Kinlessness and Mortality Risk:
Higher Mortality for those Lacking Close Kin in Older Age

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Short Abstract: Older adults without available family members have worse health and greater likelihoods of being institutionalized. Research on mortality among older adults without available family has found elevated risks of mortality for those who are single or childless, but it has not compared across multiple types of older adult family structure. Drawing on recent research documenting increasing complexity in older adult family forms, including rising levels of kinless older adults without living family members, we use the Health and Retirement Study (HRS) to examine how older adult survival patterns differ between those who have different combinations of partner/spouse, any children, and any living siblings. We then test three mechanisms that may explain differences in survivorship by family structure including social connectedness, physical health, and economic security. We find strong associations between older adult family structure and mortality and that the risk varies by the set of available kin. Older adults without any kin at all have the highest probability of mortality risk, followed by those who only have living children, compared to those who have a partner/spouse, sibling, and children. Social connectedness, physical health, and economic security only explain a small amount of these associations. These findings have implications for older adults, the social support system and safety net, and public policies.

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Introduction

Demographic changes in fertility, mortality, and partnership are increasing the number and proportion of older adults lacking close kin in the United States (Verdery and Margolis 2017). In 1998-2010, 6.6% of adults 55 and above in the US lacked a living spouse and biological children and 1% lacked a partner/spouse, children of any type, siblings, and biological parents (Margolis and Verdery 2017). There is recent growth across birth cohorts in the prevalence of kinlessness (Margolis and Verdery 2017) and expected growth in the future (Verdery and Margolis 2017). This subpopulation tends to have poorer health and greater social and economic disadvantage than older adults with living family members (Margolis and Verdery 2017), and they often do not have available caregivers and experience higher risks of institutionalization (Thomeer, Mudrazija, and Angel 2016). Many studies have examined how mortality is associated with family status among older adults, but few studies have examined mortality risks by family structure – considered as the whole set of ties available to individuals. For example, it has been long noted that married older adults have lower risks of mortality than single older adults (Kaplan and Kronick 2006; Rogers 1996; Waite 2009), but it is unknown whether these risks are lessened for those with living children.

Given the increasing diversity of older adult family structures, driven by the last several decades of demographic changes in American society, it is important to examine family structure rather than just family status. For instance, childbearing has slowly decoupled from marriage in the United States over the last several decades, which means that more older adults today will never have married but will have living children, which may lessen the challenges associated with being single in older adulthood. Research has also examined some mechanisms through which people without family members might be at higher risk of poor health and early mortality. Lack of family members could lead to higher use of long-term care (Thomeer et al. 2016), social isolation (House, Landis, and Umberson 1988), higher rates of loneliness and depression (Fokkema, Gierveld, and Dykstra 2017), and worse health outcomes (Margolis 2013). Other research hypothesizes that aging alone may be more detrimental for some race/ethnic groups than others, and more for men than for women (Klinenberg 2001). Understanding whether those

lacking kin have higher mortality, and why, is important to understand and ameliorate health disparities at older ages and inform public health and policymakers.

Using the Health and Retirement Study, we examine mortality patterns of older adults lacking different combinations of kin compared to older adults with available kin. We ask three research questions. First, do older adults lacking close kin have a higher risk of mortality, and which combinations of kin are most important for survival? Second, to what extent do social connectedness, physical health, or economic security explain the association between kinlessness and mortality? Third, is kinlessness more hazardous for certain demographic groups? We examine differences by race and gender.

Preliminary Results

First, we present descriptive survival curves for respondents with available kin measured at baseline, and then we present hazard ratios from Cox models to see whether higher mortality of those lacking kin can be explained by different potential explanatory factors. Figure 1 shows survival rates for respondents by whether they have a partner/spouse and/or children. Respondents with both a partner/spouse and any children upon entry into HRS have the best survival, followed by those with only a partner/spouse, then only children, and the lowest survival rates are among those with no partner/spouse and no children. For instance, at year 10, there is an 87% probability of survival for those with a partner/spouse and children, 81% probability for those with only a partner/spouse, 74% probability of survival for those with only children, and 71% probability of survival for those without kin. A logrank and Wilcoxon test both show a significant difference in survival curves between these groups (p<.001).

