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Demographic Dynamics and Population Trends in West Godavari District (1991-2011): An Analysis of Total Population, Rural Population, Literacy Rates, Scheduled Caste and Scheduled Tribe Populations.

1st Dr. Ananda Ratna Kumar. K (ICSSR Fellow – PDF), **2nd Prof. T.V. Krishna**
1st (ICSSR – PDF), Department of Geography, Andhra University, Visakhapatnam, AP, India.
2nd Professor, Department of Geography, Andhra University, Visakhapatnam, AP, India.

Abstract: This study analyses demographic changes across various mandals over three decades, focusing on total population, rural population, literacy rate, and the Scheduled Caste (SC) andScheduled Tribe (ST) populations. Data from 1991, 2001, and 2011 highlight significant trends. Chintalapudi saw a steady increase in population from 76,359 in 1991 to 91,372 in 2011, with literacy rates rising from 61.8% to 66.56%. Conversely, Lingapalem experienceda decrease in literacy from 68.5% in 2001 to 65.41% in 2011, despite a growing population. Jeelugumilli and Buttaigudem showed notable improvements in literacy, reaching 67.48% and 71.51% respectively in 2011. Urbanization trends were evident in Eluru and Bhimavaram, where population growth was accompanied by significant literacy improvements, with Eluru's literacy rate reaching 80.23% in 2011. ST populations saw substantial increases in Buttaigudem, Polavaram, and other mandals, indicating demographic shifts possibly driven by migration or higher birth rates. Overall, the total population of the region grew from 3,517,568 in 1991 to 3,936,966 in 2011, while rural populations remained predominant. The literacy rate across all mandals averaged 71.43% by 2011, reflecting both progress and challenges in education. The SC population grew significantly, from 642,584 in 2001 to 811,698 in 2011, alongside an increase in the ST population from 88,863 to 109,072 during the same period. These dynamics underscore the evolving socio-economic landscape, highlighting areas for targeted policy interventions.

Keywords: ***Demographic changes, Total population, Rural population, Literacy rate, Scheduled Caste (SC), Scheduled Tribe (ST) and Urbanization trends***

1. INTRODUCTION:

Demographic analysis is a critical tool for understanding the socio-economic dynamics of a region. It provides valuable insights into population growth, literacy rates, and the distribution of various social groups, including Scheduled Castes (SC) and Scheduled Tribes (ST). These metrics are essential for planning and implementing effective policy interventions aimed at sustainable development. This study focuses on the demographic changes across various mandals over three decades (1991, 2001, and 2011) in a specific region, highlighting significant trends in total population, rural population, literacy rates, and the SC and ST populations.

2. STUDY AREA:

Andhra Pradesh boasts an extensive coastline characterized by two prominent delta systems formed by the Godavari and Krishna rivers, providing a significant potential for the aquaculture sector West Godavari district is bordered by the Bay of Bengal to the east and Krishna district to the south. The district's topography is characterized by fertile plains formed by the Godavari River and its tributaries. The landscape is relatively flat with occasional undulations, making it ideal for agriculture (Fig.1). Covering an expansive area of 2149.1 square kilometers, the district is positioned between 17° 00' and 16° 18' N latitudes and 81° 18' and 81° 52' E longitudes. Geographically, the district is bordered by EastGodavari District to the north and East, Krishna District, and the Bay of Bengal to the south, while the Vasishta Godavari River and Dr. B.R. Ambedkar Konaseema District delineate its eastern boundaries, respectively. The district boasts a 12.4-kilometer stretch of coastline in the south. As per the 2011 census, the population of West Godavari district was recorded at 8, 77,878. The climatic conditions prevailing in West Godavari district are characterized as semi-arid. This unique combination of geographical features and climatic conditions enhances the district's suitability for aquaculture activities, particularly in the context of shrimp farming.

