

Racial Differences in Formal Long-Term Care: Does the Timing of Parenthood Play a Role?

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Objectives. This article examines the association between race and the timing of formal long-term care (LTC) service use, both institutional and community based. It seeks to understand whether early parenthood predicts the timing of LTC use later in life and whether it in turn mediates the association between race and LTC use. In particular, it explores whether the lower rate of formal LTC use among African Americans is due in some part to the earlier inception of parenthood.

Methods. Linking measures from the 1989 National Long-Term Care Survey with Medicare claims (1989–1993), we model age at first use of institutional (skilled nursing facility) care and home health as competing risks using a Cox proportional hazards model.

Results. Early parenthood accelerates first use of home health for Whites but delays first use for Blacks. The likelihood of any LTC use by race group converges as timing of parenthood increases.

Discussion. Differential effects of teen childbearing across race groups indicate differential vulnerability to LTC needs among early parents.

PERSISTENT racial differences in formal long-term care service utilization have been observed nationally, in area studies, and across several decades. In general, the literature indicates that African American older persons, who experience higher rates of disability at each age, use formal long-term care at a significantly lower rate than their White counterparts (Kington & Nickens, 2001; Miller, McFall, & Campbell, 1994). A number of explanations have been offered, including differences in economic status and opportunity (Headen, 1992), in area-level segregation and the limited ability to obtain formal long-term care services (Smith, 1993), and, most commonly, in caregiving norms and expectations (Chatters, Taylor, & Jackson, 1986; Miller et al., 1994; Murtaugh, Kemper, & Spillman, 1990; Taylor, 1988; Wallace, Levy-Storms, Kington, & Andersen, 1998). Of these, the role of extended family and fictive kin is considered particularly salient, that is, the composition of the caregiving network and the likelihood that older African Americans may draw upon support beyond the nuclear family as an alternative to the use of formal services (e.g., Burton et al., 1995; Gibson & Jackson, 1987; Taylor, Jackson, & Chatters, 1997).

The family is, indeed, key to a long-term care profile. Those without a spouse or children, for instance, experience a much higher risk of institutionalization (Morrow-Howell & Proctor, 1994). Research indicates that the availability and characteristics of family members have important implications not only for the use of any long-term care over a lifetime (Himes, 1992) but for the timing and type of care ultimately used (Cagney & Agree, 1999; Freedman, 1996). For instance, Cagney and Agree (1999) found that, net of sociodemographic characteristics, both children and grandchildren play a role in deferring the age at which older African Americans use formal long-term care relative to Whites. Apart from consequences for late-life service use, these family characteristics also reflect distinctive trajec-

ries of life-course events and opportunities experienced by each group over their lifetimes. The information contained in these life biographies typically is not the focus of long-term care research. Children and grandchildren, for instance, are important indicators of family resources, but counts of offspring alone render analyses incomplete. To date, information about the *timing of parenthood*—and the family-level implications of the transition to parenthood—has not been examined.

Parenthood launches women and men into a new and formative facet of their lives. It is the timing of this transition, however, in combination with other factors—health, wealth, social support—that may shape the trajectory these lives take. The timing of parenthood has been linked to a diverse set of social phenomena including educational attainment, employment opportunities, and health (De Wit & Rajulton, 1992; Hardy, Astone, Brooks-Gunn, Shapiro, & Miller, 1998; Hotz, Mullin, & Sanders, 1997; Martin, 2000). For the most part, social science research on the impact of parenthood timing has focused on the deleterious short-term effects of early parenthood, where fewer years of schooling, lower wages, and marital disruption characterize the life experience of those who bear children before age 20 (McCauley & Salter, 1995). A small number of studies have examined later-life outcomes (Heck, Schoendorf, Ventura, & Kiely, 1997), such as breast cancer (Kampert, Whitemore, & Paffenbarger, 1988) and women's labor force participation at older ages (Pienta, 1999). The timing of long-term care use is yet another distal event that has not been explored. There are several reasons to expect that the timing of parenthood and the timing of long-term care use might be related. First, those who have their first child early in life have the opportunity to form larger families, which means that more children may be available to provide informal care. Second, the timing of parenthood determines the age, and often life stage, of the child when the parent needs long-term care. Children born

