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An Economic Analysis of Kin-Provided Child Care

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Abstract

This paper develops and evaluates a model of a mother's choice of kin-provided child care. Little is known about the choice of kin-provided child care, particularly within the context of intrafamily in-kind transfers. Despite this, kin-provided child care is extensively used, and its use affects family economic well-being. Using data from the National Longitudinal Survey of the Class of 1972 (NLS'72), this study shows that variables affecting maternal use of market-provided child care also affect use of kin-provided child care. The study also reveals that the effects of variables on the choice of kin-provided child care are misleading when the direction of other in-kind transfers between a mother and her extended family is ignored. Estimated coefficients change sign and size depending upon whether a mother was giving material assistance to members of her extended family.

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I. INTRODUCTION

In the United States, a significant number of working parents with preschool-aged children rely on relatives for child care. The 1990 National Child Care Survey found that kin cared for 22 percent of all children under one year of age whose mothers worked. In the same survey, 30 percent of the parents interviewed preferred to have a relative care for their children (Hofferth, Brayfield, Deich, and Holcomb 1991).[1]

Furthermore, according to figures produced by the Bureau of the Census, use of kin-provided child care has expanded while use of family day care and nonrelatives has decreased.[2] Between 1977 and 1987, the share of preschool-aged children cared for by kin fell from 30.9 percent to 21.1 percent. After 1987, however, the share rose, reaching 23.5 percent in 1991.[3] During that year, the proportion of children under five years old receiving in-home care by kin rose to 10 percent of all relative-provided child care arrangements (Casper, Hawkins, and O'Connell 1992).

In addition to indicating an increase in kin-provided child care, reports have noted that cash outlays for kin-provided child care occur less often than outlays for other forms of child care. Casper, Hawkins, and O'Connell (1992) found that while market providers required cash payments 90 percent of the time, grandparents required cash payments only 19 percent of the time and other relatives required cash payments only 39 percent of the time. Also, Casper et al. reported that hourly and weekly costs of kin-

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[1]Berger and Black (1992) have also documented mothers' preferences for kin-provided child care over market-provided child care.

[2]Use of nonrelatives and family day care fell from 54.7 percent in 1988 to 46.3 percent in 1991 (Casper, Hawkins, and O'Connell 1992).

[3]Figures exclude father-provided child care and mothers caring for children at work. Kin-provided child care is defined as arrangements where children are cared for by kin, excluding fathers.

provided child care were lower than its alternatives, even though the hours of use across child care arrangements were comparable.

The widespread use of kin-provided child care, its appeal among mothers, and its impact on family economic well-being convinced me that more information on kin-provided child care was essential. In this study, I provide new information on the relationship between location choice and choice of kin-provided child care, and the link between kin-provided child care and private in-kind transfers;[4] I then draw conclusions about the motives explaining kin-provided child care.

Finding the right data with which to examine these aspects of kin-provided child care was challenging. I needed one data source that contained information on child care arrangements and private in-kind transfers, as well as details about past family transfers; I required the latter to address methodological concerns. Fortunately, there was a data source meeting these demands: the National Longitudinal Survey of the Class of 1972 (NLS'72).

Fitting a model of parental child care-choice–behavior in two decisions—whether to live near parents and visit them frequently, and whether to use kin-provided child care—to these data yielded several findings. The results confirm that kin-provided child care is an in-kind transfer and they show that the estimated effects of key variables on child care decisions depend upon the direction of these other noncash (hence, in-kind) transfers within the family. Further, the results indicate that estimates of the decision to use nonparental child care are inconsistent when the decision about proximity to extended family is ignored. Finally, I found that income and child care prices affected the choice of kin-provided child care in predictable ways. Thus, I argue that keeping child care a private family matter depends on economic factors as much as family values, like family loyalty or privacy.

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[4]Private in-kind transfers are transfers of goods and services among individuals. I examined patterns of in-kind (noncash) assistance among members of the same family who lived in separate households. Family members either received noncash help from kin living elsewhere (the direction of the transfer being one-way), gave noncash help to kin living elsewhere (another one-way transfer), or exchanged goods and services across households (a two-way transfer).

The paper includes an empirical model section (Section 2), a data section (Section 3), a results section (Section 4), and a final section (Section 5), which highlights policy implications of the study and the need for more research on motives for private in-kind transfers across extended family households.

II. MODELING PROXIMITY-TO-PARENT AND CHILD CARE DECISIONS

The objective of the study, which focused on a sample of mothers who had preschool-aged children, was to model their decisions to live close to their parents and visit them regularly, and then, based on that proximity decision, to decide upon a child care arrangement.

The estimated model tried to portray the complexity of two family decisions a mother confronts. It reflected the duality between a mother's child care decision and her decision about physical closeness to her aging parents, who are a potential source of child care. Hence, the model presumes that a mother's choice of a child care arrangement was related to her other decision about the benefits of living close to her parents. I also explicitly examined why a mother would choose market-provided child care even though she lived close to her parents.

In this simultaneous model, a mother decides the closeness and accessibility to her parents and whether she wants kin-provided child care. This formulation has several advantages. First, by distinguishing the choice of location from the choice of child care arrangement, I could analyze the determinants of each choice. The specification allowed me to investigate the effects of past transfers from parents to a daughter on her later proximity to them as well as enabling me to explore the effects of a mother's early human capital development on her later proximity to her parents.

Second, by separating the two choices, I could test the effects of maternal wages, the price of child care, and household income on the choice of child care arrangement. Finally, by correcting the selection bias while treating the choices as part of a simultaneous model, I could generate consistent estimates of the determinants of kin-provided child care, with and without inclusion of the other in-kind transfer directions.

To illustrate, assume that we have the following empirical simultaneous equation system with binary dependent variables:

Proximity decision[5]

$$y_1 = Z_1\alpha_1 + \varepsilon_1,\ y_1 = \begin{cases} 1 \text{ if live within } 10 \text{ miles of} \\ \text{parents and visit at least once} \\ \text{per week, } 0 \text{ if not.} \end{cases} \quad \textbf{(1)}$$

Child care decision

$$y_2 = Z_2\alpha_2 + \varepsilon_2,\ y_1 = \begin{cases} 1 \text{ if chose kin-provided} \\ \text{child care, } 0 \text{ if not.} \end{cases} \quad \textbf{(2)}$$

The vector Z contains exogenous variables that are expected to influence the choices y_1 and y_2, and α_1 and α_2 are the coefficients on the explanatory variables. ε_1 and ε_2 are the error terms and

$$\begin{gathered} E\ [\varepsilon_1] = [\varepsilon_2] = 0, \\ Var\ [\varepsilon_1] = Var\ [\varepsilon_2] = 1, \\ Cov\ [\varepsilon_1, \varepsilon_2] = \rho. \end{gathered} \quad \textbf{(3)}$$

This joint approach accounts for the potential correlation between the two equations, ρ, and thereby corrects for potential sample selection bias that is possible in the separate estimation of the child care choice equation.

