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Are U.S. Older Adults Getting Lonelier? Age, Period, and Cohort Differences

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Media portrayals of a loneliness "epidemic" are premised on an increase in the proportion of people living alone and decreases in rates of civic engagement and religious affiliation over recent decades. However, loneliness is a subjective perception that does not correspond perfectly with objective social circumstances. In this study, we examined whether perceived loneliness is greater among the Baby Boomers—individuals born 1948–1965—relative to those born 1920–1947 and whether older adults have become lonelier over the past decade (2005–2016). We used data from the National Social Life, Health and Aging Project and from the Health and Retirement Study collected during 2005–2016 to estimate differences in loneliness associated with age, birth year, and survey time point. Overall, loneliness decreased with age through the early 70s, after which it increased. We found no evidence that loneliness is substantially higher among the Baby Boomers or that it has increased over the past decade. Loneliness is, however, associated with poor health, living alone or without a spouse–partner, and having fewer close family and friends, which together accounted for the overall increase in loneliness after age 75. Although these data do not support the idea that older adults are becoming lonelier, the actual number of lonely individuals may increase as the Baby Boomers age into their 80s and beyond. Our results suggest that attention to social factors and improving health may help to mitigate this.

Keywords: loneliness, age–period–cohort effects, Baby Boom cohorts

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In recent years, media portrayals of loneliness have depicted a growing and pressing problem—an "epidemic" (Hafner, 2016; Kar-Purkayastha, 2010; Murthy, 2017) deemed urgent largely because of the link between loneliness and morbidity (Hawkley & Cacioppo, 2010), greater health care utilization (Gerst-Emerson & Jayawardhana, 2015), and mortality (Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015). Concern about rising rates of loneliness is typically premised on an increase in the proportion of people living alone, smaller core social networks, less civic engagement, and lower rates of religious affiliation in recent decades (Holt-Lunstad, 2017; Holt-Lunstad, Robles, & Sbarra, 2017), each suggestive of rising rates of individualism. Yet loneliness is not synonymous with structural indicators of social connection but is instead defined by a perceived discrepancy between desired and attained social relationships (Peplau & Perlman, 1982). Thus, structural changes in society may not necessarily yield changes in loneliness prevalence or intensity. The purpose of this analysis was to examine the evidence for an increase in loneliness among older U.S. adults over the past decade (2005–2016). Such an increase might reflect either higher levels of loneliness among the Baby Boomers who are now entering older ages (a cohort effect) or an overall increase in loneliness in the population (a period effect).

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This study was preregistered with the Open Science Framework (https://osf.io/pwfkm/). The NSHAP data are available from the National Archive of Computerized Data on Aging (https://www.icpsr.umich.edu/icpsrweb/NACDA/series/706); the Health and Retirement Study (HRS) data are available from the HRS website (http://hrsonline.isr.umich.edu/index.php?p=avail). Code used to perform the analyses is available on GitHub (https://github.com/lhawkley/us-loneliness-apc).

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In addition to possible changes in loneliness at the population level, we also examined several established risk factors for loneliness at the individual level (Cohen-Mansfield, Hazan, Lerman, & Shalom, 2016; Pinquart & Sörensen, 2001; Theeke, 2009). Specifically, we examined whether the associations between these factors and loneliness differ among the Baby Boomers compared to previous generations. For instance, although being married protects against loneliness (Stack, 1998), this effect may have become less strong among more recent generations, due to increasing tolerance of divorce and singlehood (van Tilburg, Aartsen, & van der Pas, 2015). Changes in the prevalence of risk factors as well as in their association with loneliness may have implications for the amount of loneliness in the population. Moreover, understanding these risk factors is critical for developing effective interventions to reduce loneliness among older adults.

Background

As was noted, increases in loneliness in the older adult population over the last few decades (i.e., period effects) have been posited on the basis of the growing prevalence of living alone, decreased rates of social and religious involvement, and an aging population that is increasingly isolated as older adults age-in-place with poor health and limited mobility (Holt-Lunstad, 2017; Nyqvist, Cattan, Conradsson, Näsman, & Gustafsson, 2017). Despite these societal changes, extant data do not support the assumption that these changes are evident in the prevalence or intensity of loneliness. A nationally representative study of the oldest old in Sweden that used a repeated cross-sectional design found no change in loneliness prevalence in those 77-plus years old (M = 83) over a 22-year interval between 1992 and 2014 (Dahlberg, Agahi, & Lennartsson, 2018). In addition, a repeated cross-sectional study of Swedish adults aged 85, 90, and 95 years found no increase in loneliness over a 10-year interval between 2000–2002 and 2010–2012 (Nyqvist et al., 2017).

Other research has examined period effects in conjunction with cohort effects, which are of primary concern in the present study. Most of this research has been conducted in European countries. Period and cohort differences in the prevalence or intensity of loneliness have typically not been seen, although results are sometimes mixed depending on the country and time period being studied. Pitkala, Valvanne, Kulp, Strandberg, and Tilvis (2001) found no difference in loneliness rates among Finnish ages 75, 80, and 85 born 10 years apart (i.e., born 1904–1914 vs. 1914–1924), although actual rates were not reported. Victor et al. (2002) reviewed four early surveys conducted in England and found no differences in the prevalence of frequent loneliness among adults 60–75 or more in birth cohorts that ranged from 1865 to 1934. These cohorts did, however, differ in the prevalence of never feeling lonely, which decreased across cohorts, and sometimes feeling lonely, which increased across cohorts. Using data from the Berlin Aging Study, Hülür, et al. (2016) found that loneliness levels were substantially lower among 75-year-olds in the more recent 1925–1949 birth cohort than in the earlier 1901–1922 birth cohort. Similarly, Eloranta, Arve, Isoaho, Lehtonen, and Viitanen (2015) found lower rates of loneliness in more recent Finnish cohorts of 70-year-olds born in 1940 compared to 70-year-olds born in 1920. None of these studies has compared adults born in 1948–1965 (corresponding to the Baby Boomers) to earlier generations. In addition, no studies have examined cohort differences in loneliness in older adults in the United States.

Dykstra (2009) identified three factors that might contribute to differences in loneliness between the United States and European countries. One is differences in the distribution of individual characteristics such as wealth, health, and marital status—all of which have been found to be associated with loneliness (Fokkema, de Jong Gierveld, & Dykstra, 2012). A second potential factor is differences in social and cultural characteristics. For example, social peripheralization of older adults is common, and social exclusion is robustly linked to loneliness (Hagerty, Williams, Coyne, & Early, 1996; Leary, 1990; Schirmer & Michailakis, 2018). This effect is exacerbated in countries with more marked income inequality (Yan, Yang, Wang, Zhao, & Yu, 2014), and income inequality is greater in the United States than in European countries on average (World Bank, 2017). Third, effects of individual characteristics may vary between the United States and Europe. For example, poor health and disability may lead to greater risk for loneliness in the United States than in Europe because health care access and affordability is poorer in the United States (He, Goodkind, & Kowal, 2016).

