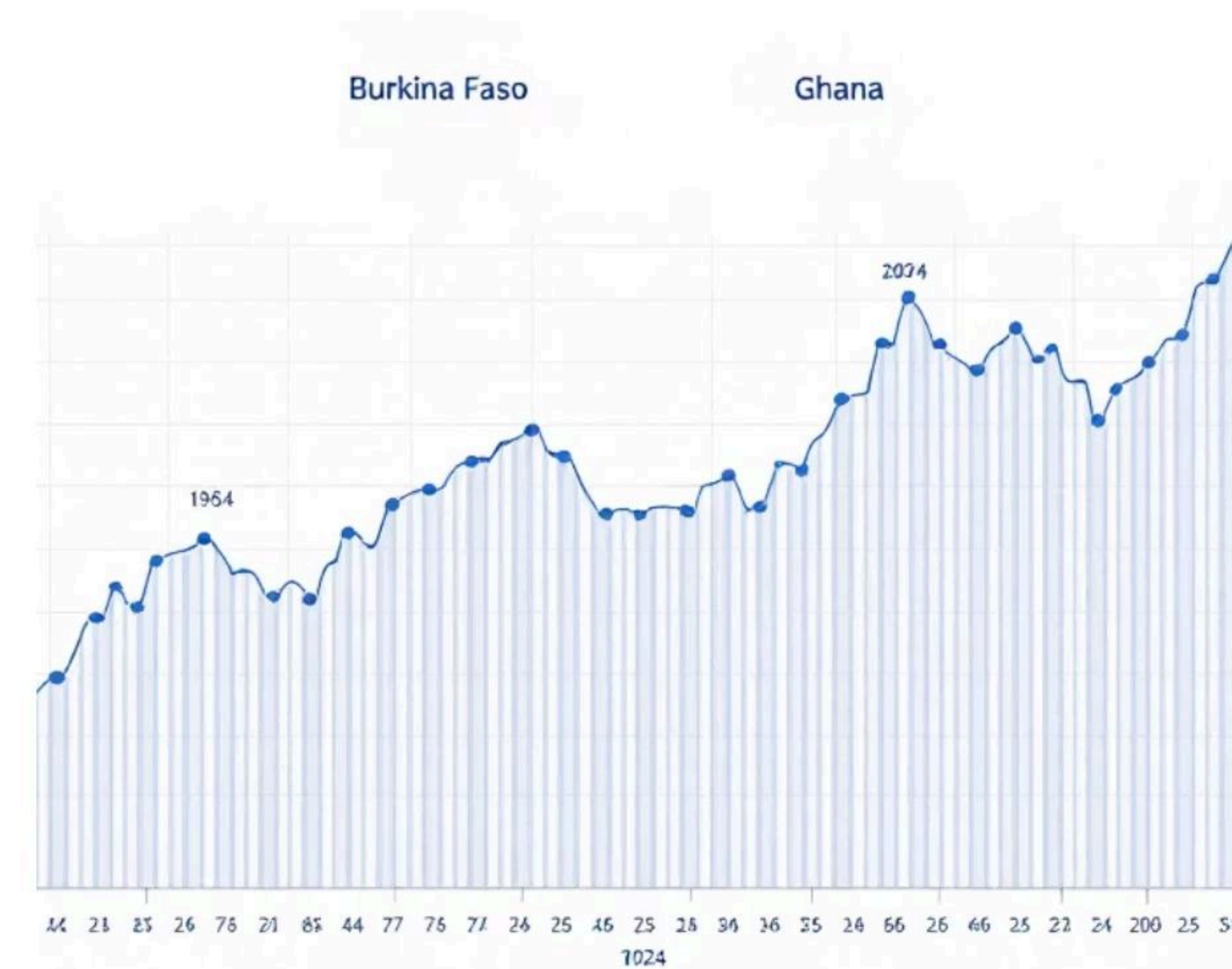


Burkina Faso and Ghana Population Analysis

A comprehensive data-driven study of population trends from 1960-2024 using Python, Pandas, NumPy, and Matplotlib

Group 04: BICABA Rayane, BERE Lydia, MADIEGA Aida, SILGA Patricia



Project Overview

01

Data Collection

Imported comprehensive population dataset spanning 266 countries from 1960-2024

The link:

<https://data.worldbank.org/indicator/SP.POP.TOTL?end=2024&start=2024&view=map>

03

Statistical Analysis

Computed growth rates, means, and standard deviations for population trends

02

Data Cleaning

Removed incomplete records and irrelevant columns to ensure data quality

04

Visualization

Created comparative charts to illustrate population dynamics over time

Research Objectives



Compare Growth Patterns

Analyze population growth between Burkina Faso and Ghana over 64 years



Measure Growth Speed

Calculate percentage increase from 1960 baseline to 2023



Assess Stability

Evaluate population stability using mean and standard deviation metrics



Identify Thresholds

Determine when populations reached critical doubling points

Dataset Structure

Initial Dataset

- 266 countries and regions
- 69 columns (65 years + metadata)
- Annual population data 1960-2024
- Some incomplete records present

Cleaned Dataset

- 264 complete country records
- 67 columns after removing indicators
- All NaN rows eliminated
- Focus subset: Burkina Faso & Ghana

Data Cleaning Process



Raw Data Import

Loaded CSV with 266 rows, 69 columns including metadata fields



Remove Incomplete Records

Dropped rows with missing values, reducing to 264 complete entries



Drop Redundant Columns

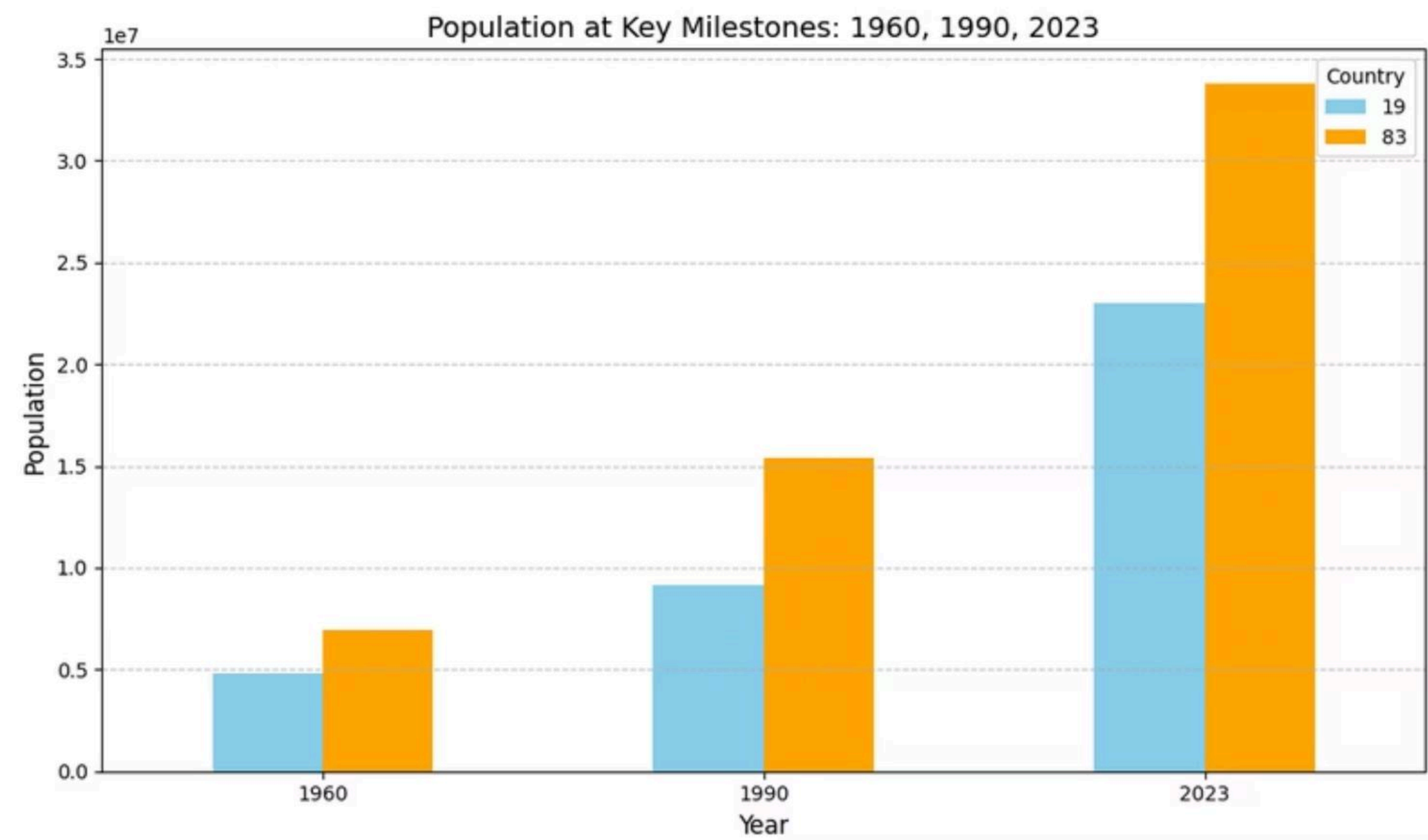
Eliminated "Indicator Name" and "Indicator Code" columns



