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Caregiving Arrangements for Older Adults: The Relationship between Family Characteristics and Public Benefits

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Abstract

Most older adults in the United States will need long-term care before they die, but there is little research on the care arrangements older adults are likely to use. Additionally, while there is some research that suggests Social Security receipt is associated with higher levels of family caregiving, there is limited research that examines how Social Security receipt affects caregiving types used by different kinds of families. This study uses data from the Health and Retirement Study (HRS), with Social Security data from the Master Beneficiary Record, to investigate how characteristics of adult children and Social Security benefit receipt are associated with caregiving arrangements for older adults. Multinomial logit models are used to compare associations between adult child characteristics, public benefits, and different caregiving types. Results find that there are significant associations between certain child characteristics and caregiving arrangements, as well as significant associations between some interactions of Social Security benefit receipt and child characteristics on caregiving arrangements.

Keywords: Family caregiving, Social Security

JEL Classification: H55, J12, J14

1. Introduction

In the United States, approximately 70 percent of adults over age 65 will need some form of long term care before they die (Johnson and Wang 2019). While the demand for care is high and expected to rise, there is growing concern about who will provide care to older adults. Formal long-term care is expensive, Medicare does not cover long-term care, Medicaid is only required to cover institutional care, the long-term care workforce is marked by low pay and high turnover, and there are financial and logistical considerations for family members to provide care. The popular media, politicians, and researchers alike have referred to this collection of concerns as the “long-term care crisis” (Gastfriend 2018; Kenen 2021; Osterland 2021; Osterman 2017). In light of this looming crisis, it is important to understand how individuals and their families make decisions about caregiving and how public programs influence these decisions in order to develop solutions that respond to their needs. As such, this paper investigates the relationships between individual and family characteristics, public benefits, and caregiving arrangements. The type of caregiving this paper is focused on is personal care that supports activities of daily living (ADL) and instrumental activities of daily living (IADL) among community residing older adults.

Individuals and their families use a range of possible caregiving arrangements, though there is little research that examines who is likely to use which arrangements. Further, the limited scholarship in this area focuses on characteristics of the care recipient without considering how characteristics of the entire family may influence the arrangement used (Toth et al. 2020). In the United States, the majority of care needs are met by family caregivers (Freedman and Spillman 2014; National Academies of Sciences, Engineering, and Medicine 2016; Soldo and Hill 1995; Stone 2011), and even when family members do not provide care, they are often involved in decisions about caregiving (Garvelink et al. 2016; Petriwskyj et al. 2014; Towle et al. 1999). Therefore, in order to understand which populations are likely to use which arrangements, it is important to understand characteristics of the entire family. As such, this project investigates characteristics of the family that affect caregiving decisions, in addition to the care recipient. In particular, this project focuses on characteristics of adult children.

Additionally, while we know that income is correlated with a chosen care arrangement (for example, higher income is associated with traditional living arrangements, while lower income is associated with community-based residential care or nursing facilities) (Toth et al. 2020), there

has been relatively little attention given to the relationship between public benefits and care arrangements. The research we do have in this area suggests that when older adult care recipients receive disability benefits, including Supplemental Security Income (SSI) and Social Security Disability Insurance (SSDI), they are more likely to share resources with adult children family caregivers, and those caregivers are likely to provide more hours of care and fewer hours in the labor market (Rennane 2020). This implies that benefits may affect the type and amount of care accessed and received, especially among low-income care recipients. Therefore, this paper also investigates how receipt of Social Security benefits interacts with adult children's characteristics in determining care arrangements.

1.1 Research Questions

This study poses two questions.

1. What is the relationship between family structure and characteristics and caregiving arrangements for community-residing older adults who need help with activities of daily living (ages 51 and older) in the United States?
2. What is the relationship between Social Security programs (SSI, SSDI, OASI) and caregiving arrangements for community-residing older adults who need help with activities of daily living (ages 51 and older) in the United States?
 - a. How does receipt of Social Security benefits interact with family characteristics to produce certain caregiving arrangements?

1.2 Implications for Low-Income Families and Benefit Design

For this study, the sample includes respondents across income groups, but the findings are particularly relevant for understanding how public benefit receipt affects low-income families with older-adult caregiving needs. This is because low-income families are less likely to have personal economic resources, such as savings and assets, to buffer against the economic consequences of caregiving. As such, these benefits may provide choices to low-income families that are already available to higher-income families simply because of their financial resources. Given the high cost of formal care and limited personal and private sector options, low-income families rely primarily on subsidized care through Medicaid or on family members (Toth et al. 2020). Therefore, family members and social welfare programs likely play an important role in determining care arrangements. Through these exploratory questions, we can begin to understand how family characteristics and benefit receipt are related to caregiving arrangements. This information can

help inform social welfare program design so it can better meet low-income families' needs and preferences in providing care to an older loved one that resides in the community.

2. Background

Capturing an accurate distribution of care arrangements in the United States is a difficult task. This is because existing representative surveys fail to adequately capture the complete array of care arrangements used by older adults. However, research has made strides toward estimating and describing characteristics of adults in different long-term care settings. For example, a 2020 RTI International report conducted for the Office of the Assistant Secretary for Planning and Evaluation (ASPE) estimated demographic characteristics of older adults in skilled nursing facilities, assisted living facilities, and traditional housing using four different surveys. While precise estimates vary by survey, the RTI report found that higher income adults are more likely to use traditional or community-based housing than low-income families, while low-income families are more likely to use nursing home care. Also, Hispanic older adults were more likely to live in traditional housing than other settings (Toth et al. 2020). Additionally, this and other studies have found that availability of family members is also associated with the type of care arrangement used. For example, those who are married are also more likely to live in traditional housing. When available, spouses are usually the primary caregiver, followed by adult children (“Caregiving in the U.S.” 2015; Spillman, Favreault, and Allen 2020). Similarly, family members who live nearer to the care recipient are more likely to be primary caregivers (Spillman and Pezzin 2000).

It is notable that few of these studies account for more detailed characteristics of family members. However, some research on characteristics of caregivers and their relationships to care recipients does exist. For example, a persistent trend in caregiving literature is that women, namely wives and daughters, are more likely to be family caregivers than men (Barnes, Given, and Given 1992; “Caregiving in the U.S.” 2015; Pinqart and Sörensen 2006). On average, younger care recipients are cared for by younger caregivers, and older care recipients are cared for by older caregivers (“Caregiving in the U.S.” 2015). Further, the amount of family care provided is associated with caregiving needs. When a care recipient has more intensive care needs, it is more likely they will use formal care in addition to informal care (“Caregiving in the U.S.” 2015; Miller and McFall 1991).

