```sql
/*Checking  % Increase In population From
 Previous Population census */
WITH CTE1 AS
(
SELECT country, country_code, '1980' AS year, pop1980 AS population FROM pop_data
UNION
SELECT country, country_code, '2000' AS population, pop2000 AS population FROM pop_data
UNION
SELECT country, country_code, '2010' AS population, pop2010 AS population FROM pop_data
UNION
SELECT country, country_code, '2022' AS population,
pop2022 AS population FROM pop_data),

CTE2 AS
(
SELECT country, country_code, year,
LAG(year,1,0) OVER (PARTITION BY country ORDER BY year  ASC) AS previous_yr, population ,
LAG(population,1,0) OVER (PARTITION BY country ORDER BY year  ASC) AS previous_yr_pop
FROM CTE1 ORDER BY country
 )

SELECT *,
CONCAT(
ROUND(IFNULL(((population-previous_yr_pop)*100.0/previous_yr_pop),""),2)," % Increase/Decrease from year ",previous_yr
        )
AS population_growth
FROM CTE2;
```

| country	country_code	year	previous_yr	population	previous_yr_pop	population_growth
Afghanistan	AF	1980	0	12486631	0	0 % Increase/Decrease from year 0
Afghanistan	AF	2000	1980	19542982	12486631	56.51 % Increase/Decrease from year 1980
Afghanistan	AF	2010	2000	28189672	19542982	44.24 % Increase/Decrease from year 2000
Afghanistan	AF	2022	2010	41128771	28189672	45.9 % Increase/Decrease from year 2010
Albania	AL	1980	0	2941651	0	0 % Increase/Decrease from year 0
Albania	AL	2000	1980	3182021	2941651	8.17 % Increase/Decrease from year 1980
Albania	AL	2010	2000	2913399	3182021	-8.44 % Increase/Decrease from year 2000
Albania	AL	2022	2010	2842321	2913399	-2.44 % Increase/Decrease from year 2010
Algeria	DZ	1980	0	18739378	0	0 % Increase/Decrease from year 0
Algeria	DZ	2000	1980	30774621	18739378	64.22 % Increase/Decrease from year 1980
Algeria	DZ	2010	2000	35856344	30774621	16.51 % Increase/Decrease from year 2000
Algeria	DZ	2022	2010	44903225	35856344	25.23 % Increase/Decrease from year 2010
American S...	AS	1980	0	32886	0	0 % Increase/Decrease from year 0
American S...	AS	2000	1980	58230	32886	77.07 % Increase/Decrease from year 1980
American S...	AS	2010	2000	54849	58230	-5.81 % Increase/Decrease from year 2000
American S...	AS	2022	2010	44273	54849	-19.28 % Increase/Decrease from year 2010
Andorra	AD	1980	0	35611	0	0 % Increase/Decrease from year 0
Andorra	AD	2000	1980	66097	35611	85.61 % Increase/Decrease from year 1980
Andorra	AD	2010	2000	71519	66097	8.2 % Increase/Decrease from year 2000
Andorra	AD	2022	2010	79824	71519	11.61 % Increase/Decrease from year 2010
Angola	AO	1980	0	8330047	0	0 % Increase/Decrease from year 0
Angola	AO	2000	1980	16394062	8330047	96.81 % Increase/Decrease from year 1980
Angola	AO	2010	2000	23364185	16394062	42.52 % Increase/Decrease from year 2000
Angola	AO	2022	2010	35588987	23364185	52.32 % Increase/Decrease from year 2010

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

Result 1 ×

```sql
/*Top 3 Countries With Highest Population In
1980, 2000, 2010, 2022 */

WITH CTE1 AS
(SELECT '2022' AS year, country AS Top3_Most_Populated_country, pop2022 AS population
FROM pop_data ORDER BY pop2022 DESC LIMIT 3),

CTE2 AS
(SELECT '2010' AS year, country AS Top3_Most_Populated_country, pop2010 AS population
 FROM pop_data ORDER BY pop2010 DESC LIMIT 3),

 CTE3 AS
(SELECT '2000' AS year, country AS Top3_Most_Populated_country, pop2000 AS population
FROM pop_data ORDER BY pop2000 DESC LIMIT 3),

CTE4 AS
(SELECT '1980' AS year, country AS Top3_Most_Populated_country, pop1980 AS population
FROM pop_data ORDER BY pop1980 DESC LIMIT 3)

SELECT * FROM CTE1
UNION
SELECT * FROM CTE2
UNION
SELECT * FROM CTE3
UNION
SELECT * FROM CTE4;
```

