KANSAS
HEALTH
INSTITUTE

25TH ANNIVERSARY

KHI.ORG
Informing Policy. Improving Health.

DISRUPTING DISPARITIES IN KANSAS
A REVIEW OF SOCIAL ISOLATION AMONG OLDER ADULTS

KANSAS HEALTH INSTITUTE

Informing Policy. Improving Health.

DISRUPTING DISPARITIES IN KANSAS
A REVIEW OF SOCIAL ISOLATION AMONG OLDER ADULTS

JANUARY 2020

Authors

Phillip Steiner, M.A.

Wyatt J. Beckman, M.P.H., C.H.E.S.

Sydney McClendon

Kari M. Bruffett

Table of Contents

(This page intentionally left blank.)

Introduction

The relationship between social isolation (the experience of diminished social connectedness) and health status and all-cause mortality among older adults has been well established.[1-3] Similarly, there is strong evidence of the importance of social connectedness to overall quality of life.[4] How race and ethnicity, gender and other factors affect social isolation is less understood. As a result, while there are evidence-based interventions that target social isolation, their effectiveness in reducing health disparities is unclear.[5]

In the fall of 2019, AARP Kansas requested a review of social isolation among older adults in Kansas through the lens of health equity, with an emphasis on Johnson and Wyandotte counties. This report provides the findings from that review, including a summary of current research on social isolation, possible causes of social isolation and the degree to which those causes differentially affect older adults based on gender, race/ethnicity and other demographic factors. The report also considers factors at the individual and community levels that could mitigate social isolation, as well as evidence-based policy or programmatic solutions to address disparities. It also presents an assessment of publicly available data that could be used to help develop data-driven, evidence-based policy or programmatic solutions, and suggests other next steps, including a recommendation to pursue additional data collection to better understand social isolation in targeted populations and neighborhoods in Johnson and Wyandotte counties.

Methodology

For this study, the Kansas Health Institute (KHI) reviewed existing literature on social isolation among older adults. For the purpose of this study, "older adults" include those age 50 and older, although age criteria vary across the literature cited (e.g., some studies include only adults age 65 and older). *Figure 1* (page 2) shows the steps of the literature review process. *Figure 2* (page 2) provides the list of search terms used for the literature review. KHI conducted the search in PubMed.gov and on the websites of key organizations for the primary term "Social Isolation" and also for "Social Isolation" in combination with each of the secondary search terms. For example, KHI conducted a search in PubMed.gov using the Medical Subject Headings (MeSH) term "Social Isolation", and separately conducted a search for the MeSH terms "Social Isolation" AND "Health Status Disparities".

Figure 1. **Steps of the Literature Review Process**

1.	Determine search terms (see *Figure 2*).
2.	Conduct the search in PubMed.gov (U.S. National Library of Medicine) using tools within the database to set inclusion criteria.
3.	Conduct the search in the websites of key federal, state and local organizations.
4.	Review titles/abstracts by inclusion and exclusion criteria.
5.	Download full text of remaining articles.
6.	Read and code each article.
7.	As needed, review the citations and data sources in selected articles for additional relevant articles or sources of data.
8.	As needed, use Google Scholar "cited by feature" to find additional articles that cite the articles identified in the initial search.
9.	Use coding table to write each summary.

Source: Kansas Health Institute.

Figure 2. **Search Terms Used for the Literature Review**

Primary Term	Secondary Terms
"Social Isolation(s)"	• AND "Aging" • AND "Health Status Disparities" • AND "Economics" • AND "Complications" • AND "Diagnosis" • AND "Prevention and Control" • AND "Statistics and Numerical Data" • AND "Physiology" • AND "Epidemiology" • AND "Race Factors" • AND "Ethnic Groups" • AND "Minority Groups" • AND "African American(s)" • AND "Indians, North American" • AND "Alaska Native(s)" • AND "Asian American(s)" • AND "Oceanic Ancestry Group" • AND "Hispanic Americans" • AND "Social Class" • AND "Health Equity"

Note: The search utilized Medical Subject Headings (MeSH) terms in PubMed.gov database.
Source: Kansas Health Institute.

The PubMed search for the MeSH term "Social Isolation" yielded 4,963 peer-reviewed articles on December 3, 2019. A search for Social Isolation with each secondary term also was
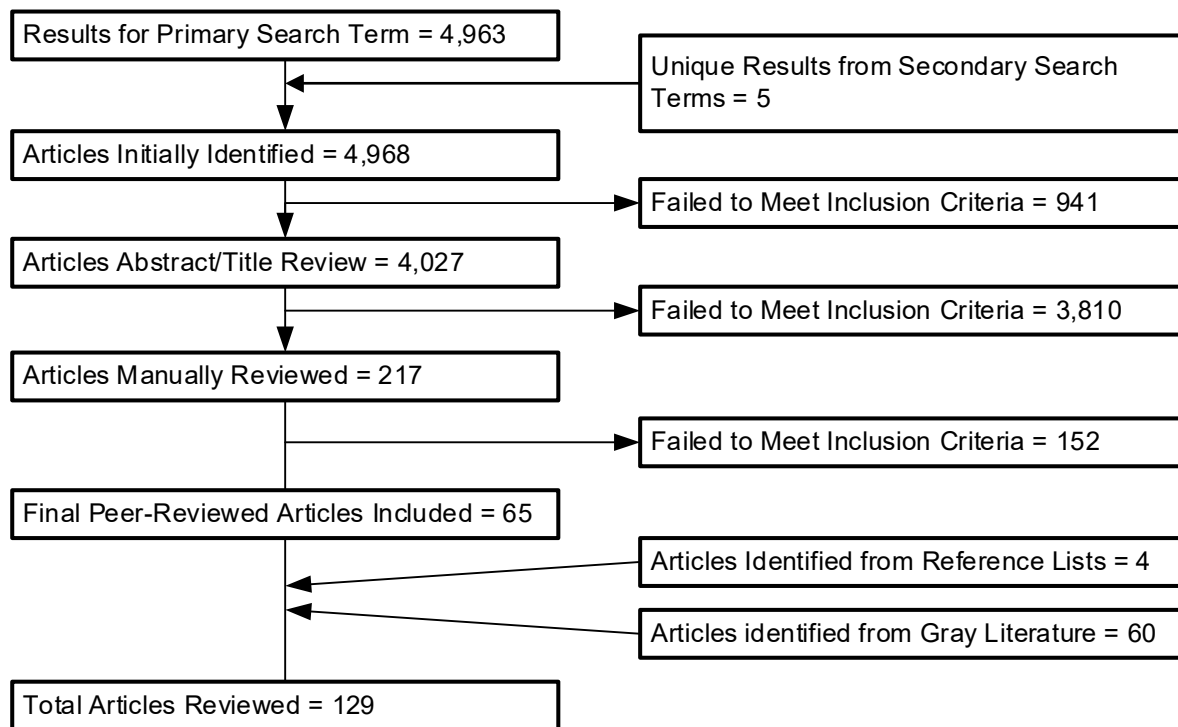
conducted in PubMed, resulting in five additional unique peer-reviewed articles. To determine which articles were relevant, searches were conducted within the 4,968 articles identified and the following actions were taken:

- All articles with any reference to animals (e.g., rats or mice) were removed – 941 articles.