In addition to relational characteristics of caregiving, there is a robust body of research that seeks to understand the relationship between labor market participation and family caregiving. This topic is particularly relevant to understanding barriers to caregiving and provides insights into which family members are likely to become caregivers. That is, given limited hours in the day, there are tradeoffs between number of hours spent in the labor market and the number of hours spent providing care for a family member. However, this research has not reached a consensus on the relationship between paid work and caregiving. Most studies have found a negative relationship between caregiving and participation in the labor market (Bolin, Lindgren, and Lundborg 2008; Ettner 1995; Heitmueller and Inglis 2007; Pavalko and Artis 1997; Van Houtven, Coe, and Skira 2013). Among caregivers who do stay in the labor market, the research is mixed on whether caregivers reduce the number of hours of paid labor. Some studies do find that caregivers reduce the number of hours in the labor market (Ettner 1996; Van Houtven, Coe, and Skira 2013), while others do not (Bolin, Lindgren, and Lundborg 2008; Wolf and Soldo 1994). Some studies find there are differences by gender (Van Houtven, Coe, and Skira 2013).

2.2 Theoretical Framework

2.2.1 Economic Considerations

The standard, classical model of labor supply states that individuals will participate in paid market labor as long as the value of this work exceeds the value of non-market activities (Killingsworth 1983). The value of each activity consists of both the monetary rewards (or costs) and intrinsic rewards, or utility, of engaging in the activity. That is, a person who benefits more from market labor than caregiving will allocate more time to the labor market than caregiving, and vice versa. Additionally, caregiving is a form of household production, and according to the household production model, the opportunity costs of providing care oneself relative to the cost of hiring professional care also factor into decisions concerning the type of care used (Becker 1965). Research on the relationship between caregiving and employment finds that people who are lower income are more likely to be caregivers, explained by lower opportunity costs to caregiving. This body of work also finds that caregiving has a negative relationship with labor market participation but finds mixed results on if caregiving reduces the number of work hours for caregivers who stay in the labor force. However, this research overwhelmingly focuses on individuals, without examining the caregiver's family, household, or alternative sources of income, all of which may be expected to mitigate care arrangements.

Ignoring family, household, and alternative sources of income is a significant oversight when examining who is likely to be a caregiver. For example, a woman who works a part-time, minimum wage job may be able to give up that job if she has a partner that earns the majority of the household's income. On the other hand, a single mom that works a minimum wage job and is the only income earner in the household may not be able to leave her job to provide care to an aging family member without another source of income. However, a low-wage worker may be able to leave the job if they receive a government benefit that provides cash income, or a family member receives a government benefit and they share those resources. For these reasons, it is particularly important to consider family structure and public provisions for studies of caregiving, especially for low-income families.

2.2.1 Reciprocity, Roles, and Culture

Providing care for family members involves considerations beyond finances. While economic factors likely play an important role, feelings of obligation and expected social and family roles also influence chosen caregiving arrangements. For example, adult children providing care for elderly parents has been conceptualized as reciprocating for care and support provided to children earlier in life (T. Antonucci 1985; T. C. Antonucci, Fuhrer, and Jackson 1990; Beckman 1981; Silverstein et al. 2002). Additionally, a substantial body of caregiving research has focused on differences in cultural practices values, beliefs, and practices across racial and ethnic groups (Dilworth-Anderson, Williams, and Gibson 2002; Dilworth-Anderson, Goodwin, and Williams 2004; Dilworth-Anderson et al. 2005; John et al. 2001; Knight and Sayegh 2010; Powers and Whitlatch 2016; Sayegh and Knight 2011). Much of this research is focused on the stress and coping mechanisms of family caregivers and considers the ways in which cultural norms and beliefs affect caregiver burden. A focus on cultural motivations for caregiving is a way to measure norms of obligation and reciprocity among racial or ethnic groups. In addition to norms of reciprocity, certain family members may be expected to perform certain roles within the family based on family-defined expectations for each other. Stack and Burton (1993) refer to this concept as "kinscripts," or the way individuals within families are conscripted to perform different tasks and roles. Under this model, societal gender and age norms influence how families define their expectations, but individual families' needs, family form, and historic roles within the family determine who will perform which roles to support the family unit. This notion of kinscripts

complicates explanations of caregiving that are focused on individual characteristics and suggests that household and family composition is important in determining who becomes a family caregiver for older relatives.

Collectively, factors that influence caregiving arrangements include financial considerations, social roles, family relationships and roles, and preferences of the care recipient and family. This study is focused on two of these factors: social roles and financial considerations. It builds on existing research that focuses on financial resources by adding the contribution of social roles.

3. Data and Methods

3.1 Data

This study leverages the unique information in the Health and Retirement Study (HRS) to investigate caregiving arrangements. The HRS is a representative, longitudinal panel study that surveys non-institutionalized adults¹ over age 50 in the United States, surveying approximately 20,000 people. It is a biennial survey that spans 1992 through 2020. Adults ages 51 and over are the respondents to the survey, though information about children, parents, and siblings is also collected. Information about children of the respondent is available in the RAND Family File, and the most recent version includes data through 2014.² HRS includes a specific module on caregiving (the “Helper” module), included in all waves, which asks questions about the care recipient’s relationship to the caregiver(s), the caregiving tasks performed, and if the caregiver is paid, either directly by the care recipient or by insurance.

For this analysis, I use HRS data for the years 1998 through 2014. Due to the sampling structure of the HRS, 1998 is the first year that the data is representative of adults ages 51 and

¹ Individuals are not eligible to enroll in the study if they reside in an institution, such as a nursing home. However, if an individual moves into a nursing home over time, they will be followed by the study.

² RAND manages and produces a longitudinal file of the HRS data. It includes many of the more popular variables, and other variables that are not included can be merged in from the files provided by HRS. In addition to the standard, longitudinal file, RAND also produces a file that includes family characteristics, including respondents’ kids.

older³, and 2014 is the most recent year that the family file has been released, which is needed for analysis involving characteristics of children.

The analytic sample for analysis on child characteristics is restricted to respondents who have at least one functional limitation⁴ and are residing in the community (that is, not in an institutional facility such as a skilled nursing facility). I define functional limitation as needing help with at least one Activity of Daily Living (ADL: eating, bathing, dressing, walking, transferring from bed to chair, etc.) or Instrumental Activity of Daily Living (IADL: shopping, cooking, cleaning, driving, managing finances, etc.). The sample is further restricted to individuals who have at least one child. The independent and dependent variables are described in the next section.

Analysis of benefit receipt and interactions with benefit receipt requires access to restricted HRS data. In the restricted data, deidentified data from the Social Security Master Beneficiary Record (MBR) is merged with the HRS survey responses. The analytic sample for this analysis requires the same conditions as in the child characteristics analysis, with the additional condition that respondents must have consented to have their Social Security records shared with HRS, and that a successful match was made between the survey and the MBR.