Under selection rules (1) and (2), the probability P_j that the mother is a member of the jth subsample is given by

$$\begin{gathered} P_1 = Pr(y_1 = 0) = Pr(y_1 \le 0) \\ = Pr(\varepsilon_1 \le -Z_1\alpha_1) = 1 - F(Z_1\alpha_1) \end{gathered} \quad \textbf{(4)}$$

[5]The dependent variable indexed two groups of mothers: those who reported living within ten miles of their parents at the time of the survey *and* who visited them several times a week and those who did neither.

$$P_2 = Pr(y_2 = 0) = Pr(y_1 > 0, y_2 \leq 0) = Pr(\varepsilon_1 < -Z_1\alpha_1,\ \varepsilon_2 \leq -Z_2\alpha_2\alpha_2) = \phi(Z_1\alpha_1,\ -Z_2\alpha_2;\ \rho) \quad \textbf{(5)}$$

$$P_3 = Pr(y_2 = 1) = Pr(y_1 > 0,\ y_2 > 0) = Pr(\varepsilon_1 > -Z_1\alpha_1,\ \varepsilon_2 > -Z_2\alpha_2) = \phi(Z_1\alpha_1,\ Z_2\alpha_2;\ \rho) \quad \textbf{(6)}$$

where $F(\cdot)$ and $\phi(\cdot)$ denote the standardized univariate and bivariate distribution functions respectively. I partitioned the original sample into three mutually exclusive subsamples:

S_1: those who do not live close to their parents;

S_2: those who lived close to their parents but did not choose kin-provided child care; and

S_3: those who lived close to their parents and used kin-provided child care.

The likelihood function for the entire sample had the following form:

$$L = \prod_{S_1} [1 - F(Z_1\alpha_1)] \cdot \prod_{S_2} \phi(Z_1\alpha_1,\ -Z_2\alpha_2;\ \rho) \cdot \prod_{S_3} \phi(Z_1\alpha_1,\ Z_2\alpha_2;\ \rho) \quad \textbf{(7)}$$

Estimates of the parameters, α_1, α_2, and ρ, are obtained by maximizing (7). The resulting estimates are more efficient than those obtained when estimating the two equations separately.

Using maximum likelihood techniques, I fitted a bivariate probit model estimating whether or not the mother was observed to live close by her parents and, if she did, whether or not she chose kin-provided child care.

In the model, I test my theory that (1) mothers' wages and hours of work, (2) their income levels and the price of kin-provided child care, and (3) their demographic traits and household characteristics affected use of kin-provided child care and the direction of in-kind transfers.

III. DATA AND VARIABLES

Data Description

The data came from the NLS'72, a national probability sample of over 22,000 high school seniors in 1972. The fifth follow-up survey, which was conducted in 1986 and provides the child care data for this study, was delivered to an unequal probability subsample of 14,489 of the original respondents (see Spencer, Sebring, and Campbell 1987).

The comprehensiveness of data gathered on child care arrangements, location of parents, and private noncash transfers from one household to another makes the NLS'72 ideal for analyzing the choice of kin-provided child care. Questions yielded data on types of child care chosen, the cost of each type, and the hours utilized in each type, as well as telling which households exchanged goods and services, which ones gave only noncash assistance to other kin, and which ones received only noncash assistance from other kin. The survey gathered specific details about the nature and frequency of these types of transfers and the relationships among those making them. Appendix C describes the creation of the in-kind transfer variables (see Spencer et al. 1987).

Because the NLS'72 provided many details on kin, I enumerated the number of coresiding kin, established the proximity of respondents' parents, and tabulated frequency of visits of respondents to parents. Such data on relatives also allowed me to check the reliability of the data on family in-kind transfers as well as using it to validate measures of kin availability for child care (see Spencer et al. 1987).

Previous survey follow-ups collected information on past transfers from parents of respondents to respondents. I retrieved these data and then created variables measuring the nature and extent of private

transfers from parents to respondents at the time of each survey follow-up. For example, some mothers were attending college during the second follow-up survey. From this particular follow-up, I extracted data that were recorded on parents paying for the mothers' college tuition and data on extra cash gifts given to mothers for living expenses. These data from the four survey follow-ups, which measured transfer behavior between parents and respondents over a fourteen-year period, were valuable when modeling mothers' later decisions about proximity to their aging parents.

The survey also included variables identifying regions of the country. Those variables and other geographic identifiers were useful when predicting the price of child care facing mothers across different regions of the country. (A full discussion of predicting child care prices is contained in Appendix D.)

Another strength of the survey was its inclusion of nonemployed women using child care. Their inclusion increased confidence in estimated effects because child care decisions were not censored by employment status. Past studies of child care demand have used data like that from the Survey of Income and Program Participation (SIPP), which questions only working mothers about child care, have not included this group of child care users and have had to make sample selection corrections to estimated parameters (Heckman 1979; Hotz and Kilburn 1991).

Hence, the strengths of the survey allowed me to simultaneously model two significant family decisions, mode of child care and proximity to parents, while controlling for factors salient at the time of the fifth follow-up and for prior family transfer behaviors.

Notwithstanding its strengths, the survey had a major weakness: it failed to sample people who had dropped out of high school. Hence, my sample is not representative of the national population—a minor issue for white mothers in the sample because their high school dropout rates have plummeted (Jaynes and Williams 1989), but a major issue for the sample of black mothers. In 1972, their high school dropout rate was 45 percent (Jaynes and Williams 1989). Thus, the selection bias restricted the study's generalizability to that subset of black and white women who reached their senior year in this grade cohort.

Variable Creation

Constructing the independent variables was straightforward, except for wages and child care prices. I estimated wages for mothers reporting no earnings (see Appendix B); similarly, I estimated child care prices for those mothers who reported nonparental child care use but failed to report its monthly cost (see Appendix D). As I indicated, I created the other independent variables from information collected at the time of the fifth follow-up and from information gathered during the four previous survey follow-ups.

