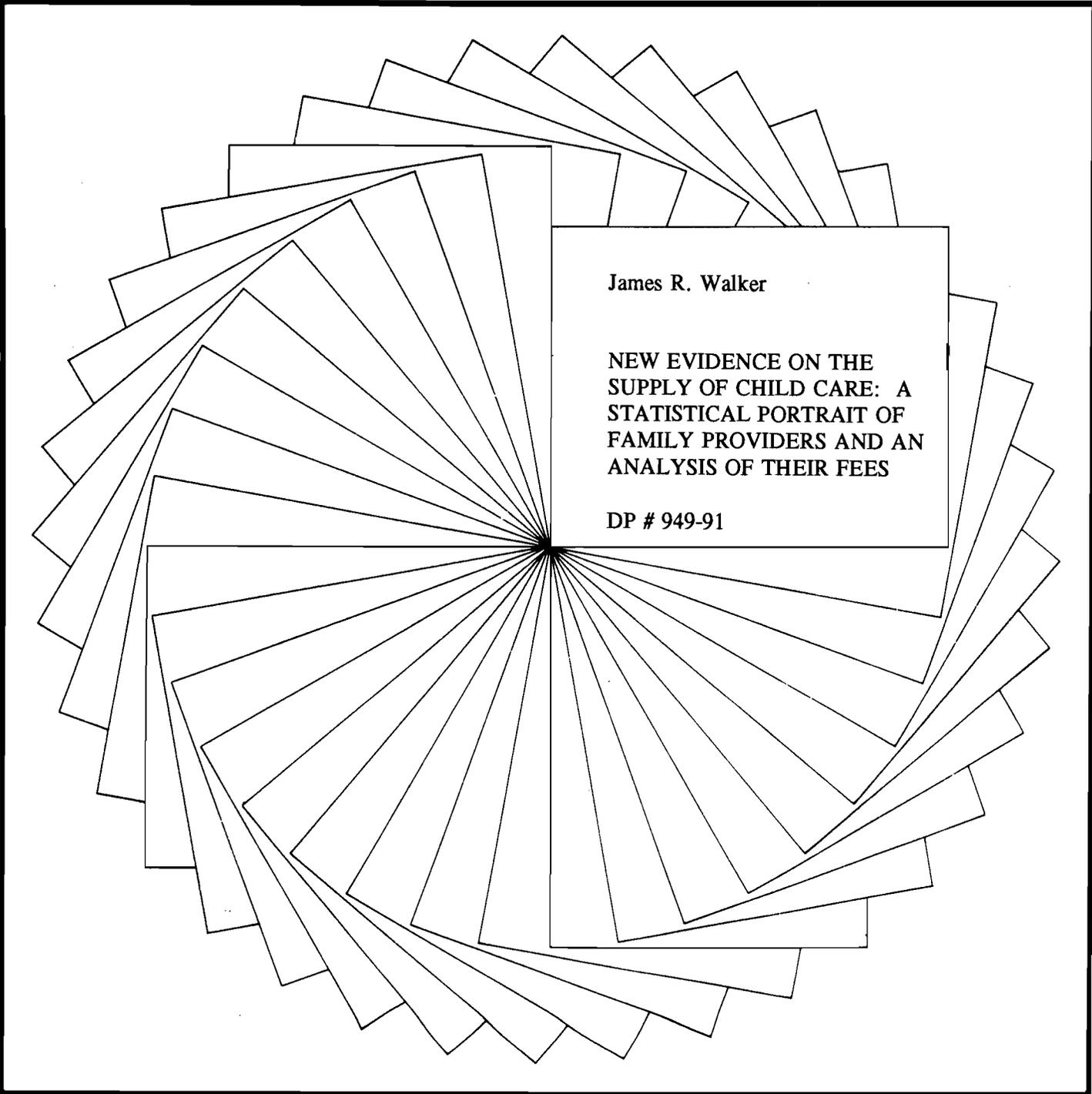




# Institute for Research on Poverty

## Discussion Papers



James R. Walker

NEW EVIDENCE ON THE  
SUPPLY OF CHILD CARE: A  
STATISTICAL PORTRAIT OF  
FAMILY PROVIDERS AND AN  
ANALYSIS OF THEIR FEES

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**New Evidence on the Supply of Child Care:  
A Statistical Portrait of Family Providers and  
an Analysis of Their Fees**

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## **Abstract**

This paper offers a description of family home providers and the care they supply for three metropolitan areas. Comparisons are made across markets and between licensed and unlicensed family providers. Among the findings are (1) unregulated family providers care for few children per establishment and offer a more adult-time intensive form of care than do licensed providers; (2) licensed family providers exhibit more commitment to the profession; (3) family providers receive no return to experience or to education; and (4) family providers offer large discounts in fees covering more than one child.

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**I. INTRODUCTION**

Recently, Hofferth and Phillips (1987) have summarized what is known about the supply of child care:

"Other than to make broad characterizations of the current supply of child care as uncoordinated and, in some cases, inadequate, data are unavailable to develop a comprehensive profile of existing child care programs. What remains are survey data on the supply of licensed child care and spotty reports of other arrangements, such as employer- and school-sponsored programs. There is virtually no national information on the supply of unlicensed child care, including in-home care and care by relatives, obtained directly from providers." (Pp. 564-65.)

This paper is a first attempt to fill this void by offering a description of family providers<sup>1</sup> and of the care they supply for three cities--Newark and Camden, New Jersey, and South Chicago, Illinois. Family home providers care for about a quarter of all preschool children of working mothers and are a major source of infant care. The absence of direct information on these providers and the absence of uniform minimum care standards have led to the tacit assumption that quality levels in this sector are (too) low. Yet, to fully assess this assumption we need answers to a variety of questions relating to the quality and type of care offered. What is the size distribution of unregulated family providers? What training and education do they have? What health and safety practices do they follow? What fee do they charge for their services and how does it vary with the characteristics of

the child and of the provider? Data from the 1988 Child Care Supply and Needs Survey offer one of the first opportunities to investigate these issues.

Three dimensions of child care are summarized in the descriptive analysis: (1) the size distribution of family providers and the age composition of children under their care; (2) the experience, education, and training of family providers; and (3) the quality and types of care family providers offer. The descriptive analysis reveals systematic differences between licensed and unlicensed family providers. Unregulated family providers care for few children per establishment; however, licensed providers are more educated, have more experience, and exhibit other behavior which suggests a stronger attachment to the profession. And, while licensed providers are more likely to follow formal health and safety standards, unregulated providers offer a more adult-time intensive form of care. By these traditional measures the data paint an ambiguous picture of the difference in care environment between licensed and unlicensed providers.

The descriptive analysis of provider and care dimensions is augmented by a regression analysis of family provider fees. These regressions afford a means of making meaningful price comparisons within and across markets. Though plagued by the usual interpretative problems of reduced-form hedonic price regressions, three results emerge. First, education and experience receive no return in the market. Hence, calls for increased educational or training requirements impose a cost with no monetary benefits to providers. Second, providers offer large discounts in fees covering more than one child. This bundling may reflect the large price elasticity of demand by families with two children in care, or may reflect the cost savings from reduced transaction costs. Third, licensed providers charge lower fees for comparable services than do unlicensed providers. This finding is at odds with existing models of occupational licensure and calls into question the role of licensing in this market.

The next section presents a brief overview of state-level regulatory practices regarding family providers. These regulations provide an interpretative framework and direction for the descriptive analysis. Section III discusses the Child Care Supply and Needs Survey (1988). Sections IV and V present empirical results as introduced above. The paper concludes with a summary.

## II. BEHAVIORAL AND POLICY ISSUES

As they do on other services, consumers have imperfect information on the availability and the quality of child care services offered in the market. Less than 10 percent of all family providers are licensed or registered, and the infrequent use of formal advertising makes informational flows informal and local.<sup>2</sup> Once a provider is identified, consumers do not know the quality (or more generally, the characteristics) of care they offer, and even after a long period of use, consumers will not be fully informed about the behavior of the provider. Perhaps more so than in other service markets, the child care market imposes greater search and monitoring costs on consumers. Concern over these informational asymmetries dominates current regulation and public debate of the industry.

