BARGAINING POWER and INTERGENERATIONAL CORESIDENCE:
ADULT CHILDREN AND THEIR DISABLED ELDERLY PARENTS

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Comments Welcome

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Introduction

Because of gradual deterioration with age or sudden health shocks, elderly persons face a considerable probability of becoming disabled and unable to care for themselves. About 20% of older U.S. adults have chronic disabilities (Manton and Gu 2001); roughly one-third have mobility limitations and 7-8% have severe cognitive impairments (Freedman and Martin 1998; Freedman et al. 2000). Recent evidence suggests a downward trend in the age-adjusted prevalence of disability and functional limitations, raising hope that long term care burdens on families and public programs will be less than feared. At the same time, growth in the elderly population and evidence that the level of disability of those who are disabled has increased (Spillman and Pezzin 2000), suggest that changes in the overall demand for long term care in the future are, at best, ambiguous.

Long-term care is often the resultant of numerous individual and joint decisions by family members with different preferences facing different constraints. Family members, most notably, adult children, not only make caregiving decisions on behalf of disabled family members but often provide hands-on care themselves and share the financial consequences of caregiving decisions. Moreover, the preferences of adult children may differ from those of their siblings and from those of their disabled elderly parent. Differences may arise about the type of care the disabled elderly receive and the setting in which they receive it; for example, a child may want a parent to receive care from a family member, rather than be cared for in a nursing home, but prefer that another child provide the care. Uncertainty about the parent’s future health and potential informational asymmetries among family members further complicate family caregiving decisions. The possibility of conflict regarding caregiving and the role of different
family members in providing it suggests that family members may have incentives to behave strategically.

An important mode of support from adult children to their elderly parents is coresidence. Although recent evidence suggests a secular trend toward living alone among elderly persons (Kotlikoff and Morris 1990), coresidence between elderly parents and their adult children remains a fairly common living arrangement in the United States (Crimmins and Ingegneri 1990; Davis et al. 1997) with nearly one-fifth of all family households with a member aged 65 or older in 2001 containing at least one of the householder’s children aged 18 or older (Census Bureau).

Coresidence has been linked to both economic and health well-being of elderly persons. A number of studies have shown that transfers provided via or in the context of coresidence are distinct from provision of resources to nonresident family members (Aquilino 1990; Börsch-Supan et. al. 1992; Lee and Dwyer 1996; Davis et al. 1997). Disabled elderly persons who coreside with an adult child, for example, are less likely than their non-coresiding counterparts to make a transition into a nursing home (Garber and MaCurdy 1990; Kemper and Pezzin 1996; Dostie and Leger 2003). Moon (1983) also provides some evidence to support the notion that coresidence affects the health of disabled elderly persons with those cared for in the home of a family member having better health outcomes than persons in similar health who were cared for in an institution.

Coresidence may also result in advantages for a child. To the extent that households contain public goods that can be jointly consumed or produced, economies of scale and other efficiency gains in consumption and production make residence sharing more effective than providing almost equivalent services without coresidence. By sharing a household, for example,
adult children may lower the time cost of providing care since travel costs can be avoided. Coresidence, however, may entail privacy and other costs.

One potential consequence of coresidence is that siblings of the coresident child may respond by reducing their transfers to the parent. Relatively little work has focused on these types of interactions among adult children.\(^1\) One concern not addressed in the literature is that coresidence may reduce the relative bargaining power of coresiding children, leading to a reduced willingness of children to share a household with a disabled elderly parent.

The purpose of this paper is to examine the effect of changes in intergenerational coresidence on intra- and interhousehold time transfers by adult children to their disabled elderly parents. In addition to focusing on the probability and intensity of informal care provision among each adult child, we also consider the impact of coresidence on the parent’s receipt of formal care, a potential substitute for the care provided by children. Our framework suggests that living and care arrangement decisions of adult children take place in an environment in which considerations of the responses of their siblings to their own decisions matter, and may adversely affect a child’s willingness to coreside with her disabled elderly parent.

