



SPATIO-TEMPORAL ANALYSIS OF LITERACY RATE IN HARYANA: CENSUS EVIDENCE

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Abstract

This study conducts a comprehensive spatio-temporal analysis of literacy rates in Haryana, India, utilizing census data spanning multiple years. Employing a combination of spatial and temporal analytical techniques, the research aims to understand the dynamics of literacy across districts/sub-districts over time. Spatial analysis techniques, including mapping and spatial autocorrelation, reveal spatial patterns and clustering of literacy rates. By integrating spatial and temporal dimensions, this research provides valuable insights into the evolution of literacy levels in Haryana and offers implications for policy-making and intervention strategies aimed at enhancing educational outcomes in the region. This research aims to investigate the literacy rate in the state of Haryana. The report uses the sex-specific literacy rates from the 2001 and 2011 censuses for each Haryana district. This essay states that, according to the 2011 census, the literacy rate in Haryana grew to 76.6 percent; the district of Gurgaon had the highest rate (84.4 percent), while the district of Mewat had the lowest (56.1 percent). The percentage of men and women who are literate is improving.

Keywords: Spatio-temporal, Literacy rate, Gender gap, Haryana

Introduction

Women who receive education will eventually educate their families, communities, and the entire globe (Pt. Jawaharlal Nehru). The capacity to write and read is what "literacy" literally implies. The UNESCO (2002) defines literacy as "the ability to recognise, comprehend, interpret, produce, communicate, compute, and use printed and written resources connected with diverse settings." In order to help people reach their objectives, expand their knowledge and potential, and engage fully in their local and global communities, literacy entails a continuum of learning (UNESCO, 2002).

The gender gap in literacy created by the minimum literacy requirement for females prevents both individual and societal socioeconomic situations from improving. One important ability and indicator of a population's level of education is literacy. This subject page covers both current literacy advancements and historical tendencies (Roser & Ortiz-Ospina, 2016). A continual, multifaceted measure of written language skill is called literacy. This essay examines a number of recent works on literacy and offers some insightful theoretical questions on consumer behaviour that are motivated by a sociocultural understanding of literacy. The connections between literacy and the following six distinct research programmes on consumer behaviour are emphasised in particular: the impact of the internet



on consumer behaviour; responses to persuasion; affect and decision making; the meanings of products and brands; social marketing of health behaviours; and consumption, identity, and resistance. Furthermore, intriguing and unsettling concerns regarding how consumption affects literacy are brought up in an effort to stimulate more study in this area (Wallendorf, 2001).

There is a strong connection between development and literacy. Communities and individuals alike gain from literacy. It has a profound impact on individuals, groups, and the social structure as a whole and is essential to socioeconomic advancement. When the word "literacy" was first used, it just meant being able to read and write (Census of India, 2011). The percentage of persons who can read and write is known as the literacy rate. The percentage of the labour force that is jobless yet actively looking for work and eager to work is known as the unemployment rate (Rahman, 2013).

A lack of proficiency in reading, writing, and numeracy is referred to as illiteracy. There are several rivals for an illiterate individual, such as disease, starvation, chaos, and disgrace (Thengal, 2013). The capacity to recognise, comprehend, interpret, produce, communicate, and calculate with printed and written materials in a variety of circumstances is known as literacy. In order to help people reach their objectives, maximise their knowledge and potential, and engage fully in their local community and larger society, literacy entails a continuum of learning (UNESCO, 2004; 2017).

The dubious distinction of having one of the highest percentages of adult illiteracy in the world belongs to India. In India, 73% of people are literate overall, according to the 2011 Census. However, dissecting the national average shows that, whereas women's literacy is 64.6%, men's is 80.9 percent. This indicates that over 25% of the nation's population still lacks literacy (Katiyar, 2016).

Furthermore, of that percentage, more than one-third of girls and almost one-fifth of males are illiterate. It is quite concerning that female literacy is growing at a slower rate than male literacy. There are still a lot of illiterate women in society, which is concerning for any development initiatives despite the numerous national and international efforts. Because it multiplies the impact on a nation's social progress, female literacy is crucial. The progress of a person, a society, and a nation is impeded by illiteracy. One important factor in lowering gender disparity is literacy. The article's goal is to map, analyse, and estimate future levels of female literacy throughout India's states and union territories (UTs) in relation to gender disparities in literacy.

