

**AN ANALYSIS OF FEMALE AGE AT MARRIAGE  
IN SOUTH INDIA  
1971 and 1981**

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CERTIFICATE

This is to certify that the dissertation entitled:  
"AN ANALYSIS OF FEMALE AGE AT MARRIAGE IN SOUTH INDIA,  
1971 and 1981" submitted by Mr. S. SUREENDER, in fulfilment  
of the six credits out of the total of twenty-four credits  
for the award of the Degree of Master of Philosophy (M.Phil)  
of this University, is a bonafide work to the best of our  
knowledge and may be placed before the examiners for  
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To

"S.S" Family

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( S. SUREENDER )

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## CHAPTER - I

### Introduction:

( Any change in the population of a country must come through the three main factors viz., fertility, mortality and migration. But the contribution of these factors to the population growth is always not the same. In India, as international migration is limited its influence on the population growth is insignificant. In the early 19th century of India, mortality rates were very high, but accordingly due to the medical technology and the consequent improvement in the health of the population, mortality levels have declined, resulting in higher population growth. Another reason for the higher population growth rates is the nearly constant fertility rates. Due to the rapid fall in the death rate and the unchanging high birth rate, the population of India on mid of 1988 was 818 million and it is still growing at the rate of the 150 million a year and will probably reach a billion by the turn of the Century. <sup>1</sup> (Such a high rate of growth of population

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1. United Nations. World Population Chart, 1988, Population Division, Department of International Economic and Social Affairs, United Nations, 1989

prevents the country from developing faster.) According to Coale and Hoover "when mortality risks are reduced, high fertility becomes a burden by increasing the dependency ratio, by diverting capital from uses that would raise, per capita output, and in the long-run by overwhelming any finite resources".<sup>2</sup> This argument at present holds true in India and despite nearly 30 years of planned development, it still faces, distressing shortages and serious economic and social shortcomings.

For example during 1950-51 and 1980-81 net national product at factor cost (at 1970-71 prices) rose by 183 percent, but on account of a rise in population, per capita NNP, rose by only 50 percent. The annual average growth rate of national income works out to be 3.4 percent and per capita income to only 1.3 percent.<sup>3</sup> The reason for this large difference is the high rate of the growth of the population. Population affects not only the per capita income, but also, the other basic facilities like

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2. Coale, A.J. and Hoover. Population growth and Economic development in low Income Countries, Princeton University Press, Princeton, 1958, p.232.
  3. Datt, Ruddar and K.P.M.Sundaram. Indian Economy, Vikas Publishing House, New Delhi, 1986, p.65

education and health.

(With a view to reduce the population growth rate and to lessen the impact of it, on the socio-economic development of the country, India has adopted the Family Planning Programme as a means of fertility control since 1952. Even though the Government's support to this programme and the financial allocation is increasing from one five year plan to another, the result of the programme in terms of the effect on the growth rate of the population is not satisfactory. Until 1987, only 37 percent of the eligible couples are effectively protected by some means of contraception.<sup>4</sup> It is for this reason, the Government of India has attached importance to beyond family planning measures to control the population growth rate. These measures among others include, increasing female literacy, raising their age at marriage, improving employment opportunities for women and raising their status. Out of these measures, one which directly affects fertility, and which needs immediate attention is raising the female age at marriage. In a country like India, where

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4. Government of India Year Book, 1986-87: Family Welfare Programme in India, New Delhi, 1988.

fertility control methods are not being widely used, beyond family planning measures like increasing the female age at marriage assume importance. The relationship between female age at marriage and family size can be brought out with the help of the below mentioned reasons: When a female marries later

- a) her reproductive span is shortened, and hence her fertility is reduced.
- b) her attitudes towards fewer children changes, due to her educational and employment achievement.
- c) the incidence of infant and child mortality is reduced <sup>5</sup> and which thereby pavesway for the adoption of family planning and acceptance of small family norm.

<sup>6</sup>  
Davis and Blake consider age of entry into sexual union as an important variable affecting fertility. They pointed out that in the pre-industrial societies early age at marriage and prolific-

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5. Office of the Registrar General of India. Survey of Infant and Child Mortality - 1979, New Delhi, 1980
  6. Davis, Kingsley and Judith Blake. "Social Structure and Fertility; An analytical framework", Economic Development and cultural change, Vol.4, No.4, 1956, pp.211-236.

child bearing was encouraged as a functional response to the high mortality levels prevailing in that society. They also mention three other reasons<sup>7</sup>

- 1) Economic exchanges involved in betrothal may be structured in such a way as to yield an advantage to the parents who marry their daughter early.
- 2) If the system is one of partilocal system, then a grown daughter remaining in her parental home is an anomaly.
- 3) A spouse is most demanded by other families when a daughter is young, first because she then has a greater potential fertility ahead of her, she is more attractive sexually, and fits more easily into a subordinate status in her husband's parental home.

In case of India, the reasons for the early age at marriage, in addition to above are mentioned by various researchers. Kapadia points out that the Hindu scriptures urged the parents to give away their daughters in marriages, "while she still goes

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7. Davis, Kingsley and Judith Blake. op.cit., pp.211-236

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 naked" and warned them not to keep maiden in their home, after she had attained puberty. Moreover an unmarried girl is expected to maintain her virginity, till the time of her marriage, and marriage must be desired, before any scope for suspicion 9 regarding the virginity of a girl presents itself. All these norms still plays a role in deciding the female marriage timing. But at present there is a weakening of the influence of religious doctrines and traditions. While examining the major reasons for arranging daughters marriage earlier than the legal age (18 years) in two Southern states and one Northern state (Andhra Pradesh, Kerala and Uttar Pradesh) Mahadevan and Sushma Tiwari 10 found that the economic reasons like dowry, and the view of the parents to arrange the marriage, when they are economically active play a major role than the religious conventions.)

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8. Kapadia, K.M. Marriage and Family in India, Oxford University Press, Calcutta, 1966, pp.138-167
  9. Samuel, T.J. "Social factor affecting fertility in India", The Eugenics Review, 57(1), 1965, pp.5-15.
  10. Mahadevan, K and Sushma Tiwari. Population dynamics in the Indian states : Trends, Differentials, Determinants and Interactions in fertility and mortality, Analytical Report, Dept of population studies, Tirupati, 1984-1986, p.38

Due to the above mentioned reasons, it has been generally observed that the female age at marriage is low. In order to increase the age at marriage, the Government of India has enacted several laws. The first - child marriage Restraint Act, known as Sarda Act, was passed by the legislative assembly of India in September 1929 and was introduced with effect from April 1, 1930. It prescribed the minimum ages of marriage as 14 years and 18 years for girls and boys respectively. This act was further amended in 1949 when the age was raised to 15 years in case of females. In 1955, 'The Hindu Marriage Act' was passed which included in it that for fresh marriage, neither party should have a living spouse. Further in March 1978, by a fresh legislation on the subject (Child Marriage Restraint Amendment Act) the Indian Government has raised the minimum ages of marriage for girls and boys to 18 and 21 years respectively. This act has been enforced with effect from 1st October 1978. But the legislation that has been framed, and are in operation still now, has, had only a slight effect on the marriage timings. This can be seen by examining Table 1 which gives the trends in mean age at marriage for females in India.

Table : 1.0

Female age at marriage in India : 1901 - 1981

Years	Age at marriage (in yrs)
1901	13.1
1911	13.2
1921	13.7
1931	12.7
1941	14.7
1951	15.6
1961	15.5
1971 a,b	17.2
1981 a,b	18.3

a : excludes Assam.

b : the data refer to Singulate mean age at marriage worked out by Hajnal's method.

Source (i) The Population of India - 1974, World Population Year, CICRED Series, (upto 1961-Census)

(ii) Office of Registrar General of India. female age at marriage - analysis of 1981 Census data, occasional paper No. 7 of 1985.

From the above table one can observe that there is sharp fall during 1921-31 and thereafter a steady and slight increase in the age at marriage. According to Agarwala and other demographers, the fall during



1921-31 was mainly due to the passing of the child marriage Restraint Act in 1929. The period between the passing of the Act and its actual enforcement was utilized by the people to perform child marriages on a larger scale, leading to a sharp decline in the average marriage age. As the area of the present study refers to the Southern states, namely Andhra, Karnataka, Tamil Nadu and Kerala, we briefly mention their mean age at marriage in recent years.

Table : 1.1

Singulate mean age at marriage of females in the four states of India : 1971 and 1981

States	Age at marriage(in yrs)	
	1971	1981
Andhra Pradesh	16.22	17.25
Karnataka	19.58	20.22
Tamil Nadu	17.80	19.20
Kerala	21.01	21.85

Source : Office of Registrar General of India. Female age at marriage - An analysis of 1981 Census data, Occasional Paper No. 7 of 1985.

As table 1.1 shows there is slight increase in the age at marriage of females from 1971 to 1981 in all the States. Kerala has the highest age at

marriage of 21.01 years, in 1971 and of 21.85 years in 1981, followed by Tamil Nadu, Karnataka and Andhra Pradesh. Compared with the all India figure, all the States, except Andhra Pradesh in 1971 and 1981, have higher age at marriage. So, a detailed scientific enquiry will be fruitful if we study the variation in female age at marriage due to the influence of demographic, socio, economic and developmental variables. Hence, in this study, we examine the determinants of age at marriage in the four southern States, namely Andhra Pradesh, Karnataka, Tamil Nadu and Kerala, using the districts as the unit of observation. For this, the study has been organised as follows: A review of the past studies on the factors affecting the female age at marriage are presented in Chapter II. The following chapter deals with the conceptual framework, hypotheses and the methodology of the study, used for testing the hypotheses that are framed. The district level estimates of female age at marriage, and the factors influencing it, are presented for 1971 and 1981 in Chapter IV for the four Southern States. The last Chapter summarizes the salient findings and conclusions of the study.

## CHAPTER - II

### A REVIEW OF LITERATURE

This chapter reviews the studies that have been done on female age at marriage. While considering the different factors that affect the female age at marriage, the factors have been broadly grouped under four headings. They are demographic, social, Economic and developmental factors. We will first review the demographic factors that affect the age at marriage.

#### Demographic factors :

The most important demographic factor, availability of marriage partners plays an important role in determining the age at which females marry. This demographic factor has been studied by several scholars while analysing the marriage timing of the females.

#### Availability of marriage partners :

The importance of this variable lies in the fact that, when one sex is in relative oversupply, the marriage timing for that particular sex, will be later. In general it has been examined that lower the number of females per 1000 males, the scarce is the bride and lower the number of males per 1000,

females the more scarce is the bridegroom. This has been termed by the demographers as the marriage squeeze.

While analysiing the Asian marriage patterns from a total of 77 Censuses and surveys of Asian population, Smith<sup>1</sup> observed that there is a negative correlation between the female singulate mean age at marriage and the availability of potential spouses and a positive correlation with the male singulate mean age at marriage.

Malaker<sup>2</sup> while studying the relation between the socio-economic and demographic correlates with marriage patterns in India, using the 1961 Census also observed a negative association between the female mean age at marriage and the sex-ratio.

In an another study carried out by Srivastava<sup>3</sup> in the rural areas of Uttar Pradesh using the 1971

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1. Smith, Peter C. "Asian nuptiality in Transition", Journal of Family History, Vol.5, No.1, 1980, pp.58-96
  2. Malaker, C.R. "Socio - Economic and Demographic correlates of marriage patterns in India", Demography India, Vol.4, No.2, 1975, p.332.
  3. Srivastava, J.N. Determinants of female age at marriage in Rural U.P., Analytical Report 30, Population Research Centre, Lucknow, 1984, p.23.

Census data, conclude that the ratio of single males to single females in marriageable age-groups showed negative influence on female marriage ages and positive influence on male marriage ages.

(During his study on a rural area in the South Indian State of Karnataka, Caldwell et.al<sup>4</sup>, observed that the increase in female age at marriage was mainly attributed to the marriage squeeze which is the result of the changes in the age-structure of the population. He defined marriage squeeze as the surplus that occur among the potential brides. According to him, as the result of the marriage squeeze, parents found it difficult to marry their daughters at the time they wished and consequently the female age at marriage is increased.)

#### Social Factors :

Marriage is one of the fundamental elements of a social institution, which is influenced by various factors that are operating in the society. The functions of marriage, for instance procreation is also

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4. Caldwell, J.C. Reddy, P.H and Pat Caldwell, " The causes of marriage change in south India", Population studies, 37(3), 1983, pp.343-361.

determined by the social factors like religious norms and the backwardness of different castes. Though at present, it seems that the religious doctrines and traditions are slowly losing their importance, its effect on age at marriage still holds true. Moreover the educational attainment of the females affects the female age at marriage. Thus it becomes important to know the influence of these factors on female age at marriage. The factors that have been reviewed in this section in relation with the female age at marriage are religion, caste, literacy and educational attainment.

#### Religion and Caste :

India being a multi-religious country, it is of special significance to study the differentials in age at marriage with respect to religion. Differences in age at marriage exist not only among different religions, but also among different castes that exist in our country. In case of religion, the christians have some delay in their marriage timing, compared with Hindus and Muslims, and so far as the castes are concerned the females of lower castes have the lowest mean age at marriage than the upper caste females. This difference that exists among the different

religion and different castes, can be examined from the below mentioned studies.

(While analysing the age at marriage in India using the Census figures of 1931, Agarwala<sup>5</sup> conclude that the christians have their marriage timing at 17.2 years followed by Muslims (12.7) and Hindus (12.3 years). A similar conclusion was obtained by Reddy and Bloom<sup>6</sup> with the help of the results of the fertility survey involving a sub-sample of units contained in India's sample registration system (Vital Statistics Division, 1975). But they pointed out that Hindus(16.85 years) have higher age at marriage than Muslims (16,75 years). Certain studies have also indicated that child marriages are also prominent among Hindus and Muslims. // Using the family planning fertility survey conducted by the Population Council of India in Haryana during 1971-72, Bishwanath Mukerjee<sup>7</sup> pointed out that child

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5. Agarwala, S.N. Some problems of India's Population, Vora & Co Publishers Private Ltd, Bombay, 1968, pp.50-74.
  6. Bloom, David, E and Reddy, P.H. "Age patterns of women at marriage, cohabitation and first birth in India", Demography, Vol 23, No 4, November, 1986,
  7. Mukherjee Bishwanath. "Child marriage in Haryana", Demography India", Vol II.2, No.2, 1973, p.238.

marriages are especially prominent in the villages, and among females belonging to Muslims and Hindus in Haryana.

The studies of age at marriage that focus on the weaker sections, especially scheduled castes and tribes, shown that they have lower age at marriage than the upper castes. Driver<sup>8</sup> in Central India found that the scheduled castes have an early age at marriage (13.8 years) than Brahmins (16.9 years). The early age at marriage does not only occur among Scheduled castes and tribes but it is also prevalent among the other weaker sections of the society. In a survey conducted in Awan village and its surrounding region of Kota District of Rajasthan during 1963-65, Giri Raj Gupta<sup>9</sup> pointed out that the upper castes like Brahmins, Rajput and Mahajans have 2 to 3 years higher age at marriage than the lowest castes say Kumhar and Bhongi. (Even now in India, the lower castes have a lower age at marriage than the upper

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8. Edwin D Driver. Differential fertility in Central India, Princeton University Press, Princeton, 1963, pp.73-102.
  9. Giri Raj Gupta. Marriage, Religion and Society : Pattern of change in an Indian village, Vikas Publishing House Pvt. Ltd, New Delhi, 1974, p.65.



castes. This can be cited with the help of the Caldwell et.al<sup>10</sup> study on South India, that the Harijans (15 years) still have a very low age at marriage than the Brahmins (over 20 years).

#### Literacy and Educational attainment :

Education is generally viewed as a tool through which the old customs and traditional systems of the peoples are altered and rational decisions are taken. Education of the women has both direct and indirect influences on their age at marriage. Directly through the school attendance and indirectly by the employment opportunities in non-traditional sectors, the education of the female affects their age at marriage. Thus demographers view the literacy and educational attainment as an important factor affecting the marriage timing among females. Malaker<sup>11</sup> while analysing the relationship between female age at marriage and different factors in India, as pointed out earlier, has found, the literacy level of the female alone accounts for about two thirds of the variation in female population. In addition to this,

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10. Caldwell, J.C. et.al; Op.cit., P.350.

11. Malaker, C.R. op.cit., p. 332.

the effect of both horizontal (percentage of females literate) and vertical (percentage of females in junior high school and above) expansion of education on the female age at marriage have also been studied.

In the districts of Uttar Pradesh, Srivastava<sup>12</sup>, as stated earlier, showed that the literacy status influences marriage ages positively and a higher level of education has a larger positive influence than simple literacy status. Koteshwar<sup>13</sup> has also found the same result, for villages of Dharwad in Karnataka State, that females with higher education have higher age at marriage than those with lower education.

