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Fertility Differentials by Religious Groups in Canada: Indirect Evidence from the 2021 Census

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Abstract

Fertility differentials by religion remain under-examined in Canada due to the absence of religion-specific birth registration in vital statistics. Using the 2021 Census of Population, this study applies indirect demographic methods to estimate fertility patterns across ten religious groups. Child–woman ratios are used to derive simulated total fertility rate (TFR) ranges for comparative analysis.

To assess demographic implications, two independent measures of natural increase are constructed: (1) a vital-statistics–anchored estimate based on adjusted births and estimated deaths by religious groups, and (2) a census-based residual estimate derived from intercensal population change net of migration and non-permanent residents. The difference between these measures is interpreted as a measurement gap, primarily reflecting net emigration, and is used to derive indirect estimates of religious switching.

Results indicate moderate fertility variation across religious groups within Canada's broader low-fertility regime. Hindu and Sikh populations exhibit fertility levels close to the national average, while Muslim and Traditional (Indigenous spirituality) populations show higher fertility and stronger natural increase. Christian populations display low fertility and limited natural increase, with demographic decline amplified by switching. Overall, migration and religious switching play a larger role in shaping religious population change than fertility differentials.

Keywords

Canada, Census, Child–woman ratio, Fertility, Indirect estimation, Religious groups.

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Introduction

Fertility is a fundamental demographic process shaping population growth, age structure, and long-term sustainability. In multicultural societies such as Canada, fertility may vary across subpopulations defined by immigration status, socio-economic position, and religion. However, fertility differentials by religion remain insufficiently documented because births are not classified by religious affiliation in Canada's vital statistics system.

Statistics Canada (2010, 2017) has previously estimated fertility differentials using the Own Children Method by linking census and vital statistics data. Although these estimates inform microsimulation projections (Demosim), they are not publicly available.

These projections assume convergence in fertility behaviour, whereby immigrant and minority groups gradually align with national fertility norms across generations. Multiple fertility scenarios (low, medium, high) are applied based on recent TFR trends, while maintaining group differentials.

This study addresses the empirical gap by applying indirect census-based methods to estimate fertility patterns across ten religious groups using the 2021 Census. It builds on earlier work (Verma, 2026a) demonstrating that migration, rather than natural increase, has been the primary driver of growth among Hindu and Sikh populations.

The analysis is framed within the convergence hypothesis and the Second Demographic Transition (SDT), emphasizing the roles of socio-economic integration, secularization, and sustained low fertility.

Fertility is a fundamental demographic process shaping population growth, age structure, and long-term sustainability. In multicultural societies such as Canada, fertility may vary across subpopulations defined by immigration status, socio-economic position, and religions. Yet fertility differentials by religions remain insufficiently documented in Canada because births are not classified by religious affiliation in the national vital statistics system. Statistics Canada (2010 and 2017) has estimated fertility differentials by religious groups using Own Children method, linking census data and birth registration from vital statistics. These differentials are unpublished, although they are used in fertility projections by religions to make projections of the diversity of the Canadian population, 2006 to 2031 and 2011-2036. Both projections use microsimulation (Demosim) rather than a traditional cohort-component model. Fertility is not projected as a single aggregate rate; it is differentiated by individual characteristics, including religion. Assuming convergence/ adaptation assumptions,

- Immigrant and minority groups' fertility tends to converge toward the Canadian average over time (generational assimilation).
- Second and third generations have lower fertility than first-generation immigrants.
- Multiple scenarios (low, medium, high) are used:
    - Based on recent trends in total fertility rate (TFR)

- These scenarios are applied uniformly, but differentials between groups are maintained.

However, differentials in fertility groups are not published.

This study addresses that gap by using indirect census-based methods to estimate fertility patterns across ten religious groups in the 2021 Census. It builds on earlier work examining the growth of Hindu and Sikh populations between 2001 and 2021, which demonstrated that immigration was the dominant driver of growth, while natural increase played a secondary role (Verma, 2026a).