In addition to creating overall differences in loneliness across countries, these factors may also combine with country-specific changes in the population to yield differences in temporal patterns of loneliness. For instance, Banks, Berkman, and Smith (2010) found that among adults born before 1930, those in the United States were more likely than those in England to have children, whereas among those born in 1940 or later, English adults were more likely than U.S. adults to have children. Thus, the "Baby Boom" was not experienced in the same way in the United States as in the United Kingdom (see also Reher & Requena, 2015). At the same time, English parents had more frequent contact with their children than did U.S. parents, whereas U.S. parents felt closer to their children than did English parents. Contact with adult children, if the parent–child relationship is of high quality, has been shown to be associated with lower levels of loneliness (Fokkema & Naderi, 2013). Thus, changes in loneliness across cohorts may differ in the United States compared to the United Kingdom.

Societal Changes Affecting Baby Boomers

Although much has been published on how individual-level characteristics are associated with loneliness, less attention has been paid to possible historical, contextual effects (Elder, 1994; Elder, Johnson, & Crosnoe, 2003). According to the *principle of timing* (Elder et al., 2003), age at exposure to events differentially alters the life course. For instance, the availability of oral contraception starting in 1960, and legalized abortions in 1973, drastically altered the behavior, attitudes, and intimate relationships among those who came of age during this time period (i.e., the so-called leading-edge Baby Boomers) but would have had very different effects on those already married. Similarly, increasing rates of employment among women were differentially experienced across birth cohorts. The increase in women's participation in the labor force, from approximately 30% of the civilian labor force in 1948 to 47% in 2016, was a phenomenon experienced disproportionately by cohorts born later; among women 16–24 years old in 1950 (i.e., born approximately 1926–1934), only 44% were in the workforce, whereas among women of the same age in

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1980, 62% were in the workforce (U.S. Department of Labor, 2019). Changing gender roles and intimate relationship histories and expectations, among other influences, exerted unique pressures on later relative to earlier cohorts, including delay of marriage and childbearing. These changes may have weakened partnership and family ties, leading to greater loneliness in later life. On the other hand, as societal norms shifted, individuals born in later cohorts may have adapted and adopted new standards against which to evaluate their social satisfaction. A recent study found that the negative association between being married and loneliness weakens with age (i.e., widowhood can be considered normative in later life) and is also weaker among later-relative to earlier-born cohorts (Böger & Huxhold, 2018), perhaps due to singlehood's becoming more accepted.

In the United States, there have been many macrolevel societal changes over the last 50 years in the domains of education, health, and social relationships—each of which is potentially relevant for loneliness at the individual level. However, individuals have the capacity to determine whether and how these influences affect their personal life course trajectories, including their loneliness (i.e., the *principle of agency*; Elder et al., 2003). Moreover, an individual's responses to these changes may have differential effects on outcomes depending on the individual's age or cohort (e.g., the less detrimental effect of singlehood on loneliness in more recent cohorts cited earlier). In the next sections we review the major changes in these three domains and their potential implications for loneliness among specific cohorts.

Education

Education is believed to protect against loneliness because more education imparts individuals with greater resourcefulness in developing and accessing social supports that alleviate stress and thereby indirectly reduce risk for loneliness (Bishop & Martin, 2007). The percentage of the population with a bachelor's degree (or higher) has risen from less than 10% in 1947 to over 25% in 2012 (Bauman, 2016), and for women, the rate of increase has accelerated with each successive 10-year cohort. High school graduation rates have also increased over this time period, from about 50% in 1950 to more than 70% in the 1990s (Snyder, 1993). Because higher levels of education are associated with lower levels of loneliness (Pinquart & Sörensen, 2003), one might expect loneliness to be lower among more recent cohorts.

Health

Poor health is considered a predisposing condition for loneliness (Dykstra, 2009). Chronic conditions, functional limitations, cognitive decline, and sensory loss are examples of the types of health concerns that can affect people's ability to remain socially active and to have good quality social interactions. In turn, social deficits increase risk for loneliness.

Self-rated health. Lonelier individuals consistently report worse health than do their less lonely peers (Pinquart & Sörensen, 2003). Recent evidence has indicated a consistent pattern of cohort differences in self-rated health such that more recent cohorts report worse health than do earlier cohorts. For instance, self-rated health was lower among Baby Boom women than among pre-Boom women and declined more rapidly with age over a three-decade follow-up from 1975 to 2003 (Chen, Cohen, & Kasen, 2007). Similarly, a 1925–1942 birth cohort of older adults in the Berlin Aging Study rated their health more poorly than did an older cohort born 1907–1922 (König et al., 2018), despite objectively having better health as indicated by measures of cholesterol, HbA1c, physical activity, smoking, and diet. Recent evidence has suggested that self-rated health is more highly related to emotional well-being in recent than earlier cohorts (Spuling, Wurm, Tesch-Römer, & Huxhold, 2015). Given that loneliness has an emotional dimension, one might expect age-related declines in self-rated health to be associated with greater increases in loneliness among younger cohorts.

Chronic health conditions. Certain chronic health conditions have become more prevalent in recent decades. For instance, between 1988–1994 and 2005–2010, diabetes prevalence among those 65 and older increased from approximately 13% to 18% (Selvin, Parrinello, Sacks, & Coresh, 2014). Data from the Health and Retirement Study showed that the proportion of older adults reporting no chronic disease decreased from 13.1% in 1998 to 7.8% in 2008, whereas the proportion reporting one or more chronic disease increased from 86.9% to 92.2%, and the proportion with four or more chronic diseases increased from 11.7% to 17.4% (Hung, Ross, Boockvar, & Siu, 2011). Given the association between chronic health conditions and loneliness (Petitte et al., 2015), a concomitant increase in loneliness may be evident in more recent cohorts.

Disability. Functional limitations are associated with loneliness and contribute to increases in loneliness over time (Luo, Hawkley, Waite, & Cacioppo, 2012; Perissinotto, Stijacic Cenzer, & Covinsky, 2012). Disability data typically rely on assessments of individuals' capacity to perform the activities of daily living (ADLs; Katz, Ford, Moskowitz, Jackson, & Jaffe, 1963) and the instrumental activities of daily living (IADLs; Lawton & Brody, 1969). Population-level data from the National Health Interview Survey have indicated relative stability in the probability of ADL disability, and a decline in IADL disability, between 1982 and 2009 among individuals 70 years and older (period effect). However, ADL and IADL disability rates are increasing with successive cohorts net of aging and period effects (Lin, Beck, Finch, Hummer, & Masters, 2012). This phenomenon might be expected to result in greater loneliness in more recent cohorts.

Sensory function. Vision and hearing are critical to meaningful social interactions, and deficits in each sense have been associated with loneliness (Sung, Li, Blake, Betz, & Lin, 2016; Wallhagen, Strawbridge, Shema, Kurata, & Kaplan, 2001). The treatment of visual and hearing impairments has significantly improved over the last several decades, and vision and hearing problems have correspondingly decreased in prevalence (Bainbridge & Wallhagen, 2014). This may help to reduce loneliness among recent cohorts.

