

Determinants of Child Care Choice: A Comparison of Results for Ontario and Quebec

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Most families with children now make regular arrangements for child care when parents are employed. Families choose from amongst available alternatives such as a child care centre, a neighbourhood sitter, a sitter who comes into the child's home, care by one parent while the other works, or care by another relative. Economic theory provides only modest guidance to the determinants of this important dimension of child care choice. Certainly, the effect of own-price should be negative for each child care option while the effect of prices of substitutes are positive. Quality and convenience, *ceteris paribus*, should also have positive effects on the probability of using a particular type of child care. Beyond these, economic theory gives way to intuition or observed empirical regularities.

Canadian research is sparse and there is no consensus on the effects of different factors on child care choice. A group of American studies verify economic theory on the effects of prices, quality and convenience. In addition, these studies find that having an infant child has a negative influence on the choice of centre care rather than care by a relative. Mother's work hours, wage and education generally each have a positive influence on the same choice.

This paper estimates separately the parameters of child care choice in

Canada's two largest provinces -- Ontario and Quebec. These provinces, with different linguistic majorities, family traditions, and child care support systems, give us unique evidence on factors which have a common effect across distinct groups of child care users. This paper also provides initial evidence on differences in the price and income elasticities of demand for each type of child care across provinces. Further, it allows us to identify similarities in the determinants of child care choice in Canada and the United States.

The outline of the paper is as follows. Section 2 summarizes results in Canadian and American studies of child care choice conditional on mother's employment. Section 3 presents the theoretical and empirical model of child care choice used in this study, including the modelling of child care prices. Section 4 describes the 1988 Canadian National Child Care Survey (CNCCS) data set. Section 5 compares the empirical results for Ontario and Quebec, with special attention to price and income elasticities. Concluding comments are provided in Section 6.

Canadian and American Research

Despite the political attention paid to child care issues in the 1970s and 1980s, Canadian research has been slow to identify the factors which influence parental choices across different types of child care. There is no obvious consensus across several multivariate Canadian studies of child care choice (Payette and Vaillancourt 1984; Henriques and Vaillancourt 1988; Cleveland 1990). The former two studies (one for Quebec, the other for all of Canada) emphasize the effect of the age of the child, the mother's education and work situation, and (in the case of Henriques and Vaillancourt) family income as key factors affecting the choice of centre care versus any other type. However, as the authors themselves emphasize, information on the crucial determinants -- prices, quality and convenience -- are not available in these studies.¹ The study by Cleveland, for Metropolitan Toronto, finds four categories of variables to be significant in child care choice: attribute variables (including price and convenience); variables describing the ages and number of children in the family; mother's work variables; and a list of socioeconomic variables. Somewhat surprisingly in Cleveland's study, family income and the number of parents in the family are not found to influence the odds of choosing centre

1. These studies consider the likelihood that any family will use some type of non-parental child care and then the likelihood of using licensed centre care conditional on using non-parental care. Some significant proportion of centre care users in the sample receive child care subsidies for reasons related to family problems, despite the mother's lack of participation in the labour force. As a result, in these studies, being "out of the labour force" is a significant predictor of centre care use; parameter estimates may not be comparable to coefficients estimated conditional on mother's employment.

care rather than either neighbourhood sitter or care by a relative.

There is a somewhat larger body of American research on the child care choices of families with employed mothers (Robins and Spiegelman 1978; Yaeger 1978; Lehrer 1983, 1989; Liebowitz, Waite and Witsberger 1988; Hofferth and Wissoker 1992). Summarizing those results is difficult because of differences in the variables used and the types of child care considered. However, there appears to be consensus on several findings. First, higher own-prices decrease the probability of using any type of care. Table 1 shows that the calculated arc price elasticities of demand for centre care in three American studies and one Canadian study are uniformly greater than one. Second, the convenience and quality of centre care are likely to have a positive effect on the choice of that type of care. Third, having infant or very young children makes the use of centre care less likely and the use of care by a relative more likely. Fourth, the mother's work hours, her wage and her education typically have a positive effect on the odds of choosing centre care rather than care by a relative.

The Model

Our model describes the choice of the main non-school child care arrangement for children five years of age or less in families in which the mother usually is employed in paid work. We assume that employment and child care decisions are independent. Thus, work and income variables are exogenous to the model. This assumption is consistent with the studies cited in Table 1.

