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Research Note

Cognitive impairment and partnership status in the United States, 1998–2016, by sex, race/ethnicity, and education

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Cognitively impaired adults without a partner are highly disadvantaged, as partners constitute an important source of caregiving and emotional support. With the application of innovative multistate models to the Health and Retirement Study, this paper is the first to estimate joint expectancies of cognitive and partnership status at age 50 by sex, race/ethnicity, and education in the United States. We find that women live a decade longer unpartnered than men. Women are also disadvantaged as they experience three more years as both cognitively impaired and unpartnered than men. Black women live over twice as long as cognitively impaired and unpartnered compared with White women. Lower-educated men and women live around three and five years longer, respectively, as cognitively impaired and unpartnered than more highly educated men and women. This study addresses a novel facet of partnership and cognitive status dynamics and examines their variations by key socio-demographic factors.

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Keywords: cognitive impairment; partnership status; multistate model; cognitive health expectancies; partnership expectancies; health disparities; longitudinal analysis

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Introduction

Longer life expectancy in the United States (US) translates to more people living at higher-risk ages for cognitive impairment; this is even more consequential considering the size of the ageing baby boomer generation. All boomers will be aged 65+ (henceforth ‘older adult’) by 2030 (Colby and Ortman 2014). Age is the strongest risk factor for developing cognitive impairment (World Health Organization 2021). Nearly 18 million older adults in the US are cognitively impaired, and the number is expected to reach over 35 million by 2060 (Rajan et al. 2021). The burden of cognitive impairment on affected individuals, their families, healthcare

workers, and society is substantial and growing (Wimo et al. 2013; Alzheimer’s Disease International 2016).

In addition to the substantial demographic shift in the population age structure, there has been a dramatic shift in partnership status composition in the US in recent decades. The share of unmarried (never-married, divorced, and widowed) adults increased from 22 per cent in 1980 to 34 per cent in 2009 (Lin and Brown 2012). In particular, the divorce rate doubled among those aged 50+ between 1990 and 2010 (Brown and Lin 2012). Although the number of unmarried cohabiters aged 50+ also increased from 1 million to 3 million between 2000 and 2013, their share of the unmarried

subgroup (about 4 per cent) remained stable (Brown et al. 2006; US Census Bureau 2014). Importantly, 91 per cent of unmarried boomers were living without a partner in 2009 (Lin and Brown 2012). Because the large baby boomer generation is entering older adulthood, these trends suggest that the share of the older US population living without a spouse/partner will increase considerably. This is a matter of serious concern, as unpartnered adults are also disadvantaged from socio-economic and demographic perspectives. For example, most unpartnered boomers live alone, and compared with the partnered their educational attainment tends to be lower, their unemployment higher, and their poverty five times greater (Lin and Brown 2012).

The dramatic shift in partnership status composition will also have implications for the provision of care and support at older ages, especially for those with cognitive impairment. Cognitive impairment is one of the most expensive health conditions (Hurd et al. 2013), and the financial burden of formal caregiving is considerably higher than that of informal caregiving (Genworth 2020). Consequently, about 81 per cent of adults with cognitive impairment live in the community, and the rest receive formal care in residential care settings or nursing homes (Lepore et al. 2017). Partners/spouses are an important source of informal caregiving, and cognitively impaired adults receive care assistance mostly from their partners/spouses (Schulz and Martire 2004). Moreover, partners are an essential source of social support (Gerstel et al. 1985; Waite and Gallagher 2000), and being partnered is an important component of successful ageing (Pruchno et al. 2010). In other words, being unpartnered at older ages, whether it be through separation, divorce, widowhood, or never marrying or forming a partnership, means loss or absence of an essential component of care, social support, and successful ageing. Consequently, the co-occurrence of unpartnered status and cognitive impairment can be a substantial disadvantage, especially for those who spend longer in that state, placing them at higher risk of needing care, as well as increasing pressure on other family members for care and support. Moreover, family size is also shrinking in the US (Hughes and Angela 2004). It is a matter of concern that the number of adults experiencing co-occurrence of unpartnered status and cognitive impairment is likely to increase due to the substantial demographic shifts and also the interrelationship between partnership status and cognitive impairment described next.

