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Fertility Differentials by Religion in Kerala: A Period Parity Progression Ratio Analysis

Introduction

FERTILITY differentials by religion are observed in many parts of the world including India. Various studies in North America and Europe have found notable differences between Catholic and non-Catholic, Christians and Jewish, and Christians and Muslim fertility. It has generally been found that the Catholics have higher fertility as compared to the Protestants, and the Muslims as compared to Christians. This is because in multi-religious countries, precepts and injunctions influence fertility desires and contraceptive practices (Kirk 1968; Jones and Nortman 1968). The available empirical evidence also shows that though there had been large fertility differences among religious groups in the past, the differences have narrowed down in the post-baby boom period especially between Catholic and non-Catholic populations in the United States, Canada and Australia (Westoff and Jones 1979; Mosher and Hendershot 1984; Blake 1984). Various reasons are rendered for this and the most important of these is the people's rejection of the Church stand on large family size and contraception.

hi India, the estimates of fertility from various sources indicate that among major religious groups, Muslims have experienced the highest fertility and Sikhs the lowest. Between these extremes are Hindus and Christians. For the country as a whole, the Muslim fertility has always been higher than that for Hindus (for a discussion, see Visaria 1974; Balasubramanian 1984). On the other hand, Christian fertility is substantially lower than Hindu fertility though the gap appears to have narrowed down.

Within India, there are large spatial variations in the religious composition as well as in fertility. As a result, fertility differentials by religion at the national level could, at least in part, be attributable to spatial variation in the religious composition. For example, majority of the

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Christian population hi India lives hi the southern region which is also characterized by relatively lower fertility. Hence, Christian fertility in India may be lower partly because a greater proportion of Christian population lives in a low fertility region. Therefore, in order to examine fertility differentials by religion, it becomes necessary to control for the state or the region effect. For this purpose reliable estimates of fertility at the state level are required. These are, of course, available for Hindus for most of the states and for Muslims for many states. However, the Christian populations are generally too small inmost of the states of India except Kerala which is the only state with over five million Christian population. Kerala also has a nearly equally large Muslim population and of course a large Hindu population. Therefore, this paper has concentrated on Hindu, Muslim and Christian fertility differentials in Kerala.

An examination of fertility differentials hi the state reveals that fertility has been much higher among Muslims as compared to Hindus and Christians (Alagarajan 1996). Moreover, the fertility differentials have persisted hi spite of the well-known rapid fertility transition hi the state. This contrasts with the western experience of narrowing of differentials towards the end of the transition to low fertility, making Kerala an interesting exception.

This paper examines the fertility differentials in the state primarily on the basis of the data from the National Family Health Survey (NFHS), a large survey that covered almost all the states of India; the survey for Kerala was carried out during October 1992 to February 1993 (PRC, Thiruvananthapuram and IIPS 1995). The survey covered various aspects of health, fertility and family planning. In Kerala, the sample included 4387 households and 4332 ever married women hi the age range of 13-49 years from these households were interviewed. Detailed fertility histories were obtained from all the women hi the sample. The individual level data, available hi the form of a computerized set, make it possible to analyze the family building process, and hi particular, parity progression. The paper first describes the trends in fertility differentials by religion in Kerala and then examines whether the religion factor has an effect net of socio-economic variables. Finally, a period parity progression ratio analysis has been carried out, to see if the family building process varies by religion and further whether the differentials have changed over time.