\(^1\)Although the literature is replete of studies examining the determinants of elderly living arrangements and, in particular, intergenerational coresidence, (Börsch-Supan et. al. 1989, Kotlikoff and Morris 1990, Börsch-Supan et. al. 1992, Börsch-Supan, McFadden and Schnabel, 1993; Wolf 1984, 1995; Stern 1994 and 1995, Hoerger, Picone and Sloan 1996, Pezzin et al 1996; Kemper and Pezzin, 1996; Costa 1997), much of the work has focused on the parent-child dyad. Although some of the studies have included variables summarizing characteristics of the remaining family network (Kotlikoff and Morris 1990; Pezzin and Schone 1999 and 2002; Stern 1993 and 1995). Notable exceptions include Engers and Stern 2002 and Checkovich and Stern 2002.
Conceptual Framework

We motivate our analysis of interactions among adult children by building on research that has modeled intrahousehold allocation within a game theoretical framework (Manser and Brown 1980; McElroy and Horney 1981; Lundberg and Pollak 1993 and 1994). Game theoretic models are especially suitable for analyzing intergenerational living and transfer arrangements because they recognize the divergent and often conflicting interests and preferences of family members and specify a process for translating these preferences into outcomes. In this section we describe the three player (disabled parent-two children) game, which serves as the point of departure for our empirical work.\(^2\)

We model family interactions as a two-stage game. The first stage is noncooperative and determines the living arrangements. A specific example will help. First the children decide, separately and simultaneously, whether or not to invite the parent to coreside. Then the parent chooses among the feasible living arrangements: she can move into a nursing home, live on her own, or accept the invitation of any child who has invited her to coreside. At the second stage, taking as given the living arrangement determined at the first stage, the children and the parent make decisions that determine resource allocation under that living arrangement. The second stage could be modelled as a noncooperative game, a cooperative game, or a mixture of both. Alternatively, we finesse some but not all of the difficulties of modeling the second-stage game by postulating a "sharing rule." A sharing rule specifies each family member's second-stage behavior as a function of economic and environmental and demographic characteristics and the

\(^2\) Much of this theoretical discussion draws from Pezzin, Pollak and Schone (2003).
living arrangement, which is determined in the first stage.\footnote{We have adopted and adapted the idea of a sharing rule from Chiappori (1988a, 1992). By beginning with the sharing rule, we avoid not only the need to analyze the second-stage game but also the need to specify it, or even to specify whether it is cooperative or noncooperative. In the context of allocation between spouses within marriage, Chiappori postulates a single-valued, Pareto efficient sharing rule without attempting to derive it from an underlying model of bargaining within marriage. Unlike Chiappori, we do not require our sharing rules to be single-valued or Pareto efficient.}

Regardless of whether the sharing rule is derived from a second-stage game or postulated directly, we assume that family members cannot make binding agreements at the first stage regarding transfers or allocations at the second stage. Hence, the transfers that a child makes and the allocation that a parent chooses at the second stage are determined, or at least ratified, at the second stage: they do not implement binding agreements made at the first stage.

Like any dynamic game, our two-stage sequential game is solved by backwards induction: First, we calculate the sharing rule corresponding to the second-stage game. We then consider the first stage game which determines the living arrangement taking into account the sharing rule for the second stage. The defining characteristics of our two-stage game, therefore, are that it involves big, up-front first stage decisions that affect second stage bargaining power, and that family members cannot or do not make binding commitments regarding their future behavior. In what follows, we focus on the implications of one of the outcomes in the first stage game coreidence for family bargaining as it leads to interesting, testable hypotheses, which are the core of our empirical work.
The Effects of Coresidence

Suppose that equilibrium of the first stage game is one in which the parent lives with one of the children. With two or more children, coresidence strengthens the bargaining power of the noncoresident child as it weakens the bargaining power of the coresident child. The noncoresident child, knowing that her sister is acutely aware of the parent's needs and cannot easily evict the parent, can contribute less knowing that the coresident child will take up much of the slack.

