

GROWTH OF POPULATION DENSITY -2020-2021 THANJAVUR DISTRICTS, TAMILNADU. TO USING THE GEOGRAPHICAL INFORMATION SYSTEM

T. Sangeetha* and R. Baskaran

Department of Earth sciences, Tamil University, Thanjavur

Abstract

In this study I have used a population project model to estimate the population growth for Thanjavur district, Tamil nadu. Until the years 2021 and to calculate the current and future needs elements in urban planning of the Thanjavur district. For urbanizations, I have employed GIS arc Info to digitize the maps and GIS-arc view to process the data combining with other analytical measurements to display the result.

Keywords: Population analysis Thanjavur district, Geographical information system, Statistical forecasting method

Introduction

A population growth is a condition where an organism's numbers exceed the carrying capacity of its habitat. In common parlance, the term usually refers to the relationship between the human population and its environment, the Earth. Population growth does not depend only on the size or density of the population, but on the ratio of population to available sustainable resources. The overpopulated include clean water, clean air, food, shelter, warmth, and other resources necessary to sustain life. If the quality of human life is addressed, there may be additional resources considered, such as medical care, education, proper sewage treatment and waste disposal. The world's urban population is expected to grow from 3.17 billion in 2005 to 4.97 billion by 2030; high-income countries will account for only 116 million out of the expected increase of 1.8 billion. Urban areas are currently growing by almost 1.3 million people a week, or a city the size of Munich or Orlando, every seven days.

(1-"Global food crisis looms as climate change and population growth strip fertile land". Guardian.co.uk. August 31, 2007, 2-Hot spot of population growth and urbanization in the asia-pasific coastal region (UNFPA 2002) . Application of GIS for population analyses case study of Libya2006)

Aim

To find out the population growth in the year of 2020-2021 Thanjavur district, Tamilnadu in the from these 9 years statistical data's.

Methodology

- To collect the 9 years Population data's, statistical data's from the statistical department.

- Population data's in 8 Taluk of Thanjavur district, Tamil nadu.
- From these data's to put the statistical forecast method, to find out in the future situation of Thanjavur district population.
- Then to apply the GIS software from theses final forecasts data's.

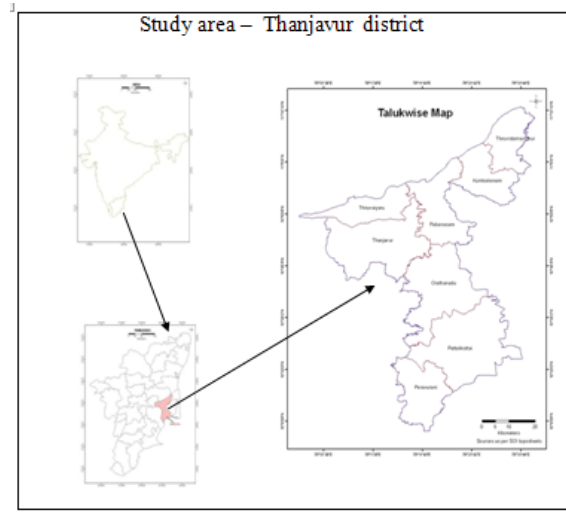
Study area

Thanjavur is located at 10°48'N 79°09'E / 10.8°N 79.15°E 10.8; 79.15 approximately in the centre of the Indian state of Tamil Nadu. The town is located in the centre of the Cauvery delta, about 320 kilometers' from the state capital Chennai and 56 kilometers from Tiruchirapalli. Thanjavur, situated in the eastern part of Tamil Nadu, was the capital of the Cholas, Kayaks and Marathas. It is surrounded by Perambalur, Tiruchirapalli, Tiruvarur, Nagapattinam and Pudukkottai districts.

The languages spoken are Tamil, Marathi and English. Thanjavur District covers an area of 3,396 sq km, and has a population of over 2.2 million. Cauvery is the main river. Agriculture is the major occupation of the people. Paddy, sugarcane, coconut and plantain are the chief crops. It receives an annual rainfall of 845 mm. The temperature varies from 22o C to 36o C.