Fertility Differentials by Religion in Kerala

Various sources like the Census, the Sample Registration System (SRS), NFHS and some large scale surveys provide estimates of one or more indicators of fertility by religion: Total Fertility Rate (TFR), Crude Birth Rate (CBR), General Fertility Rate (GFR), etc.. The estimates of the TFR (which are provided by all the sources) are discussed below. The 1979 SRS data show that Muslim fertility in Kerala was substantially higher, by 69 per cent, than Hindu fertility, whereas there was very little difference between Christian and Hindu fertility (Table 1). According to the 1981 census (un-corrected) estimates, Hindus and Christians had TFR just above 2, but this was well above 3 among Muslims, over 60 per cent higher than Hindus. The 1984 SRS estimates for Kerala show relatively very high fertility for Muslims, 64 per cent more than Hindus, but only marginally high for Christians. The recent 1992 estimates of fertility given by the NFHS indicate that in Kerala, both Hindus and Christians have very low fertility, below the replacement level (TFR well below 2), but the Muslim fertility is relatively high, with a TFR of 3.

TABLE 1: TOTAL FERTILITY RATE BY RELIGION IN KERALA

Year	*Source*	*Religion*			*% Excess over Hindu TFR*	
		Hindu	*Muslim*	*Christian*	*Muslim*	*Christian*
1979*	SRS Survey	2.39	4.05	2.57	*69*	8
1981	Census	2.20	3.60	2.10	64	-5
1984	SRS	2.20	3.60	2.40	64	9
1992	NFHS	1.66	2.97	1.78	79	7

Source. 1979 SRS Survey: Registrar General of India 1982, 1984.
1981 Census: Registrar General of India, 1988.
1984 SRS Survey: Registrar General of India, 1990.
1992 NFHS: PRC, Thiruvananthapuram and OPS, 1995.
Note: * Weighted average computed from 1978 Rural and Urban fertility estimates given by Registrar General of India, 1979.

The SRS and the NFHS do not give estimates for regions (such as districts or agro-climatic zones) within states. However, some other large surveys do provide differentials in regions within the states. The Kerala Fertility Survey (Zachariah *et al.,* 1994) was carried out during 1992 in three districts of Kerala, namely Ernakulam, Palakkad and Malappuram, that can be categorized into High, Middle and Low levels of development. The survey shows that within each of these districts, there are fertility differentials by the various religious and caste groups. Three indicators of fertility are available: average parity (standardized by age), completed fertility (mean children ever born to women of age 45-49) and the general fertility rate (for the period 1986-1991). It is clear that Muslim fertility is high in each district (Table 2). However, Christian fertility is only marginally higher than that of most Hindu castes in Ernakulam, lower in Palakkad, and not much different in Malappuram. It must be noted that the proportion of Christians is higher in Ernakulam, and lower in the other two districts. Thus, contrary to what is often believed, the Christians have low fertility in Palakkad and Malappuram in spite of being a minority group.

Are the Differentials Attributable to Socio-economic Factors?

Prior research on the religion-fertility relationship has suggested three main hypotheses: *Characteristics* (the socio-economic characteristics could vary by religion causing fertility differentials); *Particularized theology* (precepts and injunctions associated with a religion could influence fertility desires and contraceptive practice); and *Minority status* (being a numerical minority may have a bearing on fertility behaviour); for a discussion, see Jones and Nortman (1968), Goldscheider and Uhlenberg (1969), Chamie (1977).

Often the religious differentials are attributed to the differences in socio-economic characteristics. Shariff (1995), analyzing the data of the National Sample Survey (NSS) in India, found that in rural areas a larger proportion of Muslims as compared to Hindus and Christians are found in non-agricultural activities and in urban areas a larger proportion of Muslims were self employed than the Hindus and Christians. In addition to this, Muslims had

