



If you build it, they will come: parental use of on-site child care centers

RACHEL CONNELLY¹, DEBORAH S. DEGRAFF¹ & RACHEL WILLIS²

¹*Department of Economics, Bowdoin College;* ²*Department of American Studies, University of North Carolina at Chapel Hill*

Abstract. Employer-sponsored on-site child care, although a small percentage of the U.S. child care market, is of substantial interest to families, firms and governments searching for relief from work/family conflicts. This paper analyzes employee survey data from three firms in the same industry and local labor market, two of which offer on-site child care while one does not. These data allow for detailed descriptive and multivariate analysis of the child care strategies of working parents, including primary, secondary and Saturday care, and how such strategies are affected by the availability of employer-sponsored on-site care.

Keywords: child care, on-site centers

1. Introduction

The increases in women's labor force participation and single-parent households during recent decades in the United States have led to growing tension for families of young children as parents try to find affordable and reliable child care during their working hours. The market for non-parental child care that has developed in response includes a variety of options, ranging from individualized care in the child's home to large, institutionalized daycare centers. One child care option that is available to only a small number of parents is on-site child care, that is, a child care center located at either parent's place of employment. While the number of on-site centers is small relative to the total number of families using child care during working hours, employer-sponsored on-site child care is one of the fastest growing niches in the child care market. The increasing availability of on-site child care is often heralded as a desirable outcome, one that will have substantial beneficial effects on women's status, on the level of work/family conflict, and on productivity more generally. Many states currently have tax incentives for promoting employer-subsidized child care and Congress has recently considered similar national legislation.

While there is an extensive literature analyzing women's participation in the labor force and the type of child care selected by parents in the United States, little is known about parental choice of on-site center care.¹ This is

not surprising because most studies make use of cross-sectional household-level data sets and the incidence of on-site center use is still so small as to be practically invisible, even in relatively large, nationally representative samples of households. But employer-sponsored child care is too important to ignore simply because it cannot be studied with conventional data sets. Instead we have elected to use a case study approach, analyzing the child care arrangements of employees at three firms in the same local labor market and the same industry. We specifically looked for firms without a full menu of family friendly benefits. Firms that offer on-site child care seem to be of two types. One type does so as part of a corporate culture of “caring”, which is reflected by many aspects of the firm’s benefits package and working conditions. The other type offers child care as a response to a particular target population and/or as a response to a very tight labor market. We focus on this latter type of firm because, while it has received less attention than some high profile family friendly firms, we feel it holds more insights into “typical” firm behavior. Also, for firms that do not offer an array of family friendly benefits, the effect of on-site child care is less intertwined with the effects of other benefits.

Employees at two of the firms we study have access to on-site child care while employees at the third firm do not. In addition, we have collected detailed information about alternative sources of child care in the respondent’s area, particularly the availability of relatives as potential care givers. This allows us to evaluate how the employee’s individual menu of child care options affects his or her child care choice. Furthermore, household-level surveys usually are not extensive enough to gather information about the multiple child care strategies that parents often have in place to guard against the breakdown of child care arrangements and other unanticipated circumstances that create conflict between employment and caring for one’s young children. The data we collected also addresses this gap in the literature.

The employees represented by our data work for one of three light manufacturing firms in the same industry in a small city in the Southeast of the United States. The vast majority of production workers in this industry are women. Two of the firms, Action Industries and Bell Manufacturing, offer on-site child care to employees while the third, Central Products, does not.² Because the firms’ employees live in the same area, their market child care options are identical; their menus of child care choices differ only in the availability of on-site care, the availability of relatives willing to provide child care, and in their access to means-tested subsidy programs. Sampling within a relatively small geographic area also controls for other unobservables such as the cost of living. We recognize, however, that there is also a disadvantage to these firms being in the same local labor market in that employees may

choose among firms based on the benefits available at each firm. This might be exactly what a firm is hoping in offering on-site child care, but it may introduce endogeneity between who works for which firm and parental choice of child care. Accounting for the endogeneity of firm choice is beyond the limits of a three firm case study. Instead, we are conservative in our conclusions, emphasizing the unique aspects of these three firms while exploring the effects of an on-site center in parental decision making. More importantly, the direction of any bias works in our favor; if parents choose to work at a firm because it has an on-site center, and then choose to use the center once employed, that reinforces our finding that on-site care is an attractive option for families with young children.

An employee survey, discussed more fully below, was used to gather detailed information about alternative child care options, including relative care. In addition, we asked about secondary arrangements and Saturday care for those who work on Saturdays. The data are also unusual in that, because they are firm specific, they implicitly control for a host of employment conditions that could influence the work/child care dynamic that cannot be fully taken into account using nationally representative samples of households. We spent time in each firm during working hours, interviewed workers on all three shifts and talked informally with supervisors and plant managers. We spoke extensively with the human resource officers at each firm regarding their choices about benefit spending. Thus, with this unique case study, we are able to contribute interesting insights about several largely unexplored aspects of child care choice, most notably decisions related to the use of employer-sponsored on-site centers.

The next section discusses the data collection and provides context on the three firms. We then present a descriptive analysis of the primary child care arrangements of employees with young children, comparing the distribution of arrangements to a nationally representative sample and comparing the employees who work at firms with on-site child care to those who work at the firm without on-site care. We consider the role of alternative child care options and the price of such alternatives relative to the price of care chosen. This is followed by a discussion of secondary care arrangements and Saturday arrangements that focuses on differences associated with access to on-site child care. The remainder of the paper analyses the determinants of the use of on-site child care by employees with young children at Action Industries and Bell Manufacturing, and the use of any center-based care by employees at Central Products. We first look at the characteristics of users versus non-users, making comparisons among firms. We then estimate multivariate models for each sample, as well as a model for the use of any type of center-based care for the three firms combined, controlling for fixed firm effects.

2. Data and Context

The three firms whose employees were interviewed produce essentially the same products, with the same technology, and are located within a relatively small geographic area in a mid-size city in Southeastern United States. There are approximately 60 firms in this industry in this area and they range in size from about 800 employees to less than 50. The three firms visited are on the large end of the spectrum. Firm visits took place during the summers of 1996, 1997 and 1998, with one firm visited each summer. Interviews with individual employees were conducted in person at each firm on company time, during each work shift and drawing from each department. We used this strategy in order to maximize participation given budget and time constraints, while achieving a high degree of representativeness of workers. We interviewed approximately 60 percent of the Action Industries workforce of about 600, 75 percent of the Bell Manufacturing workforce of about 300, and 65 percent of the Central Products workforce of about 640.

The survey instrument is highly comparable across firms, with some tailoring by site to take into account firm specific characteristics, and with slight changes made from one firm to the next in order to benefit from insights gained at each firm. Each survey collected detailed socioeconomic and demographic information about the employee, the employee's spouse or partner (if applicable), and demographic information about the employee's household. For those employees with young children (less than age 13), information was collected on the primary and secondary child care arrangements used during the employee's normal work times, as well as information on the type of care used if the employee works overtime on Saturdays. For this paper we concentrate on children five years old or younger. In addition, detailed questions were asked about alternative sources of child care in the area, including relative care. Cost information was collected for each type of child care used, and respondents were asked about anticipated costs of alternative sources of care.

We also talked with the human resource officer in each firm about the reasons for the benefit package chosen by the firm and the importance of turnover costs and retention in that choice. At the two companies with on-site care, we also interviewed the daycare director.

Because the three firms are located in the same geographic area, parents face the same market options for child care (e.g., large daycare centers, individuals who run small child care facilities in their homes, and professional in-home care providers). Parents, however, differ substantially in their access to low- or zero-priced care by relatives and in their eligibility for state government child care subsidy. In addition, of course, those working for Action Industries or Bell Manufacturing have an on-site center available to them.