Unpartnered adults are more likely than partnered adults to experience cognitive impairment

(Sommerlad et al. 2018). Two primary explanations have been posited to explain health differences by partnership status. One set of explanations, *partnership selection*, suggests that healthier people are more likely to form partnerships, whereas the unhealthy are more likely to remain unpartnered (Wu et al. 2012; Franke and Kulu 2018). In contrast, the other set of explanations, *partnership causation*, suggests that marriage (or co-residential union) promotes health by providing economic and socio-psychological resources (Waite and Gallagher 2000; Zella 2017; Liu et al. 2020). Increased economic resources help to improve general as well as cognitive health, by improving nutritional status, increasing the ability to buy medical treatment, and facilitating access to other health-promoting resources (Waite and Gallagher 2000). Living with a spouse/partner provides individuals with the opportunity to widen their social network. Higher social engagement and more dense social networks can act as protective factors against the risk of cognitive impairment (Sommerlad et al. 2018). A causal effect of partnership on cognitive impairment may also operate through the negative health effects of partnership dissolution or widowhood as stressors (Williams and Umberson 2004). Notably, the partnership causation and selection explanations are not mutually exclusive. Evidence suggests that partnership causation and selection are both important explanations of health disparities by partnership status (Franke and Kulu 2018).

What follows from these associational investigations is that the number of cognitively impaired, unpartnered older people in the US is likely to increase considerably in coming years as cases of cognitive impairment and the share of unpartnered adults are both rising (Lin and Brown 2012; Rajan et al. 2021). Moreover, population ageing, which is projected to increase the size of the older-adult population from 55 million in 2020 to 73 million by 2030 (Ortman et al. 2014), is directly increasing the size of the population at risk of the co-occurrence of cognitive impairment and unpartnered status.

Sex, race/ethnicity, and education are three key socio-demographic factors significantly associated with both partnership status and cognitive health. Women, Black people, and the lower educated are at higher risk of being unpartnered at ages 50+ compared with men, White people, and the more highly educated, net of socio-demographic factors (Brown and Lin 2012). Compared with men aged 50, women of the same age will experience greater lifetime risk of cognitive impairment (Hale et al. 2020). Risks of cognitive impairment are higher among the

lower educated and among Black and Latinx adults compared with their counterparts, net of other risk factors (Langa et al. 2008; Reuser et al. 2011; Chen and Zissimopoulos 2018). Examining how the risks of cognitive impairment and being unpartnered translate into life expectancy in the cognitively impaired unpartnered state by these key socio-demographic factors will help to identify vulnerable subgroups disadvantaged due to their spending longer in cognitive impairment without an important source of caregiving and social support.

With the application of innovative discrete-time multistate models to high-quality, nationally representative longitudinal data—the Health and Retirement Study (HRS), 1998–2016—this study is the first to estimate life expectancy at age 50 in the cognitively impaired and unpartnered state by sex, race/ethnicity, and education. Furthermore, we also present partnership expectancies for these key subgroups. In recent decades there has been a lack of research on partnership expectancy, which summarizes individuals' partnership experiences over the life course and helps to identify subgroups exposed to the vagaries of older age due to longer exposure in the unpartnered state.

Methods

Data

We use data from the HRS, a nationally representative longitudinal survey of US residents aged 50+ and their spouses. The HRS is conducted by the Institute for Social Research at the University of Michigan and is supported by the National Institute on Aging and the US Social Security Administration (National Health Services 2019). Additional details of the HRS can be found elsewhere (Fisher and Ryan 2018). We use the RAND-HRS longitudinal file 2016 (v2), which includes imputed cognitive function scores (McCammon et al. 2019). We restrict the sample to adults aged 50–100 who provided information on partnership and cognitive status in at least two waves during 1998–2016, resulting in 35,081 adults. Less than 0.2 per cent of the analytical sample are missing data on any of the predictors. We remove adults with these missing observations using listwise deletion, which yields the final analytical sample of 34,850 individuals contributing 183,352 transitions.