Occupational licensure and other forms of regulation attempt to combat these informational deficiencies by restricting avenues of entry to keep the least-able producers out of the market and by restricting the benefits of providing inadequate care. All states license center-based group care; about one-half license family home providers, and in the remaining states, family home providers may voluntarily register with the state. As background for the analysis below, Illinois licenses only those family providers who meet certain requirements, while New Jersey introduced a system of voluntary registration just prior to the survey date.<sup>3</sup> The inherent problem of monitoring service quality requires that regulations be restricted to observable quantities, such as the number of children under care and the characteristics of providers and their care facilities. For example, in Illinois, only

providers caring for four or more children (maximum of eight, including provider's own children) under the age of 14 years are required to be licensed. Illinois law also restricts the age distribution of children, but with limits that depend on whether the provider receives help with care.<sup>4</sup> Registration in New Jersey is targeted at women paid to care for three to eight children (the provider's children and children who are not charged a fee are excluded).

A myriad of regulations attempt to ensure that the care environment is clean, healthy, and safe.<sup>5</sup> The regulations require that the child care areas are properly heated and ventilated and have adequate space and toilet facilities. Areas within the home which do not meet these standards may not be used to care for children. Requirements of family providers themselves are few. In Illinois, family providers must be of "sound moral character," partially evidenced by not having been convicted of a felony within the last ten years and never having been convicted of a child-related crime (e.g., child abuse). There are no minimum educational or training requirements. Registration in New Jersey requires six hours of classroom instruction on a variety of topics relating to child development, health, and safety.

Who are family providers? The quote by Hofferth and Phillips (1987) implies we do not know. Our perception as to who becomes a family provider colors our belief of what the proper regulatory efforts should be. One common characterization is that frequently they are mothers of young children (Connelly, 1988; Blau, 1991; Kahn and Kammerman, 1987). Another characterization (not necessarily mutually exclusive) is that family providers are predominately low-skilled individuals with limited attachment to the labor market. Data limitations (described in Section III) make it impossible to fully characterize family providers; however, a partial characterization is possible using indirect measures. Section IV presents summary measures on the size distribution of family providers, their educational attainment and experience, their earnings, child to staff ratios, and health and safety practices.

The ease with which family providers exit from the regulated sector limits the effectiveness of regulation. Increased regulations must increase the cost of supplying child care, driving some family home providers from the regulated sector or from the profession entirely. Moreover, recent theoretical work implies that one role for licensure is to signal higher-quality service. Consequently, licensed and certified family providers should command a premium in the marketplace (Leland, 1979; Shapiro, 1986). Limited to three markets, including only one regulated market, direct evidence on the effect of regulation on entry into unlicensed and licensed family providerships is not available from the survey. Section V presents indirect evidence in the form of a regression analysis of family provider fees. This analysis yields information on the incentives facing providers and the determination of fees.

### III. THE CHILD CARE SUPPLY AND NEEDS SURVEY (1988)

The data analyzed in this paper are from the 1988 Child Care Supply and Needs Survey conducted by Mathematica Policy Research under the auspices of the U. S. Department of Health and Human Services.<sup>6</sup> Authorized to assess the child care market in the localities covered by the Teenage Parent Demonstration,<sup>7</sup> the survey was limited to three metropolitan areas: Camden and Newark, New Jersey, and South Chicago, Illinois. Most novel, the survey paid special attention to sampling family providers, employing a complicated survey design of four sampling frames to identify family providers. The four sampling frames were (1) households, (2) state licensing lists, (3) providers known to the demonstration staff, and (4) users of child care from the household sample (Via-Users).

Households in the first sample frame were screened to identify users of child care and family home providers. To be included in the users' sample, a household had to have a working (including those in training and in school) mother with a preschool child. To be considered a family provider,

an individual must report "regularly providing care to someone else's children so the mother may work, train, or go to school." This statement is the operational definition of family providership used in this paper. Family providers may be related to the children under their care and need not be paid for their service. For example, a grandmother regularly caring for her grandchild is a family provider if the child's mother works, trains, or attends school. However, two nonworking women who exchange child care services, even on a regular basis, are not considered to be family providers. Child care must be a regular activity and it must permit the mother to work.

An important limitation of the survey is that information on household characteristics was obtained only for family providers identified by the household screener. Family providers located through other sample frames were administered only the family provider instrument, which did not gather such information. Consequently, for most family providers, there is no information on their age or on the number and ages of their children.

The quality of the data obtained by the survey is generally high. Providers known to the Teenage Parent Demonstration staff had a low response rate (28 percent, because of an administration error) and were excluded from the analysis. The primary limitation of the survey, then, is its small sample sizes: 73 family providers in Newark, 101 in Camden, and 107 unlicensed and 143 licensed family providers in South Chicago.

Because of its connection to the Teenage Parent Demonstration, the survey oversampled low-income neighborhoods. Hence, no pretense is made that the survey is nationally representative; however, it should be informative on urban child care markets. Also, asking parents to reveal the identity of their providers induces an endogenous sampling component into the sample of family providers. Application of conventional statistical procedures appropriate for random samples may produce biased and misleading results if applied to selected samples. However, in the absence of

compelling evidence of bias, no adjustment was made for the potential endogenous sampling of the Via-Users sample frame.<sup>8</sup>

#### IV. EVIDENCE ON FAMILY PROVIDERS: THEIR CHARACTERISTICS AND THE CARE THEY SUPPLY

This section provides a statistical portrait of family home providers and the child care they provide. The design of the survey offers two natural comparisons. First, comparisons of the New Jersey sites hold constant the state regulatory environment and measure the effect of economic conditions on family provider care. Second, comparisons of licensed and unlicensed providers within South Chicago control for economic conditions and summarize the impact of the particular regulations in South Chicago. Such comparisons provide useful information on the consequences of licensure. Both these natural comparisons are exploited in the analysis below.

The descriptive analysis is presented in three subsections. The size distribution of firms is summarized in the next subsection. Characteristics of the family providers, particularly educational and experience levels, are described in a second subsection, and measures of child care quality are considered in a third. The results are summarized in a fourth subsection.

##### The Size Distribution of Providers

As discussed in Section II, a primary dimension of regulation is the number of children per establishment. Panel A of Table 1 presents, by city and, within South Chicago, separately for

TABLE 1

**Percentage of Providers Caring for Each Number of Children  
and Mean Age of Children under Family Provider Care,  
by Number of Children, for  
Newark and Camden, N.J., and South Chicago, Ill.**

| Number of Children   | Newark | Camden | South Chicago |          |
|--|--------|--------|---------------|----------|
|  |        |        | Unlicensed    | Licensed |
| <u>A: Percentage of Providers Caring for Each Number of Children</u> |        |        |               |          |
| 1  | 31.4   | 46.6   | 47.9          | 2.1      |
| 2  | 47.9   | 19.9   | 28.4          | 14.7     |
| 3  | 11.9   | 16.8   | 9.4           | 10.5     |
| 4  | 5.8    | 8.2    | 7.7           | 9.8      |
| 5  | 2.8    | 0.9    | 4.4           | 11.9     |
| 6  | 0.0    | 0.9    | 2.1           | 19.6     |
| 7  | 0.0    | 3.2    | 0.0           | 9.1      |
| 8  | 0.0    | 0.6    | 0.3           | 12.6     |
| 9  | 0.2    | 3.0    | 0.0           | 4.2      |
| 10-20  |        |        |               | 5.6      |
| <u>B: Mean Age (in Months) of Children</u>                           |        |        |               |          |
| 1  | 22.1   | 24.2   | 25.3          | 31.7     |
| 2  | 37.9   | 38.0   | 41.4          | 33.1     |
| 3  | 42.9   | 43.1   | 59.4          | 34.4     |
| 4  | 55.6   | 45.8   | 58.3          | 39.7     |
| 5  | 41.4   | 51.7   | 70.2          | 44.9     |
| 6  |        | 69.0   | 67.2          | 48.3     |
| 7  |        |        |               | 46.4     |
| 8  |        |        |               | 51.4     |
| 9  |        |        |               | 52.4     |
| 10-20  |        |        |               | 58.7     |