Regardless of the structure of the game between parent and children, two new issues arise with coresidence. The first involves coalition formation. Pezzin and Schone (1999a, 2002a) consider the one child case and assume that when the parent and the child coreside, their interactions are cooperative. The implications of this appealing assumption for the two-child case are not yet clear. It is tempting to assume that when the parent coresides with one of the children, interactions between the parent and the coresident child are a cooperative game, and interactions between the noncoresident child and the household consisting of the coresident child and the parent are a noncooperative game. The assumption that the parent and the coresident child play as a team is fully justified if the actions of the noncoresident child affect the resources of the coresident household without affecting the relative bargaining power of the parent and the coresident child. But if bargaining power is affected, then the interests of the parent and the coresident child do not fully coincide.

The second involves monitoring. Allocation within a coresident household poses issues somewhat similar to those analyzed in bargaining models of marriage: both involve a bargaining game between two family members who live together. Furthermore, just as we need to analyze
allocation within marriage to understand the marriage market, we need to analyze allocation within coresident households to understand the decision to coreside. With one child, allocation within the coresident household and the coresidence decision are the principal issues. With two children, allocation within the coresident household plays an additional role: the noncoresident child must decide on time and cash transfers to the coresident household, taking account of the coresident household's sharing rule. Empirical work on allocation within marriage establishes that resources controlled by the wife have a different effect on household expenditure patterns than resources controlled by the husband. In the coresident household, control over resources may also affect behavior and, if it does, transfers received by the parent and transfers received by the coresident child will have different effects. Formally, resources controlled by the parent and resources controlled by the coresident child are separate arguments of the coresident household's sharing rule.

The position of the noncoresident child parallels that of the noncustodial parent described by Weiss and Willis (1985, 1993) in their analysis of child support by divorced fathers. Weiss and Willis assume that the child's well-being is valued by both parents, but that each parent is also concerned with his or her own private consumption and unconcerned with the private consumption of the ex-spouse. The divorced father, because he does not live with the child, is poorly positioned to monitor his ex-wife's allocation of child support payments between her own consumption and the child. The difficulty of monitoring precludes binding, enforceable agreements, and the father is rationally concerned that his ex-wife will "tax" any contributions he makes by reducing her own support for the child. The Weiss and Willis argument implies that divorced fathers will undercontribute relative to what they would contribute if binding,
An extreme case in which the position of the noncoresident child is essentially identical to that of the divorced father arises when the parent has a mental disability such as severe Alzheimer's that prevents her playing a role in allocation decisions of the coresident household. Under these circumstances, the coresident child makes all allocation decisions in the coresident household, just as the mother allocates resources in Weiss and Willis.

Long-term care and child support pose similar issues: the position of the noncoresident child contemplating a contribution to the coresident household is similar to that of the divorced father contemplating child support. The noncoresident child, concerned that the coresident child will exploit her position, will undercontribute to the coresident household relative to what would be contributed if binding, enforceable agreements were possible. This result is consistent with the observation that, when the parent coresides with one child, the noncoresident children may contribute very little. Testing the validity of this hypothesis is the focus of our empirical work presented next.

Data and Variables

Data for this analysis are drawn from the first and third waves of the Assets and Health Dynamics of the Elderly (AHEAD) survey. AHEAD is a biennial panel that is being collected by the Survey Research Center at the University of Michigan. It is now a part of the Health and Retirement Survey (HRS). AHEAD is nationally representative of the cohorts born in 1923 or earlier with oversampling of blacks, Hispanics and residents of the state of Florida. The AHEAD data are particularly well-suited for our analysis since they contain detailed panel data on elderly persons, regardless of living or care arrangements. The database supplies information on