- All studies conducted outside of the United States were categorized as non-U.S. – 2,412 articles.

- The titles and abstracts of the remaining 1,615 U.S. articles and 2,412 non-U.S. articles were searched for social isolation and older adults separately.

    o This title and abstract review identified 187 U.S. articles that met the inclusion criteria and referred to either social isolation or older adults and all were included for manual review.

    o The title and abstract review also identified 248 non-U.S. articles that referred to either social isolation or older adults. After a full review of these articles, 30 were ultimately selected for manual review because they were conducted with U.S. participants or data and met all other criteria.

- In total, 217 peer-reviewed articles were selected for manual review. From these, 152 articles were excluded because social isolation was discussed as a risk factor for something else (i.e., socially isolated individuals are at increased risk of stroke), the data were not reported for adults age 50 and older, the articles only discussed loneliness and did not reference social isolation, the full article could not be found, or the study was not methodologically sound. After this manual review, 65 peer-reviewed articles remained for review.

- The review was supplemented by 60 articles from "gray literature," for example, reports from nonprofit agencies, professional associations or governmental entities. All gray literature articles included were publicly available online and accessed the week of December 1, 2019. Four additional articles identified from reference lists also were included in the review.

As shown in *Figure 3*, 129 total articles that address social isolation among older adults were identified for inclusion in this review. Though all peer-reviewed articles identified were

published between January 1, 2010, and December 3, 2019, one of the four articles identified from reference lists was published in 2005.[6] The most common reasons for excluding articles included: the studies were conducted outside of the United States, the studies were on the effects of social isolation among animals, the studies focused exclusively on loneliness, or the studies focused on populations other than adults age 50 and older.

Figure 3. **Literature Identification and Screening Process**

Results for Primary Search Term = 4,963	Unique Results from Secondary Search Terms = 5
Articles Initially Identified = 4,968	Failed to Meet Inclusion Criteria = 941
Articles Abstract/Title Review = 4,027	Failed to Meet Inclusion Criteria = 3,810
Articles Manually Reviewed = 217	Failed to Meet Inclusion Criteria = 152
Final Peer-Reviewed Articles Included = 65	Articles Identified from Reference Lists = 4
	Articles identified from Gray Literature = 60
Total Articles Reviewed = 129	

Source: Kansas Health Institute.

Defining Social Isolation and Loneliness

AARP's Isolation Framework (2012) defines isolation as:

"…the experience of diminished social connectedness stemming from a process whereby the impact of risk factors outweighs the impact of any existing protective factors. A person's lack of social connectedness is measured by the quality, type, frequency, and emotional satisfaction of social ties. Social isolation can impact health and quality of life, measured by an individual's physical, social, and psychological health; ability and motivation to access adequate support for themselves; and the quality of the

environment and community in which they live, availability of transportation, and ability to access resources and information."[7]

Definitions of social isolation in the current literature are consistent with AARP's definition in that social isolation is defined both subjectively – how people perceive their experience and whether or not they feel isolated – and objectively – a quantifiable measurement(s), such as the size of one's social network or the frequency of engagement with it. Often, the objective components are referred to as "social isolation," while the subjective are called "loneliness."[8]

Despite the common differentiation many researchers make between loneliness and social isolation, this review found great variation in the specific ways both terms are defined. The risk factors, outcomes, and interventions identified for social isolation and loneliness often overlap, and the terms often are conflated, both in common discourse and in scientific literature. The number and variety of instruments measuring social isolation and loneliness speak to the lack of consensus and clarity within the field.[9]

This review found that social isolation and loneliness are related, but distinct, constructs. Changes in level of social isolation are related to loneliness, and those with the "largest possible social network score" had lower odds of reporting loneliness. Additionally, loneliness has been closely tied to objective levels of social isolation (i.e., how many telephone calls an individual receives and makes in a day).[9] However, in another study, the association between social isolation and loneliness was not strong, and both were independently associated with each negative health outcomes.[10] Furthermore, qualitative and mixed methods studies point to variation in how individuals experience and describe both loneliness and isolation.[11-13] Ultimately, this review found existing definitions of social isolation and loneliness to be consistent with the definition put forth by AARP's Isolation Framework.

Risk Factors for Social Isolation

Quantifying and acting upon social isolation require further refinement of the underlying components that indicate a lack of social interaction. In a 2017 study that refined and measured the prevalence of social isolation, the following indicators were identified: marital/partner status; talking with family about important things; talking with friend about important things; visiting in family/friends' homes or own home; attending church service; and participating in a club. Based on this conceptualization of social isolation, the study found more than one in five (21.9 percent) U.S. adults age 65 and older were socially isolated.[14]

Given the large number of older adults who likely experience social isolation and the impact of social isolation on health and quality of life, research has attempted to better understand social isolation. Though research often focuses on social isolation as a risk factor for poor health outcomes, several factors that increase the risk of social isolation have been identified. These risks are present at the individual, community or societal level and may manifest differently depending on an individual's social needs.

While the risk factors identified here have been noted in published research, not all findings are applicable to all groups or localities. Furthermore, the experience of social isolation, while often conceptualized as an either/or state, lies on a continuum that varies from person to person. The presence of a risk factor presented below may be inconsequential for some, but a key factor contributing to social isolation for others. A list of specific findings pertaining to risk factors identified in the literature is presented in *Appendix A* (page A-1).

Poor Health and Well-Being

In general, poor health and well-being deceases the ability of older adults to participate in socially connecting activities. Becoming frail, experiencing vision loss, hearing loss or falls, and other impairments or disabilities often present barriers to social connections for older adults and put them at greater risk for social isolation.[7,11,14-23] Hearing loss, which could impact an individual's ability to engage in conversations with others, could increase the odds of being socially isolated, particularly for women age 60-69.[19,24] Chronic conditions also might cause social engagement restrictions, due to increases in physician visits and hospitalizations.[16] In some cases, however, individuals with chronic conditions or other health events may be at lower risk of social isolation, possibly resulting from increased opportunities for interaction with medical personnel and care-providing family and friends.[25]

Major Life Transitions

Major life transitions or change such as losing a partner or friends, retiring or becoming a caregiver for someone with a severe impairment could sever existing social networks and relationships and create barriers to participating in social activities.[7,17,26,27] Women are more likely to lose a partner than are men, and black women tend to be widowed longer than white women.[27] Moving away from family and friends, particularly through immigration, could increase risk of social isolation and impact social connectedness. Social isolation attributed to immigration has been qualitatively noted for Chinese, Korean and Hispanic immigrants in the United States.[12,25,28]

Environmental Factors

Viewing the environment at the individual and broader community level, several factors could put older adults at greater risk for social isolation. On the individual level, living alone, having a small social network and/or having inadequate support put older adults at greater risk.[7,14,15] Older women are more likely to live alone than are older men, and black older adults also are more likely to live without a co-resident partner (e.g., a spouse) than are white older adults.[29] Black men and women are more likely than white men and women to have few close friends and relatives, and "kinless-ness" (lacking a spouse and children) is concentrated among black women.[30,31] Rates of kinless-ness are expected to triple for black adults and double for white adults between 2015 and 2060.[32] Older LGBT individuals also are more likely to live alone, be estranged from family and not have children than are heterosexual older adults, contributing to increased levels of social isolation.[26,33,34]