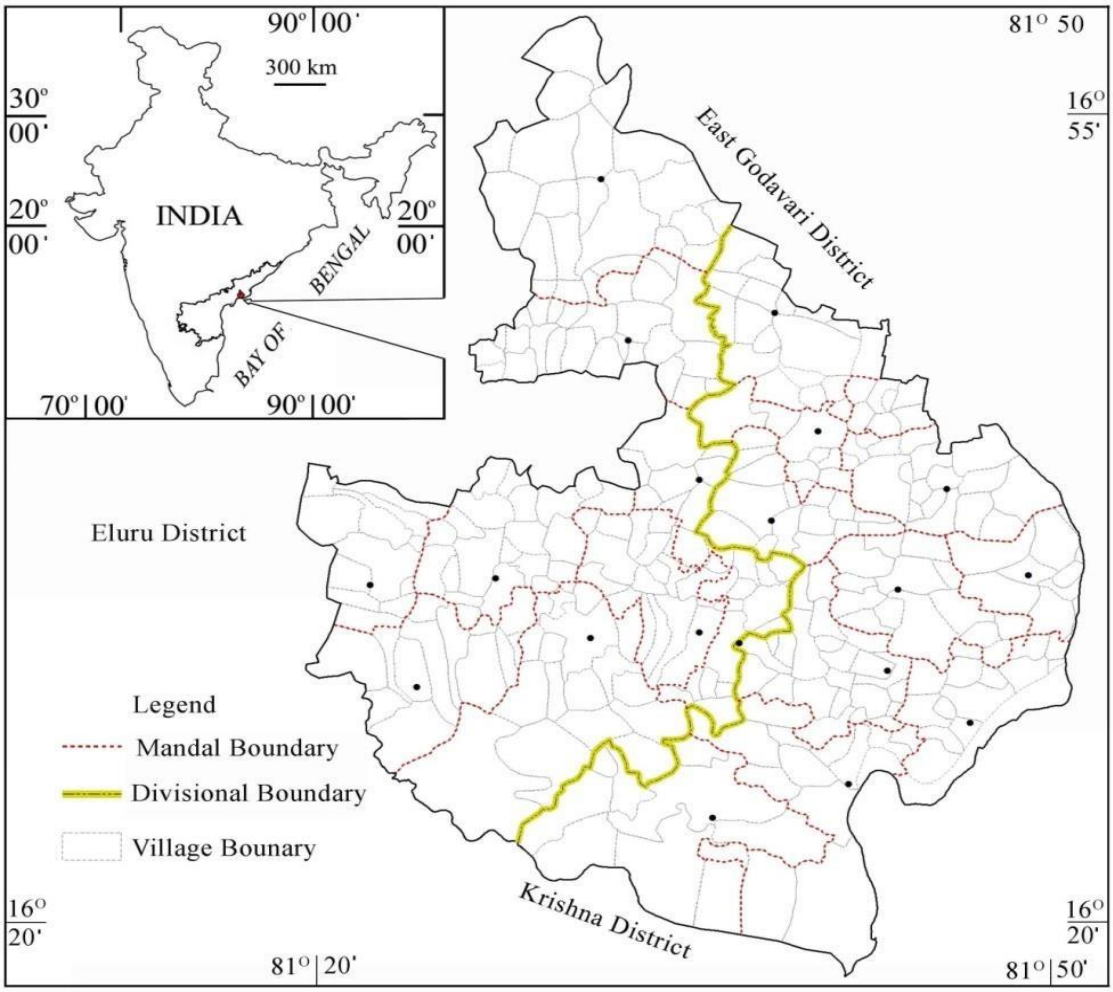

Fig.1. Location map of the study area.

3. OBJECTIVES OF THE STUDY AREA:

The primary objective of this study is to analyze the demographic changes across different mandals over three decades, focusing on:

- **Total Population Growth:** Assessing the changes in the total population in each Mandal from 1991 to 2011.
- **Rural Population Trends:** Evaluating the shifts in rural populations over the same period.
- **Literacy Rates:** Analyzing the changes in literacy rates to understand educational progress.
- **Scheduled Caste (SC) and Scheduled Tribe (ST) Populations:** Examining thedemographic trends among SC and ST populations to identify socio-economic shifts and potential areas for policy intervention.