Each two parent family is assumed to have available each of five distinct types of child care arrangement: licensed care in a child care centre; neighbourhood sitter; in-home sitter;² care by father at home; and care by other relative.³ Single mother families do not have access to care provided by father; in our estimating model the choice sets of single parent mothers are restricted to the remaining four child care arrangements. Families are assumed to know the expected price of each type of care. Families who face different expected prices and who have different characteristics (for example, work pat-

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2. Neighbourhood sitter refers to care by a person not related to the child in a home other than the child's own. In-home sitter refers to care by a person not related to the child in the child's home, either on a live-in or on a daily basis.
 3. The CNCCS asked the designated adult to identify the main method of child care used while she/he was at work or studying. We have grouped the responses into five categories, dropping a small number of records for which the main method of care listed was: junior kindergarten or nursery school; no child care arrangement other than school; senior kindergarten; before or after school program; sibling; or father at work. Because many families may not realistically be able to care for their child at the mother's work place, this paper excludes families who use this form of care.

TABLE 1 Price Elasticity of Demand for Centre Care in Four Studies

		Price Elasticity
Robins and Spiegelman (1978) ^a	Denver:	-6.99
	Seattle:	-4.08
Yaeger (1978)		-2.49
Hofferth and Wissoker (1992) ^a	Main Results:	-3.82
	Universal Logit:	-2.72
Cleveland (1990)		-2.45

a. Both centre and sitter prices were changed simultaneously in these studies. Pure centre care price elasticities would be somewhat higher.

terns, ages and numbers of children, geographic location) have, as a result, different probabilities of choosing each of the five types of care.

At any point in time, each family has a potential demand for each type of care. Families are assumed to have a common indirect utility function over each of the five possible types of child care which measure the maximum attainable utility from each child care choice, given child care prices, incomes and tastes and preferences. A family will choose the child care mode which yields the greatest level of utility.

Therefore, in general form, the utility (U) derived by the i th family from the j th type of child care is given by:

$$U_{ij} = U_{ij}(Z_{ij}, X_i) \quad (1)$$

where $i = 1, \dots, n$; $j = 1, \dots, 5$; Z is a vector of variables which measure the variable attributes of each particular type of child care, such as price; and X is a vector of family characteristics.

Although deterministic from the perspective of the individual family, the researcher may not observe any number of family-related factors and attributes of child care services, thereby randomizing the child care choice from the perspective of the researcher. Thus, we assume the utility function is stochastic, and that the error term is additive. Therefore,

$$U_{ij} = V_{ij}(Z_{ij}, X_i) + \epsilon_{ij} \quad (2)$$

If, for convenience, the utility function is assumed to be linear in the parameters of its arguments, then (2) can be written as,

$$U_{ij} = Z_{ij}\Gamma_j + X_i\beta_j + \epsilon_{ij} \quad (3)$$

Assuming that error term, ϵ_{ij} , is identically and independently distributed with a Type I Extreme Value distribution, then a convenient closed form for the probability (P) that family i will choose child care arrangement j is given by:

$$P_{ij} = \exp(V_{ij}) / \sum_m \exp(V_{im}) \quad m = 1, \dots, j, \dots, m \quad (4)$$

This produces a logit model. We can estimate the unknown parameters of (3) using maximum likelihood methods.

Modelling Prices

Potential consumers of a particular type of child care do not necessarily face a common price. A range of different prices for each type of care is observed for a number of reasons: some families are eligible for substantial child care subsidies, lowering parent fees for the use of licensed care; services provided are heterogeneous across children of different ages (for example, infants in a child care centre would receive a different type and intensity of care than 3 year-olds in the same child care centre); family-perceived quality differences across different suppliers of a particular form of care may result in otherwise similar families paying different prices for a particular mode of child care; suppliers may take into account family characteristics in determining prices (for example, sitters may offer discounts for the care of a second child in a family, or vary the price according to the family's means); and, finally, prices in different urban and rural areas will vary for demand and cost reasons.

Thus, prices for a particular type of care will not be uniform across a market but, given observable characteristics of the family, will be predictable. That is, families are able to form conditional expectations of the prices of each type of available care.