TABLE 2: FERTILITY BY RELIGION AND CASTE IN THREE DISTRICTS OF KERALA, KERALA FERTILITY SURVEY, 1991

	Ernakulam	*Palakkad*	*Malappuram*	*All Three*
		Average Parity (Standardized by age)		
Hindus:				
Scheduled Caste	2.23	3.01	3.11	2.67
Nairs	1.77	2.13	2.20	2.03
Ezhavas	2.15	2.59	2 48	2.39
Others	2.10	2.64	2.95	2.57
Christians	2.19	1.94	2.26	2.19
Muslims	2.78	3.63	3.34	3.70
		Completed Fertility		
		(mean children ever born for women age 45-49)		
Hindus:				
Scheduled Caste	3.22	5.92	4.24	5.55
Nairs	2.91	3.92	3.40	3.44
Ezhavas	3.76	4.10	3.22	3.84
Others	3.70	4.50	4.73	4.34
Christians	4.15	2.50	4.00	4.10
Muslims	5.29	6.31	6.30	6.24
		General Fertility Rate 1986-91		
Hindus:				
Scheduled Caste	99	136	133	120
Nairs	90	109	139	110
Ezhavas	96	112	77	99
Others	93	107	93	102
Christians	102	67	120	101
Muslims	115	153	161	155

Source: Zachariah *et al.*, (1994)

low level of income and educational level. Since socio-economic factors are known to be associated with fertility, the religious differentials in these can plausibly cause differentials in fertility (the characteristics hypothesis).

In order to see if this is indeed the case, we first examine fertility differentials by religion after controlling for key socio-economic variables.

For this purpose, a Multiple Classification Analysis (MCA) has been carried using the NFHS data. Children ever born by survey date (cumulative fertility) is the dependent variable. Four socio-economic variables are included as independent variables, education of the woman (four categories: Illiterate, Literate+Primary, Middle Complete, and High Schools), work status of the woman (dichotomous: Working, Non-working), residence (dichotomous: Rural,

Urban), and standard of living (three categories: Low, Medium, and High). In addition religion (three categories: Hindu, Muslim and Christian) was taken. The inclusion of the first three socio-economic variables needs no justification. The standard of living variable has been used as a proxy for income. The NFHS did not obtain data on income. However, migration to the Gulf countries could possibly be selective by religion contributing to large variations in income by religion. Moreover, the remittances from migrants are likely to influence family size desires. A standard of living index, computed on the basis of household assets and housing conditions, could be used to represent this factor. Therefore, such an index, proposed by Roy and Jayachandran (1996) has been used here, with the range divided into three categories: low (0-9 points on the scale), medium (10-19 points) and high (20-37 points). Finally, there are regional variations in the level of development in Kerala, with the northern region (Malabar) being relatively backward. There are also spatial variations in the religious composition, the proportion of Muslims is high in the northern region. In order to control for the region effect, a dummy variable has been used for the Malabar region, in addition to the socio-economic variables noted above '.

The analysis has been restricted to currently married women who have been married only once. Marital duration has been included as a covariate. The results are presented in Table 3. It can be seen that deviations by religion are large, Muslims showing fertility well above the average. Among the remaining variables, education, standard of living, and Malabar region, show significant effects. Of course, our concern here is for the religious effect after controlling (adjusting) for the independent variables. This can be seen from the adjusted deviations. Though the Hindu-Muslim gap narrows down somewhat, the adjusted mean children ever born for Muslims continues to be well above average, by 0.40. The unadjusted deviation for Christians was quite close to that for Hindus, but after adjustment Christian fertility is marginally greater than Hindu fertility. However, the Hindu-Christian difference is much smaller in comparison to the Hindu-Muslim difference even after adjustment. The *beta* value for the religion variable is quite large, 0.14, and not much different from the *eta* value of 0.18. Thus, the multiple classification analysis results clearly show that differentials by religion persist even when controlling for socio-economic and demographic variables. Clearly, the *characteristics hypothesis* does not gain much support at least in Kerala, instead, specific factors associated with religion appear to be crucial in causing fertility differentials. There is, hence, a need to examine how the family building process varies by religion.

