

# Leveraging NHATS to examine the social connections of older adults

## NHATS/NSOC 2023-2024 Webinar Series

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JOHNS HOPKINS  
M E D I C I N E

# Mrs. B



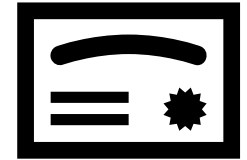
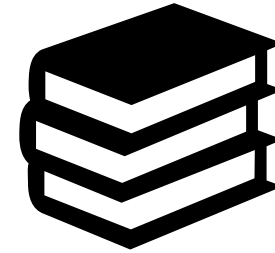
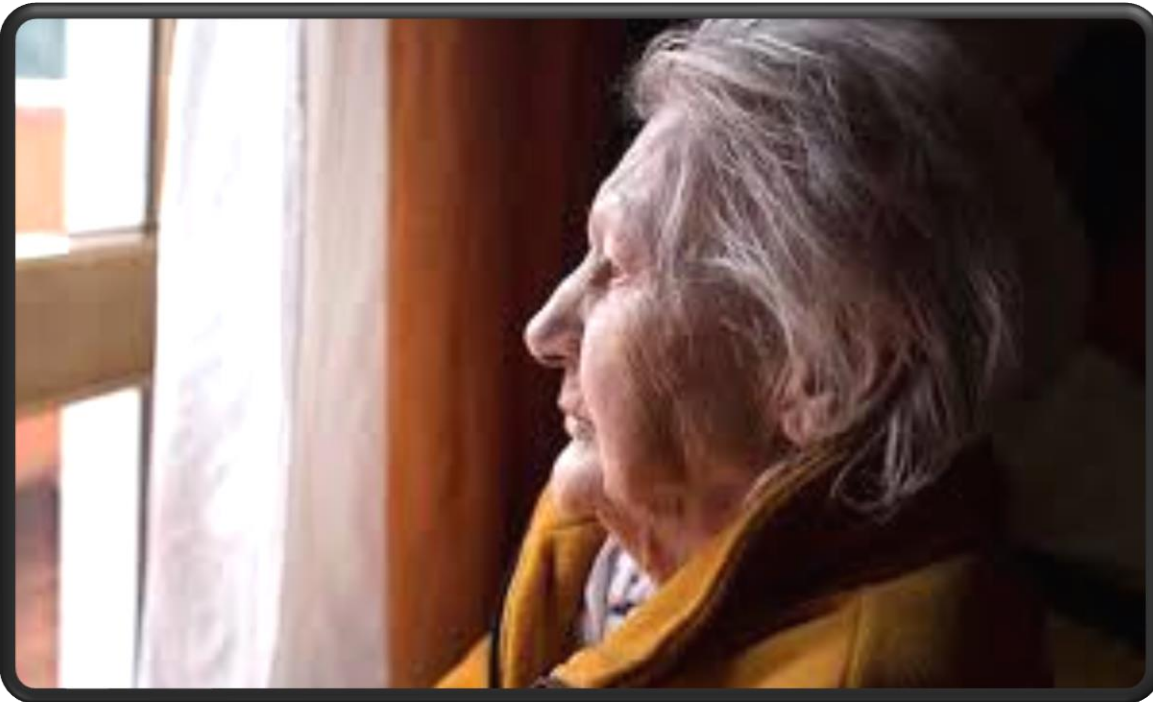
- Religious woman
- Unable to attend church
- Lives alone in low-income housing
- Minimal contact with others
- Mental and physical health issues
- Frequent hospitalization
- Really enjoyed home visits

# Mrs. B was **socially isolated and lonely**



- Religious woman
- Unable to attend church
- Lives alone in low-income housing
- Minimal contact with others
- Mental and physical health issues
- Frequent hospitalization
- Really enjoyed home visits

# What was my role? How could I be helpful?



# Berkman and Syme 1979

- Alameda County Study
- ~7000 participants
- 9 year prospective Study
- BSNL: marriage, church membership, contact w/ close friends/relatives, informal and formal group membership

**Lacking social and community ties linked to higher likelihood of mortality**



# Berkman and Syme 1979

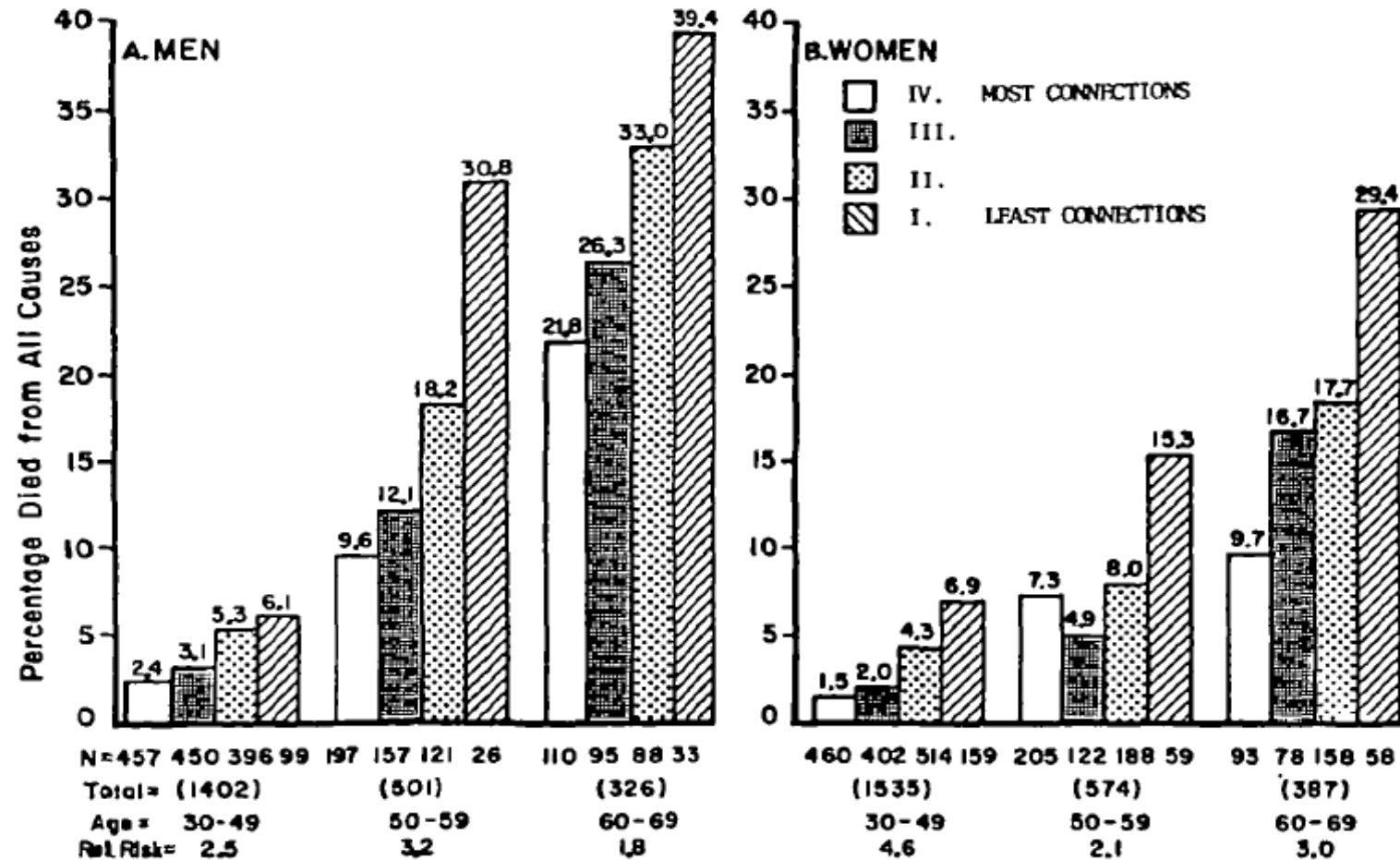
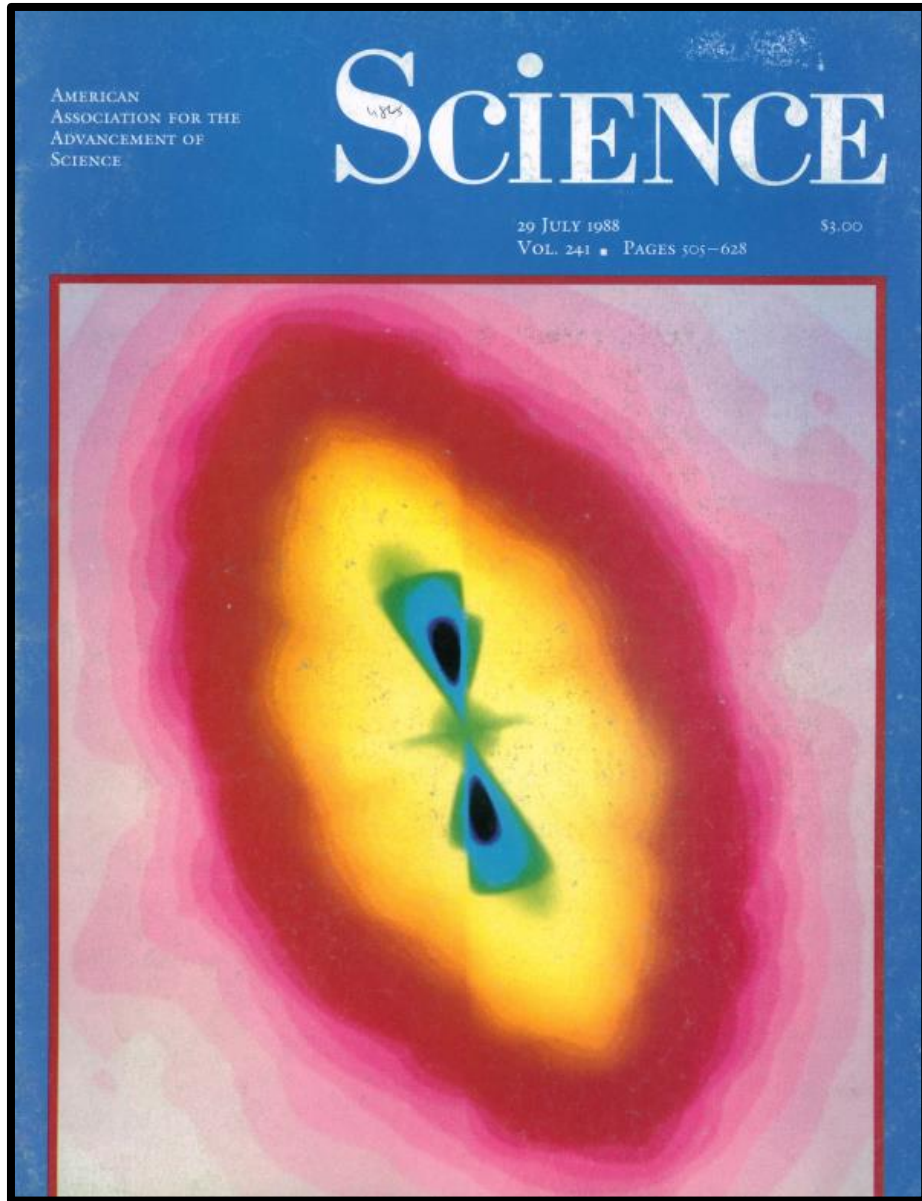


