

## **Trend of literacy rate in Haryana and its differentials: A district level analysis (1971-2011)**

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### **Abstract**

Present paper analyses the trend of literacy in Haryana over a period of forty years from 1971 to 2011. Focus of the paper remains to assess the decadal growth, gender disparity, and rural differentials at district level. This paper is based on secondary data, which is processed with some statistical techniques like Compound Annual Growth Rate (CAGR), Rural Differential Index (URDI), Sopher's Index, Correlation Coefficient and Co-efficient of Variation (C.V.). Processed data has been displayed by suitable diagrams/ tables/ choropleth maps formed with the help of Microsoft Excel/ SPSS/ ArcGIS 9.1. There is high growth rate in the literacy of Haryana as it increase more than three times in 2011 after the existence of Haryana in 1966. The adjoining districts of national capital Delhi and state capital Chandigarh shows significance growth rate in literacy, where as the Mewat region in the south and agricultural dominated districts of north and north-west indicates low literacy with high gender disparity.

### **Introduction**

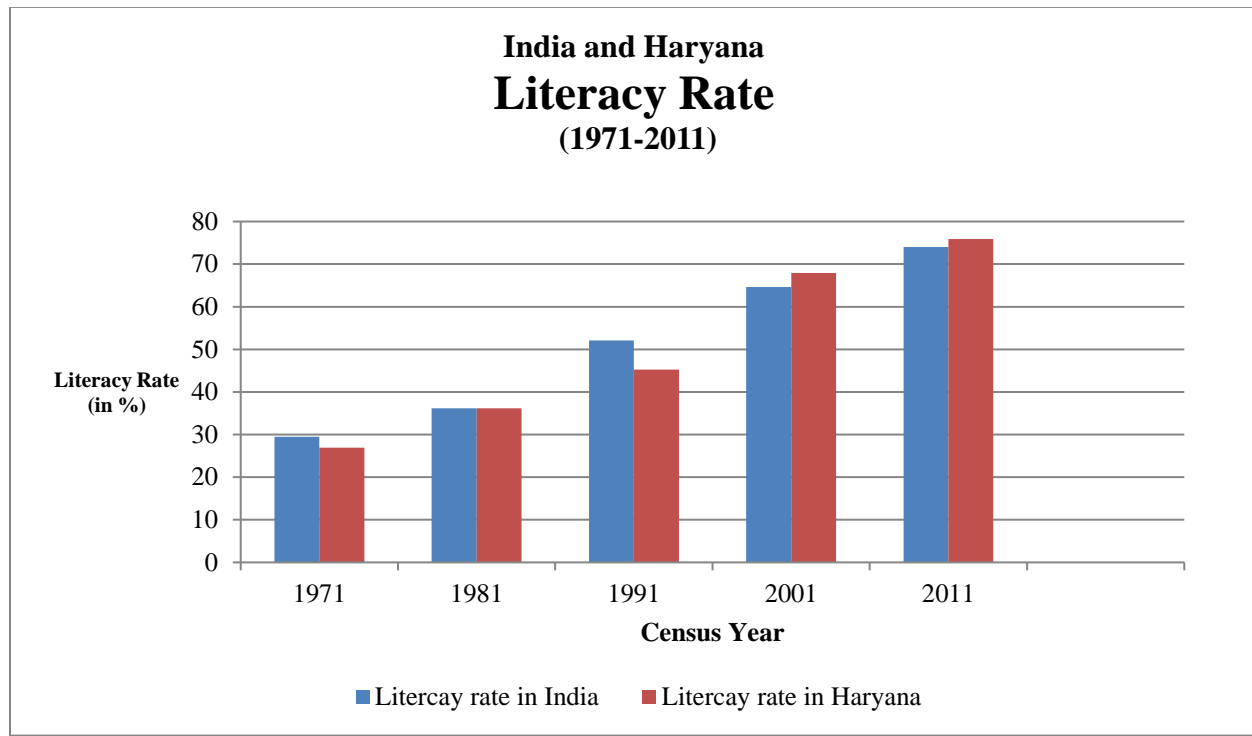
India is one of the developing countries which are having historical trend of low levels literate rates. In spite of the India's remarkable performance in terms of the child schooling (i.e. school attendance rate) especially since 1990s, its performance in literacy rate is relatively poor. (Venkatanarayana, 2013)

After the independence, Indian government has changed the state-boundary of many states and established some small states for regional development. In this series Haryana came in existence on November 1<sup>st</sup> 1966 on linguistic basis from former East Punjab state. Presently, the state has 1.4 percent population and one of the develop state of country heaving fifth highest per capita income at ₹251575, which is more than double the national average. Literacy plays an important role for the overall development of any society or region.