Study Area

Haryana is situated in the northwestern part of India, bordered by Punjab and Himachal Pradesh to the north, Rajasthan to the west and south, and Uttar Pradesh and Uttarakhand to the east. It covers an area of approximately 44,212km², making it one of the smaller states in India in terms of land area. The capital city of Haryana is Chandigarh, which is a union territory and serves as the shared capital of Haryana and Punjab. Other major cities in Haryana include Faridabad, Gurgaon (now Gurugram), Rohtak, Hisar, Karnal, and Ambala. Haryana has a diverse population comprising various ethnic groups and communities. The majority of the population consists of Hindus, followed by sizable communities of Sikhs and Muslims. Haryanvi is the predominant language spoken in the state, although Hindi and



Punjabi are also widely spoken. Haryana boasts a robust and diversified economy, with agriculture, industry, and services sectors contributing significantly to its GDP. The state is known for its fertile agricultural land, producing crops such as wheat, rice, sugarcane, and cotton. Haryana is also a hub for industries, particularly automobile manufacturing, IT and ITES, pharmaceuticals, textiles, and food processing. The cities of Gurgaon and Faridabad are major centers for corporate offices, multinational companies, and business process outsourcing (BPO) firms. Haryana has made significant strides in improving educational infrastructure and literacy rates. The state government has implemented various initiatives to promote education at all levels. Literacy rates in Haryana have been steadily increasing, with a focus on female education and empowerment. Haryana has a rich cultural heritage, with traditions deeply rooted in its rural agrarian lifestyle. The state is known for its vibrant folk music and dance forms such as Ragini, Ras Leela, and Holi dances.

Database & Methodology

The present paper examines the variations in the literacy rate between districts in the state of Haryana. An effort has been made to research Haryana's census-derived demographic data, the state's male-to-female literacy rate, and the variations in literacy rates throughout its districts. The population of Haryana has been studied using data from the 2001 and 2011 censuses. Data for 21 districts in the state of Haryana have been collected in order to examine the rates of male and female literacy generally. The following resources were consulted in order to gather information: the Government of India's 2001 and 2011 Census reports; the Economic Survey of India; the United Nations Human Development Report of 2000, 2011; the Primary Census Abstract; the Census of India; and the Statistical Abstract of Haryana (various issues). ArcGIS was used to create the theme maps, and MS Excel was used to compile and tabulate the data.

Result & Discussion

The table 1 presents the literacy rates for various districts within the state of Haryana, as recorded during the 2001 census. Literacy rates reflect the percentage of individuals aged seven years and above who are literate, meaning they can read and write with understanding in any language. Ambala district had the highest literacy rate at 76.2%, indicating a relatively high level of educational attainment among its population. Conversely, Fatehabad district exhibited the lowest literacy rate at 58.2%, suggesting lower access to education or educational attainment levels compared to other districts. Notably, the capital region, including districts such as Faridabad and Gurgaon, displayed moderate literacy rates, with Faridabad recording a rate of 70.8% and Gurgaon at 63.6%. Districts like Panchkula, with a literacy rate of 76.54%, and Rewari, with a rate of 75.8%, demonstrated relatively high literacy rates comparable to Ambala. Overall, the table provides valuable insights into the educational landscape of Haryana, highlighting variations in literacy rates across its districts and serving as a basis for further analysis and policy interventions aimed at promoting literacy and education throughout the state (Table 1).

Ambala, Bhiwani, Faridabad, and Fatehabad have high male literacy rates, with Ambala having 83%, Bhiwani at 81.2%, Faridabad at 82.5%, and Fatehabad at 68.7%, indicating high literacy levels and access to education. Gurgaon, Haryana's major urban center, has a male literacy rate of 77.1%, while Mahendragarh district has the highest at 85.3%. However, Fatehabad and Sirsa have lower rates, suggesting potential educational interventions. Male