FIGURE 1. Age and sex-specific mortality rates from all causes per 100 for Social Network Index, Human Population Laboratory Study of Alameda County, 1965-1974.



“Social relationships, or the relative lack thereof constitutes **a major risk factor for health**—rivaling the effect of well established health risk factors such as **cigarette smoking, blood pressure, blood lipids, obesity and physical activity**”.

House et al. *Science*. 1988



# Social Connections and Mortality

Meta-analysis of 70 studies, 3.4 million participants

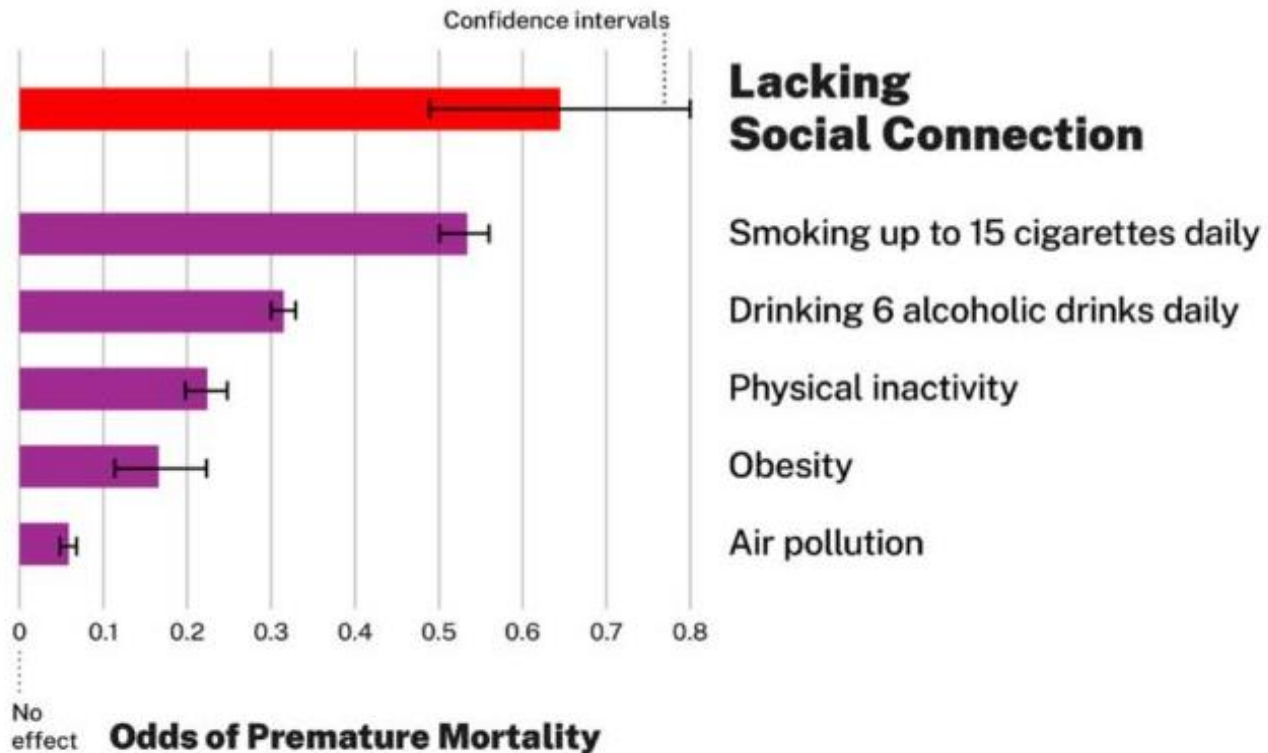
- Increased likelihood of death
  - 26% for loneliness
  - 29% for social isolation
  - 32% for living alone



Holt-Lunstad et al, 2015



# Lacking social connection is as dangerous as smoking up to 15 cigarettes a day.



## Mortality

### All-cause mortality:

- Social isolation: ↑ 32% risk
- Loneliness: ↑ 14% risk

### Cancer mortality:

- Social isolation: ↑ 24% risk
- Loneliness: ↑ 19% risk

### Cardiovascular mortality:

- Social isolation: ↑ 34% risk
- Loneliness: Non-significant

Office of the Surgeon General, Public Health Service (2023). *Our Epidemic of Loneliness and Isolation*.

