Supplementary Table S1: Descriptive Statistics with Missing Data Re-coded as Maximum Values for Depression

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Neither** | | **Pain** | **Depression** | **Pain + Depression** | **p-value** |
| **N** | **4877** | 3243 | 606 | | 760 | 268 |  |
| **Age (years) at screening – mean (±SD)** |  | 43.5 (+14.3) | 47.1 (+13.7) | | 42.0 (+13.7) | 46.3 (+12.0) | <0.001 |
| **Gender** | **Female** | 1549 (47.8%) | 322 (53.1%) | | 468 (61.6%) | 174 (64.9%) | <0.001 |
| **Male** | 1694 (52.2%) | 284 (46.9%) | | 292 (38.4%) | 94 (35.1%) |
| **Race** | **Hispanic** | 1029 (31.7%) | 153 (25.2%) | | 242 (31.8%) | 69 (25.7%) | <0.001 |
| **Non-Hispanic White** | 1415 (43.6%) | 346 (57.1%) | | 290 (38.2%) | 127 (47.4%) |
| **Non-Hispanic Black** | 613 (18.9%) | 89 (14.7%) | | 166 (21.8%) | 56 (20.9%) |
| **Other** | 186 (5.7%) | 18 (3.0%) | | 62 (8.2%) | 16 (6.0%) |
| **Body Mass Index** | **<25** | 1052 (32.4%) | 162 (26.7%) | | 285 (37.5%) | 68 (25.4%) | <0.001 |
| **25 to 30** | 1124 (34.7%) | 211 (34.8%) | | 213 (28.0%) | 65 (24.3%) |
| **>30** | 1067 (32.9%) | 233 (38.4%) | | 262 (34.5%) | 135 (50.4%) |
| **Marital Status** | **Married/Living with Partner** | 2036 (62.8%) | 380 (62.7%) | | 403 (53.0%) | 126 (47.0%) | <0.001 |
| **Divorced/Separated/Widowed** | 538 (16.6%) | 128 (21.1%) | | 162 (21.3%) | 95 (35.4%) |
| **Never Married** | 669 (20.6%) | 98 (16.2%) | | 195 (25.7%) | 47 (17.5%) |
| **Insurance** | **Private** | 1557 (48.0%) | 234 (38.6%) | | 294 (38.7%) | 70 (26.1%) | <0.001 |
| **Medicare** | 179 (5.5%) | 59 (9.7%) | | 50 (6.6%) | 33 (12.3%) |
| **Medicaid** | 178 (5.5%) | 72 (11.9%) | | 91 (12.0%) | 57 (21.3%) |
| **Other** | 355 (10.9%) | 88 (14.5%) | | 73 (9.6%) | 34 (12.7%) |
| **None** | 974 (30.0%) | 153 (25.2%) | | 252 (33.2%) | 74 (27.6%) |
| **Ratio Family Income:Poverty Level – mean (±SD)** |  | 2.6 (+1.7) | 2.4 (+1.7) | | 2.0 (+1.6) | 1.7 (+1.4) | <0.001 |
| **Alcohol Use** | **No** | 1545 (47.6%) | 296 (48.8%) | | 102 (13.4%) | 73 (27.2%) | <0.001 |
| **Yes** | 1698 (52.4%) | 310 (51.2%) | | 658 (86.6%) | 195 (72.8%) |
| **Cigarette Use** | **No** | 2552 (78.7%) | 427 (70.5%) | | 538 (70.8%) | 153 (57.1%) | <0.001 |
| **Yes** | 691 (21.3%) | 179 (29.5%) | | 222 (29.2%) | 115 (42.9%) |
| **Diabetes** | **No** | 2926 (90.2%) | 518 (85.5%) | | 676 (88.9%) | 214 (79.9%) | <0.001 |
| **Yes** | 317 (9.8%) | 88 (14.5%) | | 84 (11.1%) | 54 (20.1%) |
| **Stroke** | **No** | 3181 (98.1%) | 590 (97.4%) | | 746 (98.2%) | 249 (92.9%) | <0.001 |
| **Yes** | 62 (1.9%) | 16 (2.6%) | | 14 (1.8%) | 19 (7.1%) |
| **Coronary Artery Disease** | **No** | 3183 (98.1%) | 581 (95.9%) | | 741 (97.5%) | 258 (96.3%) | 0.003 |
| **Yes** | 60 (1.9%) | 25 (4.1%) | | 19 (2.5%) | 10 (3.7%) |
| **Cancer** | **No** | 3064 (94.5%) | 548 (90.4%) | | 723 (95.1%) | 239 (89.2%) | <0.001 |
| **Yes** | 179 (5.5%) | 58 (9.6%) | | 37 (4.9%) | 29 (10.8%) |

