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## Close enough? Adult child-to-parent caregiving and residential proximity

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### Abstract

Adult children are among the most frequent providers for community-dwelling older adults with a disability. This report assesses the extent to which help received from an adult child by older persons with a disability is contingent on the distance between their residences. Using the national Panel Study of Income Dynamics, we selected persons 55 and older with a disability and their adult children (810 older adults; 1,767 dyads of older adult – adult child pairs). The adjusted average hours of help received from an adult child was estimated by the distance between the parent's and the adult child's residences using a two-part model with a linear spline of proximity and adjusting for demographic and socioeconomic factors of the parent and child. We found that average weekly hours of help received from an adult child by older adults with a disability declined dramatically as the distance between older adults and their adult children's residences increased, but only up to 2–5 miles. Adjusted average weekly hours of help received from an adult child were 5.99 (95%CI 3.33, 8.65) if coresident, 3.16 (95%CI 2.04, 4.28) if on the same block, 1.16 (95%CI 0.72, 1.59) if 2–5 miles away, 0.79 (95%CI 0.39, 1.20) if 5–10 miles away, and 0.58 (95%CI 0.25, 0.92) if >100 miles.

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The amount of help for parents with a disability may require adult children living very near their parents which has important implications for long-term care for the aging population.

### Keywords

Intergenerational geographic proximity; Informal care; Family and unpaid care; Intergenerational care; Disability; Older adults; Aging

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## INTRODUCTION

Over 37 million adults in the United States have a disability (Erickson et al., 2020), and this number is projected to increase as the population ages (Institute of Medicine (US) Committee on Disability in America, 2007). Care from family members and other unpaid helpers received by older adults with disabilities is valued at \$470 billion, greater than the cost of the Medicaid program (Reinhard et al., 2015). While spouses are important caregivers within married couples, adult children are the most frequent providers of care among community-dwelling older adults with a disability (Wolff et al., 2016).

Close residential proximity of older adults and their kin is strongly associated with help received from kin (Joseph & Hallman, 1998; Litwak & Longino, 1987; Rossi & Rossi, 1990) and reduces paid care and nursing home entry (Choi et al., 2015). Many family members in the US live within 30 miles of each other (Choi et al., 2020; Compton & Pollak, 2015). However, little evidence exists on the association between help from kin and residential proximity that recognizes the importance of living within a few miles of kin (e.g., same block,  $\leq 2$  miles).

This study demonstrates that hours of help received from an adult child by parents with a disability is strongly contingent on the adult child living in very close proximity, no more than about five miles, using national data with block-level residential information for parents and their adult children. By providing new evidence on the distinctive role of very close proximity for family caregiving, this paper advances the field of family spatial proximity and its implication for long-term care of an aging population.

## METHODS

### Data and Sample

The Panel Study of Income Dynamics (PSID) is a national longitudinal survey that began in 1968 (Institute for Social Research, 2019). Members of the sample and their biological and adopted descendants are traced and interviewed indefinitely even if they do not live together (Institute for Social Research, 2019).

We used the 2011 and 2013 waves of PSID. In 2013, the PSID included a module of survey questions to measure help received from adult children (Schoeni et al., 2015), which is our outcome of interest. We used proximity, demographic, and socioeconomic variables based on data collected in 2011.

We selected individuals 55 and older who had difficulty with at least one activity of daily living (ADL) or instrumental activity of daily living (IADL), and had at least one biological adult child aged 25 or older who was also in the 2011 and 2013 PSID (Appendix Table A1). The unit of analysis was a dyad of a parent (i.e., older adults) and an adult child, with some parents having more than one adult child and contributing more than one dyad (810 parents; 1,767 dyads of parents and their adult children). We also examined, as a comparison group, parents who did not have a disability (1,812 parents; 3,608 dyads of parents and their adult children).