On a broader level, living in a rural, unsafe or inaccessible location, living in a home that is inadequate for the person's needs (i.e., not accessible or a high risk for a fall), and lack of access to affordable transportation could decrease both opportunities and capacity to engage in socially connecting activities.[7,17,29,35] A study in Alabama found that more than one in five (22.1 percent) older adult black women did not have reliable transportation, while only 3.2 percent of older adult white men reported not having reliable transportation.[6] Older black men and women also were more likely to report a fear of being attacked when going outside and to reside in lower-quality housing.[6,29]

Marginalized Group Status

Numerous societal factors, such as ageism, racism and other forms of discrimination, can influence the nature of opportunities for social connectedness and create barriers to social engagement for marginalized groups. The presence of these factors may place individuals of minority race or ethnicity, those identifying as LGBT, those having limited resources (poverty), individuals who do not speak English, and those who have immigrated, at greater risk for social isolation.[7,12,14,16,25,26,28,29,33,34,36-40]

Findings on the impact of race and ethnicity on social isolation are mixed. For older black adults and older black LGBT adults, perceived discrimination can contribute to feeling more subjectively isolated (i.e., lonely).[41,42] A study examining differences in measures of social connection (e.g., talking to friends on the phone during the past two weeks) between black and white older adults found that more black adults reported a lack of social connections than did

white participants across six of seven social connection measures.[36] Black adults did, however, report higher levels of attending church or temple than did white adults. Another study found that black and Hispanic older adults were less likely to experience social isolation than were white older adults.[40]

Data Availability for Assessing Social Isolation in Kansas

Data on social isolation often are reported at the national level and are rarely stratified by race or ethnicity. KHI did not identify any studies on the prevalence, risk of, or interventions to address social isolation in Kansas, Johnson County or Wyandotte County. Most peer reviewed articles did not explicitly mention race or ethnicity in the title or abstract. Analysis of risk factors or interventions stratified by gender, income and education are more common. A summary of the assessment of data sources on social isolation is presented in *Appendix C* (page C-1).

While evidence of the differential impact of race and ethnicity on social isolation is mixed, differences in the experience of social isolation may be location specific. For example, one study examined racial and geographic residence differences among older adults in one state and concluded that blacks were more likely to be socially isolated than are whites.[6]

While KHI did not identify any studies on social isolation in Kansas, the data to conduct such a study might be available. The data assessment in *Figure 4* (page 9) provides a list of data sources identified through this literature review and whether data from those sources are available at the state or county level. Almost all of the data sets provided include variables to identify the race or ethnicity of respondents. In addition to large research data sets, KHI also identified several survey instruments that could be used to measure social isolation. Primary data collection could supplement or fill in the gaps in existing data sources (e.g., stratify local data by race or ethnicity) to assist in developing contextually sensitive interventions or policies and conducting evaluations of their efficacy.

Figure 4. **Sources of Data on Social Isolation and Related Risk Factors**

Data Source	Data Years	Available by Race/Ethnicity	Lowest Level of Geography Identified
National Social Life, Health, and Aging Project (NSHAP)	2005-2016	Yes	National
National Health and Aging Trends Study (NHATS)	2011-2015	Yes	Census Tract*
Health and Retirement Study (HRS)	1992-2016	Yes	Zip Code*
Midlife in the United States (MIDUS)	1995-2016	Yes	National
General Social Survey (GSS)	1972-2018	Yes	Census Tract
National Health and Nutrition Examination Survey (NHANES)	1959-2016	Yes	National
National Long-Term Care Survey	1982-2004	Yes	National
Panel Study of Income Dynamics	1968-2017	Yes	Census Block**
National Survey of American Life (NSAL)	2001-2003	Yes	National
AARP National Poll on Healthy Aging	2017	Yes	State
National Longitudinal Mortality Study	1973-2011	Yes	Census Tract
American Community Survey (ACS)	2005-2018	Yes	Census Block Group
Current Population Survey Annual Social and Economic Supplement	1948-2017	Yes	National
County Business Patterns	1964-2017	N/A	Zip Code
State- or Project-Specific Data Sources			
University of Alabama at Birmingham (UAB) Study of Aging	2004-2006	Yes	5 Counties in Central Alabama (41 percent rural)
Wisconsin Longitudinal Study (WLS)	1957-2011	No	N/A
Chicago Health, Aging, and Social Relations Study (CHASRS)	2002-2013	Yes	Cook County, Illinois

*Lower level geographic data are restricted. An application and approval from an Institutional Review Board (IRB) are required for access.

** Lower level geographic data are restricted. An application, approval from an IRB, and a $750 fee are required for access.

Source: Kansas Health Institute review of multiple publicly available data sources.

Interventions and Policies to Address Social Isolation

Three systematic literature reviews on interventions to address social isolation or a related construct met the inclusion criteria for this study.[43-45] Each article proposed a framework for categorizing interventions, and several key components of effective interventions were identified. For example, one thematic analysis (Gardiner et al., 2018) grouped interventions into

six categories based on their purpose, their mechanisms of action and their intended outcome (*Figure 5)*, and was generally consistent with the categorizations in the other two articles.[43-45] None of the articles included in our literature review specifically studied a policy or intervention to reduce social isolation in the context of racial or ethnic disparities.

Figure 5. **Categories of Interventions to Mitigate Social Isolation[43]**

Category of Intervention	Description
Social Facilitation	Interventions with the primary purpose of facilitating social interaction with peers or others who may be lonely. Social facilitation interventions generally presumed a degree of reciprocity and strived to provide mutual benefit to all participants involved.
Psychological Therapy	Interventions that provide recognized therapeutic approaches delivered by trained therapists or health care professionals.
Health and Social Care Provision	Interventions involving health, allied health and/or social care professionals supporting older people. These interventions are characterized by the involvement of health and social care professionals and enrollment in a formal program of care, either in a nursing home or community setting.
Animal Interactions	Interventions that consist of animal-assisted therapy or ownership of a pet – either living or robotic.
Befriending Interventions	A form of social facilitation with the aim of formulating new friendships.
Leisure/Skill Development	Training or activities that can be administered in solitary or group settings. Gardening and computer literacy programs were provided as examples.

Source: KHI analysis of Gardiner et al., 2018.[43]

All three systematic reviews found that group interventions can successfully reduce social isolation and loneliness, and one systematic review found that solitary interventions can also reduce social isolation and loneliness. Some elements of successful interventions identified by Gardiner et al. include:

1. Adaptability of an intervention to a local context.

2. A community development approach, where service users are involved in the design and implementation of interventions.

3. Activities or interventions which support productive engagement (i.e., purposeful or participatory activity as opposed to passive activity or activity with an ambiguous outcome).[43]

Another systematic literature review assessed the effect of interventions targeting social isolation or a related construct in community-dwelling adults age 60 or older. The review did not find many high-quality studies that identified a significant effect on health outcomes from social isolation interventions.[45] Some of the characteristics that were used to identify a high-quality study included:

- Being explicit about how their proposed intervention would theoretically impact social isolation to improve health (e.g., explaining how the outcomes would change according to behavior change theory).

- Applying a standardized definition and measures for social isolation and loneliness.

- Comparing the intervention group with a control group or otherwise controlling for confounding variables in order to better determine intervention effectiveness.

- Recruiting and reporting results for a diverse population to determine important population differences.

