**Questions and SQL Queries:**

**1. What are average, max, and min values in the data?**

* Purpose: To assess global extremes and averages for population metrics to understand disparities and opportunities for targeted support.

*-- Average, max, and min population*

SELECT AVG(population) AS avg\_population, MAX(population) AS max\_population, MIN(population) AS min\_population

FROM countries;

*-- Average fertility rate and max/min by country*

SELECT AVG(fertility\_rate) AS avg\_fertility, MAX(fertility\_rate) AS max\_fertility, MIN(fertility\_rate) AS min\_fertility

FROM countries;

*-- Density per square kilometer statistics*

SELECT AVG(density\_per\_sq\_km) AS avg\_density, MAX(density\_per\_sq\_km) AS max\_density, MIN(density\_per\_sq\_km) AS min\_density

FROM countries;

*-- Average percent of world population represented by a country*

SELECT AVG(percent\_of\_world\_pop) AS avg\_percent\_pop, MAX(percent\_of\_world\_pop) AS max\_percent\_pop, MIN(percent\_of\_world\_pop) AS min\_percent\_pop

FROM countries;

*-- Average, max, and min net migrants*

SELECT AVG(net\_migrants) AS avg\_net\_migrants, MAX(net\_migrants) AS max\_net\_migrants, MIN(net\_migrants) AS min\_net\_migrants

FROM countries;

**2. What about those numbers per category in the data (using HAVING)?**

* Purpose: To compare metrics across countries grouped by specific thresholds or conditions, aiding in identifying key development patterns.

*-- Countries with above-average density*

SELECT country, density\_per\_sq\_km

FROM countries

GROUP BY country

HAVING AVG(density\_per\_sq\_km) > (SELECT AVG(density\_per\_sq\_km) FROM countries);

*-- Countries grouped by high or low fertility rate*

SELECT country, fertility\_rate

FROM countries

GROUP BY fertility\_rate

HAVING AVG(fertility\_rate) > 2.1;

*-- Countries with significant population changes*

SELECT country, population\_change

FROM countries

GROUP BY country

HAVING MAX(population\_change) > 1000000;

*-- Countries with above-average area size*

SELECT country, area\_sq\_km

FROM countries

GROUP BY area\_sq\_km

HAVING AVG(area\_sq\_km) > (SELECT AVG(area\_sq\_km) FROM countries);

*-- Countries contributing significantly to world population*

SELECT country, percent\_of\_world\_pop

FROM countries

GROUP BY percent\_of\_world\_pop

HAVING SUM(percent\_of\_world\_pop) > 5;

**3. What ways are there to group the data values that don’t exist yet (using CASE)?**

* Purpose: To create new categories for countries based on metrics like fertility rate, population density, or age demographics for better analysis.

*-- Classify countries by population size*

SELECT country,

CASE

WHEN population > 100000000 THEN 'High Population'

WHEN population > 10000000 THEN 'Medium Population'

ELSE 'Low Population'

END AS population\_category

FROM countries;

*-- Classify countries by population density*

SELECT country,

CASE

WHEN density\_per\_sq\_km > 500 THEN 'Very Dense'

WHEN density\_per\_sq\_km > 100 THEN 'Moderately Dense'

ELSE 'Low Density'

END AS density\_category

FROM countries;

*-- Group countries by fertility rate*

SELECT country,

CASE

WHEN fertility\_rate > 3 THEN 'High Fertility'

WHEN fertility\_rate >= 2 THEN 'Replacement Level'

ELSE 'Low Fertility'

END AS fertility\_category

FROM countries;

*-- Classify countries by migration trends*

SELECT country,

CASE

WHEN net\_migrants > 0 THEN 'Net Positive Migration'

ELSE 'Net Negative Migration'

END AS migration\_status

FROM countries;

*-- Categorize countries by population growth rate*

SELECT country,

CASE

WHEN percent\_one\_year\_change > 2 THEN 'Rapid Growth'

WHEN percent\_one\_year\_change > 0 THEN 'Steady Growth'

ELSE 'Decline'

END AS growth\_category

FROM countries;

**4. What interesting ways are there to filter the data (using AND/OR)?**

* Purpose: To identify countries meeting specific criteria for targeted interventions or insights, such as high density and low fertility.

*-- Countries with high population density and low fertility*

SELECT country, density\_per\_sq\_km, fertility\_rate

FROM countries

WHERE density\_per\_sq\_km > 300 AND fertility\_rate < 2;

*-- Countries with population growth and high migration*

SELECT country, percent\_one\_year\_change, net\_migrants

FROM countries

WHERE percent\_one\_year\_change > 1 AND net\_migrants > 10000;

*-- Countries with low population and high area size*

SELECT country, population, area\_sq\_km

FROM countries

WHERE population < 1000000 OR area\_sq\_km > 1000000;

*-- Countries with high fertility and young median age*

SELECT country, fertility\_rate, median\_age

FROM countries

WHERE fertility\_rate > 3 AND median\_age < 25;

*-- Countries contributing significantly to world population but experiencing decline*

SELECT country, percent\_of\_world\_pop, percent\_one\_year\_change

FROM countries

WHERE percent\_of\_world\_pop > 1 AND percent\_one\_year\_change < 0;

**Why is the NGO Asking These Questions?**

1. **Population Dynamics**: Identify regions with rapid growth or decline to support sustainable development efforts.
2. **Migration Trends**: Understand migration patterns to guide policies on integration and support.
3. **Fertility and Health**: Examine fertility rates and demographic shifts for better resource allocation.
4. **Population Density**: Address overcrowding issues or develop infrastructure in dense regions.
5. **Global Contribution**: Highlight countries that play key roles in world population changes for strategic focus.