Figure 2 shows survival rates for respondents by whether they lacked a partner/spouse, children, or siblings. Survival rates vary by presence of partner/spouse, children, and siblings, with those who have all three having the greatest survival advantage over time, and the lowest survival advantage is among those with only children alive and those with no kin of any kind. At year 10, 88% of those with all three kin survive, followed by 83% of those with a partner/spouse and sibling, 80% of those with a partner/spouse and children, and 77% of those with a child and sibling survived. The next categories of survival are 74% of those with only a partner/spouse, 73% for those with only a sibling, and 62% of those with only a child, and 63% for those with no

kin. A logrank and Wilcoxon test both show a significant difference in survival curves between these groups (p<.001).

<u>Cox Models</u>

Next, we estimate a series of nested Cox models to test whether adults lacking close kin have higher mortality when accounting for controls, and we test several explanatory mechanisms. Model 2 in Table 1 shows that the patterns highlighted in our descriptive figures for baseline kinlessness hold with control variables. Respondents lacking a partner and child have the highest mortality risk, followed by respondents with only children, then only partners. Older adults with both a partner and child have the lowest mortality risk. The next three models show that social connectedness, physical health, and economic security explain a little of the relationship between kinlessness and mortality risk, with hazard ratios decreasing only slightly. In the final model for baseline kinlessness, Model 6, holding all else constant, respondents lacking all combinations of kin have significantly higher mortality risk than those with a partner and children. Model 7 and 8 test two different measure of kin change. Model 7 allows for our kinlessness measures to vary over the survey, and Model 8 uses the baseline kinless group but enters kin changes while in the survey separately. Both find that holding all else constant and accounting for kin changes while in the survey, respondents lacking combinations of kin have significantly higher mortality risk than those with a partner and children.

Table 2 provides comparable results for our second combination of close kin (partners, children, and siblings). Table 2, Model 2, shows that the patterns highlighted in our descriptive figures for baseline kinlessness hold with control variables. Respondents lacking all three kin have the highest mortality risk, followed by respondents with only children, only a partner, only a sibling, a child and sibling, a partner and a child, and a partner and sibling. Older adults with both all three kin have the lowest mortality risk. The next three models show that social connectedness, physical health, and economic security explain a little of the relationship between kinlessness and mortality risk, with hazard ratios decreasing only slightly. In the final model for baseline kinlessness, Model 6, holding all else constant, respondents lacking combinations of kin have significantly higher mortality risk than those with all three kin. Model 7 and 8 test two different measure of kin change. Model 7 allows for our kinlessness measures to vary over the survey, and Model 8 uses the baseline kinless group but enters kin changes while in the survey separately. Both find that even accounting for these factors, respondents lacking combinations of

kin have significantly higher mortality risk than those with all three kin (with the exception of a partner and sibling in Model 7, which becomes insignificant).

Discussion and Next Steps

The fact that the population of kinless older adults is projected to keep growing makes the higher mortality of older adults lacking kin an important public health issue. Kin connections in older age are associated with mortality risk net of explanatory mechanisms raises questions about how we can better capture *how* families matter, and how we can create similar types of policy supports for older adults without family members.

As we refine our paper before PAA 2019, we will conduct additional analyses that test other potential explanatory mechanisms, including geographic proximity, education of kin, and religiosity, for example. In addition, we will present group differences by gender and race.

Figure 1. Kaplan-Meier Survival Curves by Kinlessness of Partner and Child at Baseline
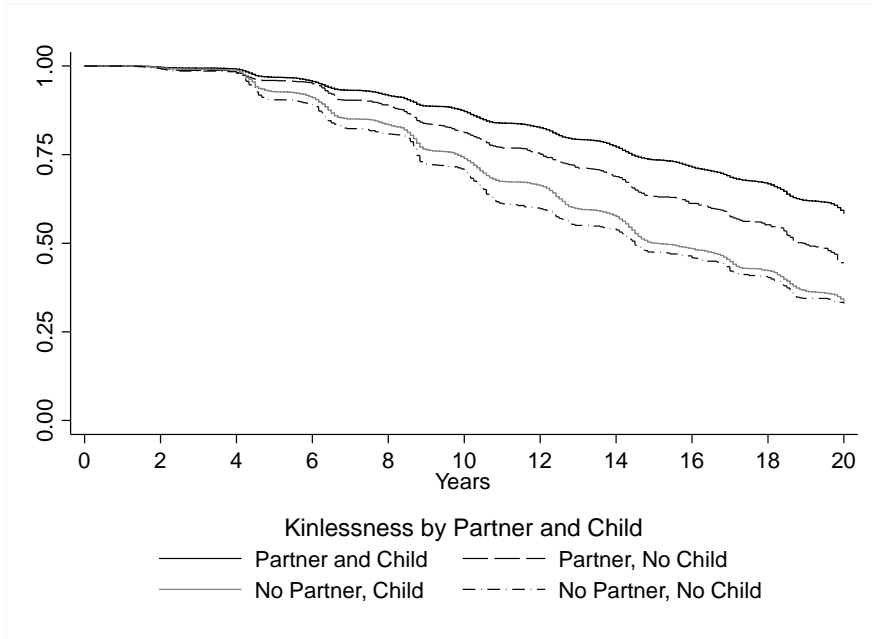
Note: Partner = Partner/Spouse, Child = Any child(ren), Sibling= Any sibling(s)