- Selecting study outcomes depending on the duration and intensity of the intervention to be studied.

- Measuring health care utilization outcomes, in addition to health outcomes.

- Conducting longer-term interventions and measuring longer-term outcomes — including health care utilization — to assist health care systems in determining where to focus limited resources.

- Reporting all harms for studies, including both serious adverse events (e.g., hospitalization) and less severe adverse events (e.g., musculoskeletal injuries for physical activity interventions). Considering other types of study designs such as cohort, case-control, or cross-sectional to capture information on harms over long periods of time and on large groups of people.

One example of an intervention that the authors noted as high-quality evidence and that improved health outcomes and reduced social isolation was a multicomponent intervention delivered to pre-frail or frail older adults by trainers and study staff at a local community center. The intervention combined exercise (a three-month, twice-weekly, 100-minute resistance program) with either a nutritional or a psychosocial program. The nutritional program aimed to

increase food variety through lectures on diet and group activities, while the psychosocial program involved group discussions of participants' hobbies, neighborhoods and community resources.[45]

Other programmatic interventions identified through our review include:

- Eight-week "activity" interventions (differing group activities, such as trivia, music and computer classes, conducted in twice weekly 90-minute sessions) implemented in 10 assisted and independent living communities (AIC) were associated with lower levels of social isolation and greater life satisfaction between baseline and three months post-baseline, compared to five AICs that did not have activity interventions.[46] Levels of loneliness did not differ between the intervention group and the comparison group.

- An intergenerational reverse mentoring program in which youth mentors had at least three hours of contact time to help teach older adults how to use technology had positive results for both the older adults and the youth mentors. A comparison group was not included in the study. Older adults increased their self-efficacy for using technology and engaging socially in the digital world. The mentoring sessions provided direct opportunity for social connection. Both older adults and the young mentors reported benefiting from the social connection during the meetings. Finally, the intervention increased the ability of older adults to connect with others after the program using technology and their new skills.[47]

- Human-operated embodied conversational agents (computer-generated pet avatars) have the potential to support and enhance social interactions for older adults but have several associated usability challenges. Women interacting with a digital pet for three weeks reported the pet provided companionship and enhancements to their interactions with other people. However, the study did not have a comparison group, and challenges were experienced with internet connectivity and the quality of the agent response through the digital pet. [48]

- In an intervention testing the impact of training older adults in how to use Facebook, researchers found improvements in cognitive function associated with the use of Facebook but not improvements in levels of social support, social integration or loneliness compared to the control group.[49]

- A university-community partnership involved nursing students working one-on-one with older adults for an hour every two weeks for four months. Nursing students were trained in a social isolation "empowerment" intervention, in which the older adults form social goals to empower them to re-engage socially. Techniques that the nursing students employed to develop trust and to assist in visits with the older adults included reminiscence; exercise-talk discussions; goal-oriented social engagement-directed discussions; coaching; and modeling. Following an intervention targeting community-dwelling older adults, those in the comparison group were 11.63 times more likely to be socially isolated than were the adults who received the intervention, after controlling for demographic factors.[50]

- Hearing aids might protect against loneliness, particularly for individuals with moderate-to-severe hearing loss. Prior to receiving hearing aids, 45 percent of the sample was lonely, and four to six weeks after receiving hearing aids only 28 percent of the sample was lonely.[19] A comparison group was not available for the study.

Policy Interventions

The *World Report on Ageing and Health* from the World Health Organization (WHO) suggests the goal of public health action on aging is not on functioning itself – what older people do – but on building the abilities that will allow them to navigate their changing world and to help them invent new and better ways of functioning.[51] Key areas for action on healthy aging identified in the report that might be relevant to social isolation based on previously identified risk factors include:

- Aligning health systems to the needs of the older populations they now serve: Providers could be incentivized or enabled to collect, analyze and report data on social isolation. In one example of how this could work, Aetna Inc. is implementing a "Social Isolation Index" to determine a senior Medicare Advantage member's "risk of social isolation" by analyzing health claims data and other information. Those identified will get "proactive outreach from specially trained consultants" within a new "*Resources for Living*" program. In addition, Aetna is partnering with Miami-based Papa Inc., which links seniors with college-aged caregivers who aid with transportation, house chores, technology lessons, companionship and other senior services.[52]

- Developing systems to provide long-term care: One study found that, nationally, among dual eligible beneficiaries, home and community-based services (HCBS) are used more by racial and ethnic minorities, and that blacks had the highest rate of hospitalization among dual eligible HCBS users. The authors argue that these findings imply that increased scrutiny of the quantity and quality of HCBS provided to dual eligible beneficiaries in minority communities is needed and that increasing spending on caregiver support may be one remedy.[53] A number of studies of interventions to address social isolation specifically targeted those who could be supported through HCBS. For example, one category of interventions scheduled contact with someone from a recipient's social network (e.g., a family member or friend) or a volunteer who might have characteristics similar to the recipient (e.g., age, gender, interests or culture). Discussions are unscripted and informal in nature. Personal contacts may be specifically trained to offer emotional support and may or may not be permitted to provide instrumental support (e.g., transportation, shopping, minor housekeeping and repairs, letter writing/correspondence or meal preparation). Contact with the recipient can be made through face-to-face interactions, over the phone, email, or videoconference.[44]

- Ensuring everyone can grow old in an age-friendly environment: Age-friendly environments include both physical and social components. Mechanisms range from adequate public seating and toilets, to accessible transportation, to facilitating interaction between older adults and younger generations. The WHO Global Network of Age-Friendly Cities and Communities provides a framework for implementing such programs. The WHO network requires a commitment to participate in a five-year continuing cycle of community assessment, planning, improvement and evaluation of eight environmental and social domains of livability that contribute to active and health aging: Outdoor spaces and buildings; transportation; housing; social participation; respect and social inclusion; civic participation and employment; communication and information; and community support and health services. In the United States, the WHO Global Network of Age-Friendly Cities and Communities has 65 members covering over 32 million U.S. residents.[54]

Opportunities for Future Research

This review identified numerous risk factors for social isolation among adults age 50 and older and highlighted some policy and programmatic interventions found in the literature. Additionally,

this review has described current understanding and distinction between social isolation and loneliness, helping to guide efforts for one, or both, of these important constructs. Despite these worthwhile outcomes, this review brought into light the numerous limitations within current literature and publicly available data. These gaps of understanding, and potential opportunities to enhance current knowledge around social isolation, are summarized below.

Localizing Data

- The data assessment identified some sources of data that may be available at a localized level but have cost or procedural barriers to immediate access.

- Some important data are not available at a localized level, so it may be necessary to conduct primary data collection in Johnson and Wyandotte counties, and among specific populations or neighborhoods.

Disparity-Focused Research

- Some studies aim for racially/ethnically diverse populations, but few conduct comparisons between groups.

- Even fewer look to describe differential risk factors for various populations within the same study, illustrating the need for disparity-focused research on social isolation. Additional research on risk factors for different populations could inform the development of targeted interventions.