4. METHODOLOGY:

The data for this study were sourced from census records for the years 1991, 2001, and 2011. The analysis focuses on several key metrics, including total population, rural population, literacy rates, and the populations of SC and ST groups. The trends observed in these metrics provide a comprehensive overview of the demographic changes in each Mandal.

5. KEY FINDINGS

POPULATION GROWTH:

The population data from 1991, 2001, and 2011 reveal significant growth across various mandals over the two decades. Overall, the region's population increased from 3,517,568 in 1991 to 3,936,966 in 2011, reflecting an overall growth of approximately 11.9%. This consistent upward trend underscores the region's expanding demographic landscape, with notable variations among individual mandals.

Chintalapudi, for instance, experienced a steady population growth from 76,359 in 1991 to 91,372 in 2011, marking an increase of 19.6%. Similarly, Lingapalem saw its population rise from 48,598 in 1991 to 58,360 in 2011, growing by 20.1%. T. Narasapuram showed a similarpattern with its population increasing from 45,427 in 1991 to 56,179 in 2011, a growth of 23.6%. These figures highlight the gradual population increments typical of rural areas, driven possibly by natural growth and internal migration.

In contrast, urban and semi-urban mandals exhibited more substantial growth. Jangareddigudem's population surged from 77,765 in 1991 to 109,814 in 2011, an impressive increase of 41.2%. Tadepalligudem also experienced significant growth, with its population rising from 162,326 in 1991 to 192,162 in 2011, a 18.4% increase. These trends likely reflect both natural population growth and rural-to-urban migration, as people moved towards urban centers for better employment and educational opportunities. Some mandals, such as Eluru and Bhimavaram, displayed substantial urban population growth. Eluru's population grew from 279,439 in 1991 to 319,405 in 2011, a growth of 14.3%. Bhimavaram saw its population increase from 195,580 in 1991 to 226,497 in 2011, reflecting a 15.8% growth. These urban centers likely benefited from improved infrastructure, better healthcare, and Economic opportunities, attracting people from surrounding rural areas.

However, not all mandals exhibited consistent growth. Tallapudi, for example, saw a slight decline in population from 54,477 in 2001 to 52,785 in 2011. Kovvur showed minimal growth, from 108,159 in 2001 to 108,445 in 2011. These variations could be attributed to local economic conditions, migration patterns, or even data recording anomalies. Gopalapuram and Koyyalagudem exhibited steady growth trends, with populations increasingfrom 54,557 to 62,597 and 62,096 to 75,694 respectively between 1991 and 2011. These mandals might have experienced improvements in local living conditions, contributing to sustained population growth.

On the other hand, some mandals such as Akividu experienced fluctuations. Akividu's population grew from 70,483 in 1991 to 74,766 in 2001 but then slightly declined to 73,889 in 2011. This fluctuation might indicate temporary migration trends or economic shifts impacting local demographics.

Overall, the region's demographic changes from 1991 to 2011 depict a complex interplay of growth and decline across different mandals. The total population growth reflects broader national trends of urbanization and rural development, while local variations underscore the importance of tailored policy interventions to address specific demographic and socio-economic challenges in each mandal (Figure.1).