Source: The Child Care Supply and Needs Survey (1988).

unlicensed and licensed providers, the percentage of providers caring for each number of children (excluding own-children of the providers). First, note the large proportion of small unregulated providers: one-third to one-half care for one child. Note also the stability of the size distributions of unregulated providers across cities. For example, the proportion that care for three or fewer children is 91 percent in Newark, 83 percent in Camden, and 86 percent in South Chicago. This stability between New Jersey and South Chicago is surprising in light of the regulatory differences across states. Assuming that care technology and consumer preferences are similar in New Jersey and Illinois, then in the absence of regulation the size distribution should also be similar across locations. However, if licensure is costly and enforced by the authorities, then any licensing requirements based on the number of children under care should concentrate the distribution on size levels not covered by the regulations. That the proportion of unlicensed providers in South Chicago caring for three or fewer children is bounded by the New Jersey sites suggests that enforcement of licensing size requirements in South Chicago is not strict.

Average establishment size is substantially larger for licensed providers. Nearly 73 percent of licensed providers care for four or more children, whereas 14 percent of unlicensed providers in South Chicago do. Licensed providers may be more willing and able to operate a larger enterprise than are unlicensed providers. Alternatively, licensed providers may service a different market (a market which covers the cost of licensure and supports a larger scale of operation) than do unlicensed providers. Either explanation suggests that the dimensions of licensed family providers will not be representative of all dimensions of unlicensed family providers.

Panel B of Table 1 reports the average (mean) age of the children by the number of children in care for each of the four groups of providers. Little difference appears in the pattern of mean ages of children served by unregulated family providers. In each city, the mean age of children increases rapidly with the first three children under care. For example, providers who care for one child, on

average, care for a two-year old, while those caring for three children care for children with an average age of (approximately) four years. An increasing, though more moderately sloped, age gradient with respect to the number of children under care is observed among licensed providers. For a given number of children, licensed providers generally care for slightly younger children on average. However, because they care for substantially more children per provider, licensed providers care for children of a slightly higher average age.

### Characteristics of Family Providers

This section summarizes the educational attainment and experience of family providers. Panel A of Table 2 reports the educational attainment of family providers by city and, within South Chicago, by licensing status. The educational attainment of unregulated providers is low, as more than 40 percent in New Jersey and 29 percent in Illinois have less than a high school education. While a sizeable proportion have had some college experience, few unregulated family providers are college graduates. Also, enrollment in special training and course work in child development is low for these providers: roughly, only between a quarter to a third have had some form of specialized training. The educational attainment of licensed providers is greater than that of their unlicensed counterparts. Approximately 20 percent of licensed providers in South Chicago do not have a high school education; however, more than one-third have attended college. The investment in care-specific training is also greater as between one-half to two-thirds have taken classes or have had specialized training in child development.

The remaining two panels of Table 2 report educational attainment for two reference groups. Using data from the 1980 Census, Panel B reports the educational attainment of persons aged 18 and older living in the neighborhoods covered by the Child Care Supply and Needs Survey. A

TABLE 2

**Educational Attainment of Family Providers, of Working  
and Nonworking Women, and of All Persons 18 Years and Older,  
in Newark and Camden, N.J., and South Chicago, Ill.**

| Panel A: Educational Attainment of Family Providers |        |        |               |          |
|---|--------|--------|---------------|----------|
| Education   | Newark | Camden | South Chicago |          |
|   |        |        | Unlicensed    | Licensed |
| Less than high school                               | 47.1%  | 42.9%  | 29.0%         | 19.4%    |
| High school graduate                                | 31.8   | 24.1   | 39.0          | 37.5     |
| Some college  | 15.3   | 26.8   | 27.0          | 36.1     |
| College graduate                                    | 4.7    | 4.5    | 3.0           | 6.3      |
| Postgraduate  | 1.2    | 1.8    | 2.0           | 0.7      |
| Had courses in child development                    | 25.9   | 33.0   | 35.0          | 63.2     |
| Had special training in child development           | 23.5   | 29.5   | 20.0          | 56.9     |

| Panel B: Educational Attainment of Persons 18 Years and Older, 1980 Census |        |        |               |
|--|--------|--------|---------------|
| Education  | Newark | Camden | South Chicago |
| Less than high school  | 41.5%  | 34.8%  | 30.9%         |
| High school graduate   | 35.3   | 37.9   | 37.8          |
| Some college   | 13.0   | 14.3   | 18.8          |
| College graduate   | 5.9    | 7.9    | 7.3           |
| Postgraduate   | 4.2    | 5.0    | 5.2           |

| Panel C: Educational Attainment of Working and Nonworking Women, from Via-Users Parent Survey |             |         |             |         |               |         |
|---|-------------|---------|-------------|---------|---------------|---------|
| Education   | Newark      |         | Camden      |         | South Chicago |         |
|   | Not Working | Working | Not Working | Working | Not Working   | Working |
| Less than high school   | 29.2%       | 10.9%   | 21.5%       | 10.9%   | 8.4%          | 4.6%    |
| High school graduate  | 46.2        | 34.0    | 44.5        | 36.4    | 40.3          | 32.1    |
| Some college  | 20.1        | 34.3    | 16.5        | 32.9    | 32.4          | 37.1    |
| College graduate  | 4.5         | 18.9    | 14.0        | 16.8    | 16.4          | 18.1    |
| Postgraduate  | 0.0         | 1.9     | 3.5         | 3.0     | 2.5           | 8.1     |

Source: The Child Care Supply and Needs Survey (1988).

Note: Percentages for educational attainment taken from the 1980 Census are for those persons who lived in the zipcodes appearing in the Child Care Supply and Needs Survey.

comparison of Panels A and B suggests that the educational attainment of family providers generally reflects the educational patterns in their neighborhoods. The similarity is closest in Newark and for unlicensed providers in South Chicago. In Camden, the level of education of a family provider is, on average, less than that of most other adults, since family providers there are more likely to be high school dropouts and less likely to be college or postcollege graduates. Licensed family providers have slightly higher educational levels than the average adult, being less likely to have dropped out of high school and substantially more likely to have had some college.

Panel C reports the educational distribution of working and nonworking women in the survey of households. If family providers are likely to be women with young children, a comparison of Panels A and C reveals the educational differences between providers and users. Here the comparison is less favorable to family providers. Young mothers had much more education in 1988 than the average adult had in the three neighborhoods in 1980 (compare Panel B with Panel C) and more education than family providers had. The largest difference is in the lowest educational level: working women seldom have less than a high school education while family providers frequently do. Women who are not working have less education, though they too are more likely to be high school graduates than are family providers.

The percentages reported in Table 2 imply that licensed providers supply a higher "quality" of labor than do unlicensed providers. This interpretation is strengthened by considering industry experience. In principle, low formal educational levels can be offset by additional experience in the child care industry. However, the data suggest this is not the case: the median experience among licensed providers is eight years versus four years in Newark and three years in Camden and among unlicensed providers in South Chicago. Interestingly, the distribution of experience for unlicensed providers in South Chicago is more concentrated than are the comparable distributions for providers in New Jersey (an interquartile range of 43 months in Chicago versus about 100 months in New

Jersey). It appears that the concentration is due to having relatively few long-term unregulated family providers in South Chicago. In New Jersey 25 percent of the providers report having ten or more years of experience; in South Chicago, providers with five or more years of experience account for the top 25 percent of the experience distribution. A question for future research is to determine whether this apparent difference is due to the different regulatory environments.

