



# EDA ANALYSIS

## POPULATION TREND IN AFRICA

*ACCESSING AFRICA'S DEMOGRAPHIC TRANSITION POPULATION HEALTH:  
TRENDS IN FERTILITY, MORTALITY, AND LIFE EXPECTANCY (2010–2024)*

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# Background

Africa is undergoing a demographic transition marked by declining fertility and mortality and rising life expectancy. Understanding these patterns is crucial for guiding health and development policy. This study analyzes trends from 2010–2024 across fertility, mortality, and life-expectancy indicators to assess regional progress and reveal disparities shaping Africa's population health transformation.

# objectives and Methodology

## Our Goal

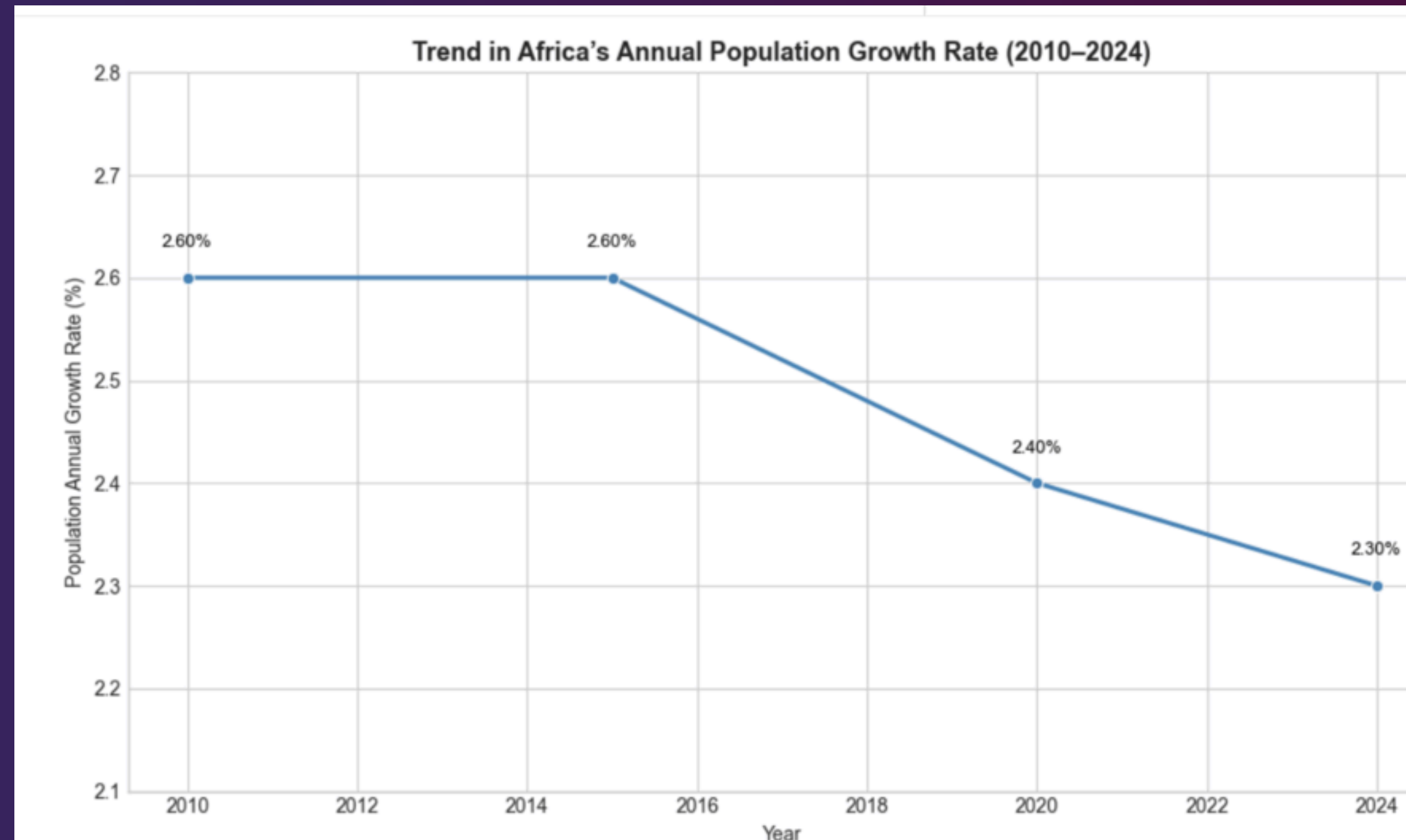
To assess Africa's progress in population health and demographic transition by analyzing trends in fertility, mortality, and life expectancy across countries, providing insights into health and development outcomes that inform health policy.