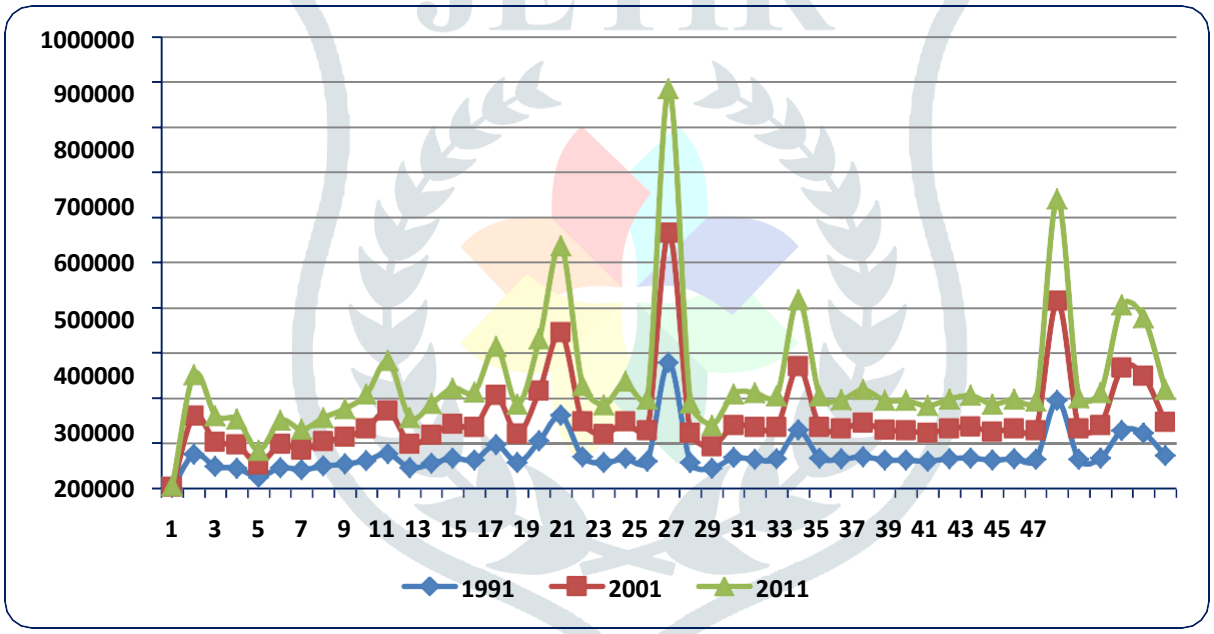

Figure: 1 Total Population Growth trend in the study area (1991-2011)

Rural Population: Over the two decades from 1991 to 2011, the rural population across various mandals displayed a general upward trend, reflecting broader patterns of population growth and rural settlement stability. The total rural population increased from 2,789,015 in 1991 to 3,128,189 in 2011, indicating an overall growth rate of approximately 12.15%. Several mandals experienced significant increases in their rural populations. For instance, Chintalapudi saw itsrural population grow from 76,359 in 1991 to 91,372 in 2011, reflecting steady growth. Similarly, Jangareddigudem experienced a substantial rise from 77,765 in 1991 to 109,814 in 2011, highlighting a strong

rural demographic expansion. This trend suggests that certain mandals may have had favorable conditions for rural livelihoods, such as agricultural opportunities, which sustained and attracted rural inhabitants.

Mandals like Koyyalagudem and Gopalapuram also saw notable increases, with Koyyalagudem's rural population rising from 62,096 in 1991 to 75,694 in 2011, and Gopalapuram's from 54,557 to 62,597 over the same period. These increases could be attributed to effective rural development programs, improved infrastructure, or other socio- economic factors that made these areas attractive for rural living. However, not all mandals experienced consistent growth. For example, Tallapudi's rural population peaked at 54,477 in 2001 before declining to 52,785 in 2011. Similarly, Ganapavaram showed a decrease from 66,656 in 2001 to 64,936 in 2011. Such declines might indicate challenges such as limited economic opportunities, outmigration to urban areas, or demographic shifts like lower birth rates or higher mortality rates.

Interestingly, some mandals showed fluctuating trends. Eluru, primarily an urban center, still maintained a significant rural population, which grew from 66,573 in 1991 to 70,096 in 2001,before slightly declining to 68,571 in 2011. This fluctuation might reflect the dynamic nature of peri-urban areas, where rural populations can be affected by urban expansion and changingland use patterns. The data also reveal specific instances where rural populations remained relatively stable over the two decades. For example, Nidamarru's rural population grew marginally from 44,768 in 1991 to 48,098 in 2001, but then slightly declined to 47,623 in 2011. This stability might indicate a balance between rural retention factors and pressures for urban migration.

Overall, the trends indicate a complex interplay of growth, stability, and decline across different mandals. The general increase in the rural population suggests sustained rural livelihoods and a preference for rural living in many areas. However, the instances of decline and fluctuation underscore the need for targeted rural development policies to address specific challenges and ensure balanced growth. These trends highlight the importance of understanding local conditions and dynamics to effectively plan and implement policies that support rural communities, while the total rural population in the region grew significantly over the two decades; the varying trends across mandals reflect diverse local conditions. This comprehensive analysis underscores the need for nuanced and region-specific policy interventions to support sustainable rural development and address the unique challenges faced by different mandals (Figure.2).