Specialized training, experience, and even establishment size are different measures of commitment to being a high-quality family provider. On each of these dimensions, licensed and unregulated providers differ. Table 3 presents additional evidence on the behavioral differences between these two sets of family providers. The first row of the table reports the proportion of each group who are members of the Family Care Association. Membership in the association represents (perhaps the intensity of the) commitment to the profession. Effectively, only licensed providers are members; none of the unregulated family providers in Newark or South Chicago are.

The next three rows of the table provide alternative measures of attachment to the profession. While the differences between licensed and unlicensed providers are not as striking as in the first row, the qualitative pattern of the responses is similar. Licensed providers are more likely to actively seek clients, are more interested in being listed in a child care directory for future referrals, and are less likely to care for a related child. The last observation suggests that for these individuals, family providership was not motivated by immediate family need.

The second panel of the table provides information on the institutional support for family providers in each locality. Direct subsidies to family providers occur predominately among licensed providers in South Chicago. Three-quarters of the licensed providers participate in the Child Care Food Program. Except for family providers in Camden, participation by unregulated providers is almost zero. Whether a particular form of provider receives government subsidies depends on the

TABLE 3

**Measures of Commitment to the Child Care Profession,  
Receipt of Government Subsidies, and Annual Income, for Family Providers  
in Newark and Camden, N.J., and South Chicago, Ill.**

|  | Newark | Camden | South Chicago |          |
|--|--------|--------|---------------|----------|
|  |        |        | Unlicensed    | Licensed |
| <u>Commitment to Profession</u>                  |        |        |               |          |
| Member of Family Care Association                | 0.0%   | 3.2%   | 0.0%          | 42.1%    |
| Take no steps to find clients                    | 54.8   | 53.3   | 56.1          | 29.1     |
| Want to be in a directory                        | 57.5   | 33.2   | 27.4          | 68.6     |
| Care for a related child                         | 52.5   | 38.9   | 37.0          | 11.1     |
| <u>Receipt of Government Subsidies</u>           |        |        |               |          |
| Provider paid directly                           | 2.8%   | 3.6%   | 3.7%          | 44.5%    |
| Participate in Child Care Food Program           | 1.5    | 18.6   | 0.7           | 74.8     |
| <u>Annual Gross Income (\$1,000)<sup>a</sup></u> |        |        |               |          |
| Mean   | 3.3    | 3.9    | 4.1           | 9.9      |
| Std. deviation                                   | 3.7    | 4.6    | 5.8           | 5.5      |
| First quartile                                   | 0.6    | 1.1    | 1.0           | 6.1      |
| Median   | 2.1    | 2.2    | 2.4           | 9.8      |
| Third quartile                                   | 5.0    | 5.2    | 4.7           | 13.6     |
| Interquartile range                              | 3.4    | 4.1    | 3.7           | 7.6      |

Source: The Child Care Supply and Needs Survey (1988).

<sup>a</sup> Annual gross income from child care is calculated as: (weekly revenue - cash payment to helpers) x (number of weeks per year of care).

care substitutes available in the market. In the presence of licensed family providers in South Chicago, few unlicensed providers receive any form of government funds.

Different commitment levels should affect earnings. The last panel of Table 3 reports calculated annual gross earnings for family providers. Annual gross earnings are defined as weekly revenues from child care less cash payments to helpers times the number of weeks per year providing care.<sup>9</sup> The mean and median earnings are consistent with the oft-reported low earnings within the child care industry (Hofferth and Phillips, 1987; Kahn and Kammerman, 1987). At \$9,900, licensed providers make two to three times the earnings of unlicensed providers. In fact, earnings of the first quartile for licensed providers exceed the third quartile earnings of unregulated providers. The difference between licensed and unlicensed providers is most evident in terms of income: licensed providers earn little; unregulated providers earn even less.

#### Measures of Quality of Care Supplied by Family Providers

This sections considers two measures of the quality of care: child-staff ratios and health and safety practices. As the discussion in Section II made clear, child-staff ratios are widely used to control quality. The battery of questions on health and safety practices offer additional evidence on the type of care received.

High-quality care is associated with low child-staff ratios. To account for the input of part-time helpers and for children in part-time care, child-staff ratios are calculated as child hours divided by total provider hours. Children of all ages are included in the numerator of the ratio and provider hours include the hours of all helpers engaged.<sup>10</sup> Median child to staff ratios are 1.9 in Newark, 1.3 in Camden, 1.5 for unlicensed providers in South Chicago, and 3.0 for licensed providers in South Chicago. Again, the variation across geographical markets is less than the difference between licensed and unlicensed providers. Only this time, the comparison favors the

unregulated providers: licensed providers offer a less adult-time intensive form of care. This difference is not due to differences in the age composition of the children under care between licensed and unregulated providers.

Table 4 reports the percentage of family providers self-reported as following each health and safety practice. Practices on which licensed providers are monitored are indicated in the table by a superscript "a." For licensed providers, response rates yield information on their compliance with the formal regulations. Comparisons of licensed and unlicensed providers yield direct evidence of the effects of these regulations on provider practices. For example, the practice of fire drills is visibly different across groups. But even among the unregulated practices, some striking differences between licensed and unlicensed providers are apparent. For example, unlicensed providers are 1.3 times more likely to accept a child with a feverish appearance than are licensed providers; 2.5 times more likely to accept children with severe coughs; and 6.4 times more likely to accept a child with a rash. Variation in the practices of unregulated providers in different geographic markets is small. Except for the acceptance of children with feverish appearances, the difference between licensed and unlicensed providers is larger than the difference between any two unregulated providers. For example, in South Chicago 40.5 percentage points separate licensed providers from unlicensed providers in the propensity to accept children with severe coughs, while only 13 percentage points separate high and low regions of unregulated providers (73.6 percent in Camden versus 60.6 percent in Newark). Although the differences are slight, health standards among unregulated providers appear highest in Newark, followed by South Chicago and Camden, in that order.

TABLE 4

**Health and Safety Practices of Family Providers  
in Newark and Camden, N.J., and South Chicago, Ill.**

| Practice                             | Newark | Camden | South Chicago |          |
|--------------------------------------|--------|--------|---------------|----------|
|                                      |        |        | Unlicensed    | Licensed |
| Accept children with:                |        |        |               |          |
| Feverish appearance                  | 55.1%  | 72.4%  | 65.3%         | 49.8%    |
| Severe cough                         | 60.6   | 73.6   | 67.0          | 26.5     |
| Rashes                               | 43.1   | 55.9   | 54.5          | 8.5      |
| Administer OTC drug                  | 83.7   | 86.1   | 86.0          | 91.5     |
| Administer prescription drug         | 92.3   | 87.8   | 92.7          | 97.1     |
| Have Dr.'s phone number <sup>a</sup> | 81.8   | 74.8   | 75.5          | 97.8     |
| Have medical release <sup>a</sup>    | 57.2   | 29.0   | 45.0          | 87.5     |
| Practice fire drills <sup>a</sup>    | 28.3   | 17.1   | 19.0          | 91.5     |
| Have liability insurance             | 39.4   | 44.1   | 48.0          | 71.7     |

Source: The Child Care Supply and Needs Survey (1988).

<sup>a</sup>Practice monitored for licensed providers in South Chicago.

### Summary of Descriptive Evidence

Three findings emerge from the analysis. First, unregulated family providers care for few children per establishment--two-thirds to three-quarters care for two or fewer children; a veritable handful care for more than four children. Moreover, there is little difference between unregulated providers in New Jersey and in Illinois. Concern over poor quality of care induced by too many children per provider is apparently unjustified.

Two, licensed family providers are not representative of all family providers; licensed family providers differ from unlicensed providers, as does the care offered by each. Indeed, there is more dissimilarity between licensed and unlicensed family providers in South Chicago than among unregulated family providers in the three sites. Specifically, licensed family providers have more education (both general and care-specific) and industry experience, are more likely to follow prescribed health and safety standards, and care for more children per establishment; however, as measured by child-staff (provider) ratios, they offer less adult-time intensive forms of care.