3.1.1 Dependent Variable

The dependent variable in this analysis is caregiving arrangement, defined as a four-category variable with the categories 1) no care; 2) family care only; 3) professional care only; and 4) mix of paid professional care and family care. Analysis was conducted with expanded categories for family care (one family caregiver; two family caregivers; three or more family caregivers) but no meaningful differences between the expanded categories were detected, so the four-category variable was selected.

3.1.2 Independent Variables

³ The early waves of the HRS only included individuals born between 1931–1941. This data was combined with data from the AHEAD study, which included respondents born before 1924. In 1998, the HRS study was formally combined with the AHEAD study, and also added a cohort for individuals born between 1924–1930 (Children of the Depression) and 1942–1947 (War Babies), becoming representative of all adults over age 50. It is important to note that the HRS is only truly representative of adults 51 and over every sixth year. The HRS sample refreshes every six years. When the sample is refreshed, only individuals aged 51 to 55 are eligible to enter the study. Therefore, the two waves between refresh years are representative of ages 53 and older and ages 55 and older, respectively.

⁴ Questions about caregivers are only asked of respondents who report functional limitations.

Key independent variables include individual characteristics of the care recipient as well as characteristics of the care recipient's adult children. Characteristics of the care recipient used in this analysis reflect variables that the literature has found are associated with different care arrangements. Those variables include marital status, gender, race, number of children who are alive, household income, an indicator for dementia, the number of ADLs they require assistance with, and number of IADLs they require assistance with. Marital status is included as a control because a spouse represents a potential caregiver that nonmarried individuals do not have, and spouses are the most common family caregiver. Gender is included because women are more likely to receive care than men, especially family care. Race is included because non-white families are more likely to use family care compared to professional care. Each child who is alive represents a potential caregiver, as well as a potential source of financial resources to pay for professional care. Therefore, those with more children may have more caregiving resources and this should be controlled for. An indicator for dementia is included because dementia is typically associated with needing a higher level of care and may require professional care. Similarly, the number of ADLs and IADLs are also included as controls, as requiring assistance with more of these activities represents higher care needs (Etkind et al. 2018; Toth et al. 2020).

Independent variables that concern the care recipient's adult children reflect variables that the literature has found to be associated with different care arrangements, in addition to new variables that explore greater detail about children's family and economic characteristics. Because the care recipient is the unit of analysis, variables that concern child characteristics are measured as the care recipient having one or more children that have this characteristic. These variables include having one or more daughters and having one or more resident child or a child living within 10 miles. Additional variables that explore greater detail were selected based on the children's potential availability to provide care based on work status, other sources of income, and other personal family obligations, like being married and having children of their own. Variables that build on other family obligations include: having one or more kids who is not married or partnered; having one or more son who is unmarried with no kids; and having one or more daughters who is unmarried with no kids. Variables that build on a child's work status include having one more child who is not working; having one or more child who is single and not working; having one or more child who has a spouse who is the sole income earner in the household; and having one or more daughters who is not working and is aged 62 or older (a proxy for being retired). As all of

these variables capture potentially greater availability and resources to care, I anticipate that all of these variables will be associated with higher levels of family care compared to professional care.

Finally, variables that concern Social Security benefit receipt are captured as three separate binary variables that indicate if in the past two years the respondent receives 1) Social Security Disability Insurance (SSDI), 2) Supplemental Security Income (SSI), or 3) Old Age and Survivor's Insurance (OASI). These three kinds of benefit receipt variables are coded to be mutually exclusive, such that if a respondent's records indicate receiving more than one benefit, they are dropped from the analysis. This design is to ensure that the comparison group for each benefit does not include other types of Social Security receipt.

Empirical Approach

For analysis of family characteristics, I employ a pooled multinomial logit model to estimate the relationship between individual and family characteristics and caregiving arrangement type. I first run a model that includes all observations (referred to as "Full"), then I run separate analyses for married and single individuals. I do this because married people are more likely to have a spousal caregiver, and therefore, the role of children and their characteristics may function differently for married and single individuals. In all models, "Professional Care Only" is the base category. This is selected because I am especially interested in how family characteristics affect care arrangements relative to using professional care.

The multinomial logit model is as follows:

$$C_t = \beta_{0t} + \beta_1 I_t + \beta_2 F_t + \varepsilon_t$$

Where

C_t = caregiving arrangement

I_t = vector of individual characteristics at timepoint t

F_t = vector of adult children's characteristics at timepoint t

ε_t = measurement level error

I also employ pooled multinomial logit models for analyses of Social Security benefits. In addition to the control variables and child characteristics in the previous model, these models also include a binary indicator for Social Security benefit receipt and an interaction term between benefit receipt and the child characteristics. Due to sample size limitations, I only run analyses for

the full population, controlling for marital status. Separate models are run for SSDI receipt, SSI receipt, and OASI receipt.

The multinomial logit model is as follows:

$$C_t = \beta_{0t} + \beta_1 I_t + \beta_2 F_t + \beta_3 S_t + \beta_3 FS_t + \varepsilon_t$$

Where

S_t = Social Security benefit receipt at timepoint t

FS_t = interaction between Social Security benefit receipt and adult children's characteristics at timepoint t

4. Results

4.1 Descriptive Statistics – Individual, Family, and Child Characteristics

I first look at the weighted frequencies of the individual and family characteristics. I present these frequencies separately for the full sample, the married sample, and the single sample. There are some notable differences between the married and single samples. Demographically, Black people make up a larger proportion of the single population than the married population, and Hispanic⁵ people make up a larger proportion of the married population than the single population. Less than 1 percent of the married population lives alone, compared to 60 percent of the single population. Concerning health metrics, single respondents are more likely to have cognitive impairments or dementia than the married sample and are also more likely to have difficulty with a higher number of ADLs and IADLs. Single respondents are more likely to be lower income, with household incomes more likely to be in the lowest two income quintiles, compared to married respondents who are more likely to be in the highest four income quintiles. Regarding characteristics of their adult children, single respondents are more likely to have a child living nearby and are more likely to have a child who is not working. The remainder of the weighted frequencies for child characteristics are relatively similar for married and single respondents.

Table 1: Weighted Frequency Statistics, Individual Characteristics

⁵ I use the word Hispanic in this paper because it is the term used in the HRS. However, I acknowledge that many people in the Latino community reject the word Hispanic because it refers to people who are of Spanish descent and highlights colonial relationships to Spain. There are also newer terms such as Latinx and Latine that are designed to be more gender inclusive versions of Latino (Mora 2014; Lopez, Krogstad, and Passel 2023).