## How?

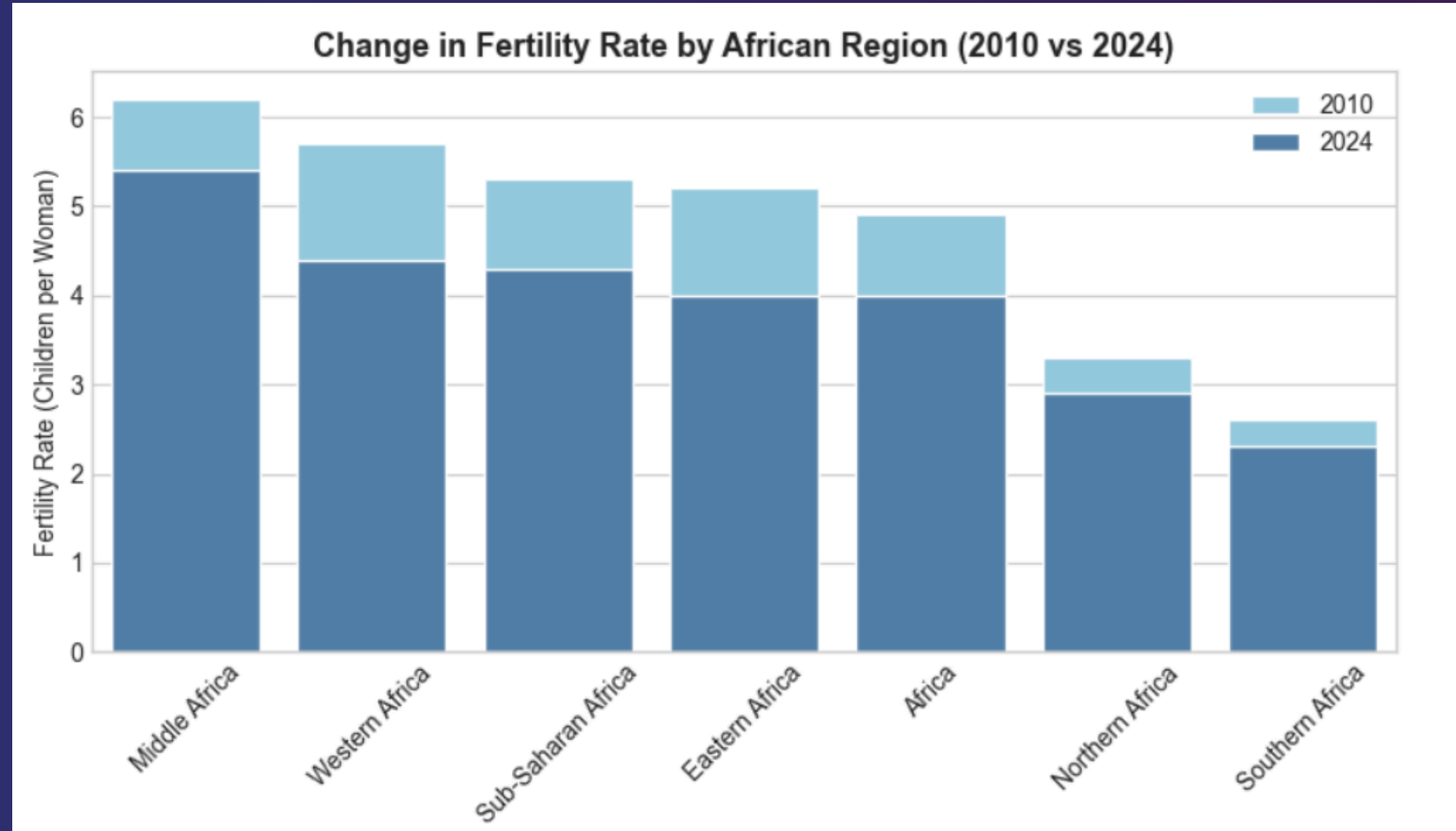
- Used UN World Population Prospects (2010–2024) focused on Africa.
- Performed descriptive, temporal, and relational analyses using Python (pandas, seaborn, matplotlib).
- Examined fertility, mortality, and life expectancy trends to identify regional disparities and demographic transition patterns