Table 1 provides definitions of independent variables and Table 2 details descriptive statistics for each one. Table 2 shows that a third of the 855 mothers in the sample were college graduates and over a third did not work in the labor force. The remaining two-thirds worked about 23 hours per week on average. Although nearly half were within 10 miles of parents and frequently visited them, few coresided with kin; kin averaged less than one per household. Figures also showed that over a third had received cash transfers in the past, while another third had taken college preparatory courses in high school.

Creating the dependent variables was more complicated than constructing the independent variables. I had to manipulate the data so that the dependent variables distinguished among particular types of resource links that mothers choosing child care had with their extended families. For instance, one variable identified those who used kin-provided child care and received resources from their extended family but who did not have a two-way exchange. Another distinguished those mothers reporting kin-provided child care but who were also involved in reciprocal exchanges; that is, this group of mothers gave help to and received help from kin.

I added one other group to the group containing women who were involved in reciprocal exchanges: mothers who used kin for child care and only gave help to their extended family, but did not receive any in-kind help from kin. I put them with the “reciprocators” because I assumed that giving help to kin was payment in-kind for kin-provided child care. (Even if the reverse occurred, i.e., kin-provided child care was payment in-kind for help given by these mothers, I still combined the groups.)

TABLE 1
Definitions of Variables

Dependent Variables:	
Connected	1 if report living with kin, or report living within 10 miles of parents and visiting them more than once a week, 0 otherwise
Kincare	1 if use relatives for care, 0 otherwise[a]
Exchange-kincare	1 if report only exchanges with kin and use kin-provided child care, 0 otherwise
Exchange-marcare	1 if report only exchanges with kin while using market-provided child care, 0 otherwise
Give-marcare	1 if giving only to kin while using market-provided child care, 0 otherwise
Receive-marcare	1 if receiving only from kin while using market-provided child care, 0 otherwise
Receive-kincare	1 if receiving only from kin and use kin-provided child care, 0 otherwise
Independent Variables:	
Colgrad	Had completed a college degree by 1986
Attached	Amount of time in a community before graduating from the high school in that community
Innest	Lived in parent's home for at least 5 years after high school
Hisearn	Husband's 1985 earnings
County	1 if by 1980 stated that they lived in same county that they had lived in with parents since 1972, 0 otherwise
South	1 if live in South, 0 otherwise
West	1 if live in West, 0 otherwise
Midwest	1 if live in Midwest, 0 otherwise
Mar_86	1 if married in 1986, 0 otherwise
Kinres	Number of kin living in household in 1986
Black	1 if black, 0 otherwise
Hours	Number of reported hours worked per week
Nonwork	1 if do not work but report use of nonparental child care, 0 otherwise
Predwage	Log of predicted hourly wage
Price	Predicted hourly cost of kin-provided care
Hse_inc	Family income (thousands of 1985 dollars)
Stay close	1 if in 1972 (base year questionnaire) respondent stated it was “very important in life” to live close to parents, 0 otherwise
Cash	1 if mother reported that her parents gave her cash transfers starting in 1972 and ending in 1979
Age of eldest	Age of the firstborn child who is residing in household
Rank	1 if in 1972 a mother was above the 90th percentile in class rank
Colprep	1 if in 1972 a mother's high school curriculum was academic and college preparatory courses, 0 otherwise
Deceased	1 if by 1986, a parent of the mother was deceased, 0 otherwise

Source: NLS'72.
[a]Excludes father-provided, sibling-provided, or employer-provided child care, and self-care.

TABLE 2

Means and Standard Deviations of Variables Probit Regressions

Variables	*Mean*	*Standard Error*
Independent:		
Kinres	0.45	1.58
Black	0.14	0.35
Colgrad	0.33	0.47
Hours	22.80	19.15
Mar_86	0.16	0.37
Predwage	1.901	0.622
Hse_inc	$32.385	19.075
West	0.18	0.380
South	0.36	0.48
Midwest	0.24	0.42
Price	$1.57	3.38
Nonwork	0.36	0.48
Attached	0.33	0.47
Innest	0.21	0.40
Hisearn	$20.503	18.286
County	0.30	0.46
Stay close	0.06	0.24
Cash	0.35	0.47
Rank	0.13	0.34
Colprep	0.37	0.48
Deceased	0.16	0.37
Age of eldest	7.6	4.2
Dependent:		
Connected	0.48	0.50
Exchange-kincare	0.25	0.43
Exchange-marcare	0.07	0.25
Receive-kincare	0.54	0.49
Receive-marcare	0.25	0.43
Kin care	0.54	0.49
Give-marcare	0.13	0.34
N = 855		

Source: NLS'72.

Ultimately, sufficient numbers of women reporting child care arrangements and the direction of in-kind transfers permitted me to construct a set of mutually exclusive and exhaustive categorical dependent variables combining child care choice and the direction of in-kind transfers. Thus, the variables linked choice of child care with the direction of in-kind transfers across extended family households; those transfers were either in a one-way direction, one household giving while another was receiving, or in a two-way direction, both households giving and receiving, i.e., reciprocal exchanges.

The dependent variables I used in the study are also defined in Table 1. Descriptive statistics for them are presented in Table 2 as well.

I exploited the variables to estimate a model that assumed that a mother maximized her utility by choosing proximity to parents and choosing between (1) kin-provided child care and reciprocal exchanges with kin or (2) kin-provided child care and accepting other assistance from kin. Results from that model are contained in Table 3. Then, I estimated a second model based on that same assumption but switched the dependent variable so that the mother now chose among (1) market-provided child care and reciprocal exchanges with kin, (2) market-provided child care and accepting other assistance from kin, and (3) market-provided child care and giving assistance to kin. Those results are presented in Table 4.

IV. FINDINGS

Many mothers in the NLS'72 used kin-provided child care. The proportion of preschool-aged children cared for by kin was 18.7 percent while the remaining children received care from fathers, day care centers, or nonrelatives. Also, while non-kin providers required cash payments 73.2 percent of the time, kin required cash payments only 43.5 percent of the time. For those women reporting child care expenditures, the monthly cost of kin-provided child care ($138.94) was lower than the monthly cost of other arrangements ($152.21), even though average monthly hours of use of kin-provided care (126.63) paralleled average monthly hours of use of non-kin care (124.35).