	Full (N=25,358) % or Mean (SD)	Married (N=9,109) % or Mean (SD)	Single (N=16,249) % or Mean (SD)
Female	78	77	78
Race/Ethnicity			
White non-Hispanic	63	66	62
Black non-Hispanic	22	16	24
Hispanic	13	15	12
Other non-Hispanic	2	3	2
Age	73 (13)	67 (11)	76 (12)
Number of Children (alive)			
1	13	9	15
2	25	25	25
3	20	20	21
4	42	46	39
Cognition (Langa Weir Classification)			
Normal	50	62	44
Cognitively Impaired but not Dementia	27	25	28
Has Dementia	23	13	29
R lives alone	40	1	61
Number of ADLs R Has Difficulty With			
0	23	25	21
1	35	38	32
2	16	16	17
3	10	10	10
4	8	6	9
5	8	5	10
Number of IADLs R Has Difficulty With			
0	55	63	50
1	24	24	25
2	10	8	12
3	10	5	13
Household Income Quintiles			
1 (low)	43	15	58
2	26	26	25
3	15	26	10
4	10	19	5
5 (high)	6	13	2
R has 1+ daughters	85	86	84
R has a resident child or child living within 10mi	74	71	76

Table 2: Weighted Frequency Statistics, Child Characteristics

	Full (N=25,358*) %	Married (N=9,109*) %	Single (N=16,249*) %
Has 1+ kids that are not married or partnered	67	67	67
Has 1+ sons that are not married or partnered with no kids	20	24	19
Has 1+ daughters that are not married or partnered with no kids	14	17	13
Has 1+ kid who is not working	56	50	59
Has 1+ kids that are single and not working	27	23	29
Has 1+ kid whose spouse is sole income earner in household	29	28	29
Has 1+ daughters that are 62+ and not working	9	2	12

**N for each model varies based on number of non-missing responses for kid variables*

Table 2 shows the weighted frequencies of the child characteristics of interest. The proportion of the married and single samples that have children with each characteristic is fairly similar across samples, with the exception that the married sample is more likely to have a son who is unmarried with no kids, and the single sample is more likely to have a kid who is not working, and a daughter who is not working and is retirement age.

4.2 Multinomial Logit Results

4.2.1 Individual, Family and Child Characteristics

In this section, I present results from the multinomial logit model that predicts associations between individual and family characteristics and care arrangements for older adults. The multinomial logit models use “Professional Care Only” as the base category and the results tables show the relative risk ratios (RRR). Table 3 shows the RRRs for individual characteristics of the care recipients, as well as the controls for number of kids and two well-established child characteristics (having a child that lives nearby and having any daughters). For both the full and single samples, being female increases the likelihood of receiving family care only or family and

professional care, relative to professional care only. Being Black or Hispanic also both increase the likelihood of receiving any type of care, including no care, relative to professional care only. This is also true for the racial group “Other,” though is only significant for some care types in the married and single samples, possibly due to sample size limitations.

Table 3: Multinomial Logit Results for Individual Characteristics

VARIABLES	Full			Married			Single		
	NC	FC	FC&PC	NC	FC	FC&PC	NC	FC	FC&PC
Female	0.81*** (0.06)	1.38*** (0.10)	1.29*** (0.09)	0.51*** (0.11)	0.80 (0.16)	1.00 (0.21)	0.86** (0.07)	1.45*** (0.12)	1.30*** (0.10)
Married or Partnered	0.86 (0.10)	1.75*** (0.20)	0.63*** (0.08)						
Black non-Hispanic	1.77*** (0.15)	1.84*** (0.15)	1.63*** (0.14)	1.62* (0.43)	1.26 (0.33)	1.66* (0.45)	1.64*** (0.15)	2.14*** (0.19)	1.61*** (0.14)
Hispanic	2.44*** (0.27)	1.99*** (0.21)	1.52*** (0.17)	3.29*** (1.00)	2.01** (0.60)	1.93** (0.59)	2.08*** (0.25)	2.35*** -0.28	1.45*** (0.17)
Other non-Hispanic	1.55** (0.34)	1.46* (0.32)	1.58** (0.34)	6.63** (5.22)	4.22* (3.28)	3.42 (2.70)	1.09 -0.26	1.49* (0.35)	1.49* (0.34)
Age	1.00 (0.03)	0.94* (0.03)	0.97 (0.03)	1.05 (0.10)	1.03 (0.10)	0.91 (0.09)	1.03 (0.04)	0.94* (0.03)	1.03 (0.04)
Age^2	1.00* (0.00)	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)	1.00 (0.00)	1.00** (0.00)	1.00 (0.00)	1.00 (0.00)
Number of Kids (alive)	1.00 (0.03)	0.96 (0.03)	1.18*** (0.03)	1.09 (0.10)	1.06 (0.09)	1.26** (0.12)	0.99 (0.03)	0.94** (0.03)	1.17*** (0.04)
CIND (Cognitively Impaired, Not Demented) (categorical, base=not cognitively impaired)	0.53*** (0.05)	0.65*** (0.06)	0.62*** (0.06)	0.28*** (0.08)	0.36*** (0.10)	0.34*** (0.10)	0.58*** (0.05)	0.70*** (0.07)	0.66*** (0.06)
Has Dementia (categorical, base=not cognitively impaired)	0.21*** (0.02)	0.35*** (0.03)	0.48*** (0.05)	0.11*** (0.03)	0.21*** (0.06)	0.33*** (0.10)	0.24*** (0.03)	0.35*** (0.04)	0.49*** (0.05)
Lives alone	0.30*** (0.03)	0.11*** (0.01)	0.17*** (0.01)	0.32** (0.14)	0.23*** (0.10)	0.18*** (0.09)	0.30*** (0.03)	0.12*** (0.01)	0.17*** (0.01)
Difficulty with ADLs (continuous)	0.37*** (0.01)	0.64*** (0.01)	0.82*** (0.02)	0.33*** (0.02)	0.59*** (0.03)	0.81*** (0.05)	0.39*** (0.01)	0.65*** (0.01)	0.82*** (0.02)
Difficulty with IADLs (continuous)	0.44*** (0.02)	0.81*** (0.03)	0.96 (0.03)	0.42*** (0.04)	0.72*** (0.07)	0.92 (0.09)	0.43*** (0.02)	0.85*** (0.03)	0.97 (0.03)
Income Quintile 1	0.59*** (0.06)	0.85 (0.09)	0.99 (0.10)	0.52** (0.15)	0.57** (0.16)	0.74 (0.22)	0.56*** (0.07)	1.01 (0.12)	1.02 (0.12)