Figure 2. Kaplan-Meier Survival Curves by Kinlessness of Partner, Child, and Sibling at Baseline
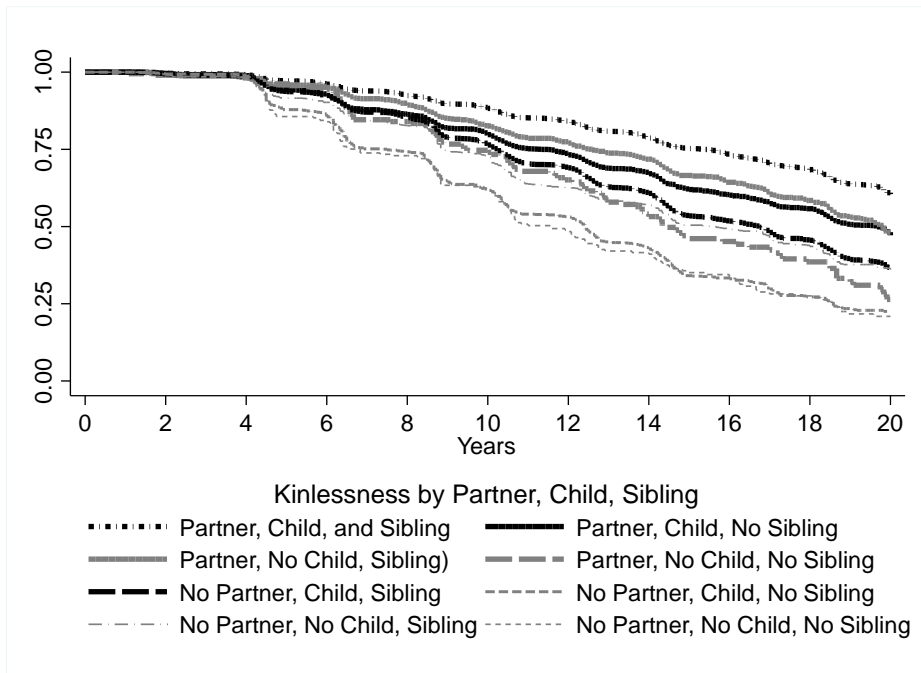
Note: Partner = Partner/Spouse, Child = Any child(ren), Sibling= Any sibling(s)

Table 1. Hazard Ratios for Mortality by Presence of Partner/Spouse and Children

	Model 1 (Kin groups)	Model 2 (M1+Controls)	Model 3 (M2+Social)	Model 4 (M2+Physical)	Model 5 (M2+Economic)	Model 6 (Full Model)	Model 7 (Time Vary Kinless)	Model 8 (M6 + Kin Change)
Partner and Child group omitted								
Partner, No Child	1.470***	1.226***	1.228***	1.201***	1.242***	1.207***	1.149*	1.207***
No Partner, Child	2.080***	1.408***	1.397***	1.252***	1.276***	1.227***	1.175***	1.229***
No Partner or Child	2.288***	1.492***	1.478***	1.313***	1.364***	1.292***	1.286***	1.292***
Female		0.679***	0.640***	0.676***	0.644***	0.652***	0.653***	0.651***
Race (White, Non-Hispanic omitted)								
Black, Non-Hispanic		1.029	1.013	0.931*	0.897***	0.901***	0.912**	0.900***
Hispanic		0.771***	0.733***	0.684***	0.649***	0.658***	0.666***	0.656***
Other, Non-Hispanic		0.914	0.894	0.843*	0.814*	0.818*	0.830*	0.817*
High School Degree		0.715***	0.758***	0.900***	0.818***	0.939**	0.939**	0.945*
Age		1.081***	1.067***	1.060***	1.070***	1.052***	1.052***	1.051***
Social Connectedness								
Lonely			1.316***			1.021	1.002	1.019
Labor Force Participation (not in LF omitted)								
Part-Time			0.401***			0.611***	0.613***	0.611***
Full-Time			0.370***			0.540***	0.540***	0.542***
Physical Health								
Good/Excellent Health				0.487***		0.522***	0.521***	0.523***
# Chronic Conditions				1.002***		1.002***	1.002***	1.002***
Smoking (never smoked omitted)								
Ever smoked				1.282***		1.254***	1.255***	1.255***
Current smoker				1.769***		1.694***	1.694***	1.696***
Obese				0.751***		0.747***	0.751***	0.747***
Number of ADLs				1.131***		1.123***	1.125***	1.124***
Number of IADLs				1.164***		1.159***	1.158***	1.159***
Participate in Vigorous Activity				0.621***		0.644***	0.645***	0.644***
Economic Security								
Logged Wealth					0.946***	0.987***	0.986***	0.987***
Logged Individual Income					0.921***	0.980***	0.979***	0.980***
Kin Changes During Survey								
New Partner								0.923
Become Divorced								0.977
Become Widowed								1.019
Lose a Sibling								1.134***
Lose a Child								0.952

