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| Table 1. Estimated means (or proportions) of loneliness and selected covariates for the U.S. community-dwelling population aged 57–85 in 2005–06 and 2015–16, based on NSHAP | | | |
| *Variable* |  |  |  |
| 2005–06 | 2015–16 | Difference1 |
| Loneliness (3–9) |  |  |  |
| Mean (SD) | 4.0 (1.4) | 4.1 (1.4) | 0.1 (-0.002, 0.2) |
| Proportion > 4 | 0.28 | 0.31 | 0.03 (0.002, 0.06) \* |
|  |  |  |  |
| *Demographics* |  |  |  |
| Age in years (SD) | 68.0 (7.7) | 66.8 (7.4) | -1.3 (-1.7, -0.8) ‡ |
| Proportion women | 0.52 | 0.52 | 0.01 (-0.01, 0.03) |
| Race/ethnicity (proportions) |  |  |  |
| Black/African American | 0.10 | 0.11 | 0.01 (0.001, 0.03) \* |
| Hispanic | 0.07 | 0.07 | 0.01 (-0.005, 0.02) |
| Education (proportions) |  |  |  |
| < HS | 0.19 | 0.11 | -0.08 (-0.09, -0.06) ‡ |
| Some college | 0.30 | 0.37 | 0.07 (0.05, 0.09) ‡ |
| Bachelors or more | 0.25 | 0.29 | 0.05 (0.02, 0.07) ‡ |
|  |  |  |  |
| *Health characteristics* |  |  |  |
| Self-rated health (1–5) |  |  |  |
| Mean (SD) | 3.3 (1.1) | 3.3 (1.0) | 0.02 (-0.04, 0.1) |
| Proportion good or better | 0.75 | 0.77 | 0.02 (-0.001, 0.05) |
| Comorbidities (0–11) |  |  |  |
| Mean (SD) | 1.5 (1.4) | 1.1 (1.3) | -0.4 (-0.5, -0.3) ‡ |
| Proportion > 1 | 0.41 | 0.28 | -0.13 (-0.16, -0.10) ‡ |
| ADLs (0–6) |  |  |  |
| Mean (SD) | 0.6 (1.3) | 0.5 (1.2) | -0.1 (-0.2, -0.03) † |
| Proportion > 0 | 0.25 | 0.22 | -0.03 (-0.05, -0.003) \* |
|  |  |  |  |
| *Social characteristics* |  |  |  |
| Living arrangements (proportions) |  |  |  |
| Living alone | 0.24 | 0.21 | -0.02 (-0.05, -0.003) \* |
| Living with others2 | 0.09 | 0.13 | 0.04 (0.02, 0.06) ‡ |
| Network size, 0–5 (SD) | 3.5 (1.5) | 3.8 (1.4) | 0.4 (0.3, 0.4) ‡ |
| Number of close family members, 0–5 (SD) | 2.9 (1.0) | 2.5 (1.0) | -0.4 (-0.5, -0.4) ‡ |
| Number of friends, 0–5 (SD) | 3.3 (1.3) | 3.1 (1.1) | -0.2 (-0.2, -0.1) ‡ |
|  |  |  |  |
| Number of respondents3 | 2,385 | 2,829 |  |
| \* p < 0.05; † p < 0.01; ‡ p < 0.001  1Estimated change from 2005–05 to 2015–16 (95% CI)  2Excludes spouse or cohabiting partner.  3The loneliness items were asked in the leave-behind, which was returned by 2,524 respondents (84%) aged 57–85 in 2005–06 and 3,010 respondents (88%) aged 57-85 in 2015–16; item non-response accounts for the remaining missing cases. | | | |

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| Table 2. Mixed-effects ordinal logistic models predicting loneliness from demographic, health and social characteristics among the U.S. community-dwelling population born 1920–65 (estimated coefficients and 95% CIs), based on NSHAP | | | | |
