Supplementary Online Content

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This supplementary material has been provided by the authors to give readers additional information about their work.

eFigure. Stacked data structure used to examine the impact of social isolation on outcomes over the following two years using the Health and Retirement Study

Social Isolation Time 1		Social Isolation Time 2		Social Isolation Time 3	
2006	2008	2010	2012	2014	2016
Sample A	Sample B	Sample A	Sample B	Sample A	Sample B

Outcomes Time 1		Outcomes Time 2		Outcomes Time 3	
2008	2010	2012	2014	2016	2018
Sample A	Sample B	Sample A	Sample B	Sample A	Sample B

Notes: The Health and Retirement Study (HRS) collects psychosocial data every other wave using a self-administered questionnaire (SAQ) which is left behind with participants at the end of the enhanced in-person interview. Each wave, a rotating random 50% sample of the larger core HRS sample is assigned to complete the SAQ. This analysis examined how social isolation and covariates in an index year (Sample A: 2006, 2010, 2014; Sample B: 2008, 2012, 2016) impacted outcomes (hospitalization, skilled nursing facility stays, nursing home placement) over the subsequent 2 years (Sample A: 2008, 2012, 2016; Sample B: 2010, 2014, 2018).

eTable 1. Six-item measure of social isolation in the Health and Retirement Study

Domain	Metric	Points
Marital status[a]	Not married	1
Living arrangement[b]	Lives alone	1
Social contact[c]	Less than monthly contact with children	1
	Less than monthly contact with other family	1
	Less than monthly contact with friends	1
Social participation[d]	Less than monthly participation in any groups, clubs, organizations, or religious services	1

[a]Marital status was coded as 0 = married or partnered and as 1 = separated, divorced, widowed, or never married.
[b]Living arrangement was dichotomized into 0 = more than 1 person in the household versus 1 = lives alone.
[c]Nine questions asked, on average, how often respondents meet up with, speak on the phone with, or write to children, family, or friends who do not live with them. Responses to each of these questions included: three or more times a week; once or twice a week; once or twice a month; every few months; once or twice a year; or, less than once a year/never. The three forms of contact (meet, speak, write) were collapsed into one variable each for children, family, and friends. The resulting three variables were coded as 0 = once a month or more versus 1 = less than monthly.
[d]Variables capturing participation in groups, clubs, organizations, or religious services were combined to create a single indicator, where participation in these activities was denoted as 0 = once a month or more and 1 = less than monthly.

eTable 2. Factors Associated with Hospitalization among Community-dwelling Older Adults

Characteristic	Odds Ratio	95% Confidence Interval	P-Value
Social isolation score	0.97	0.93 – 1.01	0.130
Loneliness score	1.01	0.98 – 1.05	0.398
Depression score[***]	1.09	1.06 – 1.12	<0.001
Time point			
Time 1 (2008-2010)	Ref.		
Time 2 (2012-2014)[**]	0.86	0.78 – 0.94	0.002
Time 3 (2016-2018)[***]	0.78	0.70 – 0.86	<0.001
Female	0.94	0.85 – 1.03	0.187
Age, years			
65 to 74	Ref.		
75 to 84[***]	1.40	1.28 – 1.54	<0.001
85 to 94[***]	1.78	1.53 – 2.08	<0.001
95 or older[***]	3.85	1.93 – 7.67	<0.001
Race			
White	Ref.		
Black	0.85	0.73 – 1.00	0.051
Other	1.09	0.83 – 1.43	0.532
Hispanic[***]	0.62	0.50 – 0.76	<0.001
Medicaid[**]	1.30	1.07 – 1.57	0.009
Smokes[**]	1.27	1.07 – 1.51	0.005
Not physically active[**]	1.14	1.04 – 1.25	0.005
ADL difficulty score[***]	1.29	1.17 – 1.42	<0.001
IADL difficulty score	1.02	0.90 – 1.16	0.747
Number of chronic illnesses[***]	1.40	1.35 – 1.46	<0.001
Alzheimer's disease and related dementias[**]	1.59	1.19 – 2.14	0.002

Notes. Weighted N = 209,922,113; Unweighted n = 21,209 person-years. Social isolation was measured through a 6-item scale with scores ranging from 0-6 and higher scores indicating more severe social isolation. Loneliness was measured through the 3-item UCLA Loneliness Scale with scores ranging from 3-9 and higher scores indicating more severe loneliness. Depressive symptoms were measured through the 8-item Center for Epidemiological Studies-Depression Scale with scores ranging from 0-8 and higher scores indicating more severe depression.
Abbreviations. Ref: reference group; ADL: activities of daily living; IADL: instrumental activities of daily living.