\footnote{An extreme case in which the position of the noncoresident child is essentially identical to that of the divorced father arises when the parent has a mental disability such as severe Alzheimer's that prevents her playing a role in allocation decisions of the coresident household. Under these circumstances, the coresident child makes all allocation decisions in the coresident household, just as the mother allocates resources in Weiss and Willis.}
changes in the economic status of respondents, along with changes in health, family structure, and in living arrangements. Specifically, AHEAD include questions in six broad dimensions: health measures (including self-assessed health, morbid conditions, cognition, mood, and ADL and IADL limitations); income and assets; family structure and intergenerational transfers, including hours of help from all sources; housing; insurance; and pensions. For each sampled person, the survey collects a roster of all household members, regardless of relationship, and all children living outside of the household, as well as information on all additional persons actually providing disability care. We use the full complement of household members, nonresident children and helpers to identify whether each elderly respondent was receiving long-term care and to classify care and caregivers as formal (paid) or informal (family members and friends).

From the full sample of respondents, we drew a subsample of elderly persons who have a chronic disability. An elderly respondent is defined as chronically disabled if s/he has difficulty with at least one of the five instrumental activities of daily living (IADLs) — grocery shopping, preparing meals, taking medications, using a telephone, and managing household finances — or difficulty with at least one of the six activities of daily living (ADLs) — transferring, dressing, bathing, toileting, eating, and walking across a room in both waves 1 and 3 of the survey. \(^5\) We

\(^5\) Our use of Wave I of AHEAD as our baseline implies some limitations for the analysis of caregiving behavior. Perhaps the most serious shortcoming of the survey in its first wave was the narrow identification of "helpers". Respondents who indicated receiving help with any of the six ADLs "all or most of the time" were asked to identify the person who "most often" helped with each specific task. In contrast, respondents who indicated receiving help with any of the five IADL tasks were asked to identify up to two persons who "most often" helped them with those activities. Respondents who received assistance with ADL tasks less often than "all or most of the time," therefore, were never asked to identify a helper. Consistent with the restrictions imposed by the data, our approach in this analysis was to consider the effects of sibling coresidence on informal caregiving by children and on parent's use of formal care for the sub-sample of disabled elderly respondents who were asked the "helpers" questions. That is, our
further restricted our sample to respondents who are unpartnered (widowed, divorced, or separated), have at least two adult children (over age eighteen), and who were present in both waves 1 and 3 of AHEAD. Unpartnered elderly persons are a group of particular policy interest because they are far more likely to be institutionalized (Freedman 1996) and are also more likely to engage in exchange with their children than are their married counterparts (Dwyer and Coward 1991). The presence of a spouse generally diminishes the caregiving role of children and changes the incentives and constraints to engage in intergenerational transfers.

Our child-level analysis file was constructed by creating individual records for every child associated with the elderly parents meeting the inclusion criteria discussed above. This resulted in an effective sample size of 1,104 adult children, 16.3% of whom experienced a change in coresidence status with the parent between 1993 and 1998.

The main dependent variables in our analysis are indicators of adult children's transfers of time to their disabled parents. Our measure of time transfers is based on adult children's informal caregiving—the provision of in-kind services to a parent because of a health-related problem or disability. We measure informal care propensities as well as total hours of care. In addition to analyzing informal care provision, we also examine the probability and intensity of formal care use by the parent. Formal (paid) home care represents a close market substitute for children's informal caregiving; moreover, its interactions with informal care and institutionalization are at the core of the public debate concerning long term care initiatives.

Contrary to the effect of sibling's coresidence on the contributions of non-coresident children, the analysis of care was based on the sub-sample of disabled elderly respondents who reported receiving help "all or most of the time" with an ADL or reported receiving help with an IADL.
net impact of coresidence on parental use of formal care cannot be determined a priori. Its direction will depend on the nature of the game played by parent and children and the relative magnitude of changes in coresident and non-coresident children's contribution to the public good.

