International Migration Analysis Project

Project Objectives

1. Analyze long-term migration trends by age and sex over time
2. Identify seasonal patterns in migration arrivals
3. Compare migration patterns between different age groups (0-4 years vs 10-14 years)
4. Examine gender differences in migration patterns
5. Track the impact of major events (like COVID-19 in 2020) on migration flows

Key Analytical Questions

1. What are the overall trends in long-term migrant arrivals over time?
2. How do migration patterns differ between males and females?
3. What are the seasonal patterns in migration for different age groups?
4. How did the COVID-19 pandemic affect migration numbers in 2020-2021?
5. Which age group (0-4 or 10-14) shows more consistent migration patterns?
6. What are the peak months for migration arrivals historically?
7. How do provisional estimates compare to final numbers historically?

SQL Queries for Key Insights

1. Overall Migration Trends by Year

sql

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SELECT

SUBSTR(year\_month, 1, 4) AS year,

sex,

SUM(estimate) AS total\_arrivals

FROM migration\_data

WHERE passenger\_type = 'Long-term migrant'

AND direction = 'Arrivals'

AND age IN ('0-4 years', '10-14 years')

GROUP BY year, sex

ORDER BY year, sex;

2. Monthly Migration Patterns (Seasonality)

sql

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SELECT

SUBSTR(year\_month, 6, 2) AS month,

sex,

AVG(estimate) AS avg\_monthly\_arrivals

FROM migration\_data

WHERE passenger\_type = 'Long-term migrant'

AND direction = 'Arrivals'

AND age IN ('0-4 years', '10-14 years')

AND status = 'Final'

GROUP BY month, sex

ORDER BY month, sex;

3. Age Group Comparison

sql

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SELECT

SUBSTR(year\_month, 1, 4) AS year,

age,

SUM(estimate) AS total\_arrivals,

SUM(CASE WHEN sex = 'Female' THEN estimate ELSE 0 END) AS female\_arrivals,

SUM(CASE WHEN sex = 'Male' THEN estimate ELSE 0 END) AS male\_arrivals

FROM migration\_data

WHERE passenger\_type = 'Long-term migrant'

AND direction = 'Arrivals'

AND age IN ('0-4 years', '10-14 years')

GROUP BY year, age

ORDER BY year, age;

4. COVID-19 Impact Analysis

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SELECT

SUBSTR(year\_month, 1, 4) AS year,

SUBSTR(year\_month, 6, 2) AS month,

SUM(estimate) AS total\_arrivals

FROM migration\_data

WHERE passenger\_type = 'Long-term migrant'

AND direction = 'Arrivals'

AND age IN ('0-4 years', '10-14 years')

AND year\_month BETWEEN '2020-01' AND '2021-12'

GROUP BY year, month

ORDER BY year, month;

5. Gender Differences by Age Group

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SELECT

age,

sex,

AVG(estimate) AS avg\_monthly\_arrivals,

MAX(estimate) AS peak\_arrivals,

MIN(estimate) AS lowest\_arrivals

FROM migration\_data

WHERE passenger\_type = 'Long-term migrant'

AND direction = 'Arrivals'

AND age IN ('0-4 years', '10-14 years')

AND status = 'Final'

GROUP BY age, sex

ORDER BY age, sex;

6. Provisional vs Final Data Comparison

sql

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SELECT

status,

COUNT(\*) AS record\_count,

AVG(estimate) AS avg\_estimate,

AVG(standard\_error) AS avg\_standard\_error

FROM migration\_data

WHERE passenger\_type = 'Long-term migrant'

AND direction = 'Arrivals'

GROUP BY status;

7. Year-over-Year Growth Rates

sql

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WITH yearly\_totals AS (

SELECT

SUBSTR(year\_month, 1, 4) AS year,

SUM(estimate) AS total\_arrivals

FROM migration\_data

WHERE passenger\_type = 'Long-term migrant'

AND direction = 'Arrivals'

AND age IN ('0-4 years', '10-14 years')

AND status = 'Final'

GROUP BY year

)

SELECT

year,

total\_arrivals,

LAG(total\_arrivals) OVER (ORDER BY year) AS prev\_year\_arrivals,

ROUND((total\_arrivals - LAG(total\_arrivals) OVER (ORDER BY year)) /

LAG(total\_arrivals) OVER (ORDER BY year) \* 100, 2) AS yoy\_growth\_pct

FROM yearly\_totals

ORDER BY year;

These queries will help uncover the key insights needed to understand migration patterns, seasonal variations, demographic differences, and the impact of significant events like the COVID-19 pandemic on international migration flows.