year	Top3_Most_Populated_country	population
2022	China	1425887337
2022	India	1417173173
2022	United States	338289857
2010	China	1348191368
2010	India	1240613620
2010	United States	311182845
2000	China	1264099069
2000	India	1059633675
2000	United States	282398554
1980	China	982372466
1980	India	696828385
1980	United States	223140018
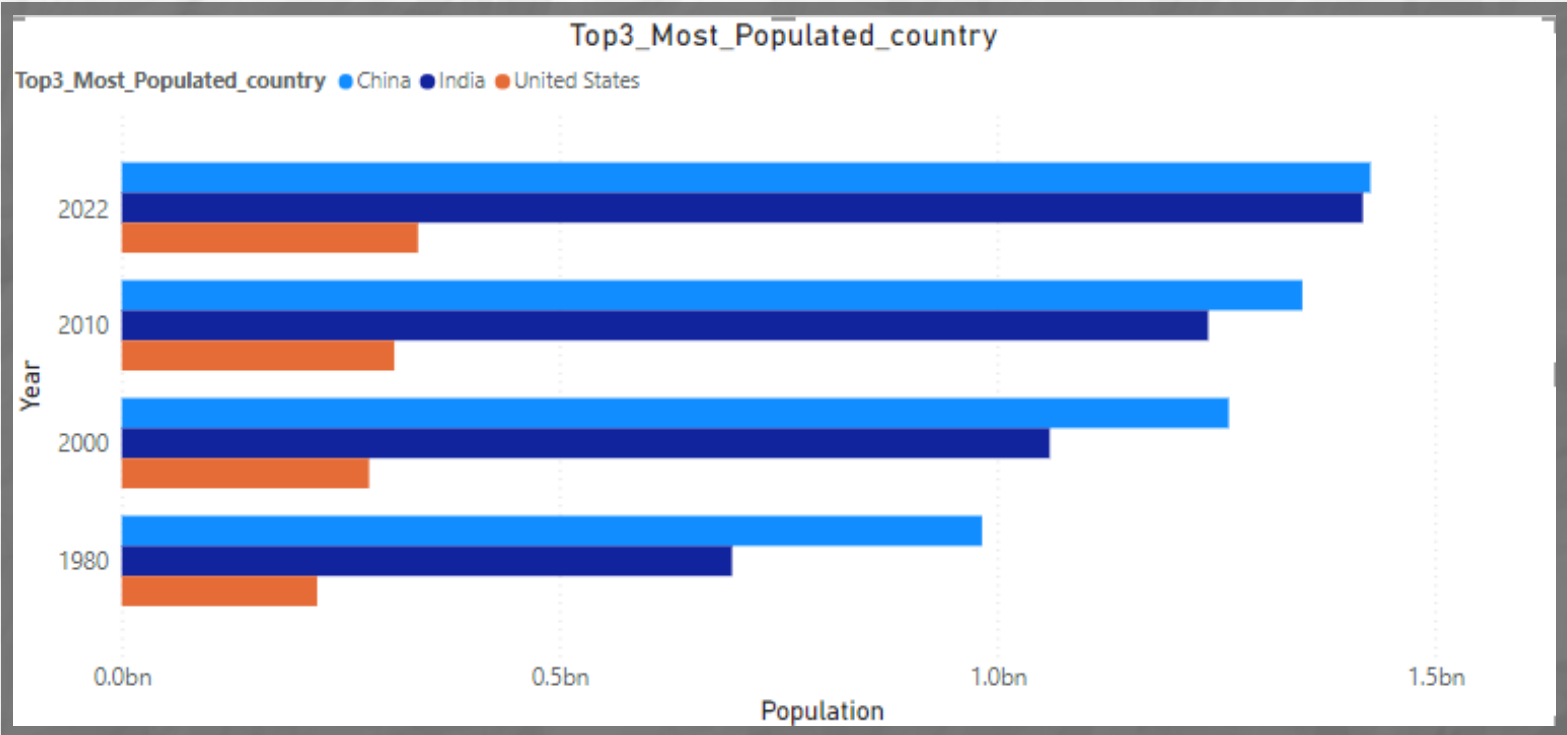
```sql
92    #Showing World's Population In All Population Census Years
93
94 •  SELECT "World",
95    SUM(pop1980) as `population (in 1980)`,
96    SUM(pop2000) as `population (in 2000)`,
97    SUM(pop2010) as `population (in 2010)`,
98    SUM(pop2022) as `population (in 2022)`
99    FROM pop_data;
100
101
102
103
```