Clean Dataset Ready

Final dataset with 264 countries, 67 columns for analysis

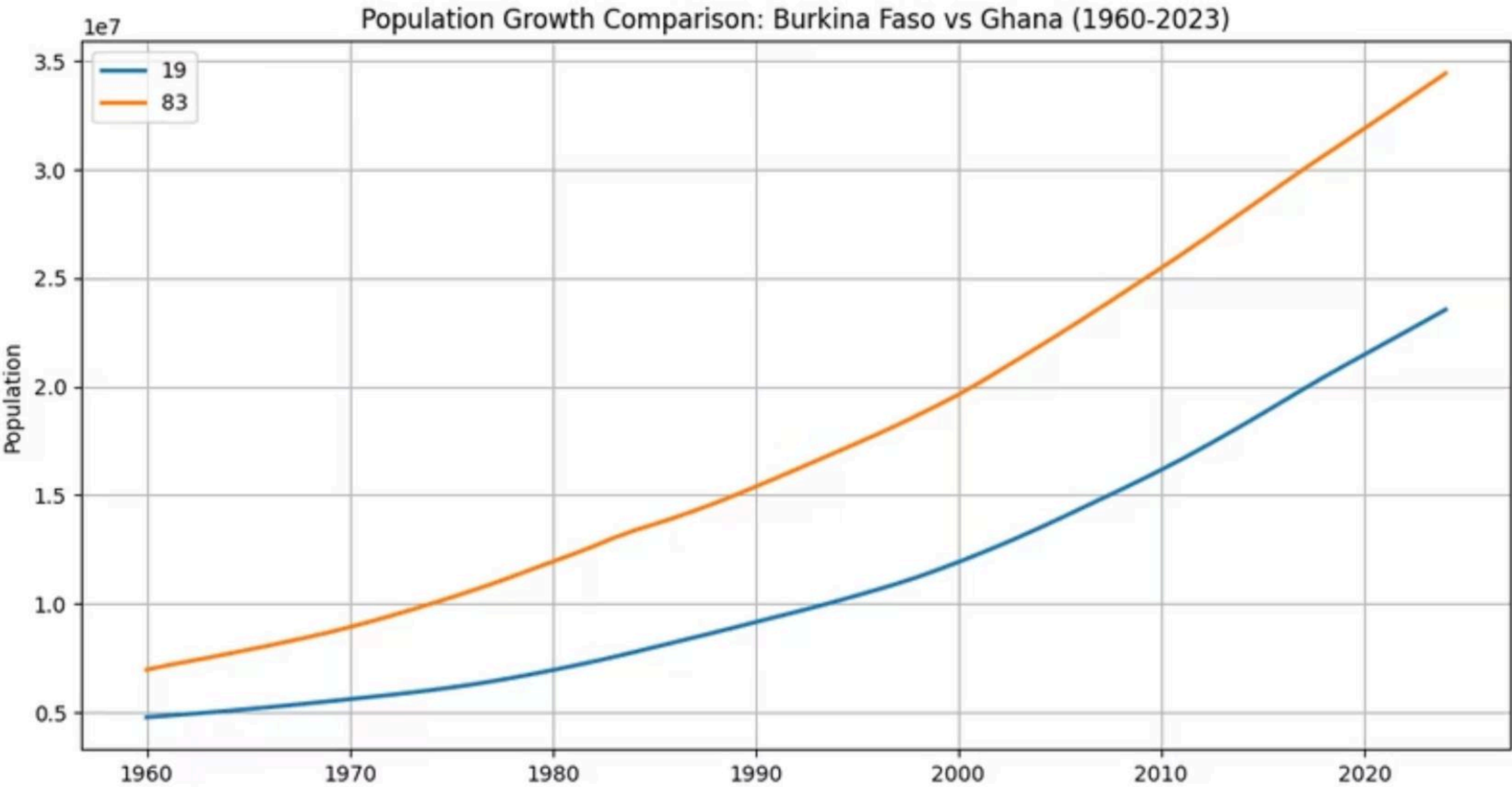
Population Growth Speed Graph



Orange: Ghana

Blue : Burkina Faso

Population Growth Comparison



Orange: Ghana

Blue : Burkina Faso

Population Growth Speed

Percentage increase from 1960 to 2023 reveals explosive demographic expansion in both nations