Literacy has been conceptualized traditionally as having a major role in developing a nation. Literacy helps to spread awareness among the people of their rights. People with good literacy skills enjoy a higher standard of living, have better opportunities of finding jobs, and are able to continue to learn new skills that will help them in the workplace. A nation with high literacy rate is more likely to attract a large pool of investors and entrepreneurs as well as the inflow of money which in turn have a great impact on the nation's economy. A society's economic prosperity and literacy have great influence on each other as they jointly grow together. (Yeoh and Chu, 2012)

In Haryana literacy rate was just 26.8 percent in 1971, which was approximately 3 percent less than national average and in 2011 the literacy rate of the state was recorded 75.9 percent, which was approximately 3 percent more than national average. But still gender and rural-urban differentials exists in literacy though the government policies, social awareness and trend of literacy indicate that state may be fill such gaps in next two decades.

Diagram-1



### Study Area

Haryana is situated in the northern part of the country and has national capital Delhi as its neighbor in company with Uttar Pradesh, Rajasthan, Punjab, and Himachal Pradesh in East, South, West, and North respectively. The state is extending over an area of about 44000sq. km. and the population density is 573 persons per sq km. The state comprises of 21 districts in 2011. Hindi is major language and Haryanvi is famous dialect of state. Hindu is a major religion of the state and about 87.46 percent population belongs to Hindu religion, about 7.03 percent are Muslims, which lives in the southern part mainly in Mewat region of the state and 4.91 percent population are Sikhs, who lives in the adjoining districts of Punjab state. The state has agrarian economy and more than 65 percent population lives in rural areas. Low sex ratio is a major social problem of the state which is 879 per thousand male.

## OBJECTIVE

The specific objectives to the study are –

- 1) Assessing district wise trends of literacy rate in the state of Haryana
- 2) Identification of level of disparity in male-female and rural-urban literacy rate
- 3) Find out the relationship of total literacy rate with male-female literacy rate and rural-urban literacy rate

## Data Sources

The present study is primarily based on secondary data. The relevant data is taken from the census publications of Haryana state from five consecutive census reports 1971, 1981, 1991, 2001, and 2011 'Primary Census Abstract (PCA) of Haryana.

## Methodology

In present study, the districts have been taken as the component spatial unit of the study area to assess and compare the trend of literacy rate. There were seven districts in Haryana in 1971, which has increased to 21 in 2011. So, the district wise data of literacy rate for 1971, 1981, 1991, and 2001 has been converted as per the districts of 2011 to make it comparable. Five aspects of literacy rate- total literacy rate, male literacy rate, female literacy rate, urban literacy rate, and rural literacy rate have been worked out from 1971 to 2011.

Compound Annual Growth Rate (CAGR) has been calculated with the help of following formula to assess and compare the changes in the growth rate of literacy at district level.

$$CAGR = \left( \frac{V(t_n)}{V(t_o)} \right)^{\frac{1}{(t_n - t_o)}} - 1$$

$V(t_n)$ - value in the initial period

$V(t_o)$ - value in the final period

$t_n - t_o$ - number of years

Rurban differential index has been calculated with the help of following formula-

$$URDI = (ULR - RLR) / TLR$$

URDI= Rurban differential Index,

ULR= Urban Literacy Rate

RLR= Rural Literacy Rate.

Sopher's index is applied to assess and compare the gender disparity in literacy rate in both rural and urban area at district level.

$$DI = \text{Log} \left( \frac{X_2}{X_1} \right) + \text{Log} \left( \frac{100 - X_1}{100 - X_2} \right)$$

DI- Disparity Index

X<sub>1</sub>- Female literacy rate of 'n<sup>th</sup>' year

X<sub>2</sub>- Male literacy rate of 'n<sup>th</sup>' year

Correlation Coefficient has been measured between the total literacy rate and other aspects of literacy with the help of Pearson's Correlation Coefficient-

$$r = \frac{\sum_{i=1}^n [(x_i - \bar{x})(y_i - \bar{y})]}{\sqrt{\sum_{i=1}^n (x_i - \bar{x})^2 \sum_{i=1}^n (y_i - \bar{y})^2}}$$

r- Pearson's Correlation Coefficient

$\bar{x}$ - Mean of x variable

$\bar{y}$ - Mean of y variable

Coefficient of Variability has been calculated to compare the degree of variation from one data series to another with the help of following formula-