The on-site child care center at Action Industries opened in 1979 and had about 80 children enrolled at the time of the survey. It charged a set rate per preschool child (ages six weeks through five years) for full-time care during the work week, with some discounting for multiple children – \$47.50 per week for the first child, \$86.50 for two children, and \$112.00 for three children. Part-time care during the work week was also available. Its hours of operation were from 6:00 a.m. to 6:00 p.m., Monday through Friday. In addition to providing part-time or full-time care for preschool children, it also offered after-school care for children aged 6 to 13. There are several indicators of a high quality of care at Action compared with other center-based care in the area. For example, the ratio of children to care providers is lower for each age group than required by state regulations and the child care providers are paid at a higher rate than average for the area. Parent fees do not fully cover the costs of the child care center. Action estimates that it subsidizes almost 50 percent of the total cost of the center. The Bell Manufacturing center opened in 1989 and had 60 children enrolled at the time of the survey. It also charged a set rate per preschool child of \$49 per week for full-time care with a five percent discount for each additional child. Its hours of operation were Monday through Friday, 5:45 a.m. to 5:30 p.m., and also on Saturday while a shift was working. Like the Action Industries center, the Bell center is a high quality center based on staff education and low child/staff ratios. Child care providers are full-time employees, receiving higher pay than other providers in the area and full benefits. Bell subsidizes the center by as much as \$100,000 per year.

The third firm, Central Products, does not have an on-site child care center. Among the companies in the area, Central is more generous than most in other aspects of its benefits package. At the time of our survey (and still today), Central was not interested in sponsoring a child care center. The human resource officer at Central indicated that he felt very confident that the firm's benefit dollars are better spent elsewhere. Central, therefore, serves as an ideal comparison case to firms with on-site centers for the analysis of type of child care selected by working parents.

One weakness of our study is the relatively small sample sizes for statistical analysis and the fact that these are just three firms in one industry in one local labor market. While we recognize this limitation, and are therefore cautious in the interpretation of results, we believe that the unique features of the study are of sufficient interest to outweigh this drawback. Rarely do we have the opportunity to study on-site child care given its low incidence in the population and the ordinary sample sizes of household surveys on child care. It is our hope that this analysis will generate further research interest in this topic.

3. Primary Arrangements

Like parents throughout the United States, the workers in our study use a variety of child care arrangements. Table 1 compares to national averages the primary type of arrangements used for young children of working mothers at the three firms. This table is limited to children less than age five of women workers to make our data more comparable with national statistics.³

In thinking about the impact of an on-site center on choice of child care, we use Central Products employees as representative of women factory workers in the area because the vast majority of manufacturing workers do not have access to on-site daycare. However, we first must take into account the fact that there is a very high proportion of Hmong women employed by Central. Twenty-one percent of the employees at Central with whom we spoke were of Hmong ethnicity. Among the sample of children under age five of Central women employees, 61 percent are Hmong children. Hmong women marry quite young, often at 13 or 14 years of age, and have very high fertility. We talked with a number of young Hmong women, aged 18 to 21 with four or five children already. Hmong parents rely almost exclusively on splitting shifts to provide care for their large families. In most cases, the father works the first shift and the mother works the second shift. This is not the only pattern, but it seems to be preferred. Nearly 70 percent of the Hmong children of women employees at Central are cared for by their father while their mother is at work. Most of the remaining Hmong preschool children of Central women employees are cared for by grandparents (24 percent), and the rest are cared for by another relative. Not a single Hmong child at any of the firms we studied was cared for at a center or by a non-relative. Because of this, the child care arrangements for the full sample of Central children greatly overstates the reliance on splitting shifts and relative care among local parents in general (see column 3).⁴

Column 4 of Table 1 shows the child care arrangements of the non-Hmong mothers employed by Central Products. Although the sample size is substantially reduced, we believe that this best represents the “typical” breakdown of child care arrangements for full-time employed women workers in manufacturing firms in this area. The distribution of child care arrangements shown in column 4 is quite similar to the national averages shown in column 5. Non-Hmong mothers at Central rely slightly more heavily on grandparents and less on non-relatives than do mothers nationally, especially for non-relatives in the child’s home. This is, in part, because of their relatively low incomes, as child care provided by non-relatives in one’s home tends to be an expensive option. It is also, in part, because of the availability of grandparents in this area, where most grown children do not live far from their parents.⁵

Table 1. Percentage distribution of primary type of child care used by employed mothers with children less than age five^a

Primary type of child care used by employed mothers	Action Industries	Bell Manufacturing	Central Products	Central non-Hmong	National statistics, 1994
Any child care center (on-site center)	62.2 (48.6)	66.7 (41.0)	11.9 (NA) ^b	30.8 (NA)	33.5 (DK) ^c
Spouse or child's other parent in your home	12.6	2.6	48.5	15.4	13.3
Grandparent in your home	9.0	2.6	10.9	2.6	5.1
Grandparent in their home	6.3	20.5	11.9	18.0	10.5
Relative in your home	0.0	0.0	5.9	5.1	2.9
Relative in their home	1.8	2.6	2.0	5.1	6.7
Non-relative in your home	0.0	0.0	0.0	0.0	4.8
Non-relative in their home	5.4	5.1	7.9	20.5	18.2
At school	2.7	0.0	1.0	2.6	1.0
Mother cares for child at work	0.0	0.0	0.0	0.0	3.9
Number in sample	111	39	101	30	–

^aFirm samples for this table are limited to children less than age five of employed mothers to make them comparable with national statistics. For Action Industries, 28 children are dropped from the sample because their father is the Action Industries employee. For Bell Manufacturing, 12 children are dropped for this reason, and at Central Products, for the full sample, 39 children are dropped and for the non-Hmong sample, 17 children are dropped. National statistics come from United States Census Bureau (1998) and are weighted to be nationally representative.

^bNA = not applicable.

^cDK = data do not include this information.

We now compare column 4 with columns 1 and 2, which represent the distribution of child care arrangements used by employed mothers at Action Industries and Bell Manufacturing where on-site child care is available. The most striking difference is the use of center care. At Action, 62.2 percent of preschool children of women employees were enrolled at the on-site daycare center or at some other center.⁶ The vast majority of center users (78 percent) were at the on-site center and ten more children of Action Industries employ-

ees in our sample were on the waiting list. Similarly, two-thirds of children of Bell women employees were enrolled at the Bell daycare center or another center. Again, the majority of center users were at the on-site center (61 percent) and there was also a sizeable waiting list. This compares with 30.8 percent of non-Hmong Central Products children and 33.5 percent nationally using center-based care.

With such a large percentage of children cared for in the on-site centers, it is interesting to see which arrangements are less common for the children of Action Industries and Bell Manufacturing workers. While the use of other center-based care is still substantial among the workers of these two firms, it is less heavily relied upon than at Central Products (non-Hmong) or nationally. Thus, to some extent, on-site care replaces other forms of center-based care. However, the use of other center-based care is not the only category that is diminished when on-site child care is available. Combining the two grandparent categories, we see that grandparent care is not noticeably diminished compared to either the non-Hmong Central sample or the national sample. Grandparents provide care for 15.3 percent of the children in the Action sample and 23.1 percent of the children with mothers employed by Bell.⁷ This compares with 20.6 percent for the Central non-Hmong sample and 15.6 percent nationally. On the other hand, Action and Bell mothers are less likely to use relative care other than grandparents, and are much less likely to use non-relatives than are Central non-Hmong mothers or mothers nationally. These two categories seem to be the less preferred option when affordable, convenient center-based care is available.

The children of Bell Manufacturing workers are also less likely to be cared for by their fathers. The percentage of the children of Action Industries women employees cared for by their fathers, in contrast, is similar to the national average, but this is completely the result of the substantial number of Hmong workers at Action (see notes 6 and 7).

At the time of our survey, both Action Industries and Bell Manufacturing had a waiting list for their on-site centers. In the sample of Action employees, ten employees each had one child on the list; while waiting, three of these children were at other centers and seven were in non-relative care arrangements in the care provider's home. In the sample of Bell employees, three employees each had one child on the list; while waiting, two were cared for by their grandparents and one was enrolled in another daycare center.

It is important to note that the center care at Action Industries and Bell Manufacturing, while subsidized by the firms, is not inexpensive. Table 2 shows the mean weekly payment for care at both centers. The average at Action is \$47.92, and at Bell is \$37.51. While this is less than the weekly expenditures for other center-based care in the area, parents using other forms

Table 2. Characteristics of child care for employees' children less than age six

	Action Industries on-site users	Action non-on-site users	Bell on-site users	Bell non-on-site users	Central Products
Mean weekly amount paid for care (including zeroes)	\$47.92 (3.75)	\$18.15 (28.14)	\$37.51 (17.03)	\$25.62 (32.65)	\$14.66 (27.04)
% paying for care	100.00	34.41	100.00	51.28	38.46
Mean weekly amount paid for care for those who pay	\$47.92 (3.75)	\$52.58 (21.72)	\$37.51 (17.03)	\$54.44 (25.92)	\$50.81 (26.37)
Mean weekly amount paid for center care	\$47.92 (3.75)	\$57.83 (18.38)	\$37.51 (17.03)	\$71.37 (24.31)	\$68.76 (28.84)
Mean age of children	2.33 (1.46)	2.71 (1.61)	3.03 (1.56)	2.85 (1.50)	2.91 (1.52)
Satisfaction ranking of parents towards their child's primary care arrangement (1 is the best ranking, 5 the worst)	DK ^a	DK	Median: 1 Mean: 1.67 (1.20)	Median: 1 Mean: 1.81 (1.02)	Median: 2 Mean: 2.40 (1.26)
Number of children	63	93	26	39	169

Standard deviations are in parentheses.