Three, there is mixed evidence on the quality of care offered by licensed and unregulated providers. Quality, as measured by child-staff (provider) ratios and responses to questions on health and safety practices, appears to be remarkably similar across unregulated providers in Camden, Newark, and South Chicago. Licensed providers offer a higher quality of labor input but use labor less intensively by spreading it over more children (per hour). These crude measures of quality thus present an ambiguous picture of the effects of licensure on the quality of care. Labeling unregulated family home providers as "low quality" is premature. Further analysis is required to assess quality in this sector of the child care market.

#### IV. HEDONIC REGRESSIONS OF FAMILY PROVIDER FEES

In this section I present a regression analysis of the fees charged by family providers. The motivation for this analysis is twofold. Since the underlying services being compared may be quite different, simple price comparisons using univariate measures are not informative. Meaningful comparisons within and across markets require that services be put on a common basis. Hence, one way to interpret the regressions presented in this section is as a data reduction device to summarize the cost of child care for a standardized service.

The second motivation for the analysis is to study price determination in these markets. The interpretative framework for these regressions is a hedonic model of price determination for differentiated products (Rosen, 1974; 1986). In this framework, child care is seen as consisting of a set of attributes which are valued by consumers (e.g., convenience, quality, etc.) and which are implicitly priced out in the market to determine the price of child care. The fee regression is  $y_{ik} = x'_{ik}\beta + u_{ik}$ , where  $y_{ik}$  is the fee charged by the  $i$ 'th provider for the  $k$ 'th child care package.  $x_{ik}$  is a vector of attributes (or their proxies) and  $\beta$  is a vector of (unknown) attribute shadow prices. Shadow prices are influenced by supply and demand conditions, and, a priori, most coefficients cannot be signed. Hence, while the approach identifies factors which affect the price of child care, it is silent on the mechanisms through which prices are set.

##### Empirical Specification

Most frequently, children are charged an individual fee for care. It is not unusual, however, for a family provider to "package" two or more children together and charge one fee. As we shall see, the bundling of child care fees is an important aspect of the child care market. The conventional practice of analyzing an average hourly fee overlooks an important aspect of the pricing of child care

services. The approach used in this analysis is to define the fee as the unit of observation and to use covariates to describe the characteristics of the associated package. The appendix discusses the sample selection rules and presents descriptive statistics of the variables used in the analysis.

The care attributes fall into one of three groups: (1) attributes of the package; (2) attributes of the family providers; and (3) attributes of the quality and type of service. Table 5 lists covariate definitions by group. This grouping is admittedly arbitrary, but provides a useful summary of the rationale for including each covariate in the regression. The reduced-form nature of the fee regression mandates caution in interpreting the results; however, some motivation is useful.

Consider the first set of covariates which describe the child(ren) of the package. Since the dependent variable of the regression is the total (weekly) fee, longer hours of care should be more costly to produce (at least over some range). By the same logic, more children should be more costly; hence, the estimated coefficient on PDEAL should be positive. It is conjectured that younger children are more time-intensive; thus the estimated price function should be negatively related with the age of the child (mean age of children in the package). The estimated coefficient on REL is expected to be negative: the full market price of care need not be charged if providers receive some additional enjoyment from caring for a related child.<sup>11</sup>

Attributes of the providers may increase or decrease the price of child care, depending on the nature of equilibrium in the child care market. A naive application of human capital concepts implies that more experienced and more highly educated providers should charge greater fees. Yet, if child care is a low-skill sector, then highly educated individuals may be employed as family providers because they could not find employment in more skilled occupations (i.e., higher paying). Individuals employed in the child care sector with the greatest education may be the least-able workers. Under this market equilibrium the estimated relationships between experience and fees, and between

TABLE 5

**Definition of Variables Used in Family Provider Fee Regressions**

Dependent variable

CPW Cost per week charged by family provider, expressed in \$

Attributes of package

MAGE Mean age in years of children in package  
 HRST Hours ÷ 10 per child in package  
 HRST2 Square of HRST  
 PDEAL Dummy variable = 1 if fee is for more than one child  
 REL Dummy variable = 1 if the package contains a child related to the provider

Attributes of provider

EXP Years of experience as a family provider  
 LTHS Dummy variable = 1 if the provider has less than a high school education  
 SCOL Dummy variable = 1 if the provider has had some college  
 COLP Dummy variable = 1 if the provider has at least a college education  
 SP\_TRG Dummy variable = 1 if the provider has received special training or education in child development or health care

Quality and service attributes

CSR Child hours to staff (provider and all helpers) hours  
 LIAB Dummy variable = 1 if the provider has liability insurance  
 KIDNUM Number of children receiving care from provider  
 BPT Number of blocks from provider's home to public transportation  
 CHOME Dummy variable = 1 if the provider supplies care in child's home.  
 DIRSUB Dummy variable = 1 if the provider receives a subsidy for any child

education and fees, will be negative. Hence, no sign restrictions are possible for the coefficients of the human capital variables.

The last set of covariates control for quality and other service attributes. The variables CSR (child to staff ratio) and LIAB (provider has liability insurance) are two measures of quality. The reasoning supporting CSR has already been presented and that supporting LIAB is equally straightforward: providers with liability insurance offer care in an environment that is sufficiently safe to be insurable. Higher-quality care is assumed to be more costly to produce; hence the coefficient on CSR should be negative while that on LIAB should be positive. The size of the provider's establishment (KIDNUM) is included to control for scale economies.<sup>12</sup> Blocks from public transportation (BPT) is seen as a proxy for the convenience of the provider. Thus, increases in BPT should correspond to decreases in the fee charged for child care services. Providing care in the child's home is less convenient for the provider and limits her opportunity to care for additional children; the estimated coefficient on CHOME should be positive.

Finally, consider the interpretation of the subsidy variable, DIRSUB. Subsidized care may reduce the fee charged to parents. A negative estimated coefficient on DIRSUB will occur if providers supplying institutional users (local government agencies) are more efficient and hence have lower costs for the same quality of service (which is why they are servicing the state agencies) or because they offer a lower quality of service. However, DIRSUB will be positive if higher fees are charged for subsidized care, perhaps because of higher quality that is more costly to produce or if institutional demanders have a less elastic demand curve.<sup>13</sup>

In the results reported below, separate regressions are estimated for each geographical area and, within South Chicago, by regulatory status. To control for unobserved differences in pricing practices, the error term is modeled as having a provider-specific component and a white noise component. This two-component random effects model is estimated by feasible generalized least

squares (FGLS), with adjustments made to the usual formulae for the covariance matrix to account for the unequal number of packages per provider (see Hsaio, 1986, pp. 194-97).

### Empirical Results

Table 6 reports the estimated coefficients by group for the fee regression obtained by the FGLS estimator. Due to the small sample sizes, most coefficients are imprecisely estimated; however, a few patterns emerge. First, hours and hours squared are the only variables that are statistically significant at conventional levels for all groups. The estimated fee schedule is concave in hours with a maximum weekly fee estimated to be in the range 60 to 64 hours for all groups. Somewhat surprising, the age variable is not statistically significant for two of the three groups of unregulated providers. When it is statistically significant, the estimated effect is negative. Also, as expected, packages containing more than one child (PDEAL) are charged a premium. The estimated effect is statistically significant in all provider groups except Camden. Caring for a relative (REL) always reduces the weekly fee by \$8 to \$15. Once again, the estimated effect is statistically significant for all groups of providers except Camden. The estimated coefficients on BPT are always negative though imprecisely determined. Among unregulated providers, CHOME is always positive and statistically significant.<sup>14</sup> Caring for a child in the child's home increases the weekly fee by \$15 to \$33, approximately one-third of the mean weekly fee. The effect of direct subsidies is always positive and is statistically significant for both groups in South Chicago. Although the estimated premiums are large, few (3 percent) of the unregulated providers receive direct subsidies (Table 3). Forty-four percent of the licensed providers receive direct subsidies and average \$10 per week per package more than their unsubsidized licensed counterparts. Since the subsidy information was obtained only for each provider and not for each package of the provider, the estimated effect reflects the average fee of subsidized providers versus that of unsubsidized providers (conditional on other