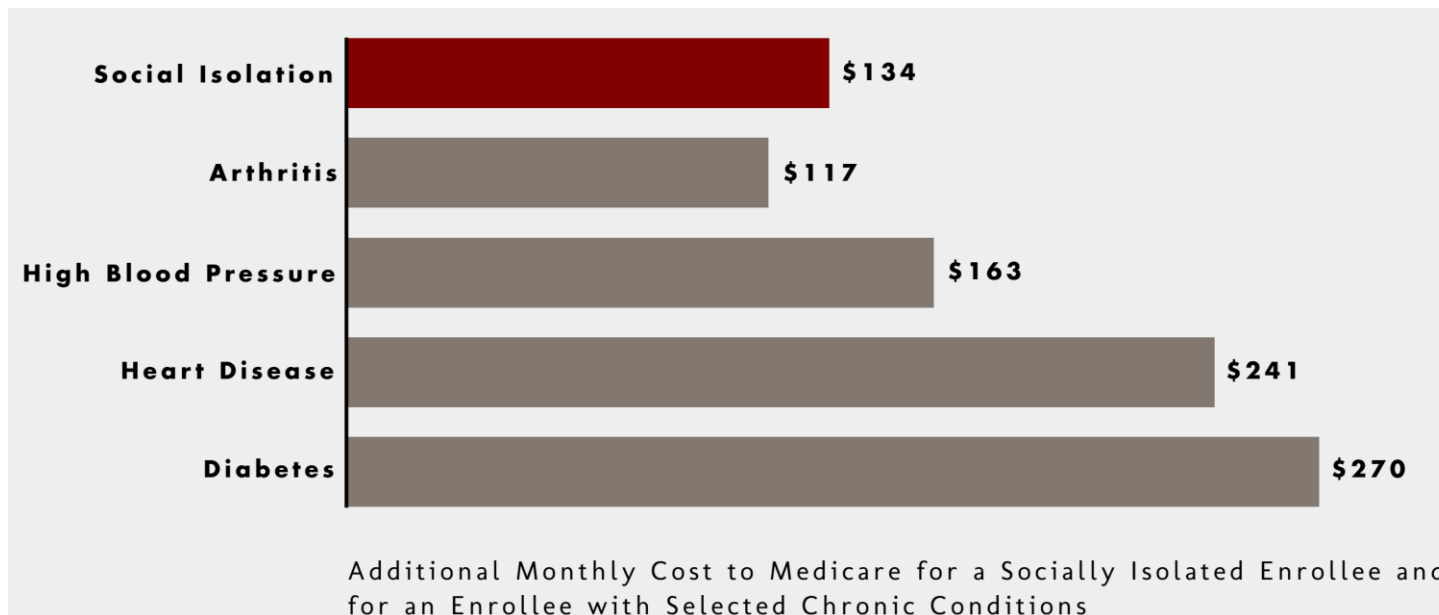
Wang et al (2023). A systematic review and meta-analysis of 90 cohort studies of social isolation, loneliness and mortality. doi:10.1038/s41562-023-01617-6

# **Social isolation is deadly!**

- Effect is robust relative to other risk factors
- Consistent across gender, health status, cause of death, country of origin
- Objective and Subjective indicators of social connection predict mortality risk

# Social isolation is costly!

- Social isolation among older adults is associated with an estimated \$6.7 billion in additional Medicare spending annually.
- Each month, Medicare spent an estimated \$134 more for socially isolated older adults (\$1,608 more annually).



Shaw, 2017

# SOCIAL ISOLATION ≠ LONELINESS

**Objective:** Limited social contact

Occurs on individual and/or community level

Not necessarily unpleasant, possibly preferred

May be chosen: “solitude”

**Subjective:** Feeling alone or isolated

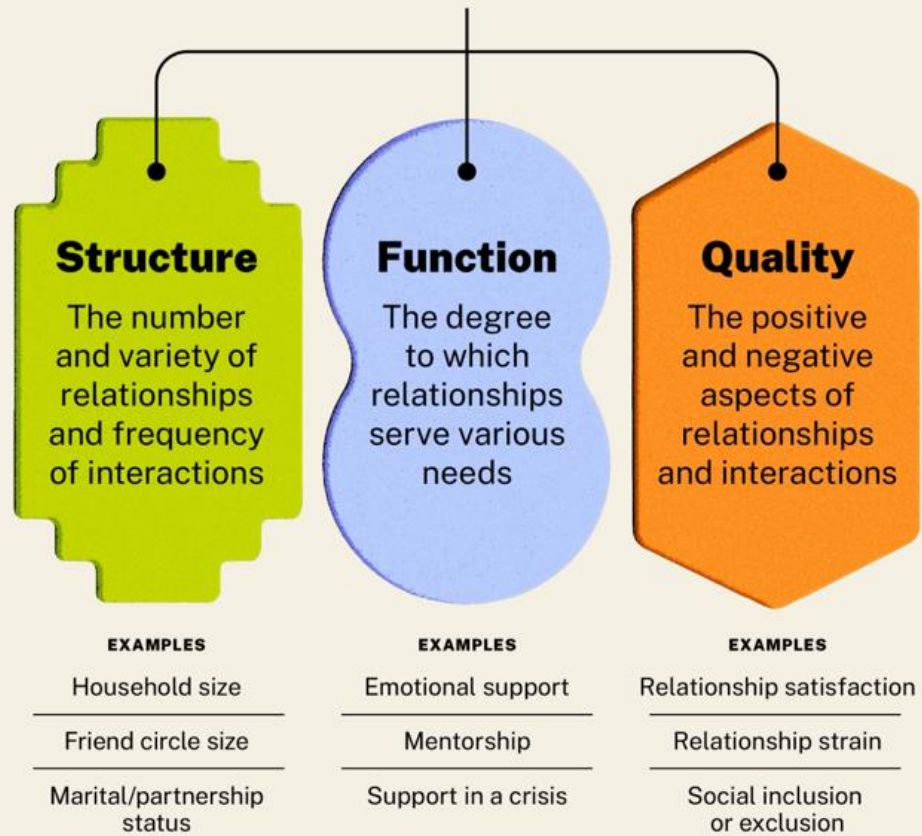
Mismatch between actual & desired relationships

Emotionally distressing and unpleasant

Low sense of control or choice

# The Three Vital Components of Social Connection

The extent to which an individual is socially connected depends on multiple factors, including:



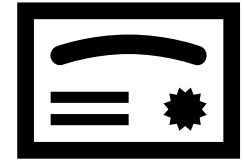
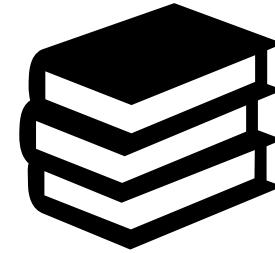
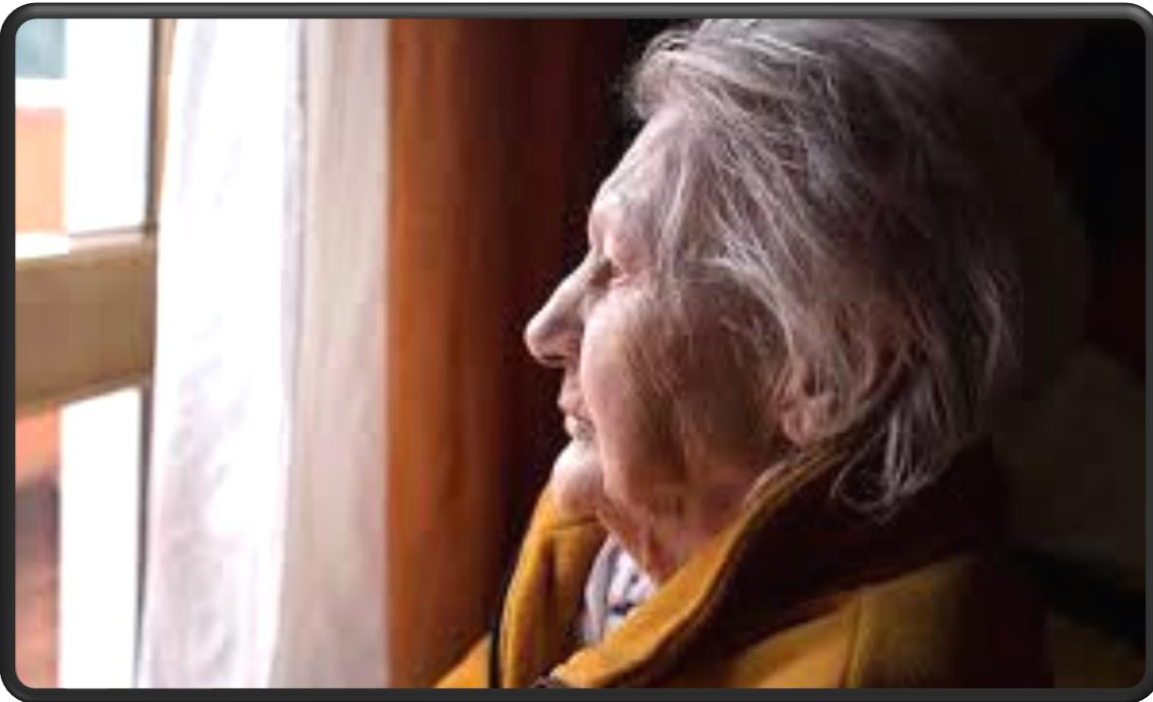
Source: Holt-Lunstad J. Why Social Relationships Are Important for Physical Health: A Systems Approach to Understanding and Modifying Risk and Protection. *Annu Rev Psychol.* 2018;69:437-458.



FIGURE 1: The Three Vital Components of Social Connection



# What was my role? How could I be helpful?



# There are many of measures

nature aging

## Reflections on measures of social isolation among older adults

<https://doi.org/10.1038/s43587-023-00472-4>

 Check for updates

In 2020, the National Academies of Science, Engineering, and Medicine reported on opportunities for the healthcare system to address social isolation and loneliness, which are risk factors for morbidity and mortality<sup>1</sup>. Shortly after the report was released, the COVID-19 pandemic ensued – which pushed social isolation up the research and public health agendas as broad swathes of the population experienced this phenomenon. Studies demonstrate social isolation as a key risk factor for adverse physical, mental and cognitive health outcomes<sup>1,2</sup>. Despite these implications, the research community lacks consensus on how to measure social isolation, which hinders progress toward solutions to combat this challenge.

Social isolation affects 15–25% of community-dwelling older adults, but estimates vary

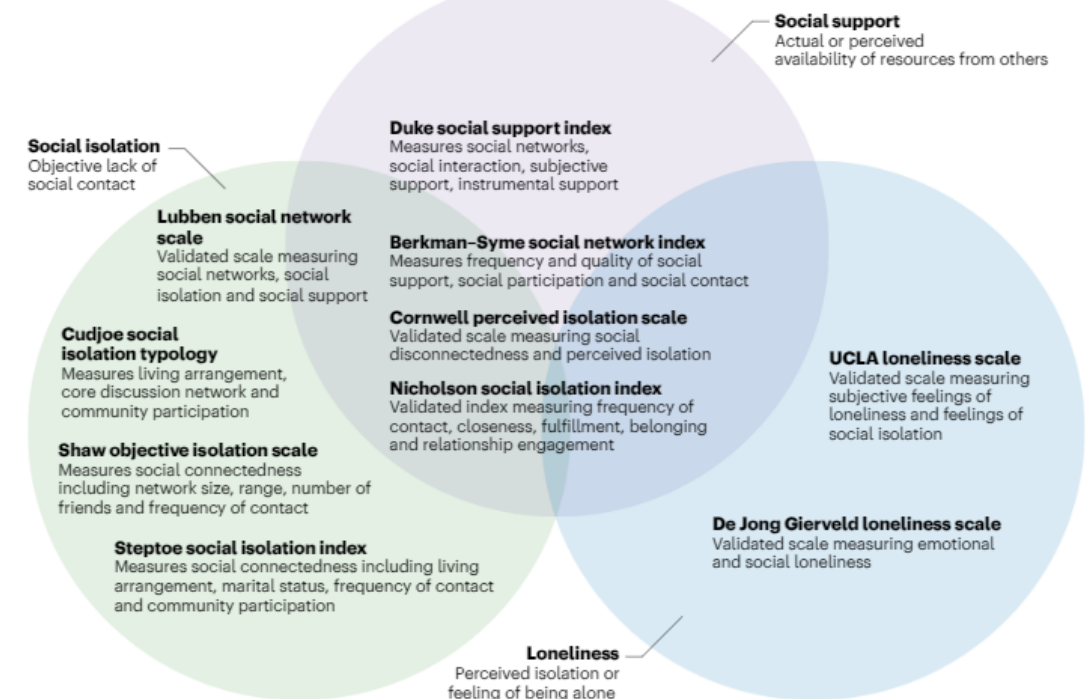
widely owing to the lack of a uniform metric<sup>3</sup>. Literature reviews identify more than fifty measures related to social isolation<sup>4</sup>. The lack of measurement consensus and use of instruments that vary in their content, rigor and uptake inhibits progress toward building knowledge on social isolation and its consequences. Standardized measurement is crucial to assess and address the health risks of social isolation, as highlighted in a 2023 advisory from the US Surgeon General<sup>5</sup>.

Among the measurement issues is the problem of single-item metrics. Proxy variables such as ‘living alone’ or ‘not married’ are easy to administer but do not capture key aspects of social isolation, such as social connection at the group (for example, network size or frequency of contact) or community (for example, volunteering) level<sup>4</sup>. Social

isolation measures should capture objective and quantitative components of relationships. Although some researchers have used multidomain metrics, single-item indicators persist and may confound estimates.

Furthermore, many studies interchange social isolation with loneliness<sup>4</sup>. Social isolation is the lack of social contact and relationships, whereas loneliness is subjective and characterized by feeling isolated<sup>1</sup> (Fig. 1). These interrelated concepts are moderately correlated and associated with distinct health outcomes<sup>1,2</sup>. There is also a need to disentangle the effects of social isolation from other aspects of social connection on health<sup>4</sup>. Refined and well-validated measures of social isolation would help to achieve this goal.

Measures that capture both objective and subjective aspects of social connection are



**Fig. 1 | Common measures of social connection.** Various measures are used to evaluate social isolation and related concepts that fall under social connection, a multifactorial construct that encompasses distinct but related aspects (including social support (functional aspect), social isolation (structural aspect) and loneliness (quality aspect))<sup>4,5</sup>.