The analysis is situated within two complementary theoretical perspectives. The convergence hypothesis suggests that immigrant-origin religious groups gradually align with host-country fertility norms through socio-economic integration. Secularization theory and the broader Second Demographic Transition (SDT) framework emphasize declining influence of institutional religions, individualization, and sustained sub-replacement fertility in advanced societies. By integrating fertility estimation with intercensal decomposition of population change, this study evaluates whether religious population change in Canada reflects persistent doctrinal fertility divergence or structural convergence within a secularizing, low-fertility regime.

Data Sources and Quality

The analysis uses data from the 2021 Census of Population conducted by Statistics Canada. Religious data exhibit low non-response and imputation rates, supporting reliable comparative analysis.

Published national totals of registered births and deaths for 2001–2021 are used to anchor vital-statistics-based natural increase.

Methods

Indirect Measurement of Fertility

Because births by religions are not recorded in Canada's vital statistics system, fertility is estimated indirectly using the child–woman ratio (CWR), defined as:

Children aged 0–4 per 1,000 women aged 15–49.

Simulated TFR ranges are derived from empirically observed relationships between CWR and TFR in low-mortality populations. These simulated values are intended for comparative interpretation rather than precise measurement.

(For further details, see Appendices A to C.)

Estimation of Births and Deaths by Religious

Births by religions are estimated using age-specific fertility rates applied to female populations aged 15–49. The sum across religious groups is proportionally adjusted to equal total registered births for Canada.

Deaths are estimated by applying national age-specific death rates to religion-specific age structures.

Thus:

Natural Increase (Vital Statistics Based):

$$NI_rV^s = B_r^{adj} - D_r^{est}$$

By construction, the sum across religious groups equals national natural increase.

Census-Based Decomposition

Intercensal change for each religious group is defined as:

$$\Delta P_r = P_r,2021 - P_r,2001$$

This is decomposed as:

$$\Delta P_r = M_r + NPR_r + R_r$$

Where:

- M_r = Net international migration
- NPR_r = Change in non-permanent residents
- R_r = Residual

Residual:

$$R_r = \Delta P_r - (M_r + NPR_r)$$

Because religion-specific census under coverage estimates are unavailable, a proportional national undercount adjustment factor (1.38381148) is applied exclusively to the residual:

$$R_r^* = \theta \times R_r$$

Migration components remain unadjusted.

Measurement Gap

Measurement gap:

$$MG_r = NI_r^{cens} - NI_rVs$$

The sum of religion-specific measurement gaps closely approximates the national measurement gap, indicating strong internal closure.

Estimation of Switching

After undercount adjustment, the national measurement gap is interpreted primarily as reflecting net emigration uncaptured.

A national emigration rate:

$$e = MG_{CANADA} / \text{Average Population}_{CANADA}$$

This rate is applied proportionally:

$$E_r = e \times \text{Average Population}_r$$

To reflect gradual accumulation over the intercensal period, half of E_r is subtracted:

$$Switch_r = MG_r - \tfrac{1}{2}E_r$$

Switching is therefore derived as a residual allocation within a closed demographic accounting framework.

The switching estimates derived are used solely to complete the demographic accounting framework and to interpret intercensal population change. A more detailed analysis of the magnitude, and struct patterns of religious net switching is presented separately (Verma, 2026b).

Review of Previous Studies

Previous research on comparison of fertility of immigrant and Canadian-women confirms

that the demographic profile of immigrants in Canada typically undergoes a process of convergence toward the national average, though this occurs at different rates for fertility (Basavarajappa, 1993; Be'langer, et al., 2002, Ng, and Nault, 1997; Ram and George, 1990 and 1993, and Teng, 2025). Teng (2025) found a narrowing fertility gap between immigrants and Canadian-born residents. Most immigrants from top source countries (including India, the Philippines, and China) now rates in their home countries. Despite this convergence, foreign-born mothers still sustain Canada's natural population growth. In 2024, 42.3% of all newborns in Canada had a foreign-born mother, nearly double the proportion from 1997 (Claudine, 2025). Foreign-born women are more likely to give birth at older ages (over 40) compared to Canadian-born women, but their overall fertility rate is also falling toward the national record low of 1.25 children per woman. Based on these findings, it is hypothesized that the fertility levels of Hindu and Sikh including other minority religious groups, though already at a lower level now (see Table 1) would converge toward the national average over time. Statistics Canada (2010) has also assumed the convergence hypothesis. In contrast, Statistics Canada (2017) has kept the fertility differentials observed in 2010-11 period maintained throughout projection periods, 2011-2036.

