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Estimation of Labour Market Participation Rates for Canadian  
and Foreign-born Families Resident in the  
Vancouver Census Metropolitan Area Circa 1991

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## RIIM

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**Estimation of Labour Market Participation Rates for Canadian-Born  
and Foreign-Born Families Resident  
in the Vancouver Census Metropolitan Area Circa 1991**

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**Abstract**

With data extracted from the 1991 Census of Canada, labour market participation rates were estimated for residents of the Vancouver Census Metropolitan Area. The focus of this investigation was at the family level. Separate logit regression equations were employed for husbands or male common-law partners, and wives or female common-law partners by place of birth.

The findings suggested that labour market participation rates differ by place of birth for females, with Asian-born or Middle East-born females being more likely to participate than their European-born or Canadian-born counterparts. Participation rates for males were estimated to be consistently higher than for females and were found not to be contingent upon place of birth, especially in males under the age of fifty.

## **Introduction**

A large body of work has been published which addresses the labour market participation decision of males and females. Studies by Lewis and Shorten (1991), Carliner (1981) and Ciecka and Donley (1996), for example, have estimated the relationship between the labour market participation decision and a number of human capital and socioeconomic characteristics. Numerous authors have estimated earnings differentials between visible minorities and non-visible minorities. Benjamin and Baker (1995) found that earnings differentials existed for a number of ethnic groups due to differential payoffs in characteristics relative to persons of European origin. However, as Pendakur and Pendakur (1996) noted, the evidence regarding the magnitude and existence of earnings differentials is not clear cut. Kelly (1995) concluded that visible minorities are doing well in Canada.

Given the relatively high levels of immigration to Canada over the past decade, important questions arise pertaining to the economic performance of immigrants in terms of their earnings and participation in the labour market which are of concern to both provincial and federal governments. First, how well do immigrant males and females perform relative to their Canadian-born counterparts, for instance, in terms of their participation in the labour market and in terms of earnings? Second, how have relatively new immigrants performed in the labour market in comparison to earlier waves of arrivals? These questions are particularly important to Vancouver, which along with Toronto, is the most popular first destination of new immigrants.

This paper seeks to explore how the interaction of family characteristics affects the decision of husbands or male common-law partners, and wives or female common-law partners to enter the labour force. The focus of the investigation concerns the question of whether or not differential participation rates by gender or foreign birth status exist. The study then proceeds to test whether human capital or family characteristics

explain participation rate differences. If the influences of human capital or family background do not offer an explanation, then participation rate differentials may be attributable to either discrimination by gender or foreign birth status and/or a lack of assimilation into the Canadian way of life.

The study was confined to include families who were resident in the Vancouver Census Metropolitan Area (CMA) at the time of the 1991 Census. As most immigrants to British Columbia initially settle in Greater Vancouver as opposed to the hinterlands, the analysis was limited to the Vancouver CMA. Central to the study is the decisions of husbands and wives (or common-law equivalents) in relation to their place of birth. Particular attention is made to Canadian-born families, Asian/Middle East-born families, European-born families and foreign-born families in total. In this study, a family is defined as Canadian-born if both partners were born in Canada. Similarly, European families are defined as families where both partners were born in Europe, and Asian/Middle East families as families where both partners were born in Asia or the Middle East. This approach is used as place of birth is thought to offer more reliable information on an individual's background than the census question pertaining to the 'ethnicity' of an individual. The problem with the census ethnicity question lies in the fact that multiple responses are possible, particularly in a country as culturally diverse as Canada. Family census data was used in this study as it provides more detailed information on both the earnings of family members and number of children than do individual census data files.

One of the lines of enquiry in this paper is whether or not the labour market participation decision is being driven by place of birth. Are immigrants less likely to participate because of discrimination, thus lowering their expected wage from labour market activity? When controlled for a number of human capital characteristics, the results suggest that the labour market participation decision is contingent upon place of birth. Moreover, the results indicated important differences in the variables that were

statistically significant in explaining the labour market participation decision across the four separate groups for which equations were estimated by gender.

This paper is set out in three parts. Section 1 includes a discussion of the data used for the investigation. Section 2 contains the results of estimating labour market participation equations for husbands and wives (or common-law partners) using logit regression techniques. Section 3 includes participation rates estimated using the logit regression results described in Section 2.

## **Section 1: Data**

The data used for this paper were obtained from the 1991 Census of Canada public use microdata file on families. The sample was restricted to include families that were resident in the Vancouver census metropolitan area (CMA) at the time of the census.

The descriptive statistics relating to the sample are contained in Table 1. The data were divided into four groups. Three groups were made up of Canadian-born families, Asian/Middle East-born families, and European-born families. A fourth group, composed of foreign-born only families, was included in the analysis. Excluded from the sample were all families where either partner was under the age of 19 or over 64, families that were resident outside Vancouver at the time of the 1991 census, and all families that contained only one parent. The census family tape contains a three percent sample of the census population.

The sample included 3,859 Canadian-born families, meaning that the sample was drawn from a population 33.33 times larger than or approximately 128,621 families in the Vancouver area. In addition, 1,036 Asian/Middle East-born families and 682 European-born families were included in the sample. Finally, the foreign-born family group

comprised 2,179 families. This translates into the population consisting of 72,633 foreign-born families residing in the Vancouver CMA at the time of the census. Of this total, 34,533 were Asian/Middle East-born families, and 22,733 families were European-born.

## **Family Structure**

In terms of family size, the families having Asian/Middle East-born partners were found to be larger than the other groups. The average family size of the Asian/Middle East-born group was 3.84, which was higher than that of the Canadian-born group (3.09) and the European-born group (3.21). Also, the foreign-born group as a whole exhibited larger family sizes than the Canadian-born group (3.57 versus 3.09). In terms of the number of children reported to be living at home, 77 percent of the Asian/Middle East families reported the presence of children under the age of 15 in comparison with 52.9 percent for the Canadian-born families and 33.6 percent for the European-born families.

Age differentials do not appear to offer an explanation for Asian/Middle East-born households having more children than the Canadian-born. In this sample the Asian/Middle East-born husbands/common-law partners are approximately 2.5 years older than the Canadian-born. More importantly, the average age of the Asian/Middle East-born wives/common-law partners (40.06) is only about 1.5 years older than the Canadian-born wives/common-law partners (38.49). Cultural differences, the cost of child rearing, or the fact that a larger proportion of the Asian/Middle East-born are married relative to the other groups are the likely explanations for the difference in household size of the Asian/Middle East-born families relative to the European-born and Canadian-born groups. As noted earlier, this study was limited to families which included married or common-law couples. As alluded to above, the data suggest that within the groups chosen, just over 84 percent of the Canadian-born families had partners

who were married in comparison to 98.7 percent for the Asian/Middle East-born families and 96.6 percent for the European-born families.

**Husbands or Male Common-law Partners**

**Average Income Data: Husbands/Common-law Partners**

**All Data in 1991 Dollars**

	Canadian-born	Asia/Middle East-born	European-born	All Foreign Born
Average Total Income of Family	\$66,261	\$48,844	\$64,274	\$55,830
Average Total Income of Husbands/Male Common-law Partners	\$44,395	\$28,712	\$41,808	\$34,527
Average Wage or Salary of Husbands/Male Common-law Partners	\$39,718	\$24,728	\$37,661	\$30,635

Source: Authors Calculations, 1991 Public Use Census Files For Families

As shown in the above table, the average total income in 1991 dollars of Canadian-born families was \$66,261, with the average total income of the husband or common-law partner being \$44,395. Of this total income figure, males reported wages and salaries of \$39,718.

In Asian/Middle East-born families, the average total family income was \$48,844 which is 73.7 percent of the equivalent figure for Canadian-born families. Of particular interest is the fact that the average wage or salary of the Asian/Middle East-born husbands or common-law partners is \$24,728 or 62 percent of the equivalent figure for the Canadian-born males in the sample. It is important to note that the average wage data is based on all of the husbands/common-law partners in the sample. No account for the level of labour market activity is inherent in this figure.



In European-born families, the average total level of household income was \$64,274, or about 97 percent of the level of the Canadian-born counterparts. The average wage or salary of the husbands/common-law partners was \$37,661 or 94.8 percent of the level of the Canadian-born equivalents. Finally, the data indicate that total household income of all foreign-born husbands/common-law partners in the sample was \$55,830 or about 15.7 percent below that of the Canadian-born.

Pendakur and Pendakur (1996), using ethnicity as opposed to place of birth to categorize the population, noted that within census metropolitan areas in provinces outside Atlantic Canada, mean earnings differentials for males representing visible minorities born outside Canada were 24.6 percent below white Canadian-born males. As anticipated, given the findings for the Asian/Middle East-born males, the average wage or salary of the foreign-born contingent was \$30,635, or 77 percent of that of the Canadian-born. Canadian-born husbands/common-law partners (93.0 percent) were more likely to be in the labour force than the males in the Asian/Middle East-born (87.5 percent) and European-born groups (89.3 percent).

