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Projections of White and Black Older Adults without Living Kin in the United States, 2015-2060

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Projections of white and black older adults without living kin in the United States, 2015 to 2060

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Close kin provide many important functions as adults age, affecting health, financial well-being, and happiness. Those without kin report higher rates of loneliness and experience elevated risks of chronic illness and nursing facility placement. Historical racial differences and recent shifts in core demographic rates suggest that white and black older adults in the United States may have unequal availability of close kin and that this gap in availability will widen in the coming decades. Whereas prior work explores the changing composition and size of the childless population or those without spouses, here we consider the kinless population of older adults with no living close family members and how this burden is changing for different race and sex groups. Using demographic microsimulation and the United States Census Bureau's recent national projections of core demographic rates by race, we examine two definitions of kinlessness: those without a partner or living children, and those without a partner, children, siblings, or parents. Our results suggest dramatic growth in the size of the kinless population as well as increasing racial disparities in percentages kinless. These conclusions are driven by declines in marriage and are robust to different assumptions about the future trajectory of divorce rates or growth in nonmarital partnerships. Our findings draw attention to the potential expansion of older adult loneliness, which is increasingly considered a threat to population health, and the unequal burden kinlessness may place on black Americans.

demography | family | disparities | race | microsimulation

Older adults without kin are some of the most disadvantaged and isolated members of society (1, 2), because close kin are vital sources of social support that affect social, economic, and physical well-being (3, 4). The availability of kin is repeatedly implicated in studies of healthy aging (5, 6), and lacking kin is among the social factors most positively associated with nursing facility placement and quality of care (7, 8). Loneliness appears to be increasing among older adults (9) and is more strongly associated with early mortality than smoking and excessive alcohol consumption (10). Because kin make up the dominant share of most Americans' close confidante networks (11), it is no surprise that loneliness is most prevalent among the never married, widowed, and divorced as well as the childless and those without partners (12, 13). Of course, not all close kin are in contact, geographically proximate, emotionally intimate, or willing or able to exchange resources, but the availability of kin is a necessary condition for their provision of such functions (14). For these reasons, it is important to examine the population dynamics of those who lack close kin (15). In the American kinship system (16), demographic events determine the availability of kin, with marriage and fertility producing kin and death and divorce reducing them. The clear links between demographic processes and kinship networks (17, 18) imply that ongoing demographic changes in American society will shift the availability of living kin in the future. However, a continuing revolution in relationship types in older adulthood, particularly the growth of nonmarital partnerships (19, 20), complicates this picture. To best understand changes in the future availability of kin, researchers must consider potential continued increases in nonmarital partnerships.

We draw on theories of cohort succession and demographic metabolism (21) and the methods of computational demography (22, 23) to examine the changing population of kinless individuals in American society over the coming decades. Prior research has examined the increasing percentages and numbers of people who lack specific types of kin, such as the never married (24, 25) or the childless (26, 27), but few studies have put these factors together to consider the subpopulation that simultaneously lacks multiple types of close kin and is at elevated risk of social isolation, loneliness, and hardship (15, 28). The first and second demographic transitions and the gender revolution suggest that the share of people who lack multiple types of close kin is increasing (29, 30). For instance, unions occur less frequently, with delayed marriage and more nonmarriage (31), and historical increases in union dissolution affect cohorts that have recently aged into older adulthood (32, 33). Similarly, cohort childlessness doubled between 1980 and 2000 (34). Putting these factors together, we can expect that more and more Americans will be without close kin in the coming decades. On the other hand, if nonmarital partnerships take on kin-like functions and continue to grow in prevalence (20, 35), they may serve as a buffer against such trends.

Two ongoing demographic changes may further amplify the size of the US kinless population in the future. The first is the rise of "gray divorce," recent increases in the divorce rate among older adults, which doubled among Americans over 50 y old between 1990 and 2010 (36). Risks of gray divorce are higher among blacks, those with low education and incomes, and for second and

Significance

Family members provide the majority of social support for most older adults, but not all individuals have living family. Those without living close kin report higher rates of loneliness and experience elevated risks of chronic diseases and nursing facility placement. How the population of older adults without living family, the kinless population, will change in the coming decades merits consideration. Historical racial differences and recent variation in demographic rates imply unequal burdens of kinlessness for white and black Americans. By projecting the US population using demographic microsimulation, we find increases in lacking kin similar in magnitude to projected increases in other important population health burdens such as diabetes and Alzheimer's dementia. Increasing kinlessness may represent a growing population health concern.