Further some studies indicate that it is the educational status of the wife which is more effective in raising her marriage timing, than the educational status of her husband. In a survey done in three<sup>14</sup> districts of Eastern Rajasthan in 1981, by R.K. Sinha

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12. Srivastava, J.N. Determinants of Age at Marriage in U.P., Analytical Report 25, Population Research Centre, Lucknow, 1982, p. 53-54.
  13. Koteshwar, R.K. Some aspects of age at marriage of girls in Dharwad, P.R.C Report 45, Population Research Centre, Dharwad, 1986, p.27.
  14. Sinha, R.K. "Some correlates of recent marriages in Eastern Rajasthan, Findings from Baseline survey" Dynamics of Population and Family Welfare, Himalaya Publishing House, Bombay, 1985.

and a study by Kanitkar and Sinha<sup>15</sup> in five districts of Orissa in 1982, came out with the above said conclusion in their respective studies. Some are of the opinion that the rural urban differentials on female age at marriage is mainly due to the impact of educational attainment of the females on those areas.

It has been examined by Sinha<sup>16</sup> in three districts of Eastern Rajasthan in 1981, that in rural areas with a female literacy rate of 11.3 percent in the age group of 5+, the proportion of women married in 10-14 age-group is 14.5 percent, while in urban areas with 46 percent literacy, the proportion married is 9.8 percent. (Using survey data collected in 1975 Bangalore population project, Bloom and Reddy<sup>17</sup> found that significant rural-urban differences in marriage and fertility timing, are at least partly the result of the greater impact of education on age at marriage, co-habitation and first birth in urban areas than in rural areas.)

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15. Tarakanitkar and Sinha, R.K. "Factors associated with increasing age at marriage in Orissa", Journal of Institute of Economic Research, 21(1), 1986.

16. Sinha, R.K. op.cit.

17. Bloom, David. E and Reddy, P.H. op.cit., p. 521.

In addition to the above mentioned studies, Duza<sup>18</sup> and Baldwin while analysing the nuptiality and population policy in Tunisia, Malaysia and Sri Lanka, observed that transition from massive literacy to even elementary literacy represents vital changes and activates a whole chain of modernization effects having positive impact on female marital postponement and a depressing influence on the incidence of child marriage.

**Economic Factors :**

(These are one which at present play an important role in determining the fertility behaviour of the people and also their marriage timing.) The resurgence of dowry, has a drastic influence on the female age at marriage. The employment of the females also affects their marriage timing. (For instance, when a female is economically sound enough and she doesn't need a male for her survival, then her marriage timing will be postponed, than those females who are economically backward. Thus, marriage, a social phenomena at present, is also influenced by the economic background of the family.) Under the economic

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18. Duza M. Badrud and Stephen Bardwin.C. Nuptiality and Population Policy, The Population Council, New York, 1977.

heading, the only factor which has been reviewed in relation to age at marriage is the employment status of the females.

**Employment of the females :**

The link between employment and age at marriage has been brought out by different scholars. Parents generally try to delay their daughter's marriage in order to prolong the period during which the women contributed to the family. (Mamdani<sup>19</sup> observed in Manupur village of Haryana that in families of landless labourers, the age of the girls at effective marriage risen, partly because grown up daughters can earn good wages especially at periods of peak labour demand. Reddy and Gopal,<sup>20</sup> also came out with the result that there exists a positive association between the female age at marriage and their labour force participation rate in Karnataka State.)

Moreover the relationship between the females participation in different industrial categories and

19. Mamdani, Mahmood. The myth of population Control : Family, caste and class in an Indian villages, Monthly Review Press, New York, 1972, pp.101-103.
20. Reddy and Gopal. "Socio-Economic factors and age of marriage", The Journal of family Welfare, Vol..26, No. 3, 1980, pp.53-59.



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their marriage timing has also been examined.) In Seventeen villages of Dharwad taluk of Karnataka, Koteswar<sup>21</sup> analysed that the females engaged in cultivation have a mean age at marriage of 15.8 years, and those engaged in non-agricultural activities, have a higher mean age at marriage of 17.3 years. A similar conclusion was arrived by Kanitkar<sup>22</sup> and Sinha in the study conducted in five districts of Orissa in 1982.

#### Developmental factors :

Apart from the demographic and socio-economic factors, the developmental factors like percapita income and the residential background play a major role in deciding the female age at marriage. The influence of these factors on female age at marriage is discussed below :

#### Percapita Income :

Percapita income is one of the best indicators of the economic well-being of a population and hence some studies have tested its relation with the female age at marriage. A geographical area having

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21. Koteswar. Op. cit., p 22.

22. Tarakanitkar and Sinha, R.K. op.cit.

higher income tends to change the people's attitude in such a way that they postpone their daughter's marriage.

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Reddy and Gopal in Karnataka and Srivastava in fourteen major states of India showed that there exists a positive association between the per capita income and the female age at marriage. Also when the per hectare agricultural yield taken as an indicator of per capita income, Srivastava<sup>25</sup> observed that in the rural areas of Uttar Pradesh, it has a positive association with the female marriage timing. The following reasons pointed out by Caldwell et. al.,<sup>26</sup> while analysing the causes of marriage change in South India, supports the negative relation between female age at marriage and per capita income. The reasons are as follows :

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23. Reddy and Gopal. op.cit.
  24. Srivastava, J.N. Correlates of age at marriage in India: with special reference to literary status, Analytical report 33, Population Research Centre, Lucknow, 1986. p.39.
  25. Srivastava, J.N. "Determinants of female age at marriage in rural U.P", op.cit., p.21.
  26. Caldwell et. al., op.cit., pp.357-358.

- (i) parents generally desire their daughter's to marry educated men with urban jobs. But in a settlers market created by relative scarcity, there is no alternative but to offer dowry with one's daughter.
- (ii) Parents guarantee the economic well-being of their daughters even after marriage. Because of this reason, parents have the problem of finding an acceptable level of dowry and raising the money for it. This situation postpones the marriage timing of the females.

#### Residential background :

According to earlier studies, the age at marriage of females is higher in urban areas than in rural areas. The general reason for this differential, is the improved socio-economic conditions prevailing in the urban areas. With the help of the marital status distributions by age and sex, Smith<sup>27</sup> observed in Asian population that urbanisation is a modern process that influences the female age at marriage. He added that the urbanisation process is a combination of social and economic transformations

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27. Smith, Peter, C. Op.cit.



and not merely the agglomeration of population, which affects the female marriage timing. Sadashi-<sup>28</sup>vaiah et al., pointed that in 1971, for the country as a whole, the mean age at marriage for females was fairly higher in urban areas (19.1 years) than in rural areas (16.6 years).<sup>29</sup> Goyal too arrived at the same conclusion, while analysing the shifts in age at marriage in India between 1961 and 1971 utilising the Census figures.

This difference in age at marriage exists not only among urban and rural areas but also between cities, towns and villages. While analysing the marriage timing in Central Asia, Driver<sup>30</sup> observed the same, that those in cities marry at 15.5 years while those living in towns and villages at 13.6 years and 13.4 years respectively. Recently the study of Srivastava<sup>31</sup>, reveals that in the districts

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28. Sadashivaiah, K. et.al., "Age at marriage in India-the implications of the new legislations in the light of the 1971 Census data", Journal of Family Welfare. Vol 27, No.3, March 1981, pp. 46-63.
29. Goyal, R.P. Marriage age in India, B.R. Publishing Corporation, Delhi, 1988.
30. Edwin D.Driver. op.cit.
31. Srivastava, J.N."Determinants of age at marriage in Uttar Pradesh, Op.cit., p.56.

of Uttar Pradesh the proportion of urban population has an significant positive influence of the marriage timing. He explained that the expansion of urbanisation provides larger opportunities for non-familial roles and whose modernising influences help to remove the impact of traditions and tend to raise the marriage ages of females.

### Conclusion

The above review suggest us that the demographic, social, economic and developmental factors, have played an important role in determining the female age at marriage in India. Based on the above review, the present study focusses attention on the female age at marriage in South India. A study of female age at marriage in South India, has not yet been carried out at the district level. Also, the factors that affect the age at marriage differs from one country to another, and also within the same country from one state to another, and also within one district to another. Hence, the factors that affect the female age at marriage in the districts of the Southern States are to be examined. Thus, the present study comes into picture by overwhelming the previously mentioned studies.

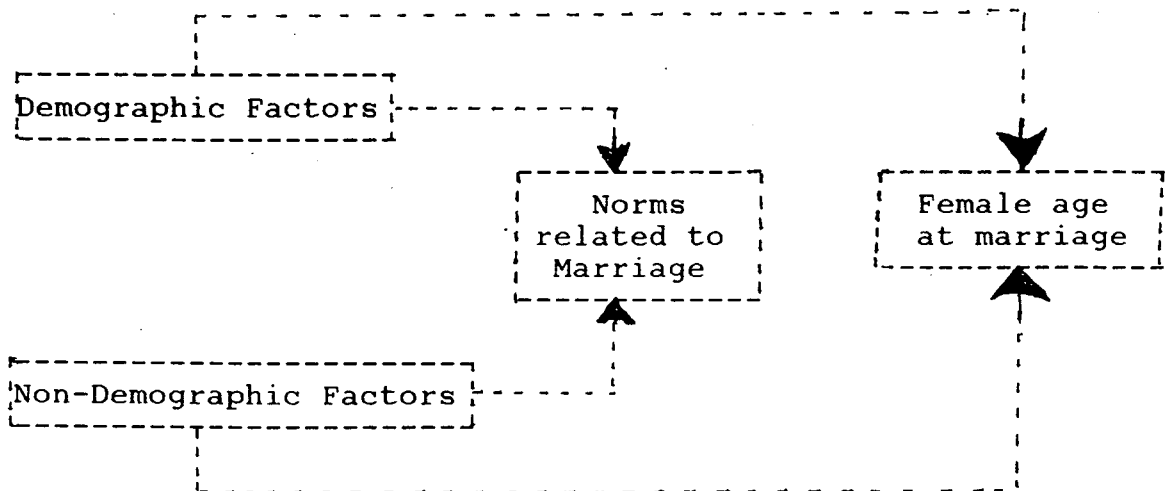
## CHAPTER - III

### A Framework for Analysing the Age at Marriage and Methodology used

A framework for analysing the age at marriage and the methodology of this study are presented in the two different sections of this chapter. The first section deals the conceptual framework of the age at marriage within which the study is to be conducted. In this section a brief description of the selection of the variables and the hypotheses of the study are also given. In the next section, the measurement of the variables, the source of data, the methodology to be used, and the limitations of the data are presented.

Section : 1

#### Conceptual framework for the study of female age at marriage



(The above framework has been used to analyse the inter-district variations in the marriage patterns in

the concerned states in terms of different demographic, socio-economic and developmental factors.) In finding out the linkages between the various factors and female age at marriage, we have more or less followed the framework, which was developed by United Nations in 1988<sup>1</sup>. The framework is composed of combination of inter-related block of factors. It proceeds in sequential fashion from, demographic, non-demographic factors, marriage norms and female age at marriage.

( The first block consists of demographic factors. Among the demographic factors, the marriageable population which includes, men and women who are not married but who are in marriageable ages are taken into account. This demographic factor influences the age at marriage, directly through the imbalance in sex-ratio, and also indirectly through its influence on marriage norms. For instance, we can say that, more number of females than males in marriageable population creates conditions for a new marriage norm such that females marry at an ~~late~~ age, due to the

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1. United Nations. First Marriage : Patterns and Determinants, Department of International Economic and Social Affairs, ST/ESA/SER.R/76, New York, 1988, p.14.

demand and supply within the marriage market. Though the socio-economic development plays an important role in deciding the female age at marriage, in country like India, where the religious and traditional beliefs are still prevalent, the availability of marriage partners also plays an important role in affecting the female marriage timing.

In the next block the non-demographic factors are considered. The non-demographic factors include the socio, economic and developmental variables. These variables directly affects the female age at marriage through the difference in the soci-economic conditions of the people, and indirectly through their effect on the marriage norms. The individual effect of these factors on age at marriage are discribed below:

**Social factors :**

In order to explain the relationship between female age at marriage and the social factors, variables like religion, caste and educational attainment of females are considered.

**(a) Religion and Caste :**

Religion and Caste being the ascribed status play a significant role in determining the female age

at marriage. The female age at marriage is determined partly due to the religious norms and traditional practices, which are followed by different societies in India, and partly due to the varying socio-economic difference that exist among the communities. (For instance) the traditional religious belief of the Hindus was that if a Hindu girl attained puberty before marriage, her father would be deemed to have been responsible for foetal murder every month when the girl went into her menstrual period. Apart from this, (the purity or virginity at the time of marriage is an essential element of Hinduism, which stress the parents to arrange their daughters marriage at an early age<sup>2</sup>. Though at present, the first belief is uncommon, the belief of arranging the marriage of the females at an early age, due to the latter reason is quite prevalent.

(Just as in the case of different religions, different castes, especially the weaker sections believe in the early age at marriage,) due to the reasons mentioned above. (But recent researchers observe that though these type of practices are pre-

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2. Kapadia, K.M. Marriage, Religion and Society, Vikas Publishing House, Delhi, 1966, p.55

valent in almost all the castes; it is the low socio-economic background of the weaker sections which drastically affects the female marriage timing<sup>3</sup>. Hence it is argued that the socio-economic development alters people's perception and attitudes towards the deeply rooted practices that prevails in the society. For example, the educational attainment of the people alters the religious beliefs towards the age at which females should marry. But in case of India, though the socio-economic change is occurring, it is slow, and hence the religious beliefs and practices, still holds its grip on female marriage timing.

(b) Educational attainment of the females :

The level of educational attainment of the females being the important indicators of social development, has been examined here, to bring out its relationship with the female age at marriage. Higher literacy and educational attainment especially of females tend to increase their age at marriage both directly and in an indirect way. The higher level of education are directly associated with a higher age at marriage, and indirectly through altering the

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3. Goyal, R.P. Marriage Age in India, op.cit., pp. 227-253 .

traditional attitudes of the people towards the marriage timing of the females.)

**Economic Factors :**

(One of the important economic factors) that has been studied in relation to female age at marriage is the employment status of the females. Females who are employed delay their marriage timing than those who are unemployed. One of the reasons that can be given for this difference is that, women who are employed outside their house, are exposed to new ideas and new situations. In other words we can say that there is a conflict between career achievement and early age at marriage. Moreover females engaged in non-agricultural activities, will be better educated, which in turn, postpones their age at marriage.

**Developmental Factors :**

In the developmental factors, we have included the urban population of the district, and its agricultural development in terms of net area irrigated to net-area sown.

**(a) Urban Population :**

The urban-rural differentials in the demographic behaviour is quite common in almost all the countries. Due to the socio-economic differences in



these areas, the demographic behaviour is altered with the residential background. The urban areas through its modernisation and by the educational and occupational achievement of the females in these areas, have higher age at marriage, than the rural areas. For instance, the employment opportunities that are available in urban areas require certain level of education, which postpones the female marriage timing.

(b) Net area irrigated to net area sown :

The variable net area irrigated to net sown, shows the agricultural improvement in an area, which is generally associated with the levels of percapita income. The districts which are developed in terms of higher percapita income, have an impact on the people's traditional beliefs and practices towards early marriage timing and there by increase the female age at marriage. For instance, the per capita income plays an important role in the social and economic development, and thereby increases the female age at marriage.

The third block deals with the norms relating to marriage. A norm has been defined as an obvious or subtle constraint whereby society ensures that the

outcome of individual choices will not favour the maintenance of the social fabric and not prejudice the group's interests<sup>4</sup>. Marriage norm in particular refers to the values held about the desirable age at which men and women should marry. These norms are generally carried from one generation to another and assumed to be social responses to environmental conditions, that are designed to maintain the survival of the group<sup>5</sup>. In India, parents still follow the marriage norms and marry their daughters at an early age. An important reason for this is that they think that there is every possibility of their daughter to loss her virginity or to become pregnant before marriage, which may bring disgrace to the family<sup>6</sup>. Though the improvement in socio-economic conditions of the people may lessen the rate of marriage norm in deciding the female marriage timing, in India, the marriage norms still plays a role in determining the female age at marriage.

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4. United Nations. First marriage : Patterns and Determinants, op.cit., p.27.
  5. Ibid, p.27.
  6. Mahadevan Pillai.K and P.R.Dutt. A Sociological Appraisal of Raising age at Marriage, Reprinted from Bulletin of the Gandhigram Institute of Rural Health and Family Planning, Vol.6, No.3, 1972.

The final block shows the dependent variable; the female age at marriage. It gives us an idea about the age at which females are married in different districts of the study area. In brief this conceptual framework defines a chain of influences where by the social structure affects the female age at marriage.

**Hypotheses :** Based on the above framework the following hypotheses are made.

- (i) Higher the proportion of single males to single females in the marriageable age groups, lower will be the female age at marriage.
- (ii) Higher the proportion of christian population, higher will be the female age at marriage
- (iii) Higher the proportion of scheduled caste population lower will be the age at marriage.
- (iv) Higher the percentage of females who have metric and above form of education, higher will be the age at marriage
- (v) Higher the percentage of females engaged in non-agricultural activities, higher will be the age at marriage
- (vi) Higher the development of the district, higher will be the age at marriage.

