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SEX RATIO AND CHILD SEX RATIO IN CUDDALORE, TAMIL NADU: A SUB-DISTRICT-LEVEL SPATIAL ANALYSIS, 2001–2011

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Abstract

This study examines the demographic and socio-economic characteristics of Cuddalore district in comparison with Tamil Nadu during 2001–2011, with emphasis on Child Sex Ratio (CSR), literacy, work participation and gender disparities in relation to the SDGs. Cuddalore's CSR declined sharply from 957 in 2001 to 896 in 2011, a fall of 61 points, while Tamil Nadu improved marginally from 942 to 943. Despite this decline, the overall sex ratio in Cuddalore remained relatively stable, indicating greater gender imbalance among children. Female literacy improved considerably, including in rural areas, reflecting progress towards SDG 4 (Quality Education). However, significant gender disparities persisted in work participation, with males at 57.15% compared with 32.47% among females, highlighting challenges under SDG 8. The declining CSR also has important implications for SDGs 3, 5 and 10, concerning health, gender equality and reduced inequalities. Overall, the findings highlight the need for integrated interventions promoting girl-child survival, education, health, economic participation and gender equality towards achieving the 2030 Agenda.

Key words: Sex ratio, Child Sex ratio, Women Literacy and Women Work Participation.

Introduction

Tamil Nadu has experienced significant demographic and socio-economic changes during the period 2001–2011. According to the Census, the State had 32 districts, 215 sub-districts, 1,097 towns and 15,979 villages in 2011. Its total population reached 72.14 million, with 51.6% residing in rural areas and 48.4% in urban areas. The State recorded a decadal

population growth rate of 15.6%, with urban areas registering substantially higher growth than rural areas, reflecting the process of rapid urbanisation. Population density increased from 480 to 555 persons per sq. km. during the decade. Alongside these demographic changes, Tamil Nadu witnessed an improvement in the overall sex ratio, which increased from 987 females per 1,000 males in 2001 to 996 in 2011. The improvement was particularly notable in urban areas, where the sex ratio reached 1,000 females per 1,000 males.

However, the demographic situation of children presents a contrasting picture. The population in the 0–6 age group stood at approximately 7.4 million in 2011. The Child Sex Ratio (CSR), an important indicator of gender balance and the social status of the girl child, showed only a marginal improvement from 942 in 2001 to 943 in 2011. While the rural CSR increased from 933 to 936, the urban CSR declined from 955 to 952.

Significant inter-district variations were also observed that Cuddalore recorded the lowest overall CSR (896), while The Nilgiris recorded the highest (985). Cuddalore also recorded the lowest rural CSR (880), whereas Ariyalur had the lowest urban CSR (913). These variations indicate that improvements in the overall sex ratio have not necessarily translated into a corresponding improvement in the gender balance among children.

Thus, the Census 2011 demographic profile of Tamil Nadu highlights a mixed pattern of demographic progress, characterised by urbanisation, increasing population density and improvement in the overall sex ratio, but with persistent concerns regarding the Child Sex Ratio. The spatial and rural–urban disparities in CSR provide an important basis for examining gender discrimination, son preference and the socio-economic factors influencing the survival and status of the girl child in Tamil Nadu.

Objectives:

1. Analyse the trend and spatial pattern of the Child Sex Ratio (CSR) in Tamil Nadu during 2001–2011 and identify the districts with the lowest CSR.
2. To analyse the trend and pattern of the Child Sex Ratio (CSR) in Cuddalore district at the sub-district level during 2001–2011.
3. To examine the major socio-economic, demographic and cultural factors associated with the decline in the Child Sex Ratio in Cuddalore district.

Data and Methodology:

The present study is based on secondary data obtained from the Census of India. The study examines the trend and decadal change in the Child Sex Ratio (CSR) during 2001–2011, with particular focus on the districts recording the lowest CSR in Tamil Nadu. Special attention is given to Cuddalore district and its sub-districts to analyse variations in the Child Sex Ratio.

The required Census data for 2001 and 2011 were downloaded from the official Census of India website and systematically compiled for analysis. SPSS was used for statistical analysis. A Paired Samples t-test was applied to examine whether there was a statistically significant difference in CSR between 2001 and 2011, while Paired Samples Correlation was used to assess the relationship between CSR values across the two Census years

Statement of the problem:

The decline in India's Child Sex Ratio (CSR) reflects persistent forms of gender discrimination that operate across the life course. Gender-biased sex selection, rooted in deep-seated son preference and facilitated by access to prenatal sex-determination technologies, contributes to a reduction in the number of girls born. This disadvantage may continue after birth through unequal access to nutrition, health care and survival opportunities, further widening the gender gap among children.