Most data sets used to estimate the effect of price and other factors on child care choice include information on the price of the particular type of care chosen by a family, but, despite its obvious relevance, do not contain information on the prices of the types of care not chosen by each family. Since child care prices are not the same for all potential users, but vary by family characteristics, it is not trivial for the investigator to determine the entire set of child care prices faced by each family at the time its child care choice was made. It is, nonetheless, necessary to do so if the full set of prices are to be included as regressors. Researchers have employed different strategies to overcome this problem. Yaeger (1978) designed her own survey instrument and collected data from municipal union workers in New York City. Her survey explicitly asked respondents to estimate the approximate price (and other attributes) of the main types of child care arrangement not chosen by the family, as well as providing this information for the type of care actually chosen. These estimates were used directly in a logit analysis of child care choice.

Cleveland (1990), using a 1976 data set for Metropolitan Toronto, devised a rule to determine eligibility for day care subsidy and the availability of free care from a live-in relative. Other families were assigned the mean price of

users for each child in the family in each age category. Variation in the ages and numbers of children in families created a dispersion of prices across the data set. These prices were used in a logit model of child care choice.

Hofferth and Wissoker (1992) analyzed the demand for child care arrangements of mothers 20-27 years of age using the National Longitudinal Study of Youth for 1985 in the United States. They calculated expected prices for each type of care from regressions of price per hour of child care on the characteristics of families choosing that type of care. These regressions were corrected for sample selection using a series of probits. Expected prices were used in a logit analysis of choice of child care arrangements.

Following Hofferth and Wissoker, we regress price paid per hour by users of each of four types of child care arrangements on a set of family characteristics and attributes of the particular child care mode.⁴ Since it is possible that users have unobserved family characteristics, or choose care with unobserved attributes, users may face a lower price for a particular type of care than non-users for unobservable reasons; this creates a potential sample selection problem for a price regression based exclusively on information provided by users. We correct for sample selection using a multinomial logit selection correction suggested by Lee (1983). We then use fitted values (omitting lambda) from these regressions to calculate expected prices for each of the four different types of child care.

Centre care price regressions for each province include a dummy variable which indicates whether the family is considered to be eligible for government child care subsidy. For Quebec, where there is no arbitrary limit on the number of subsidies available at any point in time, the value of this variable for any particular family is relatively straightforward.⁵ In Ontario (essentially in Metro Toronto and Ottawa), a family may be nominally eligible for subsidy and yet unable to access a space. Following the results of a 1988 study (D.P.A., 1988), we have identified the income groups (by number of parents in the family) for which subsidies are, in practice, widely available, allowing us to establish a measure of which families in Ontario were actually likely to be able to get a subsidy.

The Data

The data for both Ontario and Quebec are drawn from the 1988 Canadian National Child Care Survey, conducted by Statistics Canada. The CNCCS was administered as a supplement to the September 1988 Labour Force Survey;

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4. Lacking data on the opportunity cost of father's time, we constrain the price of care by father to zero. This is consistent with Hofferth and Wissoker (1992) and Yaeger (1978).
 5. See L'Office des services de garde à l'enfance (1988).

consequently, the sample design and population coverage of the CNCCS is similar to that of the well-known monthly Labour Force Survey.⁶ Data were collected in person from the parent most responsible for child care arrangements in the household. Respondents provided information about the main method of care used by a randomly selected "target child" in the family. Although most families use some form of child care during a child's youth, the bulk of child care use is concentrated amongst employed mothers with preschool children. School-aged children use child care as well, but for fewer hours per day, and purchased child care services are used much less frequently. Accordingly, we define our sub-sample to include only families with a working mother and at least one preschool child who used non-maternal care in the reference week: families with a usually-working mother who worked in the reference week (that is, excluding families with single parent fathers, with mothers at school full-time, unemployed, temporarily absent from work, caring for their own child while at work or not in paid employment) and with a preschool target child. The final samples comprised 936 observations for Ontario and 662 observations for Quebec.

The data set does not include objective data on the quality or convenience of different types of child care. Accordingly, these variables are not included as explanatory variables in the regressions. Means and standard deviations for the variables in the Ontario and Quebec child care choice models are given in Appendix Table 1.

