# Comparative Analysis of Son preference in Indian immigrants in Spain, USA and Canada: The Role of Parental Education, Age, Place of Birth and Endogamy.

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## Abstract

Son preference is a systematic bias in favor of the male child. Although scholars have widely studied son preference in India, Indian migrants posit a conundrum on how migrating from patriarchal to relatively egalitarian societies would impact the marked gender gap between boys and girls. This paper aims at investigating son preference among Indian immigrants in three countries (Spain 2011, USA 2015, and Canada 2011). For this purpose, we examine the census microdata from the IPUMS International. The resulting datasets has 4833, 3615875 and 898870 cases respectively for Spain, U.S.A and Canada. We compare the sex ratios (0 to 15 years) (from males to females) for all the three samples, across groups based on parental educational attainment and endogamy. Additionally, a logistic regression analysis is also conducted. Results show that in the case of Indian immigrants in three countries, when parents are more educated, they are more likely to have a balanced sex ratio. We conclude that there is strong son preference in the case of Indian immigrants in the Spanish sample, however, there is evidence of slight son preference in the US and the Canadian samples. Overall, our results demonstrate that Indian immigrants are still carrying their gender preferences.

## Theoretical Focus

Son preference is an attitude that represents a systematic bias in favor of the male child. Son preference manifests in the form of various social practices involving discrimination against daughters (Clark, 2000), for example, unequal access to education (Bose, 2012), nutrition and healthcare (Clark, 2000 Mitra, 2014), property rights and dowry (Singh, 2013; Parmar, 2014). Son preference is strongly related to gender inequality (Tracy, 2007; Hunnicut, 2009) and is one of the key aspects of a gender biased system. The social problems that result because of gender inequality/patriarchy may be universal, however their degree/intensity, frequency or prevalence vary across sets of countries, with more (intense and deep-rooted) problems found in developing and poor countries as compared to developed/rich countries (Jayachandran, 2015). These variations come face to face when people immigrate from relatively poor or developing countries to the ones that are more advanced on the path of gender equality. Thus, the juxtaposition of different sets of cultural values related to gender equality and patriarchy presents a fertile ground for research.

In this paper, we focus on son preference as the key outcome variable and compare Indian immigrants across three developed countries: Spain (2011), US (2015) and Canada (2011). We aim to understand whether the immigrants' son preference varies as compared to their parent population and whether it differs across the three host countries. In addition to understanding the prevalence of gender-based bias in the immigrant population of interest, we also focus on the influence of parental education, place of birth, age, and endogamy status on this bias. The immigration context presents an interesting juxtaposition of different sets of cultural values related to gender equality (including son preference), thereby providing a fertile ground for research.

This paper makes three key contributions. First, it presents a comparative analysis of son preference across immigrant populations from India (high son preference), living in three western host countries; Spain, USA and Canada (no son preference). Second, it includes Spain as a host country in the analysis. To the best of our knowledge, very few studies have focused on son preference in Indian immigrant populations outside of the traditional or more popular destinations for Indian diaspora, such as US and Canada. It

is interesting to study this phenomenon in relatively recent destinations such a Spain, which are culturally and linguistically distinct from the parent country as well as other destination/host countries. Third, it considers parental education and endogamy as explanatory variables.

## Data and Research Methods

We examined the census microdata from the IPUMS International from three countries: Spain (2011), USA (2015) and Canada (2011). Using these data, we evaluated the preference for male children among Indian immigrants residing in these three countries. We restricted the sample to families where at least one person in the family had reported "India" as the place of birth. The resulting datasets had 4833, 3615875 and 898870 cases respectively for Spain (2011), U.S.A (2015) and Canada (2011). The smaller size of the Spanish sample reflects the fact that Spain has fewer immigrants of Indian origin as compared to the other two countries. The analyses were conducted using Microsoft Excel, R Studio 1.4.1103 and IBM SPSS 23.0.

Based on the previous literature, we particularly focused on sex ratio as a global indicator of son preference[1]. Sex ratio is defined as the ratio of "the number of males" to "the number of females" in a given population and is generally expressed as the number of males for every 100 females. For most countries, normal sex ratio at birth can range from 102-106 males per 100 females. In the absence of gender discrimination, we can expect this above-mentioned gender ratio, while any deviation would suggest a gender bias. We began our analysis by comparing the sex ratio (males to females) in Indian immigrants and their co-residents in the three datasets (Spain, USA, and Canada). Further, we calculated the sex ratios for all quinquennial age groups and for various combinations of "place of birth" (self and parental) and presented them in three population pyramids, one for each dataset/country of analysis.