[1] Child mortality is another factor that can influence fertility desires and behaviour and, in principle, be used along with the socio-economic variables in the MCA. It is known that child mortality varies by religion in Kerala (according to the NFHS, the infant mortality rate during 1982-92 was 23 per thousand births for Hindus, 28 for Christians, and 44 for Muslims; see, PRC, Thiruvananthapuram and UPS, 1995). However, children ever bom, which is the dependent variable in the MCA analysis carried out here, can influence child survival, creating a reciprocal effect making it difficult to incorporate child mortality in the analysis explicitly. The effect of the survival of a previous child can be taken into account in an analysis of birth intervals, which is not being attempted hi this paper but will be explored in a separate analysis. However, though there are differentials in child mortality by religion, the levels for all the religions in Kerala are so low (below 50 per thousand) that the effect on fertility is not likely to be notable.

TABLE 3: MULTIPLE CLASSIFICATION ANALYSIS OF CHILDREN EVER BORN ON SOCIO-ECONOMIC AND RELIGION VARIABLES, NFHS, KERALA

Variable/ Category	*N*	*Unadjusted deviations*	*Eta*	*Deviations adjusted for independents and covariates*	*Beta*
Grand Mean	3800	2.492			
Religion					
Hindu	2090	-0.19	0.18	-0.19	0.14
Muslim	958	0.54		0.40	
Christian	752	-0.15		-0.02	
Residence			0.02		0.00
Urban	1060	-0.05		0 01	
Rural	2740	0.02	-0.01		
Work Status			0.05		0.00
Working	2868 932	-0.05 0.17		0.02 -0.06	
Non-working					
Education			0.43		0.12
Illiterate	532	1.36		0.46	
Literate/Primary	1381	0.44		0.05	
Middle Complete	1003	-0.55		-0.16	
High School +	884	-0.88		-0.17	
Standard of Living					
Low	1423	0.22	0 . 1 1	0.18	0.09
Medium	1679	-0.05		-0.04	
High	698	-0.34		-0.26	
Region Malabar	1635	0.27	0.13	0.13	0.07
Other	2165	-0.20		-0.10	
Multiple $R = 0.740$	$R^1 = 0.547$				

Note : Marital duration is used as the covariate.
This analysis has been carried out only for currently married women, who have been married only once.

Period Parity Progression Ratios: Methodology

A useful way of examining the family building process is to look at the Parity Progression Ratios *(PPRs)*[2]. The *PPR* is the proportion of women who eventually move (progress) from

[2] It must be noted here that the PPR analysis examines only one dimension of the family building process. Age at the initiation of childbearing and spacing of births are aspects that also need to be investigated for a more complete analysis of the process. This would involve analyses of the timing of the first birth and of inter-live birth intervals. Though the present paper has not examined these aspects, the NFHS data do provide scope for such an analysis and it is hoped that it would be possible to do so in the near future.

a given parity to the next. Traditionally, PPRs are computed for cohorts of women or cohorts of births and can be obtained from fertility histories. However, there is a problem caused by truncation because some women who have had a birth during a period of, say ten years before the survey, may plausibly have the next birth after the survey, an information which is obviously not available on the survey date. As a result, progression from births in a period of about ten years before the survey cannot be studied. This makes it difficult to assess recent changes. An alternative proposed by Feeney and Yu (1987) and Bhrolchain (1987) uses the Period Parity Progression Ratio (PPPR) approach. This involves the computation of synthetic PPRs for a time period of, say one year or five years, from duration specific parity progression during the period. The idea is similar to a synthetic cohort life Table obtained from period-age-specific death rates. The PPPRs can be computed up to a period ending just before the date of survey and hence are useful to examine recent changes. In order to compute PPPRs for a calendar year, duration-specific parity progression ratios need to be obtained. Suppose t is the calendar year for which the PPR from parity l to $l + 1$ is to be computed. Then let,

$$q_E = \frac{\text{No. of women who had both } l\text{th and } l+1\text{th births in year } t}{\text{No. of women who had } l\text{th birth in year } t}$$

$$q_k = \frac{\text{No. of women who had } l\text{th birth in year } (t-k-1) \text{ and } l+1\text{th birth in year } t}{\text{No. of women who had } l\text{th birth in year } (t-k-1) \text{ but did not have the } l+1\text{th birth until the beginning of year } t,}$$

for $k = 0, 1, 2....$

Thus, $q_E, q_0, q_1....$ are duration-specific parity progression ratios which estimate duration-specific conditional probabilities of having the next birth, similar to the q_x values in a life table. Then, for the calendar year t,

$$PPPR\ (l \text{ to } l+1) = 1 - (1 - q_E)(1 - q_0)(1 - q_1)(1 - q_2).... \quad (1)$$

The details of the methodology are given in Feeney and Yu (1987).