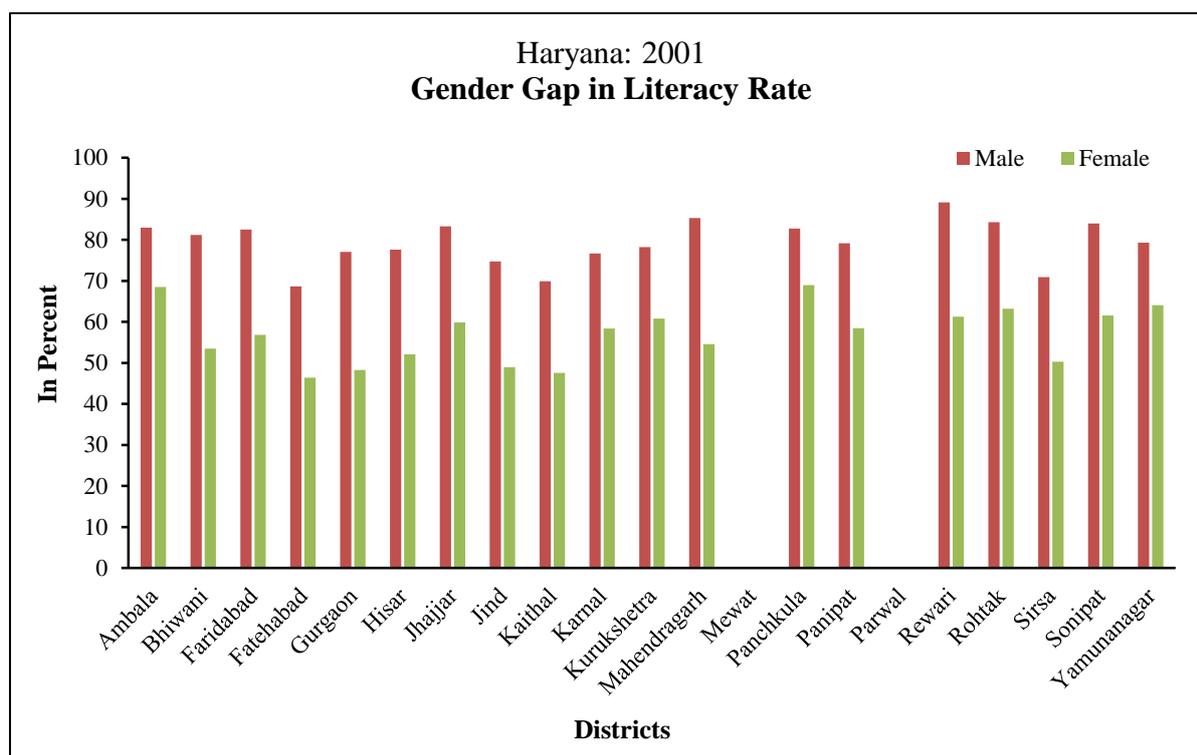
literacy rates in Haryana vary across districts, with the state average being 78.5%. Data for Mewat and Parwal is missing, emphasizing the need for targeted efforts (Map 1).

Table 1: Trend and Pattern of Literacy Rate in Haryana, 2001-2011

Sr. No.	Districts	2001			2011		
		Total	Male	Female	Total	Male	Female
1.	Ambala	76.2	83.0	68.5	82.9	88.5	76.6
2.	Bhiwani	68.2	81.2	53.5	76.7	87.4	64.8
3.	Faridabad	70.8	82.5	56.8	83.0	89.9	75.2
4.	Fatehabad	58.2	68.7	46.4	69.1	78.1	59.3
5.	Gurgaon	63.6	77.1	48.3	84.4	90.3	77.6
6.	Hisar	65.9	77.6	52.1	73.2	82.8	62.3
7.	Jhajjar	72.5	83.3	59.9	80.8	89.4	71.0
8.	Jind	62.8	74.7	49.0	72.7	82.5	61.6
9.	Kaithal	59.5	69.9	47.6	70.6	79.3	60.7
10.	Karnal	68.2	76.7	58.4	76.4	83.7	68.3
11.	Kurukshetra	70.0	78.2	60.8	76.7	83.5	69.2
12.	Mahendragarh	70.4	85.3	54.6	78.9	91.3	65.3
13.	Mewat	NA	NA	NA	56.1	73.0	37.6
14.	Panchkula	76.54	82.74	68.98	83.4	88.6	77.5
15.	Panipat	69.8	79.2	58.5	77.5	85.4	68.2
16.	Parwal	NA	NA	NA	70.3	82.6	56.4
17.	Rewari	75.8	89.1	61.3	82.2	92.9	70.5
18.	Rohtak	74.6	84.3	63.2	80.4	88.4	71.2
19.	Sirsa	61.2	70.9	50.3	70.4	78.6	61.2
20.	Sonipat	73.7	84.0	61.6	80.8	89.4	70.9
21.	Yamunanagar	72.2	79.3	64.1	78.9	85.1	72.0
Haryana		67.9	78.5	55.7	76.6	85.4	66.8

Source: Census of India, 2001 & 2011, Note: Data not available (NA).