Cognitive health. Data from community-based studies and national surveys provide evidence for a recent reduction in the prevalence of cognitive impairment (Rocca et al., 2011). Similarly, dementia incidence and prevalence have shown a declining age-specific risk in the United States (Langa, 2015; Langa et al., 2017) and in other countries. In Sweden, cognitive functioning improved for 70-year-olds in the 1930 birth cohort relative to the 1901–1902 cohort (Sacuiu et al., 2010). Loneliness is known to be a risk factor for cognitive decline (Donovan et al., 2017), and conversely, cognitive decline has been shown to predict loneliness (Zhong,

Chen, Tu, & Conwell, 2017). Together these findings suggest that a reduction in loneliness may parallel the declining prevalence of cognitive impairment among more recent cohorts.

Social Relationships

The most frequent explanation for loneliness is a deficit in one's social relationships. Indeed, the number and quality of people's social relationships and activities play a prominent role in determining feelings of loneliness (Hawkley et al., 2008). Cohort differences in how people structure their social lives may therefore be reflected in cohort differences in loneliness.

Marital status. The prevalence of divorce has increased among older adults, and this has been accompanied by an increased rate of remarriage together with a declining prevalence of widowhood (Brown & Lin, 2012). Being divorced is associated with greater loneliness than is being married, but loneliness tends not to differ between married and remarried individuals. In fact, some research has indicated that remarried older men are less lonely than are first-married older men (Dykstra & de Jong Gierveld, 2004). The proportion of older adults who were married decreased from 1960 to 2010 (Cohn, Passel, Wang, & Livingston, 2011), whereas the proportion of older adults who were never married increased from 1986 to 2009 (Kreider & Ellis, 2011). Given the strong negative association between marriage and loneliness (Stack, 1998), this decline in the proportion of married older adults may have resulted in greater loneliness among more recent cohorts. On the other hand, a recent study found that partnership status has become less predictive of loneliness in more recent cohorts whereas satisfaction with singlehood has increased (Böger & Huxhold, 2018). In addition, although loneliness was significantly greater in divorcees than in first-married adults across three cohorts of Dutch 54- to 65-year-old adults, "social" loneliness—a dimension of loneliness that refers to a lack of meaningful relationships—decreased steadily among divorcees from 1992 to 2002 and from 2002 to 2012 (van Tilburg et al., 2015). These data suggest that the marriage advantage in lowering loneliness may be smaller in more recent cohorts, perhaps because recent cohorts are more likely to develop and nurture relationships that compensate for the lack of a spouse or partner.

Living arrangements. Living alone and living with people other than a spouse or partner (e.g., children, other relatives) have each been associated with greater loneliness than is living with a spouse (Russell, 2009). Historical data from 1967 to 2016 show that living alone became more prevalent in the United States among 50- to 64-year-olds, whereas among those over age 65, living with a spouse or unmarried partner became more prevalent and the proportion living with other relatives became less prevalent (Vespa, 2017). These changes suggest a lower risk for loneliness among older cohorts relative to younger ones.

Social network size. Larger networks are associated with lower levels of loneliness, but the association is typically small to moderate in size (Hawkley et al., 2008; York Cornwell & Waite, 2009). Little research has examined cohort differences in social network size. A recent exception is a study that found no differences in network size between 55- and 64-year-olds born in 1928–1937 and a more recent cohort born 1938–1947. The more recent birth cohort showed an increase in network size at follow-up about two years later that was not evident in the earlier cohort, but it declined subsequently such that network size at the final follow-up about nine years later again revealed no difference between cohorts (Suanet & Huxhold, 2018). Evidence to date thus provides little basis for positing cohort differences in loneliness.

Friends. Friendships are important in reducing feelings of loneliness (Pinquart & Sörensen, 2001; Stevens & van Tilburg, 2000), particularly among unmarried older adults (Pinquart, 2003). Typically, the proportion of nonkin in personal social networks—of which friends constitute the majority—declines with age. In more recent cohorts of older adults (i.e., 1922 and earlier vs. after 1922), the age-related decline is delayed or slower (Suanet, van Tilburg, & Broese van Groenou, 2013). Additional data from the Longitudinal Aging Study Amsterdam found that a younger cohort (born 1927–1937) was more likely to have friends in their network than were older cohorts (born before 1927; Stevens & van Tilburg, 2011). Similar differences, if observed in the United States, would tend to reduce loneliness among more recent cohorts.

Close family–relatives. Family members and close relatives form the core of most older adults' social networks, and their presence can also attenuate risk for loneliness. Sibling contact, for instance, has been associated with reduced loneliness in rural elderly adults (Dugan & Kivett, 1994), as has having children who show affection to and receive affection from their parents (Long & Martin, 2000). Family members are also critical in providing elder care and increasing older adults' ability to age in place, factors that protect against loneliness (Prieto-Flores, Fernandez-Mayoralas, Forjaz, Rojo-Perez, & Martinez-Martin, 2011). Recent data have indicated that kinlessness is prevalent among 6.6% of those 50-plus years old and is expected to increase over the coming decades (Margolis & Verdery, 2017). Between the 1970s and 2010, family size shrank and geographic distance from family members increased (Fischer, 2011). In combination, these data suggest that more recent cohorts may be at greater risk for loneliness than are earlier cohorts of older adults.

In sum, there have been many changes in the distributions of factors known to be associated with loneliness, some of which suggest a possible increase in loneliness among more recent cohorts whereas others suggest a decrease. The objective of this study is to determine whether there is any evidence of overall changes in loneliness among more recent cohorts and whether the associations between known predictors of loneliness differ among those born from 1948 to 1965 compared to those born earlier. Our results provide insight into the prognosis regarding loneliness among older adults in the United States over the coming decades, as well as regarding possible steps that might be taken to reduce loneliness among older adults.

Method

Study Population

The National Social Life, Health and Aging Project (NSHAP) is an omnibus survey study (including physical and biomeasures) of health and aging, with a focus on intimate and other social relationships. Data were first collected in 2005–2006 from a probability sample of 3,005 U.S. community-dwelling adults born 1920–1947; this sample consisted of only one respondent per household and included oversamples of both African Americans and Hispanics, as well as of older men (O'Muircheartaigh, Eckman, & Smith, 2009). A second wave of

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data was collected in 2010–2011 (n = 3,377) from all surviving respondents and their coresident spouses or partners (if present, regardless of age; O'Muircheartaigh, English, Pedlow, & Kwok, 2014). The third wave of data was collected in 2015–2016 (n = 4,777) from all surviving previous respondents; in addition, a new sample of U.S. adults born 1948–1965 (including their coresident spouses or partners, regardless of age) was added. Overall response rates were 75.5%, 74%, and 71%, respectively. Attrition in Wave 2 was due to death (14%), moving to a nursing home (<1%), health poor enough to preclude an interview (5%), or nonresponse (6%); corresponding percentages for Wave 3 were 18%, <1%, 5%, and 8%, respectively. Our analytic sample included all respondents born 1920–1965 (i.e., spouses or partners born outside this range were excluded). Data were collected by the National Opinion Research Center (NORC). Interviews were conducted in the home by trained interviewers using computer-assisted personal interviewing (CAPI) along with a leave-behind questionnaire (LBQ) that the respondents completed and mailed back. This study was approved by the Institutional Review Boards of NORC and the University of Chicago. All respondents provided written, informed consent.