Finally, Table 1 includes a selection of variables that describe the level of education obtained by husbands/common-law partners in the sample. In terms of the total years of schooling, the average total years of education for the husbands/common-law partners was broadly similar for the four groups. The Canadian-born males averaged 13.33 years of education in comparison to their foreign-born counterparts who averaged 13.12 years of education. The European-born group of husbands/common-law partners averaged 12.87 years of education, which was slightly lower than the Asian/Middle East-born partners who averaged 12.98 years of education. Of the Asian/Middle East-born males, 26.2 percent reported possessing a university degree or a higher level of education in comparison to 16.3 percent of the Canadian-born husbands/common-law partners and just 11.1 percent of the European-born equivalents.

## **Wives or Female Common-law Partners**

This section describes, according to place of birth, the labour market activity of females who are either wives or common-law partners. With respect to female immigrants, several comments are noted. First, as reported by Baker and Benjamin (1995), a female may not have gained entry to Canada based on her stock of human capital. In this study all females were either married or living with a partner at the time of the 1991 census. It is therefore postulated that in many cases the credentials of the husband would have been taken into account during the immigration screening process. Moreover, the decision of a female to participate in the labour market will be determined by the reservation wage and the magnitude of wage offers forthcoming. The reservation wage is the wage at which the individual will decide not to participate in the labour market. As noted by Killingworth and Heckman (1986), an individual will decide to take part in the labour market if the reservation wage is less than the market wage. The reservation wage of the wife or female common-law partner will not only be a function of her stock of human capital but will also likely be a reflection of factors such as the income of the male partner, and the residual income of the household provided by other family members. The level of residual income will, in turn, be correlated with the number of children, the family size and the age of the husbands, wives or common-law partners. Here we focus on whether or not place of birth plays a part in the labour market activities of wives or female partners, adjusting for a number of human capital and household characteristics. To this end, participation rates were estimated using the average values from the data in conjunction with the estimated regression coefficients.

## Average Income Data: Wives/Common-law Partners

### All Data in 1991 Dollars

	Canadian-born	Asia/Middle East-born	European-born	All Foreign Born
Average Total Income of Wives/Common-law Partners	\$19,349	\$15,417	\$15,912	\$15,954
Average Wage or Salary of Wives/Common-law Partners	\$17,040	\$12,650	\$13,720	\$13,516

Source: Author's Calculations, 1991 Public Use Census Files For Families

The level of labour market activity of the Canadian-born wives/common-law partners relative to their Asian/Middle East-born counterparts was almost identical (74 percent versus 72.7 percent respectively). European-born wives or common-law partners were less likely to participate in the labour market, with 67.4 percent either working or looking for work.

Significant variations existed between the average wages and salaries of the Canadian-born, Asian/Middle East-born and European-born wives/common-law partners. The average wage or salary of the Canadian-born wives/common-law partners was \$17,040, which was almost 35 percent higher than the Asian/Middle East-born females (\$12,650) and over 24 percent higher than the European-born females (\$13,720). If the average reported wage of those who were working is examined,<sup>1</sup> the data suggest that the Canadian-born wives/common-law partners earned an average of \$22,764, Asian/Middle East-born wives/common-law partners \$17,712, and European-born wives/common-law partners \$20,318. All foreign-born wives or common-law partners who were working earned an average of \$19,136.

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<sup>1</sup> An individual is assumed to be working if he/she reported wages or salaries exceeding \$1,500 per year.

Finally, a number of variables measuring education are included in Table 1. The data suggest that the average number of years of schooling of the Canadian-born wives/female common-law partners is higher than that of the Asian/Middle East-born, European-born and all foreign-born contingent. The average number of years of schooling of the Canadian-born females was 13.05 years in comparison to 11.84 years for the Asian/Middle East-born, and 12.28 years for the European-born females. The group consisting of all foreign-born females had, on average, 12.25 years of education.

## **Section 2: Logit Regression Results**

The expected signs of the regression coefficients with respect to the labour market participation rate are, as detailed below, in keeping with the life-cycle predictions of human capital theory. As discussed by Shamsuddin (1993), in general terms, individuals will typically invest in education and training while they are relatively young in order to accumulate capital that will allow them to earn more income than those with less human capital over a long working span. This is because the cost of earnings foregone, in terms of lost income, is lower for younger people than for older people. As people age, their stock of human capital will eventually begin to decline thus leading to lower wages.

Given the life-cycle profile of earnings described above, age is expected to be positively related to labour market participation, meaning that labour market attachment increases with age. The age-squared variable is expected to be negative, indicating that diminishing marginal returns to aging is anticipated.

The expected sign of the total family income variable with respect to the female partner is ambiguous. On the one hand, higher levels of family income attributable to the earnings of the male partner may be associated with females substituting work for non-work activities, especially if the male partner is able to earn sufficient income to meet the family needs. On the other hand, higher family income could be attributed, in part, to the

female having a successful career. If this is the case, the female may choose to substitute work for leisure, given that the implicit cost of leisure (in terms of income foregone) is high. In other words, all other things being equal, higher total family income levels could be associated with either higher or lower levels of participation in the labour market of wives or female common-law partners. With similar reasoning, the relationship between total family income and the labour market participation decision of the husbands/male common-law partners is also hypothesized to be uncertain.

The presence of children under the age of six is expected to have a negative impact on the labour market participation-rate decision of females. For males, one may expect the reverse to hold. Males with children living at home may participate more in the labour market than males without children given the financial resources that are required to raise children. Similarly, the presence of children between the ages of six and fourteen is expected to have the same impact as described above for males and females for children aged under six. The relationship between the labour market participation rate of males and the presence of older dependents living at home is postulated to be either positive or negative. It could result in increased labour market participation of males. However, it is also possible that older dependents living at home may either be associated with the labour market or may have the means to finance themselves.

Turning to the impact of time spent in Canada, the years in Canada variable is expected to be positively related to the participation decision in the equations representing both husbands/male common-law partners and wives/female common-law partners. In other words, all other factors being constant, the likelihood of labour market participation is expected to increase the longer one lives in Canada. Possible reasons include the fact that knowledge of Canadian labour markets and proficiency in English are likely to increase with the amount of time spent in Canada. The sign of the years in Canada squared variable is anticipated to be negative, thus implying concavity of the function with respect to the participation-rate decision.

The variable representing whether or not an individual is married (as opposed to being a common-law partner in this case) is expected to yield a positive coefficient. This is because marriage is thought to positively impact on the labour market participation decision. All other things being equal, the relationship between total years of education and the labour market participation decision is expected to be positive. Higher levels of education are anticipated to result in higher participation rates for males and females. This hypothesis is based on human capital theory. Education is typically positively related to income, meaning that an individual who has obtained a relatively high stock of human capital will be able to command an income that exceeds his or her reservation wage, thus inducing the individual to participate in the labour market.

## Logit Regression Estimates

### List of Variables

#### Dependent Variable

A dummy variable being equal to one if the individual is working or looking for work at the time of the census, and zero otherwise.

#### Independent Variables

Age

Age of the individual at the time of the census.

Age Squared

Age of the individual squared.

Total Family Income

Includes money income from wages/salaries, government transfers, investment income and retirement income of all family members living at home.

Total Years of Schooling

The total years of schooling at elementary, secondary, university and non university levels.

Children Under Six

A dummy variable taking the value of 1 if there are any children under the age of six living at home and zero otherwise.

Children Six to Fourteen

A dummy variable taking the value of 1 if there are any children over the age of six and under the age of fourteen living at home and zero otherwise.

Married

A dummy variable taking the value of 1 if the individual is married, and zero if the individual is a common-law partner.

Years in Canada

The number of years that the individual has been in Canada.

Years in Canada Squared

The number of years that the individual has been in Canada squared.

## **Logit Regression Results: Participation Rates of Wives or Female Common-law Partners by Place of Birth**

### Discussion of Results: Wives or Common-law Partners

Consider first the logit results that were estimated for the Canadian-born females shown in Table 2. All of the coefficients were of the expected sign. Age and age squared were both significant at the 95 percent level of confidence in determining whether or not a Canadian-born female will be in the labour force. The other significant variables were total family income, total years of schooling, and the dummy variables representing the presence of children at home under the age of six and between the ages of six and fourteen. The marital status dummy variable was significant at the 95 percent level of confidence and had a negative coefficient meaning that, as expected, being married reduced the probability of a wife or common-law partner in a family being in the labour force.

For the Asian/Middle East-born females, age and age squared were found not to be statistically significant. It is also interesting to note that for Asian/Middle East-born females, the presence of children under the age of six, but not between the ages of six and fourteen were statistically significant in explaining female participation rates. The variables representing years in Canada, years in Canada squared and total years of schooling were also found to be statistically significant and of the expected sign. Total family income and the marital status dummy variable were found not to be significant in explaining the labour market participation decision.