Empirical Estimation

In testing the hypothesis that the relative bargaining power of adult siblings changes with changes in their coresidence status with the parent, we rely on a difference-in-differences estimator (Meyer 1994). In particular, we examine the extent to which children's differences in time transfers across survey waves can be accounted for by changes in their siblings' coresidence status with the parent. For example, a finding that a child reduces her time transfers to the parent as a result of her sibling now residing with the parent is consistent with the hypothesis that the bargaining power of the nonresident child has improved relative to her coresiding sibling.

Consistent with the framework presented above, we classify children into four mutually exclusive groups: treatment groups $T_1$ and $T_2$, which consist of families where there was a change in coresidence, and control groups $C_1$ and $C_2$, which consist of families who experienced no such a change. Specifically, we classify individuals in group $T_1$ if a sibling makes a transition into coresiding with a parent between waves 1 and 3; group $T_2$ if a sibling makes a transition out of coresidence with the parent between waves 1 and 3; group $C_1$ if a sibling coresides with the parent in both waves 1 and 3; and $C_2$ if a sibling does not coreside with the parent in either wave. This approach yields a model of transfers of time from each child $j$ ($j=1\ldots K$) in family $i$ of the form:
where \( X_i \) represents family (and parent) characteristics of the \( i \)th family, \( Y_{ji} \) represents a vector of child-specific characteristics for the \( j \)th child in family \( i \), and \( Z \) represents characteristics of the remaining \( k \) children in the \( i \)th family. Variables in \( X \) include demographic characteristics of the parent, such as age, gender, race/ethnicity and education; parental functioning, which is captured by counts of limitations in ADLs (ranging from zero to six), and IADLs (ranging from zero to five), and a binary variable for incontinence; and parental economic status, captured by the parent's current income, based on Social Security income and wealth, as measured by the parent's total net worth. Variables in \( Y \) include the index child's age, gender, education, marital status, and number of children. Variables in \( Z \) include the presence of any unmarried sibling, the presence of a sister and the size of the sibling network.

The variable \( t \) captures time effects (survey waves=1 or 3) while variables \( T_1, T_2 \) and \( C_1 \) control for differences in transfers across the groups that are invariant. Lastly, the interaction terms between wave and group provide the key parameter estimates for our hypotheses. They represent the changes in time transfers across waves for each group relative to those children who did not have a sibling residing with the parent in either wave (the reference group). The models are estimated using Probit specifications for the propensities and Tobit specifications for the intensities (monthly hours of care) of child-provided and formal care.

Two econometric issues in estimating the above-specified model merit comment. The first concerns the potential endogeneity of the \( T \) variables. If a child's observed caregiving behavior is correlated with unobservable factors that affect her sibling's coresidence decision,
then estimates of the corresponding coefficients will be biased. Identification of a model in which such an endogeneity problem would be addressed is difficult as it depends on the existence of viable exclusion restrictions. In what follows, we have not explicitly dealt with the endogeneity of the transition variables. Our goal, however, is to address this issue by estimating a reduced-form Probit for the transition equations, form predictions for all children in the sample of their propensities to begin or terminate coresidence and create binary indicators of for the predicted binary $T$ variables based on a threshold cut. Supply variables concerning availability of nursing home beds as well as home ownership for parent and children might serve as viable identification variables for the first stage Probit relationships. These variables might plausibly be assumed to affect (parent and) children willingness to form (or dissolve) an intergenerational household but not to have an independent effect on a child’s transfer behavior conditional on her sibling’s transition decision.

Another issue concerns the potential correlation of caregiving behavior (and consequently formal care use) within families. If the behavior of siblings is correlated, then the current specification does not take advantage of this information, resulting in estimates that may be both biased and inefficient. The efficiency of our estimates might be improved with a random effects specification to ascertain how much of the unobserved family background, including unmeasured parental frailty and disability, explains the variation in children’s transfer behavior. We intend to address both of these issues in future version of this paper.
Results

Table 1 provides descriptive information on our dependent variables by the four groups of children: those whose sibling made a transition into coresiding with a parent between waves 1 and 3 ($T_1=1$); those whose sibling made a transition out of coresidence with the parent between waves 1 and 3 ($T_2=1$); those whose sibling coreside with the parent in both waves 1 and 3 ($C_1=1$) and those whose sibling did not coreside with the parent in either waves 1 or 3 ($C_2=1$).