To confirm our findings, we replicated our basic age, period, and cohort analyses using comparable data collected in 2006–2016 by the Health and Retirement Study (HRS). Like the NSHAP, the HRS is a U.S. national, longitudinal study of older adults. Although much of the study's content is focused on retirement and financial decision-making, the HRS also includes a rich set of health measures (including physical and biomeasures) and psychosocial measures (collected via an LBQ). As part of the latter, the HRS added questions from the UCLA Loneliness Scale starting in 2002 that were later adopted by the NSHAP (described later; Hughes, Waite, Hawkley, & Cacioppo, 2004). Since 1998, the HRS has maintained a sample representative of U.S. adults ages 51 and older, replenishing the sample every 6 years with younger cohorts; early Baby Boomers (born 1948–1953) were added in 2004, mid Baby Boomers (born 1954–1959) in 2010, and late Baby Boomers (born 1960–1965) in 2016. Like the NSHAP, both members of a couple are included for all cohorts. Because our objective was to replicate the NSHAP results, we used a subsample that closely matched the NSHAP sample: respondents born 1920–1965 who were 50–95 at the time of data collection. The HRS (Health and Retirement Study) is sponsored by the National Institute on Aging (NIA Grant U01AG009740) and is conducted by the University of Michigan. This analysis uses early release data from the Health and Retirement Study (HRS, 2006–2016). These data have not been cleaned and may contain errors that will be corrected in the final public release version of the data set.

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Measures

Loneliness. A validated three-item version of the UCLA Loneliness Scale (Hughes et al., 2004) was used in both the NSHAP and the HRS (item stem "How often do you feel" and endings "that you lack companionship," "left out," and "isolated from others"), with the questions administered in a leave-behind questionnaire (LBQ). The NSHAP LBQ was completed and returned by 84% of the sample in 2005–2006, 87% of the sample in 2010–2011 and 85% of sample in 2015–2016 (the HRS LBQ had slightly lower response rates, ranging from 73%–88% during 2006–2014; Smith, Ryan, Sonnega, & Weir, 2017). Individual characteristics associated with nonresponse to the NSHAP LBQ are discussed in Hawkley, Kocherginsky, Wong, Kim, and Cagney (2014). In NSHAP 2005–2006 and HRS (all years), the response categories were 0 (*Hardly ever [or never]*), 1 (*Some of the time*), or 2 (*Often*); starting in 2010–2011 these were changed in the NSHAP to 0 (*Never*), 1 (*Hardly ever*), 2 (*Some of the time*), or 3 (*Often*). For consistency across time and between studies, the NSHAP responses from 2010–2011 and 2015–2016 were recoded to combine *Never* and *Hardly ever* into a single category. These three items, each coded 1–3, were summed to yield a loneliness score ranging from 3 to 9. Cronbach's alpha was .80 in Wave 1 and .79 in Wave 2 (Hawkley & Kocherginsky, 2018).

Demographics. Age at the time of the interview was calculated from the respondent-reported date of birth. Gender was coded by the interviewer, with clarification by the respondent (if necessary). Race–ethnicity was determined based on the following two questions: "Do you consider yourself primarily white or Caucasian, black or African American, American Indian, Asian, or something else?" and "Do you consider yourself Hispanic or Latino?"; for these analyses all who reported themselves to be Black or African American were included in this group (regardless of their response to the second question). Self-reported educational attainment was categorized as *less than high school*, *high school graduate or GED*, *some college or associates degree or vocational certificate*, and *bachelor's degree or higher*.

Health characteristics. Self-reported physical health, vision, and hearing were each rated on a scale of 1 (*Poor*) to 5 (*Excellent*); the latter two items were not asked in 2015–2016. Respondents were asked whether they had been told by a doctor that they had the following conditions, and these were summed to construct a comorbidity score (Vasilopoulos et al., 2014) with a possible range of 0–16 (points assigned in parentheses): congestive heart failure (1), heart attack (1), coronary procedure (1), stroke (1), diabetes (1), arthritis (1), chronic pulmonary disease (1), dementia (1), nonmetastatic cancer excluding skin cancer (2), and metastatic cancer other than skin cancer (6). Six activities of daily living (ADLs) were measured (walking across room, dressing, bathing, eating, getting in and out of bed, toileting), and the total number for which the respondent reported having at least *some difficulty* was calculated. A survey-adapted version of the Montreal Cognitive Assessment (MoCA-SA) was introduced starting in 2010–2011 with ranges from 0 to 20 (with higher scores indicating better cognitive function; Dale et al., 2018; Kotwal et al., 2015).

Social characteristics. Network size (with a possible range of 0–5) was calculated based on the number of alters named in response to a question asking the respondent to identify "the people with whom you most often discussed things that were important to you" over the past year (Cornwell, Schumm, Laumann, & Graber, 2009). Three distinct living arrangements were identified based on reported marital status and a roster of household members: living with a spouse or cohabiting partner, living alone, or living with at least one other person *not including a spouse or partner*. Questions were asked about the number of family members or relatives the respondent "feels close to" and the number of friends he or she has, using the following response categories: 0 (*None*), 1 (*One*), 2 (*2–3*), 3 (*4–9*), 4 (*10–20*), and 5 (*More than 20*).

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Statistical Analyses

Three sets of analyses were performed, each to answer a different question. First, we used NSHAP data to generate population estimates of the distributions of loneliness and of the covariates in 2005–2006 and 2015–2016, to determine whether (and how) these have changed during the decade. Because the NSHAP sample in 2005–2006 was representative of the population aged 57–85, we also restricted the 2015–2016 sample to this age range, for comparability. Population estimates were obtained by using the weights distributed with the data set to adjust for differences in the probability of selection and nonresponse. Standard errors for the differences between time points were obtained using the clustered version of the sandwich (i.e., robust) variance estimator (Angrist & Pischke, 2009) to account for within-respondent correlation among respondents interviewed at both time points, and Wald tests were constructed based on these standard errors.

Second, we examined the associations between loneliness and age, birth year (i.e., cohort), and survey year (i.e., period) using all observations for which the respondent was 50 or older at the time of data collection. Effects of age and birth year were modeled using restricted cubic splines with 4 degrees of freedom (i.e., 3 knots), orthogonalized using the Gram-Schmidt procedure to facilitate interpretation. Mean loneliness was first plotted as a function of age separately by gender, together with 95% pointwise confidence bands. A mixed-effects ordinal logit model (Skrondal & Rabe-Hesketh, 2004) was then used to estimate simultaneously the effects of age, birth year, and survey year, including a random intercept to account for within-respondent correlation over time. As mentioned previously, survey weights were used as well as the cluster robust variance estimator to ensure accurate standard errors even if the random effects model does not capture the true correlation structure. Due to the linear dependency among age, period, and cohort (i.e., age = period − cohort), it is not possible to include linear terms for age, survey year, and birth year in the same model (Holford, 2006). Thus, we fit two models: (a) a model excluding the linear term for birth year and modeling survey year using individual contrasts relative to baseline and (b) a model including the linear term for birth year but excluding a linear effect for survey year (for the NSHAP, a single contrast comparing 2010–2011 to 2005–2006 and 2015–2016, and for the HRS, the same restricted cubic splines as for age and birth year but excluding the linear component). These models permitted us to examine the linear trends for two of the three variables under the assumption that the linear trend for the third is negligible, whereas the nonlinear components for all three variables are interpretable regardless. This analysis was performed first using the NSHAP data set and then replicated using the HRS data set. Results are presented together by plotting the linear predictor versus each covariate together with 95% confidence bands.