Total Population Of World By Years

	World	population (in 1980)	population (in 2000)	population (in 2010)	population (in 2022)
▶	World	4442400374	6147055703	6983785000	7973413043
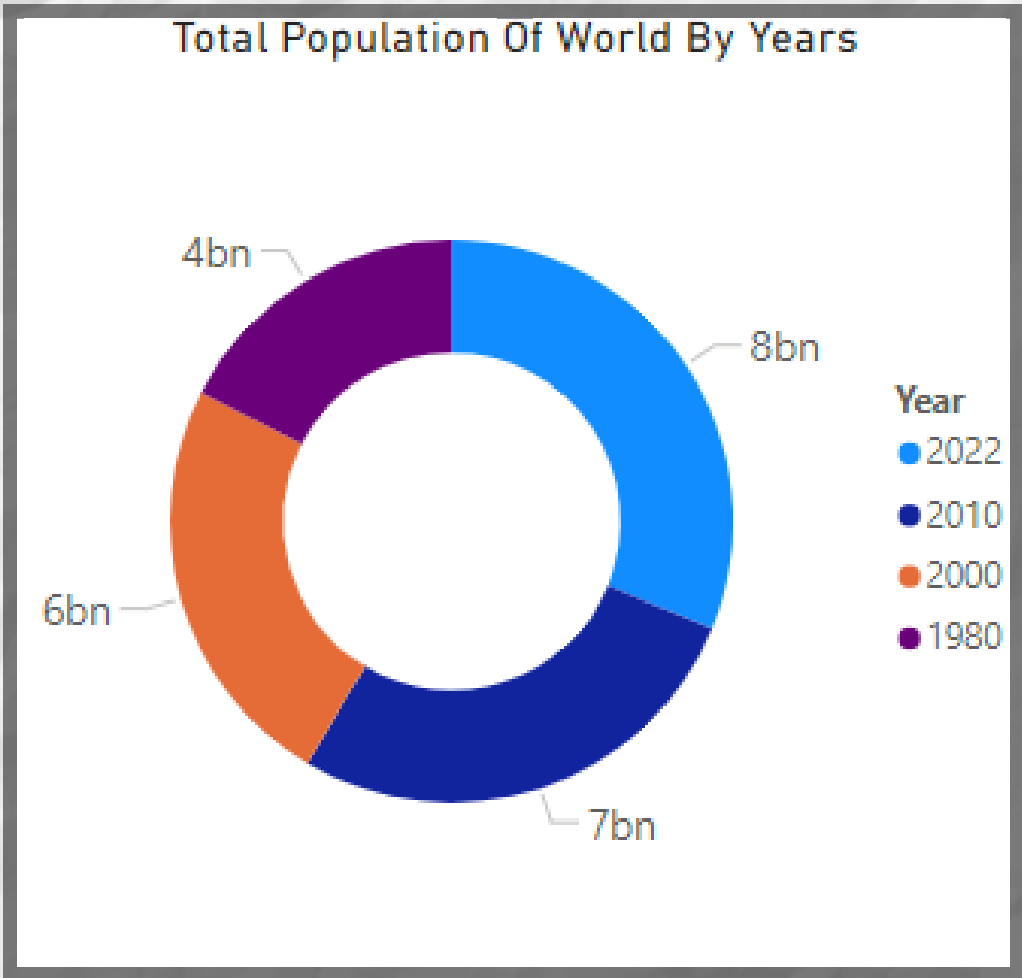
Year
- 2022
- 2010
- 2000
- 1980

```sql
/*Showing Growth Rate Of World Population In Each Census Year*/


WITH CTE AS
(SELECT
SUM(pop1980) as pop_1980,
SUM(pop2000) as pop_2000,
SUM(pop2010) as pop_2010,
SUM(pop2022) as pop_2022
FROM pop_data),
CTE2 AS(
SELECT "2022" AS year, pop_2022 AS population FROM CTE UNION
SELECT "2000" AS year, pop_2000 AS population FROM CTE UNION
SELECT "2010" AS year, pop_2010 AS population FROM CTE UNION
SELECT "1980" AS year, pop_1980 AS population FROM CTE),
CTE3 AS(
SELECT *,LEAD(population,1,0) OVER(ORDER BY year DESC) AS previous_yr_pop
FROM CTE2)

SELECT *,
CONCAT(ROUND((population-previous_yr_pop)*100.0/previous_yr_pop,2)," % Increase") AS growth_rate
FROM CTE3;
```

year	population	previous_yr_pop	growth_rate
2022	7973413043	6983785000	14.17 % Increase
2010	6983785000	6147055703	13.61 % Increase
2000	6147055703	4442400374	38.37 % Increase
1980	4442400374	0	NULL