to older mothers may be more likely to be responsible for the care of their own young children when their parents need assistance. Demographers have shown that the overall prevalence of this “sandwiched” generation is low. About three fourths of the middle-aged population have living parents and children, but obligations to each of these generations tend not to coincide: When children are young, grandparents provide child care and money; when grandparents are in declining health, children are likely to be out of the home and financially independent (e.g., Soldo, 1996). However, this depends on both the timing of the onset of disabling conditions among the elderly and the timing of childbearing (Uhlenberg, 1995). Recent research in the United Kingdom has shown that highly educated women who delay childbearing are more likely to have children at home and care for aged parents than others, implying a potential increase in this role combination in the future (Agree, Bissett, & Rendall, 2003). Yet another possibility is that the timing of parenthood acts as a marker for the nature of intergenerational relationships within the family (Jackson, Jayakody, & Antonucci, 1996). Early parenthood, for instance, may be associated with a constellation of family factors (e.g., shared households, proximal grandparents) that consequently indicate a greater willingness of children to be caregivers. Transmission of a normative orientation toward familial activities and obligations may later mean that informal caregiving acts as a substitute for formal care or that it staves off use of formal services until later ages.

We sought to understand whether the timing of parenthood predicts the timing of long-term care use—institutional or community based—and whether it in turn mediates the association between race and long-term care. African Americans have a lower average age of first parenthood than Whites and higher levels of teen childbearing (Furstenberg, 1987; Ruggles, 1994); this earlier timing of parenthood may account in part for the racial difference observed in formal long-term care use. We use the National Long-Term Care Survey (NLTC) to explore these questions, a nationally representative survey of disabled people aged 65 years or older, and linked Medicare claims files. To follow an older cohort with shared fertility timing prospectively, with access to appropriate claims data, we found it necessary to use the 1989 wave of the NLTC with Medicare claims from 1989 to 1993. Our outcome is the age at which the respondent first enters a skilled nursing facility (SNF) or begins to use Medicare home health services (i.e., the first long-term care episode). First use of SNF care or home health acts as an indicator—or point of initiation—into long-term care; we include them under the broad rubric of health, personal care, and social services that define long-term care (Kane & Kane, 1987).

Conceptual Model

The life-course perspective provides a framework for examining the use of long-term care as an age-related transition. Life-course analysis recognizes that formative events are experienced over the entire lifespan. Individuals may face the same decision at the same age, such as a choice among long-term care options, but they will have arrived there through a unique set of experiences (Burton & Bengtson, 1985; Dannefer, 2003; O’Rand, 1996). The timing and sequencing of life experiences are fundamental to the model; the use of early-life information

such as the timing of parenthood informs later-life outcomes (Kertzer, 1989; Passuth & Bengtson, 1988; Riley, 1987).

As outlined above, early parenthood may affect family size, the presence of competing obligations, and the nature of intergenerational relationships. Thus, early parenthood affects both the structure and the characteristics of the pool of potential informal caregivers; these in turn influence the timing and type of long-term care used. Within this framework (Figure 1), we test whether the effect of early parenthood matters because it is indicative of family size or because it determines the age and life stage of the child. Our model recognizes the quality of intergenerational relationships as another potential mechanism, but our data preclude the possibility of investigating this pathway. Our framework also considers the unique role of social class, and additional features of family structure, in the timing of long-term care use.

In this model, we treat SNF care or home health as the beginning of a trajectory of long-term care service use. Both programs were initially designed to deliver care post hospitalization (Diwan et al., 1997). SNF care is the only type of nursing home care covered by Medicare, with the stipulation that the care follows, and is related to, a 3-day hospitalization (Centers for Medicare and Medicaid Services, 2002). Alternatively, the Medicare home health benefit may be utilized if the beneficiary is homebound, under a physician’s care, and in need of skilled nursing care and/or physical therapy on a part-time or intermittent basis (U.S. General Accounting Office, 1996). Medicare recipients who use these post-acute care benefits are initiated into the world of long-term care delivery; this initial interaction may be of short duration and of a different nature (e.g., rehabilitation), but it marks the beginning of a relationship with long-term care. Indeed, SNF or home health use often precipitates permanent nursing home placement or extended use of long-term care services within the community. We view this preliminary service use as an important life event and one that heavily influences the type of trajectory a long-term care user is likely to take.

METHODS

Data Sources

The 1989 NLTC, our main data source, is a nationally representative longitudinal survey designed to study changes in the health and functional status of disabled older Americans aged 65 years and older. It also has detailed information on children who do not live within the household, making it possible to examine the influence of family structure apart from living arrangements. The initial sampling frame was the population 65 years of age and older drawn from Medicare enrollment files in 1982. Further details on the sampling frame and survey design can be found in the work by Manton, Corder, and Stallard (1993).

The NLTC data were linked to Medicare claims information for each respondent; both SNF and home health data were abstracted. The files were prepared by the Center for Demographic Studies at Duke University (Durham, NC) with data from the Health Care Financing Administration. As the NLTC sample is drawn from Medicare beneficiary enrollment files, nearly 100% of NLTC respondents can be tracked longitudinally with both Medicare Part A and Part B claims files.