Results for Ontario and Quebec

Table 2 provides the estimated logit coefficients and asymptotic t-statistics for five types of child care in Ontario and Quebec.⁷ Care by other relative is the omitted category; the appropriate interpretation of each coefficient is that it represents the derivative of the log odds of choosing some particular type of child care (rather than care by a relative) with respect to changes in the explanatory variable.

The effect of four price variables⁸ and nineteen other explanatory variables on choice amongst five child care modes is estimated for each province. Statistical significance is indicated both by superscripts and the absolute

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6. Details of the host survey and of the CNCCS sample are provided in Statistics Canada Catalogue 89-526, *Canadian National Child Care Study: Introductory Report*, February 1992.
 7. Results of a likelihood ratio test reject the hypothesis that a single set of coefficients can accurately reflect the child care process in both Ontario and Quebec. The test statistic, distributed as chi-square, is 673.35 with 63 degrees of freedom and is significant at the .005 level.
 8. These are expected prices calculated from corrected regression coefficients from users of each type of care. Price regressions for Ontario are provided in Appendix Table 2.

Table 2 Logit Child Care Choice Coefficients for Ontario and Quebec

(t-statistics in parentheses)	Centre Care vs Relative		Neighbourhood Sitter vs Relative		In-Home Sitter vs Relative		Father at Home vs Relative	
	Ont	Que	Ont	Que	Ont	Que	Ont	Que
	Ont	Que	Ont	Que	Ont	Que	Ont	Que
PRICE VARIABLES								
Centre/ Sitter/ In-Home Price	-0.50 ^b (2.64)	-1.92 ^b (4.74)	-1.36 ^b (2.88)	-0.92 ^a (1.49)	-0.27 ^a (1.57)	-2.13 ^b (5.75)	--	--
Price of Care by Relative	1.81 ^b (4.38)	2.09 ^b (4.64)	1.81 ^b (4.38)	2.09 ^b (4.64)	1.81 ^b (4.38)	2.09 ^b (4.64)	1.81 ^b (8.09)	2.09 ^b (4.64)
CHILD VARIABLES								
Child 2-3 Years (dummy; 0-1 omitted)	1.65 ^a (7.26)	1.80 ^a (7.04)	-0.17 (1.20)	0.86 ^b (4.27)	0.12 (0.65)	0.13 (0.34)	-0.53 ^b (3.01)	0.66 ^b (2.56)
Child 4-5 Years (dummy; 0-1 omitted)	0.14 (0.52)	1.55 (6.26)	-0.17 (0.97)	0.66 ^b (3.25)	-1.23 ^b (4.86)	-0.027 (0.07)	-0.09 (0.46)	0.70 ^b (2.95)
No. Children < 10 Years Old	-0.27 ^b (2.16)	0.13 (0.77)	-0.46 ^b (4.76)	0.39 ^b (2.55)	0.44 ^b (3.11)	0.54 ^b (2.71)	0.25 ^b (2.49)	1.23 ^b (7.24)