Finally, we used mixed-effects ordinal logit models to examine the associations between the covariates and loneliness. One model used the entire NSHAP data set for maximum precision; age was modeled using both linear and quadratic effects (based on results from the analyses mentioned earlier), and birth year was excluded. We then fit cross-sectional ordinal logistic regression models separately to two groups: those born in 1920–1947 using data collected in 2010–2011, and those born in 1948–1965 (comprising the Baby Boom cohorts) using data collected in 2015–2016. The samples for these two models are independent (i.e., different respondents and a different sampling frame), and so one may be viewed as a replication of the other. The objective was to compare the associations between loneliness and the covariates among the Baby Boomers relative to earlier cohorts; data from 2010–2011 were used for those born 1920–1947 to maximize sample size. In both cases, survey weights were used together with the cluster robust variance estimator (note that for the cross-sectional models, each respondent is included in only a single model). Results from the cross-sectional models are presented graphically using a forest plot to facilitate comparison of effect sizes.

Results

During the 10-year period from 2005–2006 to 2015–2016, we estimated that the mean loneliness score among U.S. community-dwelling adults aged 57–85 remained nearly unchanged, from 4.0 to 4.1 (95% confidence interval [CI: −.002, .2]; $p = .055$), and the proportion with a loneliness score greater than four increased only slightly, from .28 to .31 (95% CI [.002, .06]; $p = .035$; see Table 1). At the same time, the population distributions of several individual characteristics previously reported to be associated with loneliness exhibited modest, or in some cases even moderate, changes. For example, the proportion who did not graduate from high school decreased from .19 to .11, whereas the proportion with at least some college increased from .55 to .66. Improvements in objective health measures were also observed, with the proportion exceeding a score of 1 on the comorbidity index decreasing from .41 to .28 and the proportion reporting at least 1 ADL decreasing from .25 to .22; despite these, however, there was little evidence of an increase in self-rated health. The proportion living alone declined slightly (.24 to .21), matched by a similar increase in the proportion living with others (.09 to .13). Finally, although there was a modest increase in network size, both the mean number of close family members and the mean number of friends decreased.

Age, Period, and Cohort Differences

Figure 1 shows population estimates of mean loneliness for the NSHAP (2015–2016) and the HRS (2014) plotted by age, separately for men and women. Overall, mean loneliness for women was slightly higher than that for men and decreased with age for both until just after 75, after which it increases. Mean loneliness was consistently higher for the HRS than for the NSHAP, likely because the HRS presented the *Often* response first, whereas NHSAP presented it last. Such response order effects are described by Krosnick and Alwin (1987).

Figure 2 shows estimated differences in loneliness by age (Panel A), birth year (Panel B), and survey year (Panel C) based on a mixed-effects ordinal logit model including a linear term for age but excluding a linear term for birth year ($n = 8{,}763$ observations from 5,293 respondents for the NSHAP; 38,626 observations from 18,646 respondents for the HRS). Plotted on the *y*-axis is the value of the linear predictor (xb) reflecting the change on the logit scale in the likelihood of exceeding a loneliness cutoff point associated with the covariate. Consistent with the pattern in Figure 1, loneliness decreased with age through the early 70s and then increased again at older ages ($p = .003$ for joint test of four age splines). The differences associated with birth year are smaller. Although the

Table 1
Estimated Means (or Proportions) of Loneliness and Selected Covariates for the U.S. Community-Dwelling Population Aged 57–85 in 2005–2006 and 2015–2016, Based on the NSHAP

Variable	2005–2006	2015–2016	Difference [95% CI][a]
Loneliness (3–9)			
M (*SD*)	4.0 (1.4)	4.1 (1.4)	.1 [−.002, .2]
Proportion > 4	.28	.31	.03 [.002, .06]*
Demographics			
Age in years: *M* (*SD*)	68.0 (7.7)	66.8 (7.4)	−1.3 [−1.7, −.8]***
Proportion women	.52	.52	.01 [−.01, .03]
Race–ethnicity (proportion)			
Black–African American	.10	.11	.01 [.001, .03]*
Hispanic	.07	.07	.01 [−.005, .02]
Education (proportion)			
<High school	.19	.11	−.08 [−.09, −.06]***
Some college	.30	.37	.07 [.05, .09]***
Bachelor's or more	.25	.29	.05 [.02, .07]***
Health characteristics			
Self-rated health (1–5)			
M (*SD*)	3.3 (1.1)	3.3 (1.0)	.02 [−.04, .1]
Proportion good or better	.75	.77	.02 [−.001, .05]
Comorbidities (0–11)			
M (*SD*)	1.5 (1.4)	1.1 (1.3)	−.4 [−.5, −.3]***
Proportion > 1	.41	.28	−.13 [−.16, −.10]***
ADLs (0–6)			
M (*SD*)	.6 (1.3)	.5 (1.2)	−.1 [−.2, −.03]**
Proportion > 0	.25	.22	−.03 [−.05, −.003]*
Social characteristics			
Living arrangements (proportions)			
Living alone	.24	.21	−.02 [−.05, −.003]*
Living with others[b]	.09	.13	.04 [.02, .06]***
Network size (0–5): *M* (*SD*)	3.5 (1.5)	3.8 (1.4)	.4 [.3, .4]***
No. of close family members (0–5): *M* (*SD*)	2.9 (1.0)	2.5 (1.0)	−.4 [−.5, −.4]***
No. of friends (0–5): *M* (*SD*)	3.3 (1.3)	3.1 (1.1)	−.2 [−.2, −.1]***
No. respondents[c]	2,385	2,829	

Note. NSHAP = National Social Life, Health and Aging Project; CI = confidence interval; ADLs = activities of daily living.
[a] Estimated change from 2005–2006 to 2015–2016. [b] Excludes spouse or cohabiting partner. [c] The loneliness items were asked in the leave-behind questionnaire, which was returned by 2,524 respondents (84%) aged 57–85 in 2005–2006 and 3,010 respondents (88%) aged 57–85 in 2015–2016; item nonresponse accounts for the remaining missing cases.
* $p < .05$. ** $p < .01$. *** $p < .001$.

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nonlinear terms are not statistically significant for the NSHAP ($p = .590$ for a 3-*df* test of nonlinear terms), the additional precision provided by the larger HRS sample reveals slightly lower loneliness among those born in the early 1940s, followed by slightly higher loneliness among those born in the early 1950s ($p = .020$ for a 3-*df* test of nonlinear terms). Whereas the NSHAP data show an increase in loneliness in 2010–2011 relative to 2005–2006 and 2015–2016 ($p = .003$ for a 2-*df* test), the HRS data suggest very small decreases in loneliness in 2010 and perhaps also 2014 ($p = .028$ for a 5-*df* test). Finally, with the linear term for survey year removed, a linear term for birth year was not statistically significant for either data set; the estimated odds ratios were 1.15 (95% CI [.92, 1.42]) for the NSHAP and 1.04 (95% CI [.94, 1.14]) for the HRS, both for a 10-year increase in birth year. Thus, with the HRS data set we could rule out even small linear increases in loneliness with increasing birth year. The estimated curves for both age (see Figure 2D) and birth year (see Figure 2E) are similar to those for the first model.