# From 2010 to 2024: Africa's population growth trajectory

The continental population growth rate declined from **2.6 % in 2010** to **2.3 % in 2024**, indicating that Africa's overall growth is beginning to slow gradually after decades of rapid expansion.

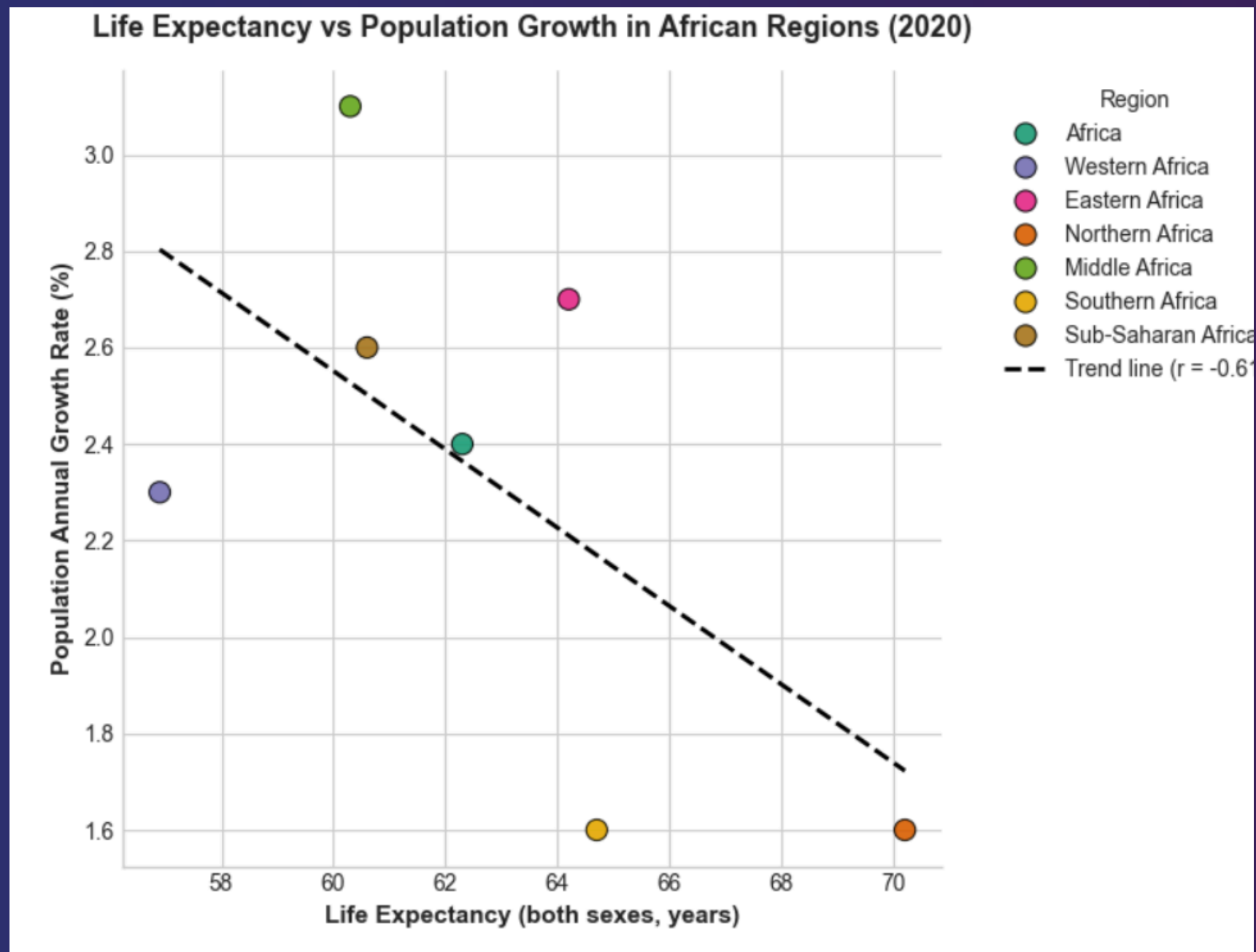


# FERTILITY TRENDS VARY BY REGION IN AFRICA



Fertility remains **highest in Middle and Western Africa**, while Northern and Southern Africa show sharper declines. All regions experienced a declining trend.