The logit results for the European-born females suggest that the significant variables in explaining the labour market participation decision were total family income, total years of schooling and the dummy variables representing whether or not children under the age of six and between the ages of six and fourteen were resident in the household. The years in Canada squared variable was also statistically significant at the 95 percent level of confidence. In contrast to the Asian/Middle East-born females, the number of years in



Canada do not enter significantly into the participation decision. The age and age squared variables were insignificant for both the European-born and Asian/Middle East-born wives/common-law partners.

If comparison is made between the Canadian-born females and all foreign-born females, the variables reflecting total family income, total years of schooling, the presence of children (both under age six and between the ages of six and fourteen) were all statistically significant. For the foreign-born contingent taken as a group, the years in Canada variables were also statistically significant. In contrast to the Canadian-born, the age variable was not significant in explaining the labour market participation decision of the foreign-born group.

### **Logit Regression Results: Labour Market Participation Rates of Husbands or Male Common-law Partners by Place of Birth**

Labour market participation rates of men and women have been observed to differ with male participation rates being in the neighbourhood of 15 percent above female participation rates in certain age groups. Females participate less in the labour market for a number of reasons. First, they typically share a greater role in raising children or in engaging in other family responsibilities. Moreover, females who have engaged in child rearing at home may find that their stock of human capital has depreciated if they have not been active in the labour market. This, in turn, could be reflected in future wage offers being below their expectations thus leading to the decision not to participate in the labour market.

Table 3 provides the results from estimating logit regressions for husbands and male common-law partners by birth status. For the Canadian-born males, the significant variables were age, age squared and total family income. The variables measuring years of schooling and marital status were not significant.

The results for Asian/Middle East-born males suggested that total family income, age squared, years in Canada and years in Canada squared were statistically significant. The variables measuring age, the presence of children, marital status and total years of schooling were all insignificant in explaining the labour market participation decision of males.

The equation estimated for European-born males also suggested that age squared, total family income and total years of schooling were significant and of the expected sign. In contrast to the Asian/Middle East-born males, years in Canada and years in Canada squared were not significant at the 95 percent level of confidence.

For the foreign-born males considered as a whole, age, age squared, total family income, total years of schooling and the years in Canada variables were all significant in explaining the participation decision. In considering all four groups of male common-law partners and husbands, the presence of children did not statistically impact on the decision to enter the labour market.

### **Section 3: Estimated Participation Rates: Age-Participation Profile**

The results set out in Tables 4 and 5 suggest the following for Vancouver residents at the time of the 1991 Census of Canada.

#### Discussion of Results: Wives or Female Common-law Partners

1. Canadian-born and European-born females resident in Vancouver are less likely to participate in the labour market than the Asia/Middle East-born group or the foreign-born group considered as a whole. This applies to all age groups.

- Considerable differences emerge if one compares either the Canadian-born and foreign-born groups, or the Canadian-born and Asia/ Middle East-born group.
2. The participation rates for the Canadian-born group are of a similar magnitude to those estimated for the European-born group.
  3. The participation rates of the Asian/Middle East-born females are of a similar magnitude as the group representing all foreign-born females.
  4. Asian/Middle East-born females are more likely to participate beyond the age of sixty than the European and Canadian-born females.
  5. For the Asian/Middle East-born females, years in Canada as opposed to age were significantly related to the participation decision with the participation rate initially increasing with years spent in Canada and then declining after the immigrant had been in Canada for a period of twenty years. This was not the case with the European-born and foreign-born groups. In the case of the European-born contingent, both age and age squared were found to be statistically insignificant, with years in Canada squared (not years in Canada) significantly influencing the participation rate. In the equation estimated for all foreign-born wives and common-law partners, the years in Canada variables and the age squared variable were statistically significant.
  6. Young children living at home (under the age of six) were found to be statistically significant in reducing the probability of a female being in the labour market. Children living at home between the ages of six and fourteen were found to have a statistically significant negative impact on the labour market participation decision of all groups with the exception of the Asian/Middle East-born contingent.
  7. Higher levels of education were estimated to have a positive and statistically significant influence on the labour market participation decision of all four groups.
  8. All other factors being equal, increased labour market participation was estimated to be associated with higher levels of family income for the Canadian-born, European and all foreign-born groups with the exception of the Asia/Middle East group.

### Discussion of Results: Husbands or Common-law Male Partners

1. Canadian-born husbands or common-law partners tend to participate in the labour market at a slightly higher rate than their foreign-born counterparts. The difference is magnified beyond the age of fifty-five.
2. After the age of fifty, European-born males are estimated to participate in the labour market at a higher level than the Asian/Middle East-born and Canadian-born males.
3. Labour market participation is estimated to be lower for the Asia/Middle East-born group beyond the age of fifty-five in comparison with the other groups.
4. The presence of children living at home was found not to be a significant variable in the participation-rate equations estimated for all four groups of husbands and male common-law partners.
5. Years in Canada and years in Canada squared were statistically significant in the regression equations estimated for the Asia/Middle East-born and the foreign-born husbands/male common-law partners. This was not the case for the European-born group.
6. The number of years of education was only significant in explaining the participation rate of the European-born and all foreign-born groups. Education was not significant in the equations estimated for the Canadian-born or Asia/Middle East-born contingents.

Figure 1 shows estimates of age participation rate profiles for Canadian-born wives/common-law partners and husbands/common-law partners. Figures 2 and 3 show profiles of estimated participation rates against years in Canada. In determining the estimates included in Figure 2 and Figure 3 a number of assumptions were used. To arrive at a profile of participation rates and years in Canada, it was assumed that the individuals arrived in Canada at the age of nineteen. Also, average values for the total family income and years of education for each group were combined with the regression

estimates described in Tables 2 and 3. Finally, each male and female was assumed to have one child under the age of six and one child between the ages of six and fourteen living at home. It is noted that the years in Canada - participation-rate profiles portrayed in Figures 2 and 3 do not coincide with the age-earnings profiles included in Tables 4 and 5 because the age-earnings profiles assumed a constant value for years in Canada based on average data from each group.

In consideration of other studies, the results of this study were comparable to those obtained by Fagnan (1995) and Shamsuddin (1993), who both used Canadian data.

Tables 6 and 7 provide comparisons of the regression coefficients reported in this paper with those obtained by Fagnan and Shamsuddin. It is noted that the findings of Fagnan and Shamsuddin both relate to Canadian data as opposed to the Vancouver data set used in this paper. In these studies, either family size or children under the age of six were found to negatively impact on the labour market participation decision of females. This finding was replicated here. In addition, both Fagnan and Shamsuddin found that education was a significant variable in their econometric equations. The estimated influence of education reported in this study was also in keeping with that of Fagnan and Shamsuddin with the exception of the equation estimated for Canadian-born males.

In terms of the Canadian-born husbands or male common-law partners, the findings of this paper with respect to the influence of children were in keeping with those estimated by Fagnan (1995) and Shamsuddin (1993). Children living at home were not statistically significant in determining the participation decision of males. In addition, the results reported in this study found that education was not significant in the Canadian-born and Asia/Middle East-born regressions. Fagnan and Shamsuddin reported that education was significant in their labour market participation equations.

## **Conclusions**

The results contained in this study suggest that participation rates do tend to differ according to foreign birth status for the sample of wives or female common-law partners resident in Vancouver at the time of the 1991 Canada census. In particular, the Asia/Middle East-born females were found to be more likely to participate in the labour market than their European-born or Canadian-born equivalents. The reasons for these differences appear to be explained, at least in part, by the influence of variables included in the regression analysis to capture the impact of children living at home, and the role of the number of years of residence in Canada.

The magnitude of the regression coefficients suggested that the negative impact of the presence of children was lower for the Asia/Middle East-born females than for the European or Canadian-born groups. One interpretation of this finding is that the typically larger household sizes reported for the Asia/Middle East-born group allow for child-rearing responsibilities to be spread among other family members, thereby providing more flexibility for the female to engage in labour market activities.

In terms of years of residence in Canada, the regression coefficient representing the number of years in Canada was positive and significant for the Asia/Middle East-born regression equations. This was not the case for the European-born group. Again, this result would tend to increase the estimates of labour market participation for Asia/Middle East-born females in comparison to the other groups analyzed. In addition, the level of educational attainment does not appear to explain why the Asia/Middle East-born females tend to participate more in the labour market than their European-born or Canadian-born equivalents. The stock of education of the females was found to be broadly similar, and the regression coefficient was found to be almost fifty percent of the size of the coefficients estimated for the European and Canadian-born groups suggesting a positive, but weaker effect of education.