International organisations, including the WHO and United Nations agencies, recognise gender-biased sex selection and the resulting deficit of girls as important public-health, human-rights and gender-equality concerns. UNFPA estimated that approximately 460,000 girls were missing at birth annually in India during 2013–2017, while around 4 million girls aged 0–6 years were estimated to be missing according to the 2011 Census. These trends highlight the continuing need for effective measures to address son preference, gender discrimination and the protection and survival of the girl child.

Table 1: Decadal Changes in Sex Ratio and Child Sex Ratio in Cuddalore District, 2001–2011

India/Sta/ Dist	Child Sex Ratio 2001			Child Sex Ratio 2011			Sex Ratio 2001			Sex Ratio 2011		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
INDIA	927	934	906	919	923	905	933	946	900	943	949	929
Tamil Nadu	942	933	955	943	936	952	987	992	982	996	993	1000
Cuddalore	957	957	955	896	880	934	986	984	990	987	980	999

Sources: DCHB Cuddalore: Census 2001and 2011

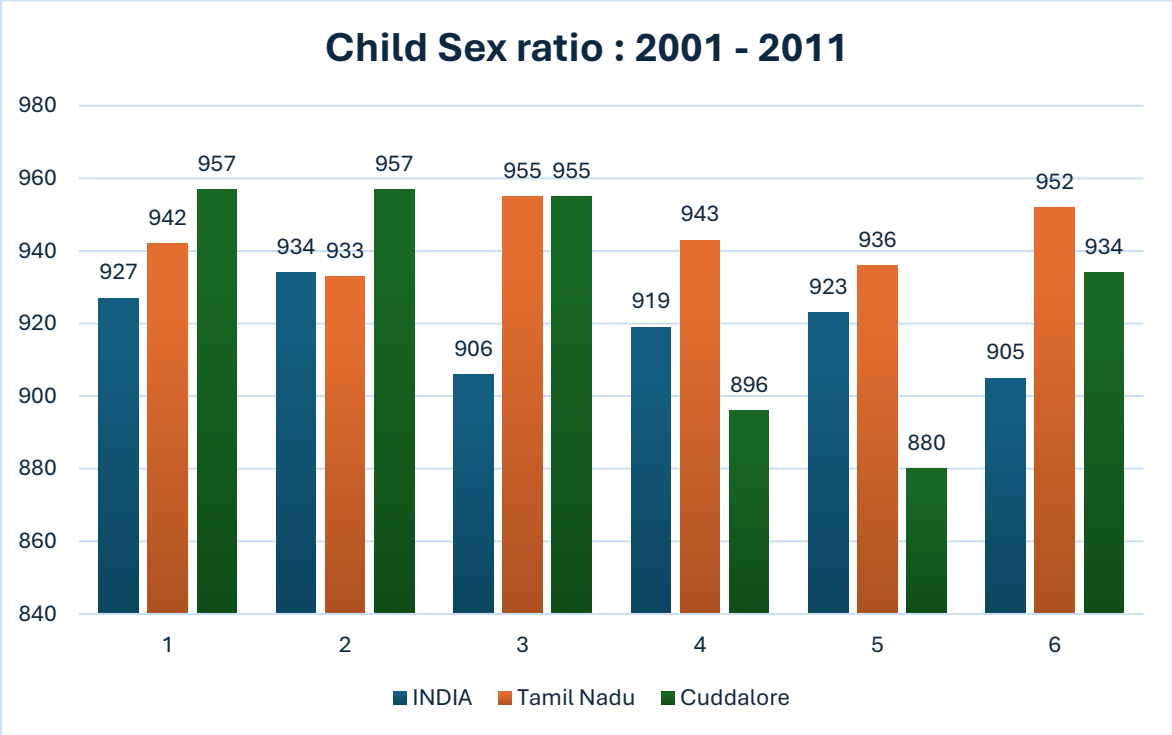
Cuddalore district presents a striking contrast between the overall sex ratio and the Child Sex Ratio (CSR) during 2001–2011. The overall sex ratio remained almost stable,

increasing marginally from 986 females per 1,000 males in 2001 to 987 in 2011, whereas the CSR declined sharply from 957 to 896, representing a decline of 61 points. This substantial difference indicates that an improvement or stability in the overall sex ratio does not necessarily reflect gender balance among children.

The rural–urban pattern further highlights the severity of the decline in CSR. The rural CSR declined from 957 to 880, a substantial fall of 77 points, while the urban CSR declined from 955 to 934, a fall of 21 points. In contrast, the overall rural sex ratio declined only from 984 to 980, whereas the urban sex ratio increased from 990 to 999. Thus, the sharp decline in CSR, particularly in rural areas, is more pronounced than the changes observed in the overall sex ratio.