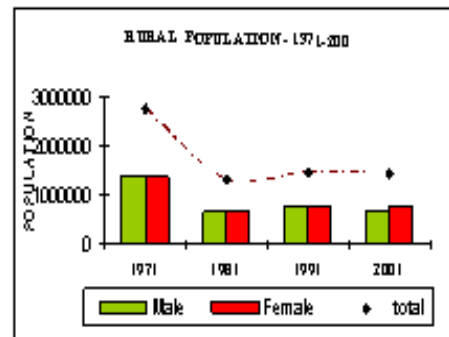
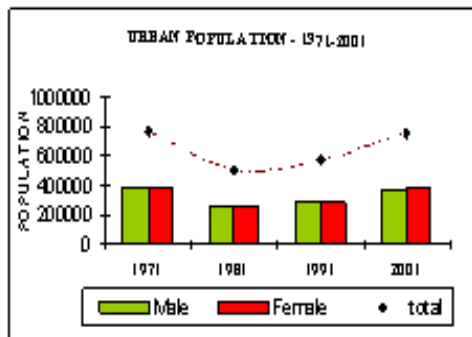
Divided into two distinct divisions, viz the Deltaic region and the Non-deltaic region, it spreads over an area of about 3396 sq km. The municipality has an area of about 36 km². The township and its exterior suburbs extend for an area of about 100 km². The town has an elevation of 57 meters above mean sea level. It is drained by the rivers Vadavar and Vennar in the north. (Thanjavur district statistical office book-2006-07)

* Corresponding Author, Email: tpsangeetha2009@yahoo.in



Rural and urban population census 1971-2001

YEARS	URBAN		RURAL	
	Male	Female	Male	Female
1971	387126	384562	1393690	1384685
1981	252987	252987	667440	665992
1991	284664	282119	744296	742681
2001	372227	383291	694994	765626



(Sources- Thanjavur district statistical office books-1971-2001).

For example for:

Thanjavur Taluk- Total Population
Forecasting method for the year of- 2020-2021 (statistical method)

YEARS	y	x	x ²	xy
1998-99	361060	-4	16	-1444240
1999-00	361060	-3	9	-1083180
2000-01	439689	-2	4	-879378
2001-02	439689	-1	1	-439689
2002-03	439689	0	0	0
2003-04	448301	1	1	448301
2004-05	448301	2	4	896602
2005-06	448301	3	9	1344903
2006-07	448301	4	16	1793204
Total	2946401	0	60	636523

Since $\sum x = 0$, therefore, (Sources-Thanjavur district statistical hand office books-1998-2007).

$$a = \frac{\sum y}{n} = \frac{2946401}{9} = 327377$$

$$b = \frac{\sum xy}{\sum x^2} = \frac{636523}{60} = 10608$$

Thus substituting the value of 'a' and 'b' in the straight line of the trend, we get $Y = a + b(x)$

$$y = 327377 + 10608(x)$$

$$x = 2006 - 2007 = 4$$

$$\text{So } 2020 - 2021 = 18$$

Forecast value for the year 2020-2021

$$y = 327377 + 10608(18)$$

Forecast of the population for the year 2020-2021 = 518333

Classification Population density

Thanjavur is the eleventh largest city in Tamil Nadu with a population of 221,185 (est. 2008). Males constitute 50% of the population and females 50%. Thanjavur has an average literacy rate of 80%, higher

than the national average of 59.5%: male literacy is 85%, and female literacy is 76%. In Thanjavur, 9% of the population is under 6 years of age.

Population data's are collected in taluk wise. In these data's are classified in two major category.

- Total male and female population.
- SC and ST population.

