**Rolling Average:**

A rolling average can provide valuable insights into the trends and patterns in the immigrant population over time. By calculating the average value over a specific period and continually updating it as new data becomes available, a rolling average smooths out short-term fluctuations and highlights longer-term trends. Here's what a rolling average can tell us about the immigrant population:

Trend identification: A rolling average helps identify the overall direction of change in the immigrant population. By removing short-term noise and focusing on the smoothed average, you can observe whether the population is increasing, decreasing, or remaining relatively stable over time.

Seasonal patterns: If there are recurring patterns or seasonality in the immigrant population, a rolling average can reveal these trends. By calculating the average over a period that aligns with the seasonal cycle, you can identify regular peaks and troughs in the population and understand how it varies throughout the year.

Long-term changes: A rolling average can reveal long-term changes in the immigrant population. By analyzing the average over extended periods, such as five or ten years, you can identify gradual shifts in the population composition, growth rates, or overall trends that might not be apparent when looking at individual years.

Smoothing outliers: Outliers or extreme values in the immigrant population data can distort the overall picture. A rolling average helps mitigate the impact of these outliers by incorporating multiple data points into the calculation, providing a more representative and stable measure of the population.

Forecasting: A rolling average can serve as a basis for forecasting future trends in the immigrant population. By extending the rolling average into the future, you can make projections and estimate how the population might evolve based on past patterns and trends.

It's important to note that the specific insights obtained from a rolling average will depend on the chosen time period and the context of the data. Different rolling average periods can highlight different patterns, and it's essential to consider the appropriate timeframe for your analysis.

To visualize a rolling average of the immigrant population, you can use various chart types in Power BI or any other data visualization tool. Here are a few visualization options to consider:

Line Chart: A line chart is commonly used to display trends over time. Plot the rolling average of the immigrant population on the y-axis and the corresponding time periods (years, months, quarters, etc.) on the x-axis. This chart type helps visualize the overall trend and any fluctuations in the rolling average over time.

Combo Chart: A combo chart combines different chart types into a single visualization. You can use a combo chart to display both the actual immigrant population values and the rolling average. For example, plot the immigrant population as a column or bar chart, and overlay the rolling average as a line chart. This allows for a direct comparison between the actual values and the smoothed average.

Area Chart: An area chart can be effective in illustrating the rolling average of the immigrant population. Similar to a line chart, it shows the trend over time, but with the area under the line filled, emphasizing the magnitude of the average. This visualization can provide a sense of the overall magnitude and changes in the rolling average.

Sparkline Chart: If you want to display the rolling average in a compact form, consider using sparkline charts. These small, condensed line charts can be placed within a table or alongside other visuals to provide a quick overview of the rolling average trend for each time period.

Remember to label your axes, provide a clear legend or labeling for different lines or areas, and choose appropriate colors and formatting to enhance clarity and understanding. Additionally, consider adding annotations or callouts to highlight significant events or changes that align with the rolling average trend.

Experiment with different visualization options and choose the one that effectively communicates the rolling average of the immigrant population while aligning with your analysis objectives and the preferences of your audience.