## Measures

The Census block of residence for parents and their adult children is made available by the PSID to researchers through a restricted use contract. Using this location information together with a household roster, we constructed a measure of the distance between parents and each adult child: i) coresident; ii) on the same block but not coresident; iii) not on the same block but  $\leq 2$  miles; iv) 2–5 miles; v) 5–10 miles; vi) 10–30 miles; vii) 30–100 miles; viii)  $>100$  miles. These cut-points were chosen based on substantive significance (e.g., less than 2 miles as a walking distance), cell size in each proximity category, and cut-points used in previous studies.(Choi et al., 2015, 2020; Compton & Pollak, 2015)

To estimate the slope of the relationship between help hours and miles within a segment of distance, we also created a linear spline of proximity with two knots (Harrell Jr., 2015) – at ‘not on the same block but  $\leq 2$  miles’ and at ‘5–10 miles’ – after examining the estimates on all proximity categories (Appendix Tables A2 and A3).

The hours of help asked in the module administered in 2013 encompasses a broader aspect of help, e.g., hands-on care, chores, and errands received in the prior calendar year from each adult child. Parents (care recipients) could report hours per week, per month, or for the entire year. All reports are converted to weekly amounts in this study and include 0 hours for children who did not provide help. There are a few cases reporting an implausibly high number of hours, including four cases of 168 hours per week. Therefore, weekly hours of help received is top-coded at the 99th percentile (=69.8 hours per week).

We included demographic and socioeconomic factors that are potentially associated with the amount of help received from an adult child and may also influence the association between help and proximity: parent’s race (non-Hispanic black, non-Hispanic whites), marital status (single, married or cohabiting for at least one year), the number of children (1 or 2, 3 or more), and household wealth ( $<$ median,  $\geq$ median); and adult child’s age, gender (daughter, son), employment status (working, not working), and parenthood status (no children, at least one child).

## Statistical Analysis

The adjusted relationship between hours of help received and residential distance was estimated using a two-part model (Belotti et al., 2015): logit model for the binary outcome (i.e., zero vs. any positive hours) in the first part; and generalized linear model with gamma distribution and log link for the continuous outcome (within positive hours) in the second part. Based on estimates from the two-part model using the linear spline of the proximity

measure as specified earlier, we calculated adjusted predicted weekly hours of help received from an adult child at each proximity category holding all covariates at their mean values of each corresponding sample (sample with a disability vs. without a disability). As auxiliary analyses, we also estimated the predicted value of help hours for each proximity category separately by parent's and adult child's sociodemographic status.

The survey sample weight was applied for all estimates, and standard errors were adjusted by clustering the residual structure at the family level.

## RESULTS

As summarized in Table 1, the sample of parents with an ADL/IADL limitation had a mean age of 73 and a mean number of ADLs/IADLs of 3.3. The share who were non-Hispanic black was significantly higher among those coresident or living within 5 miles compared to those living farther than 5 miles from each other. The share of parents having a spouse was lower for those non-coresident but living close ( $\leq 5$  miles) compared to other proximity categories (coresident or  $> 5$  miles). The proximity of living far ( $> 5$  miles) was associated with a greater share of parent-child dyads that had parental wealth above the median, a higher level of children's education ( $\geq 16$ ), and a greater share of children employed, compared to coresident.

Among parents with an ADL/IADL limitation, the likelihood of receiving any help (i.e., the first part of the two-part model) fell as distance increased between 'not on the same block but  $\leq 2$  miles' and '5–10 miles' (Adjusted Odds Ratio (AOR) = 0.77, 95% CI 0.59, 1.00), and between '5–10 miles' and 'beyond 100 miles' (AOR=0.70, 95% CI 0.59, 0.84; Table 2). Conditional on receiving help from the adult child (i.e., the second part of the model), hours of help received decreased in the segments containing the closer distance categories: between 'coresident' and 'not coresident but  $\leq 2$  miles' (adjusted coef. = -0.64, 95% CI -0.87, -0.41).

Adjusted weekly hours of help received were estimated by combining the two components of the two-part model (Figure 1). Among parents with a limitation, adjusted weekly hours decreased with distance but only up to about 2–5 miles: 5.99 (95% CI 3.33, 8.65) if coresident, 3.16 (95% CI 2.04, 4.28) if lived on the same block, 1.16 (95% CI 0.72, 1.59) if 2–5 miles away, 0.79 (95% CI 0.39, 1.20) if lived 5–10 miles away, and 0.58 (95% CI 0.25, 0.92) if lived  $> 100$  miles away (Figure 1). There is little substantive difference in adjusted weekly hours of help received between parents with vs. without an ADL/IADL limitation for distances beyond 2–5 miles.

