PROJECT ON, STATE-WISE POPULATION, DECADAL POPULATION GROWTH RATE AND POPULATION DENSITY - 2011

Hello, My name is Avneet Singh Matta.
In this project I have utilized SQL queries to solve questions related to population growth from 2001-2011

SCHEMA OF POPULATION_GROWTH _STATES

	TABLE_CATALOG	TABLE_SCHEMA	TABLE_NAME	COLUMN_NAME	ORDINAL_POSITION	COLUMN_DEFAULT	IS_NULLABLE	DATA_TYPE	CHARACTER_MAXIMUM_LENGTH
1	Projects	dbo	Population_growth_states	Category	1	NULL	YES	nvarchar	50
2	Projects	dbo	Population_growth_states	India_State_Union_Territory	2	NULL	YES	nvarchar	50
3	Projects	dbo	Population_growth_states	Population_2011	3	NULL	YES	int	NULL
4	Projects	dbo	Population_growth_states	Decadal_Population_Growth_Rate_2001_2011	4	NULL	YES	float	NULL
5	Projects	dbo	Population_growth_states	Population_Density_per_sq_km_2011	5	NULL	YES	smallint	NULL

Questions:-

- Show the top 5 highest population growth of states in 2001-2011.

- Show the top 5 lowest population growth of states in 2001-2011.

- Show the top 10 highest population growth of union territories in 2001-2011 and avg of there population density.

- Rank the population density of states and union territory and compare them.

Questions:-

- Which states and union territories have a population density above the national average in 2011?

- How do specific states or union territories compare in terms of population growth between 2001 and 2011?

- Are there any outliers (states or UTs with exceptionally high or low population density)?

SHOW THE TOP 5 HIGHEST POPULATION GROWTH OF STATES IN 2001-2011

```sql
select top(5)
    category,
    india_state_union_territory,
    decadal_population_growth_rate_2001_2011
from
    population_growth_states
where
    category = 'state'
order by
    decadal_population_growth_rate_2001_2011 desc
```

	category	india_state_union_territory	decadal_population_growth_rate_2001_2011
1	State	Manipur	31.7999992370605
2	State	Meghalaya	27.8999996185303
3	State	Arunachal Pradesh	26
4	State	Bihar	25.3999996185303
5	State	Jammu & Kashmir	23.6000003814697

Show the top 5 lowest population growth of states in 2001-2011

```sql
select top(5)
   category,
   india_state_union_territory,
   decadal_population_growth_rate_2001_2011
from
   population_growth_states
where
   category = 'state'
order by
   decadal_population_growth_rate_2001_2011 asc
```

	category	india_state_union_territory	decadal_population_growth_rate_2001_2011
1	State	Nagaland	-0.600000023841858
2	State	Kerala	4.90000009536743
3	State	Goa	8.19999980926514
4	State	Andhra Pradesh	9
5	State	Himachal Pradesh	12.8999996185303

SHOW THE TOP 10 HIGHEST POPULATION GROWTH OF UNION TERRITOTIES IN 2001-2011 AND AVG OF THERE POPULATION DENSITY

```sql
select top 10
   category,
   india_state_union_territory,
   avg(population_density_per_sq_km_2011) as 'avg population density'
from
   population_growth_states
where
   category = 'union territory'
group by
   category,
   india_state_union_territory
order by
   avg(population_density_per_sq_km_2011)
```

	category	india_state_union_territory	avg population density
1	Union Territory	Andaman & Nicobar Island	46
2	Union Territory	Dadra & Nagar Haveli	700
3	Union Territory	Lakshadweep	2149
4	Union Territory	Daman & Diu	2191
5	Union Territory	Puducherry	2547
6	Union Territory	Chandigarh	9258
7	Union Territory	Delhi	11320