For the purpose of consistency in computing parity progression ratios from woman's own birth to first birth (parity 0 to 1), the product chain in equation (1) is truncated at the duration (age) of 30 years. That is, any first births beyond the age of 30 are ignored and thus the *PPPR* relates to the probability of having the first birth before the age of 31. Further, since no births are expected below the age of 13 years, $q_E, q_0....q_{12}$ would be zero for the progression to the first parity. Eq. (1) is then modified to,

$$PPPR\ (0 \text{ to } 1) = 1 - (1 - q_{13})....(1 - q_{30}) \quad (2)$$

In most cases, there would not be any first births after the age of 30 and thus the truncation will have little effect. However, hi the recent years, age at marriage is high and a non-negligible proportion of women would have first births after the age 30. hi that case, the actual *PPPRs* would be slightly higher than those estimated here.

For PPPRs beyond the first parity, the product chain in eq. (1) is truncated at 10 years, that is,

$$PPPR\ (l \text{ to } l+1) = 1 - (1 - q_E)\ (1 - q_0) \ldots\ (1 - q_{10}) \qquad (3)$$

There would rarely be an inter-live birth interval wider than 10 years and hence q_f values would generally be zero for $i > 10$. As a result, this truncation is not likely to underestimate *PPPRs* notably.

Parity progression ratios can be computed either only during the currently married state or generally for all women. The latter are more useful for relating to *TFR* (see Feeney and Yu, 1987; for details), hi the NFHS, the fertility histories are obtained only from ever married women. On the reasonable assumption that fertility outside marriage is negligible, the fertility histories from ever married women can be used to obtain *PPPRs* from the first to the second parities and subsequent progressions. Accordingly, these have been computed. For progression from woman's birth to first birth, that is from parity zero to one, data for *all women including never married* are required (the denominators in the ratios would be *all women).* However, the NFHS files for fertility histories are only for ever married women. Therefore, proportions of women never married were computed from the individual records in the household files of NFHS data by single year of age. The number of women by age obtained from the ever married women's file was then adjusted to account for never married women as well. This adjustment was made by single years of age.

In order to use the PPPR approach, it is essential that the timings of births are accurately reported, hi many populations, the dates of births are not known for many births. However, a scan of the data files of Kerala revealed that the calendar year of birth has been reported for most of the births. Moreover, the instances of inconsistent reporting are very few (see Appendix Table 1 for details).

Thus, the fertility histories from the NFHS data in Kerala appear to be suited to the kind of analysis proposed.

Period Parity Progression Ratios for Kerala: 1968-91

The PPPRs have been computed for periods of one year (calendar years) during 1968 to 1991 for progressions up to the fourth parity. Progressions beyond the fourth birth are not computed since the denominators by period become quite small, hi the recent years, there have not been many births of a higher order. Of course, in the past, there would probably have been many such births, but those women would have been in the middle-later childbearing ages at that time, and most of them would have crossed 50 years of age by the survey date (the survey covered only women below the age of 50). Hence, we are not hi a position to study changes in PPPRs at higher parities.