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subsequent marriages (36). The second set of demographic changes leading to a potential growth in kinlessness is population aging and population growth. In its most recent national projections, the United States Census Bureau estimates that the percentage of Americans age 50 and older will increase from 34.6% in 2015 to 41.5% in 2060 (37). In addition to comprising a larger share of the US population, there will be many more older adults in the future. As the overall population continues to increase, demographers expect that the United States will have 61.8 million more adults ages 50 and above in 2060 than it does today. Recent work finds substantial increases in kinlessness among adults in their 50s and 60s for more recent birth cohorts, which combined with population aging may yield dramatic increases in numbers kinless in the coming decades (15).

The increasing prevalence of cohabitation and dating relationships may offset, to some degree, a potential rise in kinlessness among older adults. Increasingly, relationships formed later in life do not result in marriage (38), and single older adults are now just as likely to form cohabitating as marital unions (39). In 2000, there were more than 1 million cohabiting older adults, who together made up 1.5% of the population older than 50 (20). Other older adults may have a noncoresidential dating partner (40); estimates suggest that 5% of older adults are in such relationships (19). Dating relationships in older adulthood can have a variety of meanings, with some functioning much like marriage and others with less commitment (35). Whether recent increases in these new relationship forms can offset increasing kinlessness depends on how many of these adults also have children and other types of close kin, because those with living children are not kinless. At present, the vast majority (92%) of cohabiting older adults have children (20), as do most (86%) older adults in dating relationships (41). These facts explain why recent work on contemporary kinlessness finds only marginal differences in its population prevalence when nonmarital partnerships are included (15).

Although recent explorations find that white and black Americans of both sexes currently have comparable rates of kinlessness in older adulthood (15), the future burden of kinlessness is unlikely to be equally distributed across race and sex groups, because of differential demographic rates and population aging. Recent research finds large racial differences in the existence of kin of different types using survey data and that these differences are growing in more recent birth cohorts (14). For example, among those aged 45 to 54 in 2011, whites were almost twice as likely to have living spouses as blacks (64% vs. 36%) but slightly less likely to have living children (73% vs. 78%). A portion of these complex patterns is determined by the different ages at which whites and blacks experience kin mortality (14, 42). For instance, by age 60, blacks are twice as likely as whites to have lost a spouse (10.5% vs. 4.9%) and a child (1.0% vs. 0.5%) (42). But, of course, differential fertility also plays a critical role in producing these disparities by altering numbers of children, how many siblings those children have, and age differences between parents and children. There are also differences in nonmarital partnerships by race, with cohabitation and dating more common among blacks than whites (19, 20). Another factor is that whites and blacks are expected to have uneven patterns of population aging. The Census Bureau's most recent national projections forecast that the share of non-Hispanic whites who are above 50 y old will grow from 41.2% at present to 48.2% by 2060, while the share of non-Hispanic blacks who are older than 50 will grow from 29.0 to 40.1% (37).

Other demographic factors also lead to differences in kin availability between men and women. Women have greater life-course overlap with children and grandchildren because of sex differences in the age at childbearing, age differences between spouses, and greater longevity (43). Women are also less likely to marry and more likely to be widowed or divorced in older age (25, 26). Cohabitation and dating in older adulthood are much less common among women than men, with only 3% of women over 50 cohabiting and 7% dating compared with 6% of men over 50 cohabiting and 27% dating (19, 20). Social gerontologists have examined the different family structures of older adults by sex and what these differences imply for economic well-being, health, and social integration (44, 45). However, it is unknown how sex differences in kin availability will change due to future trends in marriage, partnership, divorce, remarriage, fertility, and mortality.