TABLE 3
Bivariate Probit Predicting Probability of Locating Close to Parents and Choice of Kin-Provided Child Care
(Standard Errors in Parentheses)

Connected[a]				
Constant	0.34***	0.34***	0.34***	N.A.
	(0.13)	(0.13)	(0.13)	
Rank	-0.64***	-0.64***	-0.64***	
	(0.13)	(0.13)	(0.13)	
Colprep	-0.21**	-0.21**	-0.21**	
	(0.10)	(0.10)	(0.10)	
Attached	0.18*	0.18*	0.18*	
	(0.09)	(0.09)	(0.09)	
Innest	0.44***	0.44***	0.44***	
	(0.11)	(0.11)	(0.11)	
Deceased	-0.46***	-0.46***	-0.46***	
	(0.12)	(0.12)	(0.12)	
Cash	-0.06	-0.06	-0.06	
	(0.10)	(0.10)	(0.10)	
Hisearn	-0.01***	-0.01***	-0.01***	
	(0.002)	(0.002)	(0.002)	
County	0.21**	0.21**	0.21**	
	(0.10)	(0.10)	(0.10)	
Stay close	0.53***	0.53***	0.53***	
	(0.19)	(0.19)	(0.19)	
	Exchange-Kincare	*Receive-Kincare*	*Kincare*[b]	*Kincare*[c]
Constant	-1.10***	0.96***	0.71***	0.76***
	(0.28)	(0.32)	(0.27)	(0.28)
Kinres	0.07**	-0.08***	-0.007	0.01
	(0.03)	(0.04)	(0.03)	(0.03)
Black	0.77***	-0.48***	0.38***	0.36***
	(0.15)	(0.18)	(0.14)	(0.15)
Colgrad	-0.55***	0.17	-0.34***	-0.34***
	(0.14)	(0.14)	(0.13)	(0.13)
Nonwork	0.33	0.25	0.78***	0.71***
	(0.22)	(0.23)	(0.21)	(0.22)
Hours	-0.002	-0.01***	-0.01**	-0.01**
	(0.005)	(0.002)	(0.005)	(0.005)
Mar_86	-0.68***	-0.007	-0.54***	-0.53***
	(0.17)	(0.15)	(0.13)	(0.14)

(table continues)

TABLE 3 (continued)

	Exchange-Kincare	*Receive-Kincare*	*Kincare*[b]	*Kincare*[c]
Predwage	0.13*	-0.27***	-0.04	-0.04
	(0.07)	(0.15)	(0.08)	(0.08)
Hse_inc	0.007****	-0.01***	-0.006**	-0.006**
	(0.002)	(0.003)	(0.003)	(0.003)
Price	-0.18***	-0.21***	-0.26***	-0.27***
	(0.03)	(0.03)	(0.04)	(0.04)
Age of eldest	0.02**	-0.01	0.01	0.02
	(0.014)	(0.01)	(0.01)	(0.02)
ρ	0.14**	0.09	0.21***	—
	(0.07)	(0.07)	(0.06)	
Log likelihood =	-966.36	-951.67	-984.64	-456.73
N =	855	855	855	855
Chi^2 (10)				267.17***

* $p \leq .10$.
** $p \leq .05$.
*** $p \leq .01$.
—Omitted from model.
N.A. Not applicable for purpose of this last model.

Note: Estimates in columns 1 and 2 account for the direction of other in-kind transfers. Estimates in column 3 do not account for the direction of in-kind transfers. They are, however, conditioned on locational choice. Estimates in column 4 do not account for locational choice or for the direction of in-kind transfers. These estimates represent results found in standard models of kin-provided child care.

[a]Regional dummy variables unreported because only the "West" variable was statistically significant at the 5 percent level of significance.

[b]Standard choice model of kin-provided child care accounting for locational choice.

[c]Standard choice model of kin-provided child care without accounting for locational choice.

TABLE 4

Bivariate Probit Predicting Probability of Locating Close to Parents and Choice of Market-Provided Child Care
(Standard Errors in Parentheses)

Connected[a]			
Constant	0.34***	0.34***	0.34***
	(0.12)	(0.12)	(0.12)
Rank	-0.61***	-0.61***	-0.61***
	(0.13)	(0.13)	(0.13)
Colprep	-0.20**	-0.20**	-0.20**
	(0.10)	(0.10)	(0.10)
Attached	0.14	0.14	0.14
	(0.09)	(0.09)	(0.09)
Innest	0.42***	0.42***	0.42***
	(0.11)	(0.11)	(0.11)
Deceased	-0.49***	-0.49***	-0.49***
	(0.12)	(0.12)	(0.12)
Cash	-0.05	-0.05	-0.05
	(0.10)	(0.10)	(0.10)
Hisearn	-0.01***	-0.01***	-0.01***
	(0.002)	(0.002)	(0.002)
County	0.22***	0.22***	0.22***
	(0.10)	(0.10)	(0.10)
Stay close	0.51***	0.51***	0.51***
	(0.20)	(0.20)	(0.20)
	Exchange-Marcare	*Receive-Marcare*	*Give-Marcare*
Constant	-0.86***	-0.42	-2.11***
	(0.42)	(0.30)	(0.36)
Kinres	-0.08	0.02	-0.002
	(0.11)	(0.03)	(0.03)
Black	-0.15	-0.93***	0.46***
	(0.30)	(0.19)	(0.16)
Colgrad	0.28	0.22*	-0.003
	(0.18)	(0.12)	(0.16)
Nonwork	-0.61*	-0.54**	-0.59**
	(0.35)	(0.23)	(0.31)
Hours	0.003	0.006	0.004
	(0.007)	(0.006)	(0.007)

(table continues)

TABLE 4 (continued)

	Exchange-Marcare	*Receive-Marcare*	*Give-Marcare*
Mar_86	0.10	0.32**	0.34**
	(0.21)	(0.14)	(0.16)
Predwage	-0.29*	-0.04	0.16
	(0.16)	(0.10)	(0.11)
Hse_inc	0.002	-0.001	0.01***
	(0.005)	(0.003)	(0.003)
Price	-0.04***	0.04***	0.006
	(0.01)	(0.01)	(0.01)
Age of eldest	-0.04**	-0.03**	0.02
	(0.02)	(0.01)	(0.01)
ρ	0.04	-0.28***	0.002
	(0.09)	(0.06)	(0.08)
Log likelihood =	-712.04	-952.53	-845.29
N =	855	855	855

* $p \leq .10$.
** $p \leq .05$.
*** $p \leq .01$.

Note: All estimates conditioned on locational choice.

[a]Regional dummy variables unreported because only the "West" variable was statistically significant at the 10 percent level of significance.

Though many mothers chose kin-provided child care, their numbers were smaller than the numbers the Bureau of the Census found, a discrepancy due to different methods of sample selection. I drew my sample from a population of high school graduates, whereas the Census Bureau drew its sample from a population of working mothers of all educational levels, including high school dropouts. My sample of more educated mothers probably had better employment prospects, enabling them to use market-provided child care rather than kin-provided child care.