Rank the population density of states and union territory and compare them

```
select
   category,
   india_state_union_territory,
   population_density_per_sq_km_2011,
   rank() over(partition by category order by  population_density_per_sq_km_2011 desc ) as 'population Density rank'
from
   population_growth_states
where
  category in ('state' , 'union territory')
group by
   category,
   india_state_union_territory,
   population_density_per_sq_km_2011
```

	category	india_state_union_territory	population_density_per_sq_km_2011	population Density rank
1	State	Bihar	1106	1
2	State	West Bengal	1028	2
3	State	Kerala	860	3
4	State	Uttar Pradesh	829	4
5	State	Haryana	573	5
6	State	Tamil Nadu	555	6
7	State	Punjab	551	7
8	State	Jharkhand	414	8

WHICH STATES AND UNION TERRITORIES HAVE A POPULATION DENSITY ABOVE THE NATIONAL AVERAGE IN 2011?

```sql
select
   category,
   india_state_union_territory,
   population_density_per_sq_km_2011
from
   population_growth_states
where
   category in ('state', 'union territory') AND
   population_density_per_sq_km_2011 > (select avg(population_density_per_sq_km_2011) from population_growth_states)
order by

   population_density_per_sq_km_2011
```

	category	india_state_union_territory	population_density_per_sq_km_2011
1	State	Bihar	1106
2	Union Territory	Lakshadweep	2149
3	Union Territory	Daman & Diu	2191
4	Union Territory	Puducherry	2547
5	Union Territory	Chandigarh	9258
6	Union Territory	Delhi	11320

How do specific states or union territories compare in terms of population growth between 2001 and 2011?

```sql
select
    category,
    india_state_union_territory,
    round(decadal_population_growth_rate_2001_2011, 2) as decadal_population_growth_rate_2001_2011
from
    population_growth_states
where
    india_state_union_territory IN ('Delhi', 'Bihar', 'Chandigarh', 'Uttar Pradesh')

order by
    decadal_population_growth_rate_2001_2011
```

	category	india_state_union_territory	decadal_population_growth_rate_2001_2011
1	Union Territory	Chandigarh	17.2
2	State	Uttar Pradesh	20.2
3	Union Territory	Delhi	21.2
4	State	Bihar	25.4

SHOW TOP 10 OUTLIERS (STATES OR UTS WITH EXCEPTIONALLY HIGH OR LOW POPULATION DENSITY)?

```
select top 10
  category,
  india_state_union_territory,
  population_density_per_sq_km_2011,
  PERCENTILE_CONT(0.95) within group (order by  population_density_per_sq_km_2011 ) OVER () AS top_5_percentile
from
 population_growth_states
where
  category in ('state','union territory')
order by
   population_density_per_sq_km_2011
```

	category	india_state_union_territory	population_density_per_sq_km_2011	top_5_percentile
1	State	Arunachal Pradesh	17	4224.75
2	Union Territory	Andaman & Nicobar Island	46	4224.75
3	State	Mizoram	52	4224.75
4	State	Jammu & Kashmir	56	4224.75
5	State	Sikkim	86	4224.75
6	State	Nagaland	119	4224.75
7	State	Himachal Pradesh	123	4224.75
8	State	Manipur	128	4224.75
9	State	Meghalaya	132	4224.75
10	State	Chhattisgarh	189	4224.75

ANALYSIS OF THE PROJECT

The analysis of India's population growth and density between 2001 and 2011 highlights significant demographic trends across states and union territories. Manipur recorded the highest decadal population growth, primarily due to high birth rates and population concentration in the Imphal Valley, while Nagaland experienced a rare decline due to census data adjustments. Among union territories, Delhi exhibited the highest population density, contrasting sharply with Andaman & Nicobar Islands, which had the lowest. Bihar emerged as the most densely populated state, whereas Arunachal Pradesh had the least. The study also identifies states and UTs surpassing the national average in population density, reflecting urbanization trends. Furthermore, an outlier analysis revealed extreme cases of high and low population concentrations. These findings offer valuable insights into regional population dynamics, urban pressures, and policy implications for future planning.