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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 | | | |
| *Variable* |  |  |  |
| 2005–06 | 2015–16 | Change1 |
| Loneliness |  |  |  |
| Mean (3-9) | 4.0 | 4.1 | 0.1 (-0.02, 0.2) |
| Proportion > 4 | 0.28 | 0.31 | 0.03 (-0.002, 0.05) |
|  |  |  |  |
| *Demographics* |  |  |  |
| Age (years) | 67.7 | 67.4 | -0.4 (-0.79, 0.06) |
| Proportion women | 0.51 | 0.53 | 0.01 (-0.01, 0.04) |
| Race/ethnicity (Proportions) |  |  |  |
| Black/African American | 0.10 | 0.11 | 0.01 (-0.005, 0.02) |
| Hispanic | 0.07 | 0.07 | 0.01 (-0.004, 0.02) |
| Education (Proportions) |  |  |  |
| < HS | 0.18 | 0.11 | -0.07 (-0.09, -0.06) ‡ |
| Some college | 0.30 | 0.37 | 0.07 (0.05, 0.09) ‡ |
| Bachelors or more | 0.25 | 0.29 | 0.04 (0.02, 0.06) ‡ |
|  |  |  |  |
| *Health characteristics* |  |  |  |
| Self-rated health |  |  |  |
| Mean (1–5) | 3.3 | 3.3 | 0.02 (-0.04, 0.1) |
| Proportion good or better | 0.75 | 0.78 | 0.03 (0.004, 0.05) \* |
| Comorbidities |  |  |  |
| Mean (0–11) | 1.5 | 1.1 | -0.4 (-0.5, -0.3) ‡ |
| Proportion > 1 | 0.40 | 0.28 | -0.13 (-0.15, -0.10) ‡ |
| ADLs |  |  |  |
| Mean (0–6) | 0.6 | 0.5 | -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 | 0.23 | 0.20 | -0.03 (-0.05, -0.01) † |
| Living with others2 | 0.09 | 0.12 | 0.03 (0.01, 0.04) † |
| Network size (0–5) | 3.5 | 3.8 | 0.4 (0.3, 0.4) ‡ |
| Number of close family members (0–5) | 2.9 | 2.5 | -0.4 (-0.5, -0.4) ‡ |
| Number of friends (0–5) | 3.3 | 3.1 | -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) | | | | |
| *Covariates* |  |  |  |  |
| Model 1 | Model 2 | Model 3 | Model 4 |
| *Demographics* |  |  |  |  |
| Age (decades from 70) | -0.07 (-0.16, 0.01) | -0.12 (-0.21, -0.04) † | -0.24 (-0.32, -0.15) ‡ | -0.28 (-0.37, -0.19) ‡ |
| Age squared | 0.20 (0.12, 0.28) ‡ | 0.17 (0.09, 0.25) ‡ | 0.12 (0.04, 0.19) † | 0.09 (0.01, 0.16) \* |
| Women (vs. men) | 0.35 (0.17, 0.54) ‡ | 0.38 (0.20, 0.56) ‡ | 0.14 (-0.05, 0.33) | 0.17 (-0.01, 0.36) |
| Race/ethnicity (vs. white) |  |  |  |  |
| Black/African American | 0.68 (0.41, 0.95) ‡ | 0.57 (030, 0.84) ‡ | 0.38 (0.11, 0.66) † | 0.30 (0.02, 0.57) \* |
| Hispanic | -0.14 (-0.45, 0.18) | -0.21 (-0.52, 0.10) | -0.30 (-0.61, 0.003) | -0.36 (-0.66, -0.05) \* |
| Other | 0.21 (-0.32, 0.74) | 0.18 (-0.33, 0.69) | 0.13 (-0.39, 0.65) | 0.11 (-0.39, 0.62) |
| Education (vs. HS) |  |  |  |  |
| < HS | 0.46 (0.13, 0.78) † | 0.26 (-0.06, 0.58) | 0.39 (0.08, 0.71) \* | 0.23 (-0.09, 0.54) |
| Some college | -0.20 (-0.44, 0.05) | -0.13 (-0.37, 0.11) | -0.12 (-0.37, 0.12) | -0.07 (-0.31, 0.18) |
| Bachelors or more | -0.48 (-0.74, -0.21) ‡ | -0.26 (-0.52, 0.005) | -0.34 (-0.61, -0.07) \* | -0.15 (-0.41. 0.12) |