Chi2 analysis used for categorical variables  
  
ANOVA used for continuous variables

Supplementary Table S2: Outcomes v. Exposures with Missing Data Recoded as Maximum Values for Depression

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **Neither** | **Pain** | **Depression** | **Pain + Depression** | **p-value** |
| **N** | **4877** | 3243 | 606 | 760 | 268 |  |
| **General Health** | **Good** | 2677 (82.5%) | 409 (67.5%) | 536 (70.5%) | 102 (38.1%) | <0.001 |
| **Poor** | 566 (17.5%) | 197 (32.5%) | 224 (29.5%) | 166 (61.9%) |
| **# Healthcare visits (in past 12 mo)** | **<3** | 2282 (70.4%) | 320 (52.8%) | 481 (63.3%) | 110 (41.0%) | <0.001 |
| **>3** | 961 (29.6%) | 286 (47.2%) | 279 (36.7%) | 158 (59.0%) |
| **Overnight stay in hospital**  **(in past 12 mo)** | **No** | 2952 (91.0%) | 517 (85.3%) | 637 (83.8%) | 192 (71.6%) | <0.001 |
| **Yes** | 291 (9.0%) | 89 (14.7%) | 123 (16.2%) | 76 (28.4%) |
| **Functional Limitation** | **No** | 2924 (90.2%) | 391 (64.5%) | 584 (76.8%) | 107 (39.9%) | <0.001 |

Chi2 analysis used for categorical variables  
  
ANOVA used for continuous variables

Supplementary Table S3: Regression Analysis with Missing Data Recoded as Maximum Values for Depression

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Exposure Group** | **Self-Rated Health as Poor** | | **>3 Healthcare Visits in Past 12 Months** | | **Overnight Hospital Stay in Past 12 Months** | | | **Limits on Daily Activity** | |
| **OR**  **(95% CI)** | **p-value** | **OR**  **(95% CI)** | **p-value** | **OR**  **(95% CI)** | **p-value** | **OR**  **(95% CI)** | | **p-value** |
| **Neither** | 1 (ref) |  | 1 (ref) |  | 1 (ref) |  | 1 (ref) | |  |
| **Pain** | 3.00  (1.46-2.72) | <0.001 | 1.56  (1.14-2.17) | 0.009 | 1.25  (.80-1.96) | 0.311 | 4.15  (2.96-5.83) | | <0.001 |
| **Depression** | 2.11  (1.46-2.72) | <0.001 | 1.40  (1.09-1.79) | 0.012 | 1.38  (0.94-2.07) | 0.132 | 2.62  (1.87-3.69) | | <0.001 |
| **Pain + Depression** | 7.23  (4.20-12.47) | <0.001 | 3.17  (2.24-4.49) | <0.001 | 2.81  (1.46-5.40) | 0.004 | 12.88  (7.67-21.62) | | <0.001 |

Supplementary Table S4: Descriptive Statistics with Missing Data Re-coded as Minimum Values for Depression