## Section : 2

### Measurement of Variables :

In this section we deal with the measurement of the variables that has been selected for the study. We first describe the measurement of the dependent or nuptiality variables and later the independent or explanatory variables of this study.

#### Measurement of nuptiality / dependent variables :

(The first measurement of the nuptiality indicator is the mean age at marriage. Since the question related to female age at marriage is absent in the Census, we calculate it with the available data on marital status by age from Census, using the well known Hajnal's method. This method is usually termed as the singulate mean age at marriage (SMAM).)

(The SMAM can be defined as an estimate of the mean number of years lived by a cohort of women before their first marriage.) Assuming that the (i) Incidence of mortality and migration at each age is the same for both the single and general population and (ii) the rates of first marriage in a community are constant over a period of time, the average age of persons marrying upto a certain age, by which nearly all marriages have taken place may be computed. It

gives the estimated mean number of years lived a by a cohort of females before their marriage.

(The method can be described as follows :

$$\bar{x} = \frac{1000 + 5 \sum_{10}^{35} nsx - 35 \times sk}{100 - sk}$$

Where

$\bar{x}$  = Singulate mean age at marriage .

35 = Age upto which nearly everybody is married.

5 = Age-group.

$nsx$  = proportion of single persons in age-group  $x$  to  $x+n$  in a Census.

$Sk$  = proportion of single female at age 35

1000 = the years lived by the cohort before their 10th birthday.

For the purpose of estimating the mean ages, 'K' is taken to be 35 years.)

This method has been used by most of the studies that has been mentioned in the previous chapter. Especially Agarwala<sup>7</sup> (1962) with 1961 Census, and recently Goyal<sup>8</sup> (1987) using the 1981 Census, used this method in their respective studies.

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7. Agarwala, S.N. Age at Marriage in India, Kitab Mahal, Allahabad, 1962.
  8. Goyal, R.P. op.cit.

b) The second measure of the nuptiality is the percentage of females who are single in the age group of 15-19 and 20-24, in order to determine the early age at marriage. It is calculated with the help of the following method:

$$\begin{array}{l} \text{Percentage of females} \\ \text{single in the age-group} \\ \text{of 15-19/20-24} \end{array} = \frac{\text{Total no.of females single in} \\ \text{15-19/20-24 age-group}}{\text{Total no.of female population} \\ \text{in 15-19/20-24 age-group}} \times 100$$

c) The third measure involves, in calculating the percentage of females single in the age-group of 45-49, in order to determine the celibacy rate. It is measured through the following method:

$$\begin{array}{l} \text{percentage of females} \\ \text{Single in 45-49 age-group} \end{array} : \begin{array}{l} \text{Total no.of females single} \\ \text{in 45-49 age-group} \end{array} = \frac{\text{Total no.of female population} \\ \text{in 45-49 age-group}}{\text{Total no.of female population} \\ \text{in 45-49 age-group}} \times 100$$

This variable represent the cohort measure, which is quite different from the above mentioned measures.)

The independent variables that has been selected for this study are measured in the following way.

Table : 3.1

Measurement of independent variables :	
Variable	Measurement of the the variables
Availability of marriage partners	Ratio of single males in 15-39 age group to single females in 10-34 age-group.
Religion	Percentage of Christian population to total population.
Caste	Percentage of Scheduled Caste to total population
Education	Percentage of females educated with metric and above to total female population above 0-4 age group.
Employment	Percentage of females engaged in non-agricultural activities to female population above 0-4 age- group.
Development	(a) Percentage of urban population to total population
	(b) percentage of net area irrigated to net area sown.
	(c) Per Capita Income

Source of Data :

The variables that are used in this study were taken from the secondary source. The sources from which these variables are taken were given in the following table.

Table 3.2

Sources for the variables that are used in this study

Variable	Source
Census :	
1. SMAM	Socio-cultural tables
2. Percentage single in 15-19 age-group	"
3. Percentage single in 20-24 age-group	"
4. Percentage single in 45-49 age-group	"
5. Ratio of single males to single females in marriageable age-groups	"
6. Percentage of Christian Population	Socio -cultural tables(1971) Table on Household Population by Religion. (1981)
7. Percentage of Scheduled Caste Population	Special tables on Scheduled Caste Population(1971)  Primary Census Abstract on Scheduled Caste Population(1981).
8. Percentage of females educated with matric and above	Socio-cultural tables
9. Percentage of females engaged in non-agricultural activities	General Economic Tables
10 Percentage of Urban Population	General Population Tables



11 Percentage of net area irrigated to net area sown	Indian Agricultural statistics 1970-71 to 1973-74 (Vol II)  Season and crop pattern of 1981-82.
12 Percapita Income	Statistics for Planning of Kerala 1983.

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\* Only in case of Kerala.

#### METHODOLOGY

The methods used for analysing the relationship between the nuptiality indicators, and explanatory variables are presented in this section. In order to find the influence of various factors (explanatory) on the nuptiality indicators, we first used the correlation analysis to explain the relation between these variables. This technique also gives us an idea about the type of relation i.e., positive or negative that exist between the two variables.

In order to estimate or predict the change in the dependent variable, for a unit change in the independent variable, we use the regression analysis.) Since there are more than one explanatory variable, and in order to find the influence of all these variables on the nuptiality indicators, we use

the multiple regression analysis technique. In multiple regression analysis, we define the regression equation as path of the mean of the <sup>nuptiality</sup> indicator  $\hat{Y}$  for all the combinations of  $X_1, X_2, \dots, X_k$ . Hence the equation of multiple regression is taken as :

$$Y = a + b_1 X_1 + b_2 X_2 + \dots + b_k X_k$$

Where,

$Y$  is the nuptiality indicator

$X_1, X_2, \dots, X_k$  are the explanatory variables.

$a$  is a constant, and

$b_1, b_2, \dots, b_k$  are the regression coefficient.

Thus regression equation tells us if the explanatory variables get changed by one unit, then by how many units, the nuptiality indicator will get changed.

Moreover, when the multiple regression technique is in the use, then it also necessitates us to know, how the parameters gets changed when new variables are added one by one in the model. Hence the use of stepwise regression analysis comes into picture. This technique tells us the contribution of an added variable in explaining the nuptiality indicators, and also helps to see whether the new variable is worth including in the model or not.

(In addition to above,) two statistical like (t-test, F-test) are used in order to test the significance of regression coefficient, and coefficient of determination ( $\bar{R}^2$ ) respectively which are more essential in any analytical study.)

#### Limitations of the data:

Though in this study, we tried to utilise all the available data, there are certain limitations do occur. The following are the limitations of the data:

(i) The data that are used in this study are taken from the national Census i.e., secondary sources. Actually for the problem like age at marriage, there may be many indepth reasons like marriage norms, dowry for the early or late marriage. And this type of information can only be obtained through the primary sources such as interviews, rather than the available limited sources.

(ii) While calculating the sigulate mean age at marriage by an indirect method, using the Census figures, we assume that mortality and migration are closed. But such an assumption may not be strictly valid.

## CHAPTER - IV

### An Analysis of Determinants of Nuptiality in the Southern States during 1971 & 1981

This chapter deals with the estimates of nuptiality indicators (SMAM, percent single in 15-19, 20-24 and 45-49 age-group) for 1971 and 1981, and an analysis of factors that affect these nuptiality indicators in the districts of the Southern States separately and all of South India for both time periods. The differentials in SMAM and other nuptiality indicators are first studied with respect to the concerned states and then it was tried out with the districts of each state separately. The estimates of nuptiality indicators together with the explanatory variables for 1971 and 1981 are presented at the Appendix.

Table No : 4.0

Decadal Increase in the Singulate mean age at marriage for females in the Southern states

State	SMAM (Yrs)		Decadal Increase
	1971	1981	
Andhra pradesh	16.17	17.18	1.01
Karnataka	17.71	19.10	1.39
Tamil Nadu	19.51	20.11	0.60
Kerala	20.75	20.97	0.22
India	17.20	18.30	1.10

Compared to all India figures, except Andhra Pradesh all other states have higher female age at marriage in both time periods. It has been observed that there is a marginal increase in the age at marriage of all the states during 1971 and 1981, and the increase is slightly higher in case of Karnataka, than other states. It is a welcome change in the state of Karnataka, that the female age at marriage which was below 18 years in 1971, increased to 19.10 years in 1981. On the otherhand, it has been observed that even in 1981, the state of Andhra Pradesh, has the female age at marriage below the prescribed age limit of 18 years.

A similar conclusion can also be arrived while looking at the differentials in the percentage of females single in the age-groups of 15-19, 20-24 and 45-49.

Table No: 4.1

Percentage of females single in 15-19, 20-24 and 45-49 years of the Southern States, 1971 and 1981

State	Percent Single in 1971			Percent Single in 1981			Decadal Change		
	15-19	20-24	45-49	15-19	20-24	45-49	15-19	20-24	45-49
Andhra Pradesh	31.56	4.48	0.29	42.47	7.43	0.23	10.91	2.95	-.06
Karnataka	49.65	11.31	0.69	64.08	19.41	1.01	14.43	8.10	0.32
Tamil Nadu	72.69	16.96	0.56	76.77	22.94	0.48	4.08	5.98	-.08
Kerala	80.97	32.74	3.05	85.41	40.18	2.93	4.44	7.44	-.12

It is obvious from the table that there has been marked increase in the percentage single in the age-group of 15-19 and 20-24 in all the states. In case of Andhra Pradesh and Karnataka, the increase in the percentage single from 1971 to 1981, is higher in the age-group of 20-24 during 1971 to 1981. The general explanation that can be given for this is that, since in Andhra Pradesh and Karnataka, the percentage of female single in 15-19 age-group is lower in 1971, there has been much increase in this age-group in 1981, than in the latter age-group.

In the case of Tamil Nadu and Kerala, already i.e., 1971, the percentage of females single in 15-19 is reasonably high and hence further increase takes place in the latter age-group during 1981. With regard to the age-group 45-49, except in Kerala and Karnataka, the other two states does not have even one percent of female single in the age-group during 1981. The decadal change indicates that except Karnataka, other states have a decline in the percent single. Moreover the decadal increase in Karnataka is not markeable, which explains that marriage is universal for females in the Southern States.

Having discussed, the differentials in the nuptiality indicators, with respect to the state, let us now examine, the variations in the nuptiality indicators and the determinants of the same in the districts of each state separately for both time periods. The states that are discussed are in the following, Andhra Pradesh, Karnataka, Tamil Nadu and Kerala.

Table 4.2

Mean and Coefficient of Variation of the Variables :  
Andhra Pradesh

Variables	1 9 7 1		1 9 8 1	
	Mean	Co-efficient of Variation	Mean	Coefficient of Variation
<b>Nuptiality Indicators</b>				
Y1	15.99	8.15	17.11	6.59
Y2	30.16	39.09	41.72	30.38
Y3	4.03	63.31	7.16	64.74
Y4	0.27	74.64	0.23	70.22
<b>Explanatory Variables</b>				
X1	98.78	9.17	94.78	16.58
X2	3.97	99.12	2.38	105.58
X3	13.68	28.82	14.97	23.98
X4	1.14	110.15	3.31	106.14

X5	4.71	35.70	6.81	46.23
X6	17.80	68.75	22.83	78.06
X7	31.33	69.94	37.47	60.50

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## NOTE:

- Y1 refers to Singulate mean age at marriage
- Y2 refers to percentage of females single in 15-19 age-group
- Y3 refers to percentage of females single in 20-24 age-group
- Y4 refers to percentage of females single in 45-49 age-group
- X1 refers to sex-ratio in marriageable age-groups
- X2 refers to percentage of christians in the population
- X3 refers to percentage of Scheduled Caste in the population
- X4 refers to percentage of females educated with matric & above
- X5 refers to percentage of females engaged in non agricultural activities
- X6 refers to percentage of Urban population
- X7 refers to percentage of net area irrigated to net area sown.

## Andhra Pradesh

The table 4.2 reveals that among the dependent variables, higher variation has been found with the females single in 45-49 age-group, which is 74.64 percent in 1971 and 70.22 percent during 1981. The



Appendix shows that this variable ranges from 0.05 percent and 0.94 percent in Nalgonda and Guntur districts in 1971, and between 0.06 percent and 0.77 percent in Adilabad and Hyderabad districts during 1981. The variable SMAM, which has a low coefficient of variation ranges from 13.32 yrs to 17.58 yrs in Nizamabad and Hyderabad districts in 1971 and between 15.30 yrs and 19.89 yrs during 1981 in Karimnagar and Hyderabad districts of Andhra Pradesh.

Among the explanatory variables, the variable educational attainment of the females and the ratio of single males to single females in marriageable age-groups, have respectively, the high and low coefficient of variation in both time periods. The educational attainment of females ranges from 0.36 percent and 6.32 percent in Srikakulam and Hyderabad districts respectively in 1971 and between 1.16 percent and 16.92 percent in Nalgonda and Hyderabad districts of Andhra Pradesh in 1981. The above mentioned variable with a lower coefficient of variation ranges from 83.65 and 118.17 in Khammam and Chittoor districts in 1971 and in 1981 between 83.09 and 158.23 in Adilabad and Srikakulam districts of Andhra Pradesh. The percentage of Christians in the

population, also has a high coefficient of variation in both time periods, ranging from 0.76 percent to 14.61 percent in Karimnagar and Guntur districts during 1971 and between 0.18 percent to 10.53 percent in Srikakulam and Guntur districts respectively during 1981. In order to understand how the dependent and independent variables covary with each other, zero-order coefficient are calculated. The matrices which represent the zero-order correlation coefficient are given in the tables 4.3 and 4.4.

From the zero-order correlation matrices, three relations can be established.

- (i) Correlation within the dependent variables
- (ii) Correlation within the independent variables
- (iii) Correlation between dependent and the independent variables

The relation that has been cited above are discussed separately.

- (i) Correlation within the dependent variables :

We can make out from the tables 4.3 & 4.4 that in 1971 and in 1981, the nuptiality indicators are highly related. There is, as expected, a high correlation between the SMAM, and the percent single





in 15-19 age-group in both the time periods. Due to the high correlation among the dependent variables, and for the simplicity of regression analysis, we have selected only one variable SMAM, for our regression analysis.

**(ii) Correlation within the independent variables :-**

The relation within the independent variables, as observed from the correlation matrices, by and large fall in line in the expected direction. The variable urbanisation is positively associated with educational attainment and the participation in non-agricultural activities of females. The positive association between educational attainment and participation in non-agricultural activities of females is also clearly brought out by the results. Further as assumed the christian population has a positive correlation with the education and participation of females in non-agricultural activities. However the negative relation of percentage christians in the population with sex-ratio in marriageable age-groups, and with female participation in non-agricultural activities does not bring any clear-cut conclusion.

Among the variables that have been selected above, there seems to be a very high correlation between the urban population and females who are educated upto matric and above in both the time periods. In order to avoid the problem of multicollinearity, that may occur in the regression analysis, if these two variables are used in the same function, alternative regression equation is formed from the standard regression equation in such a way by keeping other variables constant and interchanging the variables which are highly correlated. (The regression equations thus formed are as follows.)

Standard regression equation :

$$\text{SMAM} = a + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_5 x_5 + b_7 x_7$$

Alternative Regression equation :

$$\text{SMAM} = a + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_5 x_5 + b_6 x_6 + b_7 x_7$$

Where a represents the intercept value.

b1.....b7 represents the regression coefficients .

x1.....x7 represents the variables as mentioned earlier.

The above equations hold true for both time periods i.e., for 1971 and 1981.

**Correlation between the dependent and independent variables :**

The 1971 and 1981 zero-order correlation matrices, show that the results in general are in accordance with normal expectations. The variables, percentage of christians in the population, educational attainment of the females, the urban population and net area irrigated to net area sown, exerts a positive relation and the Scheduled Caste population has a negative relation as expected, with the nuptiality indicator in both the time periods. The demographic variable, sex-ratio in marriageable age-groups, exerts a negative relation as expected in 1971, but in 1981 has positive relation with the nuptiality indicator. With respect to the variable, percentage of females in non-agricultural activities, a negative correlation has been found in both the time periods, which is quite opposite to our hypotheses framed. Among all the explanatory variables, there is a high correlation between female educational attainment and singulate mean age at marriage.