Participants provided written informed consent and the University of Michigan Health Sciences and Behavioral Sciences Institutional Review

Board approved the protocols. There are no direct identifiers in the data, which ensures anonymity of the participants.

Measure: Cognitive function

For self-respondents, the HRS uses a modified Telephone Interview for Cognitive Status test, which includes several tasks to assess cognitive function. We sum the task scores—immediate (0–10 points) and delayed word recall (0–10 points), serial 7s (0–5 points), and counting backwards (0–2 points)—giving a total range of 0–27. Self-respondents with scores of 12–27 and 0–11 are classified as not cognitively impaired (NCI) and cognitively impaired (CI), respectively. Prior research has validated these ranges for self-respondents (and also for the proxies described next) using the Aging, Demographics, and Memory Study, a sub-study of the HRS that uses hours of clinical and neuropsychological assessment and expert clinician judgement to yield a gold-standard diagnosis of cognitive impairment (Langa et al. 2005; Crimmins et al. 2011).

For proxy respondents, we follow the approach of Langa et al. (2017) of categorizing cognitive function. Before 2000, these measures included proxy's direct assessment of respondent's memory (0 = excellent, 4 = poor) and respondent's limitations in five instrumental activities of daily living: managing money, taking medication, preparing hot meals, using the phone, and shopping for groceries (score 0–5). The ranges for 1998 were 0–2 for NCI and 3–9 for CI. After 2000, another measure—interviewer's assessment of respondent's difficulty completing the interview due to cognitive limitations—was included (0 = none, 1 = some, and 2 = prevented completion). The ranges for 2000–16 were 0–2 for NCI and 3–11 for CI. We have determined that the changes in proxy measures before and after 2000 do not significantly affect our results.

Measure: Partnership status

Because we are interested in defining the benefits of partnership (vs marriage per se) and due to the complexity of co-defining partnership and cognitive status, in the main analysis we simplify partnership to two categories. We define 'unpartnered' as separated, divorced, widowed, or never married, as compared with 'partnered', which covers married and partnered. In the supplementary analysis (section I), we consider individuals as partnered only if they

are married. In both analyses, the dependent variable comprises the combined cognitive and partnership states (next subsection).

Dependent variable

The dependent variable is a five-state variable: NCI partnered, CI partnered, NCI unpartnered, CI unpartnered, and dead. These states form the Markov state space. Deaths are reported to the HRS and verified through the National Death Index.

Independent variables

Age is a continuous variable. The HRS reports sex as a binary variable. Race/ethnicity is self-reported as non-Latinx White, Latinx Black, non-Latinx Black, and non-Black Latinx. We combine Latinx Black and non-Latinx Black adults because of their similar health outcomes (Chinn and Hummer 2016). Henceforth, we refer to non-Latinx White as ‘White’, Latinx and non-Latinx Black as ‘Black’, and non-Black Latinx as ‘Latinx’. Educational categories are: less than high school; high school (HS)/ general equivalency degree (GED)/ some college; and associate degree or higher. In the latter category we combine higher degrees because for earlier cohorts, attendance at a university with a four-year (or longer) course, especially for Blacks/Latinx people, would result in too-small sample sizes.

Practice effects are a common problem in cognitive tests in longitudinal surveys. Due to repeated testing, participants become familiar with the test, which can mask cognitive decline (Rabbitt et al. 2004). Therefore, we also adjust for the number of cognitive tests (i.e. practice effects) taken. Practice effects is a categorical variable with four standard categories: first, second, third to sixth, and seventh or higher cognitive test taken (Goldberg et al. 2015). A fifth category is added separately for those with proxy responses (Hale et al. 2020).