# Are regions with higher life expectancy also experiencing slower population growth?



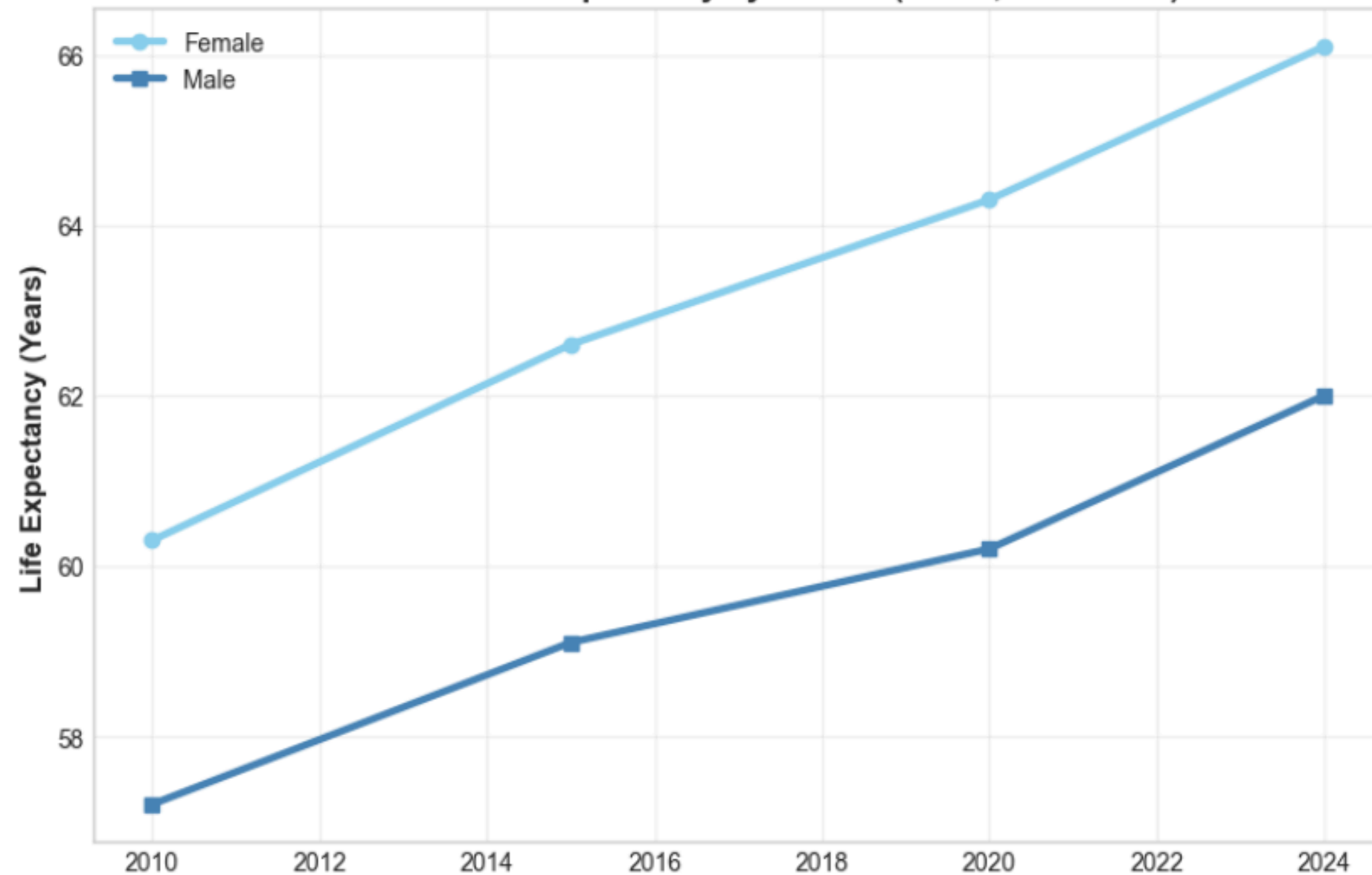
- Negative correlation ( $r = -0.61$ ): longer lives → slower growth.
- Northern & Southern Africa: higher life expectancy (**68–70 yrs**), **lower growth (~1.6–2.0%)**.
- Western & Middle Africa: shorter lives (**58–61 yrs**), **higher growth (~2.8–3.1%)**.
- Reflects demographic transition — from high fertility/mortality to stabilization.