The findings for the husbands/male common-law partners were broadly similar across all four groups up to the age of fifty. The results suggest that, beyond the age of fifty, European and Canadian-born males participate at higher rates than Asia/Middle East-born males. These results appear to be partly explained by the magnitude of the estimated regression coefficients. The coefficient of the total family income coefficient estimated for the Asia/Middle East-born group was about 60 percent of the magnitude of the equivalent coefficient for the Canadian-born contingent, suggesting a smaller increase in labour market participation for a given increase in family income. Inspection of the raw data does not suggest that large differences in the endowment of human capital exist between the male groups by birth status.

Finally, the results obtained in this paper were found to be broadly in keeping with those found using Canadian data by Shamsuddin and Fagnan. This suggests that the participation decision of residents of Vancouver is, in the main, influenced by the same economic factors as those applicable to the nation as a whole.

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**Table 1 - Descriptive Statistics of Census Families in 1991**

	<b>Canadian Born</b>	<b>Asia or Middle East</b>	<b>European Born</b>	<b>All Foreign Born</b>
<b>Family Structure</b>				
% Married (as opposed to Common Law)	84.10%	98.70%	96.60%	87.10%
<b>Family Size</b>				
Two Persons	41.50%	13.30%	34.00%	22.60%
Three Persons	21.70%	21.60%	27.40%	23.70%
Four Persons	26.40%	40.90%	26.00%	34.40%
Five Persons	8.00%	18.30%	10.10%	15.00%
More than 5 Persons	2.40%	5.90%	2.50%	4.30%
Average Family Size	3.09	3.84	3.21	3.57
<b>Children</b>				
Presence of children under 6 years of age	26.10%	31.90%	8.40%	23.00%
Presence of children from 6 to 14 years	26.80%	45.10%	25.20%	36.60%
Presence of children from 15 to 17 years	9.20%	20.46%	16.90%	18.20%
Presence of children from 18 to 24 years	12.40%	24.70%	31.70%	26.80%
Presence of children over 25 years of age	3.20%	8.50%	10.40%	9.10%
Average Number of Never Married Children at Home	1.09	1.84	1.21	1.57
<b>Income (1997 Dollars)</b>				
Average Total Income of Census Family	\$66,261	\$48,844	\$64,274	\$55,830
Average Total Income of Husband/Common Law Partner	\$44,394	\$28,712	\$41,808	\$34,526
Average Total Income of Wife/Common Law Partner	\$19,349	\$15,416	\$15,912	\$15,954
Average Wage of Husband/Male Common Law Partner	\$39,718	\$24,728	\$37,661	\$30,635
Average Wage of Wife/Female Common Law Partner	\$17,040	\$12,650	\$13,720	\$13,516
% Males Reporting No Income Whatsoever	0.80%	2.41%	0.88%	1.79%
% Males Reporting No Wage or Salary	5.42%	13.03%	8.36%	10.23%
Average Age of Husband/Common Law Partner	40.83	43.36	49.98	45.71
Average Age of Wife/Common Law Partner	38.49	40.06	46.99	42.44
<b>Labour Force Activity of Husband, Male Common Law Partner</b>				
% in the Labour Force	93.00%	87.50%	89.30%	89.10%
<b>Labour Force Activity of Wife, Female Common Law Partner</b>				
% in the Labour Force	74.00%	72.70%	67.40%	71.60%
<b>Highest Level of Schooling of Husband, Male Common Law Partner</b>				
High School Certificate	13.30%	12.70%	7.30%	10.60%
University degree or higher	16.30%	26.20%	11.10%	21.90%
Total Years of Education	13.33	12.98	12.87	13.12
% reporting Skill Level 3 or 4	64.40%	51.40%	66.30%	58.70%
% reporting Skill Level 4	30.20%	22.40%	26.70%	26.20%
% reporting Skill Level 2 or 3	59.40%	55.50%	57.90%	56.20%
% reporting Skill Level 1	5.50%	11.60%	7.00%	10.00%
<b>Highest Level of Schooling of Wives, Male Common Law Partner</b>				
High School Certificate	20.60%	17.80%	18.50%	16.90%
University degree or higher	11.80%	16.20%	6.50%	13.40%
Total Years of Education	13.05	11.84	12.28	12.25
% reporting Skill Level 3 or 4	40.30%	26.20%	33.20%	31.70%
% reporting Skill Level 4	1.80%	10.30%	12.80%	13.10%
% reporting Skill Level 2 or 3	55.90%	47.00%	46.50%	47.40%
% reporting Skill Level 1	5.50%	18.30%	12.50%	15.00%
Number of observations	3,859	1,036	682	2,179

Source: Census of Canada, 1991

**Table 2: Logit Regression Results For Wives & Female Common Law Partners  
Equations Estimated For Those Resident In The Vancouver Census Metropolitan Area**

**Dependent Variable: Labour Force Activity, D=1 for participation, D=0 otherwise**

<b>Variables</b>	<b>Canadian Born</b>	<b>Asia or Middle East Born</b>	<b>European Born</b>	<b>All Foreign Born</b>
Age	<b>0.143</b> (4.524)	0.039 (0.589)	0.086 (0.901)	0.036 (0.805)
Age Squared	<b>-0.003</b> (-6.982)	-0.001 (-1.525)	-0.002 (-1.707)	<b>-0.001</b> (-2.248)
Total Family Income	<b>0.000009</b> (6.540)	0.000004 (1.476)	<b>0.0000116</b> (4.052)	<b>0.0000080</b> (4.689)
Total Years of Schooling	<b>0.116</b> (6.337)	<b>0.046</b> (2.419)	<b>0.097</b> (3.674)	<b>0.051</b> (3.860)
Children Aged 6 to14	<b>-0.484</b> (-4.940)	-0.294 (-1.678)	<b>-0.654</b> (-2.693)	<b>-0.370</b> (-3.026)
Children Under 6	<b>-1.591</b> (-15.288)	<b>-0.674</b> (-3.416)	<b>-1.214</b> (-3.423)	<b>-0.694</b> (-4.787)
Married	<b>-0.497</b> (-3.436)	-0.196 (-0.276)	-1.250 (-1.770)	-0.339 (-0.959)
Years in Canada		<b>0.207</b> (7.879)	0.060 (1.521)	<b>0.137</b> (8.004)
Years in Canada Squared		<b>-0.005</b> (-5.877)	<b>-0.002</b> (-1.967)	<b>-0.003</b> (-7.670)
Constant	<b>-1.214</b> (-1.926)	-0.046 (-0.0319)	0.098 (0.044)	0.339 (0.349)
Likelihood Ratio Test	677	133	111	243
Number of Observations At	2,846	753	609	1,942
Number of Observations At	1,013	283	73	237

**Bold Letters Indicate Statistically Significant Variables at the 95% Level**

**Table 3: Logit Regression Results For Husbands & Male Common Law Partners  
Equations Estimated For Those Resident In The Vancouver Census Metropolitan Area**

**Dependent Variable: Labour Force Activity, D=1 for participation, D=0 otherwise**

<b>Variables</b>	<b>Canadian Born</b>	<b>Asia or Middle Eas Born</b>	<b>European Born</b>	<b>All Foreign Born</b>
Age	<b>0.28953</b> (5.721)	0.16449 (1.709)	0.41255 (1.953)	<b>0.24758</b> (3.598)
Age Squared	<b>-0.004343</b> (-7.716)	<b>-0.002716</b> (-2.538)	<b>-0.005522</b> (-2.685)	<b>-0.003672</b> (-4.894)
Total Family Income	<b>2.641E-05</b> (9.276)	<b>1.614E-05</b> (3.724)	<b>4.742E-05</b> (6.035)	<b>2.555E-05</b> (7.482)
Total Years of Schooling	0.005011 (0.201)	0.035696 (1.352)	<b>0.11666</b> (2.790)	<b>0.05472</b> (2.856)
Children Aged 6 to14	0.32212 (1.284)	-0.13819 (-0.547)	0.11532 (0.182)	-0.16329 (-0.788)
Children Under 6	0.37501 (1.388)	0.34476 (1.104)	0.057395 (0.050)	0.19819 (0.762)
Married	0.26072 (1.114)	1.3113 (1.831)	-1.0871 (-0.930)	0.059195 (0.125)
Years in Canada		<b>0.18132</b> (5.168)	-0.056896 (-0.551)	<b>0.16814</b> (6.257)
Years in Canada Squared		<b>-0.00386</b> (-3.956)	0.0005404 (0.252)	<b>-0.003704</b> (-5.392)
Constant	<b>-2.8483</b> (-2.695)	-3.284 (-1.552)	-5.184 (-0.984)	<b>-4.0169</b> (-2.587)
Likelihood Ratio Test	584	147	179	342
Number of Observations At	3,578	907	460	1,561
Number of Observations At	281	129	222	618

**Bold Letters Indicate Statistically Significant Variables at the 95% Level**

**Table 4: Estimated Participation Rates For Wives/Female Common Law Partners**  
**Estimates Are For Those Resident In The Vancouver CMA At The Time of The 1991 Census**