Income Quintile 2	0.83*	0.96	1.14	0.67*	0.76	0.92	0.82	1.14	1.17
	(0.09)	(0.10)	(0.12)	(0.16)	(0.18)	(0.23)	(0.10)	(0.15)	(0.14)
Income Quintile 4	1.09	0.99	1.15	1.22	1.01	1.30	1.01	1.01	1.04
	(0.17)	(0.15)	(0.18)	(0.37)	(0.31)	(0.41)	(0.19)	(0.20)	(0.20)
Income Quintile 5	1.04	0.85	1.27	1.09	0.78	1.06	0.83	0.77	1.51*
	(0.20)	(0.16)	(0.25)	(0.37)	(0.26)	(0.37)	(0.20)	(0.21)	(0.36)
Has any daughters	1.70***	2.76***	0.75***	0.95	1.09	0.40***	1.64***	3.91***	0.79***
	(0.14)	(0.23)	(0.06)	(0.27)	(0.31)	(0.12)	(0.14)	(0.38)	(0.07)
Has resident child or child living within 10mi	1.08	1.24***	2.27***	1.22	1.21	2.60***	1.01	1.40***	2.15***
	(0.07)	(0.08)	(0.16)	(0.23)	(0.22)	(0.52)	(0.07)	(0.10)	(0.16)
Observations	25358	25358	25358	9,109	9,109	9,109	16,249	16,249	16,249

Standard errors in parentheses

NC= No Care, FC= Family Care Only, FC & PC= Family Care and Professional Care; Professional care only is base category

All models include year fixed effects

**** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$*

For all three samples, having more kids is associated with increased likelihood of using professional and family care, and the associations with other care types are not significant. For all three samples, having a cognitive impairment or dementia and having difficulty with more ADLs and IADLs are all associated with a greater likelihood of using professional care than no care or family care only. For all of these variables except for IADLs, individuals in all samples are also more likely to use professional care only instead of a mix of professional and family care. For IADLs, there is no significant difference between professional care and mix of professional and family care. For the single and full population, having any daughters is associated with an increased likelihood of using family care only or no care relative to professional care only, but for all samples, there is a decreased likelihood of using a combination of professional and family care. Similarly, for all samples, having a child that lives nearby is associated with a greater likelihood of using a mix of family care and professional care, and only for the single and full population is it also associated with an increased likelihood of family care only.

4.2.2 Adult Child Characteristics

Table 4 shows the results for the child characteristics of interest for the full, married, and single samples. These models control for the variables included in the individual and family analysis above but only show the RRRs for child characteristics to save space.

Overall, in the full sample, having an unmarried child is associated with 16 percent reduced likelihood of receiving family care only relative to professional care, and 14 percent greater likelihood of receiving family and professional care, and no significant effect for no care. Examining the married and single samples separately, the effect on family and professional care is more pronounced for the married sample with 74 percent greater likelihood of receiving family and professional care compared to professional care only, and no significant effect for family care only. For the single sample, there is a significant 20 percent reduced likelihood of using family care only compared to professional care only, and no significant effect for family and professional care. However, the direction of the RRR is the same for both samples. It is possible that the single and married samples are separately driving the results in the full sample for family care only and family and professional care, respectively.

Having one or more sons that are not married or partnered and don't have kids is associated with a significant greater likelihood of receiving a combination of family and professional care for all three samples. For the full and single sample, care recipients are significantly less likely to use family care only or not receive any care. These findings suggest that sons who do not have children of their own are likely to provide some care to a parent, but not be a primary caregiver. They may also suggest that in addition to physical care resources, such sons provide financial resources for professional care. However, these inferences cannot be confirmed by this analysis and would require further exploration. For having one or more daughters that are not married or partnered and don't have kids, there are no significant effects for any population.

Table 4: Multinomial Logit Results for Child Characteristics, Marital and Child Status

	N	Full			N	Married			N	Single		
		NC	FC	FC&PC		NC	FC	FC&PC		NC	FC	FC&PC
Has 1+ kids that are not married or partnered	25,358	0.93 (0.06)	0.84*** (0.05)	1.14** (0.08)	9,109	1.24 (0.25)	1.13 (0.22)	1.74*** (0.35)	16,247	0.90 (0.07)	0.80*** (0.06)	1.07 (0.08)
Has 1+ sons that are not married or partnered with no kids	25,358	0.81** (0.07)	0.60*** (0.05)	1.46*** (0.12)	9,109	0.90 (0.22)	0.80 (0.20)	1.87** (0.47)	16,249	0.84* (0.08)	0.52*** (0.05)	1.39*** (0.12)
Has 1+ daughters that are not married or partnered with no kids	25,358	1.03 (0.10)	0.98 (0.10)	0.87 (0.09)	9,109	0.75 (0.18)	0.71 (0.17)	0.73 (0.18)	16,249	1.09 (0.12)	1.10 (0.12)	0.88 (0.10)

Standard errors in parentheses

NC= No Care, FC= Family Care Only, FC & PC= Family Care and Professional Care; Professional care only is base category

All models include all individual and family controls from Table 3 and year fixed effects

Each row (ie, adult child variable) is a separate regression

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Variables that capture work status and alternative sources of income are shown in Table 5. Having one or more kids that are not working have opposite effects for married and single people. For the married sample, this arrangement is associated with a 46 percent greater likelihood of using family care only, and a 51 percent greater likelihood of using family and professional care as compared to professional care only. On the other hand, single individuals are 15 percent less likely to have no care compared to professional care only, but are no other significant associations with other care arrangements. This suggests that married older adults are more likely to have family care when they have a child who is not working, but this is not the case for single older adults. While study is not able to control for adult children's selection into leaving the labor market for the purpose of caregiving, this finding warrants further exploration into how adult children's labor market responses to caregiving needs vary in different kinds of families.

When adding further nuance to child's employment status, by exploring if a child who is not working is also not married or partnered, there are similar but stronger results as compared to those of having one or more kids not working, regardless of their employment status. For the married sample, care recipients are 78 percent more likely to use family care only compared to professional care only, and 143 percent more likely to use a mix of family and professional care. In the full sample, individuals are 21 percent more likely to use family and professional care over professional care only. While the effect is not significant for the single sample, the direction of the RRR is the same as the full sample.

Still, there are different effects for having a child who does not work but is married to someone who does. For the full sample there is a 24 percent greater likelihood of receiving family care only when they have a child in this situation, and a 26 percent greater likelihood for the single sample. The effect is not significant for the married sample, though the direction of the RRR is the same. Additionally, there is a 17 percent increased likelihood of using family and professional care, compared to professional care alone, for the single sample. This may suggest that having an alternative source of household income (e.g., spouse's income) is important for many adult children to be able to serve as a primary caregiver for their parent, though more research is necessary before this can be concluded.

Finally, for the single sample, having a daughter who is not working and is age 62 or older is associated with an 18 percent increased likelihood of using family care only compared to professional care only. This is also significant for the full sample, though not for the married

sample. Again, this warrants further exploration into why this is significant for older adults who are single, but not for those who are married.