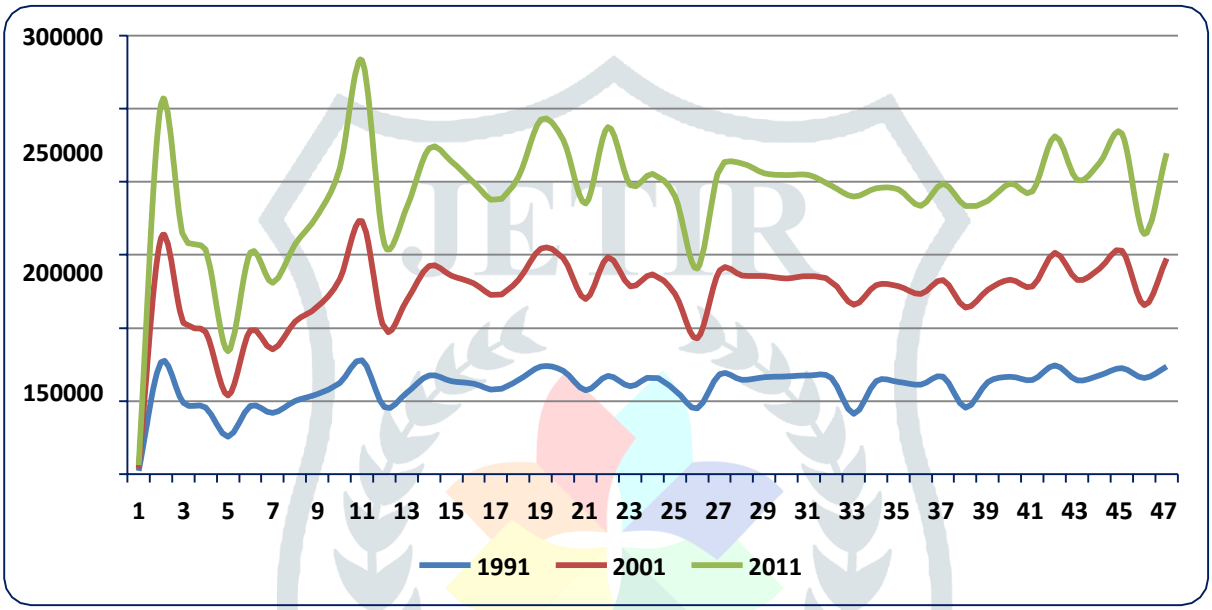

Figure: 2 Rural population trends in the study area.

Literacy Rates:

The literacy rate data across various mandals from 2001 to 2011 reveal mixed trends, with some areas showing marked improvements while others experienced declines. Overall, the literacy rate averaged around 71.43% in 2011, indicating both progress and challenges in achieving educational goals. Significant improvements were observed in certain mandals. For instance, Buttaigudem's literacy rate increased remarkably from 61.4% in 2001 to 71.51% in 2011, reflecting effective educational interventions. Eluru, a more urbanized Mandal, also saw its literacy rate rise from 78.3% to 80.23%, showcasing the positive impact of urban development on education.

Conversely, some mandals experienced declines in literacy rates. Notably, T. Narasapuram's literacy rate dropped from 64.5% in 2001 to 57.12% in 2011, indicating possible socio-economic challenges or deficiencies in educational infrastructure. Lingapalem also saw a decline from 68.5% to 65.41%, despite population growth, suggesting a need for targeted educational policies.

Urban centers generally maintained or improved their literacy rates. For example, Bhimavaram's literacy rate slightly increased from 72.3% to 74.01%, while Eluru, as mentioned earlier, showed a notable rise. However, not all urban areas followed this trend; Akividu experienced a significant drop from 78.9% in 2001 to 65.37% in 2011, highlighting disparities within urban populations.