Statistical analysis

We calculate the average number of years in each state of the Markov state space using Markov chain multistate models, and the central inputs are transition probabilities. The HRS is fielded

biennially, so transition probabilities are calculated across waves which are two years apart. To be included in the multistate calculation, individuals need to provide information in at least two waves.

To calculate transition probabilities for the total population, we estimate the following multinomial logistic regression model, by sex:

$$\log\left(\frac{p_{ij}}{p_{iN}}\right) = a_{ij} + b_{1,ij} \text{ Age} + b_{2,ij} \text{ Age}^2 + b_{3,ij} \text{ Practice effect} \quad (1)$$

where p_{ij} is the transition probability from current (i) to future (j) state (that also includes the absorbing state ‘dead’); N indicates the reference state ‘NCI partnered’; a_{ij} is the intercept; Age is age during follow-up; and $b_{3,ij}$ is the coefficient vector related to the practice effect categories.

To calculate the biennial transition probabilities by race/ethnicity, we add race/ethnicity to the regression model without education (and the opposite for probabilities by education). This is because we are interested in studying the burden in the US older population of being both cognitively impaired and unpartnered, by race/ethnicity and educational attainment. Notably, this is a different goal from in a covariate adjustment approach that would report the racial/ethnic disparities if Black, White, and Latinx adults did not differ in educational attainment. However, they do differ, which leads to inequalities in the burden, and that is what we are assessing. In calculating the transition probabilities, practice effect is set to the second interview, as explained earlier. In the supplementary material (section II and associated section III), we provide a detailed description of the estimation procedure. We estimate 95 per cent confidence intervals using bootstrapping (500 replications) and conduct analyses using R.

Results

Table 1 describes the socio-demographic characteristics of the sample across 1998–2016.

Overall, NCI partnered (54 per cent) and CI partnered (9 per cent) adults contribute the highest and lowest shares of person-years, respectively. The mean age of the sample is 69 years. Women, Black adults, and the lowest educated contribute around two, three, and eight times more person-years in cognitive impairment while unpartnered than do men, White adults, and the highest educated, respectively.

Table 1 Sample description (percentage of person-years): adults aged 50–100 in the US, 1998–2016

	Partnered	Unpartnered	NCI partnered	CI partnered	NCI unpartnered	CI unpartnered	Total
Overall	63	36	54	9	26	10	100
Age (average)	–	–	66	73	69	78	69
Sex							
Women	52	47	46	6	34	13	58
Men	78	22	65	13	16	6	42
Race/ethnicity							
White	67	33	60	7	25	8	73
Black	46	54	34	12	34	20	17
Latinx	66	34	49	17	21	13	11
Education							
Less than HS ¹	54	46	34	20	21	25	23
HS ¹ /GED ² /some college	63	37	56	7	29	8	52
Associate or higher	71	29	68	3	26	3	25
Total person-years	116,192	67,160	99,565	16,627	48,112	19,048	183,352

¹High school.²General equivalency degree.

Note: *N* respondents = 34,850. NCI refers to not cognitively impaired; CI refers to cognitively impaired. Percentages are row percentages apart from the final column, which gives column percentages.

Source: Health and Retirement Study, 1998–2016.

Total life expectancies and partnership expectancies

Tables 2 and 3 show total life expectancies and partnership expectancies at age 50 for men and women, respectively. Out of a life expectancy of 28.3 years, men are expected to live 7.5 years as unpartnered. For women, out of a life expectancy of 33.0 years, they can expect to live 17.4 years unpartnered.

Black adults display shorter life expectancies than their White and Latinx counterparts but can expect to live four to five years longer unpartnered than White adults. The lowest-educated adults show the shortest total life expectancies and can expect to live 0.1–0.2 years longer unpartnered than the highest educated. In terms of the share of life expectancy in the unpartnered state, stark disadvantage is observed for Black adults and the lowest educated, especially women, who can expect to spend 70 per cent ($= \frac{21.5}{30.5} \times 100$) and 59 per cent, respectively, of their remaining life expectancies at age 50 unpartnered.