^aDK = data do not include this information.

of care pay substantially less. Action parents not using the on-site center pay \$18.15 on average while Bell parents pay \$25.62 on average, and Central Products parents pay \$14.66 on average per week. This substantial difference is largely the result of the percentage of non-on-site users who are using arrangements with a zero money cost. Only 34.4 percent of the Action non-on-site users pay for care, while 51.3 percent of this group at Bell and 38.5 percent at Central pay for care. Once we omit those not paying for care, the amount paid is much more similar across columns. The Bell on-site center seems, at first glance, to be priced "below-market", but this average is somewhat misleading. As discussed more fully below, many users of the on-site center at Bell receive a government subsidy for child care. This is not the case at Action. Judging from the data, some of the recipients of the subsidy reported their out-of-pocket cost of child care rather than the total charged by the center. When this difference is taken into account, the average charge per child at the two on-site centers is almost identical. Thus, the price of the on-site centers is about equal to local rates for paid child care in general, and is somewhat lower than rates for other center-based care which are in the \$60 to \$70 per week range.

Because the on-site center is not inexpensive, the natural question is why do so many parents use the center. Some of the parents using the on-site center do not have a zero- or low-cost option, and thus the on-site center offers roughly the same price as other paid options, a more convenient location and, at minimum, an acceptable level of quality. On the other hand, some of the parents using the on-site center have a zero- or low-cost option but choose the center over this other option as being more convenient, more reliable (in terms of not breaking down), and perhaps of higher quality. Table 3 compares employees with young children across firms in terms of the availability of alternative care givers and the amount expected to pay those care givers.

Based on the percentage of employees with parents or parents-in-law in the area, on-site center users do not seem to differ from users of other arrangements. In fact, on-site users at both Action Industries and Bell Manufacturing are slightly more likely to have parents in the area. Many studies of child care use the presence of parents or parents-in-law in the area as an indicator of a zero-cost child care alternative. Substantially fewer on-site users at both Action and Bell report having parents or parents-in-law who are available for child care. This provides some evidence that many users of the on-site center do not have a zero- or low-cost option available to them, although one wonders if more grandparents would be available if the need were greater, i.e., if there were no on-site center.⁸ Taking the data at face value, there are a number of center users at both Action and Bell who report having a parent, parent-in-law or another relative who would be available at no cost. Eighteen percent of the users of the Action center report having a zero-cost alternative available to them; at Bell, the corresponding number is 42.9 percent. Clearly, some parents are choosing the on-site center over alternative arrangements despite a relatively high price tag. Convenience and reliability are likely to be factors in parents' choice of the on-site center; quality or a preference for center care may also be reasons for choosing the on-site center.

Thinking further about parental preferences across child care options, we return to Table 2 to see that the mean age of children at the on-site centers is not significantly greater than the mean age of children in other arrangements. Research on the mode of child care choice among employed mothers in the United States has found that parents are more likely to use relative care for very young children and center-based care for older preschool children (Connelly & Kimmel 2000; Chaplin et al. 1996; Hofferth & Wissoker 1992; Waite et al. 1991). It has never been clear, however, whether the lower probability of using center-based care for very young children represented parental preferences or a lack of infant care slots in daycare centers. Here, at least for on-site center care, there does not appear to be a parental preference

Table 3. Child care options of employees with children less than age six^a

	Action on-site users	Action non-on-site users	Bell on-site users	Bell non-on-site users	Central Products
% w/parents in area	83.33	62.00	80.95	71.88	67.29
% parents available for care of those in the area	14.29	70.97	35.29	69.57	61.11
% who expect to pay for grandparent care	20.00	11.11	16.67	13.33	37.21
Range of expected payments	\$35–45	\$20–50	\$40	\$40	\$5–150
% w/other relatives in area	53.85	61.70	80.95	46.88	65.09
% of other relatives available for care of those in the area	23.81	62.07	41.18	33.33	56.52
% who expect to pay for relative care	20.00	17.65	57.14	0.00	41.03
Range of expected payments	\$65	\$25–50	\$35–90	NA ^b	\$20–70
% who know others (non- relatives) available for care	23.40	31.37	23.81	28.12	25.00
% who expect to pay for non-relative care	100.00	62.50	50.00	100.00	62.50
Range of expected payments	\$18–75	\$25–60	\$20–40	\$45–60	\$20–200
% who know of any child care centers	57.14	41.38	71.43	50.00	36.11
% who expect to pay for center care	100.00	100.00	100.00	100.00	100.00
Range of expected payments	\$35-92	\$25-125	\$10-100	\$72-155	\$12-100
% w/zero cost care option (not including spouse)	18.00	55.17	42.86	50.00	52.78
Number of employees	50	58	21	32	108

^a Employees whose grandchild or other relative is enrolled in the on-site center are excluded. Two grandparents are excluded from the Action Industries sample and three employees, two grandparents and an aunt, are excluded from the Bell Manufacturing sample.

^b NA = not applicable.

for older children to use center-based care or for younger children to not use center-based care.

Further insight about age-based parental preferences can be gained by looking more closely at families with more than one child less than age six to see if arrangements differ by age of child. Table 4 shows the percentage

of families with more than one preschooler who use the same arrangement for both children. These percentages are compared with national data using a 1994 sample of SIPP families with two or more preschoolers and an employed mother. The national data show that the majority of parents, 85 percent, use the same arrangements for both (all) of their preschoolers. Center users are, however, less likely to use the same arrangement for both (all) of their preschoolers, though the majority still do (69 percent).⁹ Sample sizes of families with two or more preschoolers are quite small in the firm-based data, but employees of the three firms seem to be even more likely to favor the same arrangement for all their preschoolers. The fact that most families use the same care arrangements for all children indicates the importance of convenience and reliability in the parents' decision making or the tendency to stick with what one knows. Among users of the Action Industries center, there are 17 families with two preschool aged children, 14 of whom use the on-site center for both children.

Twenty-three percent of the national sample of center users follow the pattern suggested by other researchers of using home-based or relative care for the younger child and center-based care for the older child. However, no family in the Action Industries or Bell Manufacturing samples of on-site users follows this pattern. This suggests that there is no shying away from on-site center care for younger children among the parents at Action and Bell, nor is there any evidence of a strong preference for relative or home-based care for younger children at any of the three firms.¹⁰

At Bell Manufacturing and Central Products we asked parents the question "How do you feel about this child care arrangement?" after having asked the objective questions about the arrangement. Action Industries workers were not asked this question.¹¹ Table 2 shows that Bell parents are happier in general with their arrangements than are Central parents as indicated by both the median and mean scores. There is no difference between the median level of satisfaction of on-site center users and other parents at Bell; however, the mean score indicates somewhat greater satisfaction with the on-site center than with other child care arrangements.

4. Secondary Arrangements

We also asked questions about a second regular child care arrangement for each of the four youngest children, as the literature on child care in the United States has emphasized the cobbled together arrangements many parents use to provide sufficient care for their children while they are at work. At Action Industries, 10.0 percent of children enrolled in the on-site center have regular secondary child care arrangements, compared with 22.4 percent of the non-

Table 4. Primary care arrangement for families with more than one preschool child

	Action on-site users	Action non-on-site users	Bell on-site users	Bell non-on-site users	Central Products all parents	Central Products center users ^a	National all mothers	National center users ^a
% using same arrangement for all preschoolers ^b	87.50	95.00	100.00	100.00	95.00	100.00	85.06	68.93
% using center for older preschool children but not for younger	0.00	5.00	0.00	0.00	0.00	0.00	8.05	22.82
<i>n</i>	16	20	3	4	40	1	609	206

^a Defined as having any preschooler enrolled in center-based care.