Taken together, these results suggest that there is much more nuance to the relationship between characteristics of adult children and caregiving for older adults than has previously been studied. These findings underscore that many characteristics of adult children function differently for married versus single parents, and that the marital status of the older adult care recipient must be considered when examining care provided by adult children. Additionally, the findings highlight that a nuanced understanding of the family and financial situations of adult children is important to understanding the family caregiving arrangements used by older adults. Programs and policies that are designed to support older adults and family caregivers should take this variation into account. That is, rather than designing one-size-fits all policies, programs should consider a range of family structures and dynamics in order to develop solutions that respond to a diversity of needs.

Table 5: Multinomial Logit Results for Child Characteristics, Employment Status and Other Sources of Income

	Full				Married				Single			
	N	NC	FC	FC&PC	N	NC	FC	FC&PC	N	NC	FC	FC&PC
Has 1+ kid who is not working	24,725	0.90* (0.06)	0.97 (0.06)	0.99 (0.07)	8,874	1.34 (0.25)	1.46** (0.27)	1.51** (0.29)	15,851	0.85** (0.06)	0.93 (0.07)	0.95 (0.07)
Has 1+ kids that are single and not working	25,358	0.94 (0.07)	0.97 (0.07)	1.21*** (0.09)	9,109	1.61* (0.41)	1.78** (0.45)	2.43*** (0.63)	16,249	0.92 (0.07)	0.91 (0.07)	1.12 (0.08)
Has 1+ kid whose spouse is sole income earner in household	21,042	1.12 (0.08)	1.24*** (0.09)	1.13* (0.08)	7,762	1.17 (0.25)	1.21 (0.25)	1.00 (0.22)	13,280	1.08 (0.09)	1.26*** (0.10)	1.17** (0.09)
Has 1+ daughters that are 62+ and not working	25,270	1.00 (0.10)	1.23** (0.11)	0.99 (0.09)	9,041	0.81 (0.29)	0.81 (0.27)	0.93 (0.32)	16,229	1.02 (0.11)	1.18* (0.11)	0.98 (0.09)

Standard errors in parentheses

NC= No Care, FC= Family Care Only, FC & PC= Family Care and Professional Care; Professional care only is base category

All models include all individual and family controls from Table 3 and year fixed effects

Each row (ie, adult child variable) is a separate regression

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

4.3 Social Security Benefit Receipt

The sample used for the analysis of the relationship between social security benefit receipt and caregiving arrangements is somewhat different from the sample used in the analyses of individual, family, and child characteristics because the sample is further restricted to those who consented to have their Social Security records shared with the HRS. Separate analyses are done by SSDI receipt, SSI receipt, and OASI receipt, and the respective descriptive statistics are shown in Table 6. Due to sample size limitations, each analysis is done only for the full sample and does not include separate models by marital status.

4.3.1 Descriptive Statistics

The samples used in the SSDI and OASI analyses are fairly similar but differ on a few key variables. The sample in the SSI analysis is demographically quite different from both samples used in the SSDI and OASI analysis. Descriptive statistics for these variables are available on Table 6. The similarity between SSDI and OASI is unsurprising given that SSDI and OASI both require work credits to qualify, while SSI is for people with little income and economic resources. The vast majority of all samples are women, but a larger percent of the OASI sample is men, with 22 percent men compared to 18 percent in the SSDI sample and 15 percent in the SSI sample. The SSDI and OASI samples are majority White, though SSDI has a slightly higher percentage of Black, non-Hispanic respondents with 21 percent compared to 17 percent. The SSI analysis sample is more evenly racially distributed, with White non-Hispanic, Black non-Hispanic, and Hispanic respondents each making up approximately one third of the sample. The mean age of respondents in the OASI population is older than the SSDI population, at age 74 compared to 64 in both other groups. This age difference is logical given that SSDI converts to OASI when an individual reaches full retirement age. SSDI and OASI analysis samples have similar numbers of children, while the SSI analysis sample has more children on average. Regarding cognition, the SSI analysis samples has the highest rates of both cognitive impairment and dementia at 36 percent and 14 percent respectively, while SSDI has the lowest rates at 23 percent and 9 percent. The OASI analysis sample is most likely to live alone and the SSDI sample is least likely to live alone. The SSI analysis sample also needs assistance with more ADLs and IADLs on average, and the OASI sample needs assistance with fewer. This is also not surprising because SSI and SSDI support individuals with disabilities, while OASI primarily targets old age. The majority of the SSI sample is in the lowest income quintile, while SSDI and OASI are more evenly distributed across income

quintiles. While over 70 percent of both samples have a resident child or child that lives within 10 miles, the SSI sample has the highest proportion of respondents who do, at 78 percent.

Table 7 shows the frequency statistics for adult child characteristics for each Social Security analysis sample. The frequencies of each are similar for the SSDI and OASI analysis sample, with two exceptions. The SSDI analysis sample is more likely to have one or more daughters that are not married or partnered with no kids, and the OASI sample is more likely to have a daughter who is of retirement age and not working. The SSI analysis sample is more likely than the SSDI or OASI analysis samples to have a child with all of the characteristics with the exception of having one or more daughters that are not married or partnered and does not have kids, and having a daughter who is of retirement age and not working.

Table 6: Weighted Frequency Statistics for Social Security Analyses, Individual Characteristics

	SSDI Analysis (N= 2940)	SSI Analysis (N=1658)	OASI Analysis (N=5444)
	% or Mean (SD)	% or Mean (SD)	% or Mean (SD)
Gender			
Male	18	15	22
Female	82	85	78
Race/Ethnicity			
White non-Hispanic	64	34	71
Black non-Hispanic	21	33	17
Hispanic	12	28	11
Other non-Hispanic	3	5	2
Age	64 (11.57)	64 (11.28)	74 (11.33)
Number of Children (alive)			
1	11	11	11
2	25	15	23
3	21	19	22
4	43	55	45
Cognition			
Normal	68	49	60
Cognitively Impaired, not Dementia	23	36	26
Has Dementia	9	15	14
Lives Alone	28	34	38
Number of ADLs Has Difficulty With			
0	24	21	25
1	38	34	40
2	18	20	16
3	11	12	9
4	6	8	6
5	4	4	4
Number of IADLs Has Difficulty With			
0	37	34	38
1	33	31	33
2	16	19	14
3	7	8	6
4	4	4	5
5	3	4	5
Income Quintiles			

1 (low)	39	74	35
2	23	16	28
3	17	6	19
4	13	4	12
5 (high)	8	1	7
Has 1+ daughters	86	88	87
Has 1+ resident child or child living within 10 miles	72	78	73

Table 7 Weighted Frequency Statistics, Child Characteristics

	SSDI Analysis (N= 2940*) %	SSI Analysis (N=1658*) %	OASI Analysis (N=5444*) %
Has 1+ kids that are not married or partnered	74.86	82.09	71.45
Has 1+ sons that are not married or partnered with no kids	25.41	29.37	21.93
Has 1+ daughters that are not married or partnered with no kids	16.19	14.66	14.55
Has 1+ kid who is not working	52.41	66.38	55.25
Has 1+ kids that are single and not working	27.55	40.53	26.75
Has 1+ kid whose spouse is sole income earner in household	29.93	34.44	29.22
Has 1+ daughters that are 62+ and not working	4.53	5.19	7.88