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Neither** | | **Pain** | **Depression** | **Pain + Depression** | **p-value** |
| **N** | **4877** | 3743 | 683 | | 260 | 191 |  |
| **Age (years) at screening – mean (±SD)** |  | 43.2 (+14.2) | 46.8 (+13.5) | | 42.5 (+14.0) | 47.3 (+12.0) | <0.001 |
| **Gender** | **Female** | 1846 (49.3%) | 375 (54.9%) | | 171 (65.8%) | 121 (63.4%) | <0.001 |
| **Male** | 1897 (50.7%) | 308 (45.1%) | | 89 (34.2%) | 70 (36.6%) |
| **Race** | **Hispanic** | 1176 (31.4%) | 167 (24.5%) | | 95 (36.5%) | 55 (28.8%) | <0.001 |
| **Non-Hispanic White** | 1603 (42.8%) | 384 (56.2%) | | 102 (39.2%) | 89 (46.6%) |
| **Non-Hispanic Black** | 731 (19.5%) | 108 (15.8%) | | 48 (18.5%) | 37 (19.4%) |
| **Other** | 233 (6.2%) | 24 (3.5%) | | 15 (5.8%) | 10 (5.2%) |
| **Body Mass Index** | **<25** | 1248 (33.3%) | 189 (27.7%) | | 89 (34.2%) | 41 (21.5%) | <0.001 |
| **25 to 30** | 1276 (34.1%) | 229 (33.5%) | | 61 (23.5%) | 47 (24.6%) |
| **>30** | 1219 (32.6%) | 265 (38.8%) | | 110 (42.3%) | 103 (53.9%) |
| **Marital Status** | **Married/Living with Partner** | 2318 (61.9%) | 415 (60.8%) | | 121 (46.5%) | 91 (47.6%) | <0.001 |
| **Divorced/Separated/Widowed** | 630 (16.8%) | 155 (22.7%) | | 70 (26.9%) | 68 (35.6%) |
| **Never Married** | 795 (21.2%) | 113 (16.5%) | | 69 (26.5%) | 32 (16.8%) |
| **Insurance** | **Private** | 1781 (47.6%) | 262 (38.4%) | | 70 (26.9%) | 42 (22.0%) | <0.001 |
| **Medicare** | 212 (5.7%) | 64 (9.4%) | | 17 (6.5%) | 28 (14.7%) |
| **Medicaid** | 232 (6.2%) | 85 (12.4%) | | 37 (14.2%) | 44 (23.0%) |
| **Other** | 398 (10.6%) | 97 (14.2%) | | 30 (11.5%) | 25 (13.1%) |
| **None** | 1120 (29.9%) | 175 (25.6%) | | 106 (40.8%) | 52 (27.2%) |
| **Ratio Family Income:Poverty Level – mean (±SD)** |  | 2.56 (+1.66) | 2.39 (+1.65) | | 1.65 (+1.46) | 1.69 (+1.37) | <0.001 |
| **Alcohol Use** | **No** | 1549 (41.4%) | 296 (43.3%) | | 98 (37.7%) | 73 (38.2%) | 0.34 |
| **Yes** | 2194 (58.6%) | 387 (56.7%) | | 162 (62.3%) | 118 (61.8%) |
| **Cigarette Use** | **No** | 2932 (78.3%) | 475 (69.5%) | | 158 (60.8%) | 105 (55.0%) | <0.001 |
| **Yes** | 811 (21.7%) | 208 (30.5%) | | 102 (39.2%) | 86 (45.0%) |
| **Diabetes** | **No** | 3385 (90.4%) | 585 (85.7%) | | 217 (83.5%) | 147 (77.0%) | <0.001 |
| **Yes** | 358 (9.6%) | 98 (14.3%) | | 43 (16.5%) | 44 (23.0%) |
| **Stroke** | **No** | 3675 (98.2%) | 661 (96.8%) | | 252 (96.9%) | 178 (93.2%) | <0.001 |
| **Yes** | 68 (1.8%) | 22 (3.2%) | | 8 (3.1%) | 13 (6.8%) |
| **Coronary Artery Disease** | **No** | 3672 (98.1%) | 655 (95.9%) | | 252 (96.9%) | 184 (96.3%) | 0.002 |
| **Yes** | 71 (1.9%) | 28 (4.1%) | | 8 (3.1%) | 7 (3.7%) |
| **Cancer** | **No** | 3541 (94.6%) | 618 (90.5%) | | 246 (94.6%) | 169 (88.5%) | <0.001 |
| **Yes** | 202 (5.4%) | 65 (9.5%) | | 14 (5.4%) | 22 (11.5%) |