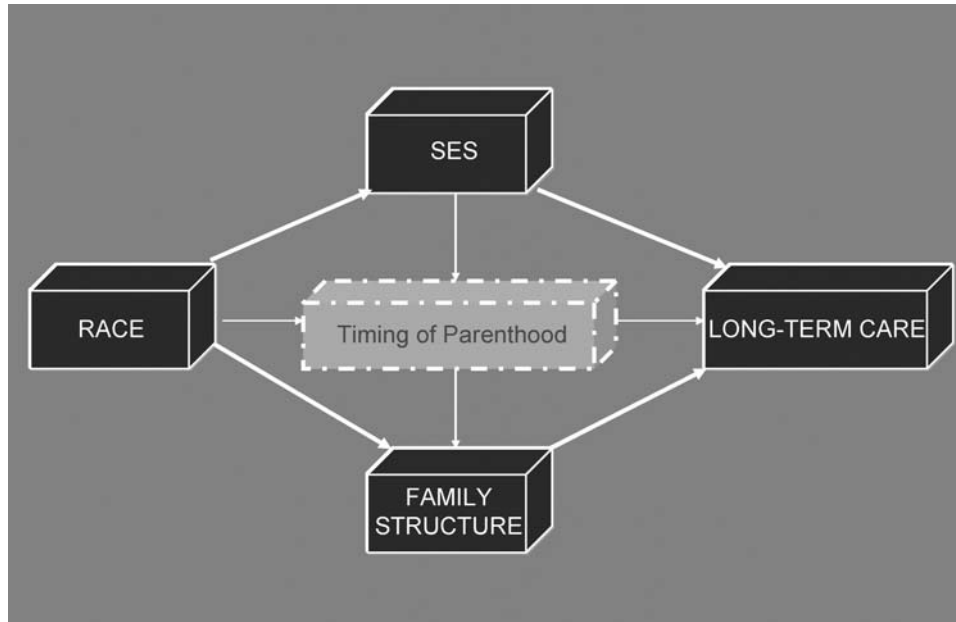


Figure 1. Conceptual model. SES = socioeconomic status.

The final analytic sample is restricted to those who identify as Black or White, those with no use of either SNF or Medicare home health services prior to interview, and those with children ($N = 2,603$ from the initial sample of 4,463 completed community interviews). Although the proportion of Blacks and Whites initially excluded for prior use of home health is nearly equal (26.6% of Black respondents vs 25.2% of Whites), a greater proportion of Whites than Blacks were excluded owing to prior SNF use (1.6% of Black respondents vs 4.3% of Whites). Although these numbers are small, they may indicate that Whites at greater levels of disability have already left the community or, if they remain, have already experienced long-term care use (and thus are ineligible for an examination of first use). If this is the case, then we are comparing healthier Whites with Blacks at greater levels of disability. This implies that our relative hazard estimates are conservative.

Variables

Dependent variable.—Age at first use is consistent with the analysis of long-term care as a life-course transition. Measured in days, the variable was created using the respondent's birthdate and the first date of use from the Medicare billing record for either home health or SNF care. Age at inception of the survey ranges from 65 to 103 years (mean age = 78 years).

Explanatory variables.—Race is coded as Black or White and was determined from the Center for Demographic Studies Analytic File. Social class is represented by education level and several variables to assess financial resources. Financial resources were defined as household income, Medicaid coverage, and private insurance. The latter two are coded as dichotomous. Total household income for the previous 12 months is available in 16 ranges from under \$3,000 to \$50,000 and above. A regression-based imputation for missing income

data used in previous analyses of the 1989 NLTCs (Burton et al., 1995) was adopted here. Three income levels relative to poverty were then created ($< 100\%$, $100 < 200\%$, $\geq 200\%$), as suggested by Liberatos, Link, and Kelsey (1988). These were based on published federal poverty guidelines for 1989 (Social Security Administration, 1993). Family structure—meaning those related by blood, marriage, or adoption—consists of spouses, sons, daughters, and others who are related to the respondent. Family characteristics include number of living children, timing of parenthood (< 18 years, 18–19 years, 20–24 years, ≥ 25 years), number of daughters, number of sons, and whether any grandchildren live in the respondent's or the child's household. Living arrangements also reflect the structural availability of kin for caregiving; because they are assessed at baseline, they temporally precede the outcomes of interest. Living arrangement is coded as living alone, living with a spouse, or living with others. The categories were chosen so as not to be redundant with the family structure variables. A categorical variable indicating the proportion of children working full-time is also included to address potential competing obligations among children.