^b Same arrangement is defined as arrangements with the same detailed arrangement codes.

on-site center users. Of the secondary child care arrangements, none of those of on-site center users involve a money transfer, while 14.3 percent of those of non-on-site users are paid arrangements, ranging from \$10 to \$50 per week. Though the number of cases is small, the difference suggests that the on-site center reduces the need to maintain two sets of arrangements.

At Bell Manufacturing and Central Products, we expanded the data collection on secondary care and added a section on Saturday care (Table 5). Comparing the on-site center users and non-users at Bell, we find the same pattern as at Action Industries: on-site center users are less likely to report maintaining secondary arrangements. Twelve percent of the on-site center children in the Bell sample have secondary arrangements compared with 47.4 percent of other children. None of the secondary arrangements of on-site center users involve a money transfer, while 29.4 percent do for others who report paying from \$35 to \$110 per week. Secondary arrangements used by Bell workers rely heavily on the other parent or spouse, grandparents, and other relatives. Thus, on-site center care seems to reduce the need for secondary arrangements, particularly paid arrangements. This is beneficial to parents in that it reduces transaction costs and, in some cases, monetary costs. There is also limited evidence from Bell employees that they are more satisfied with their primary arrangements than their secondary arrangements. This suggests that reducing the need for secondary care increases overall satisfaction with child care arrangements.

Without an on-site center, more than one-third of Central Products children have a second regular child care arrangement. This is a much larger percentage than at Action Industries or Bell Manufacturing (though is smaller than for the non-on-site users at Bell). Central children who are in center-based care for their primary arrangement are just as likely as the full Central sample to have a regular secondary arrangement. This suggests that the on-site centers may be better than other centers at avoiding the need for a secondary arrangement. Of the secondary arrangements at Central, 85.7 percent are unpaid. Only eight children of Central employees have paid secondary arrangements, ranging from \$10 to \$60 per week. Only four children have paid arrangements for both primary and secondary care. Secondary arrangements used by Central employees are mainly relative-based, with 6.9 percent of the secondary care provided by the employee's spouse, 27.6 percent provided by grandparents and 46.6 percent provided by another relative. Of the seven Central children in center care for the primary arrangement, four use grandparents and three use other relatives for the secondary arrangement. The median score on the child care satisfaction question is 2 for secondary arrangements, however 48 percent of the responses are at 1, the highest level of satisfaction. Central parents are slightly happier with their secondary than

Table 5. Secondary and Saturday arrangements for children of Bell Manufacturing and Central Products employees

	Bell on-site users	Bell non-on-site users	Central Products
% with regular secondary care	11.54	47.36	38.24
Type of secondary care:			
% center	0.00	0.00	5.17
% spouse	33.33	27.78	6.89
% grandparent	33.33	38.89	27.59
% relative	33.33	16.67	46.55
% non-relative	0.00	0.00	10.34
% sibling	0.00	11.11	3.45
% in-school	0.00	5.56	0.00
Level of satisfaction	Median: 1 Mean: 1.0 (0.00)	Median: 2 Mean: 2.4 (1.7)	Median: 2 Mean: 2.2 (1.4)
% pay for secondary care	0.00	29.40	14.28
% with parents who sometimes work on Saturday	65.38	66.67	79.88
Type of Saturday care:			
% center	29.41	7.69	0.00
% spouse	41.18	61.54	61.07
% grandparent	11.76	15.38	23.66
% relative	17.65	11.54	8.40
% non-relative	0.00	3.84	3.82
% sibling	0.00	0.00	3.05
Number of children	26	39	169

Standard deviations are in parentheses for level of satisfaction.

their primary arrangement, as the mean difference between the rankings is positive, but quite small.

5. Saturday Arrangements

Table 5 also contains information about the child care arrangements used on Saturday.¹² About one-third of the children in the Bell Manufacturing sample have parents who report that they never work on Saturday. Of the remaining parents, the vast majority use their spouse or the child's other parent for Saturday care when at work. Seven children use Bell's on-site center for

Saturday care, including two who do not use it during the week. Only one child is cared for by a non-relative on Saturday, other than those using the on-site center. The majority of children cared for at the center at Bell during the week are cared for by their parents or relatives on Saturdays.¹³

At Central Products, 20.1 percent of the children have employee parents who report never working on Saturday. For those whose parents do work on Saturday, the majority are cared for by their other parent or their parent's spouse. The rest use a variety of care options, mostly grandparents and other relatives. Older children are also used by a few families. Only five families report using non-relatives on Saturdays. The Saturday arrangements for children in center-based care during the week are similar to those for the full sample of Central children. Other parents, grandparents and other relatives account for all of the care of those center users whose parents sometimes work on Saturday. Saturday arrangements for center users exactly match the secondary arrangements for those children with secondary arrangements. This is not the case for Bell employees because some are able to use the on-site center for Saturday care.

In sum, comparing the employees in our three firms, on-site child care centers seem to reduce the need for secondary arrangements. When secondary arrangements are used they are almost always unpaid and with relatives. Where the on-site center is available on Saturday it is used, but not by a majority of parents. Saturday arrangements are more common than secondary arrangements and largely consist of the child's other parent or other relatives. It seems that the occasional nature of the need, and the fact that other relatives who are not available on a regular basis are available for Saturday care, creates a distinction between Saturday care and regular care needs. In addition, most "market" care arrangements – center-based care and formal home daycare – are not typically available to parents on Saturdays.

6. Comparison of Employee Characteristics

Tables 6a and 6b compare employee users of the on-site center with other employees who have young children and those with no children under the age of six for Action Industries and Bell Manufacturing, respectively. Table 6c compares the sample of Central Products employees with and without young children.

At Action Industries, users of the on-site child care center have fewer children, a higher mean level of education, and are more likely to be married than non-users. This is in part the result of the ethnic difference between the two groups (as already mentioned, Action has a sizeable number of Hmong workers). Of the employees with children under age six who do not use the

Table 6a. Characteristics of Action Industries employees by care status of children less than age six^a

	Employees with children who are on-site center users	Employees with children who are not on-site center users	Employees without children less than 6
Mean number of children less than 6	1.30 (0.51)	1.43 (0.65)	NA ^b
Mean number of children 6 to 12	0.32 (0.55)	0.83 (1.02)	0.26 (0.56)
Mean hours worked per week	40.89 (4.31)	40.29 (3.32)	40.45 (3.36)
Mean level of education	13.12 (2.05)	11.09 (2.96)	12.06 (2.63)
Category of worker:			
% hourly office workers	14.00	0.00	14.60
% hourly production workers	14.00	43.10	34.07
% piece workers	52.00	53.45	33.19
% salaried workers	14.00	1.72	12.83
% child care workers	6.00	1.72	5.31
Time of day employed:			
% 1st shift	94.00	50.00	67.26
% 2nd shift	0.00	31.03	9.29
% 3rd shift	6.00	18.97	23.45
Marital status:			
% married	86.00	77.59	65.32
% widowed	0.00	0.00	2.25
% divorced	4.00	6.90	11.71
% separated	2.00	3.45	3.60
% never married	8.00	12.07	17.12
Mean age	28.96 (4.89)	27.52 (4.19)	39.37 (11.43)
% female	86.00	75.86	80.09
Race/ethnicity:			
% White	92.31	57.89	88.34
% African American	3.85	3.51	4.93
% Hmong	0.00	38.60	4.93
% other	3.85	0.00	1.79
Mean years at Action Industries	4.50 (4.21)	2.34 (2.39)	6.66 (6.40)
Mean years lived in area	20.65 (11.03)	15.10 (12.49)	28.81 (16.68)
Miles from home to work	10.51 (6.90)	13.17 (8.44)	11.10 (8.35)
Number of employees	52	57	223

Standard deviations are in parentheses.

^aTwo employees have grandchildren at the center. The characteristics of these two grandparent employees are excluded from the users column and included in the children less than six column.

^bNA = not applicable.