Years spent cognitively impaired unpartnered

Table 4 shows the number of years men and women aged 50 can expect to spend in the CI unpartnered state. In the supplementary material (section IV),

we also present expectancy estimates for all the states of the Markov state space.

Women can expect to live 3.2 more years in the CI unpartnered state than men. Black and Latino men live 3.0 and 1.2 years longer as CI unpartnered, respectively, than White men. Latina women experience 5.7 years more than White women as CI unpartnered, followed by Black women. Women and men with less than HS education live 5.3 and 2.7 years longer, respectively, in the CI unpartnered state than those with an associate degree or higher, and adults with HS/GED/some college education lie in the middle.

Summary and discussion

Alongside population ageing, cognitive impairment has become a major public health concern in the US. A majority of cognitively impaired adults are cared for informally, in part due to the substantial cost associated with formal care. Spouses/partners constitute an important source of informal caregiving, and they are also an essential component of emotional support. Consequently, the co-occurrence of cognitive impairment and unpartnered status can be a substantial disadvantage. However, prior research has been limited mainly to studying the association between partnership status and cognitive impairment. To the best of our knowledge, this is the

Table 2 Total life expectancies and partnership expectancies at age 50, overall and by race/ethnicity and education: men in the US, 1998–2016

	Partnered years	Unpartnered years	Total life expectancy
Overall	20.8	7.5	28.3
<i>Race/ethnicity</i>			
White	21.7	6.9	28.6
Black	15.4	10.8	26.2
Latinx	22.6	7.1	29.7
<i>Education</i>			
Less than HS ¹	18.1	7.4	25.5
HS ¹ /GED ² /some college	20.0	7.7	27.7
Associate or higher	23.7	7.3	31.0

¹High school.²General equivalency degree.

Note: All expectancies are in years.

Source: As for Table 1.

first study to measure the burden of cognitive impairment in the unpartnered and its disparities by sex, race/ethnicity, and education. Furthermore, we also measure partnership expectancies. Other major strengths of the study are the use of: (1) high-quality panel data covering the older US population across nearly two decades; and (2) a multistate model. Unlike the prevalence-based Sullivan method, the multistate approach is based on transition probabilities representing the current population health situation and allows reversible transitions between the states (e.g. moving from NCI partnered to NCI unpartnered and back to NCI partnered). Our findings are novel and extend prior research on partnership and cognitive status.

First, we document partnership expectancies at age 50. Prior research has examined differences in the probability of partnership formation and dissolution across subpopulations. However, no recent study has examined partnership expectancies,

which summarize partnership experiences over the life course in a single indicator and also provide a way of comparing population subgroups in terms of their partnership experiences. Our results indicate substantial socio-demographic differentials. We find that women aged 50 can expect to live a decade longer without a partner than men, which is not surprising. This can be explained largely by greater life expectancy for women than men. We find that Black adults can expect to live a considerably greater share of their remaining life unpartnered, consistent with prior evidence that indicates a higher risk of being unpartnered for Black than Latinx and White adults (Bulanda and Brown 2007; Brown and Lin 2012). Compared with the most highly educated adults, adults with less than HS education can expect to live a greater proportion of their lives after age 50 unpartnered. This is in line with previous studies that have suggested that lower-educated adults are more likely to be unpartnered and less

Table 3 Total life expectancies and partnership expectancies at age 50, overall and by race/ethnicity and education: women in the US, 1998–2016

	Partnered years	Unpartnered years	Total life expectancy
Overall	15.6	17.4	33.0
<i>Race/ethnicity</i>			
White	17.5	16.1	33.6
Black	9.0	21.5	30.5
Latinx	16.1	20.0	36.1
<i>Education</i>			
Less than HS ¹	12.2	17.5	29.7
HS ¹ /GED ² /some college	15.5	17.8	33.3
Associate or higher	18.4	17.3	35.7

¹High school.²General equivalency degree.