Control variables.—Two dimensions of health—functional status and cognitive status—are included in these analyses. Functional status was determined from questions concerning ability to function independently (without help) in activities of daily living (bathing, dressing, eating, transferring, toileting, getting around inside) and instrumental activities of daily living (heavy and light housework, shopping, meal preparation, taking medications, managing money, using the telephone). The assessment of cognitive status in the NLTCs was based upon the Short Portable Mental Status Questionnaire score. The variable used in this analysis is dichotomous, with a score of ≥ 3 errors out of a possible 10 indicating impairment (Pfeiffer, 1975). Gender is also included as a control variable.

Statistical Methods

We use Cox proportional hazards modeling and its extensions (Cox, 1972) to model SNF care and home health use as competing risks. This “time-to-event” framework allows us to examine the age and stage of life transitions and to identify the precise point of long-term care entry. Analyses were conducted with unweighted data. Robust standard errors were used with the Cox proportional hazards models to account in part for the complex sampling design of the NLTCs.

Both the product-limit survival estimator and the Cox proportional hazards models focus on age at the event. Although the primary reason for choosing age, rather than time in study, as the time scale is because age is best suited to test the hypotheses derived from the theoretical model, there are analytic reasons for choosing age as the outcome measure. First, if time from interview date is used rather than chronological age, there is an implicit assumption that the period of risk begins at the date of the survey, rather than at some specified age or specific health event (e.g., stroke, disability). Because the failure to properly identify the risk period may bias hazard model estimates in an unpredictable direction (Cnaan & Ryan, 1989), chronological age may provide a better outcome variable than time from survey date. Age as a measure offers a discrete, nonrecurring event for assessing the point of transition (Freedman, 1996). Second, using age as the outcome variable allows more flexibility in identifying the age-specific risks of long-term care use because it does not require age to be entered as either a continuous variable or a series of dummy variables. Third, age as opposed to time on study is preferred because it is recommended, for proportional hazards models, to choose as the outcome the variable that has the largest effect on the hazard (Korn, Graubard, & Midthune, 1997). It is expected that the baseline risks for both SNF care and home health use would change more as a function of age than as a function of time over the survey interval.

As eligibility for the NLTCs is based on both age and the presence of disability, persons who were in the community and age eligible were not included in the survey if they were not disabled. Thus, respondents who were older than 65 years at the time of the community interview are left truncated. The proportional hazards models are modified to account for left-truncated data (Cox & Oakes, 1984).

The analysis focused on predicting the age at first SNF or home health use as a function of three vectors of explanatory variables—race, social class, and family structure—and one vector of control variables.

The general model can be written in the following form:

$$\log h(t; X, \beta) = (t) + \beta_1 \text{RACE} + \beta_2 \text{SOCCLASS} + \beta_3 \text{FAMILY} + \beta_4 X_4$$

where (t) is a function of time [$(t) = \log h_0(t)$] and β is the coefficient.

The above model can be generalized to the competing risks case. Usually called an analysis of the type-specific or cause-specific hazard, a competing risks situation is characterized as one where the occurrence of one type of event removes the individual from risk of all other event types (Allison, 1995). For example, a single model for the event of interest, such as death from heart disease, can be estimated, treating all other death types as censoring events. In this case, a single model for

SNF care can be estimated, treating first home health use as a censoring event. The modeling process is the same as that discussed above; however, the definition of the censoring event and the consequent interpretation of the model change.

RESULTS

Table 1 provides descriptive statistics, stratified by race, of the NLTCs population with no prior long-term care use and at least one child ($N = 2,603$). Column percentages and p values of the chi-square statistic are presented for each variable. No significant differences exist for age and gender, but functional status and cognitive status do differ by race. Approximately 48% of the Black respondents show some cognitive impairment as compared with 23% of Whites. Service use over the entire interval is higher among Whites, but only marginally significant for home health. All family structure variables differ significantly by race, with the exception of number of sons. Timing of parenthood indicates a trend toward an earlier inception of family for the Blacks in this sample. All four measures tapping education and financial resources differ significantly by race: Black respondents have fewer years of education, are much more likely to have incomes below the federal poverty level (nearly 50% of this sample as compared with just under 19% for Whites), and disproportionately are Medicaid recipients.

Figures 2 and 3 illustrate the probability of first use of either home health or SNF care by age, race, and whether or not the respondent is an early parent (defined as younger than 18 years). For home health, these descriptive results indicate that, with the exception of some crossover between 70 and 74 years, Whites regardless of parenthood status are more likely at each age to avail themselves of home health services. Interestingly, Blacks who are early parents are less likely than others to use home health as they age, whereas the converse is true for their White counterparts. For SNF care, it is difficult to distinguish patterns, but, in general, Whites are more likely to utilize the SNF benefit. At later ages, Blacks who are early parents may be higher users (but smaller sample sizes at these ages preclude discerning an effect).