Table 6b. Characteristics of Bell Manufacturing employees by care status of children less than age six^a

	Employees with children who are on-site center users	Employees with children who are not on-site center users	Employees without children less than 6
Mean number of children less than 6	1.19 (0.51)	1.09 (0.30)	NA ^b
Mean number of children 6 to 12	0.67 (0.58)	0.28 (1.58)	0.24 (0.63)
Mean hours worked per week	42.33 (2.99)	41.91 (3.00)	43.22 (5.06)
Mean level of education	12.33 (1.28)	12.00 (1.59)	12.38 (1.64)
Category of worker:			
% hourly office workers	9.52	9.38	10.43
% hourly production workers	28.57	37.50	38.65
% piece workers	47.62	46.88	37.42
% salaried workers	0.00	3.13	8.00
% child care workers	9.52	0.00	4.29
Time of day employed:			
% 1st shift	95.24	75.00	85.28
% 2nd shift	0.00	25.00	9.20
% 3rd shift	4.76	0.00	5.52
Marital status:			
% married	76.19	71.88	57.67
% widowed	0.00	0.00	6.13
% divorced	9.52	12.50	11.04
% separated	9.52	0.00	1.84
% never married	4.76	15.62	23.31
Mean age	30.55 (6.03)	29.03 (5.63)	40.40 (13.28)
% female	85.71	65.62	75.32
Race/ethnicity:			
% White	65.22	76.67	83.33
% African American	34.78	10.00	12.96
% Hispanic	0.00	13.33	3.70
Mean years at Bell Manufacturing	4.86 (4.60)	1.74 (2.65)	8.78 (11.74)
Mean years lived in area	23.05 (12.86)	15.31 (10.96)	29.81 (18.13)
Miles from home to work	9.83 (9.13)	9.31 (6.45)	8.62 (7.93)
Number of employees	23	30	162

Standard deviations are in parentheses.

^a Three of the children enrolled at the center are grandchildren or the employee's sibling's child. Those employees are included in this table as employees having no children less than six.

^b NA = not applicable.

Table 6c. Characteristics of Central Products employees with and without children less than age six

	Employees with children less than 6	Employees without children less than 6
Mean number of children less than 6	1.52 (0.77)	NA ^a
Mean number of children 6 to 12	0.78 (1.13)	0.28 (0.78)
Mean hours worked per week	40.06 (4.41)	40.54 (4.13)
Mean level of education	10.58 (3.85)	11.13 (2.89)
Category of worker:		
% hourly office workers	6.48	14.09
% hourly production workers	23.15	42.62
% piece workers	67.59	38.26
% salaried workers	2.78	5.03
Time of day employed:		
% 1st shift	50.00	62.42
% 2nd shift	31.48	20.13
% 3rd shift	18.52	17.45
Marital status:		
% married	75.93	60.40
% widowed	0.93	3.36
% divorced	8.33	12.42
% separated	5.56	3.69
% never married	9.26	20.13
Mean age	27.46 (6.36)	40.47 (13.62)
% female	73.83	66.67
Race/ethnicity:		
% White	43.52	79.53
% African American	5.56	5.70
% Hmong	49.07	11.41
% other	1.85	3.35
Mean years at Central Products	2.17 (3.22)	7.16 (9.70)
Mean years lived in area	11.89 (14.93)	26.62 (18.16)
Miles from home to work	13.21 (10.35)	10.85 (8.92)
Number of employees	108	298

Standard deviations are in parentheses.

^a NA = not applicable.

on-site center, 38.6 percent are Hmong. Users of the on-site center are overwhelmingly White. However, the difference in the mean education level also results from the fact that all 11 college graduates with young children use the on-site center at Action. Users of the on-site center are overwhelmingly first-shift workers and more are female than in the non-user sample. On-site center users are also much less likely to be hourly production workers than are non-users, being more heavily concentrated among office workers, salaried workers and child care workers.

A substantial difference appears between employees with children enrolled in the child care center and non-center users in the number of years they have worked at Action Industries, 4.5 versus 2.3 years, on average. This may be evidence that the center reduces turnover of parents of young children as advocates of employer-sponsored child care claim. On the other hand, given that there is a waiting list for child care center slots, Action employees do not have instant access to the child care center.¹⁴ In looking at the employees with children on the waiting list, they have been at Action less time than employees with children at the center. The mean job tenure of the parents of children on the waiting list is 2.2 years which is much more similar to the non-center user group than the user sample. Children on the waiting list are also younger than the average child at the center. The mean age of children on the waiting list is 1.3 years compared with 2.3 for the mean age of children at the Action center and 2.7 for the full sample of non-users (see Table 2). Their recent birth may be the explanation of their waiting list status rather than their parent's job tenure.¹⁵ Another possible explanation for the difference in job tenure is that job tenure is related to shift. The child care center is overwhelmingly used by first-shift workers. If first-shift jobs, when they become open, are filled by second-shift workers, then first-shift workers will have longer job tenures at the firm than second-shift workers, on average. Not all second-shift workers want to work first shift. Many of the Hmong women prefer the second shift so they can be with their young children during the day, but others may be working second shift to queue for first-shift positions. Third shift appears to be quite different. The only group that has a substantial number of third-shift workers is the sample of workers without young children.

At Bell Manufacturing there are no Hmong workers. The ethnic composition of the Bell sample is more heavily African American and slightly less White than at Action Industries. None of the Hispanic workers with young children at Bell use the on-site center, but African American workers with young children do (Table 6b). One-third of the employees with children at the on-site center are African American; this percentage is much greater than their representation among employees as a whole. In part, this is due to the fact that 30 percent of the African American employees have young children

compared with only 23 percent of the non-African American employees. In addition, two-thirds of African American employees with children less than age six have a child enrolled in the on-site center compared to 34 percent of the non-African Americans.

As at Action Industries, users of the on-site center at Bell Manufacturing are more likely to be women than the non-user group and are also almost exclusively first shift workers. They are more likely to be married or separated and, again, are less likely to be hourly production workers. There is also a substantial difference in the mean years of job tenure between the users and non-users of the center at Bell, as at Action. Users have an average of 4.9 years on the job compared to 1.7 years for non-users. Again, this could be partly a result of reduced turnover among workers who use the on-site center and partly a result of having to wait for a slot to open at the Center.¹⁶

Comparing the samples with and without young children we find that employees without young children are, on average, older than those with young children.¹⁷ They work more hours and are more likely to work third shift. They have substantially longer job tenure than employees with young children. Many have been with their company for more than ten years. Workers without young children are much less likely to be piece rate workers at all three firms. This is probably due to their longer job tenure as some may have moved into supervisory positions. Workers without young children are more likely to be widowed or never married, but many are married and have older children. Eighty percent of Action Industries workers overall have had children, compared with 32 percent who currently have young children. The comparable numbers at Bell Manufacturing are 82 and 25 percent, and at Central Products, 75 and 27 percent.

At Central Products, the lower percentage of employees who have ever had children is probably the result of a group of ten Vietnamese workers who are all childless. The Vietnamese workers (all men) work together. They follow a completely different coping strategy than the Hmong, delaying marriage until near forty and living in family groups with other grown siblings and sometimes their parents. Only one is recently married and he does not yet have children. In contrast, the Hmong marry very young and have many children very quickly. The Hmong, for the most part, do not live with siblings, though occasionally older parents live with the young family.¹⁸ As already discussed, Hmong parents deal with the need to care for their young children and their need for money income by each parent working full time but working different shifts.

7. Determinants of On-Site Center Use

The variables reported in Tables 6a, 6b, and 6c represent, in part, our expectations of the factors that might influence the choice to enroll one's child in an on-site center. Because many of these variables are related to one another, we estimate a multivariate model to predict on-site center use for families with young children from the two firms with on-site centers.¹⁹ Sample sizes are small, thus we interpret the results with caution. Sample size is especially a concern in the Bell Manufacturing sample, making these results suggestive at best.²⁰

Characteristics of the employee parents included in the analysis are the number of years with the company, hourly production worker or piece worker (salaried or hourly office worker is the omitted category²¹), works first shift, hours worked per week, miles the employee lives from the factory, race/ethnicity dummies, relative is available for child care, the proportion of life the employee has lived in the area, years of schooling, age, gender, and marital status (currently married is the omitted category). Our expectation is that first-shift workers are more likely to use the on-site center because the center's hours of operation more closely match that schedule.²² The number of years a worker has been with the company is expected to have a positive effect on the probability of center use, as discussed above. We expect hourly production workers and piece workers to be less likely to enroll their children because they tend to have lower incomes than salaried and office workers.²³ We expect that the greater the distance from home, the less likely the employee uses the on-site center because it would mean a longer commute for the child.