Conclusions

Social isolation and loneliness, two associated but distinct constructs, play an important role in the health and quality of life for older adults in our communities. This review identified several risk factors for social isolation and related constructs, as well as potential interventions that could help mitigate their development. This review also found a paucity of research regarding interventions to reduce disparities in social isolation, despite numerous findings regarding disproportionate risk for marginalized groups. As populations continue to age, both nationally and here in Kansas, the importance of reducing social isolation will only grow. This review serves as a meaningful foundation for future studies and efforts to reduce social isolation among older adults in Kansas and helps move our aging communities toward greater health equity and improved quality of life.

(This page intentionally left blank.)

Appendix A: Social Isolation Risk Factors for Adults Age 50 and Older

Figure A.1. **Social Isolation Risk Factors for Adults Age 50 and Older Identified in Literature Review**

Risk Factor Category	General Findings	Findings by Gender	Findings by Race/Ethnicity
Poor Health and Well-Being • Sensory impairments such as hearing or vision loss, loss of mobility • Becoming frail • Poor mental health • Reduced cognitive abilities	• Home and community-based services (HCBS) clients in "restricted" networks (low frequency of contact across all relationships) were the most socially isolated. Those in "religious" networks were the next most isolated.[15] • For those with chronic conditions, the following factors were associated with social engagement restrictions: receiving care, having more physician visits, hospitalizations and higher Emotional and Physical Problem Scale (EPPS) scores.[16] • During in-depth interviews with 12 adults age 50 and older, interviewees indicated that declining health (most commonly mobility issues) contributed to feelings of loneliness.[17] • Individuals who self-reported excellent health were five times more likely to not be isolated.[14] Individuals who were socially isolated were more likely to be older than those who were not socially isolated. • Older adults who experience moderate or severe hearing loss were more likely to be lonely than those with typical hearing abilities or only mild hearing loss.[19] • Loneliness was common in those with spinal cord injury (40 percent). This appears higher than among other middle age and older adults in the general population, although there are few comparison points.[55] • Poorer subjective vision predicted greater social isolation, and social isolation mediated the link between self-reported vision and depressive symptoms.[18]	• For women age 60-69, there was a significant association between hearing loss and social isolation (i.e., the odds of being socially isolated increased 3.49 times for every 25-dB shift in pure tone averages). No association was found for men in this age cohort, or for men or women in the age 70-84 cohort.[24]	

Figure A.1 (continued). **Social Isolation Risk Factors for Adults Age 50 and Older Identified in Literature Review**

Risk Factor Category	General Findings	Findings by Gender	Findings by Race/Ethnicity
Poor Health and Well-Being (continued) • Sensory impairments such as hearing or vision loss, loss of mobility • Becoming frail • Poor mental health • Reduced cognitive abilities	• During an in-depth qualitative interview with seven women currently using benzodiazepines (primarily used for treating anxiety), feelings of isolation stemming from transportation and sight limitations were identified.[11] • Participants with normal visual acuity were less likely than their counterparts with low visual acuity and blindness to be at risk for social isolation due to their marital status, levels of emotional support, and number of friends. Individuals who had low visual acuity or who were blind were statistically more likely to be categorized as at risk of social isolation according to the overall social isolation score. Individuals with "good" self-reported vison were less likely to be at risk of social isolation in all four categories detailed in the study, while participants with "fair" self-reported vision were 59 percent more likely to be at risk for social isolation due to having fewer than one close friend. For the total isolation score, individuals with "poor" self-reported vision were 53 percent more likely to be at risk for social isolation than those "good" self-reported vision.[20] • There was an unadjusted association of UCLA loneliness score and amyloid burden – a pre-clinical indicator of Alzheimer's Disease (r = .3). Higher amyloid burden was associated with greater loneliness, adjusting for age, sex, and genetic carrier status (r^2 = 0.11).[21] • Unrecognized or unaddressed hearing loss was associated with increased risk of social isolation for adults age 60 to 69.[22]		

Figure A.1 (continued). **Social Isolation Risk Factors for Adults Age 50 and Older Identified in Literature Review**

Risk Factor Category	General Findings	Findings by Gender	Findings by Race/Ethnicity
Poor Health and Well-Being (continued) • Sensory impairments such as hearing or vision loss, loss of mobility • Becoming frail • Poor mental health • Reduced cognitive abilities	• In a national study of "high-need" beneficiaries in Medicare Advantage plans, adults age 65 and older with three or more chronic conditions and difficulty with a basic or instrumental activity of daily living had different prevalence of some social isolation factors than those relatively healthy older adults with multiple chronic conditions but no difficulty with activities of daily living. Nearly four in five (79 percent) high-needs older adults reported limitations with walking, in contrast with 58.7 percent of relatively healthy older adults. Additionally, 30.2 percent of high-needs older adults reported living alone and 49.9 percent were not married. Among the relatively healthy older adults, 27.9 percent lived alone and 40.3 percent were not married.[23]		

Figure A.1 (continued). **Social Isolation Risk Factors for Adults Age 50 and Older Identified in Literature Review**

Risk Factor Category	General Findings	Findings by Gender	Findings by Race/Ethnicity
Major Life Transitions • Losing a partner or friends • Retiring • Becoming a caregiver for someone with a severe impairment	• In in-depth interviews with 12 adults age 50 and older, interviewees indicated that loss of spouse and retirement contributed to feelings of loneliness.[17] • During in-depth interviews with adults age 50 and older with HIV, the loss of close friends and partners was noted as a contributing factor to feelings of social isolation.[26]	• "Kinless-ness" (lacking spouse and children) is concentrated among black women and non-Hispanic other race women.[30] • Women are more likely to be widowed than are men.[27]	• "Kinless-ness" (lacking spouse and children) is concentrated among black women and non-Hispanic other race women.[30] • In projections through 2060, black women are expected to continue to experience the highest rate of kinless-ness, and rates of kinless-ness are expected to triple for black Americans and double for white Americans.[32] • Immigrating to the United States —, at the associated loss, separation, and distance from the family and friends in the country of origin — was qualitatively noted to contribute to social isolation by Chinese,[12] Korean[25] and Hispanic immigrants[28]. • African American women were at highest risk for long-term widowhood.[27]

Figure A.1 (continued). **Social Isolation Risk Factors for Adults Age 50 and Older Identified in Literature Review**

Risk Factor Category	General Findings	Findings by Gender	Findings by Race/Ethnicity
Environmental Factors • Living in a rural, unsafe or inaccessible location • Living alone • Living in a home that is inadequate for the person's needs (i.e., not accessible or high risk for a fall) • Lack of access to affordable transportation	• Seasonality, predominately winter, might impact social interactions for older adults.[56] • Older adults with more social support, both from friends and family, are less likely to reside in low quality housing. Individuals with lower income are more likely to reside in lower quality housing.[29] • In in-depth interviews with 12 adults age 50 and older, interviewees indicated that lack of transportation (described as "giving up the car") contributed to feelings of loneliness.[17] • Socially isolated individuals were more likely to live alone than those who were not socially isolated.[14] • Adults with normal hearing in both urban and rural areas had similar positive social experiences. However, those with hearing loss in rural areas had fewer positive social experiences than their urban counterparts. As noted by the authors, "the preliminary findings could indicate that older adults with hearing loss living in rural communities will face more isolation compared with adults with hearing loss in urban areas."[35] • The absence of religious attendance may reduce social integration and social support since religious attendance may encourage the development and maintenance of social ties and supportive relationships.[57]	• Older women are more likely than older men to live without a co-resident partner (e.g., a spouse).[29] • Older Korean women were more likely to live alone and were less likely to participate in activities than were older Korean men.[58] Older Korean women had larger social networks than did older Korean men.	• For Korean Americans, loneliness mediates the relationship between living alone (objective isolation) and depressive symptoms.[59] • Black older adults are more like than white older adults to live without a co-resident partner (e.g., a spouse). Black adults also are more likely to reside in lower quality housing.[29]