These patterns, though interesting, revealed nothing about the determinants of a mother's child care choice while she also received other kinds of noncash assistance or gave noncash assistance to relatives. The bivariate probit model, however, did produce informative results.

Results in Tables 3 and 4 provide evidence suggesting that high school performance, parental assistance to children in late adolescence/early adulthood, preferences formed about closeness to parents by the end of secondary school, and long-term residence in one area affect later proximity of adult children to aging parents.

Tables 3 and 4 show that a mother who lived in her parents' house following high school lived closer to them and visited them more frequently fourteen years later. According to estimates for "Innest" (tables 3 and 4), a mother who had lived in her parents' household until 1977 (five years after high school) continued to live nearer to them nine years after 1977 than a mother who lived outside the parental home after completing high school.

Though statistically insignificant, the direction of the "Cash" coefficient in tables 3 and 4 suggested that a mother lived farther away from her parents in 1986 if she had received income transfers from them between 1973 and 1977, perhaps when attending college.

Furthermore, a mother who grew up in the same county as the one in which she attended high school ("Attached") had closer proximity to her parents, as did a mother who remained in the same county as her parents ("County") after high school. And a mother who stated at the time of her high school

graduation in 1972 that living close to her parents was a “major priority” did indeed, fourteen years later, live closer to them and visit often.

Class rank and differences in curriculum in the last year of high school, both of which can decisively affect future human capital formation, also affected later geographic attachment between a daughter and her parents. A mother above the ninetieth percentile in high school class rank was more likely to live far away from her parents in 1986 than her lesser-ranked peers. I discovered a weaker but still significant effect for “Colprep” as well. Those among the sample of mothers who were taking college preparatory courses during high school lived farther away from their parents later in life.

For both groups of academically oriented mothers, the odds of leaving the area where they attended secondary school would have been high because their early investment in human capital by age eighteen provided them with the incentives to pursue college and an occupation rather than to stay close by their parents, possibly marrying and having children.

Differences in mothers’ traits by the time of the fifth follow-up survey also influenced proximity between parents and a mother. A mother whose spouse had high earnings lived farther away from her parents.

Analyses showed that the direction of intrafamily in-kind transfers and a mother’s use of kin- or market-provided child care varied according to her economic circumstances and personal traits.

Table 3 shows that maternal characteristics predicted use of kin-provided child care and the direction of in-kind transfers. For instance, college-educated mothers (“Colgrad”) chose kin-provided child care less often, especially when it was associated with an exchange of goods and services. Other studies have found that more educated mothers chose kin or informal child care providers less frequently than did less educated mothers. But those studies did not show how the direction of other in-kind transfers modified the magnitude and sign of the education effect (see Blau 1995).

Two other maternal characteristics and one feature of a mother's household also predicted the direction of in-kind transfers and use of kin-provided child care between a mother and her kin.

The race of the mother predicted the direction of in-kind transfers when a mother used kin-provided child care. Table 3 shows that blacks more regularly used kin for child care and exchanged goods and services with nearby kin than did whites. However, whites more frequently coupled use of such care with the *receipt* of other goods and services from kin than did blacks.

Marital status, denoted by "Mar_86" in Table 3, was another significant predictor, except for column (2). Unmarried mothers rarely chose kin-provided child care, especially when it was linked to exchanging goods and services.

Since divorce, not a nonmarital birth, was the leading cause of single motherhood for this particular sample of mothers, I argue that the marital status finding in Table 3 reflects a loss of potential kin child care providers on the ex-husband's side of the family.[6] Possibly, after the divorce, the mother lost a set of "in-laws," like her mother- or sister-in-law, who could have provided low-cost child care if she were still married.

My prediction that coresiding kin, a household-level variable, should affect mothers' child care choices and the path of transfers across households was correct. The estimated coefficient found in column (2) for "Kinres" indicated that a mother living with more kin received fewer noncash transfers from kin living nearby. Yet, as column (1) suggests, a mother living with more kin most likely used kin-provided child care in exchange for goods and services. Conceivably, coresiding kin could produce goods and services for trade across extended family households.

The model also tested the effects of prices, income, and, wages on the use of kin-provided child care and the direction of in-kind family transfers.

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[6]Almost 73 percent of the 143 unmarried mothers were divorced. The remainder reported that they were "not married." None were widowed.

Columns (2), (3), and (4) of Table 3 indicated that a higher wage rate led to less use of kin-provided child care. In particular, the coefficient for "Predwage" in column (2) showed that use of kin was very doubtful when kin-provided child care was linked to receipt of other in-kind transfers. The positive sign on the wage estimate in column (1) suggests that increases in a mother's wage raised the chance that child care provided by kin and exchanges of goods and services between mother and kin occurred. Perhaps the mothers worked only part-time in higher-paying jobs and offered help to those kin providing child care.

This conjecture agrees with my theory that working mothers trade leisure time for time in home production. The implication is that mothers in high-paying jobs substitute hours in home production for hours in the labor market so that they can compensate kin for child care; hours spent out of the labor force are not always spent as pure leisure time.

Besides a wage effect, a mother's work effort affected the path taken by in-kind family transfers and choice of kin-provided child care. Estimates for "Hours" implied that a mother who worked more outside the home was less inclined to receive noncash transfers from kin alongside kin-provided child care, as well as being less inclined to exchange goods and services and receive kin-provided child care.

Regardless of motives for in-kind transfer behavior, those transfers, including kin-provided child care, were reduced as a mother's work effort increased. While greater work effort reduced time for trading with relatives, like exchanging goods for kin-provided child care, it increased the mother's earnings, allowing her to substitute market-supplied goods and services for kin-supplied goods and services, including child care services.

Findings on the child care choices of nonworking mothers are often unavailable. The survey I used, however, contained this rare group of women. Results for them were what I expected: nonworking mothers clearly preferred kin-provided child care. I argue that smaller cash outlays than those needed for market care, or no cash outlays at all, as well as needing care for shorter periods of time, led these mothers to favor this form of care.

Higher household income changed patterns of in-kind transfers within families. Increases in household income made kin-provided child care and receipt of other in-kind transfers from the extended family less likely. However, increases in household income made it more likely that a mother exchanged goods and services for kin-provided child care. I argue that the changing sign of the coefficient is due to a wealth effect: wealthier households buy more goods to compensate kin for help with child care. Or higher-income mothers could afford to work less and offer help to kin providing child care.