[*]Significant at $p < 0.05$.
[**]Significant at $p < 0.01$.
[***]Significant at $p \leq 0.001$.

eTable 3. Factors Associated with Skilled Nursing Facility Stays among Community-dwelling Older Adults

Characteristic	Odds Ratio	95% Confidence Interval	P-Value
Social isolation score***	1.16	1.06 – 1.28	<0.001
Loneliness score	0.99	0.92 – 1.07	0.842
Depression score**	1.08	1.02 – 1.15	0.010
Time point			
Time 1 (2008-2010)	Ref.		
Time 2 (2012-2014)	1.01	0.79 – 1.30	0.907
Time 3 (2016-2018)	0.90	0.70 – 1.17	0.441
Female**	1.39	1.10 – 1.75	0.006
Age, years			
65 to 74	Ref.		
75 to 84***	2.56	1.99 – 3.28	<0.001
85 to 94***	4.88	3.48 – 6.85	<0.001
95 or older**	6.86	1.92 – 24.51	0.003
Race			
White	Ref.		
Black	0.67	0.45 – 1.01	0.058
Other	0.65	0.28 – 1.51	0.315
Hispanic*	0.53	0.28 – 0.99	0.046
Medicaid	0.88	0.66 – 1.41	0.601
Smokes	0.77	0.48 – 1.22	0.262
Not physically active***	1.82	1.45 – 2.28	<0.001
ADL difficulty score***	1.65	1.37 – 1.99	<0.001
IADL difficulty score	0.91	0.71 – 1.18	0.482
Number of chronic illnesses***	1.43	1.30 – 1.57	<0.001
Alzheimer's disease and related dementias*	1.80	1.04 – 3.12	0.036

Notes. Weighted N = 209,422,777; Unweighted n = 21,159 person-years. Social isolation was measured through a 6-item scale with scores ranging from 0-6 and higher scores indicating more severe social isolation. Loneliness was measured through the 3-item UCLA Loneliness Scale with scores ranging from 3-9 and higher scores indicating more severe loneliness. Depressive symptoms were measured through the 8-item Center for Epidemiological Studies-Depression Scale with scores ranging from 0-8 and higher scores indicating more severe depression.
Abbreviations. Ref: reference group; ADL: activities of daily living; IADL: instrumental activities of daily living.

*Significant at $p < 0.05$.
**Significant at $p \leq 0.01$.
***Significant at $p \leq 0.001$.

eTable 4. Factors Associated with Nursing Home Placement Among Previously Community-dwelling Older Adults

Characteristic	Odds Ratio	95% Confidence Interval	P-Value
Social isolation score[**]	2.01	1.21 – 3.32	0.007
Loneliness score[*]	1.43	1.08 – 1.90	0.012
Depression score	1.02	0.84 – 1.23	0.835
Time point			
Time 1 (2008-2010)	Ref.		
Time 2 (2012-2014)	1.64	0.56 – 4.80	0.368
Time 3 (2016-2018)	2.89	0.53 – 15.74	0.220
Female	2.30	0.96 – 5.51	0.062
Age, years[a]			
65 to 74	Ref.		
75 to 84[**]	21.55	2.18 – 212.75	0.009
85 to 94[*]	1594.61	1.59 – 1601627	0.037
95 or older[*]	24832.44	7.05 – 87500000	0.015
Race			
White	Ref.		
Black[*]	0.19	0.05 – 0.80	0.024
Other	0.24	0.02 – 3.40	0.292
Hispanic[*]	0.04	0.003 – 0.62	0.021
Medicaid	1.92	0.65 – 5.68	0.238
Smokes[*]	0.19	0.04 – 0.94	0.041
Not physically active[**]	3.27	1.51 – 7.09	0.003
ADL difficulty score[*]	2.46	1.22 – 4.96	0.012
IADL difficulty score[*]	1.96	1.09 – 3.54	0.026
Number of chronic illnesses	1.06	0.83 – 1.36	0.633
Alzheimer's disease and related dementias[a*]	56.06	2.14 – 1466.11	0.016

Notes. Weighted N = 210,813,081; Unweighted n = 21,294 person-years. Social isolation was measured through a 6-item scale with scores ranging from 0-6 and higher scores indicating more severe social isolation. Loneliness was measured through the 3-item UCLA Loneliness Scale with scores ranging from 3-9 and higher scores indicating more severe loneliness. Depressive symptoms were measured through the 8-item Center for Epidemiological Studies-Depression Scale with scores ranging from 0-8 and higher scores indicating more severe depression.

Abbreviations. Ref: reference group; ADL: activities of daily living; IADL: instrumental activities of daily living; ADRD: Alzheimer's disease and related dementias.

[a]Unstable estimates for odds ratios and confidence intervals are associated with small cell size.

[*]Significant at $p < 0.05$.
[**]Significant at $p < 0.01$.
[***]Significant at $p \leq 0.001$.