Figure A.1 (continued). **Social Isolation Risk Factors for Adults Age 50 and Older Identified in Literature Review**

Risk Factor Category	General Findings	Findings by Gender	Findings by Race/Ethnicity
Marginalized Group Status • Racial/ethnic minority • LGBT • Having limited resources (poverty) • Language (non-English speaking) • Limited education	• Factors associated with social engagement restrictions for those with chronic conditions: higher education, being disabled and being unemployed.[16] • Higher levels of isolation were associated with HIV status and stigma associated with HIV.[34,60] • Falls among HIV+ individuals can lead to social isolation.[37] • For aging LGBT individuals living alone, culturally competent, "welcoming" service providers can buffer feelings of perceived isolation.[38] • LGBT adults are more likely to live alone, more likely to be estranged from family and are less likely to have children than heterosexual adults.[33] • Socially isolated individuals were more likely to be white and to have less education than those who were not socially isolated.[14] • The lack of extended families among many older gay men was noted when discussing feeling socially isolated. From a participant, "the majority of gay men with HIV who are aging don't have children. They don't have extended families, which is an absolute major form of support for aging populations in the country that are heterosexual... this is why community resources become so important because they don't have family resources."[26] • The prevalence of social isolation was higher among veterans who were HIV+ than among veterans who were not. Social isolation scores also were higher for individuals who were HIV+ than for those who were not.[39] • More African American participants reported a lack of social connections in the past two weeks than did white participants across six of seven social connection measures, with the exception of the "going to a church or temple" measure.[36]	• Foreign born Korean American men had a higher prevalence of marginal (weak) ties to both family and friends, than their female counterparts.[25]	• Perceived discrimination is associated with being more subjectively socially isolated (i.e., lonely) for African Americans.[41] • During interviews, older LGBT African American adults highlighted feelings of isolation related to age, race and sexual identity or orientation. Aging-related isolation stemmed from unwillingness/inability to drive, limited transportation options, lack of events for peer group, lack of friends, and chronic ailments and disabilities.[42] During interviews, older LGBT African American adults highlighted feelings of isolation related to age, race and sexual identity or orientation. • In a study of black and white men and women, race was a stronger predictor of social isolation than sex.[31]

Figure A.1 (continued). **Social Isolation Risk Factors for Adults Age 50 and Older Identified in Literature Review**

Risk Factor Category	General Findings	Findings by Gender	Findings by Race/Ethnicity
Marginalized Group Status (continued) • Racial/ethnic minority • LGBT • Having limited resources (poverty) • Language (non-English speaking) • Limited education	• Black and Hispanic older adults were less likely than white adults to experience social isolation.[40] • Using a national sample of more than 6,500 community dwelling older adults, being unmarried, male, low education, and low income were each independently associated with social isolation.[40]		• In a study of 1,000 older adults in Alabama, more than one in five (22.1 percent) older adult black women had no reliable transportation, while 3.2 percent of older adult white men reported the same. Similarly, older adult black women were the most likely to be unmarried (79.5 percent) followed by white women (54 percent), black men (41.4 percent) and white men (20.0 percent). For church services, 81.1 percent of older adult black women had regular attendance, followed by white women (77.2 percent), black men (67.3 percent), and white men (63.2 percent). Black women were most likely to report fear of being attacked when going outside (30.5 percent). More than one in five black men (23.1 percent) also reported fear of being attacked, while 14.0 percent of white women and 3.2 percent of white men reported the same. A greater proportion of black men (15.9 percent) and black women (11.6 percent) reported experiencing discrimination than their white counterparts (6.8 percent for white women and 4.8 for white men.)[6] • Using a national sample of more than 6,500 community dwelling older adults, black and Hispanic older adults were found to have lower odds of social isolation compared to white older adults, after adjusting for covariates.[40]

Note: As of December 16, 2019.

Source: KHI review of peer reviewed journal articles available online.

(This page intentionally left blank.)

Appendix B: Research Instruments for Social Isolation

Connect2Affect Online Poll[61]

In the Connect2Affect online poll, respondents answer yes or no to 14 statements. Respondents are then grouped into low, medium or high risk depending on their answers and the relationship between the answer and the risk factor assumed in the question. For example, answering yes to question 1 ("I live alone") would increase the likelihood of being determined at risk for isolation.

Lubben Social Network Scale[62]

The Lubben Social Network Scale measures social isolation by measuring frequency, size, and closeness of contacts of the respondent's social network by assessing the perceived level of support they receive from friends and families. There are two versions of the scale, one which include six items, and one that includes 12 items.

Social Network Index[63]

The Social Network Index (SNI) is a 13-item measure that assesses participation in 12 types of social relationships: relationships with a spouse, parents, parents-in-law, children, other close family members, close neighbors, friends, workmates, schoolmates, fellow volunteers, members of groups without religious affiliation, and religious groups. One point is assigned for each type of relationship for which respondents indicate that they connect with at least once every two weeks.

Social Support Questionnaire (SSQ6)[64]

The Social Support Questionnaire is a six-item measure of social support wherein respondents indicate the number of people they feel they have available to provide support in six areas (e.g., "With whom can you totally be yourself?").

UCLA Loneliness Index[65]

Originally developed at the University of California, Los Angeles (UCLA) by psychologist Daniel Russell, the UCLA Loneliness Scale (Version 3) is a 20-item measure that assesses how often a person feels disconnected from others. Using a 4-point rating scale, participants answer 20 questions, such as "How often do you feel left out?" and "How often do you feel part of a group of friends?" The UCLA Loneliness Index only measures subjective isolation (i.e., loneliness) and does not capture objective measures of social isolation (e.g., frequency of contacts).

(This page intentionally left blank.)

Appendix C: Data Source Assessment

Social Isolation Data Assessment

The data sources in *Figure 4* (page 9) were identified in the literature on social isolation and through searches related to social isolation on the websites of selected organization. The documentation for each data source was reviewed to determine the earliest and most recent year that the data were available, whether the data contain race/ethnicity variables, and the lowest level of geography for which the data were available. The data sources in *Figure C1* (page C-2) are a starting point for future research. The availability of lower levels of geography and variables for race or ethnicity do not necessarily mean that the data are usable at that level or for those groups. A separate analysis of the data would be needed to determine whether the sample size in Kansas or Johnson and Wyandotte County is large enough for research. In some cases, access to lower level geographic variables are restricted. Access can be gained for a fee and/or if the research project were approved by the relevant organizations (e.g., the organization hosting the data or the applicable Institutional Review Board).

Large survey-based data sets such as those listed in *Figure C1* (page C-2) may either directly measure social isolation through the questions asked on the survey (e.g. the National Health and Aging Trends Study asks respondents how many people they have to talk to) or may allow for the calculation of a measure to compare the risk of social isolation between areas or groups. For example, the United Health Foundation's America's Health Rankings 2019 Senior Report calculates a risk of social isolation index score from six risk factors (poverty; living alone; divorced, separated or widowed; never married; disability; and independent living difficulty) to measure and rank states based on seniors' risk for social isolation. Kansas ranks 22 out of 50 and scored slightly better than the U.S. overall.