Age	Canadian Born	Asia/Middle East Born	European Born	All Foreign Born
19-24	0.552	0.775	0.556	0.759
25-29	0.569	0.757	0.555	0.741
30-34	0.556	0.727	0.641	0.709
35-39	0.512	0.682	0.493	0.663
40-44	0.432	0.622	0.426	0.600
45-49	0.326	0.538	0.350	0.519
50-54	0.218	0.439	0.258	0.422
55-59	0.120	0.341	0.178	0.326
60-64	0.060	0.245	0.109	0.231

**Table 5: Estimated Participation Rates For Husbands/Male Common Law Partners**  
**Estimates Are For Those Resident In The Vancouver CMA At The Time of The 1991 Census**

Age	Canadian Born	Asia/Middle East Born	European Born	All Foreign Born
19-24	0.985	0.959	0.984	0.965
25-29	0.990	0.964	0.990	0.973
30-34	0.991	0.964	0.993	0.977
35-39	0.991	0.960	0.994	0.976
40-44	0.988	0.950	0.993	0.970
45-49	0.980	0.929	0.990	0.957
50-54	0.962	0.884	0.980	0.924
55-59	0.905	0.792	0.950	0.847
60-64	0.762	0.655	0.854	0.699

Notes: Estimates were obtained using the assumption that all couples were married and have children at home under the age of six and between the age of six and fourteen. Average values of family income, number of years of education and years in Canada were also used to derive the participation rates

**Table 6: Comparison of Regression Results With Those Reported by Fagnan and Shamsuddin**

**Estimated Logit or Probit Coefficients**

**Dependent Variable: Labour Force Activity, D=1 for participation, D=0 otherwise**

Variables	Sheldon	Shamsuddin	Sheldon	Shamsuddin	Fagnan
	Canadian Born Wives/Common Law Partners	Canadian Born Females	Foreign Born Wives/Common Law Partners	Foreign Born Females	Foreign Born Females
Age	<b>0.143</b> (4.524)	<b>0.029</b> (4.59)	0.036 (0.805)	<b>0.071</b> (3.57)	<b>0.175</b> (14.5)
Age Squared	<b>-0.003</b> (-6.982)	<b>-0.0009</b> (9.89)	<b>-0.001</b> (-2.248)	<b>-0.0012</b> (-5.86)	<b>-0.00222</b> (-16.2)
Total Years of Schooling	<b>0.116</b> (6.337)		<b>0.051</b> (3.860)		<b>0.0589</b> (13.1)
Children Aged 6 to 14	<b>-0.484</b> (-4.940)		<b>-0.370</b> (-3.026)		
Children Under 6	<b>-1.591</b> (-15.288)	<b>-0.648</b> (-14.84)	<b>-0.694</b> (-4.787)	<b>-0.6651</b> (-6.79)	
Married	<b>-0.497</b> (-3.436)		-0.339 (-0.959)		<b>-0.261</b> (-5.430)
Years in Canada			<b>0.137</b> (8.004)		
Years in Canada Squared			<b>-0.003</b> (-7.670)		
Constant	<b>-1.214</b> (-1.926)	<b>-0.0394</b> (0.2)	0.339 (0.349)	-0.5756 (-1.17)	<b>-3.2</b> (-12.30)

Bold Letters Indicate Statistically Significant Variables at the 95% Level

Notes: Comparisons have been made where the variables are defined similarly  
T Statistics in parentheses.

**Table 7: Comparison of Regression Results With Those Reported by Fagnan and Shamsuddin**

**Estimated Logit or Probit Coefficients**

**Dependent Variable: Labour Force Activity, D=1 for participation, D=0 otherwise**

Variables	Sheldon	Shamsuddin	Sheldon	Shamsuddin	Fagnan
	Canadian Born Husbands/ Common Law Partners	Canadian Born Males	Foreign Born Husbands/ Common Law Partners	Foreign Born Males	Foreign Born Males
Age	<b>0.28953</b> (5.721)	<b>0.146</b> (13.14)	<b>0.24758</b> (3.598)	<b>0.1543</b> (3.57)	<b>0.14</b> (5.28)
Age Squared	<b>-0.0043431</b> (-7.716)	<b>-0.002</b> (-17.64)	<b>-0.0036719</b> (-4.894)	<b>-0.0021</b> (8.38)	<b>-0.00189</b> (-6.50)
Total Years of Schooling	0.005011 (0.201)		<b>0.05472</b> (2.856)		<b>0.0598</b> (7.23)
Children Aged 6 to14	0.32212 (1.284)		-0.16329 (-0.788)		
Children Under 6	0.37501 (1.388)	0.0362 (0.48)	0.19819 (0.762)	-0.2643 (-1.76)	
Married	0.26072 (1.114)		0.059195 (0.125)		<b>0.509</b> (4.93)
Years in Canada			<b>0.16814</b> (6.257)		
Years in Canada Squared			<b>-0.0037039</b> (-5.392)		
Constant	<b>-2.8483</b> (-2.695)	<b>-0.895</b> (-3.18)	<b>-4.0169</b> (-2.587)	-0.4721 (-0.67)	<b>-1.64</b> (-2.83)

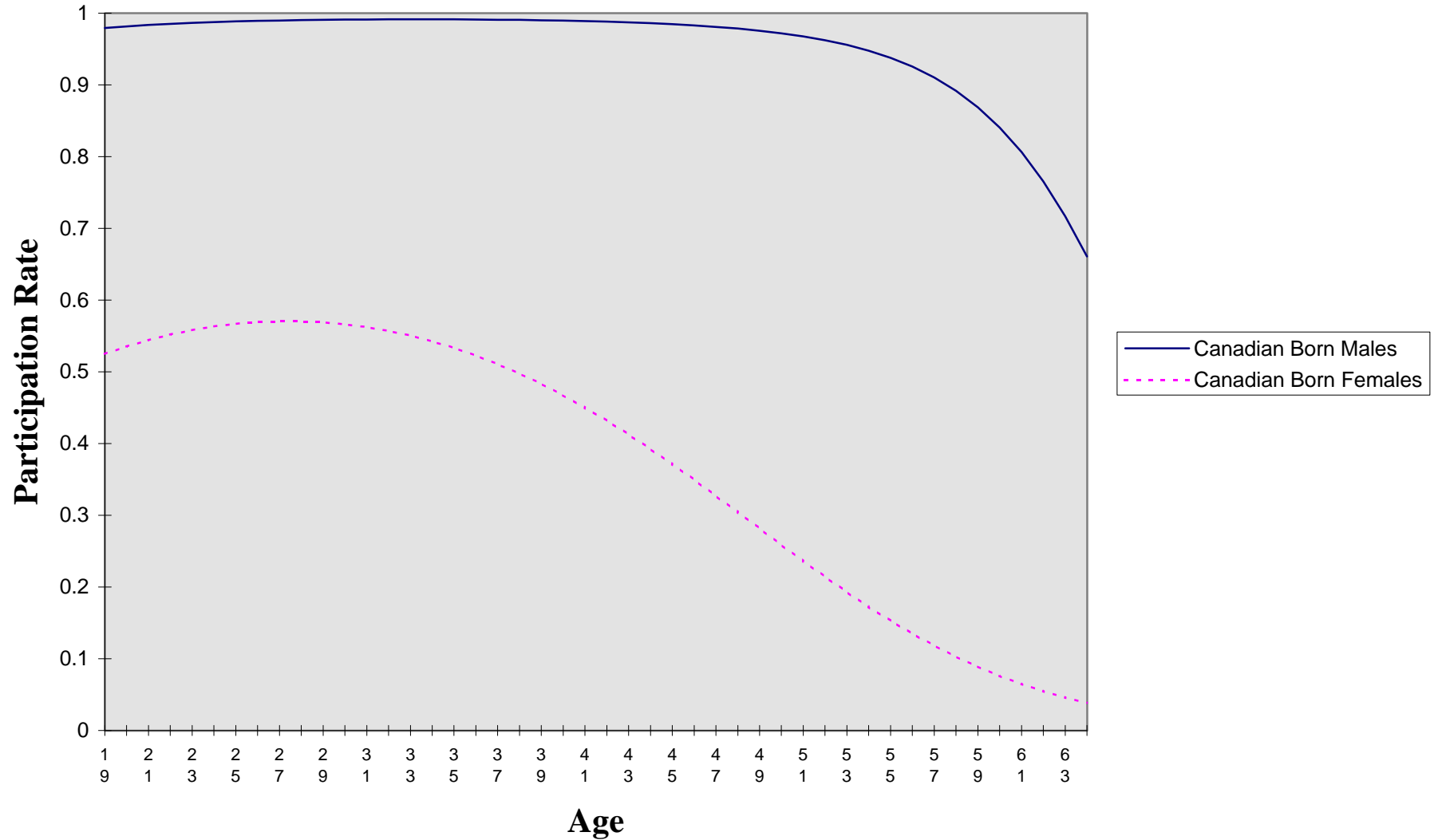
Bold Letters Indicate Statistically Significant Variables at the 95% Level

Notes: Comparisons have been made where the variables are defined similarly

T Statistics in parentheses.