Correlates of Loneliness

Table 2 shows results from a series of mixed-effects ordinal logit models fit to the NSHAP data including demographic, health, and social characteristics as covariates. In Model 1, age has a pronounced U-shaped effect, with loneliness lowest at 72 years old and increasing thereafter. However, the increase at older ages disappears when adjusting for the other covariates (see Model 4 in Figure 2F), especially the social characteristics. Women have higher loneliness in Model 1 ($OR = 1.4$; 95% CI [1.2, 1.7]); however, this effect is reduced by more than half when adjusting for differences in social characteristics (Model 3). Similarly, African Americans have higher loneliness than do Whites in Model 1 ($OR = 2.0$; 95% CI [1.5, 2.6]), but this difference is also reduced by more than half in Model 4. In contrast, Hispanics have lower loneliness than do Whites, and this difference increases when adjusting for health and social characteristics, yielding an adjusted difference approximately equal in magnitude to the adjusted dif-

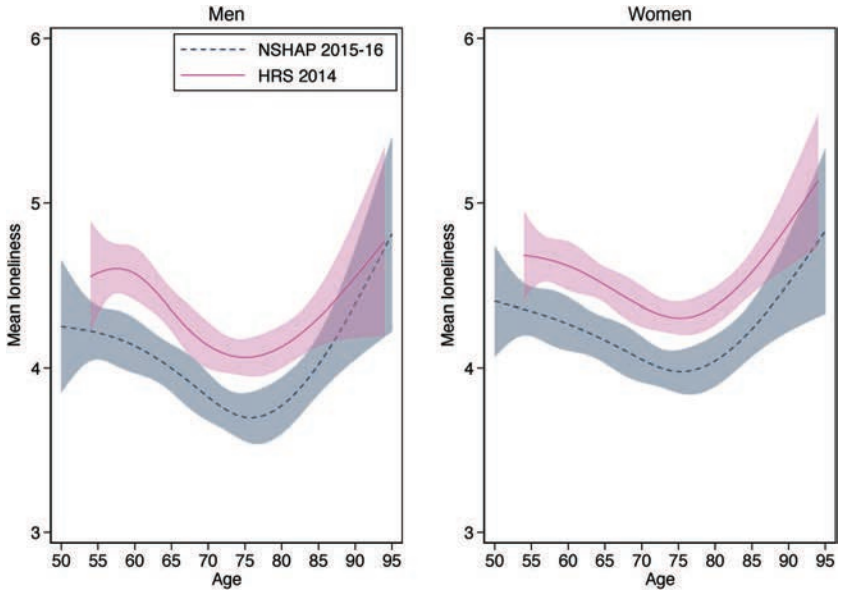


Figure 1. Mean loneliness as a function of age, estimated using restricted cubic splines separately by gender (shaded regions indicate 95% confidence bands). NSHAP = National Social Life, Health and Aging Project; HRS = Health & Retirement Study. See the online article for the color version of this figure.

ference between African Americans and Whites. Finally, loneliness decreases steadily with increasing education (*OR* for bachelor's vs. high school = .6; 95% CI [.5, .8]), an effect that is also reduced by more than half when adjusting for health and social characteristics (the overall effect of education would still be considered statistically significant; however, with $p = .031$ for the linear trend in Model 4).

Higher self-rated health is associated with lower loneliness, with an estimated odds ratio of .71 for an increase of one category (95% CI [.65, .77]; Model 4). Similarly, each additional ADL difficulty is associated with an increase in loneliness (*OR* = 1.2; 95% CI [1.1, 1.2]). These estimates are unaffected by adjusting for the social characteristics (Model 2 vs. Model 4). The number of comorbidities was not associated with loneliness.

As expected, living arrangements are strongly associated with loneliness. In Model 4, the odds ratio for living alone versus living with a spouse or partner is 5.1 (95% CI [4.1, 6.3]), whereas that for living with others (vs. a spouse–partner) is 3.4 (95% CI [2.6, 4.5]); the *p* value for comparing living alone versus living with others is .004. In addition, increases in the number of close family members and friends are both associated with a decrease in loneliness; each has an estimated odds ratio of .8 for an increase of one category (95% CI [.7, .9] and [.7, .8], respectively). In contrast, the number of network alters named was not associated with loneliness.

Figure 3 plots estimated coefficients from two cross-sectional models: one fit to NSHAP respondents born 1920–1947 using data collected in 2010–2011 (respondents aged 62–91) and another fit to NSHAP respondents born 1948–1965 using data collected in 2015–2016 (respondents aged 49–68; estimates are provided in Table S1 in the online supplemental materials). We chose data from different years to conduct the comparison because we gave priority to using the largest samples and thus maximizing our ability to detect cohort differences in associations. The initial sample in this comparison, a group assessed in 2010–2011, was larger than the group assessed in 2015–2016 due to mortality. Thus, this design provides the greatest power to detect what are essentially interaction effects. Even if there had been small changes in overall loneliness during the 5 intervening years, this would not have affected the validity of comparisons of the associations between covariates and loneliness between the two groups. Both include the covariates in Model 4 of Table 2, together with the MoCA-SA measuring cognitive function (added in 2010–2011) and self-rated vision and hearing (not asked in 2015–2016). There is less evidence of an age effect in these models (i.e., *p*s = .079 and .070 for the linear terms and *p*s = .804 and .173 for the quadratic terms, respectively), which unlike Model 4 each utilize a restricted age range and are not longitudinal. As with the previous models, better self-rated health is associated with a reduction in loneliness in both groups, although the evidence for an effect of ADLs is somewhat greater in the older group. In addition, poor vision is associated with greater loneliness among the older cohort (*OR* = 1.13; 95% CI [1.02, 1.25]), and cognitive function is not significantly associated with loneliness in either.

Both living arrangements and the number of close family members and friends have associations with loneliness similar to those observed in Table 2 (Model 4), and although there are some differences in the magnitude of the coefficients between cohorts, only that for number of close family would be considered statistically significant, with the effect observed to be larger among the younger cohort ($p = .015$). Surprisingly, an increase in the number of network alters is associated with a modest increase in loneliness in both cohorts, though given that we already adjusted for the number of family and friends, it is possible that this reflects a tendency among lonely respondents to be more willing to prolong the interview by naming more individuals on the network roster.