Ambala district has a female literacy rate of 68.5%, while Bhiwani and Faridabad have lower rates of 53.5% and 56.8% respectively, indicating potential educational disparities in education for females. Fatehabad, Gurgaon, and Mahendragarh districts all have low female literacy rates, indicating challenges in providing education. Improvements are needed in Gurgaon and Mahendragarh to improve female literacy. Districts Bhiwani and Sirsa have lower female literacy rates, indicating need for targeted efforts. Haryana's female literacy rates range from 46.4% to 68.98%, with the state average at 55.7%, requiring focused to gender disparities.

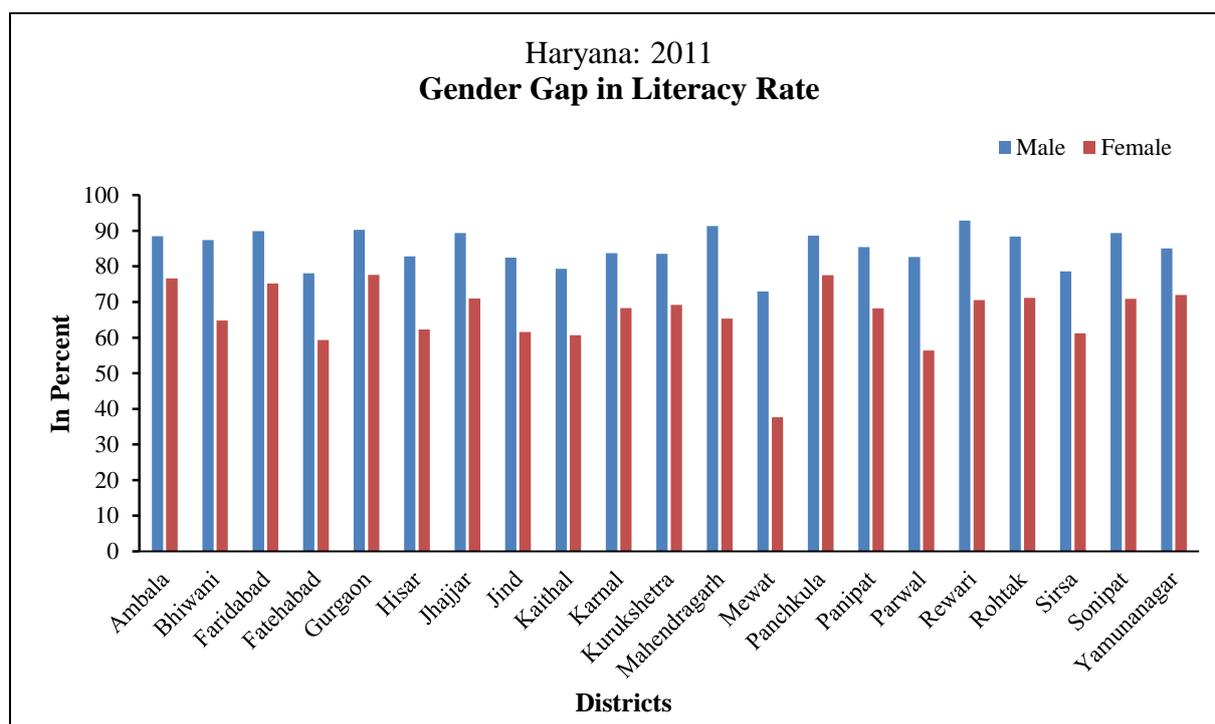


Source: Based on the table 1.

Fig. 1

In 2011, Haryana exhibited varying levels of total literacy rates across its districts, with Ambala leading at 82.9%, indicating significant strides in educational attainment. Major urban centers like Faridabad and Gurgaon showcased notably high literacy rates of 83% and 84.4%, respectively, reflecting robust educational infrastructures and access to literacy programs. However, districts such as Fatehabad and Mewat reported lower literacy rates at 69.1% and 56.1%, respectively, pointing towards persistent challenges in providing educational opportunities and promoting literacy in certain regions. Overall, Haryana recorded a total literacy rate of 76.6%, suggesting overall progress in enhancing educational outcomes across the state, although targeted efforts remain essential to address disparities and further improve literacy levels, particularly in underserved areas (Table 1).

2011 saw notable improvements in the male literacy rates across the districts of Haryana, with high levels of educational attainment reported in a number of the areas. With male literacy rates of 88.5 percent, 89.9 percent, and 90.3 percent, respectively, Ambala, Faridabad, and Gurgaon emerged as leaders. These results are indicative of strong educational infrastructures and accessibility to literacy programmes, particularly in metropolitan regions. Districts such as Fatehabad and Mewat, on the other hand, recorded much lower male literacy rates at 78.1 percent and 73 percent, respectively. This suggests that there are still issues with encouraging literacy and offering educational opportunities in some places, particularly rural ones.