**N for each model varies based on number of non-missing responses for kid variables*

4.2.2 Multinomial Logit Results, Child Characteristics

The results to multinomial regression analysis are shown in Tables 8, 9 and 10 for the SSDI, SSI, and OASI analyses respectively. These regressions also include the individual and family control variables in the prior analysis, but only the effects of Social Security benefit receipt, child variables, and interactions between benefit and child variable are shown to save space. In the SSDI models, when controlling for child characteristics, the main effect of SSDI is either not significant, or is associated with a reduction in likelihood of all types of care relative to professional care. Interestingly, however, for two child characteristics, even though the main effects of both SSDI and the main effect of kid variables are associated with reduced likelihood of all types of care relative to professional care, the interaction between them is associated with an increased likelihood of all types of care relative to professional care. That is, the combined effect makes it much more likely to use other types of care relative to professional care. The two child characteristics for which this happens in this SSDI analysis is having one or more kids who are not working, and having one or more kids who are single and nor working. The interaction effect with one or more kid who is not working is associated with an increased likelihood of using a combination of family care and professional care, family care only, and no care. The interaction effect of having one or more single child who is not working is associated with an increased likelihood of using family care and professional care relative to professional care only.

The same phenomena occurs with the OASI analysis, but for the child characteristics that capture having one or more kids who are not working, having one or more kids whose spouse is the sole income earner in the household, and having one or more daughters that are aged 62 or over and not working. For all of the characteristics, the interaction effect of receiving OASI and having a kid with the specific characteristics is associated with an increased likelihood of using a combination of family care and professional care, family care only, and no care.

In the SSI analysis, the only main effect that is significant is that having one or more kids who are not working is associated with a reduced likelihood of receiving no care. The only interaction effect that is significant is the interaction between SSI receipt and having one or more kid whose spouse is the sole income earner in the household, and is associated with an increased likelihood of receiving a combination of family care and professional care.

These results suggest that receipt of Social Security benefits is only associated with caregiving outcomes under the condition of having particular child and family characteristics. It is

surprising that in addition to increased likelihood of using a combination of family care and professional care and family care only, there is also an increased likelihood of using no care for many of these variables. However, the standard errors are very large in these analyses, especially on the interaction variables. Therefore, while the findings suggest that the effect of social security benefit receipt does vary with adult child characteristics, further research is needed to produce more reliable estimates.

Table 8: Multinomial Regression Results for SSDI Receipt and Child Characteristics

	Has 1+ kids that are not married or partnered (n=2935)			Has 1+ sons that are not married or partnered with no kids (n=2935)			Has 1+ daughters that are not married or partnered with no kids (n=2935)			Has 1+ kid who is not working (n=2856)		
	NC	FC	FC&PC	NC	FC	FC&PC	NC	FC	FC&PC	NC	FC	FC&PC
Receives SSDI	0.35* (0.19)	0.50 (0.27)	0.64 (0.37)	0.34** (0.15)	0.63 (0.26)	0.58 (0.26)	0.43** (0.18)	0.66 (0.27)	0.70 (0.30)	0.16*** (0.08)	0.26** (0.14)	0.20*** (0.11)
Main Effect of Kid Variable	1.92* (0.68)	1.26 (0.44)	2.29** (0.85)	0.66 (0.24)	0.60 (0.22)	1.34 (0.49)	3.19 (2.62)	2.53 (2.08)	3.09 (2.57)	0.36** (0.14)	0.43** (0.17)	0.38** (0.15)
Interaction SSDI & Kid Variable	1.05 (0.59)	1.36 (0.74)	0.91 (0.54)	1.24 (0.73)	0.98 (0.58)	1.04 (0.63)	0.19* (0.19)	0.35 (0.35)	0.14* (0.14)	3.70** (2.24)	4.00** (2.38)	5.82*** (3.60)
	Has 1+ kids that are not working and not married or partnered (n=2935)			Has 1+ kid whose spouse is sole income earner in household (n=2396)			Has 1+ daughters that are 62+ and not working (n=2933)					
	NC	FC	FC&PC	NC	FC	FC&PC	NC	FC	FC&PC			
Receives SSDI	0.29*** (0.12)	0.47* (0.20)	0.38** (0.17)	0.39* (0.19)	0.66 (0.32)	0.48 (0.24)	0.36** (0.14)	0.63 (0.25)	0.58 (0.24)			
Main Effect of Kid Variable	0.93 (0.32)	0.80 (0.27)	0.79 (0.28)	0.62 (0.21)	0.88 (0.29)	0.59 (0.21)	0.48 (0.23)	0.69 (0.31)	0.25*** (0.11)			
Interaction SSDI & Kid Variable	2.27 (1.50)	3.13* (2.04)	4.00** (2.68)	1.34 (0.95)	1.42 (0.99)	2.34 (1.70)						

Standard errors in parentheses

NC= No Care, FC= Family Care Only, FC & PC= Family Care and Professional Care; Professional care only is base category

SSI receipt, Kid Variable, and Interaction term all included in same model; models for each Kid Variable run separately

All models include all individual and family controls from Table 3 and year fixed effects

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 9: Multinomial Regression Results for SSI Receipt and Child Characteristics

	Has 1+ kids that are not married or partnered (n=1653)			Has 1+ sons that are not married or partnered with no kids (n=1653)			Has 1+ daughters that are not married or partnered with no kids (n=1653)			Has 1+ kid who is not working (n=1595)		
	NC	FC	FC&PC	NC	FC	FC&PC	NC	FC	FC&PC	NC	FC	FC&PC
Receives SSI	0.29** (0.17)	0.72 (0.40)	0.70 (0.45)	0.74 (0.24)	0.95 (0.30)	0.92 (0.32)	0.83 (0.25)	1.12 (0.33)	0.99 (0.31)	0.43 (0.24)	0.57 (0.31)	0.56 (0.32)
Main Effect of Kid Variable	0.51 (0.30)	0.77 (0.44)	1.24 (0.78)	0.67 (0.37)	0.49 (0.27)	1.27 (0.72)	1.15 (1.27)	1.35 (1.48)	0.87 (0.99)	0.32** (0.18)	0.40* (0.22)	0.42 (0.24)
Interaction SSI & Kid Variable	3.58* (2.39)	1.78 (1.12)	1.75 (1.24)	1.46 (0.99)	2.06 (1.38)	1.61 (1.10)	0.53 (0.64)	0.64 (0.76)	1.22 (1.51)	2.29 (1.47)	2.49 (1.56)	2.56 (1.71)
	Has 1+ kids that are not working and not married or partnered (n=1653)			Has 1+ kid whose spouse is sole income earner in household (n=1318)			Has 1+ daughters that are 62+ and not working (n=1651)					
	NC	FC	FC&PC	NC	FC	FC&PC	NC	FC	FC&PC			
Receives SSI	0.77 (0.27)	1.01 (0.34)	1.00 (0.37)	0.70 (0.27)	1.30 (0.50)	0.83 (0.33)	0.67 (0.21)	0.92 (0.28)	0.90 (0.29)			
Main Effect of Kid Variable	0.95 (0.50)	1.01 (0.52)	1.41 (0.77)	0.79 (0.40)	0.94 (0.46)	0.51 (0.27)	0.36 (0.31)	0.38 (0.28)	0.28 (0.22)			
Interaction SSI & Kid Variable	1.04 (0.64)	1.17 (0.71)	1.04 (0.66)	2.17 (1.44)	1.82 (1.17)	3.87** (2.62)	2.69 (2.64)	3.67 (3.23)	3.00 (2.83)			