Child 10-18 Years in Family (dummy)	2.55 ^b (6.28)	-0.076 (0.24)	1.75 ^b (4.52)	0.29 (0.99)	1.28 ^b (2.75)	0.55 (1.46)	1.89 ^b (4.58)	1.26 ^b (3.56)
INCOME, WORK AND EDUCATION VARIABLES								
Mother's Income	0.029 ^b (3.65)	0.049 ^b (5.07)	0.014 ^b (2.62)	0.014 (1.54)	0.028 ^b (4.03)	0.017 ^a (1.64)	-0.012 ^a (1.76)	-0.010 (0.90)
Father's Income	0.025 ^b (4.88)	-0.006 (0.63)	0.019 ^b (4.40)	-0.030 ^b (2.82)	0.014 ^b (3.08)	-0.021 ^b (2.10)	-0.005 (0.95)	-0.062 ^b (5.20)
Mother Works Part Time (dummy)	-1.25 ^b (3.96)	-0.58 ^b (2.51)	-0.22 (1.35)	0.12 (0.53)	0.44 ^b (2.23)	0.87 ^b (3.75)	0.86 ^b (5.37)	0.19 (0.85)
Mother Works Non-Day Shift (dummy)	0.46 ^a (1.83)	-0.63 ^b (3.70)	0.86 ^b (3.85)	-0.21 (1.33)	1.09 ^b (4.13)	0.17 (0.77)	2.26 ^b (8.49)	0.54 ^b (2.43)
Father Works Non-Day Shift (dummy)	-0.60 ^b (3.14)	-0.76 ^b (4.36)	-0.26 ^a (1.84)	-0.46 ^b (2.93)	-0.019 (0.10)	0.13 (0.59)	0.098 (0.59)	1.13 ^b (5.01)
Mother Attended University (dummy)	0.17 (0.66)	0.17 (0.68)	0.29 (1.61)	0.44 ^a (1.93)	0.28 (1.24)	1.06 ^b (3.63)	-0.13 (0.59)	-0.20 (0.60)
Father Attended University (dummy)	1.00 ^b (4.16)	0.35 (1.46)	-0.16 (0.87)	0.25 (1.12)	1.54 ^b (6.83)	0.35 (1.27)	0.30 (1.37)	0.46 (1.50)
OTHER VARIABLES								
Not Canadian-Born Speak English (Ont), French (Que) (dummy; Canadian-born omitted)	-0.28 (1.17)	-0.38 (0.74)	-0.44 ^b (2.46)	-0.83 ^a (1.69)	-1.34 ^b (4.56)	0.78 (1.42)	-0.74 ^b (3.29)	-12.06 (0.09)
Not Canadian-Born, Speak Other Lang. (dummy; Canadian-born omitted)	-0.94 ^b (4.63)	-0.34 (0.92)	-0.85 ^b (5.86)	-0.55 (1.46)	-0.86 ^b (4.11)	0.69 ^a (1.79)	-0.13 (0.76)	0.54 (1.43)
Single Parent Mother (dummy)	1.83 ^b (6.19)	1.25 ^b (3.69)	0.075 (0.31)	0.54 (1.61)	0.62 (1.57)	-0.57 (1.10)	--	--
Mother's Age	0.073 ^b (3.67)	-0.44 ^b (2.11)	0.074 ^b (5.10)	-0.021 (1.10)	0.12 ^b (5.38)	-0.037 (1.38)	0.036 ^b (2.03)	-0.15 ^b (5.26)
Lives Toronto or Montreal (dummy; other city omitted)	0.11 (0.54)	0.30 (1.20)	-0.18 (0.68)	-0.33 (1.36)	-0.36 (1.59)	-0.28 (0.93)	0.18 (1.06)	-0.08 (0.29)
Lives Ottawa or Quebec City (dummy, other city omitted)	-1.19 ^a (1.94)	0.51 (1.57)	-0.98 ^b (2.01)	0.48 ^a (1.67)	-2.18 ^b (3.88)	-0.68 (1.56)	-2.21 ^b (4.18)	-0.23 (0.53)
Lives in Small Town/Rural (dummy; other city omitted)	0.38 (1.57)	-1.01 ^b (3.72)	0.50 ^b (3.29)	-0.81 ^b (3.45)	0.52 ^b (2.21)	-0.69 ^b (2.04)	-0.29 (1.50)	-0.89 ^b (2.96)
Constant	-4.84 ^b (7.44)	0.27 (0.25)	0.66 (0.74)	-0.78 (0.84)	-5.61 ^b (6.75)	0.56 (0.47)	-1.39 ^b (2.68)	1.07 (1.16)