Figure C1 (page C-2) provides another example of measures for social isolation risk factors from the Robert Wood Johnson Foundation's County Health Rankings. Johnson and Wyandotte counties have a similar number of social associations (i.e., golf clubs, fitness centers, sports organizations, religious organizations, labor organizations, business/professional organizations etc.), but this measure does not account for important social connections offered via family support structures, informal networks, or community service organizations. Another measure identified as a risk factor for social isolation is residential segregation. In the data provided in the County Health Rankings, Wyandotte County is more segregated than Johnson County.

Additional research could either calculate these or comparable measures for lower levels of geography (i.e., census block group or zip code) or additional research could look at other measures of social isolation that may be collected in local area organization's data sources. For example, administrative data from hospitals, clinics, health systems and ACOs may collect data on loneliness and social interactions or isolation.

Figure C1. **Measures of Social Isolation and Related Risk Factors**

Data Source	Measure	Score
Risk of Social Isolation Index score	America's Health Rankings 2019 Senior Report • Percentile of the mean z scores for six risk factors of social isolation in adults aged 65 and older (poverty; living alone; divorced, separated or widowed; never married; disability; and independent living difficulty)	United States: 50 Kansas: 42
County Business Patterns	County Health Rankings • Social Associations measures the number of membership associations per 10,000 population. The rate measures the number of events in each time period (generally one or more years) divided by the average number of people at risk during that period.	Johnson: 8.6 Wyandotte: 10.9
American Community Survey, 5-year estimates	County Health Rankings • The residential segregation index ranges from 0 (complete integration) to 100 (complete segregation). Higher values indicate greater residential segregation between non-white and white county residents. The index score can be interpreted as the percentage of non-white or white residents that would have to move to different geographic areas in order to produce a distribution that matches that of the larger area.	Johnson: 27 Wyandotte: 39

Source: KHI review of multiple publicly available sources

Appendix D: References

1. Steptoe A, Shankar A, Demakakos P, Wardle J. Social isolation, loneliness, and all-cause mortality in older men and women. *Proc Natl Acad Sci U S A.* 2013;110(15):5797-5801.

2. Holt-Lunstad J, Smith TB, Layton JB. Social relationships and mortality risk: A meta-analytic review. *PLoS Med.* 2010;7(7):e1000316.

3. Ashida S, Heaney CA. Differential associations of social support and social connectedness with structural features of social networks and the health status of older adults. *J Aging Health.* 2008;20(7):872-893.

4. Warr P, Butcher V, Robertson I. Activity and psychological well-being in older people. *Aging Ment Health.* 2004;8(2):172-183.

5. Courtin E, Knapp M. Social isolation, loneliness and health in old age: A scoping review. *Health Soc Care Community.* 2017;25(3):799-812.

6. Locher JL, Ritchie CS, Roth DL, Baker PS, Bodner EV, Allman RM. Social isolation, support, and capital and nutritional risk in an older sample: Ethnic and gender differences. *Soc Sci Med.* 2005;60(4):747-761.

7. Elder K, Rertrum J. *Framework for isolation in adults over 50.* Washington, DC: AARP Foundation;2012.

8. Petersen J, Kaye J, Jacobs PG, et al. Longitudinal relationship between loneliness and social isolation in older adults: Results from the cardiovascular health study. *J Aging Health.* 2016;28(5):775-795.

9. Petersen J, Thielke S, Austin D, Kaye J. Phone behaviour and its relationship to loneliness in older adults. *Aging Ment Health.* 2016;20(10):1084-1091.

10. Coyle CE, Dugan E. Social isolation, loneliness and health among older adults. *J Aging Health.* 2012;24(8):1346-1363.

11. Canham SL. What's loneliness got to do with it? Older women who use benzodiazepines. *Australas J Ageing.* 2015;34(1):E7-E12.

12. Dong X, Chang ES, Wong E, Simon M. Perception and negative effect of loneliness in a chicago chinese population of older adults. *Arch Gerontol Geriatr.* 2012;54(1):151-159.

13. Finlay JM, Kobayashi LC. Social isolation and loneliness in later life: A parallel convergent mixed-methods case study of older adults and their residential contexts in the minneapolis metropolitan area, USA. *Soc Sci Med.* 2018;208:25-33.

14. Pohl JS, Cochrane BB, Schepp KG, Woods NF. Measuring social isolation in the national health and aging trends study. *Res Gerontol Nurs.* 2017;10(6):277-287.

15. Medvene LJ, Nilsen KM, Smith R, et al. Social networks and links to isolation and loneliness among elderly HCBS clients. *Aging Ment Health.* 2016;20(5):485-493.

16.   Meek KP, Bergeron CD, Towne SD, Ahn S, Ory MG, Smith ML. Restricted social engagement among adults living with chronic conditions. *Int J Environ Res Public Health.* 2018;15(1).

17.   Smith JM. Portraits of loneliness: Emerging themes among community-dwelling older adults. *J Psychosoc Nurs Ment Health Serv.* 2012;50(4):34-39.

18.   Bookwala J, Lawson B. Poor vision, functioning, and depressive symptoms: A test of the activity restriction model. *Gerontologist.* 2011;51(6):798-808.

19.   Weinstein BE, Sirow LW, Moser S. Relating hearing aid use to social and emotional loneliness in older adults. *Am J Audiol.* 2016;25(1):54-61.

20.   Coyle CE, Steinman BA, Chen J. Visual acuity and self-reported vision status. *J Aging Health.* 2017;29(1):128-148.

21.   Donovan NJ, Okereke OI, Vannini P, et al. Association of higher cortical amyloid burden with loneliness in cognitively normal older adults. *JAMA Psychiatry.* 2016;73(12):1230-1237.

22.   Mick P, Pichora-Fuller MK. Is hearing loss associated with poorer health in older adults who might benefit from hearing screening? *Ear Hear.* 2016;37(3):e194-201.

23.   DuGoff EH, Buckingham W, Kind AJ, Chao S, Anderson GF. Targeting high-need beneficiaries in medicare advantage: Opportunities to address medical and social needs. *Issue Brief (Commonw Fund).* 2019;2019:1-14.

24.   Mick P, Kawachi I, Lin FR. The association between hearing loss and social isolation in older adults. *Otolaryngol Head Neck Surg.* 2014;150(3):378-384.

25.   Jang Y, Park NS, Chiriboga DA, et al. Risk factors for social isolation in older korean americans. *J Aging Health.* 2016;28(1):3-18.

26.   Brown B, Marg L, Cabral A, et al. Community-driven health priorities for healthy aging with HIV. *J Assoc Nurses AIDS Care.* 2019;30(1):119-128.

27.   Williams BR, Sawyer P, Allman RM. Wearing the garment of widowhood: Variations in time since spousal loss among community-dwelling older adults. *J Women Aging.* 2012;24(2):126-139.

28.   Curtin A, Martins DC, Gillsjo C, Schwartz-Barcott D. Ageing out of place: The meaning of home among hispanic older persons living in the united states. *Int J Older People Nurs.* 2017;12(3).