Coefficients from multivariate analyses of SNF and home health care are shown in Table 2. Because age at first use of SNF care or home health is the outcome of interest, the risk or hazard of use is interpreted as a function of age. For example, if the respondent has a lower risk of SNF use, this indicates that age at first use will be later in life. Conversely, if the respondent has a higher risk of SNF use, then the respondent will first use SNF care at an earlier age. In a general sense, the outcome can be viewed as the risk of use at each age.

The first set of models shows the risk of first SNF use, treating use of home health as a censoring event. The second set shows the risk of first home health use, treating use of SNF care as a censoring event. This approach enables us to interpret the covariates as factors that increase or decrease the risk of use, net of any influence that prior contact with another type of long-term care delivery system would yield.

Four models are presented for each outcome. The first model includes the race variable only. The second introduces family structure, social class, and control variables, apart from the timing of parenthood variable. The third model then adds the timing of parenthood variable (collapsed into three categories to enhance estimate precision and parsimony). The fourth and

Table 1. Characteristics by Race of NLTCs Respondents at Risk for First Long-Term Care Use

Characteristic	Black (%) <i>n</i> = 269	White (%) <i>n</i> = 2,334	<i>p</i>
Age group			
65–74	34.6	38.7	.236
75–84	45.0	44.4	
85+	20.5	16.9	
Gender (male)	39.0	36.0	.333
Functional status			
No limitations	8.6	13.9	.028
Mobility only	1.1	1.2	
IADLs only	42.8	39.9	
1–2 ADLs	29.0	31.7	
3–5 ADLs	18.6	13.4	
Impaired cognitive status	48.0	23.2	.000
Service use			
SNF care	11.9	13.9	.379
Home health care	29.0	34.8	.056
Living arrangement			
Alone	28.3	29.1	.000
With spouse	33.8	49.3	
With others	37.9	21.6	
No. of sons			
0	24.9	22.2	.063
1	34.6	36.9	
2	17.5	22.8	
3+	23.1	18.1	
No. of daughters			
0	14.9	20.6	.000
1	34.9	38.0	
2	17.8	22.0	
3+	32.3	19.4	
Grandchildren	58.4	48.7	.003
Children working FT			
< .25	45.7	26.5	.000
.26–.50	22.3	21.7	
.51–.75	13.8	18.3	
.76–1.0	18.2	33.6	
Timing of parenthood			
< 18	8.6	6.2	.001
18–19	16.0	9.3	
20–24	30.1	35.4	
25+	45.4	49.2	
Education			
Below 8 th grade	63.2	25.2	.000
Some HS	26.8	36.7	
≥ 12 years	10.0	38.2	
Poverty level			
< 100%	49.8	18.7	.000
100<200%	31.6	34.2	
200%+	18.6	47.1	
Medicaid	42.0	13.6	.000
Private insurance	10.3	89.7	.000

Notes: NLTCs = National Long-Term Care Survey; ADLs = activities of daily living; IADLs = instrumental ADLs; SNF = skilled nursing facility; FT = full time; HS = high school.

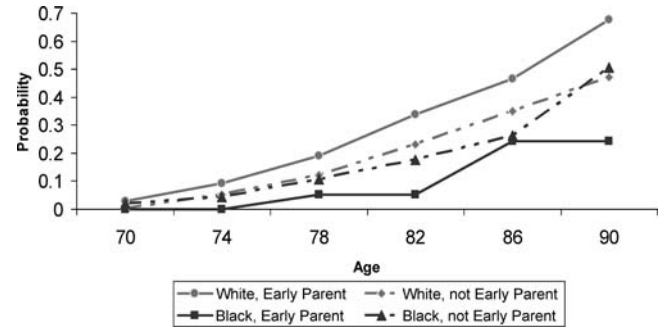


Figure 2. Probability of first home health use by age, race, and early parenthood status. Early parenthood status is defined as becoming a parent at age 18 or younger.

final model introduces interaction terms for race and the timing of parenthood.

For the risk of first SNF use, Blacks are at nearly half the risk of Whites. This narrows by just over 3% when family structure, social class, gender, and health variables are entered into the model. The introduction of the timing of parenthood variable, found in Model 3, does nothing to close the gap between Blacks and Whites—neither categorical variable is significant in this model. The race and timing of parenthood interaction term, introduced in Model 4, has no explanatory power in this model. Across models, each additional daughter and, in particular, each additional son appear to stave off SNF entry until a later age. Of interest are the results for the presence of grandchildren and the proportion of children working full-time. Respondents with grandchildren are at a risk more than one and one half times greater of entering SNF care than those without grandchildren. In general, as the proportion of children working full-time increases, the risk of entering SNF care increases (with the exception of those who have between 0.76 and 1.0 children working full-time, where the risk decreases slightly).