To understand the combined influence of these demographic trends on kinlessness, we examine how the population of older adults without close kin will change through 2060 and how kinlessness will vary by key population subgroups. We project the size and characteristics of the US population using demographic microsimulation methods that allow us to consider adults ages 50 and above with no living close family members (*Approach, Methods, Data, and Measures* and *SI Appendix*). First, we investigate those without a living partner or biological children (kinless 1). In the main text, we focus on partnership between married couples as well as between unmarried parents; in *SI Appendix*, we consider alternate definitions of partnership. Then, because people without partners and children often leverage sibling relationships for critical kin functions (46), we examine those without a living partner, biological children, parents, or siblings (kinless 2). We compare the largest native-born groups, single-race non-Hispanic white and non-Hispanic black Americans, and examine differences by sex. These groups constituted 84.0% of adults over 50 in the United States in 2014 and are projected to comprise 63.3% of the older adult population in 2060 (37). To maintain simplicity and stay within the constraints imposed by data availability, we do not examine other populations, consider the role of international migration, or examine intergroup marriage. As further justification for these choices, we note that immigration flows to the United States are expected to decline (47), that the stock of international migrants in the United States is under 15% (48), and that the Census Bureau projects that only 1.7% of the US population over 50 y old in 2060 will identify with two or more races (37).

Results

We project the US population by demographic microsimulation parameterized with age–sex–race–specific demographic rates from the historical record or the Census Bureau's most recent national projections. We review data sources in *SI Appendix*, Fig. S1. After an initial period, the simulated populations produce data outputs that match the macro trends in mortality, fertility, and nuptiality that we use as inputs and that we find in historical and projected estimates of core demographic rates (*SI Appendix*, Fig. S2). We compare the simulated percentages kinless with empirical percentages that can be estimated from recent nationally representative surveys and find broad agreement (*SI Appendix*, Fig. S3). We measure the percentages and numbers kinless among individuals aged 50 and above, separately by race and sex. We obtain the number of kinless individuals by multiplying the simulated percentages of individuals over 50 who are kinless by Census estimates or projections of the number of adults ages 50 and above of that race group in each year (37, 49, 50). To better understand what demographic factors drive changes in kinlessness, we decompose the percentage of the older adult population that ends up kinless through different life-course pathways. Last, we consider kinlessness in comparison with other population health burdens among older adults: arthritis (51), diabetes (52), Alzheimer's dementia (53), and surgical loss of limbs [i.e., amputation (54)]. In *SI Appendix*, we examine robustness to different future trajectories of divorce (*SI Appendix*, Fig. S4) and partnership (*SI Appendix*, Fig. S5). We now turn to our results.

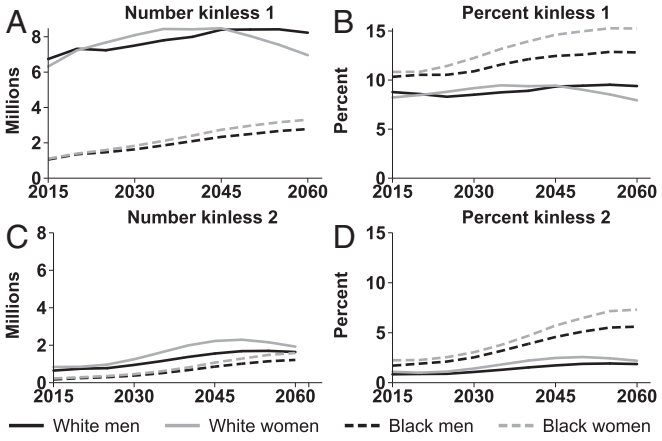

Fig. 1. Projected numbers kinless 1 (*A*), percent kinless 1 (*B*), numbers kinless 2 (*C*), and percent kinless 2 (*D*), people age 50 and older, by year, sex, and race.

Percentages and Numbers Kinless by Race and Sex. Fig. 1 presents our projections for 2015 to 2060 of the numbers (Fig. 1 *A* and *C*) and percentages (Fig. 1 *B* and *D*) kinless within race and sex groups. Fig. 1 *A* and *B* examines our first kinless measure (kinless 1), those without a living partner or biological children, and Fig. 1 *C* and *D* shows our second kinless measure (kinless 2), those without a living partner, biological children, siblings, or parents. Among whites, we project that the percentage without a partner or biological children remains steady throughout the study period, around 8 to 10% for both men and women. However, because of population aging and population growth, we project increasing numbers kinless among whites, with the number of kinless white men without a partner or biological children increasing from 6.6 million in 2015 to 8.2 million in 2060, and the number of white women without a partner or biological children increasing from 6.3 million to 7.0 million. Blacks will experience large increases in both the percentage and number kinless defined as being without a partner or biological children from 2015 to 2060. Percentages for black men increase from 9.7 to 12.6% and for black women from 10.5 to 15.1%. The numbers lacking a partner and biological children also increase for both sexes among blacks: from 1.0 million kinless black men in 2015 to more than 2.7 million in 2060, and from 1.1 million to 3.3 million kinless black women over the same period. Summing our results for whites and blacks, we project that there will be 21.1 million individuals over 50 y old without a living partner or biological children in these race groups in 2060.