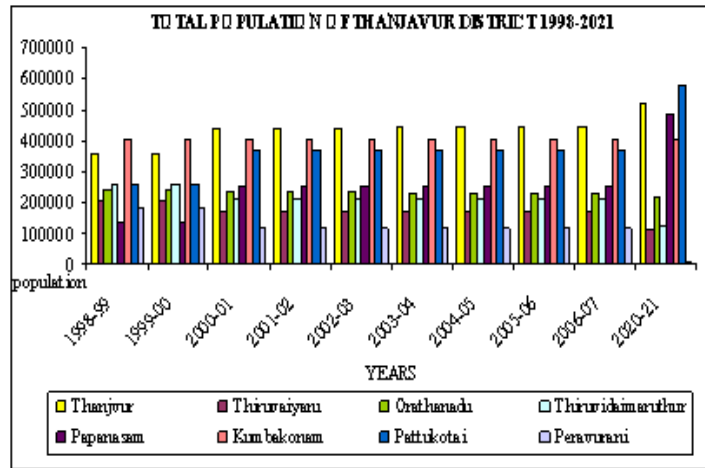
Total male and female population

The demographics of Thanjavur provide comprehensive and detailed information on the population growth, sex ratio and literacy rate of the ancient city of Tamil Nadu. According to the census data of the year of 2001, the total population of Thanjavur is 22, 05,375, out of which 10, 91,557 are males and 11,13,375 are females. Thanjavur population comprises of 14, 57,204 rural inhabitants and 7, 48,171 urban inhabitants. Among the rural population, 7, 21,677 are men and 7, 35,527 are women. The urban population encompasses 3, 69,880 males and 3, 78,291 females. Thanjavur has a sizeable amount of schedule caste and schedule tribe population as well. (www.mapsofindia.com › Thanjavur)

Total Population of Thanjavur District 1998-2021

Years	Thanjavur	Thiruvaiyaru	Orathanadu	Thiruvudaimaruthur	Papanasam	Kumbakonam	Pattukotai	Peravurani
1998-99	361060	207034	242496	263073	131176	405406	258802	184773
1999-00	361060	207034	242496	263073	131176	405406	258802	184773
2000-01	439689	173315	234351	212933	253407	404597	370327	116551
2001-02	439689	173315	234351	212933	253407	404597	370327	116551
2002-03	439689	173315	234351	212933	253407	404597	370327	116551
2003-04	448301	173286	234295	212977	255093	404393	370288	117505
2004-05	448301	173286	234295	212977	255093	404393	370288	117505
2005-06	448301	173286	234295	212977	255093	404393	370288	117505
2006-07	448301	173286	234295	212977	255093	404393	370288	117505
2020-21	518333	109899	218864	118933	488735	402381	579611	8269

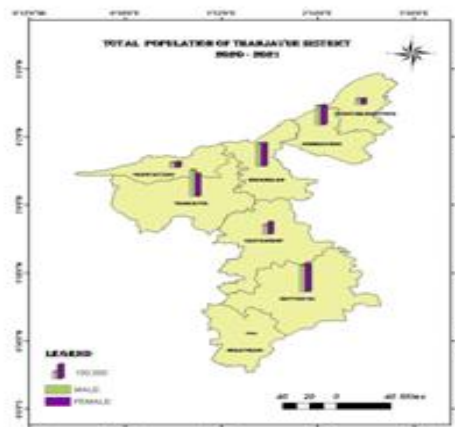
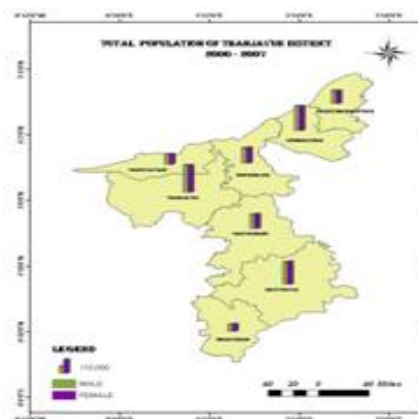
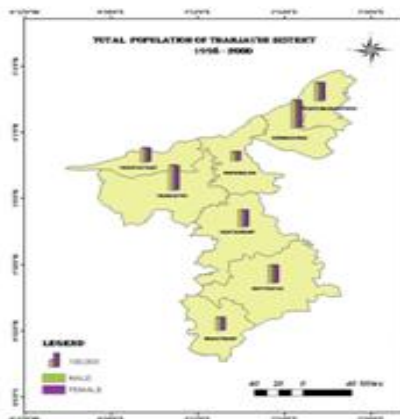
(Sources- Thanjavur district statistical office books)



Total population strength is some of the taluk decreased and increased. In 1998-2000 the Thanjavur taluk, Papanasam taluk, Kumbakonam taluk, and Pattukattai taluk these population is gradually increased in year by year. So the coming years the population also increased. [2020-2021-Thanjavur taluk-male-276648, female-241685, total-518333, Kumbakonam taluk- male-240808, female-247927, total-488735, and Pattukattai taluk - male-279689, female-299922, total-579611].