## DISCUSSION

This study finds that the hours of help received from an adult child by a parent with a disability are strongly contingent on them living no more than about five miles apart. Beyond this distance, relatively little help is given, and hours of help are not associated with proximity.

Family members may help each other in ways that are less dependent on close residential proximity (e.g., financial or emotional support), but hands-on assistance is required by many older adults with disabilities. If this family care is not received, adults in need may go without care or rely on care services paid for by themselves, their families, private insurance, or public programs.

There are potential limitations to the study. First, parents and children may have moved closer to each other, anticipating the parent's health decline, which may introduce endogeneity bias in the estimates. We found that the number of ADLs/IADLs was not higher among parents who lived closer to their children (Table 1), but there might still be endogeneity bias not addressed in our estimates. Second, limited sample sizes prohibited more nuanced assessments. Specifically, a strong association between hours of help and very close proximity seem to exist for most socioeconomic groups, but confidence intervals were too wide to provide conclusive statistical inference (Appendix Figures A1 and A2). Third, we focus on the dyad of parent-child rather than family as a whole (e.g., care provided from all children). While both are important, our data do not have the detailed geographic location of *all* children of the parent, so we could not incorporate within-family dynamics (e.g., care allocation among adult children of a parent) and assess the resulting total care amount received by a parent. Fourth, focusing on a parent's perspective (i.e., care recipient), we used the measure of help hours reported by a parent, which may be biased toward under-estimating the actual hours of help. (Ikkink et al., 1999; Lin & Wu, 2017)

Despite the limitations, this research using national data provides important new evidence on the high spatial dependency of the amount of help received from an adult child by an older adult with a disability. A better understanding is needed of the desire for, barriers to, and facilitators of child-to-parent caregiving when they live more than a few miles apart (e.g., the nature of the adult child's employment and associated work policies, technological innovations that may allow some forms of long-distance caregiving). This need has become more evident during the COVID-19 pandemic, where even adult children living nearby face significant constraints to safely providing care for their parents in need.

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## Appendix Table A1.

Selection criteria for the sample of parents with at least one ADL or IADL limitation

	Sample & Sample restrictions	N of focal persons	N of focal person-child dyad
Restriction A	Focal person age25+ who have a biological child 25+ (RT13)	4,608	10,751
Restriction B	A+ children Not in an institution for 2013	4,587	10,653
Restriction C	B + focal person and children in the main PSID sample in 2011	3,603	7,058

Sample & Sample restrictions		N of focal persons	N of focal person-child dyad
Restriction D	C + focal person and children Not in an institution in 2011	3,561	6,939
Restriction E	D + focal person aged 55 and older in 2013	2,669	5,518
Restriction F	E + focal person at least one ADL or IADL limitation	830	1,835
Restriction G	F + non-missing information on time-transfer receipt from children (RT13)	815	1,784
Analysis Sample	G + non-missing information on proximity in 2011 (block-level)	810	1,767

## Appendix Table A2.

Adjusted prediction of weekly hours of help received from a child, by distance using a dummy variable for each proximity category (Sample: Dyads of parents aged 55+ with a disability and their children aged 25+; N=1,767)

	N	Unadjusted estimates		Adjusted estimates (using two-part model)							
		Mean		First part (logit)			Second part (Gamma with log link)			Combined	
		Weighted values	95% CI	ARR	p-value	95% CI	Coef.	p-value	95% CI	Predicted values	95% CI
Coreresident	292	8.59	[5.71 11.47]	1.29	0.16	[0.90 1.83]	1.73	<0.001	[1.21 2.25]	5.34	[2.87 7.8]
Same block	111	6.73	[2.96 10.60]	1.07	0.75	[0.71 1.62]	1.67	<0.001	[1.04 2.29]	4.16	[1.63 6.70]
<=2 miles, not same block	202	2.10	[1.23 2.97]	1.31	0.14	[0.92 1.87]	0.22	0.38	[-0.27 0.72]	1.20	[0.70 1.70]
2–5 miles	199	2.84	[1.34 4.34]	1.00	0.99	[0.69 1.46]	0.75	0.01	[0.16 1.34]	1.56	[0.65 2.46]
5–10 miles	176	0.97	[0.43 1.50]	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	0.73	[0.32 1.15]
10–30 miles	226	0.62	[0.29 0.95]	0.63	0.02	[0.42 0.94]	-0.07	0.82	[-0.7 0.56]	0.43	[0.18 0.68]
30–100 miles	155	1.43	[0.19 2.66]	0.48	0.003	[0.30 0.78]	0.76	0.07	[-0.06 1.57]	0.75	[0.10 1.41]
>100 miles	406	0.80	[0.32 1.28]	0.41	<0.001	[0.27 0.63]	0.61	0.04	[0.04 1.18]	0.56	[0.22 0.90]