TABLE 6

Feasible Generalized Least Squares  
Regression of Family Home Provider Fees

| Variable                                      | Newark      |            | Camden      |            | South Chicago<br>Unlicensed |            | South Chicago<br>Licensed |            |
|---|-------------|------------|-------------|------------|-----------------------------|------------|---------------------------|------------|
|   | Coefficient | Std. Error | Coefficient | Std. Error | Coefficient                 | Std. Error | Coefficient               | Std. Error |
| Intercept                                     | 34.97       | 11.25      | 21.31       | 11.51      | 4.75                        | 12.51      | 35.90                     | 5.60       |
| MAGE  | -2.12       | 0.78       | -0.48       | 1.13       | 0.24                        | 0.95       | -1.25                     | 0.23       |
| HRST  | 5.10        | 2.30       | 13.15       | 2.49       | 24.09                       | 3.34       | 8.07                      | 1.22       |
| HRST2   | -0.42       | 0.18       | -1.02       | 0.22       | -1.88                       | 0.32       | -0.61                     | 0.13       |
| PDEAL   | 27.85       | 8.32       | 7.69        | 7.86       | 23.09                       | 8.06       | 12.28                     | 3.31       |
| REL   | -8.75       | 3.38       | -8.05       | 5.98       | -14.70                      | 6.10       | -16.33                    | 2.18       |
| EXP   | -0.20       | 0.40       | -0.32       | 0.36       | -0.23                       | 0.37       | -0.16                     | 0.13       |
| LTHS  | -0.74       | 6.75       | -8.83       | 7.78       | -7.03                       | 7.86       | -4.71                     | 3.41       |
| SCOL  | 16.41       | 11.24      | -2.10       | 8.59       | -4.81                       | 8.57       | 2.73                      | 2.96       |
| COLP  | 37.00       | 17.98      | -4.59       | 12.66      | -3.11                       | 15.83      | -0.44                     | 5.08       |
| SP_TRG  | 2.74        | 7.58       | 1.87        | 7.47       | 7.20                        | 6.55       | -1.15                     | 3.05       |
| CSR   | 5.23        | 5.29       | -3.43       | 5.02       | -17.12                      | 6.89       | -0.95                     | 1.23       |
| LIAB  | 8.20        | 6.86       | 14.98       | 6.86       | -1.58                       | 6.37       | 1.56                      | 2.54       |
| KIDNUM  | -9.40       | 3.81       | 0.07        | 2.92       | 7.85                        | 4.71       | -0.76                     | 0.59       |
| BPT   | -0.39       | 3.18       | -0.73       | 0.85       | -0.74                       | 0.87       | -0.79                     | 0.56       |
| CHOME   | 33.84       | 8.81       | 18.64       | 8.70       | 15.45                       | 7.22       | .                         | .          |
| DIRSUB  | 36.05       | 23.47      | 13.63       | 13.63      | 68.80                       | 20.74      | 9.85                      | 3.19       |
| Variance between                              | 444.2       |            | 425.1       |            | 423.6                       |            | 149.4                     |            |
| % between                                     | 83.1        |            | 45.0        |            | 49.5                        |            | 50.1                      |            |
| No. of packages                               | 136         |            | 195         |            | 160                         |            | 717                       |            |
| No. of providers                              | 66          |            | 95          |            | 85                          |            | 131                       |            |
| No. of providers<br>with one or more packages | 31          |            | 54          |            | 43                          |            | 4                         |            |

Source: Computations by author based on the Child Care Supply and Needs Survey (1988).

Notes: Two-error component model. Dependent variable is the weekly fee charged by family providers.

attributes). Subsidized licensed providers are larger (by about one more child on average), but otherwise there are no observable differences between subsidized and unsubsidized licensed providers. This suggests that the estimated premium is package-specific and not provider-specific.

The remaining coefficients exhibit no systematic pattern either in algebraic sign or in statistical precision. Noteworthy is the low explanatory power of the traditional human capital variables. For all groups the estimated experience coefficient is negative and statistically insignificant. Only one of twelve educational attainment variables is statistically significant. The remaining estimated coefficients of the educational attainment variables are imprecisely determined, with no pattern in their relative magnitudes or algebraic signs, either within or across provider groups. Enrollment in special care-specific training increases fees among unregulated providers while decreasing them among licensed providers; however, all estimates are statistically insignificant and numerically small. Indeed, the estimated returns to specialized training barely cover the direct costs of the training. These estimates present a bleak picture of the incentives facing providers to acquire additional care-specific training. Apparently, the market assigns no value to experience or formal education or training.

One prediction of the hedonic price function is that because the market clearing price depends on the distribution of tastes and the distribution of firm technology within each market, the estimated price functions should vary across markets.<sup>15</sup> Even with the small sample sizes, the data support this conjecture. A Wald test of the hypothesis that the coefficients are equal across sites is decisively rejected by the data.<sup>16</sup> Tests of the equality of coefficients among unregulated providers (within and across states) were also soundly rejected by the data.

Table 7 reports predicted weekly fees for several care packages to explore the properties of the estimated pricing schedules and to assess price differences across markets for uniform services. The predicted weekly fees use Newark's mean sample values (Table A-2) for covariates fixed across

alternatives. The first row of the table reports the fee for an individually priced four-year-old child in full-time care (40 hours per week). The prices range from a low of \$35 in Newark to a high of \$49 for unlicensed care in South Chicago.

The second row of Table 7 reports the fee of an individually priced four-year-old child in part-time care (20 hours per week). The difference between alternatives (1) and (2) measures the sensitivity of fees to changes in hours of care. Except among unlicensed providers in South Chicago, reducing hours by 50 percent reduces fees by less than 50 percent (row 3). Indeed, the reduction in fees among licensed providers is only 22 percent. On average, this group offers full-time care and has the least dispersion of hours per package, suggesting more uniformity in the structure of packages.

The third alternative is an individually priced two-year-old child in full-time care. The difference between alternatives (1) and (3) measures the effect of the child's age on the fee. Newark and licensed providers in South Chicago had the largest percentage increase and are also the sites where the estimated age coefficient is statistically significant. Nevertheless, the percentage increase in fees for the younger child (row 5) are modest, and fees show less sensitivity to age than to hours. These results imply the absence of a steep age gradient in the fee structure and call into question the alleged shortage of infant care slots.

The remaining alternatives in Table 7 illustrate the magnitude of price discounts accruing to fees covering more than one child. The discount is shown for two different combinations of children: (1) two young children (ages two and four) in full-time care (alternative 5); and (2) a young child (age four) in full-time care and a school-age child (age seven) receiving part-time care (alternative 7). The corresponding fees of individually priced child care services are listed in alternatives (6) and (8) (the sum of the appropriate fees, (1) + (3) and (1) + (4), respectively). The percentage reduction in fees appear in the rows beneath alternatives (6) and (8). These combinations are selected to represent