Notes: N=175,160; *** p<0.01, ** p<0.01, * p<0.05; Partner= Partner or Spouse, Child = any child(ren)

Table 2. Hazard Ratios for Mortality by Presence of Partner/Spouse, Children, and Siblings

	Model 1 (Kin Groups)	Model 2 (M1+Controls)	Model 3 (M2+Social)	Model 4 (M2+Physical)	Model 5 (M2 + Econ.)	Model 6 (Full Model)	Model 7 (Time Varying Kinless)	(M6+ Kin Change)
Partner, Child, and Sibling Group Omittted								
Partner, Child, No Sibling	1.576***	1.257***	1.248***	1.167***	1.257***	1.169***	1.226***	1.193***
Partner, No Child, Sibling	1.425***	1.208***	1.209***	1.173**	1.224***	1.181**	1.098	1.181**
Partner, No Child, No Sibling	2.476***	1.595***	1.592***	1.529***	1.607***	1.520***	1.526***	1.554***
No Partner, Child, Sibling	2.028***	1.413***	1.396***	1.261***	1.282***	1.233***	1.200***	1.232***
No Partner, Child, No Sibling	3.389***	1.736***	1.743***	1.420***	1.566***	1.405***	1.356***	1.445***
No Partner, No Child, Sibling	2.231***	1.489***	1.466***	1.320***	1.360***	1.295***	1.302***	1.292***
No Partner, No Child, No Sibling	3.504***	1.855***	1.868***	1.491***	1.702***	1.482***	1.527***	1.520***
Female		0.677***	0.638***	0.675***	0.642***	0.651***	0.651***	0.650***
Race (White, Non-Hispanic omitted)		1.024						
Black, Non-Hispanic		0.777***	1.008	0.927*	0.893***	0.897***	0.910**	0.895***
Hispanic		0.922	0.739***	0.688***	0.655***	0.662***	0.672***	0.660***
Other, Non-Hispanic		0.702***	0.902	0.845*	0.821*	0.820*	0.835*	0.818*
High School Degree		1.079***	0.746***	0.890***	0.805***	0.929**	0.926***	0.934**
Age		1.066***	1.059***	1.069***	1.051***	1.049***	1.050***	
Social Connectedness								
Lonely			1.313***			1.020	1.001	1.019
Labor Force Participation (not in LF omitted)								
Part-Time			0.400***			0.610***	0.614***	0.610***
Full-Time			0.369***			0.540***	0.539***	0.542***
Physical Health								
Good/Excellent Health				0.486***		0.522***	0.522***	0.523***
# Chronic Conditions				1.002***		1.002***	1.002***	1.002***
Smoking (never smoked omitted)								
Ever smoked				1.278***		1.250***	1.247***	1.251***
Current smoker				1.761***		1.686***	1.680***	1.688***
Obese				0.750***		0.747***	0.751***	0.747***
Number of ADLs				1.129***		1.122***	1.123***	1.122***
Number of IADLs				1.164***		1.159***	1.157***	1.159***
Participate in Vigorous Activity				0.621***		0.645***	0.646***	0.644***
Economic Security								
Logged Wealth					0.947***	0.987***	0.986***	0.987***
Logged Individual Income					0.921***	0.979***	0.979***	0.980***
Kin Changes During Survey								
New Partner								0.923
Become Divorced								0.977
Become Widowed								1.016
Lose a Sibling								1.175***
Lose a Child								0.955

Notes: N=175,160; *** p<0.01, ** p<0.01, * p<0.05; Partner= Partner or Spouse, Child = any child(ren), Sibling = any sibling(s)