**Results of 1971 Regression analysis :**

From the table 4.5 it can be seen that as much as as 73 percent and 69 percent (  $\bar{R}^2$  ) of the

Table - 4.5

## Results of Regression Analysis : Andhra Pradesh - 1971

Variables	S E L E C T I O N 1						S E L E C T I O N 2						
	Inter- Cept Value	R.C	S.E.E	t	$\bar{R}^2$	F	Inter cept Value	R.C	S.E.E	t	$\bar{R}^2$	F	
Step 1													
x5	17.957	-.41850	.14965	- 2.796 **	.292	7.820 *	x5	17.957	-.41850	.14965	- 2.796 **	.292	7.820 *
Step 2													
x5	17.657	-.49821	.11649	- 4.277 *	.586	13.874 *	x5	17.312	-.51581	.11621	- 4.439 *	.594	14.325 *
x4		.59080	.15564	3.796			x6		.06195	.01597	3.879 *		
Step 3													
x5		-.46617	.10667	- 4.370 *			x5		-.50230	.10792	- 4.654 *		
x4	18.906	.55396	.14217	3.896 *	.660	12.864 *	x6	16.781	.05984	.01484	4.033 *	.652	12.435 *
x3		-.09927	.04497	- 2.208 **			x7		.01611	.00810	1.988		
Step 4													
x5		-.45722	.09610	-4.758 *			x5		-.47387	.10368	-4.570 *		
x4		.54815	.12800	4.282 *			x6	17.802	.05442	.01443	3.772 *	.688	11.100 *
x3	18.263	-.09180	.04062	-2.260 **	.726	13.153 *	x7		.01517	.00770	1.970		
x7		.01611	.00722	2.232 **			x3		-.07519	.04408	1.705		
Step 5													
x5		-.45683	.09907	-4.611 *			x5		-.47304	.10653	-4.440 *		
x4		.54135	.13419	4.013 **			x6		.05336	.01505	3.545 *		
x3	17.806	-.09364	.42555	-2.201 **	.710	9.915 *	x7	17.009	.01627	.00838	1.943	.672	8.447 *
x7		.01673	.00787	2.126			x3		-.07868	.04612	-1.706		
x1		.00475	.01963	.242			x1		.00831	.02071	.401		



Step 6

x5		-.45731	.10258	-4.458*		
x4		.53830	.14201	3.791*	.691	7.721*
x3	17.587	-.08937	.05726	-1.561		
x7		.01669	.00815	2.049		
x1		.00614	.02358	.260		
x2		.00769	.06598	.117		

x5		-.47568	.10957	-4.341*		
x6		.05268	.01553	3.393*		
x7	16.114	.01611	.00861	1.871		
x3		-.06081	.06092	-.998	.656	6.708*
x1		.01391	.02442	.569		
x2		.03205	.06868	.467		

Note : \* refers significance at 1 % level.  
\*\* refers significance at 5 % level.



the urban population (X6) respectively are the variables which explain higher variations in the nuptiality indicator. Among these variables, the female education has the high regression coefficient. For instance, if the educational attainment of females (matric and above) increases by one unit, then, the age at marriage of the females, would increase by .54 units holding other variable constant. Similarly we can point out that if there is increase in the Scheduled caste population by one unit, then there would be decrease in the age at marriage of the females by .09 unit.

While looking at both selections, it can be noted that female participation in non-agricultural activities, has a significant negative influence on SMAM, which is opposite to that hypothesised. This negative influence may be due to the lower percentage of females in these activities or partly due to the higher percentage of females in mining and quarrying and in household industry, which have been included in this study under the non-agricultural activities. Usually females entering into mining and quarrying and in household industry, need no education, and hence may act against the expected result towards the

female age at marriage.

The influence of Scheduled Caste population on age at marriage supports our hypothesis that higher this caste in the total population, lower will be the female age at marriage. This is due to the low-socio-economic background of the caste, which presses the parents to marry their daughters at an early age.

The variable urbanisation exerts a significant influence on the age at marriage, which supports the hypothesis that higher the area gets urbanised, higher will be the female age at marriage. When the relative importance between urbanisation and female education are tested, it has been found from the table 4.5 that the value of  $\bar{R}^2$  decreases. When the variable female education is replaced by the urban population. This shows the relative importance of education than urbanisation, in explaining the variations in age at marriage.

In both the selections, it has been found that if the net area irrigated to net area sown increases by one unit then there will be an increase of only .01 units in the age at marriage. Though the change in age at marriage caused by this variable is low, its positive influence is to be considered.

Table - 4.6

## Results of Regression Analysis : Andhra Pradesh - 1981

Variables	S E L E C T I O N 1						S E L E C T I O N 2						
	Inter- Cept Value	R.C	S.E.E	t	$\bar{R}^2$	F	Inter cept Value	R.C	S.E.E	t	$\bar{R}^2$	F	
Step 1													
x4	16.331	.23507	.05246	4.481*	.489	20.081*	x6	16.215	.03920	.01083	3.620*	.384	13.101*
Step 2													
x4	17.585	.19781	.57799	3.423*	.512	11.479*	x6	13.879	.03743	.00998	3.752*	.482	10.225*
x3		-.07555	.05397	-1.400			x1		.02507	.01131	2.216*		
Step 3													
x4		.18394	.05678	.3.239*			x6		.02882	.01110	2.597**		
x3	18.548	-.09889	.05457	-1.812	.543	8.898*	x1	13.742	.02318	.01099	2.108	.518	8.121*
x5		-.08337	.05528	-1.508			x7		.01371	.00878	1.562		
Step 4													
x4		.18281	.06745	2.969**			x6		.02713	.01083	2.506**		
x3		-.09927	.05346	-1.857			x1		.02334	.01066	2.189**		
x5	18.359	-.09792	.05523	-1.773	.562	7.403*	x7	14.221	.01595	.00865	1.844	.548	7.021*
x7		.01238	.09923	1.341			x5		-.07940	.05362	-1.481		
Step 5													
x4		.13451	.07119	1.909			x6		.02200	.01127	1.953		
x3		-.11639	.05741	-2.027			x1		.01633	.01168	1.398		
x5	18.857	-.12282	.06272	-1.958	.557	5.985*	x7	16.315	.01518	.00848	1.789	.568	6.221*
x7		.01653	.01048	1.578			x5		-.09899	.05449	-1.817		
x2		-.07030	.08171	-.860			x3		-.07681	.05744	-1.337		

Step 6

x4		.11398	.07696	1.481		
x3		-.11575	.06543	-1.769		
x5	18.813	-.12253	.06592	-1.859	.531	4.695 *
x7		.01654	.01080	1.531		
x2		-.06942	.09259	-0.750		
x1		.00033	.01445	0.023		

x6		.02056	.01173	1.753		
x1		.01213	.01380	0.879		
x7	17.202	.01782	.00969	1.838	.553	5.050 *
x5		-.11860	.06438	-1.842		
x3		-.09621	.06683	-1.440		
x2		-.05513	.09153	-0.602		

Note : \* refers significance at 1 percent level.

\*\* refers significance at 5 percent level.

### Results of 1981 Regression analysis :

The results of 1981 regression analysis from table 1.11 shows that only 55 to 56 percent of the variations in SMAM, have been explained. In addition to the variables that explain the variation in SMAM in 1971, the variable sex-ratio in marriageable age-groups also is important in explaining the variations in the nuptiality indicator during 1981. The regression which shows the maximum variance for both the selections are as follows :

$$1) \quad \text{SMAM} = 18.36 + .18281 X4 - .09927 X3 - .09792 X5 \\ \quad \quad \quad \quad \quad \quad (2.969) \quad \quad (-1.857) \quad \quad (-1.773) \\ \quad \quad \quad \quad \quad \quad + .01238 X7 \\ \quad \quad \quad \quad \quad \quad \quad \quad (1.341)$$

$$\bar{R}^2 = .56, \quad F = 7.403.$$

$$2) \quad \text{SMAM} = 14.22 + .02713 X7 + .02334 X1 + .01595 X6 \\ \quad \quad \quad \quad \quad \quad (2.506) \quad \quad (2.189) \quad \quad (1.844) \\ \quad \quad \quad \quad \quad \quad - .07940 X5 \\ \quad \quad \quad \quad \quad \quad \quad \quad (-1.481)$$

$$\bar{R}^2 = .55 \quad F = 7.021.$$

Note: Figures in brackets represent the respective "t" values.

While looking at the value of  $\bar{R}^2$  it is clear that in 1981, large extent of variations in SMAM remains unexplained by the selected variables, and

hence suggested to look in for better indicators, to explain the variations in SMAM. The individual effect of the independent variables on the nuptiality indicator supports well with the results of 1971. If female education increase by one unit, then their age at marriage would increase by .18 unit holding other variables constant. As in 1971, female participation in non-agricultural activities shows a negative influence, but statistically insignificant in both the selections.

Sex-ratio in marriageable age-groups exerts a positive influence on the nuptiality indicator which is also statistically significant, does not permit only generalisations. Other variables namely Scheduled caste population, and net area irrigated to net area sown supports well with the hypotheses, but are statistically insignificant.

As in 1971, urbanisation is statistically significant and points out that if it increases by one unit, then there will be .02 unit increase in the age at marriage of the females. Moreover as the table 4.6 shows, when the variables like female education and urban population are interchanged, keeping other variables constant, the value of  $R^2$



increases. This explains that in 1981, the relative importance of urbanisation <sup>has</sup> increased, in altering the <sup>^</sup> age at marriage.

To summarize the results of 1971 and 1981, it can be pointed that only two variables, female education and urbanisation, play an important role in explaining the inter-district variation in SMAM.

Table 4.7

Mean and Coefficient of Variation of the Variables :  
Karnataka 1971 and 1981

Variables	1 9 7 1		1 9 8 1	
	Mean	Co-efficient of Variation	Mean	Coefficient of Variation
<b>Nuptiality Indicators</b>				
Y1	17.75	8.79	19.09	8.32
Y2	48.93	38.83	64.08	24.19
Y3	11.46	72.97	19.41	59.06
Y4	0.67	51.26	0.54	66.54
<b>Explanatory Variables</b>				
X1	98.43	11.42	96.50	9.03
X2	2.06	111.19	1.97	108.97
X3	13.21	36.33	15.08	30.24
X4	2.48	76.03	4.68	61.40
X5	3.56	64.07	4.90	79.48
X6	29.14	46.11	24.49	46.25
X7	13.58	74.19	17.31	67.77

NOTE:

- Y1 refers to Singulate mean age at marriage
- Y2 refers to percentage of females single in 15-19 age-group
- Y3 refers to percentage of females single in 20-24 age-group
- Y4 refers to percentage of females single in 45-49 age-group
- X1 refers to sex-ratio in marriageable age-groups
- X2 refers to percentage of christians in the population

- X3 refers to percentage of Scheduled Caste in the population
- X4 refers to percentage of females educated with matric & above
- X5 refers to percentage of females engaged in non agricultural activities
- X6 refers to percentage Urban population
- X7 refers to percentage of net area irrigated to net area soun

**Karnataka :**

The table 4.7 shows the inter-district variation of the dependent and independent variables among the districts of Karnataka during the years 1971 and 1981. In case of the nuptiality indicators, high coefficient of variation occurs with percent 20-24 age-group and low coefficient of variation with SMAM during 1971. From the Appendix it can be noted that the percent single 20-24 age group varies from 3.46 percent to 33.83 percent in Bidar and Coorg districts repectively and SMAM varies from 15.56 to 20.78 years in Bijapur and Coorg districts in the same period. In case of 1981, the coefficient of variation is high with the percent single in 45-49 age-group, which ranges from 0.13 to 1.33 in Bidar and Bangalore districts respectively, and SMAM with low coefficient of variation from 16.54 to 22.20 years in Bijapur and Dakshinkannad districts of Karnataka in 1981.

With respect to the explanatory variables,

the coefficient of variation is high in case of the percentage of christians in the population and low in case of sex-ratio in marriageable age-groups in both time periods. The former ranges from 0.12 percent to 9.67 percent in Bijapur and Dakshinkannand districts in 1971 and in 1981, between 0.11 percent to 8.96 percent respectively in the same districts. The sex-ratio in marriageable age-group varies from 75.76 to 118.33 in Dakshinkannad and Bangalore districts in 1971 and between 77.73 to 114.15 in the same districts during 1981. Moreover the educational attainment of females. Which also has a high coefficient of variation ranges from 0.54 percent 8.11 percent in Raichur and Bangalore districts in 1971 and 1.57 percent and 13.14 percent in the same districts during 1981.

The correlation matrices that are used to study the relation between these variables are given in the tables 4.8 and 4.9.

(i) Correlation within the dependent variables :

As in case of Andhra Pradesh, here too the correlation matrices reveal that all the variables are highly correlated. Hence for the regression analysis, SMAM is considered, and the factors that determine it in the districts of Karnataka are studied.





## (ii) Correlation within the independent variables :

The selected independent variables are related in the expected direction, as in case of Andhra. For instance, as expected, urbanisation is positively related with the educational attainment and participation in non-agricultural activities of females in both the time periods. Among the independent variables, a very high correlation has been found between female participation in non-agricultural activities, and christian population both in 1971 and 1981. Hence by interchanging these variables and keeping other variables constant, the following equations are formed.

Standard regression Equation :

$$SMAM = a + b_1 x_1 + b_3 x_3 + b_4 x_4 + b_5 x_5 + b_6 x_6 + b_7 x_7$$

Alternative Regression Equation :

$$SMAM = a + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4 + b_6 x_6 + b_7 x_7$$

Where a represents the intercept value.

b1.....b7 represents the regression coefficients

x1.....x7 represents the variables as mentioned earlier.

## (iii) Correlation between dependent and independent variables

The correlation between the dependent and independent variables in the districts of Karnataka, are in the expected pattern. The relation between the variables, female participation in non-agricultural

activities and SMAM, which was negative in case of Andhra, is positive in the state of Karnataka. This supports that hypothesised, higher the female participation in non-agricultural activities, higher will be the age at marriage. As in case of Andhra, there is a high correlation between female educational attainment and the nuptiality indicator.

#### Results of 1971 Regression analysis :

The results from the table 4.10 show that the regression (with a significant F value ) explains about 80 percent of the variation in the SMAM, in the districts of Karnataka. The variables that explain the above said variation are female education, urbanisation, sex-ratio in marriageable age-groups and net area irrigated to net area sown. The regression which show the maximum variance as pointed above, in both the selections are presented below.

$$1) \quad \text{SMAM} = 20.56 + .76940 \text{ x4} - .04004 \text{ x1} - .05803 \text{ x6}$$

$$\quad \quad \quad (6.202) \quad \quad \quad (-2.191) \quad \quad \quad (-2.190)$$

$$+ .02859 \text{ x7}$$

$$\quad \quad \quad (1.926)$$

$$\bar{R}^2 = .80, \quad F = 17.573$$

$$2) \quad \text{SMAM} = 20.56 + .76940 \text{ x4} - .04004 \text{ x1} - .05803 \text{ x6}$$

$$\quad \quad \quad (6.202) \quad \quad \quad (-2.191) \quad \quad \quad (-2.190)$$

$$+ .02859 \text{ x7}$$

$$\quad \quad \quad (1.926)$$

$$\bar{R}^2 = .80, \quad F = 17.573$$

Note : Figures in brackets represent the respective "t" values. In both the selections, it has been found from



Table - 4.10

## Results of Regression Analysis : karnataka - 1971

Variables	S E L E C T I O N 1						S E L E C T I O N 2						
	Inter- Cept Value	R.C	S.E.E	t	$\bar{R}^2$	F	Inter cept Value	R.C	S.E.E	t	$\bar{R}^2$	F	
Step 1													
x4	16.287	.58935	.14103	4.179 *	.507	17.462 *	x4	16.287	.58935	.14103	4.179 *	.507	17.462 *
Step 2													
x4	22.775	.64515	.10714	6.021 *	.722	22.443 *	x4	22.775	.64515	.10714	6.021 *	.722	22.443 *
x1		-.06733	.01797	-3.746 *			x1		-.06733	.01797	-3.746 *		
Step 3													
x4		.81983	.13003	6.305 *			x4		.81983	.13003	6.305 *		
x1	21.561	-.04690	.01923	-2.439 *	.769	19.312 *	x1	21.561	-.04690	.01923	-2.439 *	.769	19.312 *
x6		-.05814	.02849	-2.041 *			x6		-.05814	.02849	-2.041		
Step 4													
x4		.76940	.12406	6.202 *			x4		.76940	.12406	6.202 *		
x1		-.04004	.01828	-2.191 *			x1		-.04004	.01828	-2.191 *		
x6	20.563	-.05803	.02650	-2.190 *	.801	17.573 *	x6	20.563	-.05803	.02650	-2.190 *	.801	17.573 *
x7		.02859	.01565	1.826			x7		.02859	.01565	1.826		
Step 5													
x4		.74612	.13698	5.447 *			x4		.77363	.12849	6.021 *		
x1		-.03498	.02168	-1.613			x1		-.04347	.02086	-2.084		
x6	20.004	-.06013	.02763	-2.176 *	.790	13.319 *	x6	20.664	-.05681	.02752	-2.064	.789	13.233 *
x7		.02812	.01614	1.742			x7		.02786	.01626	1.713		
x5		.04789	.10213	.469			x3		.01579	.04100	.385		

Step 6

x4		.74134	.14081	5.265*		
x1		-.03816	.02290	-1.666		
x6	19.894	-.05916	.02841	-2.083	.780	10.596*
x7		.07231	.11278	.641		
x1		.00614	.02358	.260		
x3		.02648	.04516	.586		

x4		.78178	.15168	5.154*		
x1		-.04459	.02382	-1.872*		
x6	20.791	-.05669	.02865	-1.978	.773	10.192*
x7		.02826	.01730	1.634		
x3		.01469	.04374	.336		
x2		.01353	.11898	.114		

Note : \* refers significance at 1 % level.  
\*\* refers significance at 5 % level.

the results, that only four variables explain the maximum variance of the nuptiality indicator. While looking at the effect of individual variables, on SMAM, female education ( x 4 ) only accounts for major part of the explanation when other variables are hold constant. Thus, when the educational attainment of females especially with matric and above is increased by one then there will be an increase of 0.76 unit in their age at marriage.