Further, we considered three additional independent variables, namely, parental educational attainment, parental marital status and parental endogamy and studied their descriptive analysis and percentage distribution across three countries. Moreover, we also analysed the sex ratios to examine the influence of the parental education and endogamy on the gender ratio of their children. For this analysis, we restricted our data to parents (father and mother) who were 25-39 years old and were Indian born and children who were 0 to 15 years old. We classified the child's place of birth into three categories: *born in India, born in host countries,* and *born in other countries.*

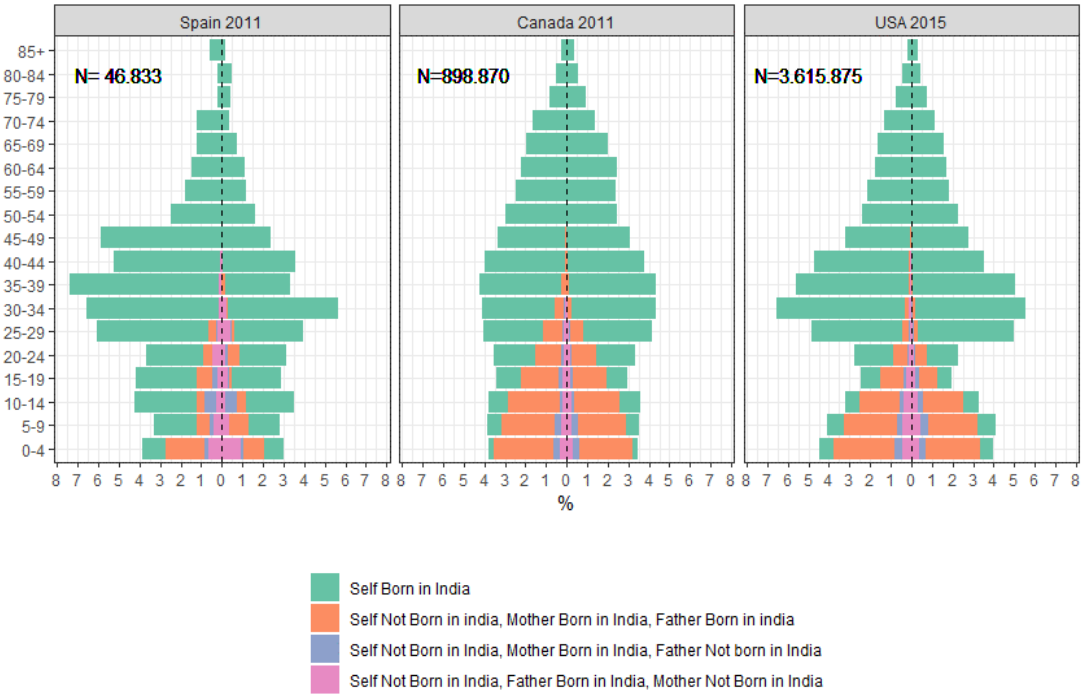
Finally, we conducted binary logistic regression analysis to predict son preference using the selected independent variables such as, child's place of birth, parental place of birth, parental education, and parental age.

## Findings

Figure 1 presents population pyramids of Indian immigrants and their co-residents in the three countries included in the analysis. These pyramids provide different characteristics of the total population, first generation population, second generation population, age distribution, parental place of birth, sample size and sex ratios etc.

[1] Sex ratio was used as a proxy for "son preference" in the previous literature (Das Gupta, 1987; Bhat and Zavier, 2003; Gaudin and College, 2011; Vanneman, Desai and Vikram, 2012; Aparna Mitra, 2014; Seema Devi, 2016). It is one of the most commonly used measure of son preference.

**Figure 1: Population Pyramids of Indian Immigrants and their co-residents in 3 Countries (Spain 2011, Canada 2011 and USA 2015)**




The comparative analysis of Indian immigrants in the three selected countries (see Table 1) reveals that the gender ratios in children born to Indian immigrants in Spain are significantly more skewed as compared to the children born to Indian immigrants in USA and Canada. This suggests ongoing prevalence of son preference among Indian immigrants in Spain. Further, our analysis of the influence of parental education on sex ratio indicates that immigrants in the low educated category across the three samples exhibit strong son preference. Furthermore, there is a slight evidence of son preference among Indian immigrants in the medium educated category in the Canadian sample. No son preference is detected among Indian immigrants in the high educated category in the US and the Canadian samples. Therefore, we can conclude that education influences son preference. When parents (Indian immigrants) are more educated they are more likely to have a balanced sex ratio. Education is the moderating variable in this research. Our results reveal that Indian immigrants in USA and Canada are more educated as compared to those in Spain.

Additionally, our analysis of the influence of parental endogamy on sex ratio reveals that the Indian immigrants in the Spanish sample demonstrate strong son preference (regardless of who they are married to: natives, Indians or others) as compared to the Indian immigrants in the US and the Canadian samples. However, there is slight evidence of son preference in the US sample (with Indians who are married to others) and in the Canadian sample (with Indians who are married to Indians). Therefore, we can conclude that Indian immigrants in Spanish sample exhibit strong son preference as compared to their counterparts in the US sample and the Canadian sample. However, there is evidence of slight son preference in the US and the Canadian samples.