$$CV = \frac{\sigma}{\mu}$$

CV- Coefficient of Variability

$\sigma$ - Standard Deviation

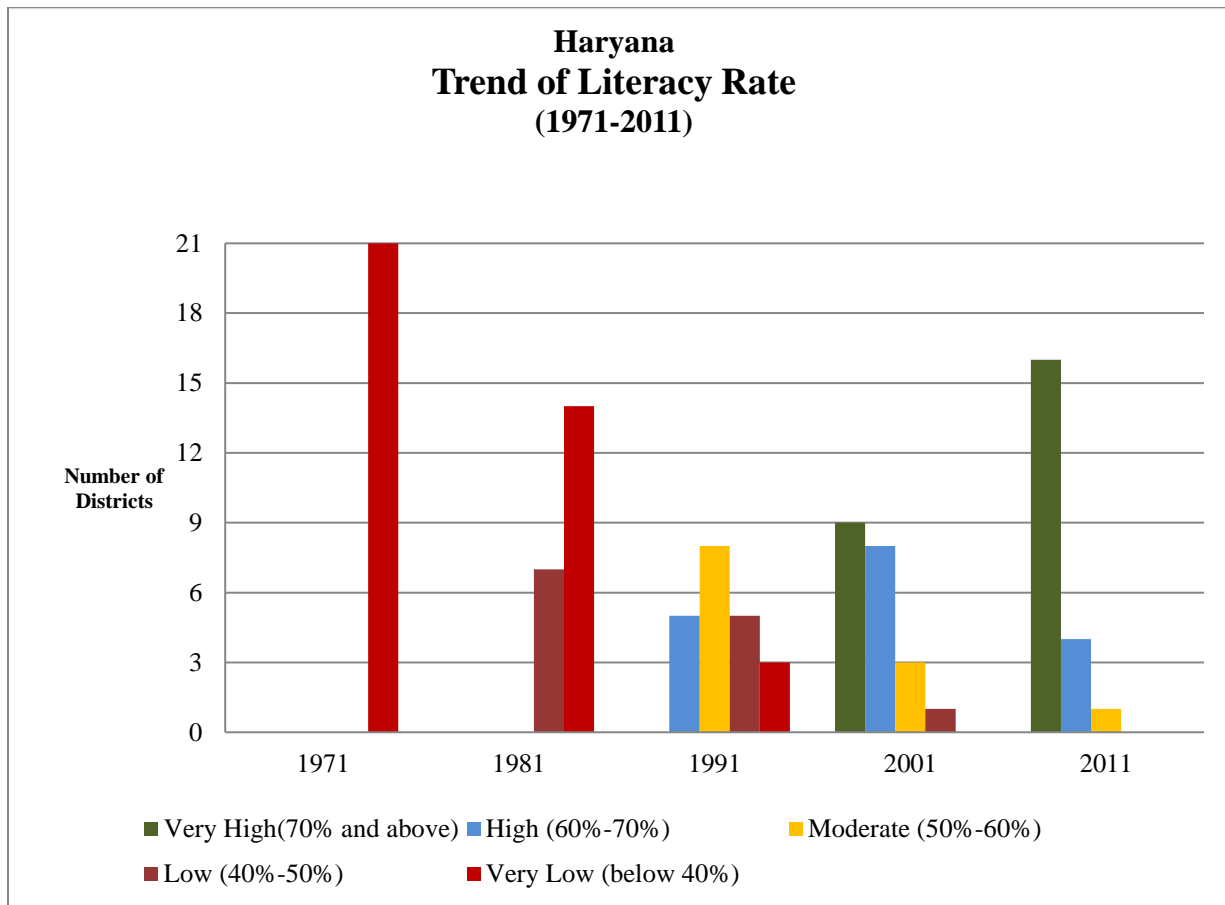
$\mu$ - Mean

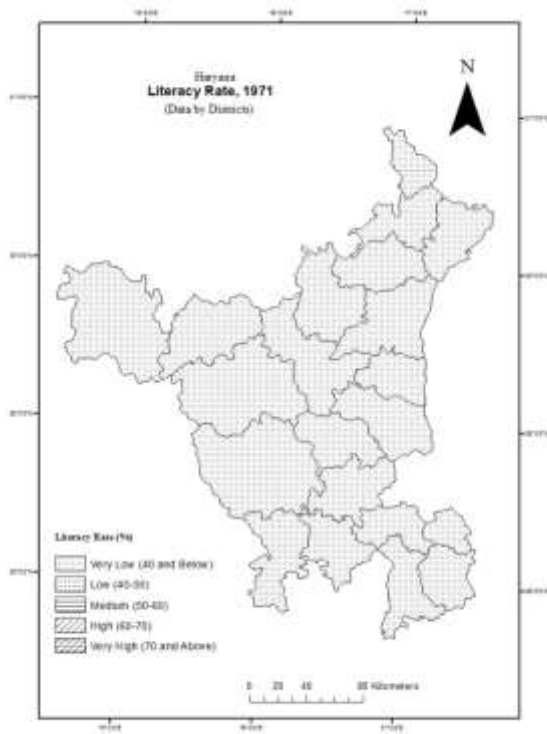
## **Discussion**

### **Growth in Literacy-**

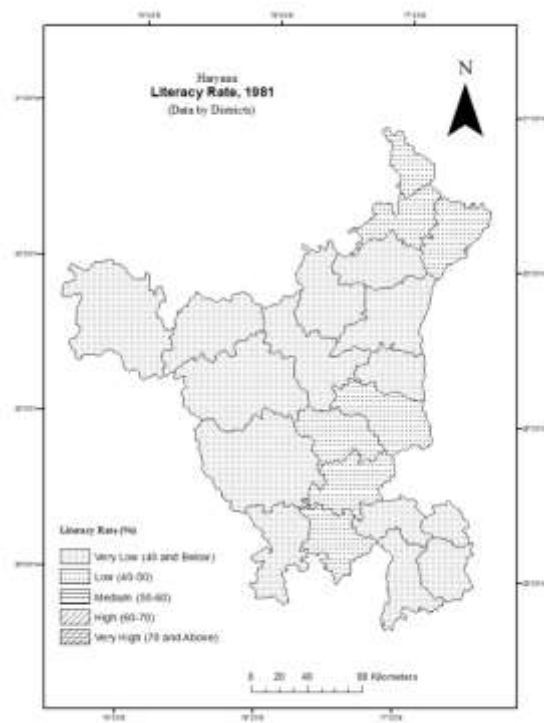
Presently, literacy rate in Haryana is more than national average, but it was just 26.89 percent in 1971. In 1971 all twenty-one districts of the state had a literacy rate of less than 40 percent and the highest literacy rate was in Panchkula district (36.5%) while the lowest was recorded in Mewat district (14.89%). After this the literacy rate improved significantly and in 1981 fourteen districts, in 1991 just three districts (viz. Mewat, Palwal and Fatehabad) had less than 40 percent literacy rate whereas in 2001 all districts were more than 40 percent literacy rate and 2011 all districts had 50 percent literate population. From 1971 to 1991 all districts had less than 70 percent literacy rate whereas in 2001 nine districts and in 2011 sixteen districts of state had very high (more than 70 percent) literacy rate. In 2011, Gurugram district was highest literacy rate (84.7%) and lowest recorded in Mewat district (54.1%).