But in the other taluk population Thiruvaiyaru taluk, Orathanadu taluk, papanasam taluk, Thiruvaidimaruthur taluk and Peravurani taluk these

population is gradually decreased in year by year. So the coming years the population also decreased.[In 2020-2021- Thiruvaiyaru taluk - male-51664,female-58234,total-109899, Orathanadu taluk- male-93070,female-125794,total-218864, papanasam taluk-male-198192,female-204189,total-402381, Thiruvaidimaruthur taluk - male-57861,female-61072,total-118933,and Peravurani taluk - male-6952,female-1317,total-8269].(Data's from Thanjavur district statistical office books-1998-2007,statistical forecasting method applid).



SC population

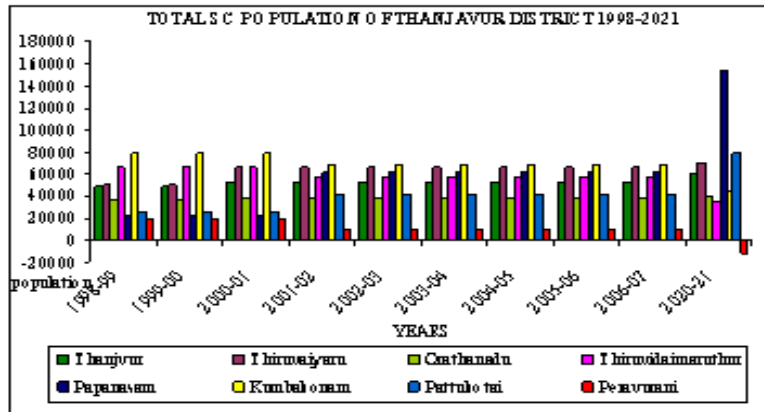
The schedule caste population of Thanjavur comprises of 3.01 lakhs, and the schedule tribe population of the ancient city of Tamil Nadu comprises of 0.04 lakhs. Most of the local indigenous inhabitants of the ancient city depend on agriculture for earning their livelihood. The cultivators of Thanjavur are classified into three

distinct categories of small cultivators, marginal cultivators and agricultural laborers. As per the statistics provided by the census of the year 2001, the district of Thanjavur holds 41.856 population of small farmers, 21,531 population of marginal cultivators and 4, 68,906 populations of agricultural laborers. . (www.mapsofindia.com › Thanjavur)

Total SC Population of Thanjavur District-1998-2021

Years	Thanjavur	Thiruvaiyaru	Orathanadu	Thiruvidaimaruthur	Papanasam	Kumbakonam	Pattukotai	Peravurani
1998-99	49778	50791	37712	66267	23882	79153	26449	20028
1999-00	49778	50791	37712	66267	23882	79153	26449	20028
2000-01	52851	66833	38717	66267	23882	79153	26449	20028
2001-02	52851	66833	38717	56979	62560	68837	42118	10758
2002-03	52851	66833	38717	56979	62560	68837	42118	10758
2003-04	52851	66833	38717	56979	62560	68837	42118	10758
2004-05	52851	66833	38717	56979	62560	68837	42118	10758
2005-06	52851	66833	38717	56979	62560	68837	42118	10758
2006-07	52851	66833	38717	56979	62560	68837	42118	10758
2020-21	60528	70937	41095	34993	154097	44422	79200	-11182

(Sources- Thanjavur district statistical office books)