The significant influence of sex-ratio in marriageable age-groups shows, a unit increase in it, will cause a decrease in the age at marriage of females by .04 unit. The variable, net area irrigated to net area sown though has an influence on SMAM in the expected direction, it is statistically insignificant. The negative influence of urbanisation, may be partly due to the lower percentage of population in urban areas, and partly due to the rural characteristics that are still backed by the people in urban areas.

Moreover when the relative importance of female participation in non-agricultural activities, and percentage of christians in the population, are tested, it has been found from the table 4.10 that there is not much difference in the value of  $\bar{R}^2$ , when one

variable is replaced by another. In addition these variables are also statistically insignificant to explain the variations in the nuptiality indicator. Hence from the above analysis, it can be concluded that female education and sex-ratio in marriageable age-groups play a greater role in explaining the variations in age at marriage in the districts of Karnataka during the year 1971.

#### Results of 1981 Regression analysis :

The results from the table 4.11 when judged by the value of  $\bar{R}^2$  explains 78 to 80 percent of the variations in female age at marriage, have been explained by female education, Sex ratio in marriageable age-groups, urban population, net area irrigated to net area sown, and the percentage of christians in the population. The results of regression which gives the above said maximum variance are as follows:

$$1) \quad \text{SMAM} = 25.57 + .52427 x_4 - .08106 x_1 - .04545 x_6$$

$$\quad \quad \quad (6.703) \quad \quad \quad (-3.357) \quad \quad \quad (-1.940)$$

$$\quad \quad \quad \bar{R}^2 = .80, \quad \quad \quad F = 24.264$$

$$2) \quad \text{SMAM} = 26.49 + .52093 x_4 - .09663 x_1 - .03827 x_6$$

$$\quad \quad \quad (3.978) \quad \quad \quad (-2.199) \quad \quad \quad (-1.299)$$

$$\quad \quad \quad + .03848 x_2 + .00679 x_7$$

$$\quad \quad \quad (0.212)$$

$$\quad \quad \quad \bar{R}^2 = .78, \quad \quad \quad F = 12.864$$

Note : Figures in brackets represent the respective "t" values.

It has been found that in both the selections,

Table - 4.11

Results of Regression Analysis : karnataka - 1981

SELECTION 1							SELECTION 2						
Variables	Inter- Cept Value	R.C	S.E.E	t	$\bar{R}^2$	F	Variables	Inter cept Value	R.C	S.E.E	t	$\bar{R}^2$	F
Step 1													
x4	17.363	.36909	.09976	3.700*	.446	13.688*	x2	18.069	.51792	.12789	4.050*	.491	16.399*
Step 2													
x4	27.515	.42672	.06489	6.576*	.774	29.428*	x2	17.313	.53340	.11912	4.789*	.569	11.340*
x1		-.10799	.02140	-5.046			x7		.04190	.02182	1.920		
Step 3													
x4		.52427	.07822	6.703*			x2		.45052	.13366	3.371*		
x1	25.572	-.08106	.02415	-3.357*	.808	24.264*	x7	21.525	.04780	.02190	2.183**	.580	8.401*
x6		-.04545	.02342	-1.940			x1		-.04301	.03368	-1.277		
step 4													
x4		.50941	.08474	6.011*			x2		.09963	.17936	0.555		
x1		-.07801	.02538	-3.074*			x7	29.079	.01672	.01825	0.916	.772	14.925*
x6	25.670	-.04461	.02405	-1.855	.799	17.410*	x1		-.12674	.03374	-3.756*		
x3		-.02276	.04219	-0.539			x4		.45908	.12496	3.674*		
Step 5													
x4		.49090	.10095	4.863*			x2		.03848	.18132	0.212		
x1		-.08267	.02911	-2.840**			x7		.00679	.01939	0.350		
x6	25.945	-.03967	.02824	-1.405	.787	13.095*	x1	26.487	-.09263	.04212	-2.199**	.784	12.864*
x3		-.02139	.04372	-0.489			x4		.52093	.13096	3.978*		
x7		.00692	.01883	.368			x6		-.03827	.02945	-1.299		

Step 6

x4		.48800	.10633	4.589*			
x1		-.07991	.03441	-2.322**			
x6	25.612	-.04137	.03104	-1.333	.771	10.102*	
x3		-.01771	.05042	-0.351			
x7		.00733	.01973	.372			
x5		.01211	.07174	.169			

x2		.07853	.19848	0.396			
x7		.00482	.02019	0.239			
x1		-.09506	.04344	-2.188**			
x4	27.192	.52450	.13456	3.898*	.774	10.230*	
x6		-.03629	.00042	-1.193			
x3		-.02802	.04821	-0.581			

Note : \* refers significance at 1 % level.  
\*\* refers significance at 5 % level.

as in case of 1971, female education and sex-ratio in marriageable age-groups are statistically significant to explain the variations in the <sup>nuptiality</sup>  $\Delta$  indicator. For instance, an increase in educational attainment of females by one unit brings about .52 unit increase in the age at marriage, and an increase in the sex-ratio in marriageable age-groups, decrease the age at marriage by .09 unit, when other variables are hold constant.

As in 1971, urbanisation shows a negative influence on SMAM, and is opposite to that hypothesised. When the relative importance of urbanisation and christian population is examined, the value of  $\bar{R}^2$  does not show much change in it, if these variables are replaced, keeping other variables constant. This is clearly brought out in the results from table 4.11. Though the variable christian population and the net area irrigated to net area sown are in the expected direction, they are statistically insignificant to explain the variation in the nuptiality indicator.

To summarize, as in case of 1971, only variables, female education and sex-ratio in marriageable age-groups, determine the age at marriage in the districts of Karnataka.

Table 4.12

Mean and Coefficient of Variation of the Variables :  
Tamil Nadu - 1971 and 1981

Variables	1 9 7 1		1 9 8 1	
	Mean	Co-efficient of Variation	Mean	Coefficient of Variation
<b>Nuptiality Indicators</b>				
Y1	19.55	5.60	20.21	5.36
Y2	72.70	14.98	77.37	11.88
Y3	17.95	55.82	24.08	44.92
Y4	0.63	62.94	0.56	68.30
<b>Explanatory Variables</b>				
X1	97.13	12.97	92.69	9.88
X2	7.73	125.29	7.18	125.36
X3	16.92	34.23	17.65	30.54
X4	3.68	131.87	6.87	67.51
X5	4.11	49.20	6.34	60.98
X6	31.59	70.52	32.25	66.91
X7	36.43	63.94	41.49	56.41

NOTE:

- Y1 refers to Singulate mean age at marriage  
 Y2 refers to percentage of females single in 15-19 age-group  
 Y3 refers to percentage of females single in 20-24 age-group



- Y4 refers to percentage of females single in 45-49 age-group
- X1 refers to sex-ratio in marriageable age-groups
- X2 refers to percentage of christians in the population
- X3 refers to percentage of Scheduled Caste in the population
- X4 refers to percentage of females educated with matric & above
- X5 refers to percentage of females engaged in non agricultural activities
- X6 refers to percentage of Urban population
- X7 refers to percentage of net area irrigated to net area sown.

The table 4.12 explains the variation that exists among the nuptiality indicators and the selected explanatory variables in the Districts of Tamil Nadu, during 1971 and 1981. The coefficient of variation is high which the percent single in 45 to 45 age group, and low with SMAM in both the time periods, the variation being 63 percent and 6 percent respectively in 1971, and about 68 percent and 6 percent during 1981. The maximum and minimum figures of SMAM as seen from the Appendix are 22.17 years and 17.86 years in Kanniyakumari and Dharmapuri districts respectively during 1971, and between 23.00 years and 18.29 years in the same districts during 1981. Incase of percent

single in 45-49 age group, the maximum and minimum figures are 1.42 percent and 0.20 percent in South Arcot and Salem districts in 1971 and in 1981 it is 1.45 percent and 0.17 percent in Madras and Kanniyakumari districts of Tamil Nadu.

In case of the explanatory variables in 1971, educational attainment of females has high coefficient of variation and the sex-ratio in marriageable age group show a low co-efficient of variation. The former ranges from 0.80 percent to 5.50 percent in South Arcot and Tirunelveli districts respectively, and the latter ranges from 80.69 in Ramanathapuram to 124.08 in Madras districts in the same time period.

During 1981, among the variables, the percentage of Christians in the population has a high coefficient of variation, and the sex-ratio in the marriageable age groups has a low coefficient of variation. The former ranges from 1.36 percent to 38.77 percent in Salem and Kanniyakumari district and the latter ranges from 83.48 in Puddukkottai to 107.23 in Madras districts during 1981.





To understand the relationship between the dependent and independent variables, the correlation coefficients were calculated and were given in the table 4.13 and 4.14.

**Correlation within the Dependent Variables :**

It has been found from the Zero-order correlation co-efficient that as in case of Andhra and Karnataka, all the nuptiality indicators are highly correlated. Hence as mentioned earlier, only SMAM is taken as the dependent variable, and the determinants of the same are studied in detail.

**Correlation within the Independent Variables :**

With regard to the relationship between the independent variables, by and large, they were in the expected direction, in both the time periods as in case of Andhra and Karnataka. However, the positive correlation of Scheduled Caste population with educational attainment and participation in non-agricultural activities of females, and the negative relation of urbanisation and percentage of Christians in the population are difficult to explain. Among all the explanatory variables, female education and urban population are highly related during both time periods. Hence, to avoid the problem of multi-

collinearity, the following equations are formed taking into account that no two variables with high correlation occur in the same equation. The Regression equations are as follows :

$$\text{SMAM} = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 \\ + b_7 X_7$$

$$\text{SMAM} = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_5 X_5 + b_6 X_6 \\ + b_7 X_7$$

Where,

a refers to intercept value

b1...b7 refers to regression coefficients

X1...X7 refers to the variables as mentioned earlier

#### Correlation between Dependent and Independent Variables :

The correlation matrices, which shows relation between dependent and independent variables, points out that among the explanatory variables, except net area irrigated to net area sown, other variables have the expected relation with the nuptiality indicators during both the time periods.

Among all the independent variables, the percentage of Christians has a high (positive) relation with the nuptiality indicator in both 1971 and 1981. This supports with our hypothesis that

Table - 4.15

## Results of Regression Analysis : Tamil Nadu - 1971

Variables	S E L E C T I O N 1						S E L E C T I O N 2						
	Inter- Cept Value	R.C	S.E.E	t	$\bar{R}^2$	F	Inter cept Value	R.C	S.E.E	t	$\bar{R}^2$	F	
Step 1													
x2	18.828	.09309	.01848	5.039*	.679	25.387*	x2	18.828	.09309	.01848	5.039*	.679	25.387*
Step 2													
x2	17.928	.07751	.01285	6.033*	.860	37.002*	x2	17.928	.07751	.01285	6.033*	.860	37.002*
x5		.24836	.06155	4.035*			x5		.24836	.06155	4.035*		
Step 3													
x2		.07733	.01281	6.038*			x2		.07733	.01281	6.038*		
x5	17.611	.27505	.06656	4.132*	.862	25.181*	x5	17.611	.27505	.06656	4.132*	.862	25.181*
x7		.00573	.00554	1.034			x7		.00573	.00554	1.034		
Step 4													
x2		.06600	.01681	3.926*			x2		.06600	.01681	3.926*		
x5		.26342	.06727	3.916*			x5	18.196	.26342	.06727	3.916*	.864	19.288*
x7	18.196	.09958	.00666	1.439	.864	19.288*	x7		.00958	.00666	1.439		
x3		-.03490	.03372	-1.035			x3		-.03490	.03372	-1.035		
Step 5													
x2		.06645	.01719	3.864*			x2		.06791	.01697	4.041*		
x5		.25890	.06901	3.751*			x5		.23459	.07225	3.247*		
x7	18.005	.01078	.00698	1.540	.860	14.887*	x7	18.030	.01244	.00715	1.739	.867	15.838*
x3		-.03012	.03501	-0.860			x3		-.03810	.03365	-1.132		
x1		-.01498	.01766	-0.848			x6		.00696	.06661	1.053		

Step 6

x2		.06277	.01803	3.481 *			
x5	19.343	.22573	.08040	2.807 *	.857	12.090 *	
x7		.01188	.07722	1.646			
x3		-.02294	.03663	-0.626			
x4		.05495	.04823	1.139			
x1		-.01498	.01766	-0.848			

x2		.06555	.01697	3.863 *			
x5		.17750	.09205	1.928			
x7	19.489	.01476	.00752	1.963	.870	13.369 *	
x3		-.04133	.03381	-1.223			
x6		.01429	.00986	1.449			
x1		-.01511	.01509	-1.001			

Note : \* refers significance at 1 % level.  
\*\* refers significance at 5 % level.



higher the percentage of Christians in the population, higher will be the female age at marriage.

**Results of the 1971 regression Analysis :**

The table 4.15 reveals that the regression with maximum variance explains about 86 to 87 percentage of the variation in the districts of Tamil Nadu, through the variables Christian population, female education, female participation in non-agricultural activities, Scheduled Caste population, net area irrigated to net area sown and the sex-ratio in marriageable age groups. The result of these regression equations are as follows :

$$\begin{aligned} \text{SMAM} &= 19.34 + .06277 X_2 + .22573 X_5 + .01188 X_7 \\ &\quad (3.481) \quad (2.807) \quad (1.646) \\ &\quad - .02294 X_3 + .05495 X_4 - .01498 X_1 \\ &\quad (-.626) \quad (1.139) \quad (-.848) \\ \bar{R}^2 &= .86 \quad F = 12.090 \end{aligned}$$

$$\begin{aligned} \text{SMAM} &= 19.49 + .06555 X_2 + .17750 X_5 + .01476 X_7 \\ &\quad (3.863) \quad (1.928) \quad (1.963) \\ &\quad - .04133 X_3 + .01429 X_6 - .01511 X_1 \\ &\quad (-1.223) \quad (1.449) \quad (-1.001) \\ \bar{R}^2 &= .87 \quad F = 13.369 \end{aligned}$$

Note : Figures in brackets represent respective 't' values

The significant F for  $\bar{R}^2$  suggests that the selected variables explain major part of variations in the female age at marriage. Among the explanatory variables, female participation in non-agricultural activities has a high regression coefficient. It indicates from the result, that there will be an increase in the female age at marriage by .17 and .22 unit by holding other variables constant and increasing the female participation in non-agricultural activities by 1 unit. The influence of Christianity in altering the attitudes of the people towards late marriage is felt, by noticing the significant 't' values.

Female educational attainment (with metric and above) has a positive influence, as expected but is statistically insignificant. Similarly, urbanisation which exerts a positive influence on the nuptiality indicator does not show statistical significance. When the relative importance of urbanisation and female education are tested the value of  $\bar{R}^2$  increases when the female education is replaced by urbanisation, keeping other variables constant in both the functions. This shows the importance of urbanisation than female education

which through its modernisational effect alters the female age at marriage. Other variables like Scheduled Caste population, net area irrigated to net area sown, and the sex-ratio in marriageable age groups were in the expected direction but not statistically significant to explain the variations in the female age at marriage.

#### Results of 1981 Regression Analysis :

The regression with maximum variance in 1981, explains about 82 to 83 percent of variation in the nuptiality indicator. Except the variable Scheduled Caste population, other variables as indicated in 1971, are the ones, which explains the above said variation, with a significant F value. The result of this regression are as follows :

$$\begin{aligned}
 \text{SMAM} &= 21.40 + .05902 \text{ X2} + .06572 \text{ X5} + .12768 \text{ X4} \\
 &\quad (2.850) \quad (1.972) \quad (2.779) \\
 &\quad - .03609 \text{ X1} + .01059 \text{ X7} \\
 &\quad (-1.798) \quad (1.638) \\
 \bar{R}^2 &= .82 \quad F = 12.727
 \end{aligned}$$

$$\begin{aligned}
 \text{SMAM} &= 20.02 + .09688 \text{ X2} + .02260 \text{ X6} + .05492 \text{ X5} \\
 &\quad (6.499) \quad (3.033) \quad (1.678) \\
 &\quad - .01289 \text{ X1} + .01094 \text{ X7} \\
 &\quad (-1.349) \quad (1.766) \\
 \bar{R}^2 &= .83 \quad F = 13.955
 \end{aligned}$$

Note: Figures in brackets represent the respective 't' values.