Diagram-2

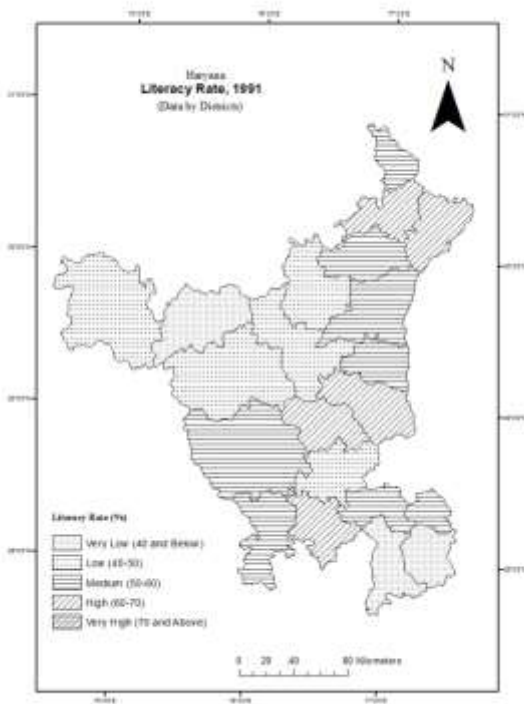




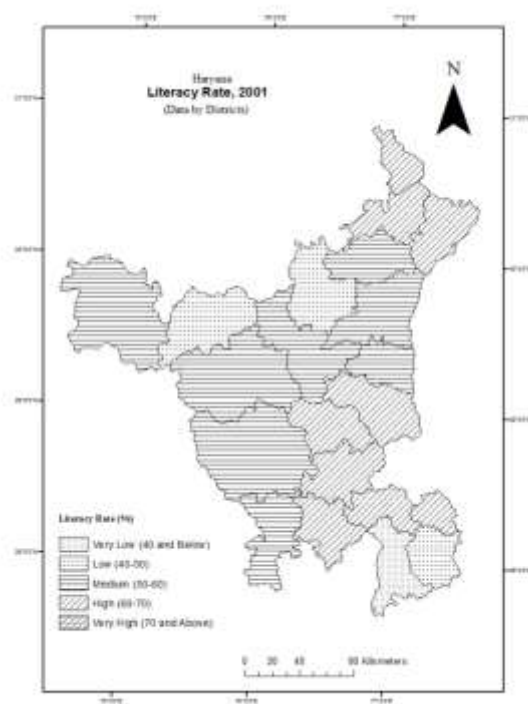
Map- 1



Map-2

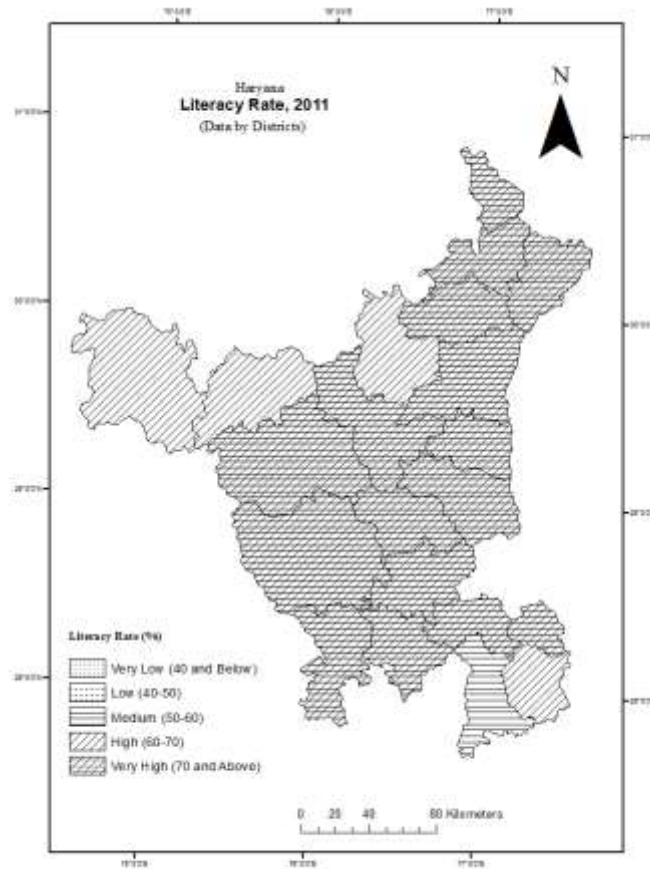


Map- 3



Map-4





Map- 5

In the census of 1971 the literacy rate in rural areas was very low, so state government made some efforts to improve the literacy rate in rural areas. As a result the growth rate was highest in rural area from 1991 to 2001. The state recorded a compound annual growth rate of 37 percent in this decade. This was the period when the state achieved maximum growth in literacy, although the literacy growth rate was very low in rural areas during this period. The literacy growth rate in 2001–2011 was lower than in previous decades but the growth rate in rural areas had improved a lot in the same decade.

**Table-1**  
**Haryana**  
**Absolute Growth Rate and Compound Annual Growth Rate**

(Value in %)

<b>Literacy Rate</b>	<b>Growth</b>	<b>1971-1981</b>	<b>1981-1991</b>	<b>1991-2001</b>	<b>2001-2011</b>
Total	Absolute Growth	9.23	9.11	22.66	8
	CAGR	25	25	37	23
Male	Absolute Growth	10.91	7.87	22.43	5.6
	CAGR	26.99	22.91	36.48	18.80
Female	Absolute Growth	7.47	10.45	22.98	11.7
	CAGR	22.27	26.45	36.82	27.88
Urban	Absolute Growth	5.8	16.86	5.54	3.9
	CAGR	19.22	32.64	18.67	14.58
Rural	Absolute Growth	4.09	32.4	0.59	8.2
	CAGR	15.13	41.60	-5.14	23.42

Source- calculated by authors from census data 1971-2011

### **Rurban Disparity**

Chandna, R.C., in their study found that the literacy rate of urban population is significantly high in comparison to rural population in the developing country. Rurban disparity in literacy has also been observed in the state. In census years 1971 and 1981, literacy was less than 40 percent in rural areas and above 40 percent in urban area of all districts. In the census years 2001 and 2011, the literacy rate in urban areas was more than 70 percent in twenty districts (beside Mewat district) of state whereas four districts in 2001 and fourteen districts in 2011 had above 70 percent literacy rate in rural areas (Diagram-3). The Rurban differential index was 109.25 percent in 1971. After that state government made efforts to fill the gap in rural and urban literacy. As a result the rurban differential index was recorded 15.92 percent in 2011.