a. Significant at 0.10 (one-tailed for prices, two-tailed for others)

b. Significant at 0.05 (one-tailed for prices, two-tailed for others)

c. Because the price of care by a relative has a negative effect on the likelihood of using care by a relative, it has a positive effect on the odds of using each of these odds ratios. See text for explanation.

Ontario:

Log Likelihood at Maximum: -3287.13

Log Likelihood (Slopes=0): -4337.85

Quebec:

Log Likelihood at Maximum: -2219.89

Log Likelihood (Slopes=0): -2767.11

value of t-statistics in parentheses. To assist in the exposition of results, variables are divided into four categories: price variables; child variables; income, work and education variables; and other variables.

Price Variables

Own-price coefficients are uniformly negative and significant for each of the four types of care that have explicit prices (centre care, neighbourhood sitter, in-home sitter, and care by a relative) in both Ontario and Quebec.⁹ Following Yaeger (1978) and Hofferth and Wissoker (1992), we specify each own-price as a conditional logit variable;¹⁰ this constrains, for instance, the set of cross price elasticities to a change in centre care price to be equal to each other and opposite in sign to the centre care price coefficient.

Table 3 shows calculated own-price and cross price elasticities of demand, at sample means, for each type of child care in Ontario and Quebec. Except for sitter care, where estimated own-price elasticities are approximately equal in the two provinces, own-price child care demand elasticities are uniformly lower in Ontario than in Quebec. Quebec's centre care own-price elasticity (-2.99) is similar to those found in other studies, shown in Table 1. It is possible that some Ontario families are attributed subsidized (that is, low) centre care prices when a subsidized space is currently unavailable; as described above, eligibility for centre care subsidies in Ontario varies by municipality and is subject to both administrative discretion and local willingness to cost-share subsidies, whereas Quebec's child care subsidy system is provincially-based and more readily modelled for the price regressions. This would imply a potential downward bias in the Ontario centre care price estimate.

Child Variables

The only pattern in estimates of the effect of the age of the child which is consistent across the two provinces is the strong positive effect of having a

9. Because relative care is the reference category, the price of relative care is shown with a positive sign: for instance, the price of care by a relative has a positive effect on the odds of choosing centre care rather than care by a relative. This is equivalent to having a negative own-price effect.

10. Following equation (3), prices are modelled as Z_{ij} rather than as X_i , so that, for example, the odds of choosing centre care rather than a relative are affected only by the price of centres and the price of other relative care, and not by the entire set of child care prices. Hofferth and Wissoker (1992), and Cleveland and Hyatt (1992), also provide logit regression results without this constraint. Some of the cross price estimated coefficients are not credible, suggesting that the regression-predicted prices are inadequate to estimate the full set of own and cross price coefficients without this constraint.

Table 3 Price and Income Elasticities of Child Care Demand in Ontario and Quebec

Elasticities	Centre Care		Sitter		In-Home Sitter		Father at Home		Other Relative	
	Ontario	Quebec	Ontario	Quebec	Ontario	Quebec	Ontario	Quebec	Ontario	Quebec
Own-Price Elasticity	-0.78	-2.99	-1.26	-1.02	-0.76	-3.10	n.a.	n.a.	-0.39	-2.03
Cross Price Elasticity to a Change in Centre Price	--	--	0.06	0.58	0.06	0.58	0.06	0.58	0.06	0.58
Cross Price Elasticity to a Change in Sitter Price	1.12	0.40	--	--	1.12	0.40	1.12	0.40	1.12	0.40
Cross Price Elasticity to a Change in In-Home Sitter Price	0.07	0.22	0.07	0.22	--	--	0.07	0.22	0.07	0.22
Cross Price Elasticity to a Change in Relative Price	0.11	0.37	0.11	0.37	0.11	0.37	0.11	0.37	--	--
Mother's Income Elasticity	0.39	0.75	0.09	0.08	0.36	0.12	-0.41	-0.38	-0.18	-0.20
Father's Income Elasticity	0.49	0.18	0.25	-0.48	0.11	-0.24	-0.52	0.18	-0.36	0.36
Parent's Income Elasticity ^a	0.88	0.94	0.34	-0.40	0.47	-0.11	-0.92	-0.21	-0.55	0.16

Note:

Elasticities are calculated at sample means.

For η_{kj} , the cross elasticity of the k th type of care to changes in the price of the j th type of care, $\eta_{kj} = (\partial Q_k / \partial P_j)(P_j / Q_k)$, $j = 1, \dots, 5$; $k = 1, \dots, 5$; $k \neq j$. For any j , the cross elasticities will be equal, when prices are specified as conditional logit.

a. Mother's and father's incomes increased at the same rates.

child 2-3 years of age rather than 0-1 years on the probability of using centre care rather than care by a relative. This mirrors findings in other Canadian and American studies. Other relatives (typically grandmothers) seem to play a slightly different role in Quebec than they do in Ontario; this can be seen, initially, in the effect of having a 2-3 year old rather than a 0-1 year old on the odds of using father rather than other relative. In Ontario, having a 2-3 year old makes the use of father less likely, whereas in Quebec care by a father is more likely (that is, grandmothers are more likely to care for infants). Having a larger number of children less than 10 years of age makes the probability of care by an in-home sitter or by father rather than by other relative more attractive in both provinces. In Quebec, though not in Ontario, having a larger number of children makes sitter care more attractive as well. Having an older child (as well as a preschooler), has a positive effect on the odds of choosing care by father at home rather than care by a relative in both Ontario and Quebec.