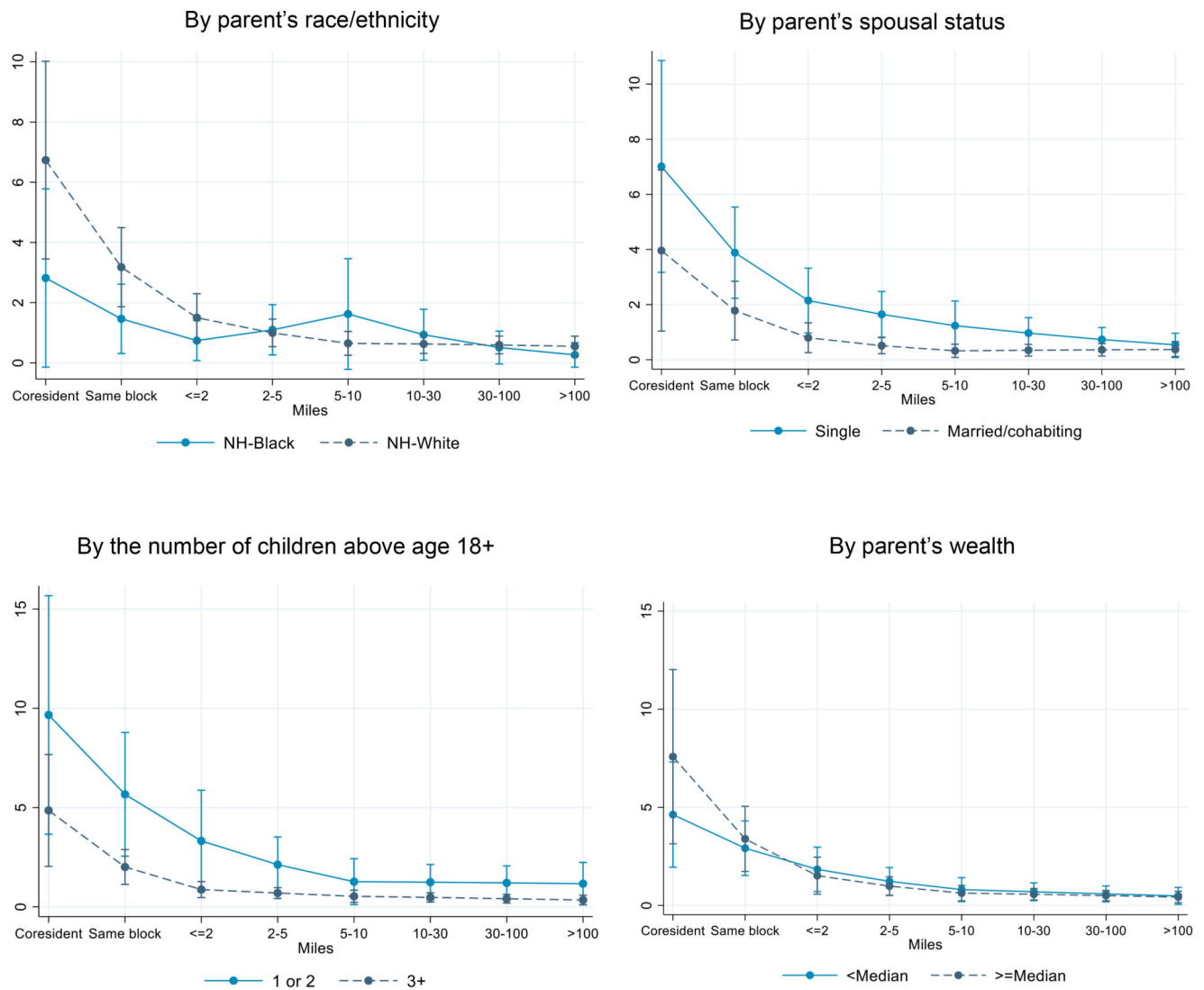
Note: Dummy variables for categories of proximity were used (reference category was 5–10 miles). Adjustment variables include parent's age, gender, race/ethnicity, spousal status, number of children, and wealth (adjusted by household size), and child's, age, gender, education, working status, and the status of having a minor child. Predicted values for the adjusted model were evaluated by holding all covariates at their mean values of the corresponding analysis sample (N=1,767).