Table - 4.16

## Results of Regression Analysis : Tamil Nadu - 1981

Variables	S E L E C T I O N 1						S E L E C T I O N 2						
	Inter- Cept Value	R.C	S.E.E	t	$\bar{R}^2$	F	Inter cept Value	R.C	S.E.E	t	$\bar{R}^2$	F	
Step 1													
x2	19.502	.09897	.01832	5.404*	.676	29.200*	x2	19.512	.09897	.01832	5.404*	.676	29.200*
Step 2													
x2	19.011	.09595	.01647	5.825*	.741	20.415*	x2	18.997	.10048	.01609	6.252*	.752	21.603*
x5		.08091	.03838	2.108			x6		.01531	.00670	2.284*		
Step 3													
x2		.08332	.01731	4.815*			x2		.09776	.01473	6.638*		
x5	18.757	.07542	.03626	2.080	.772	16.272*	x6	18.671	.01296	.00624	2.078	.795	18.526*
x4		.05523	.03369	1.639			x5		.06657	.03494	1.905		
Step 4													
x2		.06592	.02177	3.028*			x2		.10353	.01458	7.099*		
x5		.06938	.03570	1.943			x6	18.112	.01787	.00681	2.622*	.815	15.810*
x4	21.096	.08875	.04221	2.102	.785	13.128*	x5		.06226	.03346	1.861		
x1		-.02596	.02050	-1.266			x7		.00930	.00630	1.477		
Step 5													
x2		.05902	.02071	2.850*			x2		.09688	.01491	6.499*		
x5		.06572	.03333	1.972			x6		.02260	.00745	3.033*		
x4	21.401	.12768	.04594	2.779*	.815	12.727*	x5	20.015	.05492	.03273	1.678	.829	13.955*
x1		-.03609	.02007	-1.798			x7		.01094	.00620	1.766		
x7		.01059	.00647	1.638			x1		-.01289	.01623	-1.349		

Step 6

x2		.05527	.02585	2.138			
x5		.06179	.03794	1.629			
x4	21.683	.12972	.04888	2.656 *	.798	9.634 *	
x1		-.03725	.02151	-1.732			
x7		.01141	.00745	1.532			
x3		-.00968	.03612	-0.268			

x2		.08695	.01889	4.602 *			
x6		.02489	.00798	3.117 *			
x5		.04065	.03695	1.100			
x7	20.894	.01404	.00720	1.949	.827	11.479 *	
x1		-.02600	.01709	-1.522			
x3		-.03053	.03498	-0.873			

Note : \* refers significance at 1 % level.  
\*\* refers significance at 5 % level.

In 1981, among all the above said variables, the female education has a high positive significance with the nuptiality indicator i.e., if the female education increases by 1 unit, then their age at marriage will increase by .13 units. Similarly as in case of 1971, the Christian population is statistically significant and explains greater variations of female age at marriage. The females participation in non-agricultural activities though statistically insignificant, its influence on the age at marriage is according to our hypothesis, that higher the percentage of this variable, higher will be the female age at marriage.

Urbanisation which is statistically significant has a positive influence and supports well with our hypotheses. Even in case of 1981, when the relative importance of education and urbanisation is tested, the urbanisation leads the role which is clear when we look the increase in the value of  $\bar{R}^2$  from table 4.16. As in case of 1971, the variables net area irrigated to net area sown, ratio of single males to single females, though in the expected direction, were not statistically significant to explain the variations in the age at marriage.

Looking at the 1971 and the 1981 regression analysis, it strikes that Christianity, female education, females participation in non-agricultural activities and urbanisation are the most important variables that could explain the variations of the age at marriage in the districts of Tamil Nadu. Though the variable Scheduled caste population is not statistically significant, its negative influence on age at marriage needs consideration.

96  
Table 4.17

Mean and Coefficient of Variation of the Variables :  
kerala - 1971 and 1981

Variables	1 9 7 1		1 9 8 1	
	Mean	Co-efficient of Variation	Mean	Coefficient of Variation
<b>Nuptiality Indicators</b>				
Y1	20.67	6.06	21.38	5.69
Y2	80.76	17.22	84.98	12.22
Y3	32.27	29.38	38.66	31.21
Y4	3.02	45.43	2.79	47.40
<b>Explanatory Variables</b>				
X1	82.10	8.78	85.67	6.41
X2	20.08	80.61	22.36	69.50
X3	9.05	26.85	9.84	40.95
X4	5.25	44.12	9.54	40.95
X5	6.19	41.80	7.21	46.99
X6	16.21	50.83	16.41	68.53
X7	590.50	10.91	573.46	35.37

NOTE:

- Y1 refers to Singulate mean age at marriage
- Y2 refers to percentage of females single in 15-19 age-group
- Y3 refers to percentage of females single in 20-24 age-group
- Y4 refers to percentage of females single in 45-49 age-group
- X1 refers to sex-ratio in marriageable age-groups
- X2 refers to percentage of christians in the popu-



lation.

- X3 refers to percentage of Scheduled Caste in the population
- X4 refers to percentage of females educated with matric & above
- X5 refers to percentage of females engaged in non agricultural activities.
- X6 refers to percentage of Urban population
- X7 refers to Per capita Income at 1970-71 prices,

The table 4.17 reveals the inter-district variation in Kerala with respect to the nuptiality and explanatory variables. In case of nuptiality indicators, the coefficient of variation seems to be low for SMAM, and high for the percentage single in 45-49 age-group, the variation respectively being 6 percent during 1981. The appendix which shows and 47 per cent during 1981. The appendix which shows the estimates of Smam, explains that the range for the variable is between 18.43 years and 21.90 years in Mallapuram and Allepey districts during 1971, and in 1981 between 19.11 years in Malappuram and 22.95 years in Kottayam districts.

With respect to the explanatory variables there is a high coefficient of variation for the percentage of christians in the population and a low coefficient of variation for sex-ratio in marriageable age groups in both the time periods. The former ranges from 1.99 per cent in Malappuram to 48.77 percent in Kottayam districts during 1971, and from 4.80 percent to 47.00 percent in Kozhikode and Kottayam

districts during 1981. the latter varies from 70.24 to 93.55 in Trichur and Kozhikode districts during 1971 and between 75.28 and 93.96 in the same districts during 1981. Similarly in the case of urbanisation, where the coefficient of variation is also high, the range of variation is between 6.73 percent and 28.00 percent in Mallapuram and Trivandrum districts during 1971 and 4.56 percent and 39.55 percent in Idukki and Ernakulam districts during 1981.

The correlation coefficient for the variables, for both the time periods, are given in the tables 4.18 and 4.19.

#### Correlation within the dependent variables:

The Zero-order correlation matrix shows that as in the case of Andhra, Karnataka and Tamil Nadu, all the nuptiality indicators are highly correlated during 1971 and 1981. Hence as pointed out before, SMAM is taken as the only dependent variable for this study.

#### Correlation within the Independent variables:

In Kerala, the relation brought out between the independent variables shows that all the selected variables are in the expected direction as in case of Andhra, Karnataka and Tamil Nadu in both the time periods. Among the independent variables, there is a high correlation between female education and percen-





tage of christians in population in both the time periods. Hence the following equations are formed so as to use these variables in different equations.

$$i) SMAM = a + b_1 X_1 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 X_7$$

$$ii) SMAM = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_5 X_5 + b_6 X_6 + b_7 X_7$$

where,

a refers intercept value.

b<sub>1</sub>...b<sub>7</sub> refers to regression coefficient

x<sub>1</sub>...x<sub>7</sub> refers to variables as mentioned earlier.

These equations hold true for both the time periods. i.e., 1971 and 1981.

Correlation between the dependent and independent variables:

All the explanatory variables except the percentage of scheduled caste in the population, have the expected relationship with the nuptiality indicator, both during 1971 and 1981. The positive relationship of scheduled caste population with the nuptiality indicator may be due to improved socio-economic conditions of the community. As in case of tamilnadu, here too, among other variables, a very high correlation exists between the christian population and SMAM in both time periods.

1971

Results of Regression analysis:

The results from the table 4.20 show that the regression explains a maximum variance of 91 to 98 percent in the females age at marriage in the

Table - 4.20

Results of Regression Analysis : Kerala - 1971

Variables	SELECTION 1						SELECTION 2						
	Inter- Cept Value	R.C	S.E.E	t	$\bar{R}^2$	F	Inter cept Value	R.C	S.E.E	t	$\bar{R}^2$	F	
Step 1													
x4	17.862	.53466	.02828	18.908*	.978	357.520*	x2	19.405	.06295	.01590	3.958**	.662	15.669*
Step 2													
x4	17.507	.51909	.02539	20.444*	.984	246.896*	x2	18.138	.04962	.01008	4.923*	.881	29.718*
x3		.04819	.02421	1.990			x5		.24773	.06302	3.931**		
Step 3													
x4		.53337	.02951	18.077*			x2		.05000	.01016	4.921*		
x3	16.445	.06168	.02807	2.197	.984	163.246*	x5	17.696	.22082	.06954	3.176**	.882	19.824*
x1		.01054	.01094	0.964			x3		.06653	.07020	0.948		
Step 4													
x4		.51613	.04804	11.993*			x2		.05053	.00908	5.565*		
x3		.05379	.03269	1.645			x5	16.762	.16477	.07141	2.307	.909	19.278*
x1	16.667	.00826	.01224	0.675	.983	109.051*	x3		.14475	.07970	1.816		
x5		.02047	.03511	0.583			x6		-.03472	.02185	1.589		
Step 5													
x4		.52708	.05795	9.096*			x2		.04399	.01104	3.985**		
x3		.04897	.03892	1.258			x5		.15292	.07192	2.126		
x1	16.419	.01189	.01742	0.682	.980	71.909*	x3	19.636	.11821	.08331	1.419	.913	15.819*
x5		.02204	.03903	0.565			x6		-.04557	.02414	-1.888		
x6		-.00453	.01375	-0.330			x1		-.03173	.03082	-1.030		

Step 6																			
x4		.53974	.08735	6.179	*					x2	.04451	.01775	2.508						
x3		.04774	.04491	1.063						x5	.15395	.08655	1.779						
x1	16.459	.01386	.02182	0.635	.976	45.568	*			x3	19.673	.11852	.09645	1.229	.892	9.893	**		
x5		.02152	.04476	0.481						x6		-.04575	.02821	-1.622					
x6		-.00521	.01604	-0.325						x1		-.03122	.03757	-0.831					
x7		-.00041	.00184	-0.223						x7		-.00017	.00410	-0.042					

Note : \* refers significance at 1 % level.  
 \*\* refers significance at 5 % level.

districts of kerala. The variables that explains the above said variation in age at marriage are female education, female participation in non-agricultural activities, percentage of scheduled caste and christians in the population, urban population and the sex-ratio in marriageable age groups. The results of these regression equation are as follows:

$$\text{SMAM} = 16.67 + .51613 X_4 + .05379 X_3 + .00826 X_1 + .02047 X_5$$

$$\begin{array}{cccccc} & & (11.913) & (1.648) & (.675) & (.583) \end{array}$$

$$\bar{R}^2 = .98 \quad F = 109.051$$

$$\text{SMAM} = 16.76 + .05053 X_2 + .16477 X_5 + .14475 X_3 - .03472 X_6$$

$$\begin{array}{cccccc} & & (5.565) & (2.307) & (1.816) & (-1.589) \end{array}$$

$$\bar{R}^2 = .91 \quad F = 19.278$$

Note: Figures in brackets <sup>represent</sup> the respective 't' values.

From the results it can be noted that the over-all goodness of fit indicated by 'F' values has a high significant in both the selections. While looking at the respective 't' values, among the explanatory variables, only female education, percentage of christians in the population and female participation in non-agricultural activities are statistically significant. It can be pointed out that if there is a increase by one unit in the female education, then there will be .51 unit increase in the age at marriage, and a increase in the percentage of christians in the population, accounts for only .05 unit increase in the female age at marriage. This supports the hypothesis, that higher the percentage of



christian population and higher the female education higher will be the female age at marriage. While studying the relative importance of christianity and female education, it has been found from the table 4.20 that  $R^2$  value is decreased, when the percentage of christians in the population replaces the female education in the equation. This shows the relative importance of the female education over the religious communities in altering the female age at marriage.

The positive influence of scheduled caste population on the nuptiality indicator is opposite to that hypothesised and do not permit any generalisations. The negative influence of urbanisation on the age at marriage, may be due to the lower percentage of population in these areas or partly due to the rural characteristics that are still backed by the people in the urban areas.

#### Results of 1981 Regression Analysis :

The regression with the maximum variance i.e., 88 to 93 percent have been explained by female education, christianity, female participation in non-agricultural activities, urbanisation and Scheduled caste population with a significant F value. The equations, which shows the above said variance are as follows :

Table - 4.21

## Results of Regression Analysis : Kerala - 1981

Variables	S E L E C T I O N 1						S E L E C T I O N 2						
	Inter- Cept Value	R.C	S.E.E	t	$\bar{R}^2$	F	Inter cept Value	R.C	S.E.E	t	$\bar{R}^2$	F	
Step 1													
x4	18.748	.27536	.02745	10.037*	.910	100.616*	x2	20.102	.05694	.01700	3.349*	.529	11.216*
Step 2													
x4	18.836	.28685	.02910	9.856*	.912	51.973*	x2	18.636	.05418	.00924	5.865*	.863	31.568*
x6		-.01200	.01090	-1.100			x5		.21197	.04239	5.000*		
Step 3													
x4		.25911	.03078	8.419*			x2		.05520	.00885	6.238*		
x6	18.711	-.02267	.01161	-1.952	.929	43.416*	x5	18.204	.20446	.04083	5.007*	.877	23.724*
x5		.07839	.04514	1.737			x3		.04702	.03441	1.370		
Step 4													
x4		.26581	.03306	8.041*			x2		.05448	.00917	5.943*		
x6		-.02882	.01469	-1.963			x5	18.295	.22990	.05449	4.219*	.871	16.904*
x5	17.156	.08758	.04825	1.815	.926	30.756*	x3		.04081	.03634	1.123		
x1		.01780	.02459	.724			x6		-.01198	.01631	-0.734		
Step 5													
x4		.27058	.03323	8.143*			x2		.04944	.01136	4.352*		
x6		-.03042	.01470	-2.069			x5		.23262	.05609	4.147*		
x5	15.653	.08368	.04817	1.737	.928	25.047*	x3	18.282	.00994	.05391	0.184	.867	12.933*
x1		.03176	.02796	1.136			x6		-.02491	.02337	-1.066		
x3		.03214	.03114	1.032			x7		.00108	.00137	-0.794		

Step 6						
x4		.27153	.04728	5.743	*	
x6		-.03003	.02022	-1.485		
x5	15.644	.08306	.05631	1.475	.916	17.398 *
x1		.03188	.03084	1.034		
x3		.03318	.04756	0.698		
x7		-.00004	.00119	-0.032		

x2		.05190	.01250	4.151	*	
x5		.24705	.06284	3.931	*	
x3	15.829	.02727	.06241	0.437		
x6		-.03143	.02646	-1.188	.857	9.839 *
x7		.00101	.00144	0.704		
x1		.02651	.04103	0.661		

Note : \* refers significance at 1 % level.  
 \*\* refers significance at 5 % level.

$$1) \text{ SMAM} = 18.71 + .25911 X_4 - .02267 X_5 + .07839 X_6$$

$$(8.419) \quad (-1.952) \quad (1.737)$$

$$\bar{R}^2 = .93, \quad F = 43.416$$

$$2) \text{ SMAM} = 18.20 + .05520 X_2 + .20446 X_5 + .04702 X_3$$

$$(6.238) \quad (5.007) \quad (1.370)$$

$$\bar{R}^2 = .88, \quad F = 23.724$$

As in the case of 1971, the variables of female education and christianity are statistically significant and have high regression co-efficient than other variables. If the educational attainment of females (with metric and above) and percentage of Christians in the population is increased by a unit each, then the female age at marriage will increase by .26 and .06 unit respectively provided the other variables are hold constant. The female participation in non-agricultural activities influences the nuptiality indicator as expected, and also with statistical significance. An interesting thing found in case of Kerala is that in the absence of female education, female participation in non-agricultural activities play a greater role in explaining the variations in age at marriage, which can be seen from the respective 't' values. This shows that if the education of females is high, then it outstands the other variables in explaining the variation in female age at marriage. This is also true when the relative importance of female education and Christian population is tested, which clearly brought by the results. The

negative influence of urbanisation and the positive influence of Scheduled Caste population on the nuptiality indicator, as in 1971, need further considerations.