Fig. 1 *C* and *D* focuses on our second measure of kinlessness, older Americans without a partner, biological children, siblings, or parents. Among both whites and blacks, the numbers and percentages of those without any living close kin increase between 2015 and 2060. In 2015, 0.8% of white men and 1.1% of white women were without living close kin, but these levels approximately double by 2060 for both sexes to 1.9% for white men and 2.2% for white women. These increases in percentages correspond to huge increases in the numbers of older whites without close kin between 2015 and 2060: from 0.6 million to 1.6 million white men, and from 0.8 to 1.9 million white women. Increases are even larger for blacks. Percentages with no living close kin are already higher among blacks than whites in 2015 (1.7% among black men and 2.2% among black women). These figures increase to 5.6% for black men and 7.3% for black women by 2060. According to our projections, in 2060, there will be 1.2 million black men and 1.6 million black women with no living close kin. Together, we estimate that there will be 6.3 million whites and blacks without a living partner, children, siblings, or parents in 2060.

How Population Aging Contributes to Growth in Kinlessness. Next, we examine how the population age structure will change from 2015 to 2060 and how the kinless subpopulations are distributed among older adults. Fig. 2 shows population pyramids for whites (Fig. 2*A*) and blacks (Fig. 2*B*) who are over the age of 50 in 2015, 2030, and 2060. A dashed black line helps to trace the aging of the 1961-to-1965 birth cohort over these periods. Those lacking a living partner or children (kinless 1) are shown in gray and those lacking all living close kin (kinless 2) are shown in black. It is apparent from both sets of population pyramids that the over-50 population is aging considerably, with greater numbers reaching older ages, especially among women. We also see that the kinless subpopulations, under both definitions, become larger across all older age groups, especially for blacks. Moreover, the kinless population is becoming more widely distributed across different ages within the older adult population, indicating that demographic metabolism and cohort succession, rather than population aging, are driving changes in the percentages kinless (population aging does drive increases in numbers kinless). Whereas in 2015 the kinless population is largely concentrated among those in their 50s and 60s, by 2060 kinlessness is found across all older adult years. Age standardization techniques indicate that population aging contributes only marginally to changes in kinless prevalence (*SI Appendix*, Fig. S6).

What Accounts for the Increases in Kinlessness? Next, we consider what demographic and social factors are driving the increases in kinlessness documented above. Fig. 3 shows stacked percentages of the 50+ population with no living partner or biological children split into three categories. The bottom category, group A, represents those who never married and never had children by each year in the simulation. This group is responsible for the majority of the increase in kinlessness among white men, black men, and black women. The second group, Group B, represents those who were previously married but never had children. These individuals are kinless because they have not yet remarried, and may never, after a spousal death or divorce. Such individuals account for the vast majority of kinless white women, and they also make up sizable but declining shares of kinless white men, black men, and black women. The third group, group C, includes the remaining causes of being without a partner or biological children, such as those whose partner and children died. Group C is small and there is little change in it over time, although we note that it is larger for blacks than for whites, consistent with mortality explaining a small but meaningful amount of racial disparities in kinlessness (14, 42).

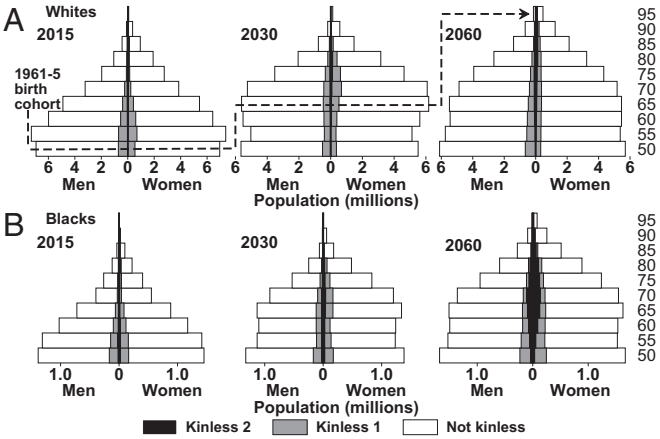

Fig. 2. Population pyramids of kinless non-Hispanic whites (*A*) and blacks (*B*) among adults aged 50 and older from 2015 to 2060.