### Appendix Table A3.

Adjusted prediction of weekly hours of help received from a child, by distance using a dummy variable for each proximity category (Sample: Dyads of parents aged 55+ without a disability and their children aged 25+; N=3,608)

	N	Unadjusted estimates		Adjusted estimates (using two-part model)							
		Mean		First part (logit)			Second part (Gamma with log link)			Combined	
		Weighted value	95% CI	ARR	p-value	95% CI	Coef.	p-value	95% CI	Predicted values	95% CI
Coresident	562	1.67	[0.85 2.48]	1.22	0.32	[0.83 1.81]	0.89	0.004	[0.28 1.49]	1.04	[0.52 1.55]
Same block	230	1.30	[0.45 2.15]	1.11	0.66	[0.70 1.78]	0.93	0.004	[0.30 1.55]	0.98	[0.34 1.63]
<=2 miles, not same block	316	0.60	[0.27 0.94]	1.15	0.49	[0.77 1.71]	0.20	0.52	[-0.41 0.81]	0.49	[0.24 0.74]
2–5 miles	294	0.35	[0.20 0.50]	1.27	0.22	[0.86 1.88]	-0.34	0.22	[-0.88 0.21]	0.32	[0.17 0.46]
5–10 miles	369	0.38	[0.17 0.58]	(ref)	(ref)	(ref)	(ref)	(ref)	(ref)	0.35	[0.15 0.55]
10–30 miles	479	0.22	[0.11 0.33]	0.74	0.14	[0.50 1.10]	-0.51	0.10	[-1.11 0.10]	0.16	[0.08 0.24]
30–100 miles	398	0.33	[0.04 0.62]	0.63	0.04	[0.41 0.98]	0.29	0.49	[-0.54 1.12]	0.30	[0.04 0.55]
>100 miles	960	0.08	[0.04 0.12]	0.36	<0.001	[0.22 0.60]	-0.46	0.09	[-1.00 0.07]	0.08	[0.04 0.13]

Note: Dummy variables for categories of proximity were used (reference category was 5–10 miles). Adjustment variables include parent's age, gender, race/ethnicity, spousal status, number of children, and wealth (adjusted by household size), and child's age, gender, education, working status, and the status of having a minor child. Predicted values for the adjusted model were evaluated by holding all covariates at their mean values of the corresponding analysis sample (N=3,608).

**Appendix Figure A1.**

Adjusted predicted weekly hours of help received from an adult child by a parent with disability, by distance and parental characteristics

