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MISSISSAUGA

Selection of Canadian Childcare Arrangements by Immigration Status

By SAMEER DHAMI

This paper explores the relationship between nativity status and childcare arrangements. By employing a logistic regression model to study Canadian household data, I find that immigrants are between 1.2 and 2 times more likely to use parental childcare arrangements than their non-immigrant counterparts. The magnitude of the coefficient on their nativity status varies between the two years 2006 and 2011, as well as the different household income groups. These findings illustrate issues in varying effectiveness of policy intervention designed to address childcare use between immigrant and non-immigrant households.

Keywords: *Economics of Minorities, Races, Indigenous Peoples, and Immigrants, Child Care, Children, Social and Economic Stratification, Public Policy*

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I. Introduction

Childcare is a topic of immense importance for parents in Canada, given the shifting attitudes around parents as sole caretakers of children. Childcare arrangements are being utilized by working parents at increased levels, even when wait lists and rising costs become a concern for many parents [Sarlo (2016)]. All costs and benefits must be assessed by parents, in order to provide the most appropriate arrangements for children.

Immigrant parents face similar childcare options to non-immigrant parents, but perhaps in a framework that is more constrained. Immigrants comprise 21.9% of Canada's population [StatisticsCanada (2017)]. In the first quarter of 2019, 80% of population growth was due to immigration [StatisticsCanada (2019)]. With the greater presence of new immigrants in Canada, it is important to view their decision making process in a different lens. Immigrants may have different preferences for childcare, such as parental or informal childcare (care by a family member, friend, neighbour, or nanny, outside a center) [OECD (2014)]. Their preferences are influenced by cultural practices and social norms where grandparents take care of the child and children spend a lengthy amount of time with their families. This reduces the need for formal childcare amongst immigrant households. The use of formal or non-parental childcare may also be inhibited by lack of knowledge of the possible child care policies and programs in place. [Johnson et al. (2017)]. Acknowledging the different preferences amongst immigrant families will have policy implications, often childcare subsidies and costs may not be enough to influence the use of formal child care.

Canada's multicultural population deserves a multidimensional approach to addressing child care needs and preferences. This paper investigates whether immigrant families are statistically less likely to use non-parental childcare arrangements. If so, the decision-making of immigrants

should be encompassed by governmental childcare policies to better support immigrant families and their decisions.

II. Literature Review

Various studies and papers have explored the link between immigrant status and childcare arrangements. These papers apply a multitude of methodologies with published papers appearing in journals for early childhood research, cultural diversity and ethnic minority psychology, international migration, and children and youth services. This area of study is often the interest of professionals in the fields of psychology, sociology, applied health sciences, public health, human development and family studies. A variety of econometric models and qualitative methods from regression to informative and in-depth interviews have been employed in numerous studies. Hence, the area of research is both topical and diverse in its approach.

[Obeng (2007)] surveyed African immigrants on their preferences for childcare and the factors surrounding those preferences. Participants in Obeng's interviews preferred informal childcare but many had their children in formal childcare settings (childcare centers). Respondents preferred informal childcare because they believed family members would be better equipped to teach morality, cultural, and belief practices. Respondents were concerned with the lack of cultural inclusion at formal childcare settings, where children may not gain enough exposure to their own cultural heritage. However, some respondents who chose formal childcare over available informal childcare, did so because of the socialization and English learning opportunities.

[Uttal and Han (2011)] explored the reasons behind Taiwanese immigrant mothers in the United States choosing childcare centers populated predominately by white American children instead of other and perhaps more familiar childcare arrangements. Qualitative methods were employed to understand this phenomenon and seven mothers were interviewed. The participants cited acculturation, English language development, and understanding American social skills as primary reasons for them to send their children to childcare centres. These answers mirrored what other studies have found regarding integration of immigrants into American society. The participants did not have concerns about their children not being able to learn their culture at the childcare centers because they ensured bicultural competency for their children through at home teaching.

These results indicate how immigrant and racial minority parents may choose to send their children to formal childcare settings for acculturation and integration into American society. Maintaining the native language and culture is still of importance to these parents. This prompts action on their part to supplement formal childcare with some informal childcare where the child is mainly cared for by a parent, relative, or non-relative who teaches the child. This literature additionally illustrates how nativity status, ethnicity, and race interact with the parents' childcare arrangement decision. It is clear there are many factors these parents must assess before deciding upon an arrangement.

[Brandon (2004)] quantitatively examined the varying childcare arrangements of immigrants. This paper utilized a logistic regression model to calculate the odds of children in immigrant and non-immigrant families using formal (centre-based) or informal (non-centre based) childcare. The independent variables were nativity status, the interaction term of nativity status with low-income status, the interaction term of nativity status with family structure, demo-

graphic characteristics of the children, mothers, households, and other contextual variables. When socioeconomic and demographic factors are controlled for, the results showed that parents in immigrant families are less likely to use formal care when compared with non-immigrant families. If interaction terms are included in the model, children in immigrant families with two parents in the household were found to be less likely to use formal childcare than children in non-immigrant families with two parents in the household.