% Growth Of World Population Over Years
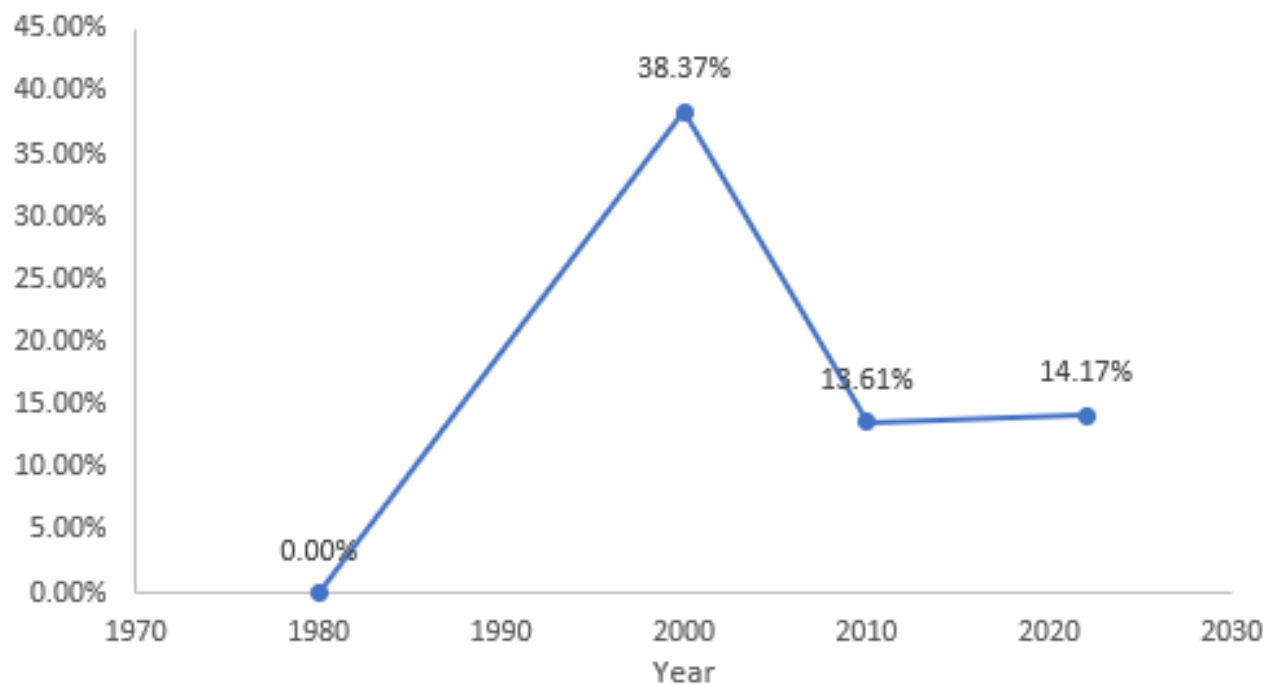
```
128

129    #Showing Population Density of All countries Over All Census Years

130

131 •  SELECT country, country_code,
132    ROUND(pop1980/landAreaKm,2) as Density_1980,
133    ROUND(pop2000/landAreaKm,2) as Density_2000,
134    ROUND(pop2010/landAreaKm,2) as Density_2010,
135    ROUND(pop2022/landAreaKm,2) as Density_2022
136    FROM pop_data;

137

138

139

140
```

country	country_code	Density_1980	Density_2000	Density_2010	Density_2022
India	IN	234.37	356.4	417.27	476.65
China	CN	104.23	134.13	143.05	151.29
United States	US	24.39	30.87	34.02	36.98
Indonesia	ID	78.92	114.02	129.97	146.74
Pakistan	PK	104.59	200.25	252.25	305.92
Nigeria	NG	80.1	134.89	176.72	239.95
Brazil	BR	14.63	21.04	23.49	25.76
Bangladesh	BD	644.77	992.5	1139.98	1315.1
Russia	RU	8.44	8.97	8.75	8.84
Mexico	MX	34.83	50.35	57.89	65.59
Ethiopia	ET	30.96	59.4	79.07	109.32
Japan	JP	322.7	347.88	351.46	340.06
Philippines	PH	162.39	261.46	317.39	387.56
Egypt	EG	43.95	71.7	87.65	111.5
DR Congo	CD	11.78	21.44	29.29	43.67
Vietnam	VN	169	252.05	278.89	313.27
Iran	IR	23.74	40.4	46.46	54.58
Turkey	TR	56.27	81.82	93.41	108.91
Germany	DE	222.64	233.41	232.76	238.62
Thailand	TH	89.53	123.44	133.63	140.34
United Kingdom	GB	232.82	243.25	259.41	279.04
Tanzania	TZ	21.79	38.91	50.93	73.94
France	FR	98.1	107.14	114.04	118.03
South Africa	ZA	24.29	38.59	42.69	49.37

```sql
142    #Predicting Growth Rate in 2030,2050 from 2022

143

144  • ⊖ with CTE AS(SELECT country, pop2022, pop2030, pop2050,
145      ROUND((pop2030-pop2022)*100.0/pop2022,2) AS growth_rate_by2030 ,
146      ROUND((pop2050-pop2022)*100.0/pop2022,2) AS growth_rate_by2050
147      FROM pop_data)

148

149      SELECT country, pop2022, pop2030, pop2050,
150  ⊖ CASE
151      WHEN growth_rate_by2030>0
152      THEN concat('+',growth_rate_by2030,'%')
153      ELSE concat(growth_rate_by2030,'%')
154      END as Growth_Rate2030,
155  ⊖ CASE
156      WHEN growth_rate_by2050>0
157      THEN concat('+',growth_rate_by2050,'%')
158      ELSE concat(growth_rate_by2050,'%')
159      END as growth_rate2050
160      FROM CTE;

161

162

163
```