382%

Burkina Faso

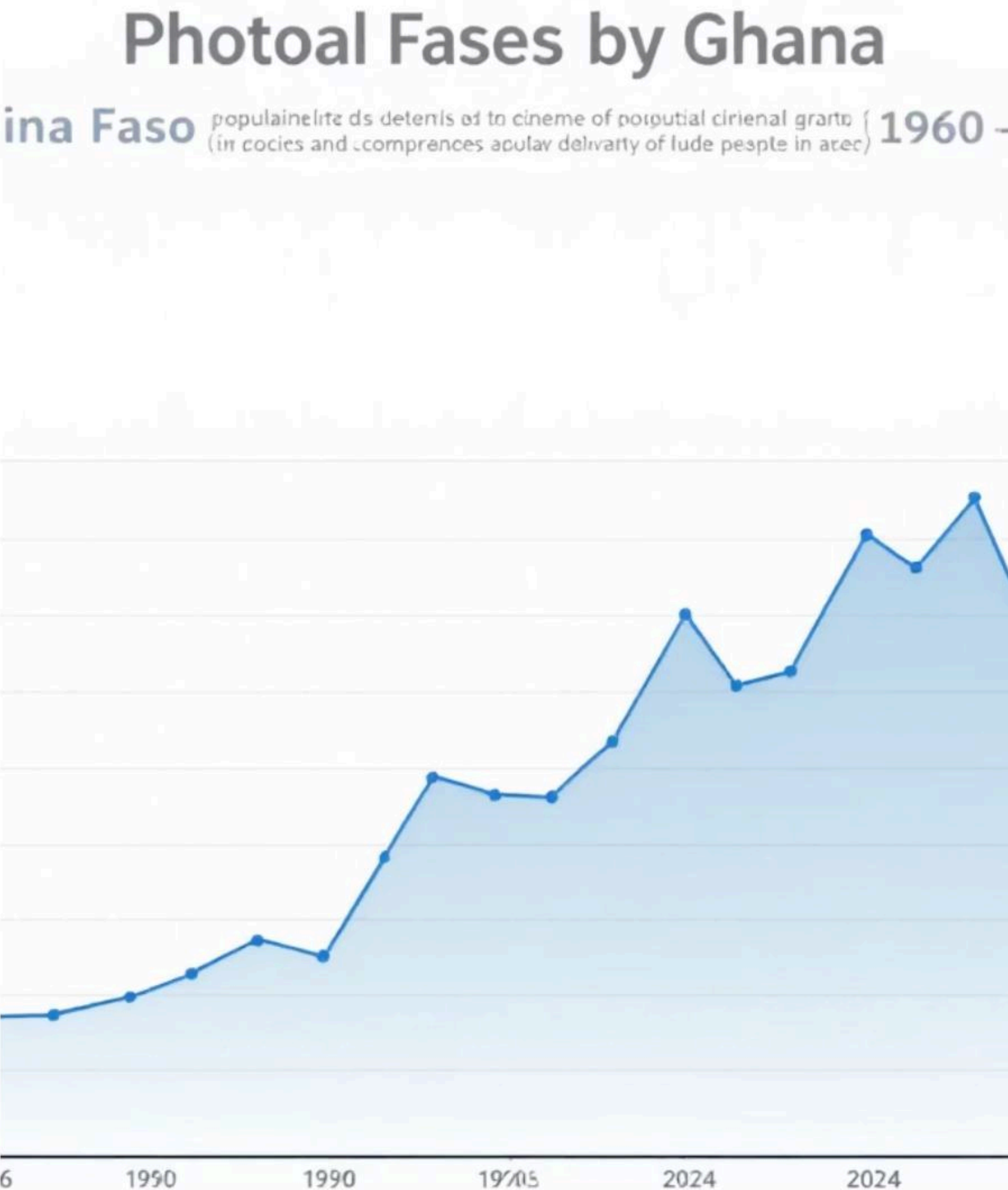
Population increased from 4.78M to 23.0M over 63 years

385%

Ghana

Population grew from 6.96M to 33.8M in the same period

Both countries experienced nearly **quadruple** population growth, with Ghana maintaining a slightly higher rate throughout the period.