Some mandals showed minor changes or remained relatively stable. Nidadavole's literacy rate remained almost constant, from 71.3% to 71.33%, indicating stagnation. Similarly, D. Tirumala saw a slight increase from 64.7% to 64.99%. The data suggest that while there havebeen significant strides in improving literacy rates in several mandals, there remain pockets of decline or stagnation that require focused attention. These trends underscore the need for continued and tailored educational policies to address specific local challenges and ensure more equitable educational development across the region (Figure.3).

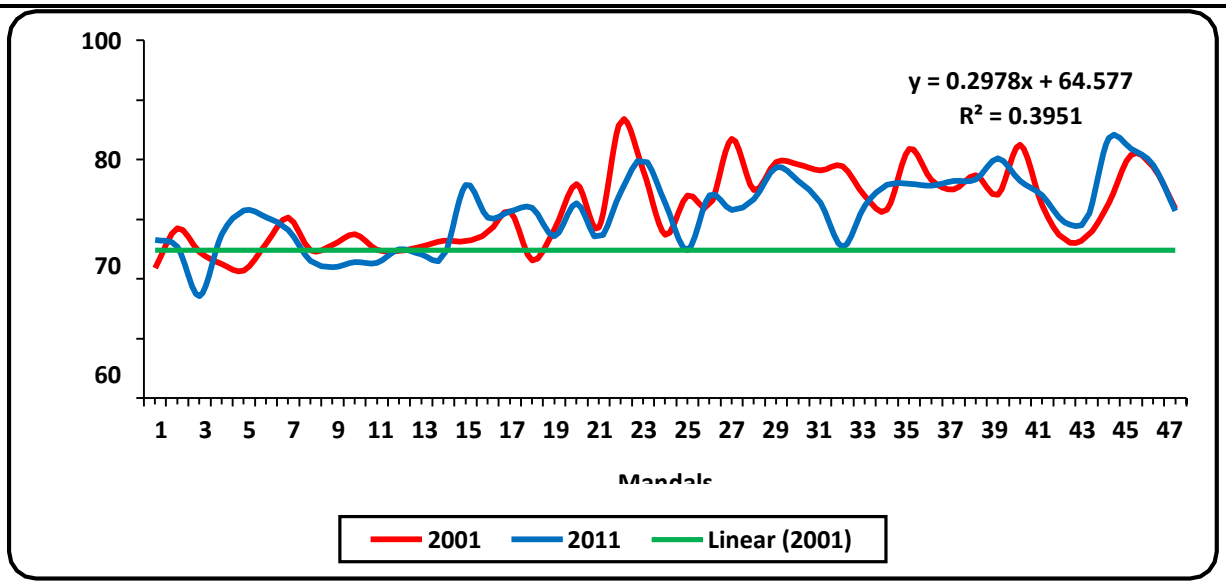

Figure 3. Literacy rate trend in West Godavari district

Scheduled Caste (SC) Population Trends

The Scheduled Caste (SC) population in the analyzed mandals has shown a significant increase from 2001 to 2011. The total SC population grew from 642,584 in 2001 to 811,698in 2011, indicating an overall upward trend. This growth is evident across most mandals. For example, Chintalapudi saw its SC population rise from 23,477 in 2001 to 28,952 in 2011, highlighting a substantial increase. Similarly, the SC population in Jangareddigudem surged from 20,131 to 25,259 during the same period. Urban centers like Eluru and Bhimavaram also reflected this growth. Eluru's SC population jumped dramatically from 13,134 in 2001 to44,153 in 2011. Bhimavaram saw its SC population increase from 6,637 to 23,397, indicatingsignificant urban migration or better enumeration practices. These trends suggest improvements in social mobility and possibly better access to resources and opportunities for SC communities in urban areas.

However, some mandals showed modest or even slight declines in their SC populations. For instance, Tallapudi experienced a minor decrease from 17,518 in 2001 to 16,951 in 2011. This anomaly could be due to migration patterns, demographic changes, or local socio-economic factors. Overall, the significant increase in the SC population across the region highlights on-going demographic shifts and underscores the need for targeted social and economic policies to support this community's continued growth and integration (Figure.3).