Whether the employee indicated that a relative is available for child care and the proportion of years the employee has lived in the area are both expected to lower the probability of center enrollment because they both increase the probability of alternative care opportunities. Years of schooling is included to test whether workers with higher education prefer center-based care. Education may also pick up effects of income. At Action Industries this variable is entered as a set of thresholds because the descriptive analysis suggests that college education is strongly correlated with the use of the on-site center. At Bell Manufacturing there is only one college graduate with young children in the sample, so we enter education as a continuous variable. We have no prior expectation about the age of the worker but we want to control for age in terms of the effect of job tenure on the dependent variable. We expect the probability of enrollment to be lower for male employees because there is a greater potential for a stay-at-home spouse. Controlling for gender, divorced and never-married employees may be less likely to enroll their child at the center because family income is potentially lower than for

married employees. On the other hand, married employees have a spouse and potentially two sets of parents and relatives who are possible child care providers.²⁴ The net result of marital status is, thus, theoretically ambiguous.

We also include three characteristics specific to the child: the child's age, the presence of preschool siblings, and the presence of primary school-aged siblings. The inclusion of the child's age allows us to test the hypothesis that parents prefer non-center-based care for younger children. The presence of preschool siblings is included to test the hypothesis that greater child care cost encourages parents to seek forms of child care which are less expensive than the on-site center. The presence of primary school-aged siblings may also increase the total financial burden of child care, perhaps leading to a lower probability of using center-based care.

The dependent variable for Action Industries and Bell Manufacturing is whether the child is enrolled at the on-site center. The analysis sample is limited to those children who are not categorized as "in school" because eligibility for "in school" status is institutional and not within the parents' choice set. The sample size for Action is 141 children. Of these, 41 are dropped because they are Hmong and that characteristic, as previously discussed, is a perfect predictor of non-center use. At Bell, the sample includes 59 children. Of these, six are dropped because they are Hispanic and that characteristic is also a perfect predictor of non-on-site center arrangements.

Table 7, column 1 shows the results of the probit estimation for the non-Hmong children of Action Industries workers, while column 2 shows the results for the non-Hispanic children of Bell Manufacturing workers. We see that, despite our small samples, many variables are statistically significant. Considering first the variables related to the child's characteristics, the age of the child does not significantly affect enrollment in the on-site center at either firm. This provides further evidence that parents do not prefer relative and home-based care for younger children. Having a preschool sibling has no effect on the enrollment of Action children in the on-site center. For Bell, the effect is negative at a p -value of 0.11. The negative effect suggests that the added cost of additional children in need of child care lowers the probability of enrolling the child at the on-site center. The final child-based variable, having a primary school-aged sibling, has a significant effect in both firms, but of the opposite sign. At Action, the presence of a primary school-aged sibling reduces the probability of using the on-site center, while at Bell, the coefficient is positive. The negative effect is consistent with the greater cost of child care hypothesis. The positive effect at Bell is unexpected and difficult to explain.

In terms of the employee characteristics, job tenure is a significant positive predictor of on-site center use at both firms. This indicates that the availab-

Table 7. Determinants of the use of on-site center care or any center-based care for children less than age six

Sample: (dependent variable)	Action Industries (on-site center)	Bell Manufacturing (on-site center)	Central Products (any center)	Combined sample (any center)
Child's age	-0.018 (0.118)	0.082 (0.341)	-1.121 (0.816)	0.052 (0.073)
Siblings < 6	0.027 (0.396)	-4.883* (3.078)	-6.345*** (3.002)	0.014 (0.251)
Siblings 6-12	-0.807** (0.426)	9.005*** (3.543)	-4.376*** (2.044)	0.081 (0.227)
Age of employee	-0.028 (0.036)	0.071 (0.102)	-0.160* (0.102)	-0.013 (0.021)
Male	-0.471 (0.690)	5.524** (2.966)	-3.321 (2.346)	-0.591** (0.332)
African American	NA ^a (2.733)	2.108 (1.576)	1.897 (0.418)	1.049***
Years of school	NA (0.475)	0.922** (0.341)	-0.122 (0.079)	0.138**
Some high school	-5.278** (3.111)	NA	NA	NA
High school	-4.716* (3.141)	NA	NA	NA
Some college	-5.179** (3.119)	NA	NA	NA
Divorced	-0.858 (0.652)	5.401** (2.984)	4.967** (2.564)	0.170 (0.307)
Never married	-1.226*** (0.611)	0.885 (1.722)	5.184* (3.556)	-0.179 (0.321)
Relatives available	-0.350 (0.424)	-4.993*** (2.431)	-3.249*** (1.449)	-0.781*** (0.215)
Time in area	-0.836* (0.570)	12.731*** (4.946)	-2.748 (2.253)	0.041 (0.258)
Miles to work	-0.044** (0.025)	-0.059 (0.161)	-0.219** (0.115)	-0.022** (0.013)
First shift	0.390 (0.446)	4.110 (2.966)	6.343** (3.347)	0.705*** (0.292)
Job tenure	0.101** (0.061)	0.833*** (0.383)	-0.562* (0.385)	0.020 (0.033)
Hourly production	-2.060*** (0.826)	-2.138 (2.579)	3.004 (2.694)	-0.515 (0.366)
Piece worker	-1.220** (0.659)	-0.646 (1.655)	-1.515 (1.617)	-0.233 (0.328)
Hours per week	-0.013 (0.073)	-0.067 (0.184)	0.120 (0.099)	0.010 (0.282)

Table 7. Continued

Sample: (dependent variable)	Action Industries (on-site center)	Bell Manufacturing (on-site center)	Central Products (any center)	Combined sample (any center)
Bell Manufacturing	NA	NA	NA	-0.338 (0.287)
Central Products	NA	NA	NA	-1.092*** (0.269)
<i>n</i>	100	53	64	222
Log-likelihood	-40.96	-11.12	-13.11	-99.57
Chi-squared	53.46***	50.76***	49.84***	105.57***

Probit coefficients with standard errors in parentheses. *** $p < 5\%$; ** $p < 10\%$; * $p < 15\%$.

^a NA = not applicable.

ility of this benefit lowers attrition of users and/or that the limited number of slots available in the center tends to favor those who have worked at the firm longer.²⁵ Controlling for job tenure, being a first-shift worker is not a significant predictor of center use for workers at either firm. This is somewhat surprising given the time of day on-site care is provided.

Other employee variables that are significant predictors of enrollment in the Action Industries on-site center are being an hourly production worker or a piece worker, distance from home to the factory, the proportion of years the parent has lived in the area (p -value 0.142), not having graduated from high school, having graduated from high school but no college (p -value 0.133), having some college (with a four-year college degree as the omitted category), and being never married. Each of these variables, as expected, reduces the probability that the employee's child is enrolled in the on-site center. Notably not significant at Action is the availability of relatives, suggesting that the on-site center may be preferable to this low-cost option.

At Bell Manufacturing, parental education also has a positive effect on the probability of using the on-site center. However, unlike at Action Industries, the proportion of years lived in the area, being male, and being divorced increase the probability of enrolling one's child in the on-site center, while having a relative available reduces the probability of using the on-site center. The last two results are consistent with expectations but the first two are not.

8. Determinants of Any Center Use

At Central Products, where there is no on-site center, we estimated a model of the determinants of the choice to enroll a child in other center-based care. Based on the descriptive analysis above, we expect the determinants of other

center-based care to be different. It is our hypothesis that the convenience of the on-site center makes it a very different choice from center care in general. Table 7, column 3 shows the determinants of enrolling a preschool child in center care for the children of Central employees. Again, being Hmong is a perfect predictor of using a non-center arrangement and the Hmong children (98 cases) are eliminated from the analysis. The explanatory variables are the same as in column 2.²⁶

In terms of the children's characteristics, the age of the child, again, is not a significant determinant of center care. Having either a preschool-aged sibling or a primary school-aged sibling reduces the probability of using center-based care. This may be cost related as expected or, in the case of the preschool-aged sibling, it may be because, as we have seen, parents seem to prefer having both their children in the same arrangement and infant center-based care outside of the on-site centers may be difficult to find in the area.

In terms of employee characteristics, first shift workers are more likely to use center care, as expected, because of the time of day that it is available. Job tenure has a significant (p -value 0.144) negative impact on the use of center care, a result that is important in its difference from the positive result at the other two firms. Neither of the arguments in support of a positive effect of job tenure – reduced turnover and waiting time – are applicable to other center care.²⁷ The other variables that are significant determinants of center-based care for the children of Central Products employees are the availability of a relative which has the expected negative effect on center use, miles from home to work which is negatively related to center care, and whether the employee is divorced or never married (p -value 0.145), both of which are positive predictors of center care.