It is inferred that there is health gains and longevity drive Africa's gradual slowdown in population growth.

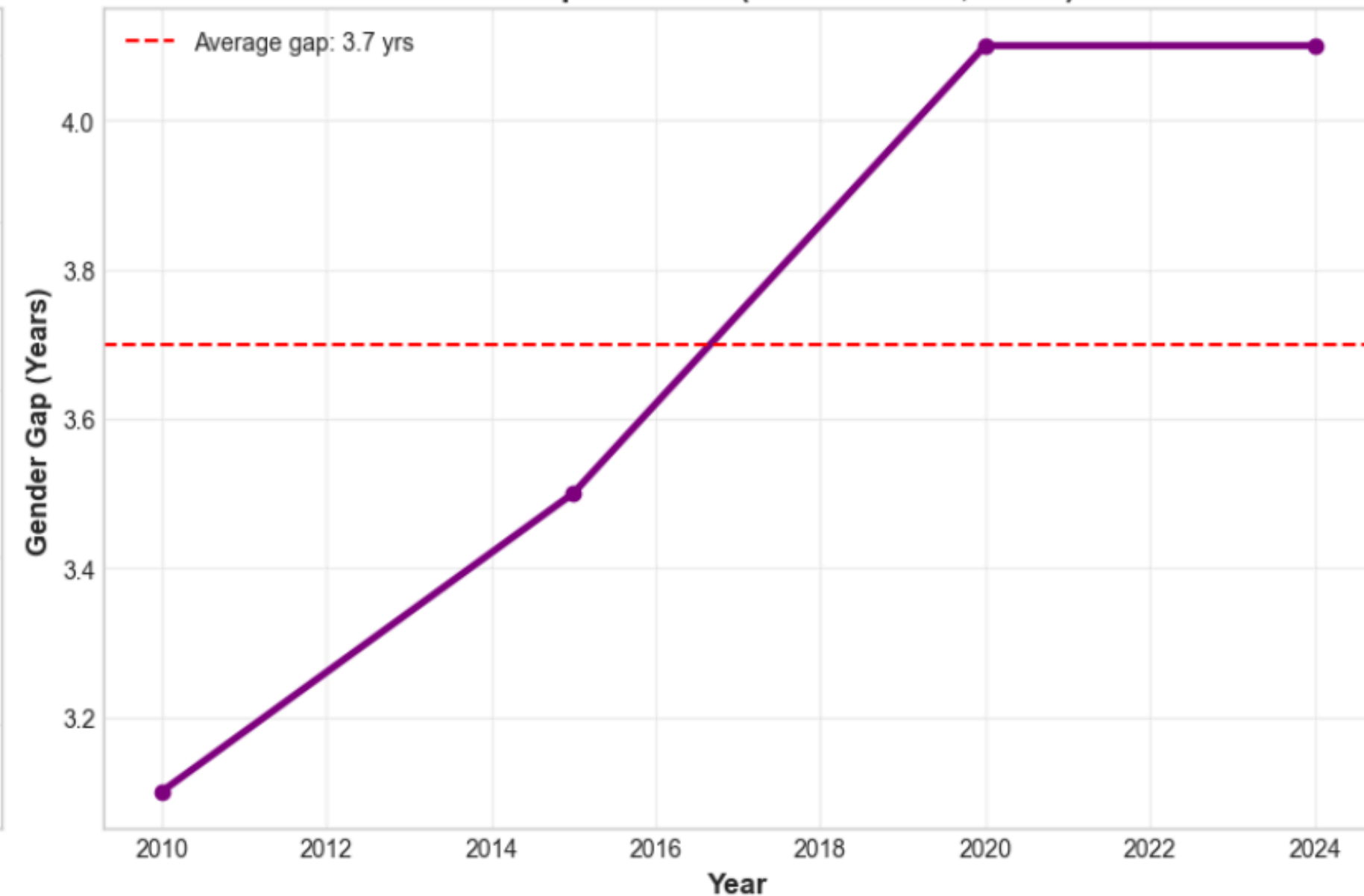


# Male vs. Female Life Expectancy