**Table 1: Sex ratios (by males to females) by parental educational attainments and endogamy**

| | Educational attainment | | | Total | Country of birth | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Abroad | | |
| | Low | Medium | High | | Native | India | Other | |
| Males | | | | | | | | |
| Spain | 2.36 | 1.00 | | 1.65 | 1.75 | 1.81 | 1.11 | 1.51 |
| USA | 1.28 | 1.06 | 1.05 | 1.05 | 0.95 | 1.06 | 1.14 | 1.06 |
| Canada | 1.19 | 1.11 | 1.06 | 1.09 | 0.99 | 1.11 | 0.90 | 1.10 |
| Females | | | | | | | | |
| Spain | 2.05 | 1.13 | | 1.52 | 1.45 | 1.81 | 2.08 | 1.80 |
| USA | 1.29 | 1.04 | 1.06 | 1.06 | 1.01 | 1.06 | 1.13 | 1.06 |
| Canada | 1.09 | 1.10 | 1.09 | 1.09 | 0.97 | 1.11 | 1.09 | 1.11 |

Finally, the results of the logistic regression[2] (see Table 2) suggest that the child's place of birth (Other) is a significant predictor of sex ratio in Model 2 in USA and Canada (not in Spain). Child's place of birth (Other) and parent's place of birth (Only mother born in India) are the significant predictors of sex ratio in Spain in Model 3. Whereas, the child's place of birth (Other) is a significant predictor of sex ratio in USA. There are not significant predictors of sex ratio in Canada in Model 3. In the last model child's place of birth (Native and Other) and parent's place of birth (Both parents born in India) are the significant predictors of the sex ratio in USA and Canada. However, there are no significant predictors of sex ratio in Spain in the last model.

[2]Model 1 represents the base model with only the intercept (constant). In Model 2, we add the child's place of birth (India (reference), native and other). In Model 3, we add parent's place of birth (only father born in India (reference), only mother born in India and both parents born in India). In the last Model we restricted our data to parents with Indian place of birth. In this model, we added father's education and mother's education (low (reference), medium and high). In addition to that, we added father's and mother's age (25-29- (reference), 30-34- and 35-39- years age groups).

**Table 2 Logistic Regression Analyses**

| | Spain | | | | | USA | | | | | Canada | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All | | | At least … born in India | | All | | | At least … born in India | | All | | | At least … born in India | |
| | M1 | M2 | M3 | Father | Mother | M1 | M2 | M3 | Father | Mother | M1 | M2 | M3 | Father | Mother |
| Intercept | 0.19 | 0.32 | 0.91 | 1.05 | -0.06 | 0.05 | -0.02 | -0.07 | -0.63 | 0.21 | 0.08 | 0.09 | -0.06 | -0.27 | -0.32 |
| Child's place of birth | | | | | | | | | | | | | | | |
| India | | ref | ref | ref | ref | | ref | ref | ref | ref | | ref | ref | ref | ref |
| Native | | -0.21 | -0.50 | -0.33 | -0.01 | | 0.08 | 0.09 | 0.17 | 0.14 | | 0.01 | 0.02 | 0.16 | 0.15 |
| Other | | -0.42 | 0.13 | | 0.40 | | 0.41 | 0.41 | 0.75 | 0.45 | | -0.24 | -0.21 | -0.05 | -0.08 |
| Partents' place of birth | | | | | | | | | | | | | | | |
| Only father born in India | | | ref | ref | | | | ref | ref | | | | ref | ref | |
| Only mother born in India | | | -0.96 | | ref | | | 0.03 | | ref | | | 0.09 | | ref |
| Both parents born in India | | | -0.09 | -0.19 | 0.65 | | | 0.04 | 0.21 | 0.11 | | | 0.16 | 0.25 | 0.09 |
| Father's Education | | | | | | | | | | | | | | | |
| Low | | | | ref | | | | | | | | | | | |
| Medium | | | | 0.02 | | | | | | | | | | | |
| High | | | | | | | | | | | | | | | |
| Mothers's Education | | | | | | | | | | | | | | | |
| Low | | | | | ref | | | | | ref | | | | | ref |
| Medium | | | | | -0.30 | | | | | -0.23 | | | | | 0.09 |
| High | | | | | | | | | | -0.29 | | | | | -0.29 |
| Age | | | | | | | | | | | | | | | |
| Father's Age | | | | | | | | | | | | | | | |
| 25-29 | | | | ref | | | | | ref | | | | | ref | |
| 30-34 | | | | -0.82 | | | | | 0.18 | | | | | -0.12 | |
| 35-39 | | | | 0.21 | | | | | 0.07 | | | | | 0.11 | |
| Mother's Age | | | | | | | | | | | | | | | |
| 25-29 | | | | | ref | | | | | ref | | | | | ref |
| 30-34 | | | | | -0.12 | | | | | -0.12 | | | | | 0.01 |
| 35-39 | | | | | -0.03 | | | | | -0.09 | | | | | 0.07 |