Figure 1

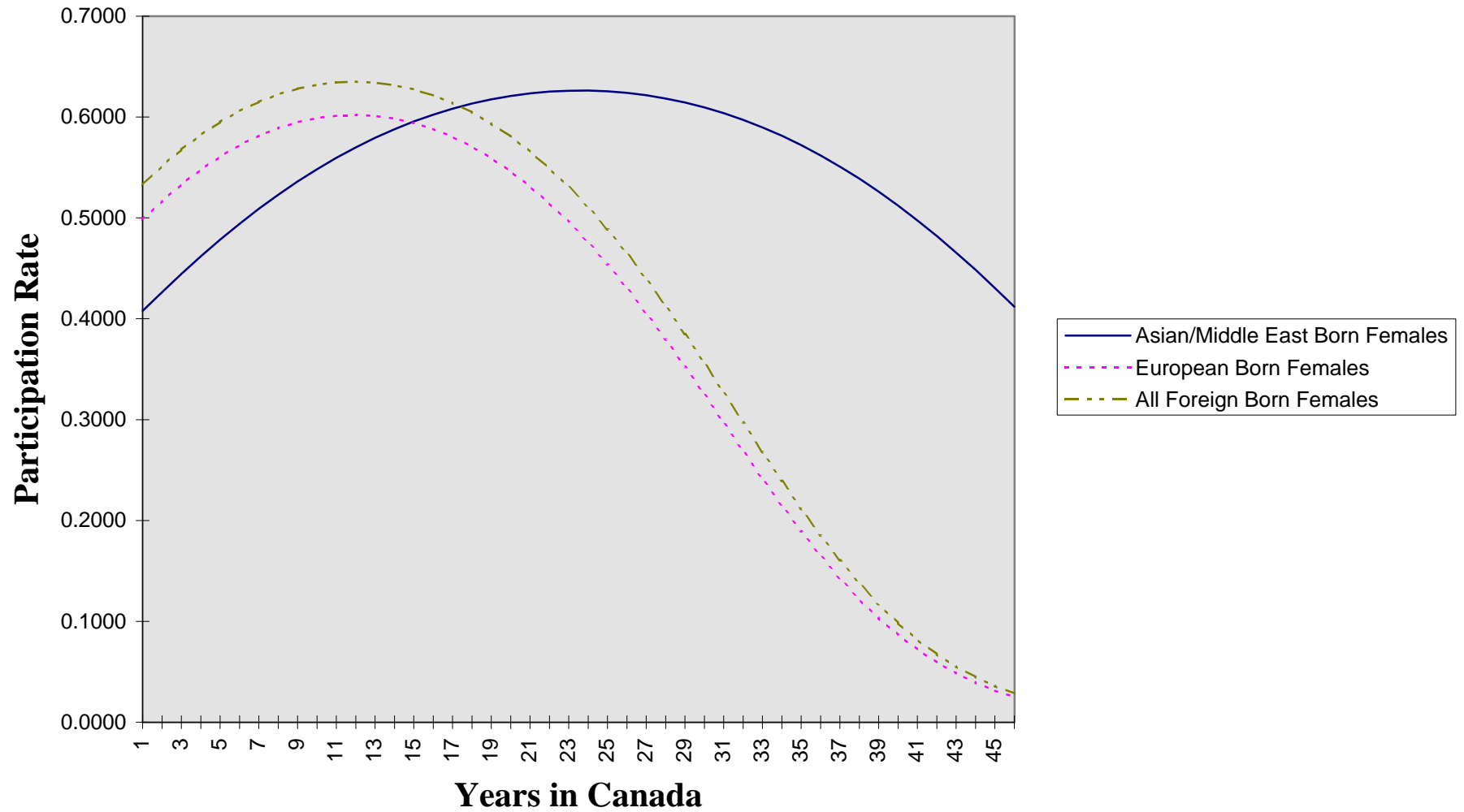
### Estimated Age-Participation Rate Profile of Canadian Born Males And Females



Notes: Estimations performed using logit results in Tables 2 and 3.

Figure 2

### Estimated Years In Canada-Participation Rate Profile For Wives/Common Law Partners Resident in Vancouver

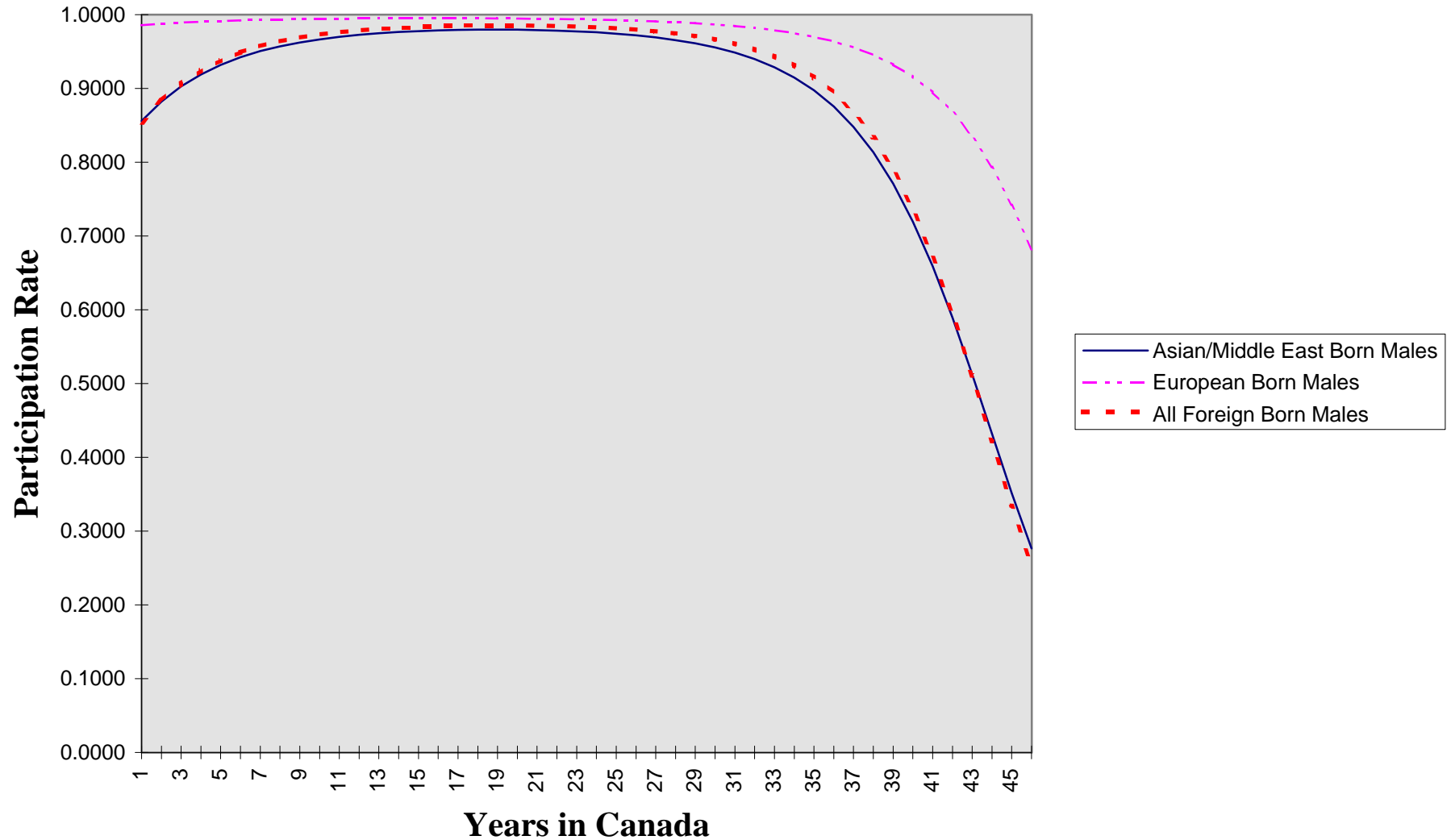


Notes: Estimations performed with equations reported in Tables 2 and 3.