Results

Fertility Differentials

Simulated TFR ranges show moderate variation across religious groups within Canada's low-fertility regime. Muslim and Traditional spirituality populations exhibit higher fertility. Hindu and Sikh populations are near the national average. Christian, Buddhist, and Other Religious groups show lower fertility (See Table 1).

Table 1 Child-Woman Ration (CWR) and Simulated Total Fertility Rate (TFR) Ranges by Religious Groups, Canada, 2021

Religious Group	Child-Woman Ration (CWR)	Simulated Total Fertility Rate Range
Total Canadian Population	225	1.4-1.6
Hindu	213	1.3-1.5
Sikh	196	1.2-1.4
Christian	181	1.1-1.3
Buddhist	91	0.6-0.8
Muslim	300	1.9-2.2
Jewish	272	1.7-2.0
Traditional (Indigenous Spirituality)	321	2.1-2.4
Other Religions	94	0.6-0.8
No religion	272	1.7-2.0

Note: Simulated TFRs are derived from child-women ratios and are intended for comparative analysis only.
Source: 2021 Census of Population, Statistics Canada; Author's calculations.
bounded; no group displays sustained extreme fertility divergence

Natural Increase Alignment

Simulated fertility rankings align closely with both vital-statistics-based and census-based natural increase. Groups with higher simulated TFR display stronger natural increase. Hindu and Sikh populations show modest natural increase, consistent with convergence toward national norms.

Migration and Switching

Immigration is the dominant driver of growth for Hindu, Sikh, and Muslim populations. Christian decline reflects low fertility combined with switching losses. Growth of the No Religion population is driven primarily by switching inflows rather than fertility advantage.

Socio- Economic Determinants of Fertility

Low fertility among Hindu and Sikh populations is closely associated with their socio-economic profiles. Both groups exhibit high educational attainment, particularly among women, strong labour force attachment, and a high concentration in large census metropolitan areas. Urban residence is associated with higher housing costs, delayed marriage, and later childbearing, all of which contribute to reduced fertility.

These findings are consistent with the convergence hypothesis, which suggests that immigrant fertility patterns tend to align with host-country norms. Once socio-economic characteristics are considered, religion appears to play a limited independent role in shaping fertility behaviour.

Fertility and Population Growth: A Companion Perspective

This fertility-focused analysis complements earlier research on the growth of Hindu and Sikh populations in Canada from 2001-2021. The study showed that immigration accounted for approximately two-thirds of Hindu population growth and about half of Sikh population growth. The present paper clarifies why natural increase contributes modestly to overall growth: fertility levels among these populations are similar to the Canadian average.

Together, the fertility and growth analysis (Verma, 2026) provides a comprehensive demographic explanation of population changes among Hindu and Sikh communities in Canada, clearly distinguishing between migration-driven growth and natural increase shaped by fertility convergence and socio-economic integration.

Theoretical Interpretation

The findings support structural convergence: immigrant-origin religious groups operate within Canada's broader low-fertility regime. Fertility variation reflects socio-economic integration rather than persistent doctrinal differences.

Secularization operates primarily through affiliation change rather than extreme fertility divergence. Within the Second Demographic Transition (SDT) framework, low fertility across religious groups reflects shared exposure to advanced post-industrial demographic norms.

Religious population change in Canada is best understood as the interaction of fertility convergence, migration flows, and switching within a secularizing demographic context.