TABLE 7

## Predicted Fees of Alternative Child Care Packages

| Alternative  | Newark  | Camden  | South Chicago |          |
|--|---------|---------|---------------|----------|
|  |         |         | Unlicensed    | Licensed |
| (1) 4-yr. old, 40 hrs/wk   | \$35.02 | \$45.20 | \$49.31       | \$39.02  |
| (2) 4-yr. old, 20 hrs/wk   | \$29.86 | \$31.34 | \$23.69       | \$30.38  |
| % difference<br>between (2) and (1)  | -14.7   | -31.1   | -52.0         | -22.1    |
| (3) 2-yr. old, 40 hrs/wk   | \$39.26 | \$46.36 | \$48.83       | \$41.52  |
| % difference<br>between (3) and (1)  | 12.1    | 2.6     | -1.0          | 6.4      |
| (4) 7-yr. old, 20 hrs/wk   | \$23.50 | \$29.90 | \$24.41       | \$26.63  |
| (5) Bundle: 4-yr. old, 40 hrs/wk,<br>& 2-yr. old, 40 hrs/wk                          | \$64.99 | \$53.57 | \$72.16       | \$52.55  |
| (6) Priced separately: 4-yr. old,<br>40 hrs/wk, & 2-yr. old, 40 hrs/wk<br>[=(1)+(3)] | \$74.28 | \$91.76 | \$98.14       | \$80.54  |
| % difference<br>between (5) and (6)  | 14.3    | 71.3    | 36.0          | 53.3     |
| (7) Bundle: 4-yr. old, 40 hrs/wk,<br>& 7-yr. old, 20 hrs/wk                          | \$57.53 | \$46.36 | \$61.83       | \$45.71  |
| (8) Priced separately: 4-yr. old,<br>40 hrs/wk, & 7-yr. old, 20 hrs/wk<br>[=(1)+(4)] | \$58.52 | \$75.30 | \$73.72       | \$65.65  |
| % difference<br>between (7) and (8)  | 1.7     | 62.4    | 19.2          | 43.6     |

Source: The Child Care Supply and Needs Survey (1988).

Note: The predicted fees use the estimated coefficients reported in Table 6, and, except for MAGE, HRST, HRST2, and PDEAL, which vary among alternatives, Newark's sample means for the fixed characteristics.

the different types of packages observed in the data. For the package containing two young children, the reduction in fees is substantial--14 to 71 percent; the package containing the school-age child receives a smaller discount--2 to 62 percent. Among unregulated providers, roughly 10 percent of all packages contain multiple children, and 15 to 19 percent of all providers have at least one multiple-child fee. Slightly fewer licensed providers, 11 percent, have a multiple-child package, representing 2.5 percent of all packages under licensed provider care. Hence, there seems to be no relationship between the use of multiple-child packages and the size of the discount. Whether the discounts reflect greater price elasticity by families with more children or a conservation of transaction costs by exchanges within the market cannot be determined from these data and is left for future research.

Finally, notice that except for individually priced children in part-time care, licensed providers charge lower fees than do unlicensed providers, in South Chicago. Assuming that licensed and unlicensed providers have the same cost structure, this is counter to the idea that licensure is a signal of higher-quality service and therefore should earn a premium in the market. Furthermore, it is interesting to note that while 7 percent of the family providers are licensed in South Chicago, 30 percent of the users of family providers interviewed in the household survey believed their family provider to be licensed. While fraud is possible, it seems more likely that satisfied consumers believe their provider to be licensed. If not to parents, then to whom is the license a signal? One conjecture is that the license is a signal to government agencies which do not have access to the local informational networks. If correct, this conjecture changes the view of licensure from one of consumer protection to efficiency of matching institutional demanders with suppliers. Future research will investigate this conjecture.

## VI. CONCLUSION

In characterizing family providers and the care they offer to the market, this paper presented several empirical findings. First, unregulated family providers care for few children per establishment. Second, licensed family providers are systematically different from unregulated providers. Licensed family providers have more education (general and care-specific) and more experience within the profession, care for more children per establishment, are more likely to be members of a professional organization, are more active in finding new clients, and are more likely to serve the institutional market. By these dimensions, licensed providers have a greater attachment to the profession. Because of their greater investment, licensed providers should have lower exit rates from the profession and therefore should be less sensitive to changes in economic and regulatory conditions than should unregulated providers. Using licensed family providers as representative of all family providers may produce misleading interpretations, especially in regards to effects of regulations and minimum care standards.

In assessing quality of care, the results indicate that licensed family providers uphold slightly higher health and safety standards than do unlicensed providers. However, licensed family providers have higher child to staff ratios. Consequently, there is mixed evidence on the quality of care offered by licensed providers.

The regressions on family provider fees yield two important results. First, the estimated fees exhibit a substantial bundling of child care services. The practice of analyzing an hourly fee misses an important pricing behavior within the market. The bundling may reflect conservation of transaction costs or a form of price discrimination. Second, licensed providers do not earn a premium. This finding contradicts the notion that a license signals higher-quality--and hence higher-priced--care to consumers. Finally, the market does not value education or experience. Importantly,

even training specific to child care receives no market premium. Family providers have slightly less education than do other adults in their neighborhood and much less than women with small children do. The absence of an educational return is doubly pernicious: well-educated individuals have no monetary incentive to enter the profession, and poorly educated providers have no incentive to upgrade their skills. If enforced, increased educational and training requirements may have serious effects on supply. The low levels of annual earnings suggest that even seemingly small compliance costs may deter entry or drive providers deeper underground.

Limited to three urban markets with few observations in each, these results are preliminary. Whether they will stand up to larger, nationally representative samples remains to be seen. The expected public release of the National Child Care Survey and the Profile in Care Settings during 1991 offers exciting opportunities to further investigate these results.

**Appendix****Construction of the Data File Used in the Regression Analysis**

This appendix describes the construction of the sample used in the regression analysis of family provider fees (Table 6).

To be included in the analysis, a package had to contain complete information on the characteristics of the provider, the fee charged, and the age and hours of care for each child. A provider will be excluded only if all packages are excluded because of incomplete information. These selection rules will oversample the larger providers (i.e., more likely to eliminate providers caring for only one or two packages). Moreover, nonresponse by smaller providers may be larger because they may not wish to reveal their income from child care if they do not report this income on their tax returns.

The number of providers and children lost by each selection rule is shown in Table A-1. The top portion of Table A-1 reports the number of children and providers deleted because of incomplete reporting of package attributes. The number of packages deleted are not listed in this section of the table because it is not always possible to determine if the incomplete records pertain to one or more packages. The primary reason for the deletions in the top portion of the table is the incomplete reporting of hours and fee information.

While the rejection rates are high, two observations suggest there is no systematic bias in the reporting of the fees or hours and selection into the analysis file. First, the characteristics of those providers and children excluded are not systematically different from those included in the analysis. Second, nonresponse is not correlated with provider size; the ratio of children per provider is almost unchanged in the construction of the packages. For all groups, the proportion of children deleted to the proportion of providers deleted is close to one. The selection rules do not oversample the larger

providers. The lower rejection rates of the licensed providers (10 percent versus approximately 25 percent for the unregulated providers) support the notion that unregulated providers are less willing to reveal income. This hesitancy, however, appears to be unrelated to provider size.

The lower portion of the table lists the number of providers, children, and packages deleted for nonresponse on covariates and other attributes. To maintain comparability with the descriptive analysis, I impose the selection criterion that providers have positive sampling weight (source = 4 and sampling-weight-equals-zero observation groups). Source = 4 providers are those known to the staff of the Teenage Parent Demonstration. Obtained through an explicit nonrandom sampling frame, these observations were assigned zero sampling weight. Some providers in South Chicago were also assigned zero sampling weight and were excluded from the descriptive analysis. The regression results reported in the text are not sensitive to the restriction of positive sampling weights.

Table A-2 reports descriptive statistics for the regression file. Observation sizes reported in Table A-2 correspond to packages (not providers).