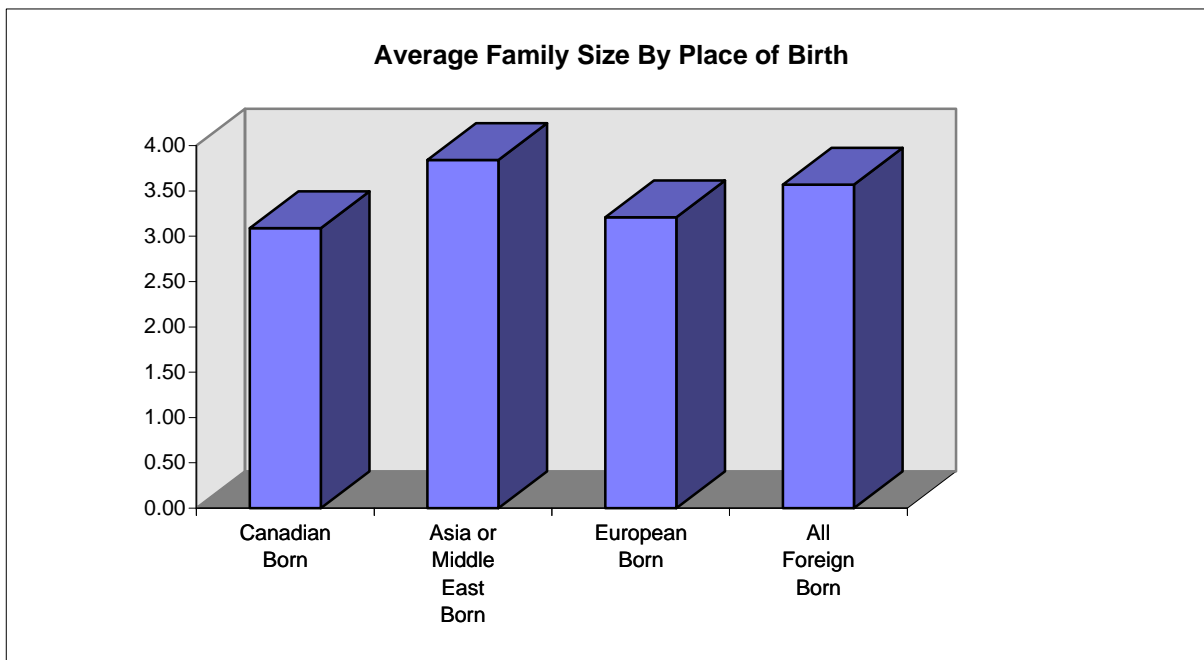
Figure 3

### Estimated Participation Rate - Years in Canada Profile For Husbands/Male Common Law Partners

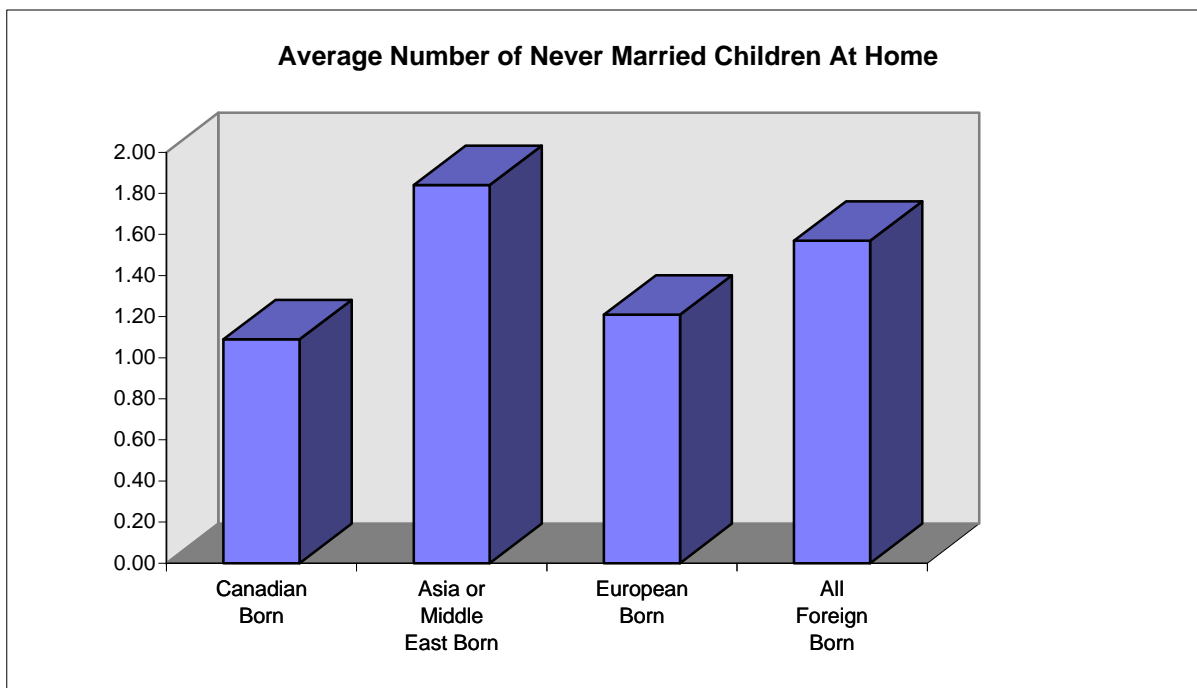


Notes: Estimator carried out with logit regression results reported in Table 3

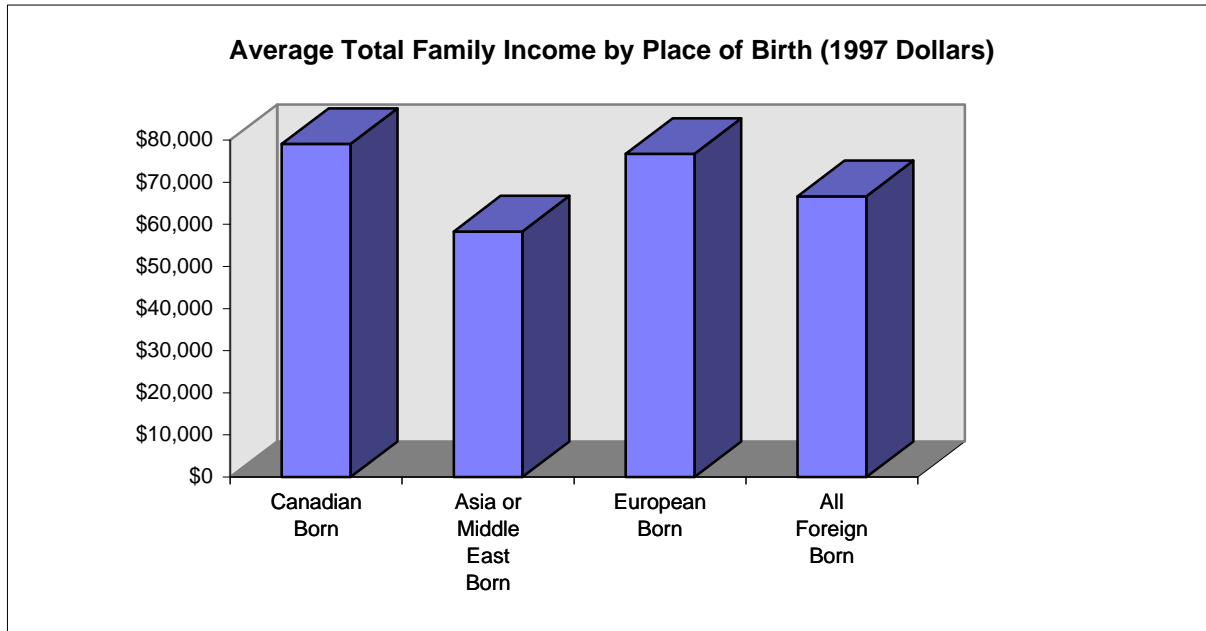
**Appendix Figure 1**



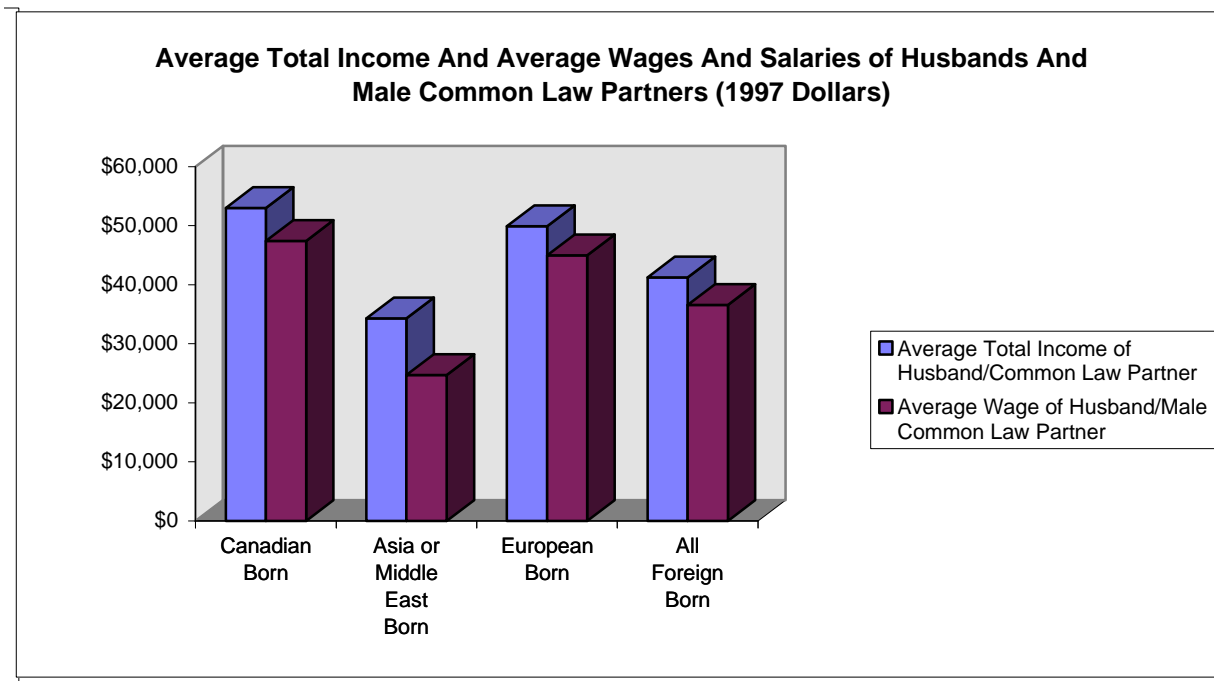