These findings suggest that CSR provides a more sensitive indicator of gender imbalance among children than the overall sex ratio. The marked decline in Cuddalore's CSR warrants further investigation into son preference, gender discrimination, sex-selective practices, and socio-economic, demographic and cultural factors affecting the status and survival of the girl child.

Chart 1: Decadal Changes in Sex Ratio and Child Sex Ratio in Cuddalore District, 2001–2011



The data show that Cuddalore had a relatively favourable CSR in 2001 (957) compared with both Tamil Nadu (942) and India (927). However, by 2011, Cuddalore's overall CSR declined sharply to 896, falling well below the Tamil Nadu average of 943 and the national level of 919.

The decline was particularly severe in rural Cuddalore, where CSR fell from 957 to 880, a reduction of 77 points. Urban Cuddalore also declined from 955 to 934, but the reduction was comparatively smaller at 21 points. Thus, Cuddalore's experience between 2001 and 2011 indicates a much sharper deterioration in child gender balance than observed at the State or national level, particularly in rural areas. This provides a strong justification for examining Cuddalore at the sub-district level to identify the spatial pattern and possible socio-economic and cultural factors associated with the decline.

Table 2: Decadal Changes Sub-District-wise Sex Ratio and Child Sex Ratio, 2001–2011:

Sl. No.	Sub-district	T/ R/ U	Sex ratio 2001	Sex ratio for 2001	Diff	Sex Rartio 2011	Sex ratio for 0-6 2011	Diff
1	Panruti	Total	975	953	-22	989	898	-91
		Rural	976	953	-23	981	877	-104
		Urban	974	954	-20	1006	951	-55
2	Cuddalore	Total	978	952	-26	1004	931	-73
		Rural	974	948	-26	986	905	-81
		Urban	984	957	-27	1023	961	-62
3	Kurinjipadi	Total	NA	NA	NA	981	883	-98
		Rural	NA	NA	NA	980	876	-104
		Urban	NA	NA	NA	982	893	-89
4	Chidambaram	Total	1,003	967	-36	990	907	-83
		Rural	985	971	-14	988	899	-89
		Urban	1,042	957	-85	993	923	-70
5	Kattumannarkoil	Total	984	975	-9	990	900	-90
		Rural	980	970	-10	988	886	-102
		Urban	1,001	993	-8	996	956	-40
6	Virudhachalam	Total	978	944	-34	969	867	-102
		Rural	979	948	-31	964	852	-112
		Urban	976	927	-49	984	922	-62
7	Tittakudi	Total	1,011	958	-53	983	880	-103
		Rural	1,020	960	-60	982	873	-109
		Urban	970	951	-19	992	922	-70
8	**District Total**	**Total**	986	**957**	-29	987	**896**	-91
		Rural	984	**957**	-27	981	**880**	-101
		Urban	990	**955**	-35	997	**934**	-63

The sub-district-wise analysis of Sex Ratio and Child Sex Ratio (CSR) in Cuddalore district reveals a significant divergence between the overall sex ratio and the sex ratio of children aged 0–6 years during 2001–2011. While the overall sex ratio remained stable or

improved in several sub-districts, the CSR declined considerably, indicating a persistent gender imbalance among the younger population.

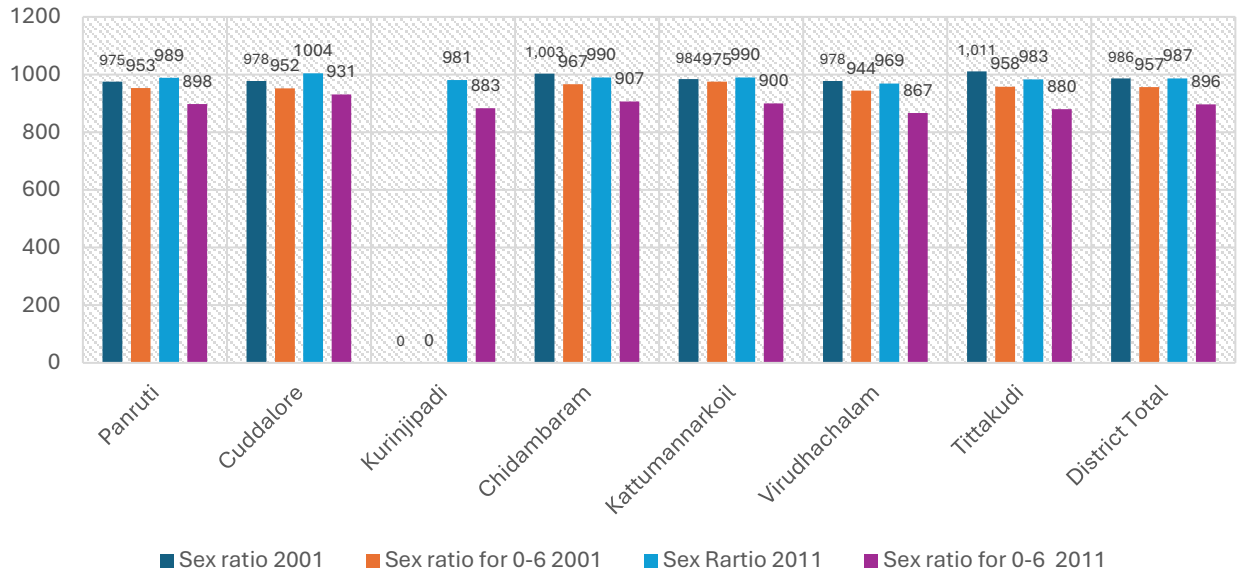
At the district level, the overall sex ratio increased marginally from 986 females per 1,000 males in 2001 to 987 in 2011. In contrast, the CSR declined sharply from 957 to 896, representing a fall of 61 points. The decline was particularly pronounced in rural areas, where CSR decreased from 957 to 880, compared with a relatively smaller decline in urban areas, from 955 to 934. This rural–urban differential indicates a greater degree of gender disadvantage among children in rural settings.