country	pop2022	pop2030	pop2050	Growth_Rate2030	growth_rate2050
India	1417173173	1514994080	1670490596	+6.90%	+17.87%
China	1425887337	1415605906	1312636325	-0.72%	-7.94%
United States	338289857	352162301	375391963	+4.10%	+10.97%
Indonesia	275501339	292150100	317225213	+6.04%	+15.14%
Pakistan	235824862	274029836	367808468	+16.20%	+55.97%
Nigeria	218541212	262580426	377459883	+20.15%	+72.72%
Brazil	215313498	223908968	230885725	+3.99%	+7.23%
Bangladesh	171186372	184424144	203904900	+7.73%	+19.11%
Russia	144713314	141432741	133133035	-2.27%	-8.00%
Mexico	127504125	134534107	143772364	+5.51%	+12.76%
Ethiopia	123379924	149296378	214812309	+21.01%	+74.11%
Japan	123951692	118514802	103784357	-4.39%	-16.27%
Philippines	115559009	129453321	157891622	+12.02%	+36.63%
Egypt	110990103	125151725	160339889	+12.76%	+44.46%
DR Congo	99010212	127582053	217494003	+28.86%	+119.67%
Vietnam	98186856	102699905	107012939	+4.60%	+8.99%
Iran	88550570	92921017	99007204	+4.94%	+11.81%
Turkey	85341241	88879698	95829258	+4.15%	+12.29%
Germany	83369843	82762675	78932228	-0.73%	-5.32%
Thailand	71697030	72060018	67880083	+0.51%	-5.32%
United Kingdom	67508936	69175770	71684966	+2.47%	+6.19%
Tanzania	65497748	81885304	129931520	+25.02%	+98.38%
France	64626628	65543452	65827072	+1.42%	+1.86%
South Africa	59893885	64659278	73529753	+7.96%	+22.77%

```
164

     #Showing  Countries With Rapid Growth in years from 1980 to 2022
166 •   SELECT country,pop1980,pop2022,
167     ROUND(100.0*(pop2022-pop1980)/pop1980,2) AS `growth_rate (in %)`
168     FROM pop_data
169     ORDER BY `growth_rate (in %)` DESC;

170

171

172

173

174

175
```

| | Result Grid | | Filter Rows: | | Export: | | Wrap Cell Content: $\underline{\underline{\text{IA}}}$ |

country	pop1980	pop2022	growth_rate (in %)
Qatar	277450	2695122	871.39
United Arab Emirates	1014048	9441129	831.03
Mayotte	52233	326101	524.32
Turks and Caicos Islands	7598	45703	501.51
Equatorial Guinea	282509	1674908	492.87
Jordan	2216903	11285869	409.08
Western Sahara	116775	575986	393.24
French Guiana	66825	304557	355.75
Oman	1017462	4576298	349.78
Angola	8330047	35588987	327.24
Niger	6173177	26207977	324.55
Saint Martin	7776	31791	308.83
Bahrain	362595	1472233	306.03
Chad	4408230	17723315	302.05
Cayman Islands	17100	68706	301.79
Gambia	718586	2705992	276.57
DR Congo	26708686	99010212	270.70
Saint Barthelemy	2983	10967	267.65
Yemen	9204938	33696614	266.07
Palestine	1453620	5250072	261.17
Sint Maarten	12243	44175	260.82
Saudi Arabia	10171710	36408820	257.94
Uganda	13284026	47249585	255.69
Ethiopia	34945460	123379924	253.06

Limit to 1000 rows

```sql
173
174      #Showing countries with Population Decline in years from 1980-2022
175
176 •   SELECT * FROM
177     (
178     SELECT country,pop1980,pop2022,
179     ROUND(100.0*(pop2022-pop1980)/pop1980,2) AS `growth_rate (in %)`
180     FROM pop_data
181     ORDER BY `growth_rate (in %)`ASC
182     )X
183     WHERE `growth_rate (in %)`<0;
184
185
186
187
188
189
```

country	pop1980	pop2022	growth_rate (in %)
Montserrat	11452	4390	-61.67
Niue	3637	1934	-46.82
Vatican City	733	510	-30.42
Latvia	2572037	1850651	-28.05
Georgia	5145843	3744385	-27.23
Bulgaria	8980606	6781953	-24.48
Bosnia and Herzegovina	4199820	3233526	-23.01
Lithuania	3521206	2750055	-21.90
Ukraine	49973920	39701739	-20.56
Moldova	4103240	3272996	-20.23
Croatia	4680144	4030358	-13.88
Armenia	3135123	2780469	-11.31
Romania	22125224	19659267	-11.15
Estonia	1476983	1326062	-10.22
Serbia	7777010	7221365	-7.14
Hungary	10698679	9967308	-6.84
Saint Pierre and Miquelon	6106	5862	-4.00
Cook Islands	17651	17011	-3.63
Albania	2941651	2842321	-3.38
Saint Vincent and the G…	107480	103948	-3.29
Belarus	9817257	9534954	-2.88
Dominica	72978	72737	-0.33