Stability Analysis Results

Historical Mean Population

Burkina Faso: 11.23 million average

Ghana: 17.82 million average

Ghana consistently maintained a larger population throughout the 64-year period.

Standard Deviation

Burkina Faso: 5.6 million

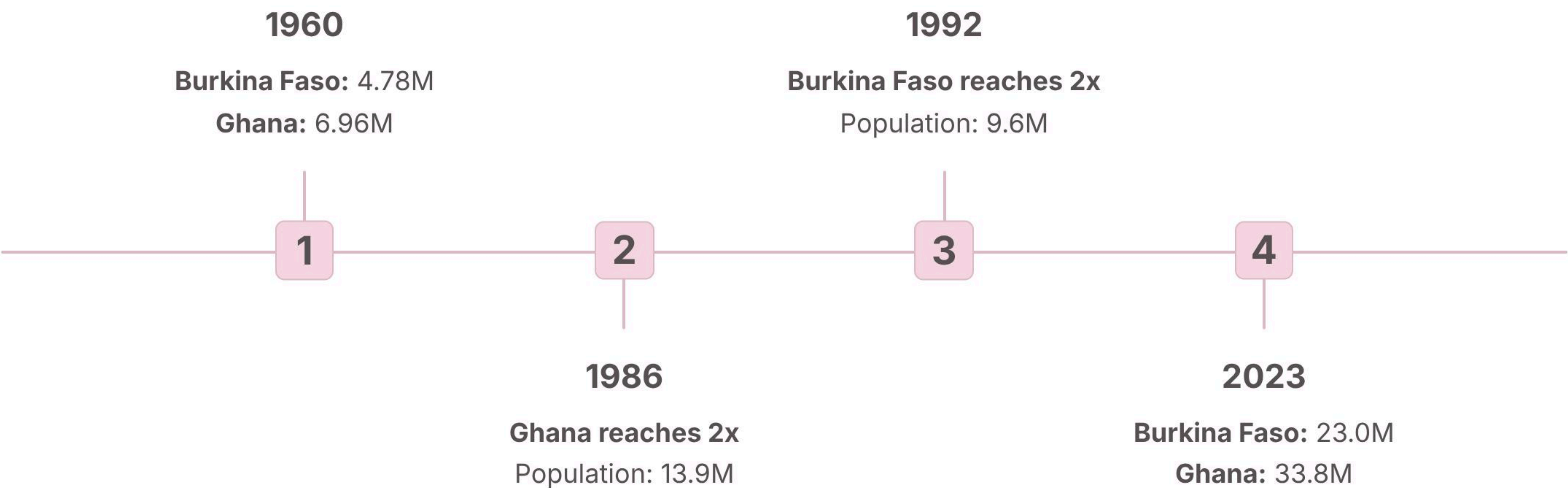
Ghana: 8.18 million

High deviation values indicate rapid, sustained growth rather than stable populations.



Critical Threshold: Population Doubling

Analysis identified the exact year when each country's population reached twice its 1960 baseline



Ghana reached the doubling threshold **6 years earlier** than Burkina Faso, demonstrating faster early growth momentum.

Exponential population growth of the exponents and parallel demographic trajectories
of Ghana and Burkina Faso over a 63 years over 63 years.



Population Trends Visualization

Comparative line plot reveals parallel growth trajectories with Ghana maintaining consistent lead

1960-1990

Steady exponential growth phase for both countries

1990-2023

Accelerated growth with widening gap between nations

Key Pattern

Ghana's population consistently 1.4-1.5x larger than Burkina Faso

Key Findings & Conclusions

Explosive Growth

Both nations experienced ~380% population increase over 63 years, indicating sustained demographic expansion

Ghana's Advantage

Ghana maintained larger population and reached doubling point 6 years earlier than Burkina Faso

High Variability

Large standard deviations confirm rapid, continuous growth rather than population stability

Parallel Trajectories

Despite different scales, both countries followed remarkably similar growth patterns throughout the period