At the sub-district level, CSR declined across all areas between 2001 and 2011. In 2001, relatively higher CSR levels were observed in sub-districts such as Kattumannarkoil, Chidambaram and Tittakudi. By 2011, however, substantial declines were evident, with Virudhachalam recording the lowest CSR at 867, followed by Kurinjipadi (883), Tittakudi (880), Panruti (898) and Kattumannarkoil (900). The largest decline was recorded in Virudhachalam, with a fall of 77 points, highlighting the severity of the deterioration in child sex composition.

The analysis further demonstrates that an improvement in the overall sex ratio does not necessarily correspond to an improvement in CSR. For example, Cuddalore's overall sex ratio increased from 978 to 1,004, while its CSR declined from 952 to 931. Similarly, Panruti recorded an improvement in overall sex ratio from 975 to 989, but its CSR declined from 953 to 898.

Overall, the findings suggest that gender imbalance was more pronounced among children than in the total population. The substantial decline in CSR during 2001–2011 points to continuing gender discrimination and son preference, particularly in rural and socially vulnerable areas. Improving the CSR therefore requires sustained efforts towards girl-child survival, health, nutrition, education, protection and gender equality, consistent with the objectives of SDGs 3, 4, 5, 8 and 10.

Chart : 2 Decadal Changes Sub-District-wise Sex Ratio and Child Sex Ratio 2001–2011



Decadal Changes Sub-District-wise Sex Ratio and Child Sex Ratio, 2001–2011: A Paired Samples t-test:

Mean	958.2	900.6
Variance	156.7	525.3
Observations	5	5
Pearson Correlation	0.303584753	
Hypothesized Mean Difference	0	
df	4	
t Stat	5.715590916	
P(T<=t) one-tail	0.00231775	
t Critical one-tail	0	
P(T<=t) two-tail	0.004635501	
t Critical two-tail	0.740697084	

A paired-sample *t*-test was conducted to examine whether the mean values of the two observed series differed significantly. The mean of the first series was 958.2, compared with 900.6 for the second series, indicating a mean decline of 57.6 points. The variance was 156.7 for the first series and 525.3 for the second, suggesting greater dispersion in the latter.

The Pearson correlation coefficient (r = 0.304) indicates a weak positive association between the two series. However, the correlation is relatively low, suggesting that the changes in the two measures are not strongly linearly associated.

The paired *t*-test produced a t-statistic of 5.716 with 4 degrees of freedom. The two-tailed p-value was 0.0046, which is below the conventional 1% significance level ($p < 0.01$). Therefore, the null hypothesis of no mean difference is rejected. This result indicates that the difference between the two mean values is statistically significant.

Overall, the findings demonstrate a substantial and statistically significant decline from 958.2 to 900.6, representing a reduction of approximately 6.0%. In the context of Child Sex Ratio analysis, this decline points to a pronounced deterioration in the gender balance among children across the selected observations and warrants further examination of the underlying demographic and socio-economic factors. The null hypothesis is rejected at the 1% level of significance, indicating that the difference in Child Sex Ratio between the two periods is statistically significant.