[Johnson et al. (2017)] implemented use of multinomial logistic regression models to predict the type of ‘early care and education’ (ECE) that low-income immigrant families utilize. Data was drawn from the Early Childhood Longitudinal Study with the sample consisting of 1,050 children born to low-income immigrant families. ECE types included Head Start (centre based ECE that is publicly funded and for families in poverty), public pre-kindergarten programs, subsidized ECE, unsubsidized ECE, and parental care (parental care was set as the reference group for analyses). Maternal characteristics, child characteristics, childcare preferences, contextual variables, and immigrant specific characteristics served as independent variables. Results indicated that the immigrant specific characteristics did impact how low-income immigrant parents made decisions pertaining to ECE. While mother’s region of origin did not impact the selection of ECE type, English proficiency (proxy variable for the level of acculturation) and the level of “welfare generosity” for immigrants by state were significant in the regressions.

[Turney and Kao (2009)] looked at the pre-kindergarten childcare arrangements of immigrant families, as well as the relationship between childcare arrangements and children’s behavioural outcomes. Data from the Early Childhood Longitudinal Study – Kindergarten Cohort (ECLS-K) from 1998 to 1999 was used to run multinomial logistic regression models. Variables used in the regressions included behavioural outcomes, the main type of childcare (parental care, centre-based care, Head Start or other), race and immigrant status of the mothers, and additional demographic and regional characteristics. The results showed that Hispanic or Asian foreign-born children were less likely than native-born white children to have centre-based care as their main childcare arrangement. Foreign-born Hispanic children were also less likely to have Head Start as their main childcare arrangement, indicating lack of access to this program or differing cultural preferences. Additional results indicated that pre-kindergarten centre-based care was not significantly associated with how children behave once they start kindergarten, and centre-based care may benefit minority immigrant children more than native-born white children.

These papers do point to immigrant parents making childcare decisions in a slightly different way than their non-immigrant counterparts. The empirical results from the logistic regressions run by Brandon, and Turney & Kao indicate that immigrant parents are less likely to use centre-based care than non-centre based care or parental care. The impact of nativity status on the childcare decision is something this paper will explore, but with a focus on households in Canada. Historically Canadians have received less focus in the literature than their American counterparts, despite the data opportunities presented by a diverse immigrant population in Canada.

III. Data and Methodology

A. Data

This paper utilizes data from the Public Use Microdata Files (PUMF) of the General Social Survey (GSS) on Family for the years 2006 and 2011. The Family cycle of the GSS is a cross sectional survey that is administered by Statistics Canada every 5 years. The target population is any person above the age of 15 residing in the ten provinces. Data from the GSS on Family contains information on the respondent's nativity status, citizenship status, household income, marital status, parental history, and other socioeconomic characteristics. The GSS on Family asks respondents questions about their childcare arrangements, reason for the childcare arrangement they use, and satisfaction with those childcare arrangements [StatisticsCanada (2013)].

This data allows exploration of the childcare arrangements for two groups of respondents – immigrant (foreign-born) and non-immigrant (native-born) parents. This work compares the two groups and assesses whether there is any indication of a linkage between childcare arrangements and nativity status. Given an interest in parents and their choices of childcare arrangements, the sample for the survey in both years is reduced to respondents who have at least one child under the age of six in the household. Several variables were generated from the existing data, so observations with missing variables are dropped. Focus is on parents who used one type of childcare rather than a combination of methods for their children, hence parents who used more than one method of childcare are also omitted. Due to the structure of the survey questions, it turned out that only observations in the 2011 survey were dropped.

In the 2006 survey there were 1914 parents, while in the 2011 survey there were 1129 parents. Around 19.25% of the parents in 2006 were foreign-born versus 15.85% of the parents in 2011. These numbers reflect well the proportion of the population that was foreign-born in Canada, 19.8% in 2006 and 20.6% in 2011 [Milan et al. (2018)]. Summary statistics and characteristics of the data for both groups in 2006 and 2011 are shown in appendix table A1. For household income, age of the parent, and number of children in the household, the mean values are included. The proportions for each group were also included across several additional dimensions.

Difference of means testing on household income, age of the parent, and the number of children in the household was conducted for both years. For the difference of means test on household income, the p-value is 0, indicating the null hypothesis of no difference in household income between foreign-born and native-born parents is rejected (i.e. there is a difference). The p value on the age of the respondent is also 0, indicating there is likely a difference between the mean ages of the two groups. The p-value for the difference in the number of children per household is 0.9496 in 2006 and 0.4702 in 2011. There is essentially no difference in terms of average children per household by group in 2006 or 2011.

A set of dummy variables was created to better identify intergroup characteristics. Looking at the highest level of education being the highest level of education obtained, the proportion within the groups is higher for those born in Canada than those born outside of Canada, in both years. This pattern reverses for post-secondary education, but the difference in proportions of the groups is small (2 – 3% difference). Interestingly, foreign-born households have a higher proportion of respondents in households with only one parent earning when compared to the native-born households in 2006. In 2011, the opposite is true with the native-born group of

parents having a proportion that is 6 percentage points greater than foreign born.