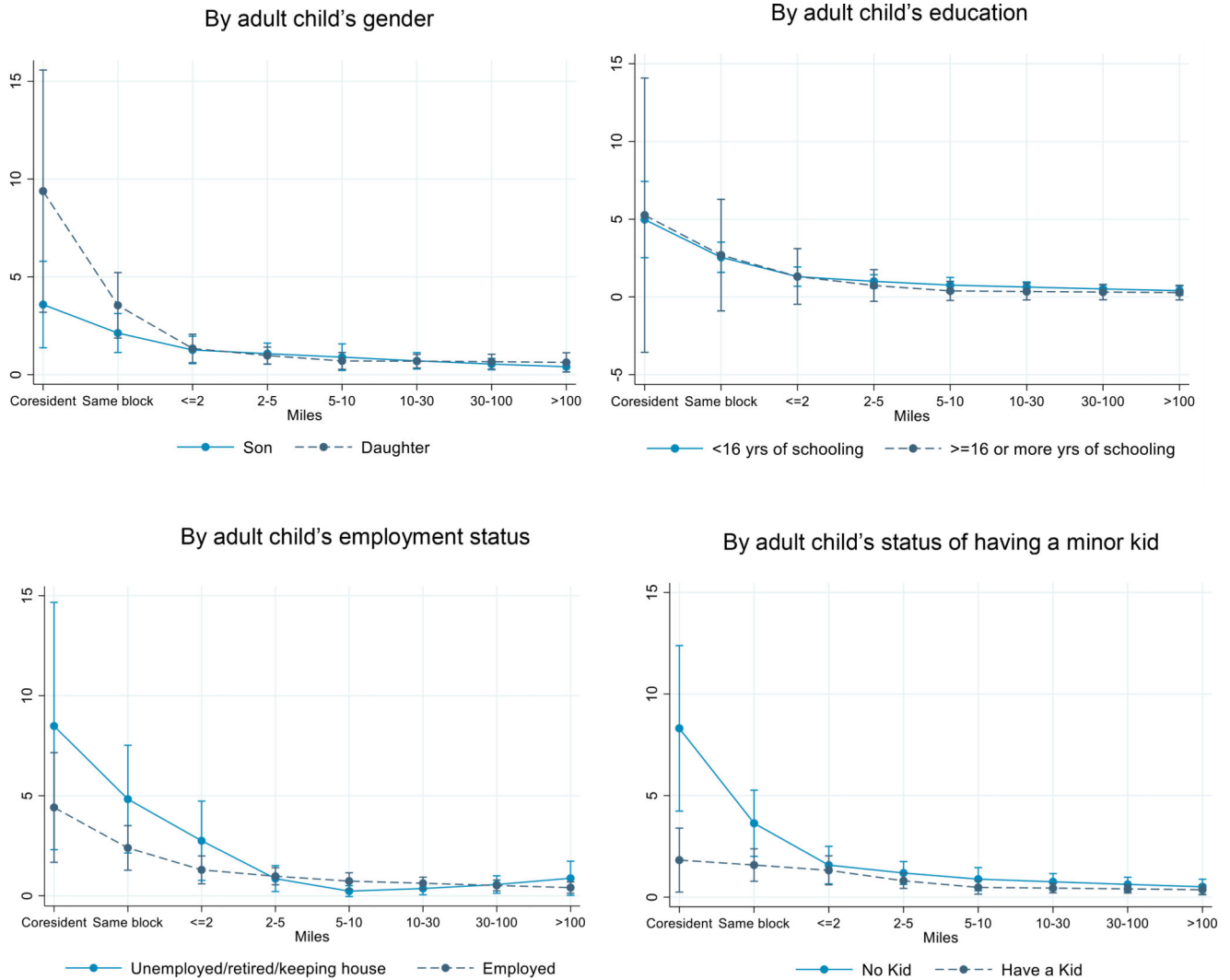
(Sample: Dyads of parents aged 55+ with a disability and their children aged 25+; N=1,767)

Note: Estimates are from two-part models using a spline with two knots for proximity.

Potential adjustment variables include parent's age, gender, race/ethnicity, spousal status, number of children, and wealth (adjusted by household size), and child's age, gender, education, working status, and the status of having a minor kid. Predicted values for the adjusted model were evaluated by holding all covariates at their mean values of the analysis sample (N=1,767).



**Appendix Figure A2.**



Adjusted predicted weekly hours of help received from an adult child by a parent with disability, by distance and children's characteristics  
 (Sample: Dyads of parents aged 55+ with a disability and their children aged 25+; N=1,767)  
 Note: Estimates are from two-part models using a spline with two knots for proximity. Potential adjustment variables include parent's age, gender, race/ethnicity, spousal status, number of children, and wealth (adjusted by household size), and child's age, gender, education, working status, and the status of having a minor kid. Predicated values for the adjusted model were evaluated by holding all covariates at their mean values of the analysis sample (N=1,767).