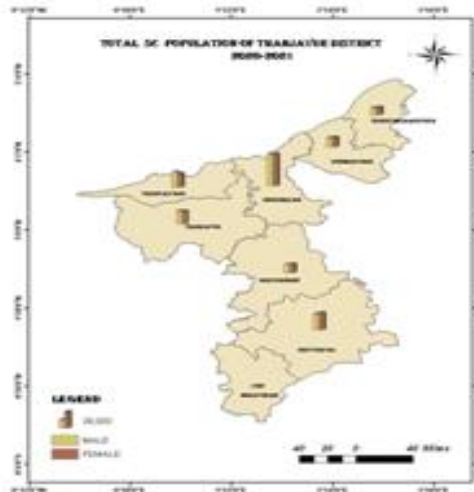
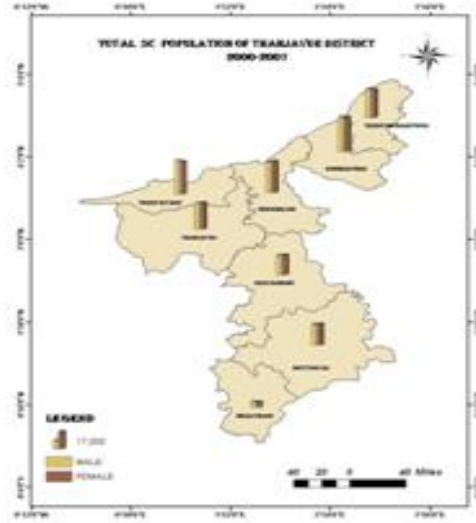
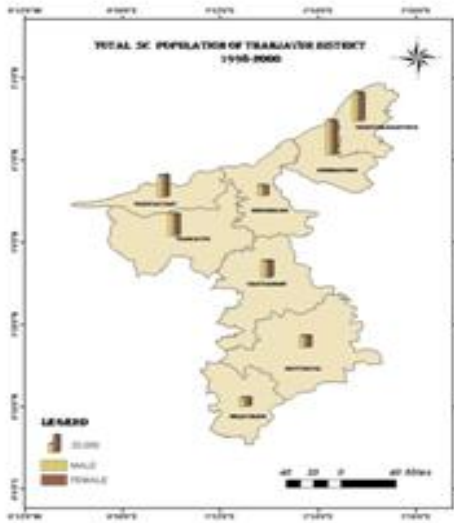
Sc population also decreased and increased in taluk wise. In 1998-2007 Thanjavur taluk, Thiruvaiyaru taluk, Orathanadu taluk, Papanasam taluk, and Pattukottai taluk sc population was increased in high. To apply the fore casting method in coming days the sc population will be increased. [2020-2021 thanjavur taluk- male-30134,female-30394,total-60528 Thiruvaiyaru taluk - male-37439,female-33498,total-70937,Orathanadu taluk- male-20078,female-

21017,total-41095,Papanasam taluk- male-76303,female-77794,total-154097, and Pattukottai taluk- male-38382,female-40818,total-79200].

At the same time the kumbakonam taluk ,peravurani taluk and thiruvidaimaruthur taluk population was decreased to low. To apply the forecasting method in coming days the sc population will be decreased [2020-2021- kumbakonam taluk- male-21884,female-22538,total-44422 ,peravurani

taluk and male-5589,female-5593,total-11182
 thiruvaidaimaruthur taluk male-17019,female-

17974,total-34993].

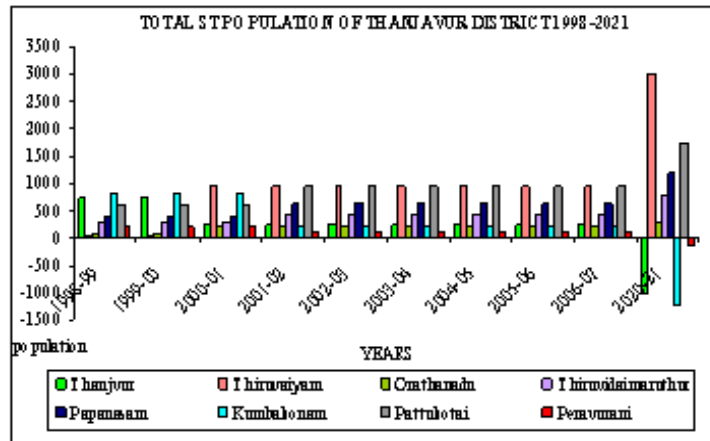


ST population

Total ST Population of Thanjavur District 1998-2021

Years	Thanjvur	Thiruvaiyaru	Orathanadu	Thiruvaidaimaruthur	Papanasam	Kumbakonam	Pattukotai	Peravurani
1998-99	733	55	78	284	390	811	610	187
1999-00	733	55	78	284	390	811	610	187
2000-01	214	952	184	284	390	811	610	187
2001-02	214	952	184	425	624	210	942	90
2002-03	214	952	184	425	624	210	942	90
2003-04	214	952	184	425	624	210	942	90
2004-05	214	952	184	425	624	210	942	90
2005-06	214	952	184	425	624	210	942	90
2006-07	214	952	184	425	624	210	942	90
2020-21	-1041	2997	297	778	1176	-1212	1727	-139