For both Bell Manufacturing and Central Products, the large positive effect of not being married seems to be related to the availability of state provided child care subsidies. At the time of the surveys, these subsidies which target low-income families were available in only some counties. These subsidies are not exclusively for center-based care, but they seem heavily weighted toward such care. Likewise, they are not limited to unmarried mothers but, again, in our data they are heavily weighted toward unmarried mothers. We experimented with replacing the marital status variables with a variable indicating that the family receives these subsidies. That variable is significantly positive at Central and Bell, and significantly negative at Action Industries, with all other results unchanged. These results are consistent with those for the marital status variables. Twelve children at the Bell center receive the subsidies compared with only one at Action. This is largely attributable to location, as Action draws a greater percentage of its workforce from a county that was not covered by the subsidy program. Taken together, these results

suggest that there are negative effects of being never married or divorced on center use, such as lower income, but that at Bell and Central these effects are offset by receipt of state provided child care subsidies.

The final column of Table 7 reports the model results for the determinants of using any center-based care arrangement for the entire sample. We have combined the data from the three firms to gain the advantage of larger numbers and to look at the effect of working for an employer with an on-site center. The dependent variable, the use of any center-based care arrangement, is the same variable that is used for Central Products only. Because all the workers in these three firms live in the same general area, they face the same price for “market” child care. The actual price of child care each family faces differs in three ways: by the availability of a relative who is willing to care for their child, by the availability of a subsidized on-site child care center and, in some cases, by whether they live in a county included in the child care subsidy program. The model in column 4 controls for the first two through the inclusion of the relatives variable and the firm dummies, and for the third imperfectly through the marital status dummies.

Not surprisingly, given the large differentials in Table 1 in the use of center care across firms, the multivariate results in Table 7 show that non-Hmong workers at Central Products are significantly less likely to use center-based arrangements.²⁸ The variable indicating employment at Bell Manufacturing is not significant, implying that workers at Action Industries and Bell are equally likely to use center care, all else held constant. Those families with relatives available are less likely to use center-based arrangements. Higher education, whether entered with thresholds or continuously, is positively related to center use.²⁹ The other significant variables in the full sample are whether the parent works first shift, African American, miles from home to work, and gender of the employee. First-shift workers, African Americans and women employees are more likely to use center-based care, as are those workers who live close to their place of employment. Interesting for their non-significance are job tenure, whether the worker is a production worker, percent of years in the area, marital status, child’s age and the presence of other siblings.

A comparison of columns 1, 2, 3, and 4 provides further evidence that on-site center care is a different option from other types of center care, though the evidence is mixed for some variables. Action Industries’ on-site center is more likely to be used by families even with more than one preschooler and even with other relatives available. This is not the case at Bell Manufacturing. At both firms with on-site centers, job tenure is positively related to the use of the center. In contrast, at Central Products, job tenure is negatively related to use of center-based care. Higher education is positively related to on-site

center use at both firms with on-site centers, but is unrelated to center-based care among Central employees. Finally, employees at Central are less likely to use center-based care even after controlling for a host of other characteristics.

9. Discussion

Many researchers have considered patterns of child care arrangements used by parents in the United States. One of the issues of concern has been to what extent the pattern we observe represents preferences versus constraints due to low income, high child care prices and/or non-availability of alternatives. None of these studies have focused on employer-based child care. The analysis presented here indicates that a substantial number of parents will choose on-site care when it is available. This may be, in part, because the on-site center is somewhat less expensive than other center-based care. However, the average weekly expenditure for the on-site centers are comparable to that for paid options in general. In addition, some of the children enrolled in the on-site centers could have been in unpaid relative care. In the multivariate analysis, we control for the availability of a relative. Having a relative available does not affect the choices of Action Industries parents, but it does reduce the probability of on-site center care for Bell Manufacturing workers, and the probability of center-based care for Central Products employees.

Overall, and especially at Action Industries, cost does not seem to be an important inhibiting factor to enrolling children in the on-site center. Furthermore, the existence of waiting lists for the on-site center at both Action and Bell supports this argument in that, at the current price, slots demanded exceeds slots supplied. The location, convenience, and reliability of the arrangement are candidates as motivating factors for on-site center use that outweigh concerns about cost. This is in keeping with Sonenstein (1991) who found in a study of parental attitudes that the best predictor of a mother's satisfaction with her child care arrangement was her rating of the convenience of the hours and the location and the reliability of the arrangement.

At the two firms with on-site centers, job tenure is positively related to the use of the center. At Central Products, it is negatively related to the use of a center-based arrangement. One explanation for this finding is that workers who use the on-site center are less likely to quit, suggesting reverse causality. Alternatively, some queuing may be taking place within the firm for access to the on-site center slots.

The data also provide evidence about secondary and Saturday arrangements, information not typically available in child care research. Users of the on-site centers are less likely to have secondary arrangements. When secondary arrangements are used they are almost always unpaid and with relatives.

Where the on-site center is available on Saturday it is used, but not by a majority of parents. Saturday arrangements are more common than secondary arrangements and largely consist of the child's other parent or other relatives. Thus, the on-site centers appear to provide more reliable primary care, relieving parental concern about child care breakdown, and also providing a solution for Saturday care needs for some workers.

Finally, we have seen that families with two or more preschool children tend to use the same arrangement for all children and the child's age is not a significant characteristic in the prediction of the use of center-based or on-site center care. This is true at Central Products as well, but in studies based on national samples, children's age is often a significant predictor of center care. This suggests that the national results may be largely driven by institutional constraints rather than by parental preferences, or that the on-site location and reliability overcome any parental preferences not to use center-based care for very young children.

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Notes

1. See, for example, Connelly & Kimmel (2000), Han (1999), Blau & Hagy (1998), Kimmel (1998), Johansen et al. (1996), Brayfield & Hofferth (1995), Kimmel (1995), Ribar (1995), Folk & Beller (1993), Hofferth & Wissoker (1992), Ribar (1992), Lehrer (1989), Mason & Kuhlthau (1989), Blau & Robins (1988), Leibowitz et al. (1988), Lehrer (1983), Duncan & Hill (1977). Lehrer et al. (1991) is one of few examples that focus explicitly on employer-sponsored child care.
2. In order to preserve confidentiality, we use fictitious names for the three firms.
3. The national data come from the Survey of Income and Program Participation as reported in United States Census Bureau (1998) and are based on all children under age five with full-time employed mothers during the fall of 1994. The remainder of the tables are not limited to women employees and also use an age cut-off of less than six for preschool children, as this is more appropriate for this location. Comparable statistics which include children less than six of both male and female employees from the three firms are quite similar to those in Table 1 as the workforce is overwhelmingly female.

4. For detailed discussion of splitting shifts and child care by fathers see, for example, Casper and O'Connell (1998), Brayfield (1995) and Presser (1995, 1989 and 1988).
5. In fact, Table 3, discussed more fully below, shows that more than three-quarters of the workers who have young children live within 60 minutes of their parents or parents-in-law and the majority say that their parents or parents-in-law would be available to act as child care providers.
6. Action Industries also has a substantial number of Hmong workers, none of whom have children enrolled at a daycare center. If the sample is limited to the children of non-Hmong workers at Action Industries, 83.5 percent are enrolled in a daycare center, 80.2 percent of whom are enrolled in the on-site center. Bell Manufacturing does not have any Hmong workers.
7. If we just consider the non-Hmong Action Industries children, only five percent are being cared for by a grandparent. None are cared for by the mother's spouse or the child's father. The remaining children are cared for by a non-relative in their home.
8. None of the grandparents who are providing regular care for the children in the sample receive payment. A few parents report that they would expect to pay the children's grandparents for child care if that option were used. Still, most of those reporting that grandparents would be available for care report that they would not expect to pay the grandparents for their time.
9. Center users are defined here as having any child enrolled in a center-based child care arrangement.
10. As noted previously, both Action and Bell centers offer modest discounts for the second child enrolled in the center which could possibly counter-balance a weak preference for non-center care for very young children.
11. Action Industries was the first firm sampled and we made use of knowledge gained from that experience at the other two firms. For example, the addition of questions about satisfaction with child care arrangements was prompted by comments made by Action Industries workers.
12. The addition of questions about Saturday care was prompted by the Action Industries parents' complaints to our interviewers that their on-site center was not open on Saturday and that they were expected to work mandatory overtime on Saturday when needed.
13. Bell has recently closed their daycare center on Saturdays citing sporadic use as the problem. Parents often signed up for Saturday hours and then found a relative to care for the child. Clearly, child care needs on Saturday differ from those of the rest of the week.
14. The waiting list is drawn from on a first-come first-serve basis. The first person on the list with a child the age of the opening is offered the slot. Employees may put their names on the list while they (or their spouse) are pregnant. New employees with young children may put their names on the list as soon as they begin working.
15. In the Action Industries sample, 20 employees are on the waiting list. Ten employees have a child less than age six and comprise the group of parents on the waiting list discussed earlier. Of the remaining 10, six are grandparents (not living with the children) and four are soon-to-be parents of a new baby. The mean job tenure of the grandparents is 9.2 years, of the parents is 2.2 years, and of the soon-to-be parents is 1.2 years.
16. The job tenure of those on the waiting list at Bell is quite low, two-thirds of a year.
17. This might seem obvious to some readers but actually it could have gone either way. The employees without young children could have been pre-children or post-young children. While there are undoubtedly some of both, the older mean age, the large percentage in