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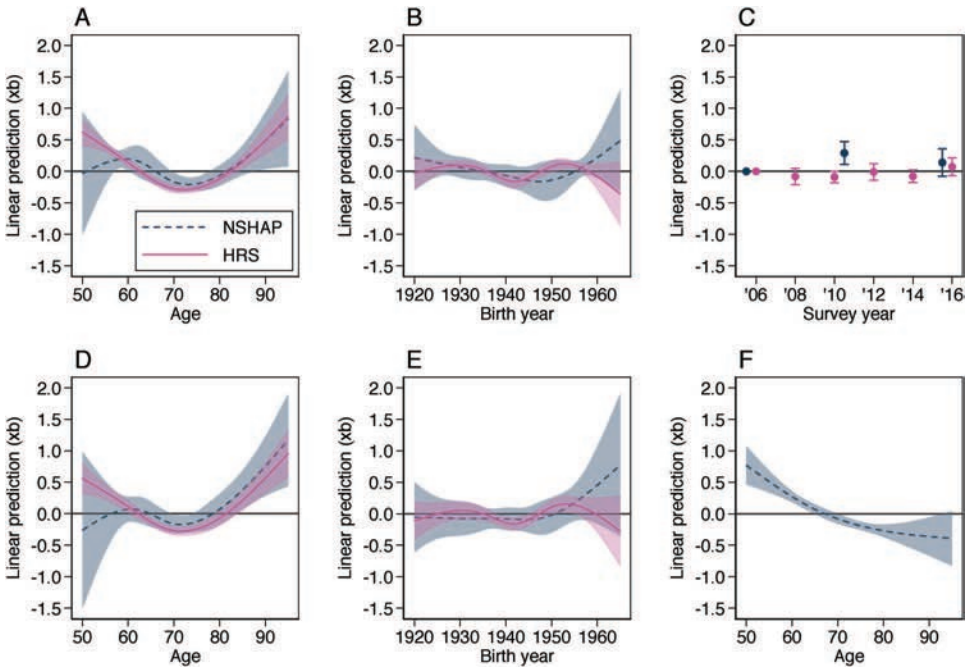


Figure 2. Estimated effects of age (Panel A), birth year (Panel B), and survey year (Panel C) on loneliness from a mixed-effects ordinal logit model excluding the linear effect for birth year, together with 95% confidence bands; effects of age (Panel D) and birth year (Panel E) from a model including the linear effect of birth year but excluding the linear effect for survey year. Estimated quadratic effect of age (Panel F) from a model fit to the National Social Life, Health and Aging Project data including demographic, health, and social covariates. Plotted is the value of the linear predictor (xb) reflecting the change on the logit scale in the likelihood of exceeding a loneliness cutoff point associated with the covariate. See the online article for the color version of this figure.

Discussion

Our results indicate that loneliness among older U.S. adults did not increase during the decade from 2005 to 2016. Moreover, we found no evidence that younger cohorts (e.g., those born 1948–1965) report greater loneliness than do older cohorts, adjusting for age. Although the larger HRS data set suggests small differences associated with cohort, these oscillate and there is no overall (i.e., linear) change in loneliness with birth year from 1920 to 65. This is consistent with a review of prior research that found no evidence of increased loneliness over the past few decades (Dykstra, 2009) and with a recent study of Dutch adults 65 years and older that found no evidence of increased loneliness between 2005 and 2010 (Honigh-de Vlaming, Haveman-Nies, Bos-Oude Groeniger, de Groot, & van 't Veer, 2014).

The NSHAP data do indicate an increase in loneliness in 2010–2011 relative to 2005–2006, a difference that persisted after adjusting for the demographic, health, and social covariates. Prior research has shown that depressive symptoms, which are closely related to loneliness, increased during the Great Recession of 2008–2010 (McInerney, Mellor, & Nicholas, 2013), and because the 2005–2010 interval in the NSHAP straddles the Great Recession, it is possible that the increase in loneliness in 2010–2011 is at least partly attributable to this significant societal exposure. However, this increase was not replicated in the HRS data set, which casts doubt on this explanation. Alternatively, the temporary 2010–2011 increase in the NSHAP may have been due to aspects of the survey instrument and/or interview protocol that were unique to that wave.

Overall, age-related differences in loneliness followed an expected pattern in which loneliness decreased after age 50 until about 75, after which it began to increase (Pinquart & Sörensen, 2001). Also consistent with prior research is the fact that the increase in loneliness after 75 may be accounted for by decreases in health and the loss of a spouse–partner and other social relationships (Luhmann & Hawkley, 2016; Pinquart & Sörensen, 2001). When adjusting for these factors, loneliness was estimated to continue declining into oldest old age (though at a slower rate; see Figure 2F).

Our results are consistent with those in prior research (Petersen et al., 2016) showing that living alone is a substantial risk factor for loneliness and that living with persons other than a spouse or partner mitigates this only slightly. Moreover, there was no evidence that this effect differed between the Baby Boomers and earlier cohorts. Eloranta et al. (2015) reported similar results for Finnish cohorts born in 1920 and 1940. However, differences in marital trajectories may moderate the association between being married and loneliness (Dykstra & de Jong Gierveld, 2004; Pinquart, 2003), and the Baby Boom cohorts are known to exhibit a wider range and number of marital transitions than do earlier cohorts. Future work using the NSHAP and HRS data sets could be done to investigate this possibility, because both include detailed information on marital history.

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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 1920–1965 (Estimated Coefficients and 95% CIs), Based on NSHAP

Covariates	Model 1	Model 2	Model 3	Model 4
Demographics				
Age (decades from 70)	−.07 [−.16, .01]	−.12 [−.21, −.03]**	−.23 [−.32, −.14]***	−.27 [−.36, −.19]***
Age squared	.20 [.12, .28]***	.16 [.09, .24]***	.11 [.03, .19]**	.08 [−.0002, .16]
Women (vs. men)	.34 [.16, .53]***	.37 [.19, .55]***	.13 [−.06, .32]	.16 [−.02, .35]
Race–ethnicity (vs. White)				
Black–African American	.67 [.40, .94]***	.55 [.28, .82]***	.37 [.10, .65]**	.29 [.01, .56]*
Hispanic	−.12 [−.44, .19]	−.20 [−.51, .11]	−.29 [−.60, .02]	−.35 [−.66, −.04]*
Other	.23 [−.31, .77]	.21 [−.31, .72]	.14 [−.38, .66]	.13 [−.38, .63]
Education (vs. HS)				
<HS	.46 [.14, .79]**	.27 [−.05, .59]	.40 [.08, .71]*	.23 [−.08, .54]
Some college	−.19 [−.44, .05]	−.13 [−.37, .11]	−.12 [−.37, .12]	−.06 [−.30, .18]
Bachelor's or more	−.49 [−.75, −.22]***	−.27 [−.53, −.004]*	−.35 [−.62, −.08]*	−.15 [−.42, .12]
Health characteristics				
Self-rated health (1–5)		−.36 [−.45, −.27]***		−.35 [−.43, −.26]***
Comorbidities (0–11)		.01 [−.05, .06]		−.0003 [−.06, .06]
ADLs (0–6)		.18 [.11, .24]***		.16 [.09, .22]***
Social characteristics				
Living arrangements (vs. married–cohabiting[a])				
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 [.96, 1.50]***
Network size (0–5)			.02 [−.04, .08]	.03 [−.04, .09]
No. of close family (0–5)			−.22 [−.31, −.13]***	−.22 [−.31, −.14]***
No. of friends (0–5)			−.31 [−.38, −.24]***	−.28 [−.35, −.21]***
Survey year				
2010–2011 vs. 2005–2006	.29 [.12, .46]**	.27 [.11, .44]**	.38 [.20, .55]***	.36 [.19, .54]***
2015–2016 vs. 2010–2011	−.18 [−.34, −.03]*	−.18 [−.33, −.03]*	−.37 [−.53, −.21]***	−.36 [−.52, −.21]***
Var(u)[b]	4.3 [3.7, 5.1]	4.0 [3.4, 4.7]	3.9 [3.3, 4.6]	3.7 [3.1, 4.3]
No. of respondents	5,282	5,276	5,212	5,205
No. of observations	8,739	8,721	8,543	8,525

Note. NSHAP = National Social Life, Health and Aging Project; CI = confidence interval; HS = high school; ADLs = activities of daily living.
[a] Excludes those who are married but do not live with their spouse. [b] Estimated variance of random effect.
* $p < .05$. ** $p < .01$. *** $p < .001$.

