



# CENSUS ANALYSIS

## Data Analysis Case Study

This analysis provides insights of the progress of literacy rate with respect to recorded population.

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# Understanding Data

There are two tables in the dataset including Population records (pop) & Literacy record (lit) against each district & state.

- **Pop** table includes attributes: **District, State, Area in Sq.Km & Population**
- **Lit** table includes attributes: **District, State, Growth of population against last year as Growth, Sex\_Ratio, Literacy rate (%)**

```
select * from pop;
```

District	State	Area_km2	Population
Adilabad	Andhra Pradesh	16105	2741239
Agra	Uttar Pradesh	4041	4418797
Ahmadabad	Gujarat	8107	7214225
Ahmadnagar	Maharashtra	17048	4543159
Aizawl	Mizoram	3576	400309
Ajmer	Rajasthan	8481	2583052
Akola	Maharashtra	5676	1813906
Alappuzha	Kerala	1415	2127789
Aligarh	Uttar Pradesh	3650	3673889
Alirajpur	Madhya Pradesh	3182	728999
Allahabad	Uttar Pradesh	5482	5954391
Almora	Uttarakhand	3144	622506
Alwar	Rajasthan	8380	3674179

```
select * from lit;
```

District	State	Growth	Sex_Ratio	Literacy
South Andaman	Andaman And Nicobar Islands	0.14	871	89.13
North And Middle Andaman	Andaman And Nicobar Islands	0	925	83.91
Nicobars	Andaman And Nicobar Islands	-0.12	777	78.06
Rangareddy	Andhra Pradesh	0.48	961	75.87
East Godavari	Andhra Pradesh	0.05	1006	70.99
Guntur	Andhra Pradesh	0.09	1003	67.4
Krishna	Andhra Pradesh	0.08	992	73.74
Visakhapatnam	Andhra Pradesh	0.12	1006	66.91
Chittoor	Andhra Pradesh	0.11	997	71.53
Anantapur	Andhra Pradesh	0.12	977	63.57
Kurnool	Andhra Pradesh	0.15	988	59.97
Mahbubnagar	Andhra Pradesh	0.15	977	55.04
Hyderabad	Andhra Pradesh	0.03	954	83.25
West Godavari	Andhra Pradesh	0.04	1004	74.63

# Which are Top 3 states with highest population?

```
SELECT
    State, SUM(population) AS total_population
FROM
    pop
GROUP BY state
ORDER BY total_population DESC limit 3;
```

State	total_population
Uttar Pradesh	196779476
Maharashtra	113322979
Bihar	96460008

## Insights & Findings

- Uttar Pradesh has the highest population of 196.78 M followed by Maharashtra at second with 113.32 M population.
- Bihar is the third state with largest population of 96.46 M.

# Which are Top 3 & Bottom 3 States having highest and lowest average Growth rate ?

```
SELECT
    state, ROUND(AVG(growth) * 100, 2) AS avg_growth
FROM
    lit
GROUP BY state
ORDER BY ROUND(AVG(growth) * 100, 2) DESC
LIMIT 3;
```

state	avg_growth
Nagaland	82.27
Dadra and Nagar Haveli	56
Daman and Diu	43

```
SELECT
    state, ROUND(AVG(growth) * 100, 2) AS avg_growth
FROM
    lit
GROUP BY state
ORDER BY ROUND(AVG(growth) * 100, 2)
LIMIT 3;
```

state	avg_growth
Andaman And Nicobar Islands	0.67
Kerala	4.14
Lakshadweep	6

## Insights & Findings

- Andaman & Nicobar Islands, Kerala & Lakshadweep are the states with lowest average growth rate recorded as 0.67%, 4.14% & 6%.
- Nagaland, Dadra & Nagra Haveli and Daman & Diu are the states with highest average growth rate recorded as 82.27%, 56% & 43%.

# Which are Top 3 & Bottom 3 States having highest and lowest average Sex Ratio ?

```
SELECT
    state, ROUND(AVG(Sex_Ratio), 0) AS avg_sex_ratio
FROM
    lit
GROUP BY state
ORDER BY ROUND(AVG(Sex_Ratio), 0) DESC
LIMIT 3;
```

state	avg_sex_ratio
Kerala	1080
Puducherry	1074
Uttarakhand	1010

```
SELECT
    state, ROUND(AVG(Sex_Ratio), 0) AS avg_sex_ratio
FROM
    lit
GROUP BY state
ORDER BY ROUND(AVG(Sex_Ratio), 0)
LIMIT 3;
```

state	avg_sex_ratio
Dadra and Nagar Haveli	774
Daman and Diu	782
Chandigarh	818

## Insights & Findings

- Dadra & Nagar Haveli, Daman & Diu and Chandigarh are the states with lowest average sex ratio recorded as 774,782 and 818.
- Kerala, Puducherry and Uttarakhand are the states with highest average growth rate recorded as 1080,1074 and 1010.