Income, Work and Education Variables

A number of the income, work and education variables have a consistent effect

across provinces. Contrary to results in some other studies, there is little evidence that mother-specific variables rather than father-specific variables dominate the family's child care choices; both appear to be important. Mother's annual income has a positive, and typically significant, impact on the choice of all non-family types of child care (centre care, neighbourhood sitter and in-home sitter) and a negative effect on the probability of choosing family types of care. Father's income has precisely the same direction of effects in Ontario, with coefficients for odds ratios between all non-family types of care and care by a relative being significant. As the father's income elasticities in Table 3 make clear, the effect of higher father's income in Quebec is different; although the likelihood of using centre care and care by father are both increased, the principal effect is to increase the probability that care will be provided by the grandmother or some other relative. Since variables do not control for live-in relatives, this may reflect an increased willingness and ability to accommodate live-in relatives as father's income rises in Quebec. If a mother works part time (less than 30 hours per week) rather than full time, her preschooler is less likely to use centre care and more likely to use either an in-home sitter or care by father rather than care by a relative; this pattern is evident in both Ontario and Quebec (although the care by father effect is not significant in Quebec). Child care choices are different for families where either the mother or father does not work a regular day shift than for families with other work schedules. For fathers who work non-day shift, there is a consistent significant negative effect on the probability of using centre care or care by a neighbourhood sitter rather than care by a relative. When mothers work non-day shift the probability increases that care by father rather than by another relative will be used in both Ontario and Quebec.

University education, given that factors such as income and age are separately controlled, may reflect tastes or opinions about the quality of care. Generally, university education increases the likelihood of using any form of market child care rather than care by a relative, however, corresponding odds ratios do not have significant t-statistics in both Ontario and Quebec.

Other Variables

Families in which the mother was born in Canada comprise the reference category for the linguistic/cultural background variables. Estimated coefficients indicate that families who were not born in Canada, whether they spoke the dominant language (French in Quebec, English in Ontario) or not, were, as a result, less likely to use either centre care or a neighbourhood sitter and more likely to use care by a relative. However, this effect is statistically significant in both provinces only for the choice of neighbourhood sitter versus relative for immigrant families who spoke the dominant language of their adopted province.

Employed single parent mothers with a preschooler are strongly and signif-

icantly more likely to use centre care than care by a relative, holding the price of care constant. This pattern is distinct from that found in other Canadian and American studies. Other choices are affected as well by single parent status but not consistently across provinces. In Ontario, small town/rural life appears to favour non-family forms of care, while in Quebec, small town/rural life appears to make care by a relative more likely and the other forms of care less likely.

Conclusion

This paper estimated separate child care demand models for employed mothers with preschool children in Ontario and Quebec. The substantive conclusions of our analysis are as follows:

1. Own-price elasticities of demand for the different types of child care are negative and significant in both Ontario and Quebec, though generally higher in absolute value for Quebec (with the exception of sitter care). The larger price elasticity of demand for centre care in Quebec is more consistent with U.S. findings than is the Ontario result. The lower estimated price elasticity for centre care in Ontario may be related to the complicated subsidy system in Ontario which may not have been satisfactorily captured.
2. In both Ontario and Quebec, mother's annual income has a positive impact on the choice of non-family types of care and has a negative influence on choosing family-based forms of care. This income elasticity is largest for centre care in both provinces.
3. Father's income has a positive effect on the absolute probability of choosing centre care in both Ontario and Quebec. For Quebec, father's income is negatively associated with the choices of in- and out-of-home sitter care and positively associated with the choice of the two family forms of care. The signs of these relationships are the opposite in Ontario. It is also of note that, unlike the results found in many U.S. studies, father-specific variables influence child care choice in both Ontario and Quebec.
4. Results from both Ontario and Quebec tend to verify the basic consensus of results from American studies. In addition to the negative effect of own-price noted above, there are a number of factors which all have a positive effect on the likelihood of using centre care rather than care by a relative. In particular, having a 2-3 year old rather than an infant, working full-time rather than part-time, increased mother's

income, and mother's attendance at university are all found to have a positive effect on this odds ratio, in both provinces. The effect of mother's education is, however, not significant.