In addition to living arrangements, our results also provide strong evidence that having more close family members and friends is associated with less loneliness, with the number of close family members having a stronger effect among the Baby Boomers than among previous cohorts. Better self-rated health, as well as fewer ADLs and better vision, were also all associated with less loneliness. These effects of living arrangements and of social and health characteristics account for much of the demographic differences in loneliness. For example, women are more likely to be widowed (and therefore to be living without a spouse) at older ages. Similarly, African Americans exhibit disparities on several health measures relative to Whites; they are also less likely than Whites to live with a spouse or partner, especially African American women (Raley, Sweeney, & Wondra, 2015). Finally, low education is associated with poor health, whereas high education is associated not only with good health but also with more supportive social environments. In contrast, adjusting for social and health characteristics increases the difference in loneliness for Hispanics, among whom loneliness is lower than for Whites or African Americans.

The National Health and Aging Trends Study in 2011 characterized 24% of community-dwelling adults over the age of 65 as socially isolated based on living arrangements, core social network size, religious service attendance, and social participation (Cudjoe et al., 2018). Although heavy social media use has been associated with elevated loneliness in younger adults (Primack et al., 2017), its use in older adults may protect against loneliness when used because older adults typically use social media to maintain contact with and obtain support from family members (Yu, McCammon, Ellison, & Langa, 2016). This may become more important among Baby Boomers due to their greater familiarity with digital technology relative to earlier cohorts. More work is required to determine and monitor the effect of social media use on loneliness among the Baby Boomers as they continue to age.

Our failure to find an increase in loneliness among more recent cohorts is perhaps not surprising, given the definition of *loneliness* as a perceived mismatch between desired and actual social relationships. Individuals may accommodate changes in the standards and opportunities for social relationships by modifying their expectations, although societal changes are most likely to affect individuals' expectations if experienced during their formative years through young adulthood (Elder, 1998). Birth cohorts navigate societal changes as a group and share common expectations that increase the likelihood that individuals will find mutual satisfaction in their social relationships. In addition, lost opportunities for social connection may be compensated for by pursuing new opportunities. For example, although increased individualism, as suggested by decreased social engagement (e.g., fewer group affiliations, less volunteering, less church attendance), may reduce certain social opportunities for Baby Boomers, this change has

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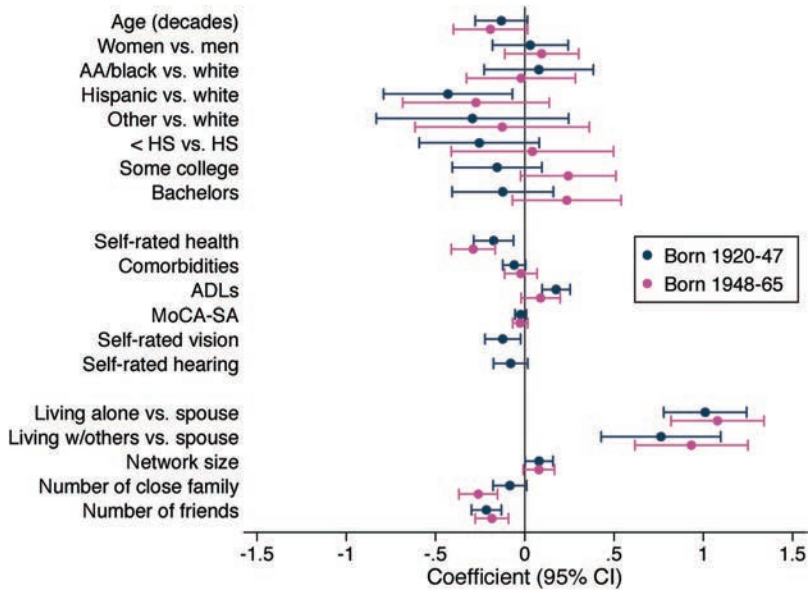


Figure 3. Estimated coefficients and 95% confidence intervals (CIs) from two cross-sectional ordinal logit models: one fit to National Social Life, Health and Aging Project (NSHAP) respondents born 1920–1947 using data collected in 2010–2011 and another fit to NSHAP respondents born 1948–1965 using data collected in 2015–2016. AA = African American; HS = high school; ADLs = activities of daily living; MoCA-SA = Montreal Cognitive Assessment. See the online article for the color version of this figure.

been accompanied by more and improved transportation and communication options, thereby creating opportunities to accumulate and maintain a more diverse social network that may increase the likelihood of finding social satisfaction. Such changes in people's strategies for avoiding loneliness and in their effectiveness are a topic for future research.

Finally, we emphasize that our findings are limited to adults over the age of 50. Potential increases in loneliness among young adults is an entirely different question—one in which there is heightened interest due to the increased use of digital communication among this group (Nowland, Necka, & Cacioppo, 2018). It is interesting that although indicators of objective isolation (e.g., smaller social networks, fewer friends) increased from 1978 to 2009 among American college students, loneliness among this group declined over this same period (Clark, Loxton, & Tobin, 2015), highlighting the distinction between objective and subjective isolation (i.e., loneliness). Still, young adults are at higher risk of loneliness than are most older age groups (Luhmann & Hawkley, 2016), and extending our work here to younger ages would therefore be valuable.

Conclusion

In sum, we found no evidence that older adults have become lonelier over the past decade or that Baby Boomers are lonelier than are previous cohorts. However, mean loneliness increased beyond age 75, and therefore the number of older adults who are lonely may be expected to increase once the Baby Boomers reach their late 70s and 80s. At the same time, our results suggest that older adults who remain in good health and maintain social relationships with a spouse, family members, and friends can avoid the increase in loneliness during the oldest ages. This presents a possible intervention target for policymakers. Efforts to ensure that older adults maintain meaningful social connections in later life in the face of increasing disability could encompass technological solutions (e.g., affordable and reliable Internet access, along with age-friendly technological interfaces to facilitate remote video calls), improvements in transportation options and affordability for disabled older adults whose social relationships are limited largely by poor access, and increased access to and affordability of programs designed to help older adults maintain mobility as well as meaningful engagement in the community.

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