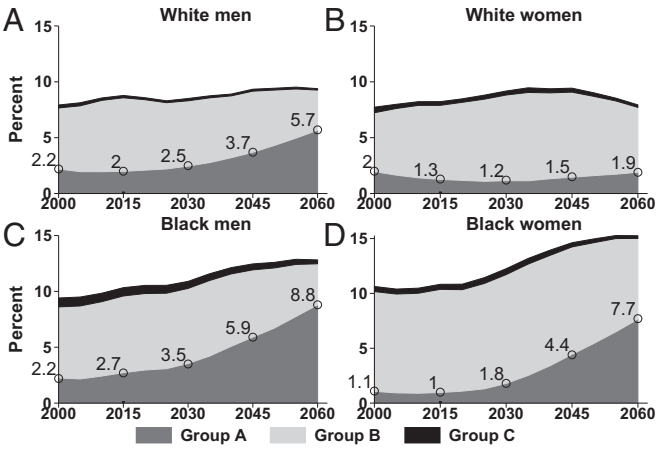

Fig. 3. Stacked percentages of White males (*A*), White females (*B*), Black males (*C*), and Black females (*D*) ages 50 and older without a living partner or biological children, 2000–2060. Note: percentages in group A in key years are presented as circles. Group A includes those who never married and never had children; group B includes those who were previously married but never had children; and group C includes the remaining cases, such as those whose partners and children died.

We also examined the demographic and social factors leading to increases in the population percentage of individuals without a living partner, biological children, siblings, or parents for all race and sex groups (kinless 2; *SI Appendix*, Fig. S7). In addition to the dynamics underlying changes in the population without a living partner and children discussed above, changes in this measure may be affected by parental survivorship, sibling survivorship, and historical increases in one-child families. We found no evidence that parental death rates led to growth in this measure; rather, parental death rates declined overall for each race and sex group. Instead, the vast majority of the increase in having no living kin is through sibling death. Although sibling survivorship is increasing, sibling death plays such a prominent role in these trends because sibling sets are changing in line with historical fertility declines associated with the first demographic transition. That is, older adults increasingly have fewer siblings and are less likely to have a much younger sibling. Together, those whose siblings died account for the vast majority of changes in lacking all close kin for blacks (84% of the increase for both black men and black women) and between half and two-thirds among whites (67% for white men and 56% for white women). A related contributor to the increase in lacking all close kin is the historical rise of one-child families. We find that increases in those who never had siblings account for a larger share of the increase for whites (32% for white men, 43% for white women) than for blacks (16% among black men and 15% among black women). Examining race differences in lacking all close kin highlights the complex ways that historical fertility patterns interact with racial disparities in mortality (14, 42) to produce kinlessness.

We also examined whether different trajectories of future divorce rates account for increases in kinlessness (*SI Appendix*, Fig. S4). We found that although the levels of kinlessness would increase slightly if divorce rates were to double or quadruple, the overall trends as well as the race and sex differences do not differ from the above results. We then considered whether increases in nonmarital partnerships that do not result in childbearing can be expected to offset increases in kinlessness (*SI Appendix*, Fig. S5). These analyses did not alter our primary conclusions. Even conservatively assuming that all dating and cohabiting relationships among childless older adults are stable partnerships and continue growing at current rates, we still see substantial growth in the share and size of the kinless population, with approximately equivalent race and sex disparities.