For home health, Blacks are at a risk 26% lower than Whites of entering home health care at every age. The gap between Blacks and Whites narrows slightly (3%) when family structure, social class, gender, and health variables are entered into the model. Unlike the SNF analysis, the timing of parenthood variable is important to the timing of home health use. Although not markedly changing the race coefficient, those who are early parents are at a risk of home health use twice as great as those

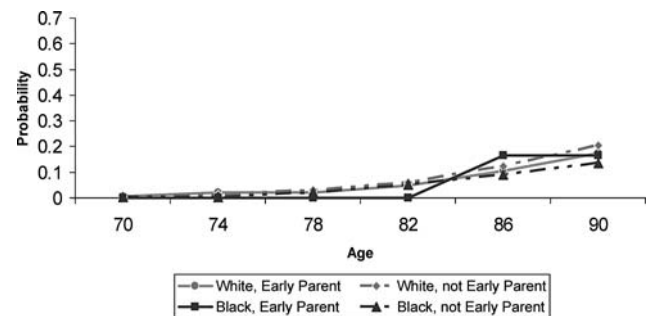


Figure 3. Probability of first skilled nursing facility use by age, race, and early parenthood status. Early parenthood status is defined as becoming a parent at age 18 or younger.

Table 2. The Risk of First SNF Care or Home Health Use: Proportional Hazards Competing Risks Models

Variable	SNF				Home Health			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Personal characteristics								
Race (Black)	0.554*	0.586*	0.585*	0.765	0.737*	0.769*	0.774 [†]	1.033
Gender (male)		0.988	0.986	0.977		0.757**	0.847 [†]	0.850 [†]
Family characteristics								
Living arrangement ^a								
Alone		1.273	1.273	1.268		1.319**	1.314*	1.310*
With spouse		1.519*	1.516*	1.521*		2.144***	2.112***	2.109***
No. of sons		0.793***	0.793***	0.791***		0.994	0.971	0.966
No. of daughters		0.883 [†]	0.883 [†]	0.887 [†]		1.057*	1.042	1.042
Grandchildren		1.647**	1.641**	1.654**		1.509***	1.575***	1.584***
Children working FT ^b								
≤ .25		1.684	1.690	1.679		1.271	1.326	1.316
.26–.50		1.762**	1.769**	1.798**		1.192	1.217 [†]	1.232 [†]
.51–.75		1.927*	1.939*	1.935*		1.454**	1.544**	1.543**
.76–1.0		1.425 [†]	1.418 [†]	1.444 [†]		1.572***	1.722***	1.749***
Timing of parenthood ^c								
< 18			1.108	1.150			1.991***	2.233***
18–24			0.960	1.009			1.270**	1.333**
Education and financial resources								
Education ^d								
≤ 8 th grade		0.688 [†]	0.689 [†]	0.686 [†]		0.883	0.841 [†]	0.838 [†]
Some HS		1.211	1.212	1.205		1.049	1.012	0.999
Poverty level ^e								
< 100%		1.377 [†]	1.377 [†]	1.383 [†]		1.198	1.183	1.189
100<200%		1.429*	1.434*	1.422*		1.142	1.131	1.119
Medicaid		1.038	1.039	1.044		1.207	1.218	1.237 [†]
Private Insurance		1.014	1.020	1.017		1.036	1.034	1.036
Health status								
Functional status ^f								
IADLs		1.404	1.404	1.407		1.300*	1.315*	1.321*
1–2 ADLs		1.882*	1.885*	1.889*		1.322*	1.334*	1.336*
3–5 ADLs		1.985*	1.978*	1.976*		1.514**	1.536**	1.547**
Impaired cognitive status		1.340*	1.340*	1.343*		0.908	0.908	0.910
Interactions								
Race (Black) × Parenthood								
< 18				0.659				0.272*
18–24				0.496				0.632 [†]

Notes: For the table, $n = 2,603$. SNF = skilled nursing facility; FT = full time; HS = high school; ADLs = activities of daily living; IADLs = instrumental ADLs.

^aThe reference category is respondents living with other people.

^bThe reference category is respondents that have no children working.

^cThe reference category is respondents that became parents at age 25 or older.

^dThe reference category is respondents that are high school graduates.

^eThe reference category is respondents that are at twice the poverty level.

^fThe reference category is respondents that have mobility only or no limitations.