Top10 Countries With Highest Decline From 1980-2022
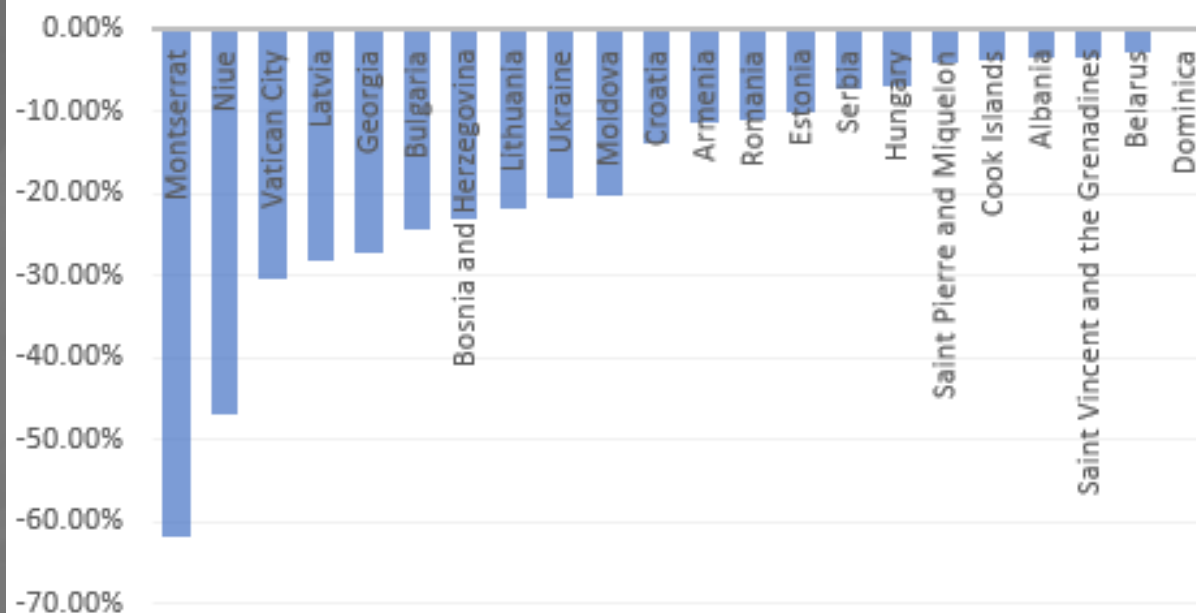
```
187

188    #Showing Top 10 Countries Which are Expected to Grow Rapidly by 2050
189 •  with CTE AS
190    (
191    SELECT country, pop2022, pop2050,
192    ROUND((pop2050-pop2022)*100.0/pop2022,2) AS `growth_by_2050 (in %)`
193    FROM pop_data
194    )
195

196    SELECT * FROM CTE
197    WHERE `growth_by_2050 (in %)` >0
198    ORDER BY `growth_by_2050 (in %)`DESC LIMIT 10;
199

200

201

202
```

country	pop2022	pop2050	growth_by_2050 (in %)
Niger	26207977	67043296	155.81
DR Congo	99010212	217494003	119.67
Mali	22593590	47439802	109.97
Somalia	17597511	36462830	107.20
Central African Republic	5579144	11533423	106.72
Chad	17723315	36452035	105.67
Mayotte	326101	664141	103.66
Angola	35588987	72328068	103.23
Tanzania	65497748	129931520	98.38
Mozambique	32969518	63044497	91.22

TOP 10 COUNTRIES WITH HIGHEST GROWTH RATE (2022-2050)

```sql
208
209     #Showing Top 10 Countries Which are Expected to Decline Rapidly by 2050
210  •  with CTE AS
211     (
212     SELECT country, pop2022, pop2050,
213     ROUND((pop2050-pop2022)*100.0/pop2022,2) AS `growth_by_2050 (in %)`
214     FROM pop_data
215     )
216
217     SELECT * FROM CTE
218     WHERE `growth_by_2050 (in %)` <0
219     ORDER BY `growth_by_2050 (in %)` LIMIT 10;
220
```

country	pop2022	pop2050	growth_by_2050 (in %)
American Samoa	44273	33557	-24.20
Bulgaria	6781953	5187392	-23.51
Latvia	1850651	1433728	-22.53
United States Virgin Islands	99465	77519	-22.06
Lithuania	2750055	2187550	-20.45
Serbia	7221365	5777806	-19.99
Croatia	4030358	3333425	-17.29
Ukraine	39701739	32867719	-17.21
Japan	123951692	103784357	-16.27
Puerto Rico	3252407	2727624	-16.14

