   |         |
| Yes                                          | 2024 (4.1)  | 2.06 (1.53, 2.78) | <0.001 |
| **Hypertension, N (%)**                      |            |             |         |
| No                                           | 58529 (81.5) | Reference   |         |
| Yes                                          | 13323 (18.5) | 1.36 (1.07, 1.72) | 0.01   |
| **Cardiovascular disease, N (%)**            |            |             |         |
| No                                           | 69015 (96.1) | Reference   |         |
| Yes                                          | 2837 (3.9)  | 1.22 (0.90, 1.66) | 0.21   |
eFigure 6 Validation study
eFigure 7. Plotted Probability of Individual 5-, 9-, and 13-Year Risk of Dementia in Men and Women

A. Men

B. Women

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