Note: All expectancies are in years.

Source: As for Table 1.

Table 4 Expectancies of life in the cognitively impaired and unpartnered state at age 50, by sex, race/ethnicity, and education: US, 1998–2016

	Women	Men
Overall	5.2 (4.6, 5.9)	2.0 (1.6, 2.5)
<i>Race/ethnicity</i>		
White	4.2 (3.6, 4.7)	1.5 (1.3, 1.9)
Black	9.0 (7.9, 10.3)	4.5 (3.6, 5.7)
Latinx	9.9 (8.6, 11.2)	2.7 (2.0, 3.6)
<i>Education</i>		
Less than HS ¹	8.1 (7.1, 9.1)	3.4 (2.8, 4.2)
HS ¹ /GED ² /some college	4.3 (3.7, 4.9)	1.8 (1.4, 2.3)
Associate or higher	2.8 (2.3, 3.2)	0.7 (0.6, 1.0)

¹High school.²General equivalency degree.

Note: All expectancies are in years.

Source: As for Table 1.

likely to form a partnership after separation than more highly educated adults (Stevenson and Wolfers 2007; Brown and Lin 2012). As the large baby boomer generation enters older adulthood, the share of unpartnered older people—a group which disproportionately comprises women, racial/ethnic minorities, and lower-educated adults—is increasing in the US (Lin and Brown 2012). Importantly, these subpopulations can expect to spend a greater proportion of their lives after age 50 unpartnered. Thus, there will be more older individuals than ever living a greater percentage of their later lives without an important source of care and social support.

Second, this study makes a unique contribution by analysing socio-demographic differentials in life expectancy in the highly disadvantaged CI unpartnered state. The findings indicate that older women live longer as CI unpartnered than men. Prior research has suggested that being unpartnered is associated with an increased risk of cognitive impairment (Sommerlad et al. 2018). We find that women live substantially longer unpartnered than men (17.4 vs 7.5 years) after age 50, which exposes them for longer to the higher risk of cognitive impairment than men. Moreover, women's longer total life expectancy increases their time at advanced ages, which brings higher risks of both being unpartnered and being cognitively impaired. These factors may partially explain why women spend longer than men in the CI unpartnered state. Some of the disparity may also be explained by greater economic disadvantage for older women than men in the US (Entmacher et al. 2013), another factor that is likely to affect cognitive health.

Black, Latina, and lower-educated older women are found to be the most disadvantaged, as they

spend considerably longer in the CI unpartnered state. These subpopulations experience earlier onset of cognitive impairment (Hale et al. 2020), and higher racial discrimination (Bleich et al. 2019) and a greater burden of chronic morbidities (Fang et al. 2011; Rodríguez and Campbell 2017) among Black and Latina women place them in a vulnerable position in terms of cognitive health. Education may positively affect cognitive health by enhancing cognitive reserve, protecting against the risk of cognitive impairment (Stern 2002). That Black and Latina women live longer unpartnered and also experience more years cognitively impaired (Hale et al. 2020) is likely to contribute to their considerably longer expectancies in the CI unpartnered state.

Women, Black and Latinx adults, and the lower educated are also disadvantaged from a socio-economic perspective. For example, higher poverty rates for women than men are persistent at older ages (Torres 2014). In other words, older women are more exposed to the challenges of having one of the most expensive health impairments in the face of diminishing resources. Educational attainment, income, and wealth are lower for Black and Latinx adults than White adults (Ryan and Bauman 2016; Williams et al. 2019). Therefore, due to not having access to an important caregiving and social support resource while cognitively impaired, as well as being disadvantaged from a socio-economic perspective, we conclude that women, Black and Latinx adults, and the lower educated are the most in need of access to intervention programmes that include, for example, more in-home care support.