Top 10 Countries With Highest Decline From 2022-2050
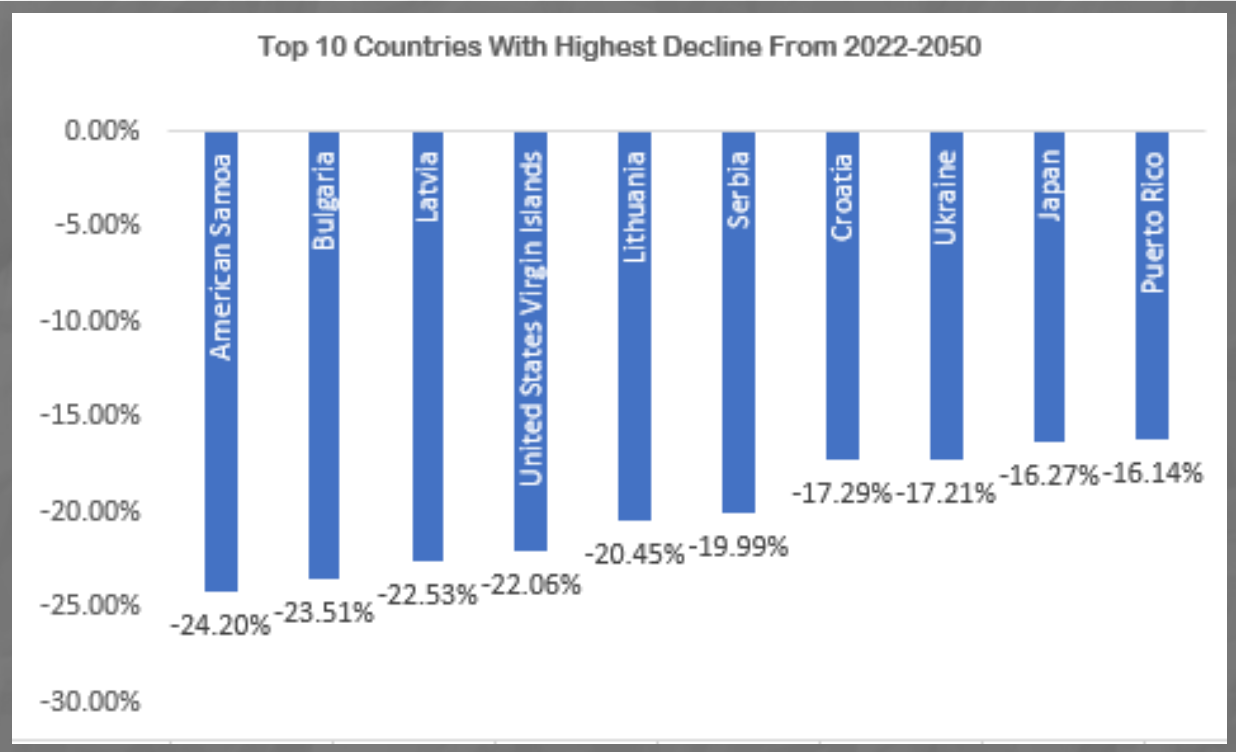
```sql
231
232   /*Showing the Population Estimation of 3 Most Populous Country
233   i.e. China, India, US */
234
235 • WITH CTE AS(SELECT country, pop2022, pop2030, pop2050,
236   ROUND((pop2030-pop2022)*100.0/pop2022,2) AS growth_rate_by2030 ,
237   ROUND((pop2050-pop2022)*100.0/pop2022,2) AS growth_rate_by2050
238   FROM pop_data
239   WHERE country_code IN ('IN','CN','US'))
240
241   SELECT country, pop2022, pop2030, pop2050,
242   CASE
243   WHEN growth_rate_by2030>0
244   THEN concat('+',growth_rate_by2030,'%')
245   ELSE concat(growth_rate_by2030,'%')
246   END as Growth_Rate2030,
247   CASE
248   WHEN growth_rate_by2050>0
249   THEN concat('+',growth_rate_by2050,'%')
250   ELSE concat(growth_rate_by2050,'%')
251   END as growth_rate2050
252   FROM CTE;
```

country	pop2022	pop2030	pop2050	Growth_Rate2030	growth_rate2050
India	1417173173	1514994080	1670490596	+6.90%	+17.87%
China	1425887337	1415605906	1312636325	-0.72%	-7.94%
United States	338289857	352162301	375391963	+4.10%	+10.97%