Kinlessness as a Population Health Burden. To contextualize our results, we consider how our projected growth of the kinless population compares with projections of other important population health burdens among the older American population (Table 1). We wish to draw attention to two points. First, our projections indicate that by 2060 the kinless population, defined as those without a partner or living children, will be larger in size (21.1 million) than the projected number of older adults suffering from diabetes (16.9 million), Alzheimer's dementia (13.8 million), or loss of limbs (2.2 million) in 2050. It will also be larger than the size of the older adult population suffering from arthritis in 2005 (20.6 million). Relatedly, we expect that the kinless population defined as those lacking all close kin in 2060 will be larger (6.3 million) than the populations suffering diabetes in 2001 (4.6 million) or Alzheimer's dementia in 2010 (4.7 million). Second, we note that our projected increases in kinlessness are of similar magnitude to several of these chronic health burdens. Given that loneliness among older adults is a growing population health threat, with meta-analyses finding a 50% increase in survival likelihoods for those with stronger social relationships (10) and established associations between loneliness and lacking living kin, we advocate that researchers must pay greater attention to the kinless population. Likewise, because the majority of care given to older adults comes from family members (4), it is important to consider how individuals without family will fare in the future.

Discussion

There is a renewed focus among demographers on the intersections between population processes and kinship, family, and social network structures (55–57). Prior demographic research on kinship has focused on coresidence, intergenerational transfers and exchanges, and the influence of different types of kin resources on the life chances of descendants (58–60). By contrast, counting those without kin and studying the implications of being kinless are neglected undertakings because few population-based surveys ask about noncoresidential kin. Compounding this problem, those without kin are often disadvantaged, and they may be more likely to be in institutionalized care and thereby omitted from the sampling frame of many major surveys. Older adults have lived within dense kin networks for most of human history and the kinless have been a small subpopulation in the modern demographic era (61). However, recent declines in marriage, increases in gray divorce, and fertility decline are leading to larger numbers of older adults with no close family members. Mortality improvements and the increase in new relationship forms among older adults are not large enough to offset these trends.

Table 1. Projections of chronic health burdens on older adults in the United States

Projections	Start*	End*	Growth*	Interval
Health burden				
Arthritis	20.6	46.3	25.7	2005–2050
Diabetes	4.6	16.9	12.3	2001–2050
Alzheimer's dementia	4.7	13.8	9.1	2010–2050
Surgical limb loss	0.7	2.2	1.5	2005–2050
Kinlessness				
Kinless 1	14.9	21.1	6.2	2015–2060
Kinless 2	1.8	6.3	4.4	2015–2060

Note: Kinlessness projections are estimated for non-Hispanic white and black Americans only. Sources are given in the text.
*Numbers are in millions.

Our findings point to dramatic increases in the numbers of kinless older adults in the United States, whether we consider a broad or a narrow definition of kinlessness. The increases occur for whites and blacks, men and women. By 2060, we expect the population of white and black Americans over 50 y old without a living partner or children to reach as high as 21.1 million, 6.3 million of whom will also lack living siblings or parents, up from our estimates of 14.9 million and 1.8 million, respectively, in 2015. The population of adults who will be over 50 y old in 2060 is already alive, which increases our confidence about probable levels of future kinlessness, barring dramatic changes in projected demographic processes.

Our results indicate that growth in numbers without a partner or children is primarily driven by the increasing size of the aging population overall. Although we also find increases in the population percentage that is kinless, this result was most evident among the black population. We find differential growth by race and sex in the share of adults over 50 who are kinless and important differences in the demographic forces driving kinlessness across these groups. There are especially notable increases in kinlessness among blacks, and slightly more for black women than black men. These changes are driven by cohort succession, where increasing numbers of black individuals who never married and never had children are currently aging into older adulthood. Among whites, increases in those without a partner or children are driven by population aging, rather than increases in the population percentage without these two types of close kin.

However, when considering increases in those with no living close kin (partner, children, parents, or siblings), we find increases in both the percentages and numbers kinless across race and sex groups. The percentage with no close kin is projected to double by 2060 for whites and more than triple for blacks. Increases in this measure are driven by large increases in having no living kin through the death of one's siblings, which accounts for more than half of the growth of this type of kinlessness among whites and the vast majority among blacks. This effect is the product of both fertility and mortality forces: Historical fertility declines mean that older adults in the coming decades will increasingly have fewer siblings than previous generations. With fewer siblings, each individual's risk of all of their siblings having died increases, potentially offsetting gains in older adult survivorship, a feature compounded by decreasing age heterogeneity in sibling sets. Blacks have much larger increases in lacking close kin through the sibling death pathway than whites due to higher mortality. The increasing prevalence of adults raised without siblings in one-child families, which drives population growth among those who never had siblings, is another demographic factor increasing in importance over the projection period. This pathway to kinlessness is more prominent for whites than for blacks.