When looking at the age of children in the household some additional factors must be considered. Across Canada, three provinces mandate a legal age limit at which a child can be left alone. Manitoba and New Brunswick do not allow children under the age of 12 to be left alone, and this limit is 16 in Ontario. Taking this into consideration, a dummy variable was created to indicate if all children in the household were under 12. This dummy is relevant as parents are most likely obliged not to leave children under the age of 12 unsupervised, regardless of the province they reside in. Thus, parents must have childcare or supervisory arrangements made for their children under the age of 12 [Ruiz-Casares and Radic (2015)]. In each year, both groups have roughly the same proportion of parents that have all children in the household being under the age of 12.

A dummy variable for whether the parent is a visible minority was also created. A visible minority is someone who identifies as non-White or non-Aboriginal. In each year, more than half of the respondents born outside of Canada identify as visible minorities and around 2% of respondents born in Canada identify as visible minorities.

The categorization of childcare arrangements is derived from the classification used in several survey questions. Childcare arrangements are split into two types – parental and non-parental. Parental care is defined as being when a parent is the main caretaker of the child. Non-parental care is any form of paid or unpaid childcare during regular work hours, including home daycare, institutional daycare, preschool, or private arrangements [StatisticsCanada (2013)]. In the 2006 survey, parents were asked this question generally, and not for specific children. In 2011, parents were asked questions about their childcare choice for each child of preschool and school age in the household.

Comparing the levels of parental care and non-parental care, the proportion of foreign-born parents who use parental care is higher than the proportion of native-born parents in each year. The difference is 10 percentage points in 2011, and 12.62 percentage points in 2006. There are clear heterogeneities in the use of parental care between the two groups before contextual, demographic, and socioeconomic controls are in place.

To further explore these differences in the childcare arrangements between the two groups, econometric modelling is employed. Controls are introduced for the various characteristics of the households to provide a better understanding of the likelihood of foreign-born parents using various parental care arrangements.

B. Model

This paper uses a logistic regression model to model the odds of foreign-born and native-born parents using parental care as their childcare arrangement. Cross sectional logistic regressions for the years 2006 and 2011 are set out as follows:

$$Pr(Y_i = 1|\mathbf{x}) = \frac{1}{1+e^{-(\beta_0+\beta\mathbf{x})}}$$

For this logistic regression, the dependent variable Y_i indicates the childcare selection where Y_i is coded as 1 if parental care is the childcare arrangement of choice of the respondent, and $Y_i = 0$ if non-parental care is used.

The independent variables \mathbf{x} measure contextual, demographic, and socioeconomic characteristics such as household income, province of residence, employment status of the respondent, number of children in the household, nativity status, and education level of the respondent. The covariates in the logistic regression models are listed in tables 1 and 2.

The coefficients of the variables are odds ratios (OR) where an OR greater than 1 indicates that variable is associated with higher odds of parental care, OR less than one 1 means that variable is associated with lower odds of parental care, and OR of 1 means that variable does not impact the odds of parental care. To control for heteroskedasticity in the logistic regression model, I use heteroskedasticity robust standard errors.

The link test and Hosmer-Lemeshow goodness of fit test were conducted after each regression to ensure the model was correctly specified and significant. Testing can be seen in the appendix. If the squared terms are statistically significant when performing the link test, this indicates that the square of the independent variables have explanatory power and the model has specification errors. The link tests show predicted terms without any transformations were statistically significant, as they should be, and the squared terms were not statistically significant. All models are well specified according to the link test.

The quality of each model specification is also indicated by tests for goodness of fit. To assess the goodness of fit, the Hosmer and Lemeshow's goodness of fit tests are employed. Results of these tests has been summarized in the appendix. Large and non-significant p-values indicate a good fit of the model. The p-values for the main specification of 2006 and 2011 data are 0.97 and 0.27, respectively, indicating that the models fit the data well. Specification was also assessed by conducting a joint F test for the significance of the provincial dummy variables as a group. The p-values for 2006 and 2011 data are 0 and close to 0, respectively. The null hypothesis that the coefficients of these dummy variables are simultaneously 0 is rejected.

Model sensitivity checks were performed by running additional logistic regressions using a restricted sample for 2006, and different household income groups for 2006 and 2011. For 2006, data on whether respondents lived in urban or rural areas was only available for residents of Ontario, Quebec, and British Columbia. The restricted sample only includes these residents so the "Urban" variable could be included. For each year, logistic regressions were run on a sample including respondents with a household income less than and greater than the mean household income. This allowed the paper to explore whether sectioning the sample would give better insights on how respondents in different income groups make childcare decisions.

Further adjustments to the variables were necessary in some cases due to data limitations. For example, some of the independent variables for each logistic regression were omitted due to either high collinearity or high correlation with other variables in that specification (for example, correlation coefficients of +/- 0.5). In the 2006 and 2011 logistic regressions, the variables indicating marital status of the respondent, whether a foreign-born respondent had immigrated to Canada under the age of 20, and whether the structure of family consisted of two parents were dropped due to high collinearity. Dummy variables for the household language being an official language, whether a foreign-born respondent had immigrated from a country outside North America or Europe, and whether a foreign-born respondent is a visible minority were dropped due to high correlation with the nativity status of the respondent.