Past findings on income effects for the demand for child care have often been irreconcilable. Results here suggested that the reason why previous studies have found conflicting income effects was that they lacked data on private transfer behavior within the family.

Estimates for “Hse_Inc” in Table 3 support my argument. Estimates in columns (2), (3), and (4) of Table 3 showed that income had a negative effect on use of kin-provided child care, a result commonly found. Yet, as column (1) showed, when I included exchange behavior alongside choice of kin-provided child care, the income effect was positive. Its sign changed according to the type of private in-kind transfer behavior within the family.

The other economic constraint in the model was the price of care. More costly kin-provided child care affected the provision of child care by kin as well as the direction of in-kind transfers. According to estimates for “Price,” a mother’s demand for kin-provided child care was price sensitive, regardless of the direction of noncash transfers within the family.

These estimates provide evidence suggesting that the demand for kin-provided child care services is sensitive to the price of that care, even when that price is privately negotiated within the family and other transfer behavior is present. When the price of kin-provided child care rose, approaching the price of market care, mothers found cheaper substitutes. For the money, they probably decided that market child care had more to offer, like qualified staff, educational activities, and playmates for their children. Further, column (1) in particular shows that increases in the price of kin-provided care lowered trades across

extended family households: to forgo wages and pay more for kin-provided child care became more costly than working and paying for formal or informal market care.

I noted before that because the survey collected data on in-kind transfers and child care arrangements, I could create several dependent variables, including ones that identified a mother who used market child care rather than kin-provided child care, but who still received help from relatives or gave help to relatives.

Possessing variables that distinguished mothers choosing market-provided child care while still engaging in private trades with their extended family allowed me to: (1) analyze the effects of the independent variables on the direction of in-kind family transfers when mothers also used market child care and (2) then compare those results with the results in Table 3.

Results in Table 4 provide more evidence showing that accumulated household wealth and strong attachments to the labor market loosened in-kind economic ties between these mothers and their nearby kin.

Column (1) of Table 4, which indicates that a higher wage rate decreased the exchange of goods and services with kin when coupled to market child care, supports the results in Table 3. On the other hand, the positive sign on “Predwage” in column (3) suggests that increases in a mother’s wage raised the chance of using market-provided child care and giving help.

Maternal work status, like wage gains, affected transfer behavior and child care choice. Estimates for “Nonwork” showed that a nonworking mother infrequently demanded market-provided child care, regardless of the direction of noncash transfers within the family.

Effects of income levels on patterns of in-kind transfers and child care use also coincided with the effects of income shown in Table 3. Though statistically insignificant, the sign for income in column (2) of Table 4 means a mother was less likely to receive other in-kind transfers while using market-provided child care when her household income increased. Yet higher incomes made her more likely to use market-

provided child care and to give help to kin. Again, the change in sign is due to a wealth effect: wealthier households can purchase child care and help kin. In other words, mothers from wealthier households worked less and offered more assistance to kin while their children were with market child care providers.

The price of kin-provided child care affected use of market child care providers. Estimates for "Price" implied that the demand for market-provided care was sensitive to the price of kin-provided child care, reinforcing my point that the demand for child care services is price sensitive and that market-provided and kin-provided child care are substitutes.

The variable "Black" in Table 4 displayed the paths taken by in-kind transfers when black and white mothers chose market-provided child care. Whereas blacks were more likely to choose market providers and *give* help to kin than were whites, whites were more likely than blacks to use market-provided child care and *receive* help from kin.

I attribute this racial effect to the unique sample of black mothers in the NLS'72. I stressed earlier that the sample of black women was drawn from a population of blacks who graduated from high school in 1972, a milestone that many blacks failed to attain back then. This group of better-educated black women, unlike the sizable group of black women who dropped out of high school in 1972, probably delayed childbirth and worked, thereby better enabling them to purchase child care and help kin, while needing less help themselves. Marital status was again a significant predictor. Unmarried mothers using market-provided child care were more likely to receive help than married mothers.

Finally, estimates of rho in the bivariate probit models provide evidence suggesting that the decision about proximity to and contact with aging parents is associated with the choice of child care mode. In Table 3, the rho test for the simultaneity of the bivariate probit specification is positive and significant in two of three possible models. This provides evidence that the choice of kin-provided child care is conditional on the decision about proximity to aging parents.

The rho test for simultaneity of the bivariate specification reported in Table 4 was less compelling, except for the estimate for rho in column (2) of Table 4, which suggested that unexplained tendencies to choose market-provided child care, alongside receipt of other in-kind transfers from relatives, were negatively correlated with a lower frequency of living near and frequently visiting parents.

V. CONCLUSIONS

The results persuaded me that kin-provided child care is an in-kind transfer and that a mother decided to use it alongside her other decisions about giving help to, and in turn, accepting help from, kin. Once I uncovered her other decisions about in-kind transactions within her family and included them in a model of kin-provided child care choice, income levels, work effort and status, and prices were found to affect that choice in predictable ways. Thus, I argue that although a mother kept child care provision a private family matter, that choice was still affected by economic factors.

Given my findings on price and income effects, I argue that policies aimed at reducing the cost of child care have unintended effects on the private provision of child care within families. Whether the unintended effects are beneficial or harmful, however, depends upon the prevailing direction of private in-kind transfers within families. Kin who provide child care in return for goods and services may suffer losses if child care subsidies lead mothers to substitute market-provided child care for their care. Heretofore, researchers have overlooked this negative outcome resulting from child care subsidies, probably because studies of child care demand have lacked data on private transfers within families.

When kin-provided child care is a one-way transfer, however, subsidies benefit the relatives supplying child care. If the price of market child care falls sufficiently, mothers may substitute market-provided child care for kin care, thereby permitting relatives to pursue other activities or to provide mothers with other needed services. Results support up-to-date child care policies that permit parents who

are eligible for child care subsidies to use public funds to pay relatives to care for their children (Blank 1994).

Besides policies that subsidize child care prices, there are tax policies that reduce child care costs. But tax policy effectiveness depends upon the direction of in-kind transfers within families. Results here imply that tax policies that increase a mother's income would lead kin to supply fewer child care services. Yet, if families were exchanging resources, extra income derived from tax breaks would increase kin-provided child care. Thus, in-kind transfer behavior within families can weaken or reinforce the effectiveness of child care policies.