Whether older adults are prepared or unprepared for being without close kin may depend on their pathway to kinlessness. Some pathways to kinlessness may be expected. For instance, those who never marry and never have children know at younger ages that they will not have a partner or children to care for them in older adulthood. They may be able to plan accordingly, either leveraging sibling ties, creating strong kin-like relationships with nonkin, or by relying on institutions for care. Our findings show that this group, those who never married or had children, are driving the largest projected increases in the share of the older kinless population for white men, black men, and black women. These trends are robust to substantial potential growth in new relationship forms.

Unexpected kinlessness is more difficult to plan for, and it can come through one of two pathways. The first is the death of kin. Demographers have recently embarked on explorations of this topic and found that it may be an underappreciated dimension of racial inequality (14, 42), but it needs more attention. However, our findings show that a very small percentage of the future population will be kinless because of the death of a partner and children. We find that a second pathway through divorce or widowhood among the childless is the more common entry to unexpected kinlessness. This is the modal route to kinlessness among white women and accounts for a substantial share of kinlessness among other demographic groups as well. Because of large recent increases in divorce at older ages (36), this issue deserves more attention. Even those who lack a living partner or biological children through expected means (e.g., the never married and childless) may still end up experiencing unexpected kinlessness through sibling death. We found that this pathway to unexpected kinlessness accounts for a large percentage of the increasing share of the black population without living close kin, but it is less relevant for whites, which may point to even larger racial disparities in access to social resources in the future. At the same time, if recent increases in white middle-age mortality persist (62), our results may differ such that a larger share of the future white population is kinless through death.

Conclusion

The impending increase of kinless older adults is a potentially critical demographic trend for society as a whole, institutions that provide services for older adults, and the kinless themselves. We know that those who lack kin are more likely to be socially isolated, suffer poorer health, and have fewer economic resources. But, of course, not all individuals without kin fit into these categories, and not all those with kin are able to draw on them for social and economic support. A limitation of our focus on the demographic processes driving kinlessness is that we did not examine how geographic proximity, exchange, contact, and emotional closeness might exacerbate or mitigate the effects of a growing kinless population on loneliness and other social issues. Many of those with kin may still be socially isolated, among other factors, because of a lack of these relationship qualities. A related limitation is that we do not focus on step-kin, who may provide an important source of support for older adults (62); future work could consider the role of such individuals. At the same time, while the majority of informal care for older adults is provided by family members (4), some who lack kin may be able to substitute roles traditionally played by partners, children, siblings, or parents with paid help or the camaraderie of friendship. In either case, however, estimates and projections of kinlessness offer a strong starting point to better understand these patterns. We advocate that such topics receive more attention in future work.

Approach, Methods, Data, and Measures

To conduct our simulations, we employed the freely available Berkeley Socsim demographic microsimulation model (63–65), which we parameterized with age–sex–state–specific probabilities of individuals experiencing demographic events. We assemble these probabilities from several sources that contain historical and projected, societal-level demographic rates as described in *SI Appendix*. We provide code for interested researchers to run the Socsim program, obtain our results, and replicate and extend these analyses (https://osf.io/z3suy/?view_only=dac305f99c414e578aceb0eb3aadf5cd). We began with populations of 50,000 white and black individuals drawn from the 1880 Census and simulated the evolution of these groups over time. We run one large simulation for each race group under these parameters, consistent with other microsimulation research (66, 67); at the end of the simulation there are over 290,000 simulated individuals alive and above the age of 50, which yields precise estimates. Microsimulation is the most popular method of assessing how demographic processes affect kinship networks over long periods (22, 68). Demographic microsimulation works by simulating the behaviors of a hypothetical population of individual agents over time, allowing them to marry, divorce, remarry, have children, and die probabilistically at specified age–sex–state–specific rates, where states can be any category such as parity, marital status, or ethnicity. We explicitly model nonmarital fertility and nonmarital partnership defined as relationships between unmarried parents of a child in the main text, with alternate definitions explored in *SI Appendix*. We use "closed" microsimulation models, in which partnering decisions are constrained by the available population, allowing us to trace the long- and short-term evolution of kinship networks and define relevant kin ties of interest (69).

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