# Which are Top 3 & Bottom 3 States having highest and lowest average Literacy Rate ?

```
SELECT
    state, ROUND(AVG(Literacy), 0) AS avg_literacy_ratio
FROM
    lit
GROUP BY state
ORDER BY ROUND(AVG(Literacy), 0) DESC
LIMIT 3;
```

state	avg_literacy_ratio
Kerala	94
Lakshadweep	92
Goa	89

```
SELECT
    state, ROUND(AVG(Literacy), 0) AS avg_literacy_ratio
FROM
    lit
GROUP BY state
ORDER BY ROUND(AVG(Literacy), 0)
LIMIT 3;
```

state	avg_literacy_ratio
Bihar	62
Arunachal Pradesh	64
Jammu and Kashmir	65

## Insights & Findings

- Bihar, Arunachal Pradesh and Jammu & Kashmir are the states with lowest average Literacy rate recorded as 62%, 64% & 65%.
- Kerala, Lakshadweep and Goa are the states with highest average growth rate recorded as 94%, 92% & 89%.

# Which States are having average literacy rate > 90?

```
SELECT
    state, ROUND(AVG(Literacy), 0) AS avg_literacy_ratio
FROM
    lit
GROUP BY state
HAVING ROUND(AVG(Literacy), 0) > 90;
```

state	avg_literacy_ratio
Kerala	94
Lakshadweep	92

## Insights & Findings

- Kerala and Lakshadweep are the only two states with average Literacy rate > 90.

# Calculate number of Males & Females for each State

```
Select b.state, sum(b.Males) as total_males, sum(b.Females) as total_females from
(select district, state, population, Sex_Ratio, round(population/(Sex_Ratio +1),0) as Males,
round(population-population/(Sex_Ratio +1),0) as Females
from
(select l.district, l.state, l.Sex_Ratio/1000 as Sex_Ratio, p.population from lit l inner join pop p
on l.district=p.district) a) b group by state;
```

state	total_males	total_females
Andaman And Nicobar Islands	148014	126970
Andhra Pradesh	42439617	42141160
Arunachal Pradesh	624752	582402
Assam	15939857	15265719
Bihar	53518388	49182975
Chandigarh	580556	474894
Chhattisgarh	13659264	13518218
Daman and Diu	150264	92983
Delhi	77939	64065
Goa	739239	719306
Gujarat	30423412	27889194
Haryana	13495175	11856287
Himachal Pradesh	5337119	5263833
Jammu and Kashmir	6640603	5900699
Jharkhand	16386367	15536711
Karnataka	31095288	30255239
Kerala	16027489	17378572

state	total_males	total_females
Lakshadweep	33131	31342
Madhya Pradesh	35047689	32633638
Maharashtra	58641586	54681393
Manipur	1438659	1417135
Meghalaya	1359289	1348760
Mizoram	555336	541870
Nagaland	1024777	953725
Orissa	21212240	20761978
Puducherry	612606	635347
Punjab	14111571	12637139
Rajasthan	37170091	34587487
Tamil Nadu	36139417	36007612
Tripura	1874564	1799353
Uttar Pradesh	102901426	93878050
Uttarakhand	3805439	3703160
West Bengal	46810398	44465717



# Calculate number of Literate & Illiterate population for each State

```
select b.state, sum(b.total_literate) as Total_literate, sum(b.total_illiterate) as Total_illiterate
from (select district, state, round(Literacy_rate * population,0) as Total_literate,
      round((1-Literacy_rate) * population,0) as total_illiterate
from (select l.district, l.state, l.Literacy/100 as Literacy_rate,
p.population from lit l inner join pop p on l.district=p.district) a) b group by state;
```

state	Total_literate	Total_illiterate
Andaman And Nicobar Islands	241015	33969
Andhra Pradesh	56671677	27909100
Arunachal Pradesh	761557	445597
Assam	22484409	8721167
Bihar	63994271	38707092
Chandigarh	908215	147235
Chhattisgarh	18621154	8556328
Daman and Diu	211827	31420
Delhi	125446	16558
Goa	1293736	164809
Gujarat	45836339	12476267
Haryana	19123489	6227973
Himachal Pradesh	8883924	1717028
Jammu and Kashmir	8391150	4150152
Jharkhand	21132066	10791012
Karnataka	46146322	15204205
Kerala	31395554	2010507

state	Total_literate	Total_illiterate
Lakshadweep	59218	5255
Madhya Pradesh	47069447	20611880
Maharashtra	92954049	20368930
Manipur	2196539	659255
Meghalaya	2009086	698963
Mizoram	999927	97279
Nagaland	1569750	408752
Orissa	30486803	11487415
Puducherry	1071351	176602
Punjab	20201266	6547444
Rajasthan	47063500	24694078
Tamil Nadu	57775522	14371508
Tripura	3203603	470314
Uttar Pradesh	133084739	63694737
Uttarakhand	5992810	1515789
West Bengal	69475388	21800727

