Global age group

fertility case study

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The capacity to conceive a child is known as fertility. The majority of us take our fertility for granted, but since conception is a complicated process, some people may have trouble getting pregnant.

Fertility rates are typically determined using two standard assumptions. To initiate, it is assumed that each woman's fertility follows general age-specific fertility trends throughout her childbearing years (peaking in her early 30s). Second, it presumes that each woman will survive her childbearing years (ages 15 to 44, or in some cases, ages 15 to 49).

Another thing to keep in mind is that the fertility rate is a theoretical number based on real data, but it is not real data in and of itself. In other words, the fertility rate is not a precise count of how many children each actual living woman in a specific country has at any given time. It is instead the calculated average number of children that a woman in that country is likely to have over her lifetime. The "total fertility rate" is another name for this.

In this, we are going to analyze the global fertility dataset using SQL which provides us with more organized and accurate data. The following codes will help us to analyze the data.

1. Maximum total fertility rate from 1950 to 2023

SELECT

country\_name,

year,

MAX (total\_fertility\_rate) AS Max\_total\_fertility\_rate

FROM `bigquery-public-data.census\_bureau\_international.age\_specific\_fertility\_rates`

WHERE year BETWEEN 1950 AND 2023

GROUP BY country\_name,year

ORDER BY Max\_total\_fertility\_rate DESC

LIMIT 1;

Result:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Row | country\_name | year | Max\_total\_fertility\_rate |  |
| 1 | Rwanda | 1978 | 8.07 |  |

This results in Rwanda having the highest total fertility rate from 1950 to 2023, with a rate of 8.07 life births per woman in 1978.

1. Maximum fertility rate for all the age groups by countries in descending order

SELECT

country\_name,

MAX(fertility\_rate\_15\_19) AS max\_fertility\_rate\_15\_19,

MAX(fertility\_rate\_20\_24) AS max\_fertility\_rate\_20\_24,

MAX(fertility\_rate\_25\_29) AS max\_fertility\_rate\_25\_29,

MAX(fertility\_rate\_30\_34) AS max\_fertility\_rate\_30\_34,

MAX(fertility\_rate\_35\_39) AS max\_fertility\_rate\_35\_39,

MAX(fertility\_rate\_40\_44) AS max\_fertility\_rate\_40\_44,

MAX(fertility\_rate\_45\_49) AS max\_fertility\_rate\_45\_49

FROM `bigquery-public-data.census\_bureau\_international.age\_specific\_fertility\_rates`

WHERE year BETWEEN 1950 AND 2023

GROUP BY country\_name

ORDER BY country\_name DESC;

Result:

| Row | country\_name | max\_fertility\_rate\_15\_19 | max\_fertility\_rate\_20\_24 | max\_fertility\_rate\_25\_29 | max\_fertility\_rate\_30\_34 | max\_fertility\_rate\_35\_39 | max\_fertility\_rate\_40\_44 | max\_fertility\_rate\_45\_49 |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | Zimbabwe | 133.0 | 294.0 | 303.0 | 268.0 | 217.0 | 107.0 | 37.0 |  |
| 2 | Zambia | 160.0 | 318.2 | 322.6 | 289.4 | 224.6 | 115.2 | 32.0 |  |
| 3 | Yemen | 110.3 | 300.4 | 348.6 | 311.9 | 250.7 | 136.2 | 69.0 |  |
| 4 | Western Sahara | 175.7 | 275.5 | 289.0 | 282.8 | 189.2 | 103.4 | 47.3 |  |

This tells us the data based on the maximum age group fertility in that particular country.

1. Maximum gross reproduction rate in ascending order (Female life births per woman)

The gross reproduction rate is the average number of girls born healthy to a hypothetical cohort of women if they lived to the end of their reproductive years and accomplished the age-specific fertility that women in each age category experience in a specific year or timespan of years.