**TABLE A-1**  
**Construction of Family Provider Fee Dataset: Selection Rules and Frequency Counts**

|  | Newark |     |     | Camden |     |     | South Chicago<br>Unlicensed |     |     | South Chicago<br>Licensed |     |     |
|--|--------|-----|-----|--------|-----|-----|-----------------------------|-----|-----|---------------------------|-----|-----|
|  | Pro    | Chd | Pkg | Pro    | Chd | Pkg | Pro                         | Chd | Pkg | Pro                       | Chd | Pkg |
| Number of initial packages   | 85     | 198 |     | 119    | 301 |     | 106                         | 224 |     | 144                       | 806 |     |
| Deleted because of incomplete reporting of the following package attributes:     |        |     |     |        |     |     |                             |     |     |                           |     |     |
| Hours of care  | 3      | 7   |     | 4      | 11  |     | 5                           | 14  |     | 3                         | 16  |     |
| Fee charged  | 6      | 12  |     | 4      | 10  |     | 14                          | 8   |     | 8                         | 32  |     |
| Ages of children   |        |     |     | 1      | 2   |     |                             |     |     |                           |     |     |
| Packages remaining   | 76     | 179 | 164 | 110    | 278 | 245 | 93                          | 196 | 172 | 133                       | 758 | 734 |
| Deleted because of nonresponse on the following covariates and other attributes: |        |     |     |        |     |     |                             |     |     |                           |     |     |
| Provider's child care experience   |        |     |     | 1      | 2   | 2   | 1                           | 2   | 2   | 1                         | 7   | 6   |
| Cost per week above \$700  |        |     |     |        |     |     | 1                           | 2   | 1   |                           |     |     |
| Source=4 <sup>a</sup>  | 10     | 28  | 28  | 14     | 50  | 48  |                             |     |     |                           |     |     |
| Providers received zero sampling weight  |        |     |     |        |     |     | 7                           | 10  | 9   | 1                         | 11  | 11  |
| Packages remaining   | 66     | 151 | 136 | 95     | 226 | 195 | 85                          | 182 | 160 | 131                       | 740 | 717 |
| As a % of initial records  | 72     | 70  |     | 73     | 70  |     | 76                          | 79  |     | 90                        | 91  |     |

Source: The Child Care Supply and Needs Survey (1988).

Notes: Pro = number of providers; Chd = number of children; Pkg = number of separate pricing packages. Selection rules are listed in the order of application.

<sup>a</sup> Source = 4 providers are those known to the staff of the Teenage Parent Demonstration and are therefore excluded.

TABLE A-2

## Descriptive Statistics of Variables Used in Family Provider Fee Regressions

|        | Newark |           | Camden |           | South Chicago<br>Unlicensed |           | South Chicago<br>Licensed |           |
|--------|--------|-----------|--------|-----------|-----------------------------|-----------|---------------------------|-----------|
|        | Mean   | Std. Dev. | Mean   | Std. Dev. | Mean                        | Std. Dev. | Mean                      | Std. Dev. |
| CPW    | 35.906 | 26.650    | 40.779 | 33.856    | 38.933                      | 36.029    | 41.413                    | 19.283    |
| MAGE   | 3.735  | 2.340     | 3.634  | 2.294     | 4.285                       | 2.859     | 4.256                     | 2.944     |
| HRST   | 4.123  | 2.270     | 3.286  | 2.427     | 2.975                       | 2.030     | 4.030                     | 1.585     |
| HRST2  | 22.112 | 29.827    | 16.660 | 27.228    | 12.941                      | 20.651    | 18.747                    | 13.855    |
| PDEAL  | 0.801  | 0.274     | 0.103  | 0.304     | 0.106                       | 0.309     | 0.028                     | 0.165     |
| REL    | 0.419  | 0.495     | 0.241  | 0.429     | 0.294                       | 0.457     | 0.066                     | 0.248     |
| EXP    | 7.811  | 7.645     | 7.266  | 8.830     | 5.894                       | 7.664     | 10.233                    | 9.770     |
| LTHS   | 0.390  | 0.489     | 0.390  | 0.489     | 0.313                       | 0.465     | 0.160                     | 0.367     |
| SCOL   | 0.324  | 0.470     | 0.410  | 0.493     | 0.331                       | 0.472     | 0.494                     | 0.500     |
| COLP   | 0.132  | 0.340     | 0.056  | 0.231     | 0.081                       | 0.274     | 0.075                     | 0.264     |
| SP_TRG | 0.456  | 0.500     | 0.605  | 0.490     | 0.513                       | 0.501     | 0.748                     | 0.435     |
| CSR    | 2.329  | 1.018     | 2.185  | 1.062     | 2.309                       | 1.124     | 3.821                     | 1.536     |
| LIAB   | 0.485  | 0.502     | 0.564  | 0.497     | 0.613                       | 0.489     | 0.616                     | 0.487     |
| KIDNUM | 3.243  | 1.994     | 3.395  | 20.34     | 3.038                       | 1.880     | 7.269                     | 3.612     |
| BPT    | 1.331  | 0.808     | 2.508  | 3.453     | 2.744                       | 3.354     | 1.968                     | 2.298     |
| CHOME  | 0.912  | 0.285     | 0.872  | 0.335     | 0.638                       | 0.482     | 0.992                     | 0.091     |
| DIRSUB | 0.022  | 0.147     | 0.062  | 0.241     | 0.025                       | 0.157     | 0.212                     | 0.409     |

Source: The Child Care Supply and Needs Survey (1988).

## Notes

<sup>1</sup> Loosely defined as the care of children in a private home, typically the provider's. The specific definition used in the empirical work is given in Section III.

<sup>2</sup> In the markets analyzed below, 75 percent of all users of family providers and center-based care either know their provider personally beforehand or are referred via friends, neighbors, or relatives. More formal sources, such as newspapers and referrals by community agencies and caseworkers, are less widely used. This suggests that once informal leads are exhausted, consumers may have limited information to help them locate adequate child care.

<sup>3</sup> Because of the newness of the program, few family providers appearing in the survey in New Jersey are registered.

<sup>4</sup> Without an assistant, the provider may care for no more than four children under the age of five, and no more than three children may be less than two years old; with an assistant, a provider may care for no more than four children under the age of two years.

<sup>5</sup> Frequently, local and state authorities share jurisdiction; many child care regulations operate through building codes and zoning laws (Gormley, 1990).

<sup>6</sup> See Kisker et al. (1989) for a more complete description of the survey instruments and sampling procedures, as well as for additional analyses of these data.

<sup>7</sup> Started in 1986, the mission of the five-year demonstration is to study the effect of alternative "workfare" programs on the self-sufficiency of teenage parents and on the ability of local governments to supply the social services to support that self-sufficiency.

<sup>8</sup> Comparison of the distributions of provider characteristics between the household and Via-Users sample frames reveals no systematic differences. However, the small sample sizes restrict the statistical power of these tests. The problems of working with a selected sample can be avoided by not using observations from the Via-Users sample frame. This sample frame accounts for approximately 30 percent of the observations. The already low sample sizes mandated against accepting this solution.

<sup>9</sup> The survey asked family providers to reveal their income from child care. The response rates were low and upon evaluation were considered to be unreliable.

<sup>10</sup> Approximately one-third of the providers report receiving help with care. The family provider survey instrument obtained information on the total number of hours of help received from each individual and a listing of all the tasks (e.g., bookkeeping, cooking, cleaning, child care) performed by the helper (i.e., hours per task are not reported). Results in this section are not sensitive to the handling of helpers' hours. See Kisker et al. (1989) for a discussion of the issues surrounding the calculation of child-staff ratios.

<sup>11</sup> Alternatively, families may be more likely to exchange in-kind transfers instead of cash. However, few in-kind arrangements are reported by family providers or by users.

<sup>12</sup> However, providers may be large because they charge lower fees. KIDNUM and other attributes of the package are determined by the provider and should not be exogenous. Then, OLS estimates are biased. Such endogeneity issues torment all applications of hedonic price equations. The usual instrumental variables procedures for simultaneity problems are not easily applied in these models. The sorting of consumers and providers in the market places restrictions on their attributes. See Epple (1987) for an excellent discussion.

<sup>13</sup> Institutional demanders may have a less elastic demand schedule because they face a restricted choice set: by law, institutional demanders may only use licensed providers. The reduced opportunity set (fewer substitution opportunities) reduces the demand elasticity.

<sup>14</sup> Only a few licensed providers state they care for children in the children's home.

<sup>15</sup> Another prediction is that prices should be a convex function of the attributes (Jones, 1988). The small samples and the large number of attributes prohibited investigation of this prediction.

<sup>16</sup> The test-statistic is 206.4 on 51 degrees of freedom. The 5 percent critical value is 72.52.

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