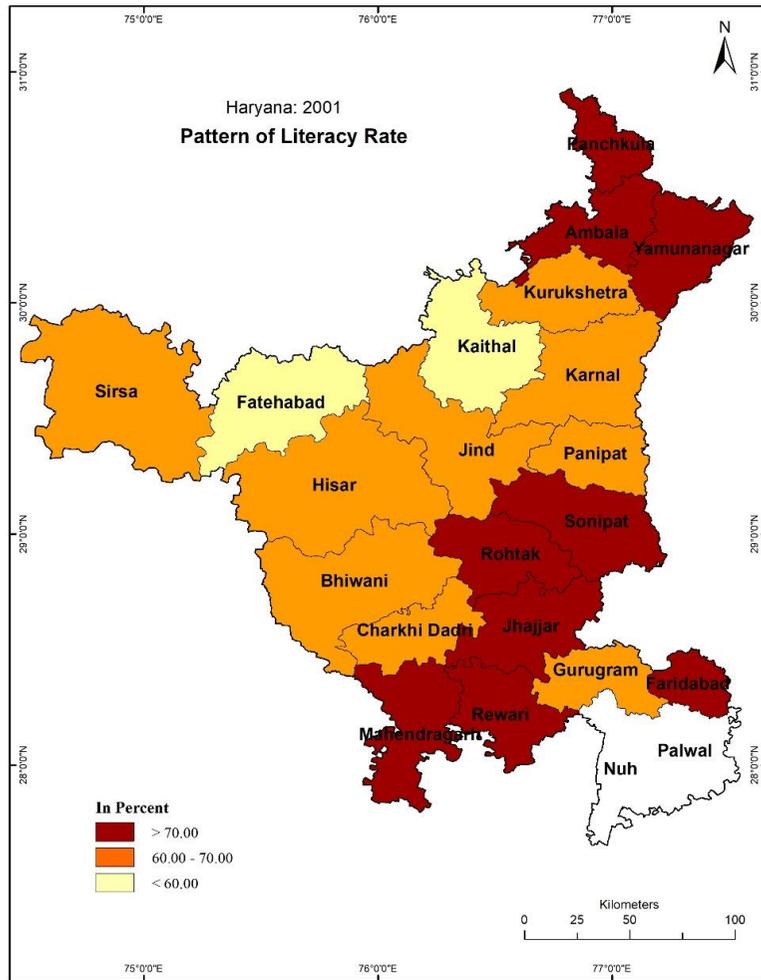


Source: Based on the table 1

Fig. 2

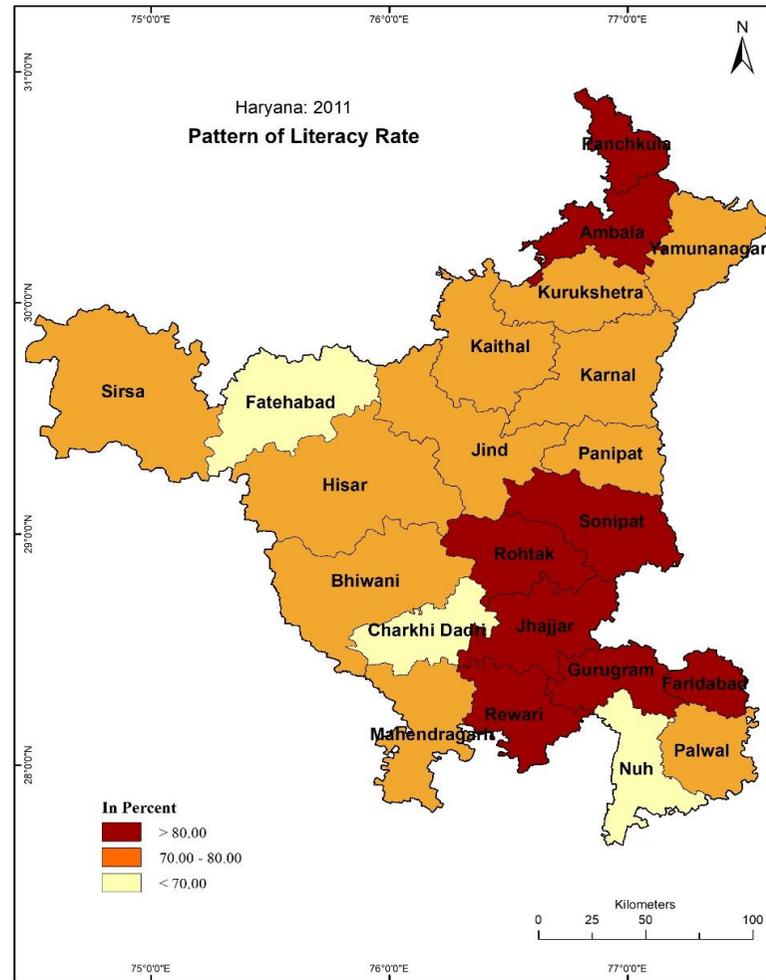
Haryana's average male literacy rate was 85.4 percent overall, showing notable progress in improving male educational outcomes throughout the state. However, focused interventions are necessary to address remaining disparities and raise male literacy rates even further, especially in underprivileged areas.