Table : 3 Literacy and Gender Gap in Literacy: Sub-District-Level Analysis, 2001–2011:

			2001				2011			
Sl. No	**Sub District**	**T/R/U**	**Persons**	**Males**	**Females**	**Gap Female Literacy rate**	**Persons**	**Males**	**Females**	**Gap Female Literacy rate**
1	Panruti	Total	71.6	82.4	60.4	22	75.22	84.24	66.22	18.02
		Rural	62.3	76.1	48.2	27.9	71.25	81.55	60.9	20.65
		Urban	82.9	90.2	75.5	14.7	83.38	89.79	77.04	12.75
2	Cuddalore	Total	72.8	81.9	63.6	18.3	81.09	87.34	74.91	12.43
		Rural	64.9	75.8	53.7	22.1	73.93	81.99	65.84	16.15
		Urban	82.6	89.4	75.6	13.8	88.2	92.74	83.79	8.95
3	Kurinjipadi	T	NA	NA	NA	NA	80.79	88.3	73.23	15.07
		R	NA	NA	NA	NA	73.62	83.04	64.15	18.89
		U	NA	NA	NA	NA	87.15	92.95	81.3	11.65
4	Chidambaram	Total	75.5	84.7	66.4	18.3	82.5	88.92	76.08	12.84
		Rural	71.7	82.2	61.2	21	78.92	86.41	71.42	14.99
		Urban	83.9	90.5	77.7	12.8	88.8	93.34	84.27	9.07
5	Kattumannarkoil	Total	74	84	63.9	20.1	78.4	85.65	71.16	14.49
		Rural	72.8	83.4	62.1	21.3	77.2	84.82	69.59	15.23
		Urban	78.8	86.4	71.1	15.3	82.95	88.8	77.09	11.71
6	Virudhachalam	Total	67.5	80.2	54.6	25.6	75.51	85.06	65.79	19.27
		Rural	63.1	77.2	48.7	28.5	72.27	82.88	61.45	21.43
		Urban	83.5	90.9	76	14.9	86.44	92.47	80.36	12.11
7	Tittakudi	Total	60	73.6	46.7	26.9	69.72	79.66	59.75	19.91
		Rural	57.1	71.4	43.2	28.2	68.07	78.29	57.8	20.49
		Urban	73.8	83.8	63.5	20.3	78.26	86.76	69.76	17
8	**District Total:**	**Total**	**71**	**81.6**	**60.3**	**21.4**	**78.04**	**85.93**	**70.14**	**15.79**
		Rural	65.4	77.7	52.9	24.9	73.69	82.85	64.48	18.37

		Urban	82.3	89.5	75.1	14.4	86.38	91.88	80.9	10.98

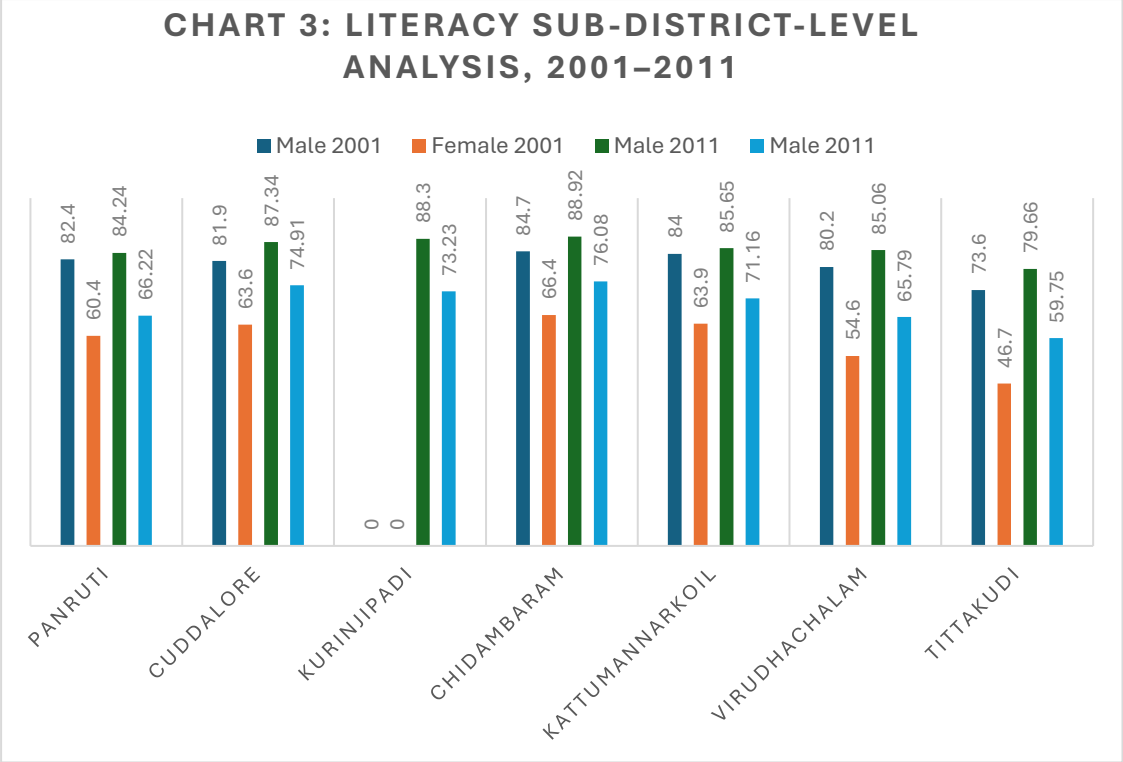
Table presents the literacy status and gender gap in literacy across the sub-districts of Cuddalore district for 2001 and 2011, with separate estimates for total, rural and urban areas. Overall, the district experienced a substantial improvement in literacy during the decade, accompanied by a considerable reduction in the gender gap in literacy.