Significant differences in provision of parental care and parent's use of formal care by child type are evident from these data. The most pronounced differences we observe in children's propensity to provide parental care are between children with siblings who coresided with the parent in both and those whose siblings never coresided with the parent: in both survey years, children with no coresiding siblings are at least four times more likely than those with a coresiding sibling to provide informal care (6% versus 27% in wave 1; 8% versus 33% in wave 3). With respect to children whose sibling experienced a change in coresidence status between 1993 and 1998, we observe that roughly one-third of all children whose siblings made a transition out of coresidence with the parent provide care after the household was dissolved; in contrast, just over 10 percent of those children provided care in wave 1 when the sibling coresided with the parent.

Parental use of formal care, on the other hand, increased over time across all four groups of children but was significantly higher among children whose sibling either moved in with the parent between waves or remained living with the parent across both waves. While these results are generally consistent with the hypothesis that sibling coresidence reduces transfers by non-coresident children, they do not control for important cofounders such as the parent's level of
disability; multivariate analyses are, therefore, required to examine the validity of our hypothesis. We turn to those results next.

Table 2 presents estimated parameters for the full models for each of the outcomes. Our results are generally consistent with the univariate statistics shown in Table 1. Perhaps the most striking finding in Table 2 is the effect of a sibling transition out of coresidence (Treatment Group 2) relative to children whose sibling did not coreside with the parent in either wave (the reference category). Children whose sibling moved out of the parental household between 1993 and 1998 are significantly more likely to provide parental care in wave 3. They also provide more hours of care in wave 3 relative to wave 1, as indicated by the significant and positive Tobit coefficients. These effects persisted despite controls for changes in parent’s health and disability and other factors likely to influence the decision of providing care. Although the underlying coefficients on the interactions between wave and sibling’s transition into coresidence (Treatment Group 1) were not statistically significant at conventional levels, their direction is of interest: Parameter estimates indicate that children whose sibling make a transition into coresiding with the parent are less likely to provide care themselves (p=0.14) and provide fewer hours of care (p=0.17) after than they did before parent-sibling coresidence. Both sets of results, therefore, are consistent with our hypothesis that non-coresident children take advantage of their superior bargaining power by reducing their contributions to the public good.

Parameter estimates with respect to formal care reveal a consistent pattern of increased use among parents in wave 3 for those who experienced intergenerational household formation. The finding of a significant increase in parental use of formal care among children whose sibling began coresiding with the parent suggests that any increases in care provision by coresident
children was more than outweighed by decreases in contributions from non-coresident children, thereby demanding higher use of formal care.

In addition to these main findings, the parameter estimates contained in Table 2 indicate that other factors are associated with child-to-parent transfers in predictable ways. Disability levels, for example, were strongly associated with both the likelihood and the intensity of care provided by children. Controlling for parental disability and other factors, children were more likely to provide care to their elderly mothers than to their fathers. In addition, although there were no statistically significant differences in the propensity to provide care, children of Hispanic and Black parents provided more hours of care to their disabled parents than did their white counterparts; somewhat surprisingly, however, these children were also more likely to have parents who used formal care.

The parent's economic status, as measured by current income, decreased the probability that children provided care while increasing the probability that the child's parent used market-purchased formal care. Sons were less likely to provide care to a disabled elderly parent; they were also more likely to have parents who relied on formal sources for their care. Consistent with the gendered nature of parental care, having a sister in the sibling network decreased the likelihood that the index child provided care to the parent; children who had at least one sister were also less likely to have parents who used formal care. Being married and having more children was negatively associated with providing parental care; these competing demands on the time of the child were also negatively associated with the number of hours of care provided in a month. Finally, children were less likely to engage in parental care the larger the size of their sibling network.
Conclusion

An interesting development of U.S. long-term care policy initiatives over the past several years has been the expansion of the target population to include not only the disabled elderly person but their families as well. The recent emphasis on developing policies and programs to support families who care for the aged makes it important to understand the process underlying families' long-term care decisions.