**Appendix Figure 2**



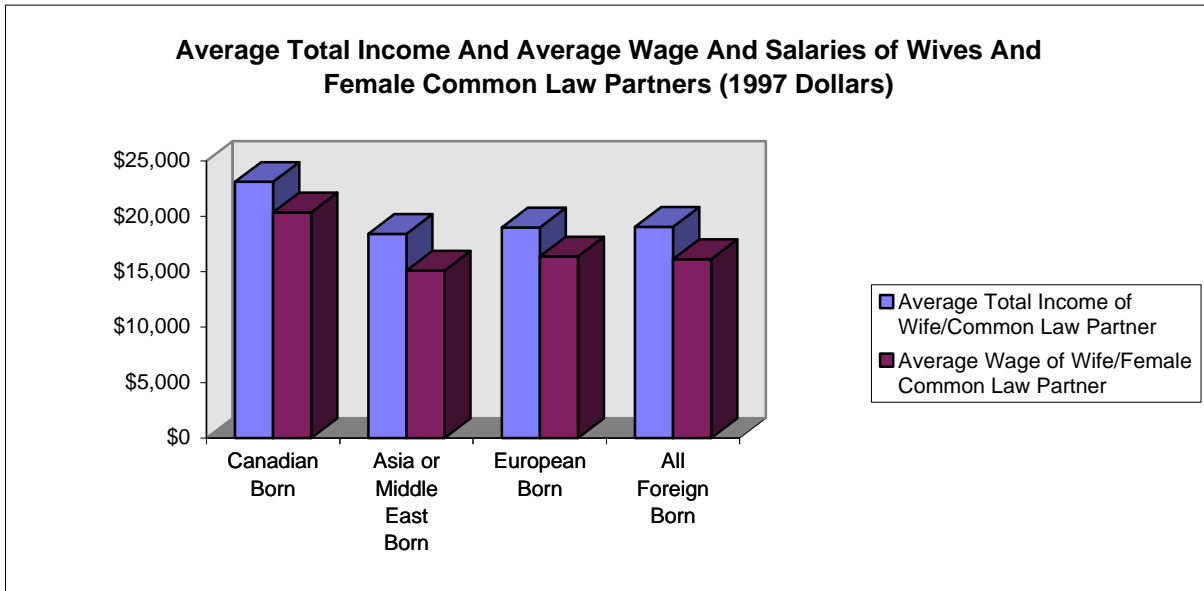
Appendix Figure 3



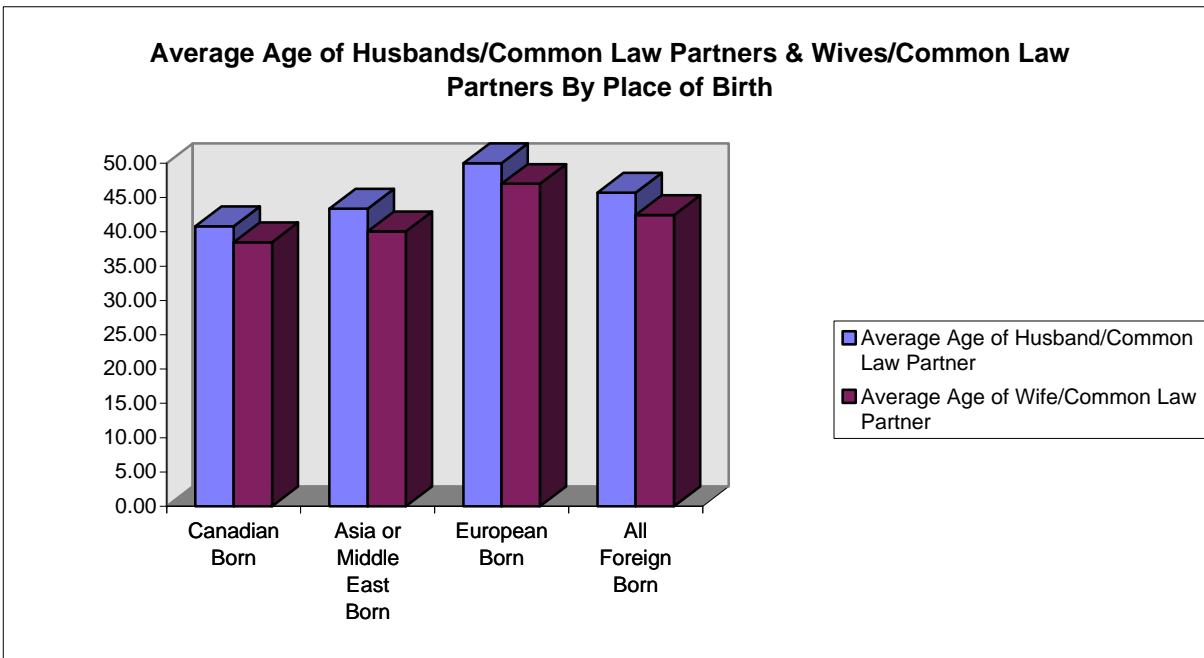
Appendix Figure 4



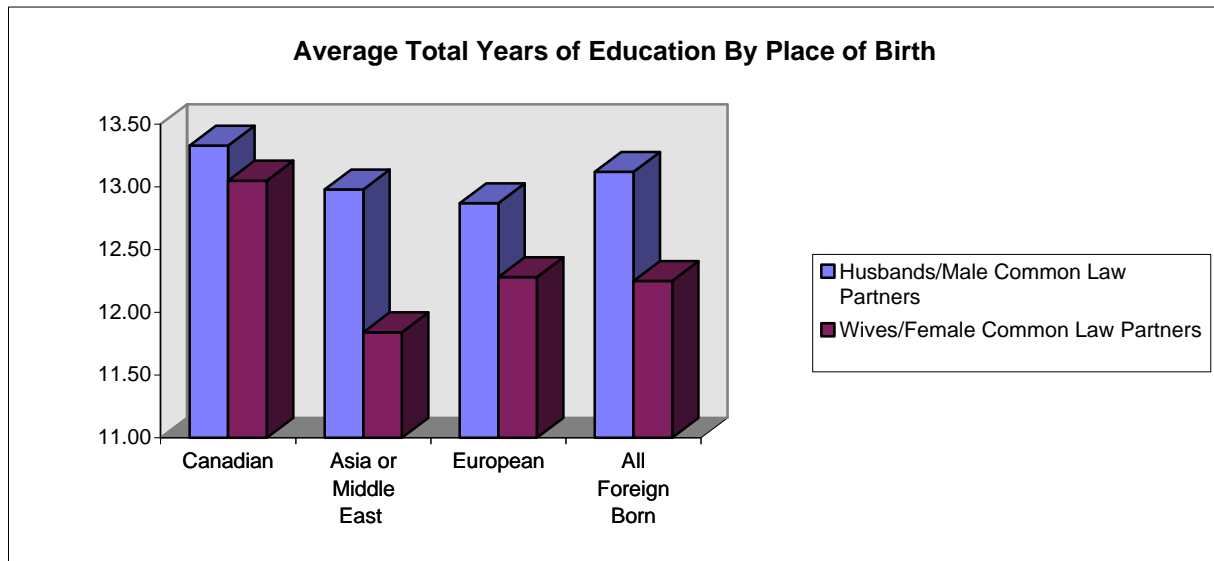
Appendix Figure 5



Appendix Figure 6



Appendix Figure 7



**Working paper series**

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