What this study leaves unresolved, however, are motives for private in-kind transfers. Studies are needed to test hypotheses about motives for in-kind transfers and to measure the impact of those motives on family well-being and income redistribution policies. Presently, the literature contains studies that have tested motives for bequests and private income transfers and that have evaluated the impact of those motives on income redistribution efforts.[7] But studies that distinguish between motives for *noncash* private transfers and that assess *their* impact are nonexistent. The outcome is a noticeable gap in the literature on motives for private transfers.

This study indirectly contributed to that literature, however, by showing that the same two motives hypothesized to influence private income transfers and bequests also influence private in-kind transfers. One of the two hypothesized motives for private income transfers is family altruism. That motive could cause kin to provide child care, especially since many mothers in my sample received kin care and yet paid no fees, cash or in-kind.

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[7]There are studies on motives for bequests by Adams (1980), Menchik and David (1983), Tomes (1981), and Bernheim, Shleifer, and Summers (1985). Likewise, companion studies that have tested motives for private income transfers are Lampman and Smeeding (1983), Cox and Raines (1985), Cox (1987), and Cox and Rank (1992).

The exchange motive is the other motive advanced. This competing motive may drive kin to provide child care since just as many mothers exchanged goods and services while receiving kin-provided child care.

Because of the design of this study, concluding which motive more plausibly explained the provision of child care by relatives was impossible. Instead, my study accepted both motives as possible motives for kin-provided child care, then proceeded to analyze the effects of economic and demographic factors on child care choice under both motives. As the two motives have major implications for child care policies aimed at subsidizing nonparental child care, I argue that new research on the connection between the economic organization of families and coinciding decisions about child care arrangements is imperative.

Lastly, the evidence suggests that the interdependence between child care choice and choice of proximity to aging parents—two family decisions affecting three generations, one older and one younger than the generation making those decisions—cannot be ignored. Mothers in this sample who chose kin as alternative caregivers made that decision in tandem with their other decisions about how close and how involved they wanted to be with their own parents. Thus, one generation's decisions about caring for the next generation are linked to that same generation's decisions about involvement with the previous one.

APPENDIX A

Auxiliary Variables

The empirical work in this study required a sizeable number of additional variables. Those variables come from the NLS'72 or from the county-level data book (U.S. Bureau of the Census 1993). Table A.1 provides definitions of these other variables and Table A.2 displays their descriptive statistics.

TABLE A.1

Definitions of Variables Not Previously Referenced

NLS'72 Variables:

Preschoolers only	1 if all children are only of preschool age
Children < 12	Number of children in household less than 12 years old
Reciprocal exchanges	1 if exchanging in-kind assistance across extended family households
Unmarried	1 if unmarried in 1986, 0 otherwise
Full-time student	1 if full-time student, 0 otherwise
Years of work	Accumulated years of full-time work since high school
Years of work_sq	Accumulated years of full-time work since high school squared
Home owner	1 if own home living in, 0 otherwise
Blue-collar	1 if work in blue-collar occupation, 0 otherwise
Mother nearby	1 if mother within 10 miles of respondent, 0 otherwise
Total children	Number of children living in same household
Regular visits	1 if visits mother more than once a week always, 0 otherwise
Family size	Number of persons in family

County-Level Variables:

Female-headed	Percentage of female-headed families in county
Unemployment rate	Rate of county unemployment
Labor force female	Percentage of labor force that is female
Pop_sq-mile	Population per square mile in county
Acres farming	Percentage of acres in county classified as farming land
Population rural	Percentage of population classified as part of rural population in county
Persons under 5	Percentage of persons under 5 years of age in county
Persons 5_17	Percentage of persons in county between the ages of 5 and 17
Age	Median age of county, population
House value	Median value of house
Nursery_elementary	Total number of nursery and elementary school enrollments in county
Transfers	Value of county transfers
Professionals	Total number of residents living in county working in professional occupations
Driving alone	Number of persons driving alone to work
Working outside	Number of persons working outside of county boundaries
Moved within 5	Moved to this county within 5 past years
Persons per house	Average number of persons per household
Births	Births per thousand persons in county
Graduates	Number of persons living in county
Median_inc	Median family income for county
House_inc > $50,000	Number of households with income above $50,000
House < pov_lev	Number of households with income below poverty level

TABLE A.2

Means and Standard Deviations of Variables Not Previously Referenced

Variables[a]	*Mean*	*Standard Error*
Preschoolers only	0.36	.48
Children < 12	0.29	0.45
Reciprocal exchanges	0.13	0.34
Unmarried	0.16	0.37
Full-time student	0.03	0.17
Years of work	5.87	3.38
Years of work_sq	46.01	42.44
Home owner	0.69	0.46
Blue-collar	0.19	0.39
Mother nearby	0.38	0.48
Total children	0.54	.80
Regular visits	0.30	0.46
Family size	3.97	1.30
N = 794		

Source: NLS'72.

[a]Descriptive statistics on the twenty-two county-based variables listed in Table A.1 available upon request from the author.

APPENDIX B

Estimating the Hourly Wage of Mothers

The model predicts that the relative value of mothers' time will affect their allocation of time between market work, home production, and other activities. As the predicted wage increases, women will reallocate their time across various activities and substitute time in market work for time spent in maternal care, in which case it should be more beneficial to substitute nonparental care for parental care.

Several instruments predicted the wage (value of time) for the sample of mothers. I combined mothers' educational levels, past work experiences, marital status, race, and other variables with county-level labor market characteristics and county-level demographic features to predict wages. The dependent variable (hourly wage) was transformed into log form after it was calculated from specific survey items.

Table B.1 shows the results of the semi-log regression. The summary statistics of the model and several estimated coefficients indicate that the model does capture variation in mothers' wages. The results resemble Mincer's (1974) earning equation results. Because I used an alternative to Mincer's measure of work experience, I could not produce the usual diminishing returns to education. The result possibly reflects the lack of variation in the work experience measure.