Limitations and Assumptions

This analysis relies on indirect methods due to the absence of religion-specific vital registration and migration data. Fertility is estimated using child–woman ratios and simulated TFR ranges. Births and deaths by religion are constrained to national totals but not directly observed. Census-based natural increase is derived from residual intercensal change. Proportional undercount and emigration allocation assumptions are applied in the absence of religion-specific data. Switching estimates are therefore approximation-based residual allocations rather than direct measurements. The analysis emphasizes comparative patterns and relative magnitudes rather than precise point estimates.

Conclusion

Fertility differentials across religious groups in Canada are moderate and operate within a shared low-fertility regime. Natural increase patterns align closely with simulated fertility estimates, providing internal validation of the indirect method. However, overall population change is driven primarily by migration and religious switching rather than fertility divergence. Religious demographic change in contemporary Canada reflects structural convergence within a secularizing and migration-intensive society.

The present study focuses on fertility and natural increase. A companion analysis examines religious switching in greater depth.

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Appendix A *Methodological Defense of Indirect Fertility Estimation*

Because births by religion are not recorded in Canada's vital statistics system, indirect methods are required to analyse fertility differentials by religious affiliation. The child–woman ratio is appropriate in the Canadian context due to low child mortality, high census coverage, and minimal age misreporting.

Although the method does not capture parity progression or timing of births and may be influenced by recent migration, it remains the most reliable and widely accepted indicator for comparative fertility analysis by religion groups in Canada.

Appendix B *Estimation of Births by Religious Group Using ASFRs*

Because Statistics Canada does not record births by religious affiliation, births by religious group were estimated using an indirect approach based on age-specific fertility rates (ASFRs) and census population data.

Total fertility rates (TFRs) for ten religious groups were first estimated using ASFRs and the population of women aged 15–49 for the year 2020–2021. Estimated births for each religious group were calculated by applying ASFRs to the corresponding female population by five-year age group (15–19 to 45–49).

The sum of estimated births across all religious groups was then compared with the total number of registered births for Canada reported by Statistics Canada for 2020–2021. The ratio of estimated births to registered births was computed and assumed to remain constant over the period 2000–2001 to 2020–2021.

This ratio was subsequently applied to the annual number of registered births in Canada to derive estimated births by religious group for each year over the twenty-year period. Aggregate estimated births were found to be approximately 3.8 percent lower than the total number of registered births reported by Statistics Canada. This discrepancy was prorated across religious groups and used to adjust the estimated number of births accordingly.

Appendix C *Robustness Check: Closure of Estimated and Registered Births*

To assess the robustness of the indirect birth estimation procedure, an internal closure test was conducted by comparing the sum of estimated births across all religious groups with the total number of registered births for Canada reported by Statistics Canada over the period 2000–2001 to 2020–2021. The cumulative discrepancy between estimated and registered births over the twenty-year period was approximately 3.8 percent, indicating a very small error of closure. Given the indirect nature of the estimation, the assumption of constant proportionality, and the absence of religion-specific birth registration, this close correspondence suggests that the estimation procedure performs well at the aggregate level and yields reliable comparative fertility estimates by religious group.

Appendix C Evaluation of the Estimated Number of Births by Religious Group, Canada, 2000-2001 to 2020-2021

Total Canadian Population by Religious Group	Ratio (1)	Registered Births (A)	Estimated births	Difference	Adjustment Factor
		7354993	7084520	-270473	1.0382
Hindu	0.03070873		225862		
Sikh	0.02469607		181639		
Buddhist	0.00402655		29615		
Christian	0.319954		2353259		
Jewish	0.00920928		67734		
Muslim	0.06963322		512152		
Traditional	0.00344452		25334		
Others	0.00406304		29884		
No religion	0.49749058		3659040		

Note: 1 Ratio of estimated births based on estimated age-specific fertility rates by religion, multiplying with the age specific number of women from 15-10 to 45-49 over the registered number of births (A) for the Total Canadian populations by religious groups, for the year 2020-2021.

Source: (A) Statistics Canda (2025). Table 17-10-008-01 Estimates of the components of demographic growth, 2001 to 2021 annual, https://www150. Statcan.gc.ca/t1/tb1 1/en/tv.action?pid=1710000801.