Result Grid | Filter Rows: | Export: | Wrap Cell Content: A

Expected Growth Rate Of 3 Most Populous Country By 2030

■India ■China ■United States

6.90%

4.10%

-0.72%

Expected Growth Rate Of 3 Most Populous Country By 2050

■India ■China ■United States

17.87%

10.97%

-7.94%
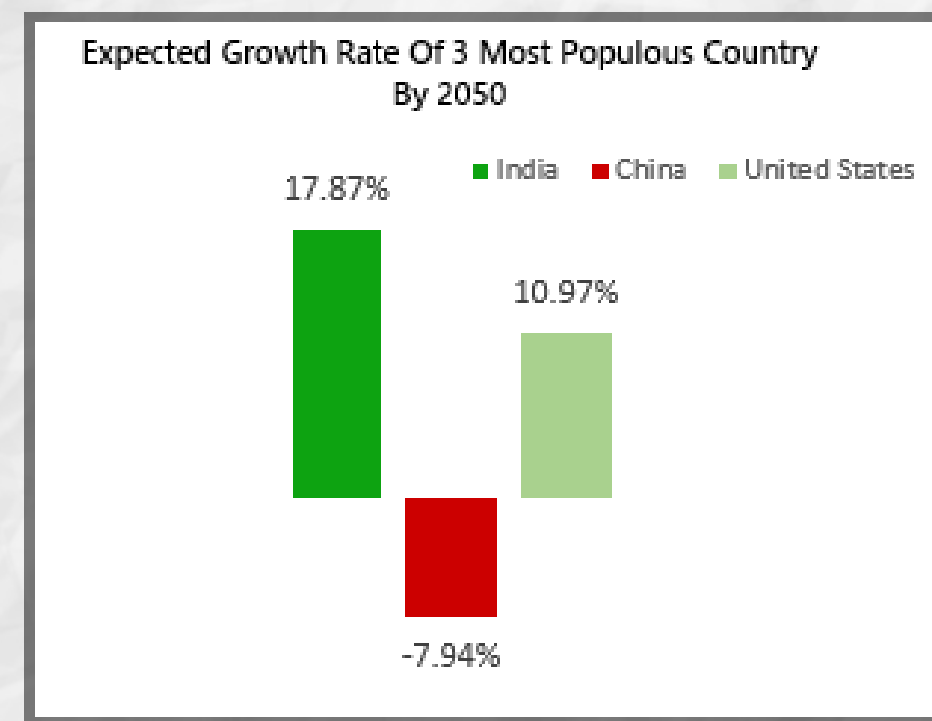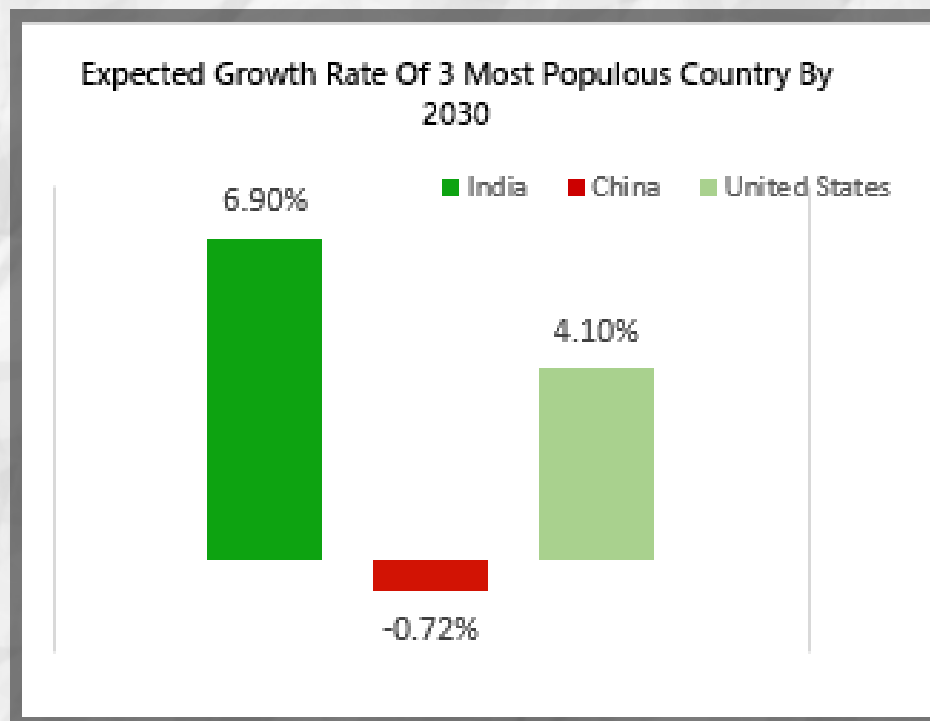
```sql
260    #Showing 5 Most Populous Expected Countries By 2050
261  • SELECT country, country_code, pop2050 AS population
262    FROM pop_data
263    ORDER BY pop2050 DESC LIMIT 5;
264
265
```

country	country_code	population
India	IN	1670490596
China	CN	1312636325
Nigeria	NG	377459883
United States	US	375391963
Pakistan	PK	367808468

```sql
#Showing 10 Most Populous Countries In 2022
SELECT country, country_code, pop2022 AS population
FROM pop_data
ORDER BY pop2022 DESC LIMIT 10;
```

Result Grid		Filter Rows:	
country	country_code	population	
China	CN	1425887337	
India	IN	1417173173	
United States	US	338289857	
Indonesia	ID	275501339	
Pakistan	PK	235824862	
Nigeria	NG	218541212	
Brazil	BR	215313498	
Bangladesh	BD	171186372	
Russia	RU	144713314	
Mexico	MX	127504125	

```sql
#Expected Population Of World By 2030 & 2050
SELECT "world", SUM(pop2022) AS`Population (in 2022)`, SUM(pop2030) AS`Population (in 2030)`,
SUM(pop2050) AS `Population (in 2050)`,
CONCAT(ROUND(100.0*(SUM(pop2030)-SUM(pop2022))/SUM(pop2022),2),'%') AS growthby2030,
CONCAT(ROUND(100.0*(SUM(pop2050)-SUM(pop2022))/SUM(pop2022),2),'%') AS growthby2050
FROM pop_data ;
```

	world	Population (in 2022)	Population (in 2030)	Population (in 2050)	growthby2030	growthby2050
▶	world	7973413043	8544417648	9707789237	7.16%	21.75%