In this paper, we have used a game-theoretical framework of families living and care arrangements to formulate an empirical model of the effects of changes in sibling coresidence on time transfers by adult children of unpartnered disabled elderly parents. In general, the results presented are supportive of the notion that coresidence reduces the bargaining power of coresiding children relative to that of their non-coresident siblings. Specifically, we observe reductions in the likelihood of providing informal care (and the intensity of the care provided) for children with siblings who begin to reside with their parent relative to children whose siblings have never lived with their parent; similarly, children increase their likelihood (and intensity) of care provision when a sibling no longer coresides with a parent. These findings highlight the importance of understanding the dynamics of family interactions when evaluating long term care policies.

As the U.S. explores creative policies to address the needs of its growing elderly population while maintaining them in the community, understanding potential barriers to shared living arrangements where the largest amounts of family care are likely to be concentrated is an important aspect in the evaluation of such programs. Interventions that compensate for reduced transfers from non-resident kin dependent care tax provisions or allowances for
coresident caregivers, for example may prove cost-effective in promoting intergenerational coresidence and reducing institutionalization.
Table 1. Provision of Parental Care and Parent’s Use of Formal Care by Child Type and Wave

<table>
<thead>
<tr>
<th>Child Type</th>
<th>Frequency</th>
<th>Provides Informal Care - Wave 1</th>
<th>R Gets Formal Care - Wave 1</th>
<th>Frequency</th>
<th>Provides Informal Care - Wave 3</th>
<th>R Gets Formal Care - Wave 3</th>
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<tr>
<td>Sibling moved in</td>
<td>103</td>
<td>0.18</td>
<td>0.16</td>
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<td></td>
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<tr>
<td>Sibling coresides with R in both waves</td>
<td>239</td>
<td>0.06</td>
<td>0.15</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Sibling and R no longer coreside in Wave 3</td>
<td>77</td>
<td>0.12</td>
<td>0.13</td>
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<tr>
<td>Sibling does not coreside with R in either wave</td>
<td>685</td>
<td>0.27</td>
<td>0.25</td>
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</tr>
<tr>
<td>Sibling moved in</td>
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<td>0.16</td>
<td>0.29</td>
<td></td>
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<tr>
<td>Sibling coresides with R in both waves</td>
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<td>0.08</td>
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<tr>
<td>Sibling and R no longer coreside in Wave 3</td>
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<td>0.31</td>
<td>0.17</td>
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<tr>
<td>Sibling does not coreside with R in either wave</td>
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<td>0.33</td>
<td>0.29</td>
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Table 2: Main Multivariate Regression Results