* $p < .05$; ** $p < .01$; *** $p < .001$; [†] $p < .10$.

who first had children at age 25 years or older. Those who became parents for the first time between ages 18 and 24 are at a risk nearly 1.3 times greater. The introduction of the interaction term between race and timing of parenthood reveals that timing of parenthood operates differently across race groups. For instance, Whites who are early parents are at a risk of home health use 2.2 times greater than those who first had children later in life (25 years or older). For Blacks, however, early parenthood lessens the risk of home health use; those who

had their first child before age 18 are at a risk 39% lower at each age. Across models, the presence of grandchildren and the greater proportion of children working full-time are predictive of the use of home health at an earlier age, similar to the findings for the SNF analysis.

Figure 4 offers an alternative perspective on the relationships among race, the timing of parenthood, and the use of formal long-term care services. It displays the predicted probabilities for both home health and SNF care for the four parenthood

groups observed; it does so from a logistic regression model that predicts any first use of care over the 5-year interval (with the covariates as described in the model above and with age as the categories shown in Table 1). These predicted probabilities illustrate graphically that the pattern for Blacks and Whites appears to converge as the timing of parenthood is delayed. For Blacks, the probability of formal service use increases with each shift to a later age of first parenthood; the probability for Whites, on the other hand, decreases, although this is more evident in the case of home health. For those who have a later timing of parenthood (≥ 25 years), there is no residual racial difference in the likelihood of entering home health or SNF care, net of the demographic, social, and economic factors included in the model.

DISCUSSION

We use a life-course framework to examine the timing of parenthood and its influence on the timing of long-term care use. We then explore whether racial differences in the timing of parenthood contribute to racial differences in long-term care utilization. We find that the timing of parenthood is important to the timing of home health use, but not SNF care. We also find that the race differential in service use is not fully explained by the timing of parenthood. Our results suggest that the use of formal in-home care is subject to the influences of care patterns within the family, whereas the use of institutional care is driven primarily by health factors. Although the timing of parenthood did not fully explain utilization differences between Blacks and Whites, it did reveal important distinctions. For instance, the timing of parenthood had opposite effects for Blacks and Whites in the risk of home health use, and results suggest a similar pattern in the SNF case. Previous research has shown that family resources operate differently across race groups in response to the need for long-term care. For example, Cagney and Agree (1999) found that each additional daughter increased the risk of home health use for Whites but decreased the risk for Blacks; the same was true for the presence of grandchildren. We may be observing families—and family systems of care—that diverge in their approach to long-term care assistance. White families may use home health as a complement, where caregivers solicit outside aid as an adjunct to their own service. Black families, in contrast, may provide informal care in order to defer formal assistance, drawing on a dense and extended family network to supplement care by adult children.

The life-course framework suggests a number of potential mechanisms. We do find that family size is significant for SNF care, but not home health services, and that competing obligations (grandchildren, proportion of children working full-time) increase the risk of both types of formal care. Because the timing of parenthood result is significant for home health, net of these indicators, our results lend support to the possibility that differences in the nature of intergenerational relationships also are reflected in the timing of parenthood.

The convergence of timing effects across race groups (shown in Figure 4) suggests that the importance of fertility timing is not incremental. Those who begin childbearing before the age of 18 years, at least in the older cohorts studied here, are a unique group. The meaning of early teen childbearing was quite different for Blacks and Whites in this country in the 1930s and 1940s, when these cohorts were having children. Some research

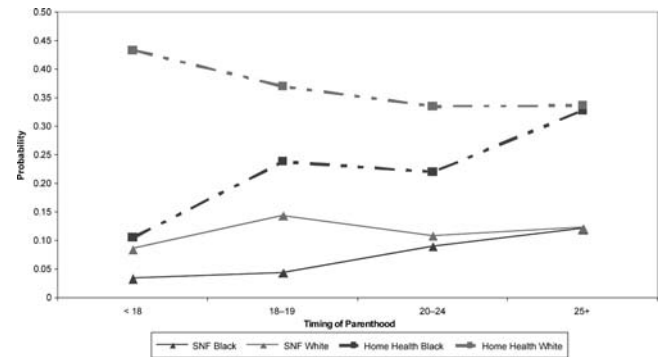


Figure 4. Predicted probability of SNF care and home health use by race and timing of parenthood. SNF = skilled nursing facility.

suggests that early parenthood has historically been more normative among Black families than White (Ruggles, 1994), and teen birth rates for Blacks have been higher than those for Whites, at least since 1960 (Heuser, 1976). This may indicate lower levels of acceptance of early childbearing among White families and potentially weaker ties across generations for teen parents. In addition, the higher probabilities of premarital conceptions and birth among Black women aged 15–29 years have persisted since 1930 (Bachu, 1999) and imply that more children born to teen parents may have been raised in extended families with grandparents around. Documented differences in the grandparent role across races, in either childcare or custodial parenting, indicate a supportive extended-family context for Blacks (and one that likely encourages caregiving behavior by grandchildren as well; Cherlin & Furstenberg, 1985; Taylor, Chatters, Tucker, & Lewis, 1990).