To summarise the results of 1971 and 1981 regression analysis it can be clearly said that only female education and Christianity, and to some extent the participation of females in non-agricultural activities plays a greater role in explaining the variations in female age at marriage.

## SOUTH INDIA

An attempt has also been made in this study, as mentioned earlier, to examine the determinants of female age at marriage in all of South India considering all the districts of the four States together during 1971 and 1981 (64 districts pertaining to 1971 and 70 districts in 1981).

The dependent variable is the Singulate mean age at marriage and the independent variables are:

- (i) Sex-ratio in marriageable age groups (X1)
- (ii) Christian population (X2)
- (iii) Scheduled caste population (X3)
- (iv) Female educated with metric and above (X4)
- (v) Female participation in non-agricultural activities (X5)
- (vi) Urban population (X6)

In order to have a similarity among all states in terms of the variables selected, per capita income, which is available only in case of Kerala, is omitted from this study. The result of the regression analysis for both the time periods are in the tables 4.22 and 4.23.

### Results of 1971 Regression Analysis.

From table 4.22 it has been found that regression with maximum variance of 60 percent is explained by variables (with a significant F value). These variables are female education, sex-ratio in marriageable age groups, percentage of Christians and scheduled caste in the population, female

Table - 4.22

Results of Regression Analysis : South India - 1971

S E L E C T I O N 1						
Variables	Inter- Cept Value	R.C	S.E.E	t	$\bar{R}^2$	F
Step 1						
x2	17.117	.13387	.02167	6.179*	.381	38.175*
Step 2						
x2	16.590	.09116	.02197	4.149*	.507	32.358*
x4		.29787	.07266	4.100*		
Step 3						
x2		.04100	.02483	.1.652		
x4	22.939	.37763	.07066	5.345*	.583	29.528*
x1		-.06509	.01872	-3.478*		
Step 4						
x2		.04424	.02457	1.801		
x4		.41238	.07288	5.658*		
x1	24.351	-.07403	.01926	-3.844*	.594	23.425*
x5		-.15070	.09235	-1.632		
Step 5						
x2		.04760	.02477	1.922		
x4		.42097	.07330	5.743*		
x1	24.091	-.07807	.01964	-3.976*	.595	18.979*
x5		-.14041	.09283	-1.513		
x3		-.04102	.03958	-1.037		

Step 6

x2		.04993	.02667	1.872		
x4		.40078	.10969	3.654 *		
x1	24.161	-.07929	.02039	-3.888 *	.588	15.570 *
x5		-.14289	.09411	-1.518		
x3		-.04018	.04004	-1.004		
x6		.00504	.02025	0.249		

Note : \* refers significance at 1 percent level.

\*\* refers significance at 5 percent level.



participation in non-agricultural activities . The variable urban population when added into the equation decreases the value of  $\bar{R}^2$  as shown in the table 4.22 . The regression equation with maximum variance as mentioned above is as follows:

$$\begin{aligned} \text{SMAM} = & 24.09 + .04760 X_2 + .42097 X_4 - .07807 X_1 \\ & (1.922) \quad (5.743) \quad (-3.976) \\ & - .14041 X_5 - .04102 X_3 \\ & (-1.513) \quad (-1.037) \\ \bar{R}^2 = & .60 \quad F=18.979. \end{aligned}$$

Note: Figures in brackets the respective 't' values.

All the the above variables influence the dependent variable in the expected direction, except female participation in non-agricultural activities which has a negative influence, and is opposite to our hypothesis. Then other variables, female education has a high regression coefficient, and hence, if this variable is increased by one unit, the age at marriage increases by .42 unit. In contrast to this percentage of Christians in population<sup>if</sup> increases by a unit, increases the female age at marriage only by .04 unit.

Sex ratio in marriageable age group with high statistical significance and the variable Scheduled caste population with statistical insignificance, influences the nuptiality indicator as hypothesised. The negative influence of female

Table - 4.23

Results of Regression Analysis : South India - 1981

Variables	Inter- Cept Value	R.C	S.E.E	t	$\bar{R}^2$	F
Step 1						
x4	17.124	.35289	.03785	9.323*	.561	86.912*
Step 2						
x4	17.659	.45428	.04109	11.055*	.652	64.065*
x6		.04518	.01046	4.319*		
Step 3						
x4		.44531	.03958	11.251*		
x6	20.539	.03797	.01041	3.648*	.679	48.655*
x1		-.03224	.01238	-2.604**		
Step 4						
x4		.50696	.07464	6.792*		
x6		.04733	.01417	3.341*		
x1	21.170	-.03841	.01391	-2.761*	.679	36.701*
x2		.02528	.02545	.974		
Step 5						
x4		.50917	.07603	6.699*		
x6		.04735	.01427	3.318*		
x1	21.256	-.03891	.01424	-2.732*	.674	28.934*
x2		.02561	.02619	0.978		
x5		-.00796	.04049	-0.197		

Step 6						
x4		.50792	.07698	6.598*		
x6		.04705	.01449	3.247*		
x1	21.390	-.03928	.01453	-2.704*	.669	23.750*
x2		.02640	.02682	0.984		
x5		-.00989	.04242	-0.233		
x3		-00555	.03334	-0.167		

Note : \* refers significance at 1 % level.  
 \*\* refers significance at 5 % level.

participation in non-agricultural activities may be due to the low percentage of female participation in these activities.

**Results of 1981 Regression Analysis :**

Out of six variables that have been selected for this study, only four variables namely female education, urban population, sex-ratio in marriageable age groups and percentage of Christians in the population, explain the maximum variance of 68 percent of the age at marriage. This is also supported by the significant F value. The regression equation that represent the above variance is as follows :

$$\begin{aligned}
 \text{SMAM} = & 21.17 + .50696 X_4 + .04733 X_6 - .03841 X_1 \\
 & \quad \quad \quad (6.792) \quad \quad (3.341) \quad \quad (-2.761) \\
 & \quad \quad \quad + .02528 X_2 \\
 & \quad \quad \quad (.974) \\
 R^2 = & .68 \quad \quad F = 36.701
 \end{aligned}$$

The above results explains that as in 1971, the female education and sex-ratio in marriageable age group are statistically significant in explaining the variation in age at marriage. In addition to these variables, urbanisation also have a high regression co-efficient in explaining the variation in age at marriage in the expected direction. Similarly, percentage of Christians in the population, though statistically insignificant influences SMAM as hypothesised.

Moreover, though the variable Scheduled caste population is statistically insignificant to explain the variations of SMAM, its negative influence needs immediate consideration. The results of 1971 and 1981 regression analysis for all of south India, shows that only variables like female education, urbanisation and sex-ratio in marriageable age groups play an important role in determining the female age at marriage in both the time periods.

## CHAPTER - V

### SUMMARY OF THE FINDINGS AND CONCLUSION

This study has attempted to estimate the singulate mean age at marriage and other nuptiality indicators like percent single in 15-19, 20-24 and 45-49 age groups, among the districts of the Southern states and to determine the various factors that affect the nuptiality indicators among the same. The district level estimates on SMAM reveals that there is an over all improvement in the female age at marriage which can be identified by looking into the figures of districts which are having age at marriage below 18 years and above 20 years. In case of 1971, the number of districts which have SMAM below 18 years are 21, 12 and 1 in Andhra Pradesh, Karnataka and Tamil Nadu respectively, and that have above 20 years are 2, 3, 6 in Karnataka, Tamil Nadu and Kerala respectively. In case of 1981, among 23 districts in Andhra Pradesh, 21 districts have age at marriage below 18 years, and in Karnataka, only 5 out of 19 districts have the age at marriage below 18 years. In Tamil Nadu and Kerala, there are no district with SMAM below 18 years. In the case of the number of districts with SMAM above 20 years are 6,11,11 respectively in Karnataka, Tamil Nadu and Kerala.

This aspect reveals that in Kerala, Tamil Nadu and Karnataka female age at marriage is on the tremendous increase, and in case of Andhra Pradesh though there is increase, it is slow, and still the female age at marriage is below 18 years. (One of the important finding from this study is that even though the legislation prescribing the minimum age for the the marriage, has been formed in 1978, still in 1981, there are more than 90 percent of districts with age at marriage below 18 years in Andhra Pradesh.)

This can also be supported by looking the other nuptiality indicators like percent single in 15-19 and 20-24 age-group during 1971 and 1981. The number of districts with the percent single in 20-24 age-group greater than the percent single in 15-19 age-group are 0,4,7,10 respectively in Andhra Pradesh, Karnataka, Tamil Nadu and Kerala during 1971, and 1, 11, 13, 12 respectively in the same districts during 1981. With regard to the variable percent single in 45-49 age group, there has been a decline from 1971 to 1981 in all the states except Karnataka.

While studying the determinants of the nuptiality indicator, Singulate mean age at marriage,

during 1971 and 1981 among the four states, it has been found that the demographic, socio-economic and developmental variables, that have been selected provide sufficient explanation for the variation in the districts. Of the different variables selected it has been found that in all the states in general, female education plays an important role in explaining the differential in SMAM during 1971 and 1981 among the districts. The importance of other variables differs from state to state. Female participation in non-agricultural activities influences the nuptiality indicator, with statistical significance, only in case of Tamil Nadu and Kerala. Similarly only in these states urbanisation too play a major role in explaining the variations in SMAM. With regard to percent of christians in the population, only in Tamil Nadu and Kerala, its influence is felt on the nuptiality indicator. The demographic variable, sex ratio in marriageable age-groups, influences SMAM, with statistical significance only in case of Karnataka.

The negative correlation of the percentage of scheduled caste in the population with the nuptiality indicator in most of the states, may be



reflection of the fact that still the socio-economic background of that population is low. Similarly the variable, net area irrigated to net area sown though is not statistically significant to explain the variation in SMAM, its positive correlation as expected, is to be considered. This indicates that the developmental variables are also important as that of the demographic and socio-economic variables, to influence the Singulate mean age of marriage.

Moreover, when all the districts of the Southern States are studied together only the variables, female education, urbanisation and sex-ratio in marriageable age-groups play a determining role in examining the variations in the female age at marriage.

#### CONCLUSIONS:

While examining the female age at marriage in South India, the one which strikes and that needs a special attention is the prescribed age limit formed by the legislation towards marriage. A question which is always among the demographers and other researchers is that how far the legislation has an effect on the female marriage timing. This problem



has been debated to an extent and criticised to the limit possible.

All the researchers are of the opinion that the marriage age is an area in social life, where the legislation alone can do a little change in it. J.R.D Tata feels this law has been a failure from its inception since, there is little social pressure against early marriages, and also the state governments are more sensitive to possible vote-losing consequences than in enforcing the law. His opinion about the legislation is almost true, which can be tested by looking into the marriage timing among the females in South India. Even though the prescribed age limit has been fixed as 18 years for females in 1978, among the districts of South India 1981, 26 districts have the age at marriage below 18 years i.e., 37 percentage of the districts have the marriage timing below the prescribed age limit. To support the statement it is necessary to cite that there has been no action taken against this marriage, even though the legislation has a provision to take legal action against the early marriages. For instance even today hundreds of children, including infants and sucklings were joined in wedlock in

Rajasthan on the auspicious "Akhateej" and so far no action has been taken against them.

This being the prevailing situation, some of the demographers feel that prescribed age limit for that the marriage has to be increased especially in case of females to above 20 years. It is a good suggestion for curtaining the pressure of the population, but unless all the states attain the minimum age limit as fixed in 1978, it is not good in their part to increase the time period further. So, first let us to try to improve the present legislation on age at marriage and try to attain the prescribed age limit, and then we can go for further changes.

Some are of the opinion that this legislation has to be backed up with the other social and economical changes in the society for a better result. The family planning foundation recommends that the legislation has to be accompanied by large-scale process of socio-economic development with high accent on education and jobs for girls in order to get a significant result. Taking all these recommendation in mind, now the state governments have decided to improve the educational and

employment opportunities for women. Recently the newly elected Tamil Nadu Government have decided to improve the educational and employment opportunities of the women and hence proposed to reserve 30 percent of state government jobs and the entire primary class teachers post for women. This is a welcome change, which definitely will mark a change not only in case of their age at marriage, but also in case of related problems like high infant mortality and high fertility. For example, Kerala has the lowest infant mortality rate, the highest expectation of life at birth, the highest average age at marriage and the lowest birth rate. The impact of late marriages from the point of view of mother and child care, and fertility and mortality are evident from the case of Kerala.

In 1987, The ministry of Health and Family Welfare formulated a new family welfare strategy for the 7<sup>th</sup> plan ending in 1990. One of the most important strategy beyond family planning includes increase in age at marriage for girls from the present 18 years to beyond 20 years.

The possible suggestions that can be given to increase the female age at marriage in the light of this study are :

- 1) Though it is not possible to bring about a change in the female age at marriage through legislative action alone, the importance of an effective legislative policy cannot be underestimated. Therefore the legislation should be strictly enforced even in different political situations, and the registration of marriages should be made compulsory. Thus by performing the above said functions an immediate effect on the age at marriage can be had by declaring all the marriages that are done below the prescribed age limit are legally nullified.
- 2) The mass media support to the marriage legislation has to be used, and should focus on the harmful effects of the early marriage on the girl's health and risk to the child.
- 3) Raising the social and economic status of the females in terms of education and employment, will dramatically increase their age at

marriage. For instance, the adult education programme which has been launched by Government of India to educate the illiterate men and women in the age-group of 15-35 by 1991, has to be geared up, which will act as a tool in raising the female age at marriage. Moreover, policies and programmes should be so designed as to accomodate them especially in the non-agricultural sector, to mark a change in their age at marriage.

- 4) The improvement in the socio-economic background of the weaker sections, especially the scheduled caste population, has to be born in mind, in order to bring a change in the female age at marriage. So the state governments should take additional steps to improve the socio-economic situation of the weaker sections, which may automatically bring change not only in the case of female age at marriage, but also with the other problems, like high family size, high infant mortality, low family planning performance.

- 5) One of the important reason for the early age at marriage in India, is the dowry problem. This problem increases, when the girl is educated or employed. So, the parents stop sending thier daughter to the school generally after matric or so, in order to meet a lower demand. To avoid this problem, and to increase the female age at marriage the dowry prohibition act should be strictly followed.

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APPENDIX

Nuptiality Indicators and Explanatory Variables pertaining to the Districts of Southern States

ANDHRA PRADESH: 1971

Districts	SMAM	% of Females Single			Ratio of single males to single females	% of christian population	% of S.C population	% females educated with matric & above	% females in non-agricultural activities	% urban population	% net area irrigated to net area sown
		15-19	20-24	45-49							
1. Srikakulam	16.76	39.61	6.18	0.34	94.20	0.84	9.21	0.36	3.85	10.65	49.04
2. Vishakapatnam	16.67	37.30	6.32	0.32	110.52	0.92	7.91	1.12	3.65	22.30	39.40
3. East-Godawari	16.36	31.91	4.60	0.22	92.44	2.40	16.77	1.03	4.27	19.23	63.35
4. West-Godawari	16.62	33.47	3.47	0.28	85.26	7.35	14.33	1.04	3.63	17.71	75.21
5. Krishna	17.09	41.15	4.72	0.25	88.21	10.84	10.05	1.99	4.45	27.25	65.61
6. Guntur	16.48	31.35	4.09	0.94	91.24	14.61	4.80	1.65	5.87	24.98	48.44
7. Prakasam	16.46	32.29	2.78	0.11	94.59	10.87	9.26	0.70	4.56	11.07	0.00
8. Nellore	17.43	45.58	5.42	0.23	97.13	2.37	19.73	1.33	4.25	15.77	61.77
9. Chittoor	17.05	39.59	5.39	0.18	118.17	1.44	17.46	1.21	2.61	13.45	31.83
10. Cuddapah	16.99	38.86	4.46	0.22	105.23	4.88	10.88	0.66	3.73	14.18	26.47

				a								
11. Anantapur	17.17	41.91	4.76	0.28	107.02	0.90	13.15	0.92	3.22	17.28	13.13	
12. Kurnool	16.46	31.38	4.15	0.45	95.18	6.52	11.24	1.07	4.36	20.30	9.40	
13. Mahboobnagar	14.49	13.65	1.64	0.31	105.52	1.34	16.84	0.56	4.71	8.97	10.32	
14. Hyderabad	17.58	46.20	12.63	0.53	108.08	2.47	14.07	6.32	6.53	65.88	14.12	
15. Medak	14.35	11.84	1.44	0.06	104.28	3.63	15.85	0.47	3.78	8.51	17.08	
16. Nizamabad	13.32	11.12	1.80	0.10	109.34	1.28	15.23	0.64	10.20	15.94	40.37	
17. Adilabad	13.97	15.10	1.93	0.07	95.31	1.12	17.62	0.38	4.46	15.92	5.83	
18. Karimnagar	14.06	17.67	1.40	0.29	93.05	0.76	18.82	0.42	7.62	10.72	19.44	
19. Warangal	14.95	21.61	2.25	0.11	94.68	1.80	15.87	0.87	4.38	13.43	23.87	
20. Khammam	16.52	36.76	3.98	0.24	83.65	4.87	12.25	0.67	3.75	13.59	23.67	
21. Nalgonda	14.92	15.03	1.29	0.05	101.31	2.23	15.89	0.59	5.04	6.69	19.66	