Chi2 analysis used for categorical variables  
  
ANOVA used for continuous variables

Supplementary Table S5: Outcomes v. Exposures with Missing Data Recoded as Minimum Values for Depression

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **Neither** | **Pain** | **Depression** | **Pain + Depression** | **p-value** |
| **N** | **4877** | 3743 | 683 | 260 | 191 |  |
| **General Health** | **Good** | 3073 (82.1%) | 446 (65.3%) | 140 (53.8%) | 65 (34.0%) | <0.001 |
| **Poor** | 670 (17.9%) | 237 (34.7%) | 120 (46.2%) | 126 (66.0%) |
| **# Healthcare visits (in past 12 mo)** | **<3** | 2624 (70.1%) | 358 (52.4%) | 139 (53.5%) | 72 (37.7%) | <0.001 |
| **>3** | 1119 (29.9%) | 325 (47.6%) | 121 (46.5%) | 119 (62.3%) |
| **Overnight stay in hospital**  **(in past 12 mo)** | **No** | 3387 (90.5%) | 574 (84.0%) | 202 (77.7%) | 135 (70.7%) | <0.001 |
| **Yes** | 356 (9.5%) | 109 (16.0%) | 58 (22.3%) | 56 (29.3%) |
| **Functional Limitation** | **No** | 3343 (89.3%) | 429 (62.8%) | 165 (63.5%) | 69 (36.1%) | <0.001 |

Chi2 analysis used for categorical variables  
  
ANOVA used for continuous variables

Supplementary Table S6: Regression Analysis with Missing Data Recoded as Minimum Values for Depression

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Exposure Group** | **Self-Rated Health as Poor** | | **>3 Healthcare Visits in Past 12 Months** | | **Overnight Hospital Stay in Past 12 Months** | | | **Limits on Daily Activities** | |
| **OR**  **(95% CI)** | **p-value** | **OR**  **(95% CI)** | **p-value** | **OR**  **(95% CI)** | **p-value** | **OR**  **(95% CI)** | | **p-value** |
| **Neither** | 1 (ref) |  | 1 (ref) |  | 1 (ref) |  | 1 (ref) | |  |
| **Pain** | 2.12  (1.72-2.62) | <0.001 | 1.67  (1.27-2.21) | 0.009 | 1.42  (0.99-2.05) | 0.311 | 4.34  (3.34-5.66) | | <0.001 |
| **Depression** | 3.01  (2.18-4.15) | <0.001 | 2.27  (1.63-3.16) | 0.012 | 1.87  (1.10-3.18) | 0.132 | 4.18  (2.63-6.64) | | <0.001 |
| **Pain + Depression** | 7.84 (3.74-16.45) | <0.001 | 3.19  (2.10-4.84) | <0.001 | 2.56  (1.19-5.23) | 0.004 | 12.14  (7.23-20.40) | | <0.001 |

Supplementary Table S7: Additional Missing Data (n=124)

|  |  |
| --- | --- |
| **Variable** | **Number Missing** |
| Body Mass Index | 81 |
| Marital Status | 4 |
| Insurance | 13 |
| Diabetes | 3 |
| Stroke | 3 |
| Coronary Artery Disease | 12 |
| General Health | 2 |
| # of Healthcare Visits (in past 12 mo) | 4 |
| Functional Limitation | 2 |