Pomeroy et al (2023). Reflections on measures of social isolation among older adults. doi:10.1038/s43587-023-00472-4

<b>Berkman Syme 1979</b>	<b>Lubben 1988</b>	<b>ELSA-Stephoe 2011/2013</b>	<b>NHANES Pantell 2013</b>	<b>NHATS Social Isolation Typology (Cudjoe 2020)</b>
Marital Status	Family networks (Number seen monthly, frequency of social contacts, number feels “close to”)	Unmarried/Not cohabitating with partner	being married or living together with someone in a partnership at the time of their interview	Living arrangement
Nature of relationship with relatives and friends	Friends networks (Number seen monthly, frequency of social contacts, number feels “close to”)	Less than monthly contact (including face to face, telephone or written/email contact) with children, other family members, and friends	averaging 3 or more interactions per week with other people (assessed with the questions “In a typical week, how many times do you talk on the telephone with family, friends, or neighbors?” and “How often do you get to-gether with friends or relatives?”	Social Network #- close ties/important matters (1 year)
Church Membership	Interdependent social supports (Has a confidant, Is a confidant, Relies upon and helps others, Living arrangement)	Did not participate in organizations such as social clubs, or residents groups, religious groups or committees	reporting that they attended church or religious services 4 or more times per year	Attend Religious Service
Membership in other organizations and clubs			reporting that they belonged to a club or organization such as a church group, union, fraternal or athletic group, or school group.	Participation in clubs, groups, meetings, activities, or volunteer

# National Health and Aging Trends Study (NHATS)

- population-based survey
- Random sample of individuals ages 65 years and older living in the contiguous U.S. from the Medicare enrollment, beginning in 2010
- Oversampling of those 85+ and blacks
- Interviews were first completed in 2011
- N=8,245 persons (71% response rate)



National Health &  
Aging Trends Study

how daily life changes as we age

- Characterize social isolation among community dwelling older adults in the National Health and Aging Trends Study (NHATS)
- Identify the prevalence and sociodemographic correlates of social isolation



## Social Isolation Typology

Domain	Metric	Score
Living arrangement	Living with at least one other person	Yes = 1
Core discussion network size	Talking to two or more people about "important matters" in the past year	Yes = 1
Religious attendance	In the last month, did you ever attend religious services?	Yes = 1
Social participation	Participating in other activities (clubs/meetings/group activities or doing volunteer work) in the past month	Yes = 1

Score range: 0 to 4

Score direction: lower score indicates greater isolation

0: Severely isolated; 1: Isolated; 2+ *No Social Isolation*

# Prevalence of Social Isolation

	Number	Weighted Number	Weighted %	95% CI
Severe Social Isolation	308	1,262,957	4.01	3.56, 4.46
Social Isolation	1401	6,390,979	20.30	19.03, 21.56
No Social Isolation	4940	23,833,728	75.69	74.23, 77.16
Total	6649	31,487,664		

**7.7 million  
older  
adults**

# Social isolation is prevalent among older adults



**1 in 4 adults**  
age 65 and older are  
socially isolated.



National Health &  
Aging Trends Study

how daily life changes as we age

# Findings

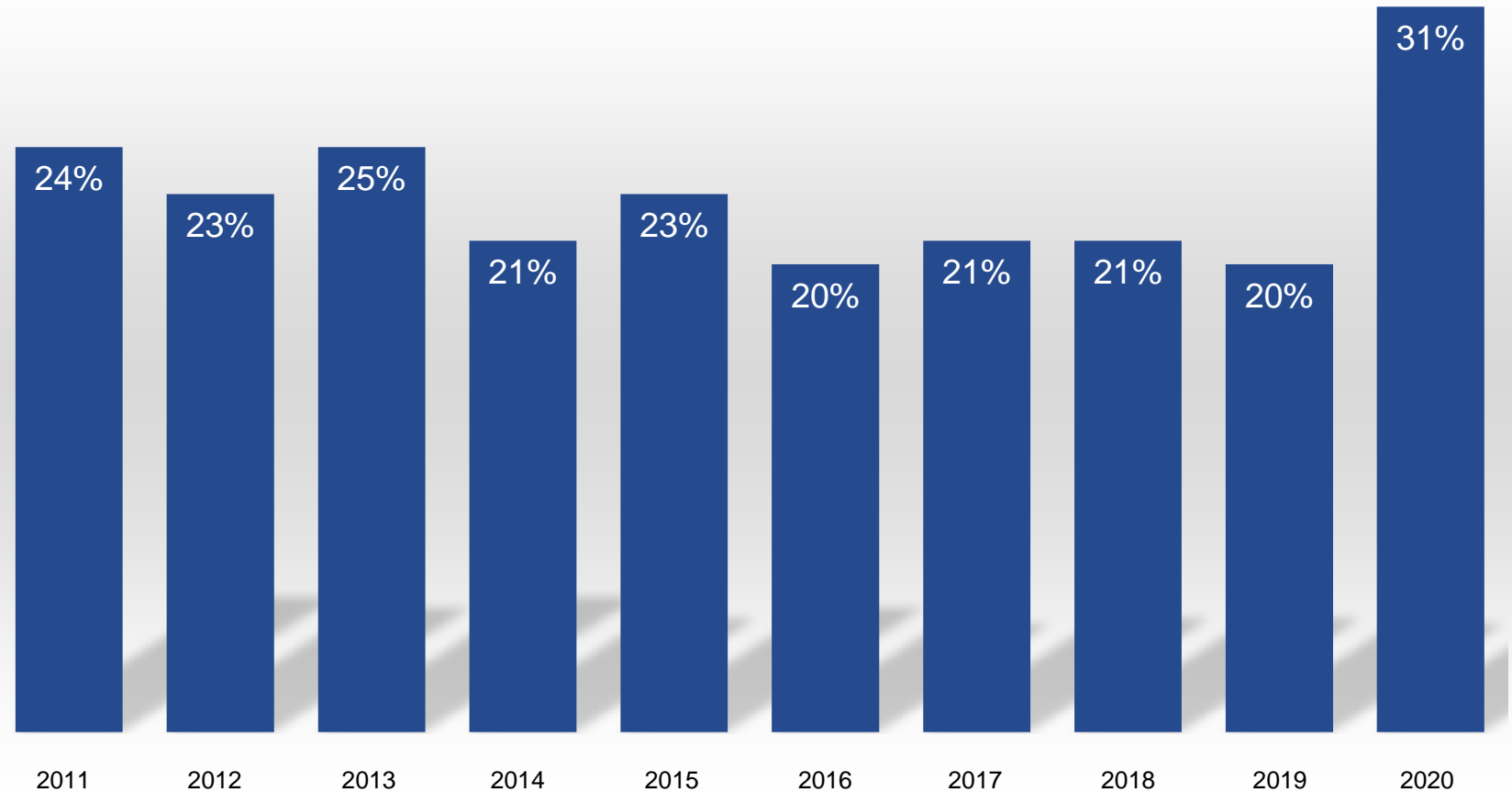
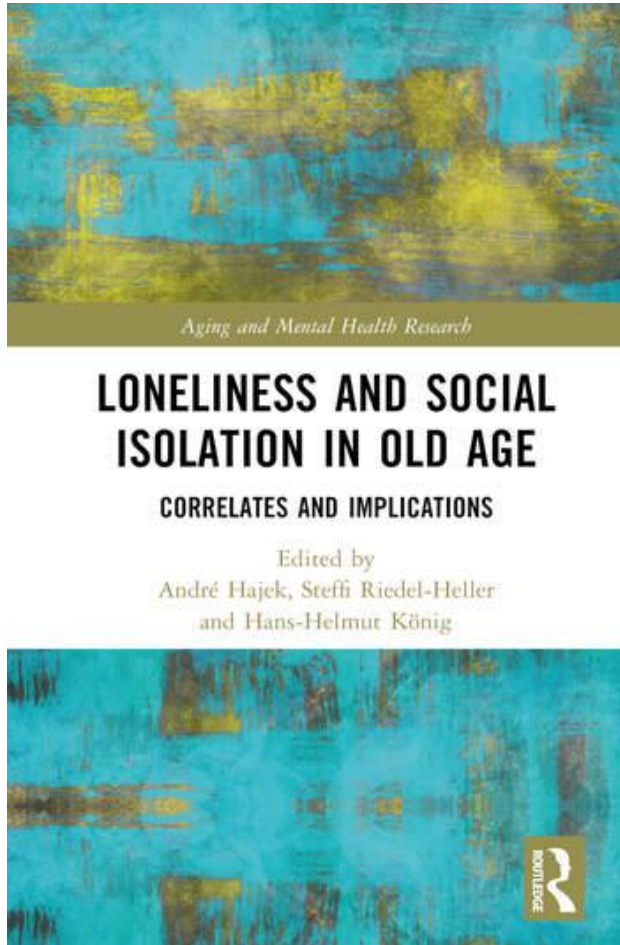
- An estimated 7.7 million community dwelling older adults are socially isolated.
- After adjusting for demographic and economic factors we found that being unmarried, male, poorly educated, lower income were correlates of social isolation.
- Black and Hispanic race compared to White race demonstrated a lower association with social isolation, in adjusted analysis.