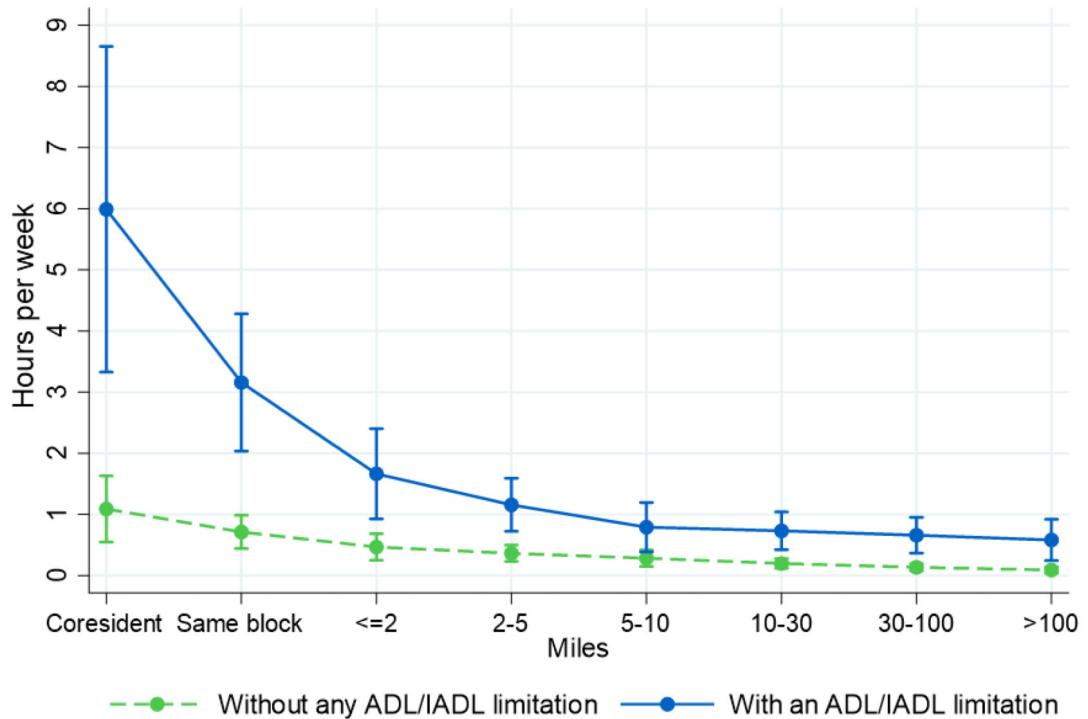
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### HIGHLIGHTS

- Older adults with disability receive a high level of care from adult children.
- The amount of care from a child is strongly contingent on spatial proximity.
- Little help is received from an adult child if the child lives beyond 2–5 miles.



**Figure 1.**

Adjusted weekly hours of help received from an adult child by a parent, by distance

(Sample: Dyads of parents aged 55+ and their children aged 25+; N=5,375)

Note: Estimates are from two-part models using a spline with two knots for proximity.

Adjustment variables include parent's age, gender, race/ethnicity, spousal status, number of children, and wealth (adjusted by household size), and child's age, gender, education, working status, and status of having a minor kid. Predicated values for the adjusted model were evaluated by holding all covariates at their mean values of each corresponding sample (N=3,608 for without ADL/IADL limitation; N=1,767 for with ADL/IADL limitation)

Summary statistics of analysis sample (Sample: Dyads of parents aged 55+ with a disability and their children aged 25+)

Table 1.