# Calculate Prev year Population Vs Curr year Population for each State

```
Select b.state, sum(b.population) as curr_yr_population, sum(b.prev_yr_population) as prev_yr_population from
(Select a.district, a.state, a.growth, a.population, round(a.population/(1+ a.growth),0) as prev_yr_population from
(Select l.district, l.state, l.growth, p.population from lit l inner join pop p on l.district=p.district) a) b group by state;
```

state	curr_yr_population	prev_yr_population
Andaman And Nicobar Islands	274984	250762
Andhra Pradesh	84580777	76254233
Arunachal Pradesh	1207154	974615
Assam	31205576	26666850
Bihar	102701363	81992854
Chandigarh	1055450	902094
Chhattisgarh	27177482	22309288
Daman and Diu	243247	157924
Delhi	142004	179752
Goa	1458545	1345064
Gujarat	58312606	49025490
Haryana	25351462	21134924
Himachal Pradesh	10600952	9419106
Jammu and Kashmir	12541302	10138189
Jharkhand	31923078	26098867
Karnataka	61350527	53067261
Kerala	33406061	31848358

state	curr_yr_population	prev_yr_population
Lakshadweep	64473	60824
Madhya Pradesh	67681327	56246184
Maharashtra	113322979	96864352
Manipur	2855794	2290350
Meghalaya	2708049	2125101
Mizoram	1097206	887530
Nagaland	1978502	1047512
Orissa	41974218	36809371
Puducherry	1247953	975896
Punjab	26748710	23645052
Rajasthan	71757578	59099299
Tamil Nadu	72147030	62376905
Tripura	3673917	3196246
Uttar Pradesh	196779476	163743783
Uttarakhand	7508599	6349171
West Bengal	91276115	80196779

# Calculate Top 2 districts with highest Literacy rate for each State

```
select a.* from (Select state, district, literacy, rank() over(partition by state order by literacy desc) rnk from lit) a
where rnk <=2 ;
```

state	district	literacy
Andaman And Nicobar Islands	South Andaman	89.13
Andaman And Nicobar Islands	North And Middle Andaman	83.91
Andhra Pradesh	Hyderabad	83.25
Andhra Pradesh	Rangareddy	75.87
Arunachal Pradesh	Papumpare	79.95
Arunachal Pradesh	Lower Subansiri	74.35
Assam	Kamrup Metropolitan	88.71
Assam	Jorhat	82.15
Bihar	Rohtas	73.37
Bihar	Patna	70.68
Chandigarh	Chandigarh	86.05
Chhattisgarh	Durg	79.06
Chhattisgarh	Dhamtari	78.36
Dadra and Nagar Haveli	Dadra and Nagar Haveli	76.24
Daman and Diu	Daman	88.07
Daman and Diu	Diu	83.46
Delhi	East Delhi	89.31
Delhi	New Delhi	88.34
Goa	North Goa	89.57
Goa	South Goa	87.59

state	district	literacy
Gujarat	Surat	85.53
Gujarat	Ahmadabad	85.31
Haryana	Gurgaon	84.7
Haryana	Panchkula	81.88
Himachal Pradesh	Hamirpur	88.15
Himachal Pradesh	Una	86.53
Jammu and Kashmir	Jammu	83.45
Jammu and Kashmir	Samba	81.41
Jharkhand	Ranchi	76.06
Jharkhand	Purbi Singhbhum	75.49
Karnataka	Dakshina Kannada	88.57
Karnataka	Bangalore	87.67
Kerala	Kottayam	97.21
Kerala	Pathanamthitta	96.55
Lakshadweep	Lakshadweep	91.85
Madhya Pradesh	Jabalpur	81.07
Madhya Pradesh	Indore	80.87
Maharashtra	Mumbai Suburban	89.91
Maharashtra	Mumbai City	89.21

state	district	literacy
Manipur	Imphal West	86.08
Manipur	Churachandpur	82.78
Meghalaya	East Khasi Hills	84.15
Meghalaya	West Khasi Hills	77.87
Mizoram	Serchhip	97.91
Mizoram	Aizawl	97.89
Nagaland	Mokokchung	91.62
Nagaland	Wokha	87.69
Orissa	Khordha	86.88
Orissa	Jagatsinghapur	86.59
Puducherry	Mahe	97.87
Puducherry	Karaikal	87.05
Punjab	Hoshiarpur	84.59
Punjab	Mohali	83.8
Rajasthan	Kota	76.56
Rajasthan	Jaipur	75.51
Sikkim	East Sikkim	83.85
Sikkim	South Sikkim	81.42
Tamil Nadu	Kanniyakumari	91.75
Tamil Nadu	Chennai	90.18

state	district	literacy
Tripura	West Tripura	88.69
Tripura	North Tripura	87.5
Uttar Pradesh	Gautam Buddha Nagar	80.12
Uttar Pradesh	Kanpur Nagar	79.65
Uttarakhand	Dehradun	84.25
Uttarakhand	Nainital	83.88
West Bengal	Purba Medinipur	87.02
West Bengal	Kolkata	86.31