# Social Isolation prevalent and changes



National Health &  
Aging Trends Study

how daily life changes as we age



Cudjoe. Correlates of loneliness and social isolation in old age: Poverty. ISBN: 1000890481



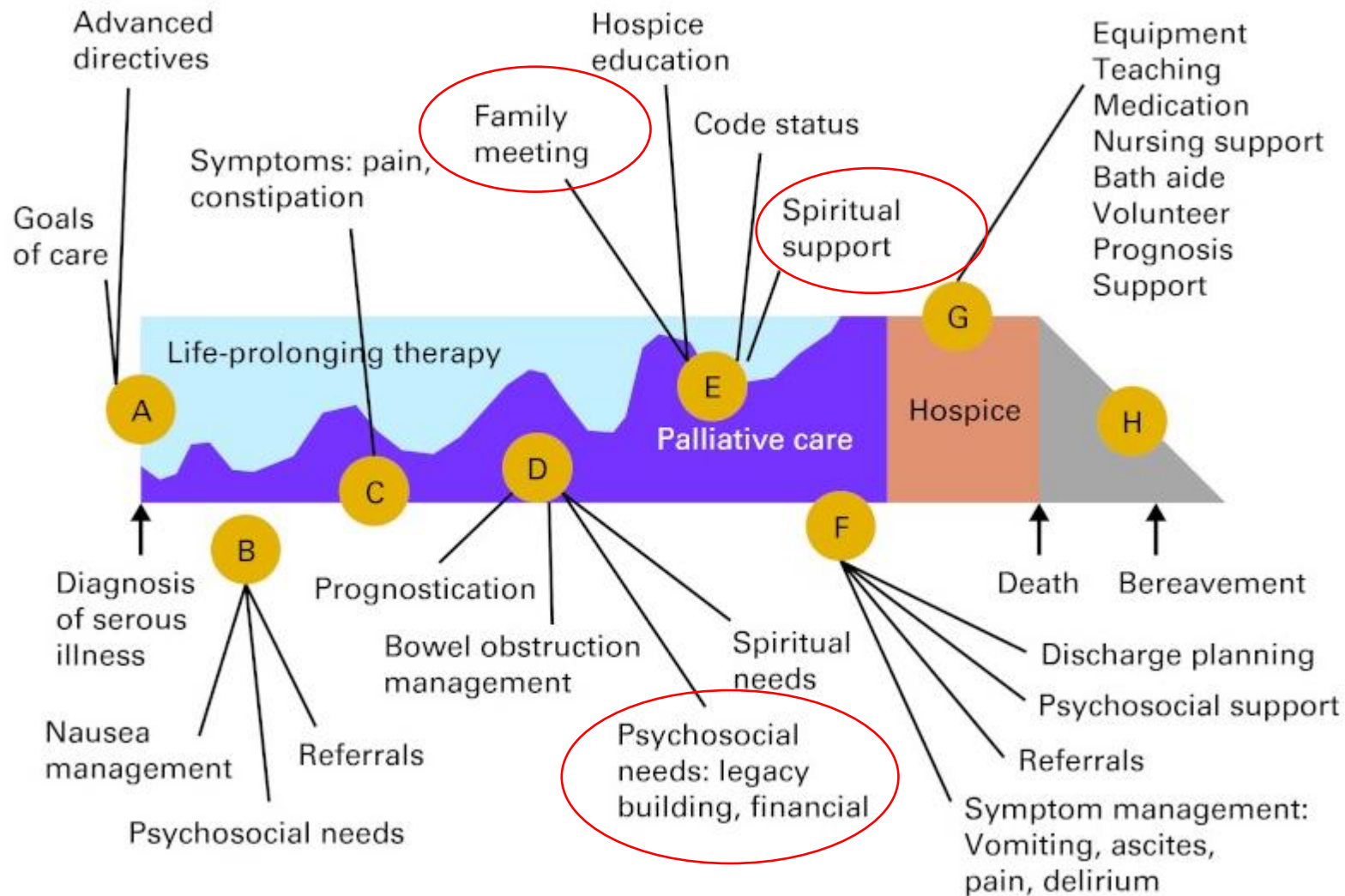
# Going through difficult times with no support.



## Background

- EOL discussions and plans are a critical aspect in the care of older adults.
- Numerous barriers exist that prevent these important discussions and processes.
- Socially isolated individuals may be at greater risk for not having discussed their EOL plans and care wishes with anyone, identified a legal proxy, or put these wishes in writing.

# Intervention points for End of life planning



Christian Sinclair, MD,  
FAAHPM

# Objective to examine social isolation and end of life care decisions

Using NHATS compare response (yes/no) on three questions between socially isolated vs socially integrated participants:

- (1) discussion with anyone about the medical treatment desired if seriously ill-(EOL discussion)
- (2) legal arrangements for a proxy to make treatment decisions- Durable power of attorney (DPOA)
- (3) written instructions about treatment desired if unconscious or unable to communicate- Advance Directive (AD)

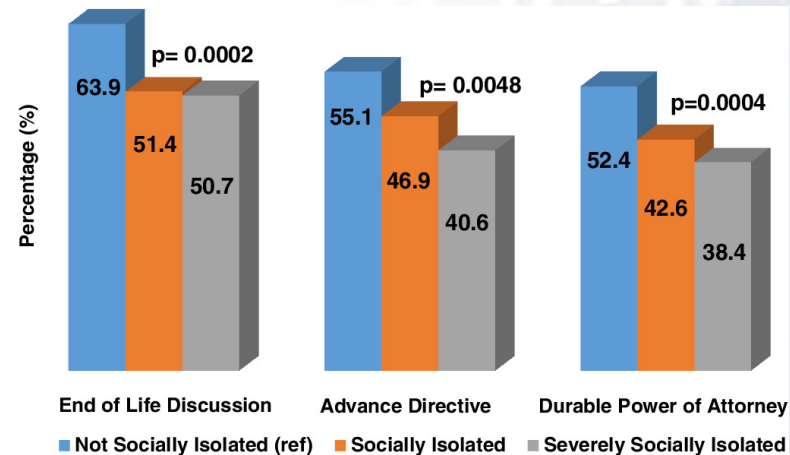
# Adjusted Analysis

Logistic regression analysis was performed to evaluate the association between social isolation and EOL plans and care, after adjusting for age, marital status, gender, race, education, income and self-rated health.

	Social Isolation	95% Confidence Interval
EOL discussion	0.63	0.49,0.81
DPOA	0.70	0.54,0.91
AD	0.77	0.59,1.01

# Social Connection Matters at the End of Life

- Older adults who experience social isolation have lower odds of having EOL discussions or a DPOA.
- More studies are needed to further understand the end of life plans and care wishes of socially isolated older adults, and the best strategies to address these important issues in practice.