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<th>Wave and Group Variables</th>
<th>Informal Care Coefficient</th>
<th>SE</th>
<th>Hours of Informal Care Coefficient</th>
<th>SE</th>
<th>Formal Care Coefficient</th>
<th>SE</th>
<th>Hours of Formal Care Coefficient</th>
<th>SE</th>
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<td>0.079</td>
<td>19.214</td>
<td>14.812</td>
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<td>0.080</td>
<td>-3.620</td>
<td>4.588</td>
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<tr>
<td>Treatment Grp 1</td>
<td>-0.318*</td>
<td>0.167</td>
<td>-63.087**</td>
<td>31.597</td>
<td>-0.264</td>
<td>0.176</td>
<td>-10.130</td>
<td>10.255</td>
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<td>Treatment Grp 2</td>
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<td>0.207</td>
<td>-145.377***</td>
<td>42.009</td>
<td>-0.623***</td>
<td>0.203</td>
<td>-33.213***</td>
<td>12.004</td>
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<td>Control Grp 1</td>
<td>-0.918***</td>
<td>0.152</td>
<td>-162.248***</td>
<td>29.658</td>
<td>-0.405***</td>
<td>0.126</td>
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<td>-62.738</td>
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<td>0.326</td>
<td>0.225</td>
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<td>0.530**</td>
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<td>91.888*</td>
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<td>0.272</td>
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<td>Control 1 * Wave 3</td>
<td>-0.110</td>
<td>0.204</td>
<td>-16.016</td>
<td>39.870</td>
<td>0.462***</td>
<td>0.159</td>
<td>18.939**</td>
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<table>
<thead>
<tr>
<th>Parent s Characteristics</th>
<th>Informal Care Coefficient</th>
<th>SE</th>
<th>Hours of Informal Care Coefficient</th>
<th>SE</th>
<th>Formal Care Coefficient</th>
<th>SE</th>
<th>Hours of Formal Care Coefficient</th>
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<td>1-2 ADLs</td>
<td>0.124</td>
<td>0.082</td>
<td>45.943***</td>
<td>15.742</td>
<td>0.705***</td>
<td>0.082</td>
<td>36.796***</td>
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<td>3+ ADLs</td>
<td>0.189</td>
<td>0.087</td>
<td>67.795***</td>
<td>16.562</td>
<td>0.908***</td>
<td>0.086</td>
<td>59.655***</td>
<td>5.204</td>
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<tr>
<td>Age 85-89</td>
<td>0.054</td>
<td>0.084</td>
<td>3.782</td>
<td>16.210</td>
<td>-0.401***</td>
<td>0.083</td>
<td>-13.130***</td>
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<td>0.094</td>
<td>55.084***</td>
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<td>0.091</td>
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<tr>
<td>Educ &lt; 12 yrs</td>
<td>0.167</td>
<td>0.106</td>
<td>4.234</td>
<td>20.017</td>
<td>0.160</td>
<td>0.105</td>
<td>3.154</td>
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<tr>
<td>Educ &gt; 12 yrs</td>
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<td>-30.558</td>
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<td>0.142</td>
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<td>0.093</td>
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<td>0.205**</td>
<td>0.091</td>
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<td>Hispanic</td>
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<tr>
<td># of Children</td>
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<td>-9.374***</td>
<td>3.019</td>
<td>-0.023</td>
<td>0.015</td>
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<td>Divorced</td>
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<tr>
<td>Soc Sec Income</td>
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<td>0.000**</td>
<td>0.000</td>
<td>0.003**</td>
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<table>
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<tr>
<th>Child s Characteristics</th>
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<th>Hours of Informal Care Coefficient</th>
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<th>SE</th>
<th>Hours of Formal Care Coefficient</th>
<th>SE</th>
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<tbody>
<tr>
<td># of Children</td>
<td>-0.053***</td>
<td>0.019</td>
<td>-11.554***</td>
<td>3.641</td>
<td>-0.002</td>
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<td>Partnered</td>
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<td>-39.713***</td>
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<td>4.441</td>
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<td>Age 50 - 54</td>
<td>-0.301***</td>
<td>0.103</td>
<td>-55.586***</td>
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<td>0.118</td>
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<td>Age 55 - 64</td>
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<th>SE</th>
<th>Hours of Formal Care Coefficient</th>
<th>SE</th>
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</thead>
<tbody>
<tr>
<td>Any sister</td>
<td>-0.169*</td>
<td>0.096</td>
<td>-22.523</td>
<td>17.840</td>
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<td>0.096</td>
<td>-10.135*</td>
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<td>Constant</td>
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<td>-1.152***</td>
<td>0.166</td>
<td>-76.223***</td>
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</tr>
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</table>

Log of the Likelihood

-1001.1***
-3651.6***
-1088.1***
-3451.2***
Notes: Omitted categories include persons with only IADLs, those with 12 years of education, parents less than 85 years old, children less than 50 years old, and persons of other race/ethnicity (mainly Caucasian). Results are statistically significant at *** $p < .01$; ** $p < .05$; * $p < .10$; $p < .15$. 
REFERENCES