TABLE 4 : PERIOD PARITY PROGRESSION RATIOS FOR KERALA, 1968-91

Year	*Progression from*			
	Woman 's Birth to 1st Birth	*Parity 1 to 2*	*Parity 2 to 3*	*Parity 3 to 4*
1968	0.8480	0.9824		
1969	0.8811	0.8710		
1970	0.9295	0.9634	0.9544	
1971	0.7883	0.9845	0.7404	
1972	0.9249	0.9697	0.9118	0.7453
1973	0.9404	0.9415	0.8276	0.7900
1974	0.8764	0.9856	0.8737	0.8439
1975	0.9404	0.9452	0.9133	0.7304
1976	0.8763	0.9801	0.8515	0.7194
1977	0.8379	0.9294	0.6133	0.6743
1978	0.9019	0.9344	0.8264	0.6104
1979	0.9322	0.9604	0.7362	0.6051
1980	0.9554	0.9731	0.8039	0.5966
1981	0.9253	0.8636	0.6986	0.5261
1982	0.9151	0.9363	0.7311	0.4645
1983	0.8712	0.8974	0.6649	: 0.5000
1984	0.9288	0.9259	0.6186	0.4655
1985	0.8686	0.9557	. 0.6624	0.3585
1986	0.8102	0,8973	0.5988	0.3239
1987	0.8997	0.9454	0.4849	0.3166
1988	0.9020	0.9556	0.4310	0.2851
1989	0.9373	0.9020	0.4021	0.3055
1990	0.8411	0.8960	0.4991	0.3178
1991	0.7786	0.9273	0.4656	0.2079

Source: Computed from NFHS data files.

The results (presented in Table 4) show that the trend in the PPPR to the first parity, i.e., from the birth of woman to her first birth, is unclear[3]. The PPPR from the first to the second parity also does not show a smooth trend, though some decline is indicated since high values of the order of 0.97-0.98 are not found after 1980. For the PPPR to the third birth a clear declining trend is seen, from about 0.9 in the early 1970s to well below 0.5 in the late eighties, though there are some fluctuations. Similarly, the PPPR to the fourth birth also shows a steep decline, from values over 0.7 in the early 1970s to about 0.3 in the late eighties. Clearly, the tendency to go for the third and higher order births has declined impressively, but most continue to go for the second child.

[3] In populations with negligible fertility outside marriage, the PPR from parity 0 to 1 can be factorised into progression from woman's birth to her marriage and from her marriage to first birth. Such an approach helps in studying changes in spinsterhood and in childlessness within marriage separately. This should have been followed in the present analysis as well. However, the NFHS gives age at marriage instead of calendar year of marriage and when dates of marriage were imputed using woman's date of birth and age at marriage, these were found to be inconsistent with her first birth in about 10 per cent of the cases. Hence, this approach was not adopted.

It must be noted here that the trend is not steady especially in the ratio to the first and the second parities. One of the reasons is that the denominator values for the computation of ratios are small for the single year period used. Besides, there would be some true disturbances. It can be seen that the PPPR falls drastically from 1976 to 1977; this could be the effect of the intensification of the family planning drive during the emergency. Some of the observed deviations could also be due to reporting errors. The calendar years of births reported in the survey might have been computed in many cases from the reported ages of children and any digit preference in age reporting could naturally distort the reporting of year of birth to that extent. This needs a detailed investigation. In the analysis for individual religions, the sample sizes would be even smaller. Hence, it was decided to adopt a five year period for computing the PPPRs by religion. This was done by computing the duration specific progression ratios for five year periods obtaining PPPRs for each period using formulas (2) and (3). The five-year periods adopted in the analysis are: 1972-76,1977-81,1982-86,1987-91; that is the four quinquennia prior to the survey.

Period Parity Progression Ratios for Religious Groups

The PPPRs for All Religions and the three religious groups are given in Table 5. The results show that the PPPRs to the first birth decline only marginally for Hindus and Muslims and show an irregular trend among Christians. Further, the PPPR to the second parity shows a decline only among Hindus, that too a small decline, whereas for Christians the trend is irregular and for Muslims a small increase is seen. In the case of Muslims and Christians, the sample sizes are small and minor changes in the estimated ratios need not necessarily imply actual changes (see Appendix Table 2 for number of births by order and religion).