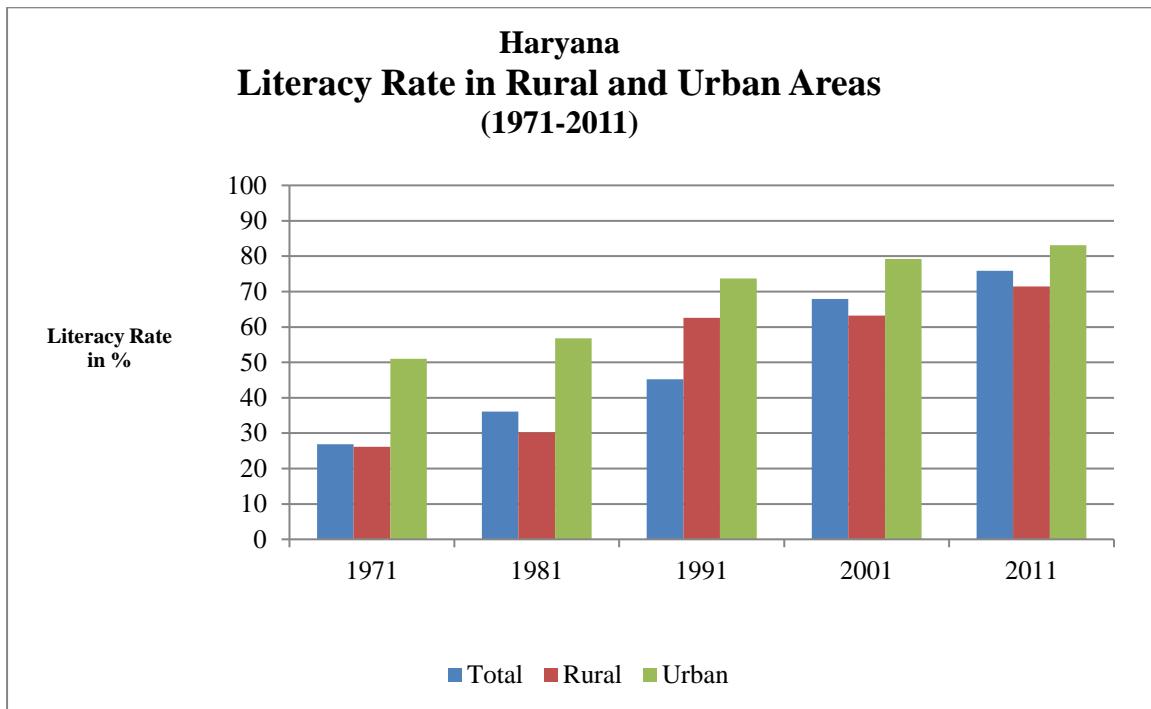
**Table-2**  
**Haryana**  
**Rurban Differential Index**

(Value in %)

<b>District</b>	<b>1971</b>	<b>1981</b>	<b>1991</b>	<b>2001</b>	<b>2011</b>
Ambala	84.14	58.68	35.01	21.14	12.73
Panchkula	81.56	50.86	24.32	22.03	13.55
Yamunanagar	86.16	64.51	37.58	22.77	13.72
Kurukshetra	133.08	86.30	39.3	21.46	14.29
Panipat	106.31	68.14	41.65	17.34	9.75
Sonipat	105.08	55.76	22.01	14.42	8.98
Rohtak	81.01	54.83	26.94	16.01	10.22
Hisar	123.96	97.60	60.37	27.16	17.83
Kaithal	145.81	112.30	61.24	30.00	16.18
Karnal	120.25	73.08	45.30	24.82	14.59
Sirsa	124.19	91.06	58.20	29.37	20.06
Fathebad	123.54	92.63	102.11	30.52	18.41
Jind	155.82	103.86	56.66	27.86	15.69
Jhajjar	84.77	52.70	39.81	12.43	6.06
Palwal	102.00	88.05	57.51	29.56	16.02
Mewat	205.64	149.41	120.50	65.36	32.16
Faridabad	118.79	72.19	45.91	20.31	12.97
Bhiwani	105.69	66.53	23.46	16.74	14.63
Rewari	63.28	61.58	21.37	11.42	3.70
Mahendergarh	64.69	51.26	28.42	13.73	7.46
Gurugram	112.65	86.12	58.33	10.96	7.91
<b>Haryana</b>	109.25	73.26	52.63	23.56	15.42