29.   York Cornwell E. Social resources and disordered living conditions: Evidence from a national sample of community-residing older adults. *Res Aging.* 2014;36(4):399-430.

30.   Margolis R, Verdery AM. Older adults without close kin in the united states. *J Gerontol B Psychol Sci Soc Sci.* 2017;72(4):688-693.

---

31. Alcaraz KI, Eddens KS, Blase JL, et al. Social isolation and mortality in USA black and white men and women. *Am J Epidemiol.* 2019;188(1):102-109.

32. Verdery AM, Margolis R. Projections of white and black older adults without living kin in the united states, 2015 to 2060. *Proc Natl Acad Sci U S A.* 2017;114(42):11109-11114.

33. Zelle A, Arms T. Psychosocial effects of health disparities of lesbian, gay, bisexual, and transgender older adults. *J Psychosoc Nurs Ment Health Serv.* 2015;53(7):25-30.

34. Greene M, Justice AC, Lampiris HW, Valcour V. Management of human immunodeficiency virus infection in advanced age. *JAMA.* 2013;309(13):1397-1405.

35. Hay-McCutcheon MJ, Reed PE, Cheimariou S. Positive social interaction and hearing loss in older adults living in rural and urban communities. *J Speech Lang Hear Res.* 2018;61(8):2138-2145.

36. Liu L. Social connections, diabetes mellitus, and risk of mortality among white and african-american adults aged 70 and older: An eight-year follow-up study. *Ann Epidemiol.* 2011;21(1):26-33.

37. Womack JA, Novick G, Fried T. The beginning of the end: A qualitative study of falls among HIV+ individuals. *PLoS One.* 2018;13(11):e0207006.

38. Yang J, Chu Y, Salmon MA. Predicting perceived isolation among midlife and older LGBT adults: The role of welcoming aging service providers. *Gerontologist.* 2018;58(5):904-912.

39. Greysen SR, Horwitz LI, Covinsky KE, Gordon K, Ohl ME, Justice AC. Does social isolation predict hospitalization and mortality among HIV+ and uninfected older veterans? *J Am Geriatr Soc.* 2013;61(9):1456-1463.

40. Cudjoe TKM, Roth DL, Szanton SL, Wolff JL, Boyd CM, Thorpe RJ. The epidemiology of social isolation: National health and aging trends study. *J Gerontol B Psychol Sci Soc Sci.* 2018;75(1):107-113.

41. Nadimpalli SB, James BD, Yu L, Cothran F, Barnes LL. The association between discrimination and depressive symptoms among older african americans: The role of psychological and social factors. *Exp Aging Res.* 2015;41(1):1-24.

42. Woody I. Aging out: A qualitative exploration of ageism and heterosexism among aging african american lesbians and gay men. *J Homosex.* 2014;61(1):145-165.

43. Gardiner C, Geldenhuys G, Gott M. Interventions to reduce social isolation and loneliness among older people: An integrative review. *Health Soc Care Community.* 2018;26(2):147-157.

44. O'Rourke HM, Collins L, Sidani S. Interventions to address social connectedness and loneliness for older adults: A scoping review. *BMC Geriatr.* 2018;18(1):214.

45. Veazie S, Gilbert J, Winchell K, Paynter R, Guise J-M. *Addressing social isolation to improve the health of older adults: A rapid review.* Rockville, MD: Agency for Healthcare Research and Quality;2019.

46. Winstead V, Yost EA, Cotten SR, Berkowsky RW, Anderson WA. The impact of activity interventions on the well-being of older adults in continuing care communities. *J Appl Gerontol.* 2014;33(7):888-911.

47. Breck BM, Dennis CB, Leedahl SN. Implementing reverse mentoring to address social isolation among older adults. *J Gerontol Soc Work.* 2018;61(5):513-525.

48. Chi NC, Sparks O, Lin SY, Lazar A, Thompson HJ, Demiris G. Pilot testing a digital pet avatar for older adults. *Geriatr Nurs.* 2017;38(6):542-547.

49. Myhre JW, Mehl MR, Glisky EL. Cognitive benefits of online social networking for healthy older adults. *J Gerontol B Psychol Sci Soc Sci.* 2017;72(5):752-760.

50. Nicholson NR, Jr., Shellman J. Decreasing social isolation in older adults: Effects of an empowerment intervention offered through the carelink program. *Res Gerontol Nurs.* 2013;6(2):89-97.

51. Beard J, Officer A, Araujo de Carvalho I, et al. The world report on ageing and health: A policy framework for healthy ageing. *The Lancet.* 2016;387(10033):2145-2154.

52. Japsen B. Aetna looks to curtail loneliness for medicare advantage enrollees. 2019. https://www.forbes.com/sites/brucejapsen/2019/11/13/aetna-looks-to-curtail-loneliness-for-medicare-advantage-enrollees/#36e76f83448f. Accessed December 2, 2019.

53. Gorges R, Sanghavi P, Konetzka T. A national examination of long-term care setting, outcomes, and disparities among elderly dual eligibles. *Health Affairs.* 2019;38(7):1110-1118.

54. *Age friendly fairfax community assessment 2015 - 2016 and strategic action plan 2017 - 2019.* Age Friendly Fairfax Task Force;2017.

55. Robinson-Whelen S, Taylor HB, Feltz M, Whelen M. Loneliness among people with spinal cord injury: Exploring the psychometric properties of the 3-item loneliness scale. *Arch Phys Med Rehabil.* 2016;97(10):1728-1734.

56. Perry TE. Seasonal variation and homes: Understanding the social experiences of older adults. *Care Manag J.* 2014;15(1):3-10.

57. Rote S, Hill TD, Ellison CG. Religious attendance and loneliness in later life. *Gerontologist.* 2013;53(1):39-50.

58. Park NS, Jang Y, Lee BS, Haley WE, Chiriboga DA. The mediating role of loneliness in the relation between social engagement and depressive symptoms among older korean americans: Do men and women differ? *J Gerontol B Psychol Sci Soc Sci.* 2013;68(2):193-201.

59.   Park NS, Jang Y, Lee BS, Chiriboga DA. The relation between living alone and depressive symptoms in older korean americans: Do feelings of loneliness mediate? *Aging Ment Health.* 2017;21(3):304-312.

60.   Webel AR, Longenecker CT, Gripshover B, Hanson JE, Schmotzer BJ, Salata RA. Age, stress, and isolation in older adults living with HIV. *AIDS Care.* 2014;26(5):523-531.

61.   Connect2Affect. How connected are you? https://connect2affect.org/assessment/self/. Accessed January 7, 2020.

62.   Lubben JE. Assessing social networks among elderly populations. *Family & Community Health: The Journal of Health Promotion & Maintenance.* 1988.

63.   Cohen S, Doyle WJ, Skoner DP, Rabin BS, Gwaltney JM, Jr. Social ties and susceptibility to the common cold. *JAMA.* 1997;277(24):1940-1944.

64.   Sarason IG, Sarason BR, Shearin EN, Pierce GR. A brief measure of social support: Practical and theoretical implications. *Journal of Social and Personal Relationships.* 1987;4(4):497-510.

65.   Russell DW. UCLA loneliness scale (version 3): Reliability, validity, and factor structure. *J Pers Assess.* 1996;66(1):20-40.

KANSAS HEALTH INSTITUTE

Informing Policy. Improving Health.