The PPPRs to the third and the fourth parities were already smaller for Hindus and Christians compared to Muslims at the beginning of the period, i.e., 1972-76. Further, though these show a steady decline through 1987-91 for all the three religions, the fall is quite steep among Hindus, from 0.80 to 0.34 to the third parity and from 0.69 to 0.15 to the fourth. The fall is also fairly steep among Christians, but not to the extent as Hindus. Clearly, among Hindus and Christians of Kerala, a majority do not go for the third births these days and fourth births are becoming even less common. On the other hand, though the PPPRs show a clearly declining trend to the third and the fourth parities among Muslims as well, the fall is comparatively much smaller. Though relatively more Muslim women stop at the second and the third births than in the past, a majority continue to go on for the fourth birth.

One can clearly see that though Muslim fertility has also declined in the recent years, there has been a lag in the transition process when compared to Hindus and Christians. The 1977-81 PPPR from the second to third parity among Muslims (0.8720) was higher than the 1972-76 Hindu PPPR (0.8034) and was between 1972-76 and 1977-81 PPPRs for Christians. The 1982-86 PPPR for Muslims (0.8336) continued to be higher than the 1972-76 Hindu PPPR and was between 1972-76 and 1977-81 PPPRs for Christians. During 1987-91, Muslim PPPR of 0.7287 is more or less equal to the PPPR for Hindus during 1977-81 and for Christians for the period 1982-86. Thus, for the progression to the third birth, Muslims lag by about ten years behind Hindus and five to ten years behind Christians.

TABLE 5 : PERIOD PARITY PROGRESSION RATIOS BY RELIGION, KERALA, 1972-91

Religion/ Period	*Progression from*			
	Woman 's Birth to 1st Birth	*Parity 1 to 2*	*Parity 2 to 3*	*Parity 3 to 4*
Hindu				
1972-76	0.9010	0.9634	0.8034	0.6871
1977-81	0.9057	0.9417	0.7108	0.4558
1982-86	0.8495	0.9222	0.5922	0.3553
1987-91	0.8316	0.8848	0.3433	0.1483
Muslim				
1972-76	0.9764	0.8865	0.9575	0.9614
1977-81	0.9500	0.9121	0.8720	0.9604
1982-86	0.9526	0.9112	0.8336	0.7479
1987-91	0.8752	0.9697	0.7287	0.6090
Christian				
1972-76	0.8399	0.9765	0.9157	0.6187
1977-81	0.9326	0.8848	0.7613	0.5733
1982-86	0.8526	0.9612	0.7110	0.2813
1987-91	0.8618	0.9016	0.3932	0.2696
All				
1972-76	0.8986	0.9562	0.8796	0.7752
1977-81	0.9133	0.9362	0.7580	0.6002
1982-86	0.8786	0.9198	0.6557	0.4240
1987-91	0.8563	0.9241	0.4593	0.2931

Source. Computed from NFHS data files.

For the fourth parity, PPPR for Muslims even during 1982-86 is higher than both Hindu and Christian PPPRs for the period 1972-76. For the period 1987-91, Muslim PPPR of 0.6090 is between 1972-76 and 1977-81 PPPRs for Hindus, and very close to the Christian PPPR of 0.6187 during 1972-76. Thus, for the progression to the fourth parity, Muslims lag by about 15 years behind Hindus and Christians.

Clearly, the PPPRs indicate that Muslim fertility was substantially higher than Hindu and Christian fertility in the past, at least during the early 1970s and has continued to be so. Moreover, the gap has widened over the past twenty years or so as can be seen from widening of the gap in the PPPRs. This has been the case in spite of a notable fertility decline for the Muslims primarily because fertility declines among Hindus and Christians have been even more impressive than among the Muslims.