Source- calculated by authors from census data 1971-2011

Diagram-3

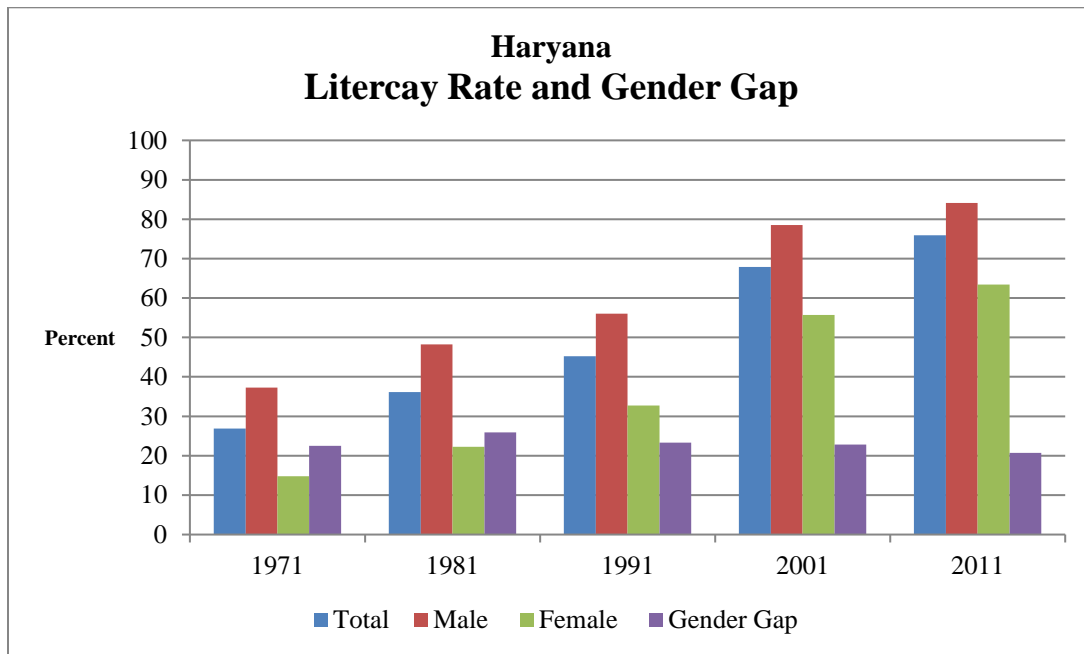


### Gender Disparity

In the census years 1971 and 1981, all districts of state had very low female literacy rate (less than 40 percent) whereas twelve districts in 1971 and five districts in 1981 had very low male literacy rate (less than 40 percent). In 1971 highest male literacy rate was recorded in Rohtak district (44.1 %) and lowest was recorded in Mewat district (23.5%). On other side highest female literacy rate was recorded in Panchkula district (27.35%) and lowest was in Mewat district (5.07%). In 2011, twenty districts of the state had a male literacy rate of over 70 percent and just seven districts had a female literacy rate of over 70 percent. In 2011, the highest male literacy rate was recorded in Rewari district (91.4 %) and lowest was in Mewat district (69.9 %) whereas highest female literacy rate was recorded in Ambala district (77.35%) and lowest in Mewat district (51%). This trend of literacy indicates the gender disparity in the state. In Haryana, the literacy rate increased nearly 3-fold from 1971 to 2011, but the gender gap is narrowing at a much slower rate. The gender gap in literacy in 1971 was 22.49 percent,

compared to 20.7 percent in 2011. The maximum gender gap (25.93 percent) was recorded in 1981 when male literacy rate was 48.2 and female literacy rate was just 22.27 percent. In 1971, the maximum gender gap was seen in Mahendragarh district (31.8%) and the minimum was in Panchkula district (15.79%), whereas in 2011, the gender gap was minimum (10%) in Yamunanagar district and maximum in Mewat district (28.9%).

Diagram-4



Disparity data suggest that gender disparity in literacy has been steadily decreasing from 1971 to 2011 at both the state and district levels. The Sopher's Disparity Index exhibits high gender disparity in southern districts mainly in Jhajjar, Palwal, Mewat, Faridabad, Bhiwani, Rewari, Mahendergarh and Gurugram.