| *Covariates* |  |  |  |  |
| Model 1 | Model 2 | Model 3 | Model 4 |
| *Demographics* |  |  |  |  |
| Age (decades from 70) | -0.07 (-0.16, 0.01) | -0.12 (-0.21, -0.03) † | -0.23 (-0.32, -0.14) ‡ | -0.27 (-0.36, -0.19) ‡ |
| Age squared | 0.20 (0.12, 0.28) ‡ | 0.16 (0.09, 0.24) ‡ | 0.11 (0.03, 0.19) † | 0.08 (-0.0002, 0.16) |
| Women (vs. men) | 0.34 (0.16, 0.53) ‡ | 0.37 (0.19, 0.55) ‡ | 0.13 (-0.06, 0.32) | 0.16 (-0.02, 0.35) |
| Race/ethnicity (vs. white) |  |  |  |  |
| Black/African American | 0.67 (0.40, 0.94) ‡ | 0.55 (0.28, 0.82) ‡ | 0.37 (0.10, 0.65) † | 0.29 (0.01, 0.56) \* |
| Hispanic | -0.12 (-0.44, 0.19) | -0.20 (-0.51, 0.11) | -0.29 (-0.60, 0.02) | -0.35 (-0.66, -0.04) \* |
| Other | 0.23 (-0.31, 0.77) | 0.21 (-0.31, 0.72) | 0.14 (-0.38, 0.66) | 0.13 (-0.38, 0.63) |
| Education (vs. HS) |  |  |  |  |
| < HS | 0.46 (0.14, 0.79) † | 0.27 (-0.05, 0.59) | 0.40 (0.08, 0.71) \* | 0.23 (-0.08, 0.54) |
| Some college | -0.19 (-0.44, 0.05) | -0.13 (-0.37, 0.11) | -0.12 (-0.37, 0.12) | -0.06 (-0.30, 0.18) |
| Bachelors or more | -0.49 (-0.75, -0.22) ‡ | -0.27 (-0.53, -0.004) \* | -0.35 (-0.62, -0.08) \* | -0.15 (-0.42, 0.12) |
|  |  |  |  |  |
| *Health characteristics* |  |  |  |  |
| Self-rated health (1–5) |  | -0.36 (-0.45, -0.27) ‡ |  | -0.35 (-0.43, -0.26) ‡ |
| Comorbidities (0-11) |  | 0.01 (-0.05, 0.06) |  | -0.0003 (-0.06, 0.06) |
| ADLs (0-6) |  | 0.18 (0.11, 0.24) ‡ |  | 0.16 (0.09, 0.22) ‡ |
|  |  |  |  |  |
| *Social characteristics* |  |  |  |  |
| Living arrangements  (vs. married/cohabiting1) |  |  |  |  |
| Living alone |  |  | 1.65 (1.44, 1.86) ‡ | 1.63 (1.42, 1.84) ‡ |
| Living with others |  |  | 1.30 (1.02, 1.58) ‡ | 1.23 (0.96, 1.50) ‡ |
| Network size (0–5) |  |  | 0.02 (-0.04, 0.08) | 0.03 (-0.04, 0.09) |
| Number of close family (0–5) |  |  | -0.22 (-0.31, -0.13) ‡ | -0.22 (-0.31, -0.14) ‡ |
| Number of friends (0–5) |  |  | -0.31 (-0.38, -0.24) ‡ | -0.28 (-0.35, -0.21) ‡ |
|  |  |  |  |  |
| Survey year |  |  |  |  |
| 2010–11 vs. 2005–06 | 0.29 (0.12, 0.46) † | 0.27 (0.11, 0.44) † | 0.38 (0.20, 0.55) ‡ | 0.36 (0.19, 0.54) ‡ |
| 2015–16 vs. 2010–11 | -0.18 (-0.34, -0.03) \* | -0.18 (-0.33, -0.03) \* | -0.37 (-0.53, -0.21) ‡ | -0.36 (-0.52, -0.21) ‡ |
|  |  |  |  |  |
| Var(*u*)2 | 4.3 (3.7, 5.1) | 4.0 (3.4, 4.7) | 3.9 (3.3, 4.6) | 3.7 (3.1, 4.3) |
| Number of respondents | 5,282 | 5,276 | 5,212 | 5,205 |