# Social Connection Matters at the End of Life

- Older adults with limited social connections
  - *lower percentages of all end of life care planning processes*
  - *lower odds of having a serious illness discussion and a durable power of attorney (adjusted models)*

# Social isolation matters at the cellular level

Received: 7 June 2021 | Revised: 13 September 2021 | Accepted: 1 October 2021

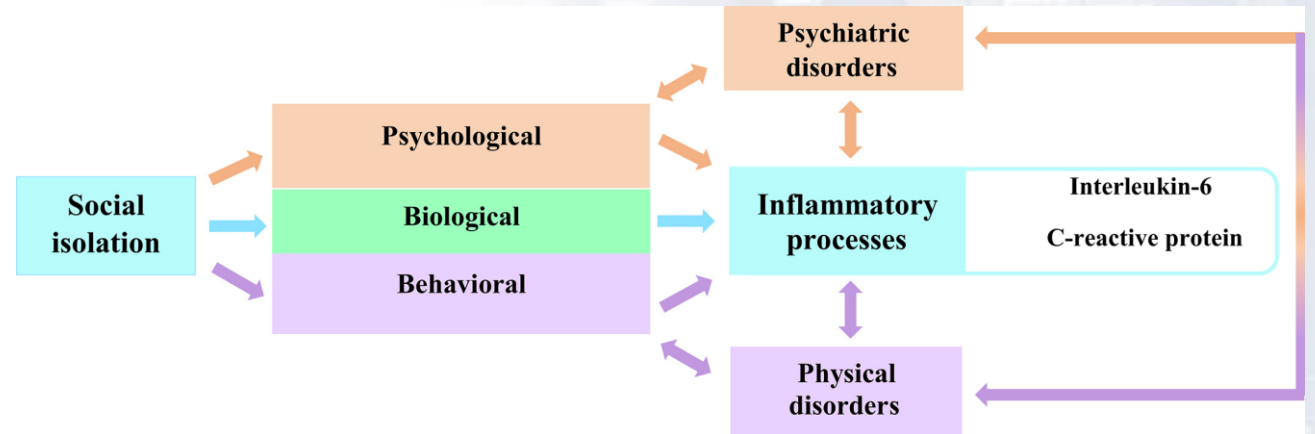
DOI: 10.1111/jgs.17518

Journal of the  
American Geriatrics Society

## Getting under the skin: Social isolation and biological markers in the National Health and Aging Trends Study

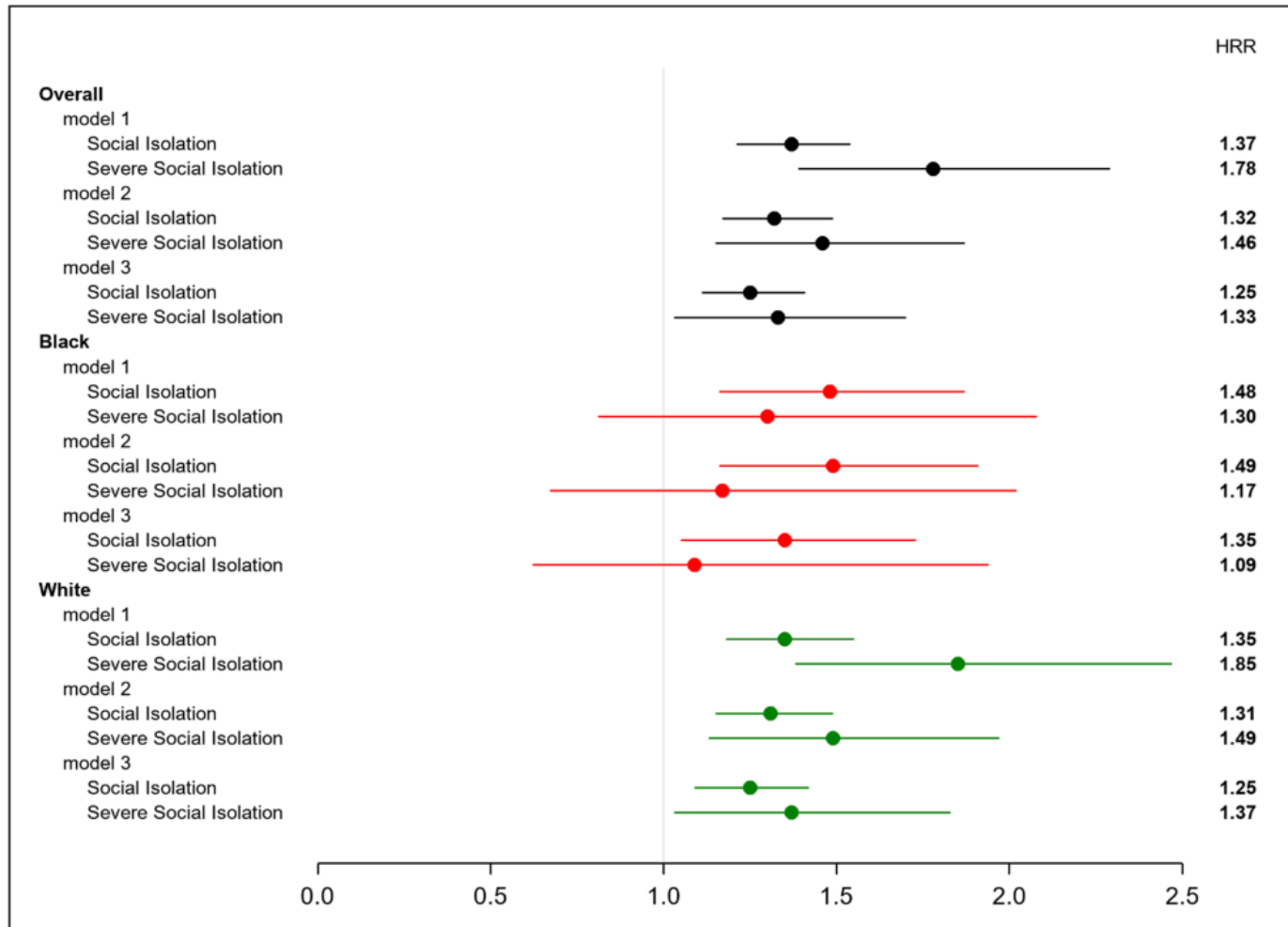
Thomas K. M. Cudjoe MD, MPH<sup>1</sup> | Sruthi Selvakumar MS<sup>1</sup> |  
Shang-En Chung ScM<sup>1</sup> | Carl A. Latkin PhD<sup>2</sup> | David L. Roth PhD<sup>1</sup> |  
Roland J. Thorpe Jr PhD<sup>2</sup> | Cynthia M. Boyd MD, MPH<sup>1</sup>

Community dwelling older adults who experienced social isolation had higher levels of CRP and IL-6



JOURNAL  
OF THE  
AMERICAN  
GERIATRICS  
SOCIETY

# Socially isolated older adults are at high risk for *becoming* homebound





# Social Isolation increases dementia risk

Received: 10 June 2022 | Revised: 26 September 2022 | Accepted: 26 October 2022

DOI: 10.1111/jgs.18140

Journal of the  
American Geriatrics Society

## Social isolation and 9-year dementia risk in community-dwelling Medicare beneficiaries in the United States

Alison R. Huang PhD<sup>1</sup> | David L. Roth PhD<sup>2</sup> | Tom Cidav MS<sup>2</sup> |  
Shang-En Chung ScM<sup>2</sup> | Halima Amjad MD, MPH, PhD<sup>2</sup> |  
Roland J. Thorpe Jr. PhD<sup>3</sup> | Cynthia M. Boyd MD, MPH<sup>2</sup> |  
Thomas K. M. Cudjoe MD, MPH<sup>2</sup>  

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GERIATRICS  
SOCIETY

Socially isolated older adults have a 27% higher chance of developing dementia than older adults