SELECT

country\_name,

MAX(gross\_reproduction\_rate) AS Max\_gross\_reproduction\_rate,

MIN(gross\_reproduction\_rate) AS Min\_gross\_reproduction\_rate

FROM `bigquery-public-data.census\_bureau\_international.age\_specific\_fertility\_rates`

WHERE year BETWEEN 1950 AND 2023

GROUP BY country\_name

ORDER BY country\_name ASC;

Result:

| Row | country\_name | Max\_gross\_reproduction\_rate | Min\_gross\_reproduction\_rate |
| --- | --- | --- | --- |
| 1 | Afghanistan | 3.9024 | 2.2088 |
| 2 | Albania | 1.4878 | 0.6812 |
| 3 | Algeria | 2.5815 | 1.1289 |
| 4 | American Samoa | 2.1209 | 1.0355 |
| 5 | Andorra | 0.7488 | 0.5458 |

The aforementioned information displays the highest and lowest gross reproduction rates in that nation from 1950 to 2023. This shows Afghanistan has a max gross reproduction rate of 3.9024 while the min gross reproduction rate is 2.2088.

1. Average Fertility Rate

SELECT

country\_name,

AVG(total\_fertility\_rate) as average\_total\_fertility\_rate

FROM `bigquery-public-data.census\_bureau\_international.age\_specific\_fertility\_rates`

GROUP BY country\_name

ORDER BY country\_name ASC;

Result:

| Row | country\_name | average\_total\_fertility\_rate |
| --- | --- | --- |
| 2 | Albania | 1.84306935483871 |
| 3 | Algeria | 2.62575625 |
| 4 | American Samoa | 2.4503921568627454 |
| 5 | Andorra | 1.455639344262295 |
| 6 | Angola | 6.1275432098 |

This tells the average total fertility rate of the countries over a century.

1. Total Fertility Rate greater than 2.1

SELECT

country\_name,

total\_fertility\_rate

FROM `bigquery-public-data.census\_bureau\_international.age\_specific\_fertility\_rates`

WHERE year = 2022 AND total\_fertility\_rate > 2.1

ORDER BY total\_fertility\_rate ASC;

Result:

| Row | country\_name | total\_fertility\_rate |
| --- | --- | --- |
| 1 | Kazakhstan | 2.108 |
| 2 | Cabo Verde | 2.128 |
| 3 | Djibouti | 2.15 |
| 4 | Mexico | 2.1568 |
| 5 | Argentina | 2.182 |

The mentioned information reveals the total fertility rate for the nations that is higher than 2.1. According to the table, Even after 2022, the population of these nations will continue to grow. While Kazakhstan has the least 2.108 and Angola has the most 5.8291.

1. Countries where the sex ratio at birth is less than 1.0 in 2022

The number of resident male live births (for a particular geography, such as a country, state, or county, for a specific time period) is known as the Sex Ratio at Birth

Sex ratio at birth =

Following code tells us the countries sex ratio at birth which is less than 1 in 2022 -

SELECT

DISTINCT (country\_name),sex\_ratio\_at\_birth

FROM `bigquery-public-data.census\_bureau\_international.age\_specific\_fertility\_rates`

WHERE year = 2022 AND sex\_ratio\_at\_birth < 1.0

ORDER BY country\_name ASC,

sex\_ratio\_at\_birth ASC;

Result:

|  |
| --- |
|  |
| Row | country\_name | sex\_ratio\_at\_birth |
| 1 | Kazakhstan | 0.9368 |
| 2 | Nauru | 0.8333 |
| 3 | United States | -9.0 |

This information reveals a list of nations where the sex ratio is less than 1, which indicates that there are fewer men than women in each nation.

1. Highest Age-specific fertility rate for age 25-29 (births per 1,000 population) between 1950 to 2050

SELECT

country\_name,

year,

MAX (fertility\_rate\_25\_29) AS max\_fertility\_rate\_25\_29

FROM `bigquery-public-data.census\_bureau\_international.age\_specific\_fertility\_rates`

WHERE year BETWEEN 1950 AND 2023

GROUP BY country\_name, year

ORDER BY max\_fertility\_rate\_25\_29 DESC

LIMIT 1;

Result:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Row | country\_name | year | max\_fertility\_rate\_25\_29 |  |
| 1 | Pakistan | 1987 | 369.2 |  |

According to the information above, Pakistan, with a fertility rate of 369.2, has the highest fertility rate in the world for those aged 25 to 29. According to this, there are 369.2 live births for every 1000 people. Additionally, this is the world's greatest fertility rate ever for a certain time period.

Data Source: -

bigquery-public-data.census\_bureau\_international.age\_specific\_fertility\_rates