Between 2001 and 2011, Cuddalore district recorded substantial improvement in literacy, particularly among females. Overall literacy increased from 71.0% to 78.04%, while female literacy rose from 60.3% to 70.14%. As a result, the gender gap in literacy declined from 21.4 to 15.79 percentage points.

The rural–urban disparity remained significant. Rural female literacy increased from 52.9% to 64.48%, whereas urban female literacy increased from 75.1% to 80.9%. The gender gap also narrowed in both areas, but remained considerably higher in rural areas.

At the sub-district level, Cuddalore and Chidambaram showed relatively high literacy and stronger reductions in the gender gap. Tittakudi and Virudhachalam continued to record comparatively lower female literacy and wider gender disparities in 2011. Kurinjipadi recorded a 2011 literacy rate of 80.79%, with a female literacy rate of 73.23%.

Overall, the findings indicate progressive improvement in literacy and a gradual reduction in gender inequality during 2001–2011. However, persistent rural and sub-district-level disparities, particularly in female literacy, highlight the need for targeted educational interventions. These patterns are important for understanding gender inequality alongside Child Sex Ratio, work participation and other socio-economic indicators in Cuddalore district.



A paired-sample *t*-test Literacy and Gender Gap in Literacy: Sub-District-Level Analysis, 2001–2011:

Mean	17.85652174	15.22695652
Variance	73.27166008	14.18076759
Observations	23	23
Pearson Correlation	0.528581872	
Hypothesized Mean Difference	0	
df	22	
t Stat	1.726143092	
P(T<=t) one-tail	0.049170347	
t Critical one-tail	1.717144374	
P(T<=t) two-tail	0.098340695	
t Critical two-tail	2.073873068	

The paired t-test was conducted to examine whether there is a statistically significant difference between the two sets of observations. The mean of the first variable is 17.86, compared with 15.23 for the second variable, indicating a mean difference of approximately 2.63 percentage points.The Pearson correlation coefficient (r = 0.529) indicates a moderate positive association between the two paired observations. The test has 23 paired observations and 22 degrees of freedom.

The calculated t-statistic is 1.726, compared with the critical value of 1.717 at the 5% one-tailed level. Since 1.726 > 1.717, the null hypothesis is rejected in the one-tailed test. The corresponding one-tailed p-value is 0.0492, which is slightly below 0.05. Therefore, there is statistically significant evidence at the 5% level for a directional difference between the two means. However, for a two-tailed test, the p-value is 0.0983, which is greater than 0.05. Thus, the null hypothesis cannot be rejected at the 5% significance level in a two-tailed analysis.