For the 2006 logistic regression, the dummy variable indicating whether the respondent's

partner is employed was omitted because it correlates with the dummy variable indicating only one parent is the income earner in the household. The different ethnicity dummy variables for 2006 were also dropped from the regression because as a group, the joint F-test indicates they are not jointly significant.

For the 2011 logistic regression, the dummy variables indicating whether a respondent's mother is foreign-born, whether their father is foreign-born and whether they are a landed immigrant were omitted due to correlation with nativity status of the respondent. The variable indicating the number of children in the household was omitted due to correlation with the dummy variable indicating whether all of the children in the household are under the age of 12. The dummy variable indicating that the highest level of education obtained by the respondent is at or above the postsecondary level was omitted due to its correlation with the dummy variable indicating whether a respondent has only limited secondary school education. The dummy variable indicating employment status of the respondent was omitted due to correlation with the dummy variable indicating only one parent is the income earner in the household.

IV. Results

A. 2006, Full Sample

The results from the logistic regression with the full sample are shown in Table 1 below. Independent variables such as nativity status, household income, the provincial dummy variables for Quebec, British Columbia and Alberta, the dummy variable for only one parent in the household is an income earner and the dummy variable indicating that the respondent's partner is employed are all significant.

Nativity status has an OR of 1.29. The likelihood of using parental care is greater when the respondent is foreign-born, at about 1.29 times more likely. However, this result is not significant at higher significance levels and the confidence interval includes the values less than 1, which indicates a reduced likelihood or no change in likelihood. Since 1 is in the confidence interval, this can mean that the respondents cannot be distinguished in likelihood to take up parental care by nativity status.

The OR for household income is essentially 1, meaning that different income groups have similar odds of using parental childcare. This was surprising, given that other studies found that as income levels rise, the odds of using parental care fall. In this case, given that the distribution of income in the sample is left skewed and many respondents are in the high-income groups, higher levels of income could then have limited impact on the parents' childcare choices. Perhaps, parents can already access non-parental childcare at lower levels of income by utilizing subsidies and other child tax credits or being able to use publicly funded childcare spaces. Additionally, the classification of non-parental care includes a diversity of childcare options from daycares, nursery schools, caretakers, babysitters to nannies. Parents of different income groups may be accessing different childcare options, but the classification would reduce their choices to "non-parental care." Since the different childcare options within the category are not captured, the odds of choosing parental care do not seem to differ between income groups. Appendix figure A1 shows the relationship between the percentage of parents that use parental care in each household income group. There is no clear linear or quadratic relationship visible,

but there does seem to be an increasing trend before a decline and stabilization.

The OR for the Quebec provincial dummy variable is 0.30, and the true population effect is between 0.21 and 0.42. Parents in Quebec are more than half as likely to use parental care than parents in Ontario. This is sensible due to Quebec's universal childcare program where costs are heavily subsidized. The low fee childcare options would make non-parental care more attractive for residents [Sarlo (2016)]. Parents in British Columbia are 1.63 times more likely to use parental care than parents in Ontario (the true population effect is between 1.15 and 2.31). This could be due in part to the lack of childcare spaces and high costs in the province, which makes non-parental care more difficult to obtain [Griffore (2015)]. The provincial dummy variable for Alberta indicates that parents in that province were 2.30 times more likely to use parental childcare than parents in Ontario. The true population effect has a 95% confidence interval of 1.55 to 3.39. In 2006, Alberta had high childcare costs, low public funding, and a shortage of spaces so parental childcare would have increased odds for parents living in Alberta as compared to Ontario [Sarlo (2016)].

Households where only one parent is employed are 3.67 times more likely to use parental childcare with the true population effect being between 2.92 and 4.60. Having one employed parent frees up time that instead can be spent caring for children. Similar studies to this one have confirmed that when only one parent was employed, the odds of using non-centre based care increased via the additional parent in the home [Brandon (2004)]. Furthermore, studies have found that mothers who were unemployed tended to be the ones to care for their children directly [Johnson et al. (2017)].

Additionally, this study shows the employment status of the respondent's partner is statistically significant. If the respondent's partner is employed, the household was half as likely to use parental childcare. The true population effect is between 0.38 and 0.66. This is expected, given that joining the labour force would reduce the time the respondent's partner can devote to childcare, and possibly increase the opportunity costs of doing so.

B. 2006, Household Income Groups & Restricted Sample

The regression results for the two household income groups and the restricted sample are also shown in table 1 below. The mean income for the sample in 2006 is \$71,889.23. The data was divided into two groups on the basis of the mean. For the group with household income under \$70,000, nativity status is a significant variable and its interpretation is homogeneous to the interpretations discussed above. While not significant, the indicator for the respondent only having some high school education interestingly has an OR that is slightly less than 1. This interpretation of the OR contrasts the previous interpretations. Even with restricting the household income, household income has an OR of 1 but is not significant. The interpretation applied to the full sample may still have relevance here, where the heterogeneity in the category of non-parental care means parents from different income groups have similar odds of using parental care. For the group with household income above \$70,000, much of the results are similar to those of the other household income group. A key contrast here is that nativity status is not a significant variable and its OR is a smaller value. For all the restricted sample regressions the results are supportive of the full sample results. Given this similar conclusions can be drawn for each OR estimate and this lends support to the overall interpretations.