| Number of observations | 8,739 | 8,721 | 8,543 | 8,525 |
| \* p < 0.05; † p < 0.01; ‡ p < 0.001  1Excludes those who are married but do not live with their spouse.  2Estimated variance of random effect. | | | | |

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| Table S1. Ordinal logistic (cross-sectional) models predicting loneliness from demographic, health and social characteristics, estimated separately for those born 1920–47 and 1948–65 (coefficients and 95% CIs), based on NSHAP | | |
| *Covariates* |  |  |
| Born 1920–47  (interviewed in 2010–11) | Born 1948–65  (interviewed in 2015–16) |
| *Demographics* |  |  |
| Age (decades) | -0.13 (-0.28, 0.02) | -0.19 (-0.40, 0.02) |
| Women (vs. men) | 0.03 (-0.18, 0.24) | 0.09 (-0.11, 0.30) |
| Race/ethnicity (vs. white) |  |  |
| Black/African American | 0.08 (-0.23, 0.38) | -0.02 (-0.33, 0.28) |
| Hispanic | -0.43 (-0.79, -0.07) \* | -0.27 (-0.68, 0.14) |
| Other | -0.29 (-0.83, 0.25) | -0.13 (-0.62, 0.36) |
| Education (vs. HS) |  |  |
| < HS | -0.25 (-0.59, 0.08) | 0.04 (-0.41, 0.50) |
| Some college | -0.16 (-0.41, 0.10) | 0.24 (-0.02, 0.51) |
| Bachelors or more | -0.12 (-0.41, 0.16) | 0.24 (-0.07, 0.54) |
|  |  |  |
| *Health characteristics* |  |  |
| Self-rated health (1–5) | -0.17 (-0.29, -0.06) † | -0.29 (-0.41, -0.17) ‡ |
| Comorbidities (0-11) | -0.06 (-0.12, 0.004) | -0.02 (-0.11, 0.07) |
| ADLs (0-6) | 0.18 (0.10, 0.25) ‡ | 0.09 (-0.02, 0.20) |
| MoCA-SA (0–20) | -0.02 (-0.05, 0.01) | -0.03 (-0.07, 0.02) |
| Self-rated vision (1–5)1 | -0.12 (-0.22, -0.02) \* |  |
| Self-rated hearing (1–5)1 | -0.08 (-0.18, 0.02) |  |
|  |  |  |
| *Social characteristics* |  |  |
| Living arrangements  (vs. married/cohabiting2) |  |  |
| Living alone | 1.01 (0.78, 1.24) ‡ | 1.08 (0.82, 1.34) ‡ |
| Living with others | 0.76 (0.43, 1.10) ‡ | 0.93 (0.62, 1.25) ‡ |
| Network size (0–5) | 0.08 (0.001, 0.16) \* | 0.08 (-0.01, 0.17) |
| Number of close family (0–5) | -0.08 (-0.18, 0.01) | -0.26 (-0.37, -0.15) ‡ |
| Number of friends (0–5) | -0.21 (-0.30, -0.13) ‡ | -0.18 (-0.28, -0.09) ‡ |
|  |  |  |
| Number of respondents3 | 2,478 | 1,667 |
| \* p < 0.05; † p < 0.01; ‡ p < 0.001  1Not asked in 2015–16.  2Excludes those who are married but do not live with their spouse.  3The loneliness items were asked in the leave-behind, which was returned by 2,799 respondents (88%) born 1920–47 in 2010–11 and 1,762 respondents (80%) born 1948–65 in 2015–16; item non-response accounts for the remaining missing cases. | | |