Scheduled Tribe (ST) Population Trends

The Scheduled Tribe (ST) population also exhibited a noteworthy increase from 2001 to 2011. The total ST population rose from 88,863 in 2001 to 109,072 in 2011. This growth is particularly significant in certain mandals. For instance, Buttaigudem saw a substantial increase in its ST population from 32,768 in 2001 to 34,247 in 2011, indicating a strong presence of ST communities in this Mandal. Polavaram similarly showed growth, with the STpopulation rising from 11,819 in 2001 to 12,112 in 2011. These increases may be attributedto higher birth rates, improved living conditions, or more accurate census practices.

Urban and semi-urban areas also reflected these trends. For example, the ST population in Eluru increased significantly from 459 in 2001 to 2,717 in 2011. Bhimavaram showed a rise from 456 to 2,022 during the same period. These increases highlight the urban migration of ST populations and the need for policies that address their specific needs in urban settings. Some mandals, however, exhibited only slight increases or remained relatively stable. Lingapalem's ST population, for example, grew marginally from 325 in 2001 to 329 in 2011, and Mogalturu saw an increase from 232 to 319. These trends suggest that while there is overall growth, certain areas may require focused development efforts to support their ST communities.

The data reflect a general upward trend in both SC and ST populations across the region between 2001 and 2011. These increases underscore the importance of inclusive development policies that cater to the specific needs of SC and ST communities, ensuring equitable access to resources and opportunities. The variations among different mandals also highlight the need for tailored interventions that address local socio-economic conditions and promote balanced regional development (Figure 4).