Standard errors in parentheses

NC= No Care, FC= Family Care Only, FC & PC= Family Care and Professional Care; Professional care only is base category

SSI receipt, Kid Variable, and Interaction term all included in same model; models for each Kid Variable run separately

All models include all individual and family controls from Table 3 and year fixed effects

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 10 Multinomial Regression Results for OASI Receipt and Child Characteristics

	Has 1+ kids that are not married or partnered (n=5443)			Has 1+ sons that are not married or partnered with no kids (n=5443)			Has 1+ daughters that are not married or partnered with no kids (n=5443)			Has 1+ kid who is not working (n=5356)		
	NC	FC	FC&PC	NC	FC	FC&PC	NC	FC	FC&PC	NC	FC	FC&PC
Receives OASI	1.07 (0.33)	0.81 (0.24)	1.20 (0.39)	0.77 (0.16)	0.82 (0.16)	0.78 (0.16)	0.91 (0.17)	0.91 (0.17)	0.83 (0.16)	0.44** (0.16)	0.45** (0.16)	0.45** (0.16)
Main Effect of Kid Variable	1.56 (0.51)	1.05 (0.34)	2.29** (0.78)	0.66 (0.23)	0.61 (0.21)	1.49 (0.51)	3.24 (2.49)	2.59 (1.98)	3.40 (2.63)	0.36*** (0.13)	0.40** (0.15)	0.41** (0.15)
Interaction OASI & Kid Variable	0.75 (0.27)	1.13 (0.41)	0.57 (0.22)	1.92 (0.80)	1.56 (0.65)	1.27 (0.52)	0.44 (0.35)	0.47 (0.38)	0.35 (0.28)	2.47** (0.99)	2.45** (0.97)	2.05* (0.83)
	Has 1+ kids that are not working and not married or partnered (n=1653)			Has 1+ kid whose spouse is sole income earner in household (n=4729)			Has 1+ daughters that are 62+ and not working (n=5441)					
	NC	FC	FC&PC	NC	FC	FC&PC	NC	FC	FC&PC			
Receives OASI	0.81 (0.18)	0.80 (0.17)	0.68* (0.15)	0.69 (0.17)	0.71 (0.17)	0.60** (0.14)	0.64** (0.14)	0.67* (0.14)	0.56*** (0.12)			
Main Effect of Kid Variable	0.77 (0.25)	0.68 (0.22)	0.77 (0.25)	0.67 (0.22)	0.86 (0.27)	0.68 (0.22)	0.43** (0.18)	0.58 (0.21)	0.31*** (0.12)			
Interaction OASI & Kid Variable	1.25 (0.47)	1.38 (0.51)	1.56 (0.58)	2.70*** (1.03)	2.31** (0.86)	2.28** (0.88)	4.85*** (2.31)	3.41*** (1.47)	4.73*** (2.14)			

Standard errors in parentheses

NC= No Care, FC= Family Care Only, FC & PC= Family Care and Professional Care; Professional care only is base category

OASI receipt, Kid Variable, and Interaction term all included in same model; models for each Kid Variable run separately

All models include all individual and family controls from Table 3 and year fixed effects

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

5. Discussion and Limitations

This research set out to investigate how individual and family characteristics and Social Security benefit receipt affect caregiving arrangements used by older adults. There are some key takeaways from this research. First, caregiving needs and available caregivers for unmarried individuals are different than for married individuals. For unmarried individuals, children's roles as caregivers is different given that there is no spouse to provide care. As such, it is important to investigate and analyze caregiving for married and unmarried populations separately. Second, this research confirmed some trends already noted in the literature: People with more severe needs (as measured by cognitive impairments and ADLs/IADLs) are more likely to use professional care than other types of care and people who live alone are more likely to use professional care than other types of care.

Importantly, this study also finds that there are significant differences in caregiving arrangements used based on the characteristics of adult children. Of particular note, having a son who is unmarried and does not have kids is associated with an increased likelihood of using a combination of family and professional care. This suggests that male children may be more involved in caregiving, either through providing direct care or through financial resources for care, than previously expected. It also finds that having a child whose spouse is the only income earner in the household is associated with increased likelihood of an older adult receiving family care only. This adds nuance to existing research that finds low-income people are more likely to be family caregivers by recognizing that household income, beyond just individual income, is also an important factor. Additionally, this study finds that there is a significant relationship between SSDI and OASI benefit receipt and type of caregiving used for some adult child characteristics.

This analysis also has limitations that can be built upon in future work. First, the data on children is collected by the survey respondent, who is the older adult care recipient in most cases. There is likely substantial response bias due to the respondent simply not knowing full information about their children's lives. Secondly, this analysis was done with the respondent as the unit of analysis, though characteristics of their children were also examined. This meant that the variables used indicated if a respondent has one or more children who have a particular characteristic but

did not allow for a comprehensive understanding of each individual child. Future research should consider conducting a demographic profile on all of the children of older adults who use each kind of care. Additionally, because of this survey design, it is not possible to control for selection into caregiving and it is therefore not possible to know if children left the labor market to provide care, or if they were already not working when a care need arose. Further, many of the models suffer from large standard errors, and other data sources or analysis strategies should be explored that can produce more reliable estimates. Finally, this research approach cannot capture how care recipient and family member preferences and family relationships and roles influence caregiving arrangements. These factors are best investigated qualitatively, and studies should be done that interview caregivers and care recipients to better understand these factors.

Overall, this study finds that a more nuanced approach to child characteristics is important to understand who is likely to provide care to older adults. While some families seem to use Social Security benefits to support caregiving, further investigation of the characteristics of these family types is needed to better understand how to design benefits to support families who use benefits in this way.

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