Huang et al. JAGS, 2023

# Social Isolation and Dementia

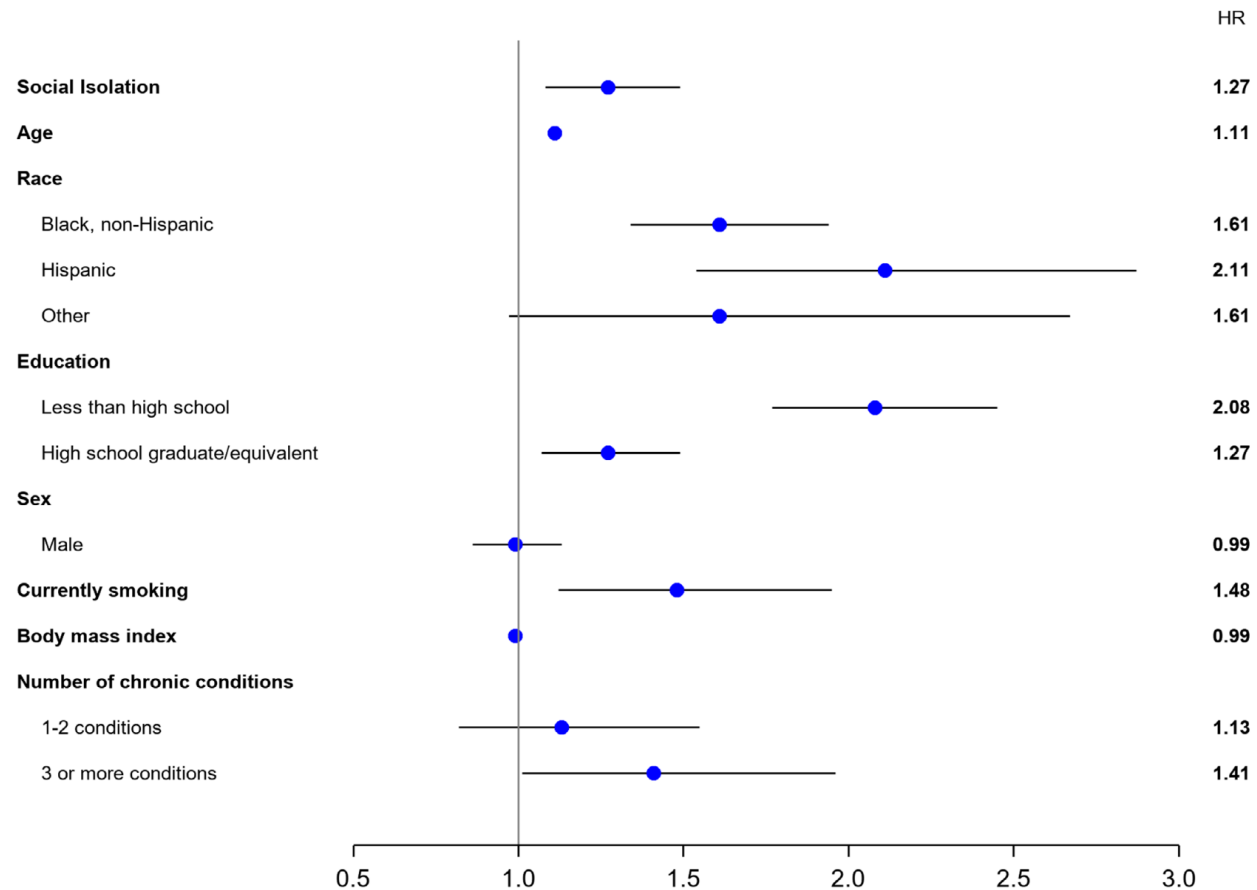
**Chronic loneliness and social isolation can increase the risk of developing dementia by 50%**

-US Surgeon General

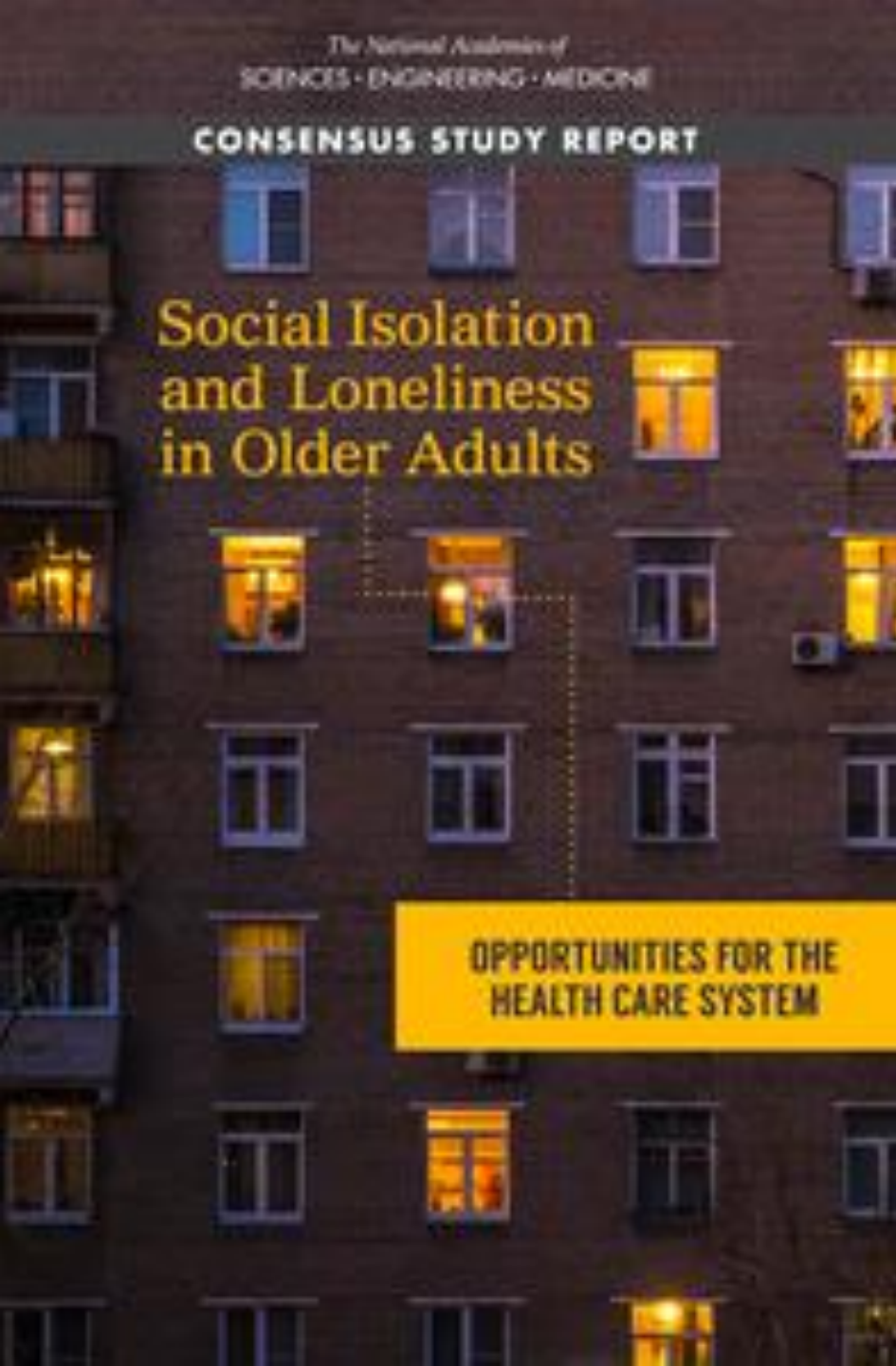
- 28% higher risk incident dementia over 9 years
- The Lancet commission estimates a 4% reduction in dementia prevalence if social isolation were eliminated
- Cognitive abilities declined 20% faster among those who reported loneliness
- Still building evidence in this area

6 JAGS

HUANG ET AL.



**FIGURE 1** Forest plots of hazards risk between social isolation and incident dementia over a 9-year period in the National Health and Aging Trends Study (2011–2020)



**Develop a More Robust Evidence Base**

**Translate Research into Healthcare Practice**

**Improve Awareness**

**Strengthen Education & Training**

**Optimize ties b/w Health Syst. & Community Networks/Resources**

**NASEM, 2020**



# Our Epidemic of Loneliness and Isolation



2023

The U.S. Surgeon General's Advisory on the Healing Effects of Social Connection and Community



**Strengthen Social Infrastructure**

**Enact Pro-Connection Public Policies**

**Mobilize the Health Sector**

**Reform Digital Environments**

**Deepen Our Knowledge**

**Cultivate a Culture of Connection**

**US Surgeon General Advisory, 2023**