TABLE 1—REGRESSION RESULTS FOR 2006

	(1) Entire Sample	(2) Restricted	(3) HH Inc < 70k	(4) HH Inc > 70k
Nativity Status	1.289* (0.1853147)	1.192 (0.1973979)	1.551* (0.3687826)	1.235 (0.2314118)
Age	0.992 (0.0096661)	0.989 (0.0125174)	0.985 (0.0157939)	0.996 (0.0125805)
Household Income	1.000*** (2.33e-06)	1.000*** (2.99e-06)	1.000 (7.68e-06)	1.000** (5.28e-06)
Some HS Education	0.996 (0.2367052)	1.021 (0.3142781)	0.981 (0.3061771)	0.975 (0.3634502)
Completed HS education	0.997 (0.1692304)	0.959 (0.2173896)	0.9264028 (0.2438991)	1.050 (0.2336855)
All children < age of 12 in the HH	0.998 (0.110071)	1.055 (0.148725)	0.683** (0.1309733)	1.204 (0.165967)
Resident of NWFL	1.305 (0.295261)		1.892 (0.7675464)	1.131269 (0.3237371)
Resident of BC	1.628*** (0.2907962)	1.658** (0.2895248)	1.937** (0.6992735)	1.007 (0.2204088)
Resident of NS	1.45294 (0.5934828)		1.494 (0.3096692)	0.828 (0.2228987)
Resident of NB	0.984 (0.2410096)		1.567 (0.6270972)	.714 (0.2398952)
Resident of QC	0.298*** (0.0510549)	0.289*** (0.0492129)	0.394*** (0.1022347)	0.250*** (0.0587548)
Resident of MAN	0.877 (0.1971756)		0.960 (0.3305499)	0.837 (0.2472842)
Resident of SKWN	0.966 (0.2493437)		0.872 (0.3484039)	1.207 (0.3791796)
Resident of ALB	2.296*** (0.4567024)		2.757** (1.277925)	2.156** (0.4828571)
Resident of PEI	0.865 (0.2754499)		1.869 (0.9444919)	0.546 (0.2536564)
Partner has some HS education	1.248 (0.3057441)	1.629 (0.5471791)	1.217853 (0.3855328)	1.320 (0.5228256)
Partner has PS education	0.843 (0.1157448)	0.986 (0.17306)	0.823 (0.1734858)	0.868 (0.1584964)
Only one parent is an income earner	3.667*** (0.4256368)	2.779*** (0.4062641)	3.601*** (0.6728471)	3.639*** (0.5626133)
Partner is employed	0.500*** (0.0711107)	0.410*** (0.0701706)	0.586** (0.1275684)	0.445*** (0.0869427)
Urban		0.979 (0.1889048)		
Observations	1932	1201	652	1280

Standard errors in Parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

C. 2011, Full Sample

The results from the logistic regression with the full sample for 2011 are shown in table 2 below. Independent variables such as nativity status, age of the respondent, marital status of the respondent, number of children in the household, the dummy variable for some secondary schooling, the dummy variable for all children in the household being under the age of 12, the provincial dummy variables for Quebec and Saskatchewan, and the dummy variable for only one parent in the household being an income earner are all significant.

Nativity status has an OR of 1.71 and the 95% confidence interval for nativity status runs from 1.18 to 2.48. This can be interpreted as foreign-born parents being 1.71 times more likely to choose parental care as their childcare arrangement than native-born counterparts. The true population effect is between 1.18 and 2.48 times more likely. This is a greater likelihood than the relative likelihood of the foreign-born group of parents in 2006.

Surprisingly, the number of children in the household and the dummy variable for all children in the household being under the age of 12 indicate a reduced likelihood of parental care being the choice of childcare. Other studies reported a greater likelihood of parental care being the choice of childcare when the number of children in the household increase (OR of 1.23 in [Brandon (2004)] when compared to centre based care, ORs of 1, 1.35, 1.23 in [Turney and Kao (2009)] when compared to the various selections of childcare). A possible explanation for this is that parents with non-parental childcare arrangements in place for one child may receive preferential treatment for any additional children. Discounted childcare for the second child, or a guaranteed spot in the childcare arrangement could be the reasoning behind parents with more children and all children under the age of 12 (age limit requiring supervision) being less likely to use parental care.

The dummy variable that indicates the respondent had only some secondary schooling as their highest level of educational attainment has an OR as expected. This group of respondents is more than two times more likely (OR of 2.13) to use parental care when compared with respondents who have obtained a high school diploma or attended further education. The true population effect is between 1.03 and 4.42 times more likely. This reflects what previous studies have found, that higher levels of educational attainment of the child's parents increases the odds of using non-parental care.