Table 4: NUMBER AND PERCENTAGE OF MAIN WORKERS, MARGINAL WORKERS, AND NON-WORKERS 2001-2011

		2001					2011			
Sl. No	**Name of Taluk**	**P/ M/ F**	**Main**	**Marginal**	**Main+ Marginal**	**Non Worker**	**Main**	**Marginal**	**Main+ Marginal**	**Non Worker**
1	Panruti	P	31.2	8.9	40.1	59.9	33.9	11.33	45.26	54.74
		M	46.7	7.8	54.5	45.5	46.7	10.08	56.82	43.18
		F	15.2	10	25.2	74.8	21	12.6	33.56	66.44
2	Cuddalore	P	30.3	8.5	38.8	61.2	31.5	10.25	41.73	58.27
		M	45.7	8.5	54.2	45.8	47	10.55	57.53	42.47
		F	14.6	8.5	23.1	76.9	16	9.95	25.98	74.02
3	Kurinjipadi	P	0	0	0	0	33.1	7.1	40.23	59.77
		M	0	0	0	0	48.1	7.16	55.29	44.71
		F	0	0	0	0	17.8	7.04	24.87	75.13
4	Chidambaram	P	28.8	11.4	40.2	59.8	27.9	15.87	43.82	56.18
		M	44	11.3	55.3	44.7	40.8	16.35	57.12	42.88
		F	13.6	11.6	25.2	74.8	15	15.39	30.38	69.62
5	Kattumannarkoil	P	30.7	15.7	46.4	53.6	26.4	18.01	44.37	55.63
		M	42.5	14.8	57.3	42.7	37.2	19.6	56.79	43.21
		F	18.7	16.5	35.2	64.8	15.4	16.41	31.82	68.18
6	Virudhachalam	P	34.3	12.2	46.5	53.5	33	13.79	46.83	53.17
		M	46.7	9.3	56	44	44.7	12.34	57.07	42.93
		F	21.6	15.3	36.9	63.1	21	15.29	36.25	63.75
7	Tittakudi	P	40.4	10.4	50.8	49.2	41.2	13.51	54.69	45.31
		M	49.2	7.7	56.9	43.1	48.1	11.86	59.98	40.02
		F	31.8	13.1	44.9	55.1	34.1	15.2	49.32	50.68
8	District Total:	P	31.9	10.7	42.6	57.4	32.1	12.76	44.89	55.11
		M	45.8	9.5	55.3	44.7	44.7	12.47	57.15	42.85
		F	17.8	11.8	29.6	70.4	19.4	13.06	32.47	67.53

For a research article, you can integrate SDG 5 (Gender Equality), SDG 8 (Decent Work and Economic Growth), and SDG 10 (Reduced Inequalities) as follows:

The analysis indicates that female work participation in Cuddalore district improved moderately between 2001 and 2011, although a substantial gender gap in workforce participation persisted. At the district level, female participation in main and marginal work together increased from 29.6% in 2001 to 32.47% in 2011, while the corresponding male participation increased from 55.3% to 57.15%. The proportion of female non-workers declined from 70.4% to 67.53%, suggesting a gradual improvement in women's economic engagement.

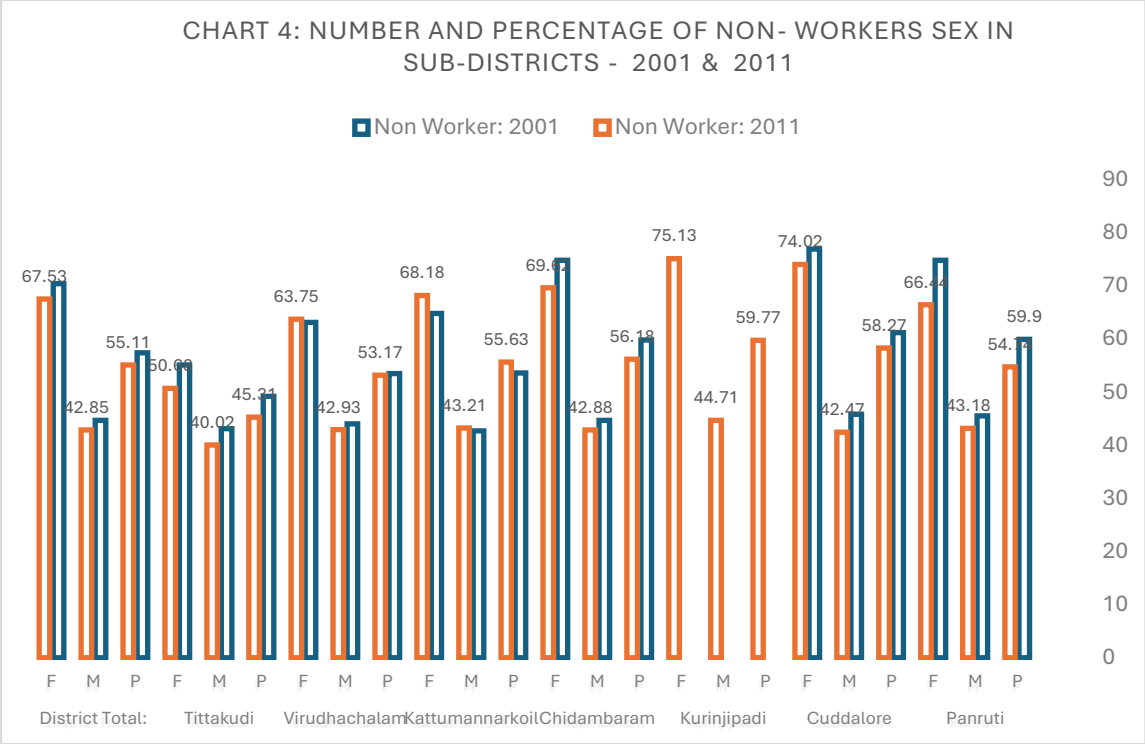
From the perspective of SDG 5 (Gender Equality), the increase in female workforce participation represents progress towards enhancing women's economic empowerment and participation in productive activities. However, the considerable difference between male and female participation indicates the continued presence of gender-based disparities in access to employment and economic opportunities. Strengthening women's skills, employment opportunities, and participation in decision-making can contribute to greater gender equality.