5. As summarized in Table 2, and in the text, there is little apparent consistency in the effect of other child, work, education, regional and linguistic variables on child care choice across Ontario and Quebec.

APPENDIX TABLE 1 Sample Means and Standard Deviations: Ontario and Quebec

Explanatory Variables	Ontario		Quebec	
	Means	Std Dev	Means	Std Dev
Predicted Price of Centre Care	\$1.77	\$0.78	\$2.15	\$0.33
Predicted Price of Neighbourhood Sitter Care	\$1.77	\$0.24	\$1.60	\$0.25
Predicted Price of Non-Relative In-Home Sitter Care	\$3.09	\$0.63	\$1.84	\$0.49
Predicted Price of Relative Care	\$0.28	\$0.24	\$1.28	\$0.42
Child 2-3 Years	0.38	0.48	0.33	0.47
Child 4-5 Years	0.32	0.47	0.37	0.48
Number of Children Less Than 10 Years	1.81	0.74	1.79	0.67
Child 10-18 Years	0.11	0.31	0.08	0.27
Mother's Income	\$19,303	\$12,928	\$18,877	\$10,600
Father's Income	\$33,033	\$25,942	\$28,010	\$18,069
Mother Works Part Time	0.29	0.45	0.29	0.45
Mother Works Non-Day Shift	0.66	0.53	0.63	0.52
Father Works Non-Day Shift	0.66	0.52	0.62	0.51
Mother Attended University	0.20	0.40	0.17	0.38
Father Attended University	0.21	0.41	0.23	0.42
English Speaking/ French Speaking, Not Born in Canada	0.11	0.32	0.02	0.15
Not English Speaking/ French Speaking, Not Born in Canada	0.23	0.42	0.16	0.37
Single Parent Mother	0.086	0.28	0.07	0.26
Mother's Age	30.86	4.66	31.04	4.36
Family Lives in Toronto/Montreal	0.36	0.48	0.42	0.49
Family Lives in Ottawa/Quebec City	0.05	0.22	0.10	0.30
Family Lives in Small Town or Rural Area	0.23	0.42	0.30	0.46

Number of Observations: Ontario 936, Quebec 662.

APPENDIX TABLE 2 Sample Selection Corrected OLS Hourly Price Regressions: Ontario

	Centre Care	Neighbourhood Sitter	In-Home Sitter	Care by a Relative
Child Aged 2-3 Years	-0.20	-0.093	0.14	0.073
Child Aged 4-5 Years	-0.52	0.06	0.36	0.21
More Than One Child < 6 in Family, no Other Children		-0.19 ^b	-0.85 ^b	0.004
Some < 6, Some 6-10 Years		-0.15	-1.83 ^b	0.40
Some < 6, Some 10-18 Years		0.09	-0.27	-0.76 ^b
Child has Disability	0.29	0.21	0.13	-0.32
Eligible for Centre Subsidy	-0.89 ^b			
Mother's Hours of Work	-0.033 ^b	-0.009 ^a		0.001
Mother Works Part-Time			0.27	
Mother Works Non-Day Shift			-0.20	-0.46 ^b
Father Works Non-Day Shift				0.16
Mother Attended University	0.52 ^b			
Other Female Adult Present				-0.26 ^a
Family Income	0.008 ^{bc}	0.0013	-0.0006	0.002
Live in Toronto	0.17 ^c	0.47 ^b	0.52	-0.006
Live in Ottawa	1.50 ^{bc}	0.25	0.27	0.88 ^b
Live Small Town/Rural Area	-0.22 ^c	-0.02	0.67 ^a	-0.47
Family Speaks English, Not Born in Canada				-0.02
Family Does Not Speak English, Not Born in Canada				-0.10
Non-Child Services Provided			0.81 ^b	0.51 ^b
Single Parent	-0.41 ^c		-0.94	
Constant	2.70 ^b	1.98 ^b	2.92 ^b	0.05
Lambda/Correction Factor	0.037	0.05	-0.66 ^a	0.35
Adjusted R ² :	0.58	0.07	0.09	0.19

a. Significant at 0.10

b. Significant at 0.05

c. Coefficient only applies to families not eligible for centre care subsidy

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