categories other than never married, and the longer job tenure of the sample without young children indicates that most of the sample is post-young child.

18. It may be less common for Hmong adults than for Vietnamese adults to have parents in the area as many of the Hmong families initially emigrated to California and then the younger generation moved to our study area without their parents.
19. The sampling unit is the child, and in a few cases more than one child from a family is included as a separate observation. In theory, this can lead to correlation among the error terms across observations. However, the number of such cases is small enough that this would not have an appreciable effect on the results.
20. Given the small sample sizes, we use a 15 percent level of significance (two-tailed tests) in the multivariate analysis. In the text, we note whenever the significance level lies between the more conventional 10 percent and 15 percent.
21. The omitted category at Action Industries and Bell Manufacturing for the type of worker also includes the on-site child care center workers.
22. At Action Industries, all employees work flextime so that the traditional concept of shifts is less relevant. We have coded a broad band of morning start hours as first shift workers for this firm.
23. We do not have data on individual or family income. It became clear early in our work at Action Industries that this question is too sensitive to ask of many of the workers and the group dynamics of surveying on site required that we drop the question.
24. Although we have controlled for having a relative available for child care, other relatives and one's spouse serve as backup providers when the child is sick or when the primary arrangement fails. Thus, we might still expect some residual effect of marital status on choice of child care to come from the presence of a spouse and spouse's family, even having controlled for availability of relatives for regular care.
25. It is also possible that at least part of this effect is spurious in that some factors that lead to a longer job tenure, such as being responsible, are also likely to cause a parent to prioritize reliable child care.
26. Again, the number of college graduates in the Central Products sample is much too small to allow us to use thresholds, given that the evidence from Action Industries indicates that the important threshold is college graduates.
27. Because the positive effect of job tenure at Action Industries and Bell Manufacturing is likely to reflect, in part, reduced turnover, we were concerned about introducing endogeneity bias by including this explanatory variable. The samples are too small to address this issue using statistical techniques, however, we re-estimated each model omitting the job tenure variable in order to check for sensitivity of the other results. The estimates for Action Industries and Central Products are quite robust to this change in specification, with the results for Bell Manufacturing less so. This is not surprising given the even smaller sample size at Bell.
28. Once again, no Hmong child in the sample is cared for in a center and, thus, the Hmong are dropped from the analysis.
29. When entered as thresholds as for Action Industries, it is those employees who did not complete high school who are significantly less likely to use center-based arrangements in the combined sample.

References

- Blau, D. & Robins, P. (1988), Child care costs and family labor supply, *Review of Economics and Statistics* 70(3): 374–381.
- Blau, D. & Hagy, A. (1998), The demand for quality in child care centers, *Journal of Political Economy* 106(1): 104–146.
- Brayfield, A. (1995), Juggling jobs and kids: The impact of employment schedules on fathers' caring for children, *Journal of Marriage and the Family* 57: 321–332.
- Brayfield, A. & Hofferth, S.L. (1995), Balancing the family budget: Differences in child care expenditures by race/ethnicity, economic status, and family structure, *Social Science Quarterly* 76(1): 158–177.
- Casper, L. M. & O'Connell, M. (1998), Work, income, the economy, and married fathers as child-care providers, *Demography* 35(2): 243–250.
- Chaplin, D., Robins, P., Hofferth, S., Wissoker, D., & Fronstin, P. (1996), The price elasticity of child care demand: A sensitivity analysis, unpublished manuscript, Urban Institute.
- Connelly, R. & Kimmel, J. (2000), Marital status and full-time/part-time work status in child care choices: Changing the rules of the game, W. E. Upjohn Institute Working Paper 00099-058.
- Duncan, G. & Hill, R.C. (1977), The child care mode choice of working mothers, pp. 379–388 in G. Duncan and J.N. Morgan (eds.), *Five Thousand American Families – Patterns of Economic Progress*, Ann Arbor, Michigan: Survey Research Center in the Institute of Social Research of the University of Michigan.
- Folk, K.F. & Beller, A. (1993), Part-time work and child care choices for mothers of preschool children, *Journal of Marriage and the Family* 55: 146–157.
- Han, W.-J. (1999), Child care choices among employed mothers with preschool children, working paper, Columbia University School of Social Work.
- Hofferth, S. & Wissoker, D. (1992), 'Price, quality and income in child care choices', *Journal of Human Resources* 27(1): 70–111.
- Johansen, A., Leibowitz, A., & Waite, L. (1996), The importance of child-care characteristics to choice of care, *Journal of Marriage and the Family* 58(3): 759–772.
- Kimmel, J. (1995), The effectiveness of child care subsidies in encouraging the welfare to work transition of low income single mothers, *American Economic Review Papers and Proceedings* 85(2): 271–275.
- Kimmel, J. (1998), Child care costs as a barrier to employment for single and married mothers, *Review of Economics and Statistics* 80(2): 287–299.
- Lehrer, E. (1983), Determinants of child care mode choices: An economic perspective, *Social Science Research* 12: 69–80.
- Lehrer, E. (1989), Preschoolers with working mothers, *Journal of Population Economics* 1: 251–268.
- Lehrer, E., Santero, T., & Mohan-Neill, S. (1991), The impact of employer-sponsored child care on female labor supply behavior: Evidence from the nursing profession, *Population Research and Policy Review* 10(3): 197–212.
- Leibowitz, A., Waite, L., & Witsberger, C. (1988), Child care for preschoolers: Differences by child's age, *Demography* 25(2): 205–220.
- Mason, K. & Kuhlthau, K. (1989), Determinants of child care ideals among mothers of preschool-aged children, *Journal of Marriage and the Family* 51(3): 593–603.
- Presser, H. (1988), Shift work and child care among young dual-earner American parents, *Journal of Marriage and the Family* 50: 133–148.

- Presser, H. (1989), Can we make time for children? The economy, work schedules, and child care, *Demography* 26(4): 523–543.
- Presser, H. (1995), Job, family, and gender: Determinants of non-standard work schedules among employed Americans in 1991, *Demography* 32(4): 577–598.
- Ribar, D. (1992), Child care and the labor supply of married women: Reduced form evidence', *Journal of Human Resources* 28(1): 134–165.
- Ribar, D. (1995), A structural model of child care and the labor supply of married women, *Journal of Labor Economics* 13(3): 558–597.
- Sonenstein, F. (1991), The child care preferences of parents with young children, in Janet Hyde and Marilyn Essex (eds.), *Parental Leave and Child Care: Setting a Research and Policy Agenda*, Philadelphia: Temple University Press.
- United States Census Bureau (1998), *Who is Minding our Preschoolers? 1994*, Internet Release date: January 14, 1998, Table 2.
- Waite, L., Leibowitz, A., & Witsberger, C. (1991), What parents pay for: Child care characteristics, quality, and costs, *Journal of Social Issues* 47(2): 33–48.

Address for correspondence: Deborah S. DeGraff, Department of Economics, Bowdoin College, Brunswick ME 04011, U.S.A.
E-mail: ddegraff@bowdoin.edu