	Overall								
	Distance between parents and adult children								
	N	Est.	95% CI	(1) Coresident (N=292)	(2) Non-coresident, <=5 miles (N=512)	(3) >5 miles (N=963)			
<u>Parent's characteristics</u>									
N of activity limitations, Mean	1,756	3.3	[3.0 3.6]	3.4	[2.9 3.9]	3.4	[3.0 3.8]	3.3	[3.0 3.6]
Age, Mean	1,767	72.7	[71.7 73.7]	70.6	[68.7 72.6]	72.1	[70.8 73.5]	73.5	[72.3 74.7]
Female, %	1,242	71.1	[68.5 73.6]	72.8	[66.2 78.6]	77.6	[72.9 81.6]	67.6	[64.1 71.0]
Race/ethnicity, %									
NH Black	547	12.0	[10.5 13.6]	17.3	[12.8 22.8]	14.8	[11.9 18.2]	9.3	[7.6 11.4]
NH White	1,065	78.2	[75.9 80.3]	66.7	[59.9 72.9]	76.8	[72.3 80.7]	81.6	[78.5 84.2]
Other	147	9.9	[8.2 11.8]	16.0	[11.5 21.8]	8.4	[5.7 12.2]	9.1	[7.0 11.8]
Have a spouse, %	900	48.9	[46.1 51.6]	51.6	[44.4 58.8]	38.4	[33.5 43.6]	53.2	[49.5 56.9]
Number of children, %									
One or two children	448	28.2	[25.7 30.7]	35.5	[28.9 42.7]	29.0	[24.4 34.1]	26.0	[22.9 29.3]
Three	425	27.1	[24.6 29.7]	26.5	[20.6 33.4]	26.7	[22.2 31.7]	27.4	[24.2 30.9]
Four or more	894	44.7	[42.0 47.5]	38.0	[31.4 45.1]	44.3	[39.1 49.6]	46.6	[42.9 50.2]
Wealth above median (\$93,338), %	701	49.8	[47.0 52.6]	33.4	[26.9 40.7]	46.2	[40.9 51.5]	55.5	[51.8 59.1]
<u>Adult child's characteristics</u>									
Age, Mean	1,766	45.7	[44.7 46.6]	42.6	[40.5 44.6]	46.1	[44.7 47.5]	46.2	[45.1 47.3]
Female, %	908	49.4	[46.6 52.2]	40.3	[33.5 47.4]	54.9	[49.6 60.1]	48.9	[45.2 52.6]
Having at least one minor kid, %	765	40.4	[37.7 43.2]	19.8	[15.0 25.7]	41.7	[36.6 47.0]	44.7	[41.1 48.4]
Education >=16 years, %	371	25.4	[23.0 28.0]	11.3	[7.5 16.6]	19.0	[15.1 23.7]	31.9	[28.5 35.5]
Adult child's employment status, %									
Employed	1,222	72.4	[69.8 74.8]	49.7	[42.5 56.9]	72.6	[67.7 77.0]	77.8	[74.5 80.8]
Unemployed, retired, keeping house	357	20.3	[18.1 22.7]	28.7	[22.6 35.7]	21.6	[17.6 26.3]	17.5	[14.8 20.6]
Disabled/student/other	139	7.4	[6.0 9.0]	21.6	[16.0 28.4]	5.8	[3.9 8.5]	4.7	[3.3 6.6]

**Table 2.**

Adjusted estimates of change in weekly hours of help received from an adult child by a parent associated with an increase in distance to the adult child (Sample: Dyads of parents aged 55+ and their children aged 25+)

	Among parents with ADL/IADL limitations (N= 1,767)				Among parents without ADL/IADL limitations (N= 3,608)							
	First part (N=1,676) (logit)		Second part (N=552) (Gamma with log link)		First part (N=3,520) (logit)		Second part (N=642) (Gamma with log link)					
	AOR	p-value	95% CI	Coef.	p-value	AOR	p-value	95% CI				
Proximity segment 1: Co-resident -- <=2 miles	0.99	0.96	[0.77 1.28]	-0.64	<0.001	[-0.87 -0.41]	0.99	0.95	[0.78 1.26]	-0.42	<0.001	[-0.64 -0.19]
Proximity segment 2: <=2 miles -- 5-10 miles	0.77	0.05	[0.59 1.00]	-0.22	0.09	[-0.47 0.03]	0.93	0.56	[0.75 1.16]	-0.20	0.11	[-0.43 0.04]
Proximity segment 3: 5-10 miles -- beyond 100 miles	0.70	<0.001	[0.59 0.84]	0.17	0.10	[-0.03 0.36]	0.67	<0.001	[0.56 0.81]	-0.03	0.69	[-0.19 0.12]

Note: Estimates are from two-part models using a spline with two knots for proximity. Adjustment variables include parent's age, gender, race/ethnicity, spousal status, number of children, and wealth (adjusted by household size), and child's age, gender, education, working status, and the status of having a minor child.