**Table- 3**  
**Haryana**  
**Sopher's Disparity Index**

<b>District</b>	<b>1971</b>	<b>1981</b>	<b>1991</b>	<b>2001</b>	<b>2011</b>
Ambala	0.25158	0.20815	0.18825	0.17223	0.17245
Panchkula	0.23065	0.18673	0.16476	0.17076	0.16487
Yamunanagar	0.23781	0.22579	0.20019	0.16818	0.15944
Kurukshetra	0.37614	0.32145	0.19707	0.18303	0.16938
Panipat	0.38914	0.33684	0.26544	0.20694	0.18981
Sonipat	0.45785	0.37267	0.27910	0.23075	0.21228
Rohtak	0.42098	0.37415	0.29444	0.21717	0.20551
Hisar	0.47828	0.42816	0.32893	0.24800	0.20894
Kaithal	0.45514	0.39660	0.32439	0.22114	0.19298
Karnal	0.36463	0.32133	0.24043	0.18838	0.17155
Sirsa	0.43466	0.35168	0.26997	0.20446	0.16975
Fathebad	0.44081	0.37116	0.41184	0.22068	0.17879
Jind	0.61158	0.52596	0.19659	0.24765	0.20649
Jhajjar	0.42296	0.38850	0.33552	0.24079	0.23852
Palwal	0.60329	0.59411	0.46544	0.33615	0.27951
Mewat	0.69190	0.68704	0.59429	0.45885	0.34086
Faridabad	0.45926	0.39990	0.31380	0.21689	0.20379
Bhiwani	0.57799	0.50700	0.36786	0.26531	0.23819
Rewari	0.51924	0.41761	0.34723	0.30158	0.29076
Mahendergarh	0.59179	0.47738	0.40062	0.30330	0.29294
Gurugram	0.46932	0.39095	0.34479	0.24192	0.20586
<b>Haryana</b>	<b>0.43211</b>	<b>0.37182</b>	<b>0.27552</b>	<b>0.22559</b>	<b>0.19130</b>

Source- Author's calculation based on data from 1971 to 2011 Census of India

### Correlation Coefficient

The strongest correlation exists between total literacy rate and literacy rate in rural areas followed by the second strongest correlation between total literacy rate and female literacy rate. The highest correlation in total literacy and female literacy can be seen in 2001. There is positive relation exists between total literacy and male literacy as well as total literacy and literacy in urban areas. A negative correlation exists between total literacy and gender disparity and in 2001 the most negative correlation between these two variables can be seen.

**Table- 4**  
**Haryana**  
**Coefficient of Variability**

Census Year	Total literacy rate and male literacy	Total literacy rate and female literacy	Total literacy rate and rural literacy	Total literacy and urban literacy	Total literacy and gender gap
1971	0.93551	0.91950	0.90018	0.79681	0.15927
1981	0.91871	0.92322	0.90833	0.87695	-0.01005
1991	0.82337	0.92157	0.90972	0.85193	-0.11141
2001	0.94368	0.97097	0.95747	0.91683	-0.59873
2011	0.93515	0.85225	0.96723	0.94557	-0.35554
<b>Average</b>	0.91128	0.91750	0.92858	0.87762	-0.18329

Source- Author's calculation based on data from 1971 to 2011 Census of India

### Coefficient of Variability

Coefficient of Variability continuously declined from 1971 to 2011 with reference to total literacy, female literacy and rural literacy. The maximum decline in female literacy was seen, as it was 40.12 in 1971 and decreased to 12.28 in 2011. After 1991, the state government made some serious efforts to improve literacy, and as a result, there can be a continuous decline in all aspects of literacy after 1991.

**Table- 5**  
**Haryana**  
**Coefficient of Variability**

Census year	Total	Male	Female	Urban	Rural
1971	21.6	18.09	40.12	20.32	10.14
1981	19.69	15.7	34.12	18.71	7.39
1991	19.67	17.18	28.72	21.63	9.50
2001	11.99	8.68	18.43	12.19	5.29
2011	9.02	6.37	12.28	8.87	4.90

Source- Author's calculation based on data from 1971 to 2011 Census of India

### Conclusion-

This paper presents district-wise growth in literacy rate of Haryana state as well as analysis of gender gap. It has been observed that literacy rate has continuously improved in every census year after the state came into existence. The state literacy rate in 1971 was lower than the national average literacy rate and was higher than the national average in the 2001 and 2011 census years. Literacy rate has been high in male population and urban areas since inception of the state, but literacy growth rate is high in female population and rural areas. In the 1971 and 1981 census, the female literacy rate in all the districts of the state was less than 40 percent, while in 2011 only one district (Mewat) has less than 50 percent female literacy. The Sopher's disparity index also shows a decreasing trend in male-female literacy disparity. The rural disparity in literacy is also decreasing in each census year, as it was 109.25 in 1971 and decreased to 15.4 percent in 2011. Coefficient correlation also shows negative correlation between total literacy and gender disparity. Therefore, it indicates the continuous efforts by the state government to improve literacy mainly among the predominantly weaker section of the state.

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