TABLE B.1
Regression Predicting Mother's Hourly Wage

Variables	*Coefficient*	*Standard Error*
NLS'72 Variables		
Constant	0.554*	0.322
Preschoolers only	0.035	0.034
Children < 12	-0.046***	0.018
Reciprocal exchanges	-0.094	0.030
Black	0.026	0.038
Unmarried	0.074**	0.033
Education	0.064***	0.006
Full-time student	-0.164**	0.084
Years of work	0.017	0.012
Years of work_sq	0.17e-03	0.9e-03
Years of unemployment	-0.017	0.006
Home owner	0.143***	0.028
Blue-collar	-0.084***	0.028
South	-0.024	0.039
West	-0.087	0.048
Midwest	-0.044	0.036
County-Level Variables		
Female-headed	0.751	0.700
Unemployment rate	1.81***	0.680
Labor force female	1.22**	0.611
Minorities	-0.234	0.205
Pop_sq_mile	1.7e-04***	0.6e-05
Acres farming	0.608**	0.316
Population rural	-0.061*	0.032
Persons under 5	-6.4e-06**	2.9e-06
Persons 5_17	-1.3e-05**	5.5e-06
Age	-0.017***	0.005
House value	2.2e-06**	1.1e-06
Nursery_elementary	-1.4e-05*	8.4e-06
Transfer	-9.12-08**	4.8e-08
Professionals	-3.2e-06**	1.6e-06
Driving alone	1.1e-06***	2.9e-06
Working outside	8.3e-06**	3.5e-07
N =2732		
R^2 = .162; adj R^2 = .152		
F(31, 2700) = 16.83***		

Mean predicted antilog value = $6.48; standard error = $1.78; range of mean predicted price: minimum = $1.24; maximum = $36.65.
* p < .10.
** p < .05.
*** p < .01.

APPENDIX C

Creation of the In-Kind Transfer Variables

I derived three distinct types of kin in-kind transfers—give only, receive only, and reciprocal exchanges—from the survey instrument.

Creating the three different types of kin in-kind transfer variables first required identifying those in-kind transfers that were exclusively with kin. Because the survey module asked respondents to describe the type of relationship between themselves and givers or receivers, I could separate in-kind transfers with kin from transfers with neighbors or friends. The type of biological relationship that existed between the respondent and a relative who was a giver (or receiver) was unimportant for this study; what was important to establish was whether mothers had kin transfers.

Once the respondents who had in-kind transfers were identified, programming routines characterized the nature of these transfers. In-kind transfers were coded according to whether mothers only gave assistance to kin, only received assistance from kin, or gave assistance to kin and received assistance from kin (two-way exchanges).

Possibly, families organized exchange transactions to include provision of everyday child care. In such cases, estimates of the effect of intrafamily in-kind transfers on child care choice would be contaminated. Fortunately, the survey design permitted me to avoid this problem. Because the survey separated data on everyday simple exchanges from data on emergency help and major ongoing kin exchanges, the intrafamily exchange variable was created based only on emergency and major ongoing in-kind transfer information. I assumed that familial exchanges that included child-care are everyday events, not major events. When I detected a missing value, I then reviewed the mother's marital history, patterns of child care use, exchange relationships, number of siblings, and distance to parents. If the mother was married, used child care, lived apart from her parents, and had only one sibling, then I assumed that she had no coresident kin; she got a zero value for the variable.

Another problem was item nonresponse in the survey module on family exchanges. Missing responses were due to respondents having less involvement with family or to respondents choosing not to answer the questions or to both. Specifically, of the 3,263 mothers using some form of child care, only 1,117 of them (34.2 percent) provided information about the types of in-kind transfers across extended family households and the direction of those transfers. The respective shares of the 1,117 mothers that only gave, only received, and only exchanged were: 33.4 percent, 52.0 percent, and 14.6 percent. Two other factors further reduced the sample for analysis to 794 mothers: (1) missing data on income; and (2) missing data on child care costs and hours in care.

To handle this missing data problem on in-kind transfers and to assess whether item nonresponse systematically biased the parameter estimates, preliminary analyses (unreported) containing a dummy variable for no reported intrafamily exchanges was included in a set of logistic regressions. During this early phase of the project, survey participants who failed to respond were imputed the mean value for the intrafamily exchange variable. No bias was found in these exploratory analyses.

APPENDIX D

Predicting Child Care Prices with Instrumental Variables

Each follow-up survey of the NLS'72 contains geographic identifiers. I used identifiers from the fourth follow-up along with information on child care expenditures in the fifth follow-up survey to estimate child care prices. I preferred to estimate child care prices for competing modes of child care using ordinary least squares (OLS) regression methods rather than other methods because geographic identifiers allowed me to append county-level data to the reported child care costs.[8] By exploiting this information, I produced county-level estimates of prices for child care, under the assumption that adding the pertinent county-level variables to regressions mimicked variation in market conditions affecting prices of child care. (I report these results in Table D.1.) Equation (8) was the empirical equation that predicted county-level child care prices:

$$Preprice = \boldsymbol{X}'\beta + \mu \qquad \textbf{(8)}$$

"PrePrice" represented the column vector of respondents' hourly child care costs, the vector X' was a vector of variables representing the attributes of the *j*th parent, including nested county-level variables, β was a vector of unknown parameters, and μ was a vector of random disturbances.

[8]Others have used the modal regional price of each child care mode to represent the market price of care. See Stolzenberg and Waite (1984) and Blau and Robins (1988).

TABLE D.1
Estimated Price of Kin-Provided Child Care Using

Variables	*Coefficient*	*Standard Error*
NLS'72 Variables		
Intercept	-16.21	35.10
Black	3.19**	1.64
Unmarried	0.838	1.72
Hse_inc	0.4e-05	0.3e-05
Mother nearby	-0.456	1.32
South	2.57	2.02
East	0.676	2.93
Midwest	1.96	1.07
Education	0.409	0.383
Total children	1.96*	1.07
Children < 12	-2.79***	0.775
Regular visits	0.391	1.33
Colgrad	-3.23	1.94
Full-time student	-2.11*	3.12
Family size	0.1002	0.818
Home owner	-0.994	1.36
Kinres	-2.81	3.06
County-Level Variables		
Moved within 5	0.3e-04	0.2e-04
Persons under 5	-0.3e-04*	0.1e-03
Persons 5_17	-0.3e-04	0.2e-03
Age	0.202	0.335
Persons per house	-0.858	5.51
Births	0.385	0.374
House value	-0.6e-04	0.7e-04
Working outside	0.4e-05*	0.2e-05
Graduates	0.8e-05*	0.4e-04
Nursery_elementary	0.6e-04	0.4e-04
Median_inc	-0.6e-04	0.6e-04
Labor force female	36.41	33.22
Unemployment rate	-17.49	33.85
Female-headed	15.55	36.92
House_inc > $50,000	39.91	70.91
House < pov_lev	-42.48	37.7
Minorities	-6.73	10.28
Population rural	2.92	19.46
Acres farming	-0.314	0.306
Pop_sq_mile	-0.004**	0.002
N = 584		
R^2 = .1088		
F(37, 546) = 1.80***		

Mean predicted price = $3.98; standard error = $6.20; range of mean predicted price: minimum = $0.00; maximum = $15.98
* p < .10.
** p < .05.
*** p < .01.

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