Speculating about the impact that parenthood timing has on the nature of intergenerational relationships and by precept, family caregiving and later-life long-term care service use helps us to identify linkages between early- and late-life events. We do not, however, have the opportunity to examine the nature of intergenerational relationships directly. Our aim in this work was to examine structural features of African American and White families that would potentially explain racial differences in long-term care use. We found some intriguing effects that cannot readily be explained, indicating that unmeasured facets of intergenerational relationships in African American and White families may be an important mechanism by which community-based long-term care services are combined with family caregiving. The rich literature on African American family life points to a number of potential pathways that might influence the context of intergenerational relationships (Dilworth-Anderson, Williams, & Gibson, 2002; Jackson, Chatters, & Taylor, 1993; Taylor et al., 1997). The higher rate of extended-family households (twice as common as compared with Whites; Farley & Allen, 1987) and the greater likelihood of social exchange in an extended-family network (Taylor et al., 1990) suggest linkages that likely contribute to the propensity to provide care.

Important to our results are several caveats. We were unable to test all potential interactions or to run separate models by race owing to the small size of the African American sample. Future analyses need to clarify the extent to which racial differences in the effects of each set of factors contribute to racial differences

in service use. Further, we assume that the measures used in our analyses operate effectively across race groups. Cognitive performance measures, for instance, may not accurately capture cognitive status in all groups, as Differential Item Functioning analysis indicates (Jones, 2003). Alternatively, there may be important confounders typically not included in social science analyses (e.g., quality of education) that reduce differences observed (Manly, Jacobs, Touradji, Small, & Stern, 2002). In addition, the risks and consequences of early childbearing (e.g., lower educational attainment) may be experienced differentially across race groups; the opportunity to, for instance, complete high school or receive other training post parenthood may have been more common for Whites in this sample (and may indicate more subtle changes within the family than we are able to identify). Additionally, because of data limitations, we were unable to explore other characteristics of children (e.g., proximity, marital status, spouse's employment) or of other relatives (e.g., siblings) that likely play a role in understanding racial differences in the long-term care decision-making process. Importantly, the inclusion of early life-course indicators, also not possible with these data, could provide additional information about the meaning of parenthood timing. We know little about the extent to which early-life conditions, or changes in life circumstances across the life course, affect health and well-being in later life (Hayward & Gorman, 2004).

Divergence between these groups also may be due to variation in access to health services, which is unmeasured here. A history of reduced access to health and other social services for African American respondents likely has cumulative effects on later-life health. This raises the larger issue of social context. We are not able to assess information about the community in which these respondents are embedded. Churches, neighborhood social networks, and other resources within the community can deliver care directly or may contribute to an environment in which some forms of care are more available or better integrated than others (Cagney, Browning, & Wen, 2004; Krause, 1996). Availability of these resources may be correlated with race in ways that we cannot readily appreciate. Change in the community is important to service availability and use as well, even if family members remain. Gentrification in an urban context and the development of agricultural lands into housing stock in a rural one mean that the context of care may change regardless of change within the family.

Why does the timing of parenthood mark Blacks and Whites so differently? Is it a product of social circumstances at younger ages, or is it a factor that determines social mobility over the lifespan, implying different life-course trajectories? Information about social mobility—for the parents and for their children—may provide the linkage necessary to understand how and to what extent early-life events such as the timing of parenthood affect later-life changes, opportunities, and, ultimately, health and later-life service use. Other research investigating the life course and the evolution of family formation and family norms suggests that the interplay between family and social opportunity is complex (Taylor et al., 1990, 1997). Accrual of wealth, for instance, for one generation and education for the next could introduce important dynamic changes into the role of the family and its relationship to formal long-term care use.

As future cohorts age, the importance of early parenthood is likely to persist. Rates of teen childbearing rose over the course

of the twentieth century; although the 1990s have seen a persistent decline in teenage childbearing, first birth rates to teen mothers in 1999 are comparable with the levels of 1940 (National Center for Health Statistics, 1999). The aim of our research was to examine this sentinel event and explore the extent to which it might influence another important life transition. Embedding these events in a life-course framework provided a novel means to examine racial differences in long-term care and a more general approach to understanding the highly differentiated lives of older adults. The mechanisms by which the timing of parenthood leads to later-life service use—particularly the processes by which the family responds to need and the dynamic nature of the family itself—merit further explication.

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