In relation to SDG 8 (Decent Work and Economic Growth), the rise in female participation suggests increasing integration of women into the labour market and contributes to more inclusive economic growth. However, higher participation alone does not necessarily imply access to decent, productive, secure, and adequately remunerated employment. Therefore, policies need to focus not only on increasing female employment but also on improving the quality and sustainability of women's work.

From the perspective of SDG 10 (Reduced Inequalities), the persistent male–female gap in work participation highlights an important dimension of socio-economic inequality. The considerable variation among sub-districts also indicates that women's economic opportunities are spatially uneven. Tittakudi, for example, recorded relatively high female participation, whereas Cuddalore and some other sub-districts recorded lower levels. Reducing these spatial and gender-based disparities through targeted employment, skill-development, and social-support interventions would contribute to more inclusive and equitable development.

Overall, the 2001–2011 trends reflect gradual progress in women's economic participation, while the continuing gender and spatial disparities demonstrate the need for stronger gender-responsive interventions. The findings are therefore relevant to the objectives

of SDG 5, SDG 8 and SDG 10, particularly in promoting gender equality, decent employment, inclusive economic growth, and the reduction of socio-economic inequalities at the sub-district level.



Conclusion:

The sub-district-level analysis of Cuddalore district during 2001–2011 reveals that women's development has been characterized by both progress and persistent gender disparities. The changes in sex ratio, child sex ratio, female literacy and female work participation demonstrate that demographic and socio-economic empowerment are closely interconnected. While the overall sex ratio remained relatively stable, the sharp decline in the Child Sex Ratio from 957 in 2001 to 896 in 2011 raises serious concerns regarding the status and social valuation of the girl child. The spatial variations among sub-districts further indicate that gender-related disadvantages are not uniform across the district and require geographically targeted interventions.

The improvement in female literacy and female work participation between 2001 and 2011 represents an important positive change. Nevertheless, women continued to have substantially lower work participation than men. This indicates that improvements in

educational attainment have not automatically translated into equal economic opportunities. The findings therefore highlight the need to move beyond access to education towards skill development, decent employment, economic independence, safe working environments and equal opportunities for women.

The issue of women's and girls' safety adds another important dimension to gender development. NCRB crime statistics should be considered alongside demographic and socio-economic indicators because the protection of women and girls is essential for translating improvements in education and economic participation into meaningful empowerment. Thus, the policy objective should not only be to improve the number of girls surviving, studying and working, but also to ensure that they can live, study and work in a safe, dignified and violence-free environment.

From the perspective of SDG 3 (Good Health and Well-being), improving the health, nutrition, reproductive health and overall well-being of women and girls is fundamental to human development. SDG 4 (Quality Education) emphasizes equitable and inclusive education, making the improvement of female literacy and continued education of girls a critical pathway for reducing gender disadvantage. SDG 5 (Gender Equality) is directly reflected in the concerns relating to child sex ratio, women's education, employment, safety and freedom from discrimination and violence. SDG 8 (Decent Work and Economic Growth) highlights the importance of increasing women's participation in productive and decent employment rather than merely increasing labour-force participation. SDG 10 (Reduced Inequalities) is relevant to the persistent gender gap and the spatial differences observed among the sub-districts.

The findings also support a life-cycle approach to girl and women empowerment. Existing government interventions such as Beti Bachao Beti Padhao focus on the survival, protection and education of the girl child for women's safety, security and empowerment. One Stop Centres and the Women Helpline provide support to women affected by violence, while programmes under nutrition, education and child protection address different stages of the life cycle.

Therefore, the study suggests that Cuddalore's gender-development strategy should adopt a convergent and sub-district-specific approach combining sex-ratio monitoring, girls' education, health and nutrition, prevention of gender discrimination, protection from violence,

skill development, and access to decent employment. Government programmes already emphasize protection, education, safety and empowerment of girls and women; the key requirement is stronger implementation, local monitoring and convergence among health, education, social welfare, police and employment institutions.

Overall, the study concludes that gender equality cannot be achieved through improvement in a single indicator. A favourable sex ratio must be accompanied by healthy and educated girls, higher female literacy, greater economic participation, freedom from violence and equal access to opportunities. The combined perspective of SDGs 3, 4, 5, 8 and 10 therefore provides an integrated framework for transforming demographic improvement into substantive and sustainable empowerment of women and girls in Cuddalore district.

References:

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