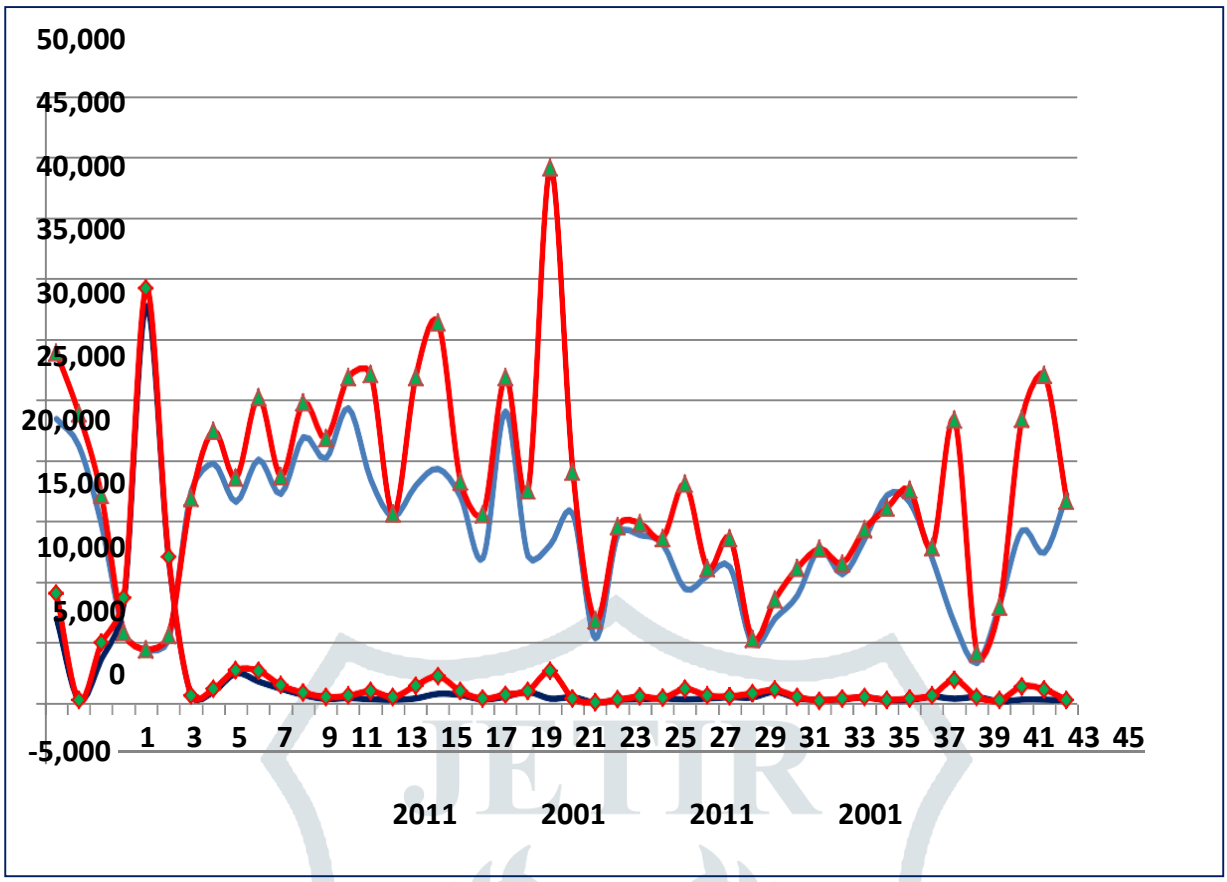

Figure: 4. Schedule Caste and Schedule tribe population trends in the study area.

6. SIGNIFICANCE OF THE STUDY:

Understanding these demographic trends is crucial for policymakers and development practitioners. The findings highlight areas where targeted interventions are needed, such as improving educational outreach in mandals with declining literacy rates and supporting rural development in predominantly rural areas. Moreover, the growth of SC and ST populations underscores the need for inclusive development policies that address the specific needs of these communities.

7. CONCLUSION:

The demographic analysis of West Godavari District over three decades (1991-2011) reveals significant trends in population growth, rural population dynamics, literacy rates, and the distribution of Scheduled Castes (SC) and Scheduled Tribes (ST). These trends provide valuable insights into the socio-economic evolution of the region and highlight the need for targeted policy interventions to address specific challenges and promote sustainable development.

The district's total population increased from 3,517,568 in 1991 to 3,936,966 in 2011, reflecting an overall growth of 11.9%. This growth was uneven across different mandals, with urban and semi-urban areas such as Jangareddigudem and Tadepalligudem experiencingmore substantial increases compared to rural areas. Urban centers like Eluru and Bhimavaramalso saw significant population growth, driven by improved infrastructure, healthcare, and economic opportunities. However, some mandals, such as Tallapudi and Kovvur, exhibited minimal or even declining growth, underscoring the need for tailored local economic and developmental policies.

The rural population displayed a general upward trend, growing from 2,789,015 in 1991 to 3,128,189 in 2011. Mandals like Chintalapudi and Jangareddigudem saw significant increases, indicating stable rural settlements and favorable conditions for rural livelihoods. Conversely, some mandals such as Tallapudi and Ganapavaram experienced declines, suggesting challenges such as limited economic opportunities or outmigration. These trends highlight the importance of sustaining rural development programs and improving infrastructure to retain rural populations.

Literacy rates across the district showed mixed trends. While some mandals like Buttaigudemand Eluru saw marked improvements, others like T. Narasapuram and Lingapalem experienced declines. The average literacy rate was 71.43% in 2011, indicating progress but also revealing areas that require focused educational interventions. Urban centers generally maintained or improved their literacy rates, reflecting the benefits of urbanization on educational access.

The SC population grew from 642,584 in 2001 to 811,698 in 2011, with notable increases in both urban and rural areas. This growth suggests improvements in social mobility and access to resources for SC communities. Similarly, the ST population increased from 88,863 in 2001to 109,072 in 2011, particularly in mandals like Buttaigudem and Polavaram. The data indicate ongoing demographic shifts and highlight the need for inclusive policies that support the socio-economic advancement of SC and ST communities.

Overall, the demographic changes in West Godavari District from 1991 to 2011 depict a complex interplay of growth and decline across different mandals. The total population growth reflects broader national trends of urbanization and rural development, while local variations underscore the importance of tailored policy interventions to address specific demographic and socio-economic challenges. This comprehensive analysis emphasizes the need for nuanced and region-specific strategies to ensure balanced and sustainable development across the district.

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