We must note here that the differentials seen in the PPRs are gross effects, since the PPPR analysis does not control for the effects of other (socio-economic) variables. Computation of PPPRs for various religions in categories of socio-economic factors poses

problems because the number of births in each cell would become too small. But the MCA carried out in an earlier section did show very clearly that differentials by religion persist even after adjusting for socio-economic and geographic factors. Therefore, the gross differentials in the PPPRs observed here can also be said to reflect the order of true variations.

The inferences drawn above are on the basis of fertility histories from the NFHS. Evidence from the 1991 census also confirms the existence of differentials and in particular that there are large differences in progressions to the third and higher order births between Muslims and Hindus-Christians. The birth order statistics from the 1991 census show that whereas the third and higher order births were only 18.0 per cent of total births during the one year period before the census among Hindus, and 17.4 per cent among Christians, the percentage was as high as 42.0 among Muslims (data tapes from the Registrar General, India, 1997). Further, only 6.0 per cent of births were of the fourth and higher order among Hindus and 4.6 per cent among Christians, but 23.7 per cent among Muslims.

The differentials in parity progression are also reflected in the pattern of contraceptive practice. According to the NFHS, the contraceptive prevalence rate (use of any modern method) was 63.6 per cent among Hindus, 58.6 per cent among Christians, but only 32.0 per cent among Muslims (PRC, Thiruvananthapuram and UPS, 1995). However, contraceptive use by method shows that most of the differentials are accounted for by terminal methods, male or female sterilization, the prevalence of which was 57.2 per cent among Hindus, 51.1 per cent among Christians and 27.6 among Muslims. Clearly, the tendency to limit family size is much greater among Hindus and Christians compared to Muslims.

Summary

That Kerala has undergone a rapid fertility transition during the past two-three decades has been well-recognized hi demographic literature. The analysis of the NFHS data shows that the tendency to go for the third and higher order births has considerably declined through the 1970s and 1980s in the state. But the decline has not been uniform at least across the three major religions hi the state - Hindu, Muslim and Christian, in particular, the fall among the Muslims has been relatively modest. As a result, while by the end of the 1980s a majority of Hindu and Christian couples stopped childbearing after the second child and only a small proportion went on to have the fourth, a majority of Muslims tended to continue childbearing at least up to the fourth child. Thus, a two or three child family appears to have become the norm among Hindus and Christians but not among Muslims. At the same tune, fertility does show a clearly downward trend among the Muslims as well showing that the transition process has begun. But there is a lag of 10-15 years as indicated by the comparative trends in PPPRs.

The state of Kerala, with a TFR of barely 2, is already at a below replacement level fertility. For Hindus and Christians, fertility is even lower. Though the Muslim fertility is moderately high, well above the replacement level, it has also exhibited a declining trend. If the lag between Hindu-Christian and Muslim fertility seen in the present analysis persists, the Muslim fertility is also likely to reach a replacement level soon after the turn of the century. Moreover, further declines in the Hindu-Christian fertility are not likely to be as rapid as in the past and in that case the differentials by religion would narrow down.

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Appendix

TABLE 1: REPORTING OF YEAR OF BIRTH IN FERTILITY HISTORIES, NFHS, KERALA

Birth order	*No. of Births*	*Year of Birth*			
		Stated but inconsistent	*Not stated*	*Missing*	*Stated & consistent*
I	3886	1	68	9	3808
2	3144	2	50	7	3085
3	1795	1	40	10	1744
4	854	0	30	9	815

Source: Computed from NFHS data files.

TABLE 2: NUMBER OF EVER MARRIED WOMEN OF AGE 13-49 AND BIRTHS OF ORDERS 1 TO 4 BY RELIGION, NFHS, KERALA

Religion	*No. of Women*	*Births*			
		1st	*2nd*	*3rd*	*4th*
Hindu	*2346*	2130	1719	902	340
Muslim	1147	992	811	569	376
Christian	824	751	607	319	135
Others	15	13	7	5	3
Total	4332	3886	3144	1795	854

Source: Computed from NFHS data files.