For reasons discussed earlier, parents who reside in Quebec are almost half as likely to use parental care when compared with parents who reside in Ontario (OR of 0.49, true population effect is between 0.32 and 0.761). Parents who reside in Saskatchewan are almost two times as likely to use parental care when compared with parents living in Ontario (OR of 1.83, true population effect is between 1.05 and 3.18). In 2011, Saskatchewan did not have specific subsidies or tax credits in place for families to aid with childcare costs but did implement programs relating to early childhood learning and childcare (Sarlo, 2016). The lack of subsidies and other financial support could be a possible reason for the increased likelihood of parental care being the childcare of choice.

Households with only one parent being the income earner are 3.6 times more likely to have parental care as their main childcare arrangement, with a true population effect between 2.65 and 4.89 times more likely.

D. 2011, Household Income groups

For the 2011 sample, the mean of household income is \$80,008.73. The sample was divided into two groups of respondents who either had household income below or above \$80 000. The results for the group with household income below \$80,000 are similar to those of the logistic regression with the full sample. One difference is the loss of significance in the nativity status variable and the inclusion of 1 in the 95% confidence interval. There is a possibility that nativity status does not reduce or increase the likelihood of using parental care for this sample.

For the other household income group, nativity status retained its significance and the OR is greater than that of the variable's OR in the full sample (OR is 2.09). The OR for the dummy variable indicates one income earning households are the highest for this group at 4.99. This implies that parents in such households are almost five times more likely to use parental care. Other variables maintain a similar value and interpretation as the full sample.

Appendix figure A2 shows the relationship between the percentage of parents that use parental care in each household income group in 2011. As with 2006 data, there is a decline and stabilization of parental care at similar levels of household income.

TABLE 2—REGRESSION RESULTS FOR 2011

	(5) Entire Sample	(6) HH Inc < 80k	(7) HH Inc > 80k
Nativity Status	1.715** (0.3240689)	1.272 (0.3453651)	2.091*** (0.5406961)
Age	0.969** (0.011603)	0.995 (0.0166004)	0.945*** (0.0180929)
Household Income	1.000*** (2.86e-06)	1.000** (6.76e-06)	1.000 (0.0000149)
Married	2.592** (1.117122)	3.128** (1.405739)	0.780 (0.7323759)
Number of children	0.802* (0.0940177)	0.968 (0.1682499)	0.708** (0.117)
Completed PS education	1.027 (0.2285296)	1.096 (0.3251942)	0.982 (0.3433657)
Some HS Education	2.132** (0.7919263)	3.176** (1.475951)	0.933 (0.6795541)
All children under the age of 12 in the HH	0.619*** (0.1123227)	0.624* (0.1776654)	0.607** (0.1509987)
Resident of NWFL	1.003 (0.3204218)	0.666 (0.3124379)	1.355 (0.6177407)
Resident of BC	1.245 (0.3041113)	0.677 (0.2573361)	2.007** (0.6565324)
Resident of NS	0.914 (0.3046401)	0.691 (0.338613)	1.122 (0.5488274)
Resident of NB	0.867 (0.2893803)	0.912 (0.4474238)	0.780 (0.3889226)
Resident of QC	0.494** (0.1090488)	0.319*** (0.1003399)	0.724 (0.227516)
Resident of MAN	1.755* (0.5113981)	1.528 (0.6678494)	1.916* (0.7466297)
Resident of SKWN	1.827** (0.5129732)	1.924 (0.9338481)	1.719 (0.6297892)
Resident of ALB	1.385 (0.2854444)	1.046 (0.3595218)	1.677* (0.4668142)
Resident of PEI	0.828 (0.4523376)	0.436 (0.3831928)	1.395 (0.9921979)
Respondent is employed	0.845 (0.1506289)	0.934 (0.2318238)	0.802 (0.2045853)
Partner has some HS education	1.385 (0.4535661)	1.444 (0.5897207)	1.507 (0.8987685)
Partner has PS education	0.979 (0.1807941)	1.027 (0.2582604)	0.960 (0.2626998)
Only one parent is an income earner	3.602*** (0.5616184)	2.478*** (0.5907907)	4.990*** (1.091788)
Urban	0.958 (0.1576022)	0.976 (0.240634)	0.942 (0.217247)
Observations	1129	467	662

Standard errors in Parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

V. Conclusion

The results of this study indicate that a holistic approach is required to understand how parents make childcare decisions. Many interactions over a multitude of characteristics appear to be significant in the decision-making process. Clear heterogeneities exist between the childcare arrangements of foreign-born and native-born parents. The logistic regressions quantified these heterogeneities, once contextual, demographic, and socioeconomic variables were accounted for. Foreign-born parents were 1.29 and 1.71 times more likely to use parental childcare than native-born parents in 2006 and 2011, respectively.

Given these findings there may be an underutilization of non-parental childcare arrangements by foreign-born parents because of the unique barriers they face in accessibility. A commonly cited reason surrounds the cultural and social norms that foreign-born parents hold (Johnson et al., 2016). Due to this, they may face hardships in adjusting to the childcare environment of Canada when they were accustomed to familial or community support in raising children.

Lack of knowledge around local programs that exist to support foreign-born parents and their children may exacerbate underutilization. Without understanding eligibility, foreign-born parents will continue to be barred from accessing non-parental childcare arrangements and rely on parental care for their children. A lengthy enrolment process coupled with red tape may also act as deterrent for foreign-born parents with varying levels of English and/or French proficiency. Foreign-born parents without a strong command of the official languages may not be able to communicate with the providers and caretakers at childcare centres and feel hindered from utilizing these arrangements [Johnson et al. (2017)].