|  |  |  |  |  |
| *Health characteristics* |  |  |  |  |
| Self-rated health (1–5) |  | -0.36 (-0.45, 0.27) ‡ |  | -0.34 (-0.43, -0.26) ‡ |
| Comorbidities (0-11) |  | 0.01 (-0.05, 0.06) |  | 0.004 (-0.05, 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 |  |  | 1.64 (1.42, 1.85) ‡ | 1.62 (1.41, 1.83) ‡ |
| Living with others |  |  | 1.28 (1.01, 1.56) ‡ | 1.22 (0.95, 1.49) ‡ |
| Network size (0–5) |  |  | 0.02 (-0.04, 0.08) | 0.02 (-0.04, 0.08) |
| Number of close family (0–5) |  |  | -0.21 (-0.30, -0.12) ‡ | -0.21 (-0.30, -0.13) ‡ |
| 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) ‡ | 0.37 (0.19, 0.54) ‡ |
| 2015–16 vs. 2010–11 | -0.19 (-0.34, -0.04) \* | -0.18 (-0.33, -0.03) \* | -0.36 (-0.52, -0.21) ‡ | -0.36 (-0.52, -0.20) ‡ |
|  |  |  |  |  |
| 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, 4.4) |
| Number of respondents | 5,288 | 5,282 | 5,218 | 5,211 |
| Number of observations | 8,750 | 8,732 | 8,554 | 8,536 |
| \* 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 3. 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) | | |
| *Covariates* |  |  |
| Born 1920–47  (interviewed in 2010–11) | Born 1948–65  (interviewed in 2015–16) |
| *Demographics* |  |  |
| Age (decades) | -0.14 (-0.28, 0.01) | -0.19 (-0.40, 0.01) |
| Women (vs. men) | 0.04 (-0.17, 0.25) | 0.11 (-0.09, 0.31) |
| Race/ethnicity (vs. white) |  |  |
| Black/African American | 0.10 (-0.21, 0.41) | 0.04 (-0.27, 0.34) |
| Hispanic | -0.43 (-0.80, -0.06) \* | -0.25 (-0.66, 0.15) |
| Other | -0.30 (-0.83, 0.24) | -0.10 (-0.58, 0.38) |
| Education (vs. HS) |  |  |
| < HS | -0.25 (-0.59, 0.09) | 0.02 (-0.43, 0.46) |
| Some college | -0.17 (-0.42, 0.08) | 0.24 (-0.03, 0.50) |
| Bachelors or more | -0.13 (-0.42, 0.15) | 0.28 (-0.02, 0.58) |
|  |  |  |
| *Health characteristics* |  |  |
| Self-rated health (1–5) | -0.17 (-0.29, -0.06) † | -0.27 (-0.39, -0.15) ‡ |
| Comorbidities (0-11) | -0.06 (-0.12, 0.01) | -0.01 (-0.09, 0.08) |
| ADLs (0-6) | 0.17 (0.09, 0.25) ‡ | 0.09 (-0.02, 0.20) |
| MoCA-SA (0–20) | -0.02 (-0.05, 0.01) | -0.03 (-0.07, 0.01) |
| Self-rated vision (1–5)1 | -0.12 (-0.22, -0.02) \* |  |
| Self-rated hearing (1–5)1 | -0.09 (-0.19, 0.01) |  |
|  |  |  |
| *Social characteristics* |  |  |
| Living arrangements  (vs. married/cohabiting2) |  |  |
| Living alone | 1.01 (0.77, 1.24) ‡ | 1.08 (0.82, 1.33) ‡ |
| Living with others | 0.77 (0.43, 1.11) ‡ | 0.93 (0.61, 1.24) ‡ |
| Network size (0–5) | 0.08 (0.01, 0.16) \* | 0.09 (0.01, 0.18) \* |
| 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 (-0.27, -0.09) ‡ |
|  |  |  |
| Number of respondents3 | 2,478 | 1,673 |
| \* 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. | | |