ANDHRA PRADESH: 1981

Districts	SMAM	% of Females Single			Ratio of single males to single females	% of chris- tian popu- lation	% of S.C popu- lation	% females educated with matric & above	% females in non- agricul- tural activi- ties	% urban popula- tion	% net area irri- gated to net area sown
		15-19	20-24	45-49							
1. Srikakulam	17.94	52.84	10.79	0.35	158.23	0.18	9.18	7.81	8.76	10.89	55.30
2. Vizianagaram	17.95	53.19	9.44	0.36	90.22	0.34	10.24	1.32	16.38	15.94	41.60
3. Vishakapatnam	17.68	48.27	9.85	0.51	100.79	1.08	7.85	3.69	5.89	31.28	36.90
4. East-Godawari	17.45	44.43	7.53	0.23	85.51	1.37	17.60	2.93	5.37	22.21	64.90
5. West-Godawari	17.68	48.92	6.74	0.18	79.64	5.42	16.15	3.38	5.14	20.77	77.90
6. Krishna	17.81	49.26	8.87	0.21	87.64	7.37	13.95	5.17	5.46	32.54	68.00
7. Guntur	17.18	39.81	6.48	0.22	91.91	10.53	9.22	3.78	6.03	27.53	53.00
8. Prakasam	16.94	38.76	4.09	0.16	91.68	4.68	16.00	2.01	5.83	14.99	23.10
9. Nellore	17.94	51.89	8.33	0.14	95.87	1.64	20.66	3.64	5.76	20.76	68.20
10. Chittoor	17.99	52.83	8.64	0.37	107.47	1.05	17.49	2.79	3.90	16.88	28.10

11. Cuddapah	17.75	50.41	6.39	0.27	97.49	3.09	12.98	2.10	6.00	19.37	28.90
12. Anantapur	18.03	53.50	8.33	0.21	100.97	0.66	13.69	2.24	3.82	20.84	13.60
13. Kurnool	17.30	42.77	7.02	0.17	91.70	2.89	15.62	2.40	5.81	24.49	13.90
14. Mahboobnagar	15.59	24.25	3.14	0.12	94.23	0.86	17.35	1.26	5.56	10.93	13.80
15. Rangareddi	16.76	36.62	6.49	0.14	98.67	1.59	19.46	4.12	6.66	23.83	13.10
16. Hyderabad	19.89	70.43	25.23	0.77	106.43	2.77	9.58	16.92	7.36	100.00	82.00
17. Medak	15.79	25.03	3.04	0.08	91.09	2.19	17.15	1.22	5.39	11.97	22.10
18. Nizamabad	15.30	25.27	3.45	0.10	86.34	0.70	15.41	1.57	15.35	19.21	48.00
19. Adilabad	16.05	31.92	4.40	0.06	83.09	0.66	18.33	1.25	6.31	19.34	7.30
20. Karimnagar	15.30	22.56	3.02	0.10	83.87	0.50	18.55	1.21	9.57	15.79	24.40
21. Warangal	15.94	27.30	4.22	0.18	85.97	1.10	16.68	1.95	6.05	17.24	27.90
22. Khammam	17.39	44.38	6.61	0.21	83.40	2.44	14.84	2.32	4.08	16.98	24.40
23. Nalgonda	15.89	24.89	2.59	0.11	87.63	1.53	16.34	1.16	6.10	11.38	25.40

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## KARNATAKA: 1971

Districts	SMAM	% of 15-19	Females 20-24	Single 45-49	Ratio of single males to single females	% of chris- tian popu- lation	% of S.C popu- lation	% females educated with matric & above	% females in non- agricul- tural activi- ties	% urban popula- tion	% net area irri- gated to net area sown
1. Bangalore	18.73	58.72	17.76	1.01	118.33	4.31	15.02	8.11	4.76	55.44	18.04
2. Belgaun	16.60	37.61	7.45	0.83	102.98	0.71	9.20	1.73	2.52	20.54	10.73
3. Bellary	16.95	39.98	6.78	1.42	101.22	0.72	14.91	1.34	4.30	27.15	7.61
4. Bidar	15.68	26.49	3.46	0.04	98.62	3.97	15.04	0.70	3.00	14.46	3.35
5. Bijapur	15.56	27.03	4.65	0.96	99.41	0.12	10.07	1.16	3.41	21.21	3.58
6. Chickmagalur	19.14	69.11	14.88	0.84	89.81	2.86	16.25	2.33	3.46	15.62	13.53
7. Chitradurga	17.60	47.13	7.43	0.39	105.36	0.21	18.20	1.84	3.34	20.25	15.45
8. Dukshinkannad	20.67	81.83	30.18	0.87	75.76	9.67	5.14	4.09	11.96	20.27	36.50
9. Dharwad	17.59	46.75	8.61	0.61	101.80	0.97	7.96	2.05	3.33	31.50	5.83
10. Gulbarga	15.60	10.46	3.55	0.20	104.12	0.82	15.06	0.77	1.86	17.78	1.75

11. Hassan	18.85	65.40	11.38	0.40	83.31	1.02	15.38	1.93	2.01	13.55	11.99
12. Coorg	20.78	79.72	33.83	0.85	88.67	3.40	9.77	6.04	5.09	15.61	7.85
13. Kolar	17.89	53.08	9.80	0.24	101.81	2.03	23.94	2.31	1.85	20.65	24.92
14. Mandya	16.93	38.98	6.45	0.54	107.49	0.38	12.25	1.22	1.58	13.76	31.64
15. Mysore	17.60	46.82	13.48	0.67	117.14	1.45	17.16	3.22	3.87	25.47	17.24
16. Raichur	15.44	25.75	3.75	1.00	82.58	1.14	10.76	0.54	2.87	15.36	10.46
17. Shimoga	18.63	63.22	10.48	0.33	89.50	1.37	14.25	2.68	2.02	23.61	44.04
18. Tumkur	17.75	50.41	8.12	0.71	106.31	0.22	16.46	2.08	2.26	11.71	11.65
19. Uttar Kannad	18.83	61.23	15.79	0.73	95.86	3.81	4.11	2.96	4.08	17.72	19.92

## KARNATAKA : 1981

Districts	SMAM	% of 15-19	Females 20-24	Single 45-49	Ratio of single males to single females	% of chris- tian popu- lation	% of S.C popu- lation	% females educated with matric & above	% females in non- agricul- tural activi- ties	% urban popula- tion	% net area irri- gated to net area sown
1. Bangalore	19.81	70.02	24.75	1.33	114.15	4.44	16.01	13.14	7.45	64.54	17.86
2. Belgaun	17.75	50.39	12.44	0.45	102.65	0.59	10.49	3.89	3.69	22.53	19.62
3. Bellary	17.80	48.70	10.64	0.40	98.18	0.76	16.39	3.09	5.13	33.05	22.69
4. Bidar	17.25	45.31	5.90	0.13	87.74	2.94	16.05	1.78	2.68	17.82	8.25
5. Bijapur	16.54	37.17	7.52	0.40	99.98	0.11	15.11	2.37	4.12	24.09	9.79
6. Chickmagalur	20.75	81.52	29.71	0.60	83.68	2.90	18.00	5.06	2.97	17.54	11.25
7. Chitradurga	19.01	64.50	15.93	0.34	102.26	0.28	18.13	3.86	4.71	23.50	17.83
8. Dukshinkannad	22.20	89.81	46.12	1.24	77.73	8.96	6.06	7.11	19.98	24.47	11.90
9. Dharwad	18.95	62.71	17.35	0.51	103.32	0.95	10.24	4.56	4.31	35.25	7.89
10. Gulbarga	16.98	40.69	7.56	0.21	96.27	0.69	21.89	2.10	5.02	22.86	2.35

11. Hassan	20.09	78.65	22.15	0.39	85.21	1.05	16.23	3.80	2.74	14.63	15.54
12. Coorg	21.56	83.79	40.26	0.88	94.09	3.55	10.55	9.69	5.17	15.52	38.84
13. Kolar	18.91	63.21	14.88	0.24	98.33	1.81	24.72	3.84	2.59	22.45	3.01
14. Mandya	18.18	54.03	11.82	0.60	103.07	0.45	12.89	2.47	2.10	15.52	23.38
15. Mysore	18.43	57.96	18.96	1.08	106.31	1.48	17.70	5.31	4.27	27.41	38.63
16. Raichur	18.10	62.88	7.97	0.28	95.30	0.98	15.12	1.57	3.41	19.27	10.96
17. Shimoga	20.38	78.03	26.28	0.21	93.94	1.34	15.95	5.44	2.90	25.72	42.42
18. Tumkur	19.05	65.85	15.26	0.23	100.34	0.27	16.90	3.49	3.60	13.77	18.75
19. Uttar Kannad	20.98	82.36	33.41	0.69	91.01	3.91	8.01	6.41	6.30	25.35	7.89

## TAMIL NADU - 1971

Districts	Smam	% of 15-19	Females in 20-24	Single 45-49	Ratio of single males to single females	% of chris- tian popu- lation	% of S.C popu- lation	% females educated with matric & above	% females in non- agricul- tural activi- ties	% urban popula- tion	% net area irri- gated to net area sown
1. Madras	19.99	78.29	25.10	1.14	124.08	6.52	10.49	2.78	3.19	100.00	0.00
2. Chengalpattu	18.80	64.53	11.53	0.65	109.53	4.08	26.28	1.42	2.60	34.76	74.16
3. North Arcot	18.43	59.55	10.29	0.47	105.51	2.64	19.33	1.17	1.30	20.85	49.10
4. South Arcot	18.38	60.79	7.83	1.42	105.19	3.65	25.92	0.80	1.53	14.19	50.48
5. Dharmapuri	17.86	52.68	6.01	0.22	94.21	1.07	13.58	1.73	5.30	8.58	15.54
6. Salem	18.89	66.06	12.08	0.20	97.96	1.30	16.05	2.56	5.96	27.21	29.70
7. Coimbatore	20.23	80.94	21.88	0.45	101.92	3.67	15.74	3.99	4.74	35.59	35.18
8. Nilgiri	19.81	74.50	20.73	1.30	89.36	13.62	18.76	2.47	3.69	49.24	00.90
9. Madurai	19.70	75.92	17.22	0.45	81.60	4.57	14.93	2.05	2.75	33.62	34.00
10. Tiruchy	19.42	74.00	14.23	0.44	102.27	5.94	17.94	3.08	1.81	22.27	30.70

11. Thanjavur	19.35	73.60	13.14	0.30	99.29	4.10	22.10	1.67	5.90	20.52	82.62
12. Ramanathapuram	19.98	79.96	18.93	0.46	80.69	5.50	16.07	2.30	8.17	26.11	36.11
13. Tirunelveli	20.66	83.70	27.56	0.47	78.76	12.51	15.78	5.50	4.83	32.57	32.22
14. Kanniyakumari	22.17	93.33	44.80	0.81	89.11	38.90	3.89	2.56	4.04	16.72	39.30

## TAMIL NADU - 1981

Districts	Smam	% of 15-19	Females in 20-24	Single 45-49	Ratio of single males to single females	% of chris- tian popu- lation	% of S.C popu- lation	% females educated with matric & above	% females in non- agricul- tural activi- ties	% urban popula- tion	% net area irri- gated to net area sown
1. Madras	20.79	78.77	31.90	1.45	107.23	6.72	13.36	20.87	7.53	100.00	0.00
2. Chengalpattu	19.66	72.22	18.88	0.49	99.21	4.54	26.20	7.56	4.83	38.92	80.00
3. North Arcot	19.03	65.30	14.63	0.49	95.45	2.63	19.89	4.13	4.32	23.00	40.50
4. South Arcot	19.08	68.11	12.85	0.24	92.78	3.63	25.97	3.39	2.44	15.70	56.20
5. Dharmapuri	18.29	57.27	8.72	0.27	94.51	1.82	13.86	2.59	2.62	9.37	20.90
6. Salem	19.68	68.79	15.80	0.31	98.11	1.36	16.28	5.13	7.88	28.93	30.10
7. Periyar	20.12	78.94	21.69	0.23	102.00	2.02	16.36	4.22	15.69	22.00	57.80
8. Coimbatore	20.91	83.19	30.73	0.30	103.84	3.73	16.24	9.31	7.94	50.46	45.90
9. Nilgiri	20.80	80.67	31.17	1.25	88.22	12.17	23.04	9.12	4.09	48.85	00.00
10. Madurai	20.21	78.01	23.30	0.43	89.69	4.48	15.33	6.36	5.31	36.24	45.20

11. Tiruchy	20.09	78.58	21.39	0.54	94.43	5.96	18.62	5.84	3.98	26.13	36.10
12. Thanjavur	20.14	80.11	20.70	0.33	96.15	4.16	23.21	5.02	2.96	23.06	86.40
13. Puddukottai	20.29	82.36	21.45	0.54	83.48	4.76	16.57	3.08	2.64	13.28	51.90
14. Ramanathapuram	20.50	82.79	24.53	0.29	78.95	5.89	16.68	4.59	8.83	28.21	38.90
15. Tirunelveli	21.22	87.73	32.78	0.53	72.86	12.77	16.49	5.48	13.52	34.64	40.20
16. Kanniyakumari	23.00	95.03	54.82	1.17	86.08	38.77	4.23	13.30	6.81	17.25	33.80



## KERALA : 1971

Districts	SMAM	% of 15-19	Females 20-24	Single 45-49	Ratio of single males to single females	% of chris- tian popu- lation	% of S.C popu- lation	% females educated with matric & above	% females in non- agricul- tural activi- ties	% urban popula- tion	Per capita income
1. Cannanore	16.60	70.01	23.59	2.19	93.23	8.31	8.95	2.69	4.28	13.74	536.00
2. Kozhikode	19.27	65.41	22.27	3.00	93.55	4.68	3.62	2.93	4.32	26.67	624.00
3. Malappuram	18.43	55.40	15.74	1.41	82.31	1.99	7.59	1.50	2.95	6.73	456.00
4. Palghat	19.83	71.82	25.76	2.83	80.54	2.70	12.51	3.47	4.27	12.70	575.00
5. Trichur	21.50	87.70	41.23	5.20	70.24	25.18	10.16	6.57	7.35	11.74	561.00
6. Ernakulam	21.70	90.55	40.17	4.11	82.19	40.72	8.10	7.46	7.31	27.56	662.00
7. Kottayam	21.52	89.73	38.02	5.03	77.37	48.77	8.73	7.23	4.07	10.22	661.00
8. Allepey	21.90	90.83	42.11	3.01	77.30	27.64	9.44	7.32	7.30	16.92	594.00
9. Quilon	21.38	88.76	35.76	1.41	78.68	23.51	11.63	6.30	10.77	7.87	653.00
10. Trivandrum	21.56	97.35	38.03	2.00	85.61	17.26	9.72	7.01	9.30	28.00	583.00

## KERALA : 1981

Districts	SMAM	% of 15-19	Females 20-24	Single 45-49	Ratio of single males to single females	% of chris- tian popu- lation	% of S.C popu- lation	% females educated with matric & above	% females in non- agricul- tural activi- ties	% urban popula- tion	Per capita income (at 1970-71 prices)
1. Cannanore	20.67	78.29	31.42	2.95	92.12	9.55	5.13	6.21	6.94	23.39	557.68
2. Wayanad	20.19	78.98	23.42	1.04	88.92	24.46	3.81	4.64	2.50	0.00	000.00
3. Kozhikode	20.12	73.54	27.15	2.84	93.96	4.80	7.20	5.90	7.16	27.18	610.06
4. Malappuram	19.11	63.16	19.20	1.70	81.85	2.38	4.18	3.67	3.75	7.40	420.36
5. Palghat	20.50	77.47	30.44	2.69	82.98	3.75	18.41	5.96	4.87	10.10	619.40
6. Trichur	22.07	90.66	46.67	5.29	75.28	25.10	12.38	11.88	9.62	21.10	589.72
7. Ernakulam	22.07	94.38	52.06	3.65	89.29	40.20	8.54	13.92	9.50	39.55	802.66
8. Idukki	21.59	89.99	37.89	2.06	83.45	43.15	13.71	8.66	2.87	4.56	712.37
9. Kottayam	22.95	95.65	54.77	4.88	82.89	47.48	7.03	16.54	5.45	9.37	686.45
10. Allepey	22.78	94.75	51.23	3.17	82.65	27.03	10.02	13.02	12.64	15.89	587.73
11. Quilon	22.20	92.53	44.54	1.56	82.82	22.66	12.35	11.35	11.35	13.15	633.50
12. Trivandrum	22.25	90.41	45.09	1.62	91.83	17.70	10.95	12.69	9.81	25.26	661.63