With substantial demographic shifts continuing, the number of CI unpartnered older adults in the US is likely to increase considerably in coming

years. This is an issue of concern, as the care burden of cognitive impairment, in terms of physical, emotional, and financial strain, is greater than the care burden related to other health conditions (e.g. physical disability) (Riffin et al. 2017). In 2021, caregivers of cognitively impaired older people in the US provided about 16 billion hours of informal care (Alzheimer's Association Report 2022). Older minority and socio-economically disadvantaged women experience longer spells as CI unpartnered, and the majority of cognitively impaired adults are dependent on informal care; this is likely to place the care burden heavily on other family members. Prior research has shown that racial/ethnic minority adults are engaged in caregiving activities more frequently than White adults, which is partly due to greater co-residence among the former (Rote and Moon 2016). The longer caregiving burden on racial/ethnic minority and lower-educated adults can adversely affect their economic conditions, as caregivers often report reduced working hours and even ceasing employment due to the intensity of caregiving (Neubert et al. 2021). This issue is further aggravated by the fact that formal care is highly expensive, and minority and lower-educated adults are already disadvantaged socio-economically. Notably, a majority of unpartnered boomers live alone (Lin and Brown 2012). Thus, ageing of the large boomer cohort is also leading to concerns about the availability of support for informal care of the cognitively impaired.

This study is not free of limitations. First, the Markov model assumes that transition from current state to the next state depends only on the current state, and past histories are not taken into consideration (Markov assumption). However, as the Markov assumption keeps the calculation of multi-state models tractable and we are focusing on population-level characteristics, such as average years spent in a particular state, the Markov assumption is a useful tool. Second, underlying cognitive function is not categorical. Categorizing it into two categories of NCI and CI results in a loss of information; however, categorization is necessary to estimate expectancies. Third, for the analytical sample, we include adults aged 50–100 who provided information on partnership and cognitive status in at least two waves, because the unit of analysis for multistate calculation is transition between two observations. Compared with those who are included in the analyses, those excluded are more likely to be lower educated and racial/ethnic minorities. These subpopulations display a poorer cognitive health profile and are more likely to be unpartnered. Therefore, we may

be excluding a disadvantaged group from the final sample. This might lead to an underestimation of the true burden of cognitive impairment without a partner for minority and socio-economically disadvantaged subpopulations.

Studies on partnership status and cognitive health have focused mostly on their association and been concerned with partnership causation and selection mechanisms. For example, studies examining partnership causation tend to be concerned with the influence of partnership selection and vice versa. In contrast, this study investigates the burden of cognitive impairment without a partner/spouse, and both partnership causation and selection mechanisms are parts of the interpretation of our results. For instance, as Blacks live substantially longer without a partner, they are at increased risk of cognitive impairment for a greater number of years. Also, previous studies have shown that they spend longer in cognitive impairment and so are also at increased risk of being unpartnered for a longer period. In other words, both these mechanisms together may explain why Black adults experience longer exposure to the CI unpartnered state.

In sum, by using advanced statistical techniques on nationally representative longitudinal data, this study makes important contributions to the partnership status and cognitive impairment literature by estimating partnership expectancies, CI unpartnered expectancies, and their disparities by key socio-demographic factors. In light of the growing cases of cognitive impairment and increasing share of unpartnered older adults, our findings have important policy implications, as the deficits in informal care and support available for cognitively impaired and unpartnered older adults are likely to place a greater burden on society, and the demand for institutional support is likely to rise in coming years. Further research should investigate the mechanisms behind the observed disparities in expectancies in CI unpartnered.

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- 3 Author contributions: All the authors contributed to the conception and design of the study and had access to the secondary data source. Shubhankar Sharma performed the analyses and wrote the first draft. All authors interpreted the results and revised earlier versions of the paper critically for important intellectual content and approved the final version to be published.
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Disclosure statement

No potential conflict of interest was reported by the authors.

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