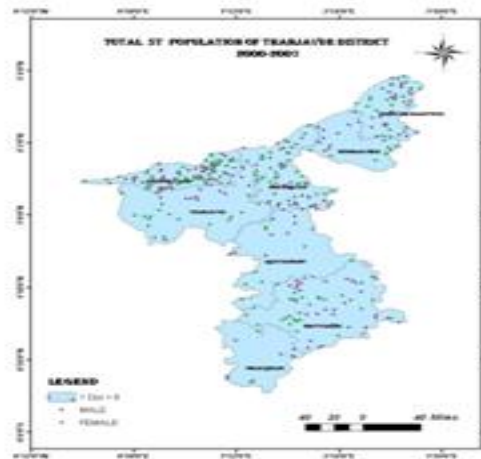
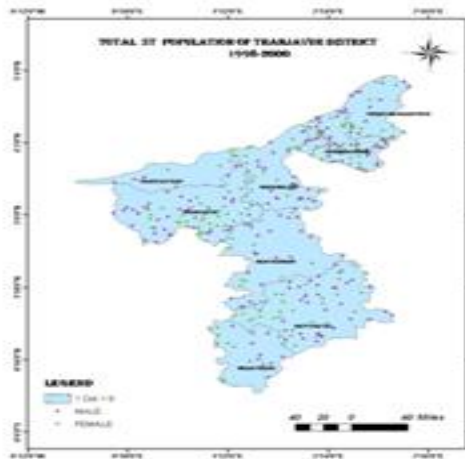
(Sources- Thanjavur district statistical office books)



ST population also decreased and increased in taluk wise. In 1998-2007 Thiruvaiyaru taluk, Orathanadu taluk, Papanasam taluk, Thiruvaidaimaruthur taluk and Pattukottai taluk st population was increased in high. To apply the forecasting method in coming days the ST population will be increased. [2020-2021 Thiruvaiyaru taluk - male-1474,female-1523,total-2997,Orathanadu taluk- male-184,female-113,total-297,Papanasam taluk- male-577,female-599,total-1176, Thiruvaidaimaruthur taluk-

male-375,female-403,total-778 and Pattukottai taluk- male-834,female-893,total-1727].

At the same time the Thanjavur taluk ,Kumbakonam taluk and,Peravurani taluk population was decreased to low. To apply the forecasting method in coming days the ST population will be decreased [2020-2021- Thanjavur taluk- male--575, female--437total--1041 Kumbakonam taluk- male--595, female--617, total--1212, and Peravurani taluk - male--103, female--36, total--139].



Summary and Conclusion

According to the population study in these thanjavur districts 1998-2000 the result of the population density range in percentage wise in Thanjavur taluk 17.57%, Thiruvaiyaru taluk 10.08%, Orathandal taluk 11.80%, Thiruvudaimaruthur taluk 12.80%, Papanasam taluk 6.3%, Kumbakonam taluk 19.73%, Pattukotai taluk 12.60% and Peravurani taluk 8.99%

After that, between the years of 2000-2007 Thanjavur taluk 20.22%, Thiruvaiyaru taluk 7.81%, Orathandu taluk 10.57%, Thiruvudaimaruthur taluk 9.61%, Papanasam taluk 11.51%, Kumbakonam taluk 18.24%, Pattukotai taluk 16.70% and Peravurani taluk 5.30% in this situation is the current information.

After that, between the years of 2020-2021 Thanjavur taluk 21.19%, Thiruvaiyaru taluk 4.49%, Orathandu taluk 8.95%, Thiruvudaimaruthur taluk 4.86%, Papanasam taluk 19.98%, Kumbakonam taluk 16.45%, Pattukotai taluk 23.7% and Peravurani taluk 33% in this situation will be increased or decreased in future year of 2020-2021.

So in this above information to we are clearly known the Thanjavur district population will be increasing coming years. At the same time the literacy, transportation and medical health institution also increased too high. More over Thanjavur district will be urbanized in 2020-2021 years. In this changes are getting more problems in our society, but at the same time in these changes (population transportation, education, and medical health) are very power full influence of this urbanization studies.

Reference:

- Application of GIS for population analyses case study of Libya 2006
- Global food crisis looms as climate change and population growth strip fertile land". Guardian.co.uk. August 31, 2007,
- Hot spot of population growth and urbanization in the asia-pacific coastal region (UNFPA 2002)).
- Statistical forecasting method book 1998.
- Thanjavur district statistical office hand books, year-1998-20 Thanjavur district.
- www.mapsofindia.com> Thanjavur.