Furthermore, foreign-born parents may not have the personal network to leverage when making childcare decisions. They may not be able to consult friends and family members, who can be a source of knowledge for childcare centres, babysitters, nannies or childcare support [Johnson et al. (2017)]. The literature also suggests that ethnic enclaves have fewer services and foreign-born parents may seek non-parental childcare services but waiting lists and lack of spaces prevent them from doing so [Agarwal et al. (2007)]. There is scope for federal and provincial policy to address these barriers and encourage foreign born parents to use non-parental care at rates similar to non-immigrant parents. Actions can be taken, such as: promoting childcare spaces, offering bilingual services, helping immigrants maneuver through the form and enrollment process, and ensuring ethnic enclaves are well serviced.

Implementing such policies could have possible child developmental benefits, and further economic benefits. Researchers have discussed the possible benefits children derive from attending centre-based childcare prior to starting school [Cleveland and Krashinsky (1998)]. Children become more social and develop greater language and cognitive skills. The ripple effect of this is better academic performance and lower chances of dropping out of school. Later on, these effects from staying committed and doing well in school translate into higher incomes, better health, and a greater chance of being employed. Economic benefits for the wider society include: greater tax revenues, increased productivity, and decreased healthcare costs and reliance on social welfare programs.

For children of foreign-born parents, additional benefits come from the transfer of social capital and ease of integration. As mentioned by Brandon, centre-based childcare is capable of transferring social capital to children of foreign-born parents, so children are able to understand

the rules, speak and write English/French, learn how to play and be social with multicultural children. These children will also be able to easily integrate into Canadian society by adapting early in their life to mainstream culture while also upholding their own cultural and familial beliefs. This would involve cultivating bicultural competency, as noted by Taiwanese mothers in survey based evidence [Uttal and Han (2011)].

Although the findings in this research are both logical and statistically significant there are some caveats to consider. As with many pieces of research, there is the potential for omitted variable bias as several variables could not be included due to limitations in the data. Variables for low income status, centre based childcare availability, countries of origin of foreign-born respondents, type of job of respondents, the main caretaker of the child if parental childcare is used, the quality of available childcare availability, and the provincial policy for childcare are not available. While the dummy variable indicating the respondent lives in an urban area is a good proxy for centre based childcare availability, there are no suitable instrumental or proxy variables for the other omitted variables. It is likely that, greater significance is being attributed to nativity status and there is a potential upward bias.

With survey data, there is also sampling bias. The participants of the survey must speak an official language to complete the survey, which excludes any foreign-born respondents who are not proficient in English or French. Additionally, the sample from the data does not provide a good representation of single parent families, with only 0.25% respondents in 2006 being single parents while the national average was 15.6%. In 2011, only 3.63% of respondents were single parents while 21.5% of children lived with single parents in Canada [Milan et al. (2018)].

Furthermore, the data used in this study does not identify whether children are foreign-born or native-born. This information would provide useful insights on how childcare arrangements differ by the nativity status of the children. Children may be eligible for certain subsidies and tax credits depending on their citizenship status and foreign-born children may not be citizens. Further wedges between the difference in parental and non-parental childcare usage may occur due to the inclusion of this variable [Johnson et al. (2017)].

Future studies could use data that contains information on omitted variables and include survey data that has a sample better reflecting the Canadian population. Alternatively, a matching model or approach might be utilized. The childcare selection measure could be further sub-categorized in order to see how nativity status interacts with non-parental non-centre based care, and a multinomial logistic regression could be the methodology employed going forward.

In summary, this paper has illustrated how foreign-born parents may interact with the childcare decision-making process differently than native-born parents. Foreign-born parents do use non-parental childcare at lower levels than their native-born counterparts, both when controls are and are not included. Such heterogeneities point to possible policy interventions that can be taken by the government, as well as the need for future studies to explore this issue with more depth and fewer limitations. As more children in Canada are children of immigrants or immigrants themselves, this issue warrants studying because of its prevalence and possible implications for the future generations of youth.