In 2011, Haryana exhibited varied levels of female literacy rates across its districts, reflecting ongoing efforts to enhance educational opportunities for women. Ambala, Faridabad, and Gurgaon emerged as leaders with female literacy rates of 76.6%, 75.2%, and 77.6% respectively, showcasing relatively higher levels of educational attainment, particularly in urban centers. However, districts like Fatehabad and Mewat reported notably lower female literacy rates at 59.3% and 37.6% respectively, highlighting persistent challenges in providing educational opportunities and promoting literacy among women, especially in rural areas. Overall, Haryana recorded an average female literacy rate of 66.8%, indicating progress in improving female educational outcomes across the state, though concerted efforts are necessary to address remaining disparities and further enhance female literacy levels, particularly in marginalized communities (Map 2).



Source: Census of India, 2001

Map 1



Source: Census of India, 2011

Map 2



Conclusion

The data from various census years, including 2001, 2011, presents a comprehensive overview of the literacy landscape across different districts of Haryana, India. Over the years, there has been observable progress in literacy rates, reflecting concerted efforts in promoting education and enhancing access to learning opportunities. Ambala, Faridabad, and Gurgaon consistently emerged as regions with relatively higher literacy rates, indicative of robust educational infrastructures and urban development. However, challenges persist, particularly in districts like Fatehabad and Mewat, where literacy rates, especially for females, remain significantly lower, underscoring the need for targeted interventions to address socio-economic disparities and promote inclusive education. Overall, while Haryana has made commendable strides in advancing literacy levels, sustained efforts are imperative to ensure equitable access to education and further enhance literacy rates, particularly among marginalized communities and in rural areas, thereby fostering comprehensive socio-economic development throughout the state. The presence of adequate educational institutions, including schools, colleges, and vocational training centers, plays a crucial role in facilitating literacy. Regions with well-developed educational infrastructure tend to have higher literacy rates as they provide better access to formal education. Socio-economic factors such as income levels, employment opportunities, and standard of living can influence literacy rates. Higher socio-economic status is often associated with better access to education and higher literacy rates. Gender disparities in access to education and societal norms regarding gender roles can significantly impact female literacy rates. Regions with greater gender equality and initiatives aimed at promoting female education tend to have higher overall literacy rates.

Recommendation for further study

- Conduct a longitudinal study to track changes in literacy rates over time and identify trends, patterns, and factors influencing these changes.
- Complement quantitative data analysis with qualitative research methods such as interviews, focus groups, and case studies to gain insights into the lived experiences, perceptions, and barriers faced by individuals and communities in accessing education and improving literacy levels.
- Explore gender disparities in literacy rates in greater depth, examining factors contributing to differential literacy outcomes for males and females. Investigate the effectiveness of gender-specific educational interventions and policies aimed at promoting female literacy and empowerment.
- Study regional disparities in literacy rates within Haryana, identifying areas with particularly low literacy levels and understanding the unique challenges and opportunities for educational development in these regions.
- Assess the impact of technology, including access to the internet, digital literacy programs, and e-learning initiatives, on improving literacy rates, especially in rural and marginalized communities.
- Explore the role of community engagement, local governance structures, and civil society organizations in promoting literacy and education at the grassroots level. Investigate



successful community-led initiatives and best practices for enhancing educational outcomes through community participation.

- Evaluate the effectiveness of past and existing education policies, programs, and interventions in Haryana, identifying strengths, weaknesses, and areas for improvement.

Conduct comparative studies with other states or regions in India or internationally to benchmark literacy rates, educational policies, and best practices. Identify lessons learned and transferable strategies for improving literacy outcomes in Haryana.

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