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APPENDIX

TABLE A1—SUMMARY STATISTICS AND DATA CHARACTERISTICS

	Statistics for 2006		Statistics for 2011	
	Native-born	Foreign-born	Native-born	Foreign-born
Age	34.34	36.47	33.16	35.33
Number of children in the HH	1.94	1.94	1.46	1.42
Household income	73653.85	64489.25	81607.88	71491.71
Some high school education	6.09%	5.65%	5.91%	4.97%
Completed high school	11.22%	10.22%	11.20%	9.39%
Post secondary (PS) education	82.69%	84.14%	82.88%	85.64%
All children are under the age of 12 in the HH	62.18%	61.83%	79.88%	78.45%
Resides in Newfoundland and Labrador (NWFL)	6.79%	0.81%	5.5%	0.55%
Resides in Prince Edward Island (PEI)	3.85%	0.81%	2.7%	0.55%
Resides in Nova Scotia (NS)	5.71%	1.88%	5.08%	1.1%
Resides in New Brunswick (NB)	5.51%	1.34%	5.08%	0.55%
Resides in Quebec (QC)	19.36%	12.63%	18.77%	19.34%
Resides in Ontario (ON)	28.72%	52.42%	22.51%	37.02%
Resides in Manitoba (MAN)	6.22%	4.84%	5.6%	4.97%
Resides in Saskatchewan (SKWN)	5%	1.08%	6.02%	4.97%
Resides in Alberta (ALB)	9.17%	8.60%	19.09%	14.92%
Resides in British Columbia (BC)	9.68%	15.59%	9.65%	16.02%
Mother is an immigrant	12.82%	95.70%	11.72%	96.69%
Father is an immigrant	14.42%	95.97%	14.42%	95.58%
Parental childcare arrangements	46.79%	59.41%	41.60%	51.93%
Partner is employed	76.86%	64.25%	72.51%	72.93%
Immigrated under the age of 20	–	38.38%	–	40.11%
Household language is an official language	98.01%	52.83%	97.72%	53.93%
Immigrated from North America or Europe	–	35.22%	–	34.81%
Minority	1.67%	57.26%	2.18%	54.14%
Partner has some high school education	6.86%	6.99%	7.05%	3.31%
Partner has high school education	21.86%	18.82%	17.84%	12.71%
Partner has post secondary school education	71.28%	74.19%	75.1%	83.98%
Respondent is employed	72.65%	71.43%	74.27%	71.68%
Only one parent is the income earner in the HH	46.03%	54.57%	48.24%	42.54%
Respondent lives in an urban area	79.69%	96%	72.2%	91.16%
Observations	1560	372	964	181

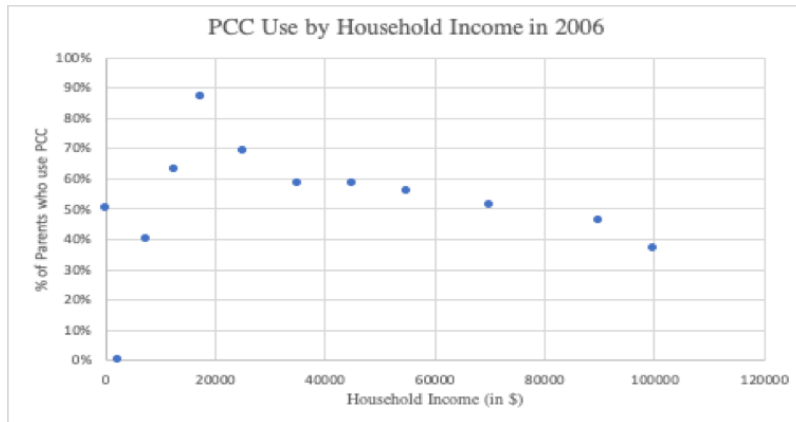


FIGURE A1. PARENTAL CARE VERSUS HOUSEHOLD INCOME IN 2006

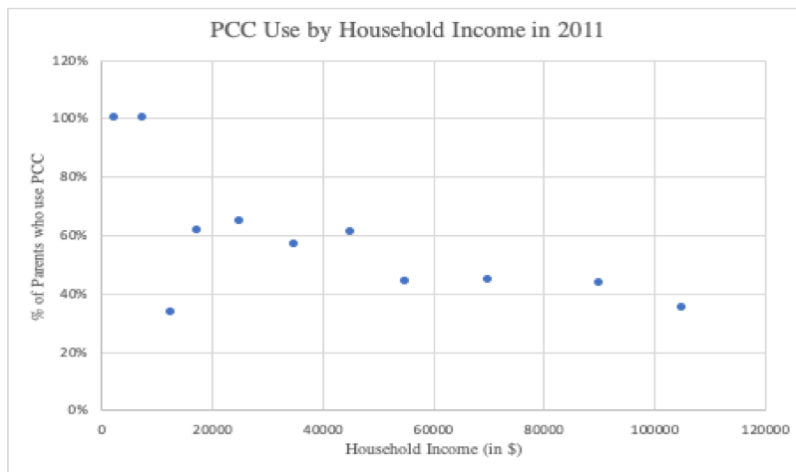


FIGURE A2. PARENTAL CARE VERSUS HOUSEHOLD INCOME IN 2011

TABLE A2—LINK (SPECIFICATION) TESTING P-VALUES

Model	hat	hatsq	cons
(1)	0.000***	0.607	0.740
(2)	0.000***	0.815	0.855
(3)	0.000***	0.476	0.686
(4)	0.000***	0.884	0.930
(5)	0.000***	0.477	0.668
(6)	0.000***	0.604	0.764
(7)	0.000***	0.925	0.956

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

TABLE A3—HOSMER-LEMESHOW (SIGNIFICANCE) TESTING

Model	HL Chi-Sqr	p-value
(1)	2.24	0.9726
(2)	12.27	0.1395
(3)	4.85	0.7740
(4)	5.05	0.7519
(5)	9.91	0.2713
(6)	11.19	0.1912
(7)	17.98	0.0214

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$