Trends in Africa

Continental Life Expectancy by Gender (Africa, 2010–2020)



Gender Gap Evolution (Female – Male, Africa)

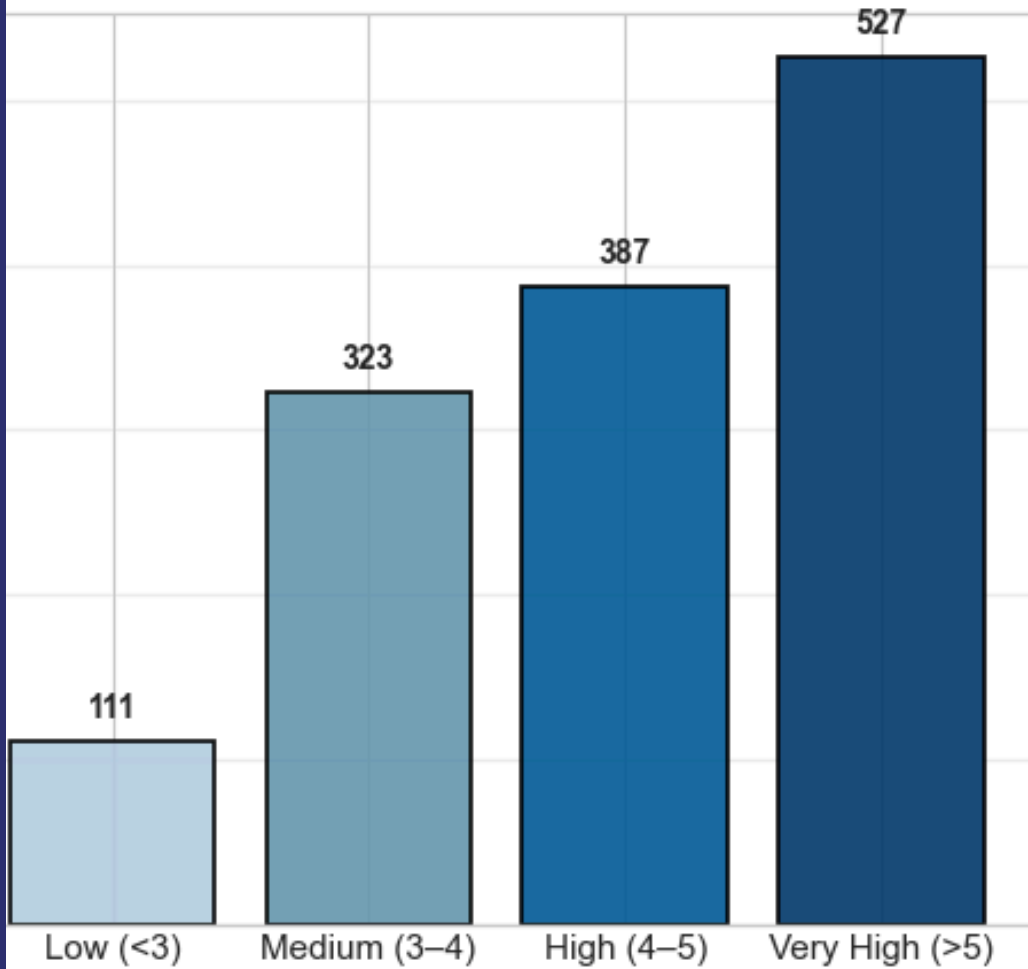


## Key insights

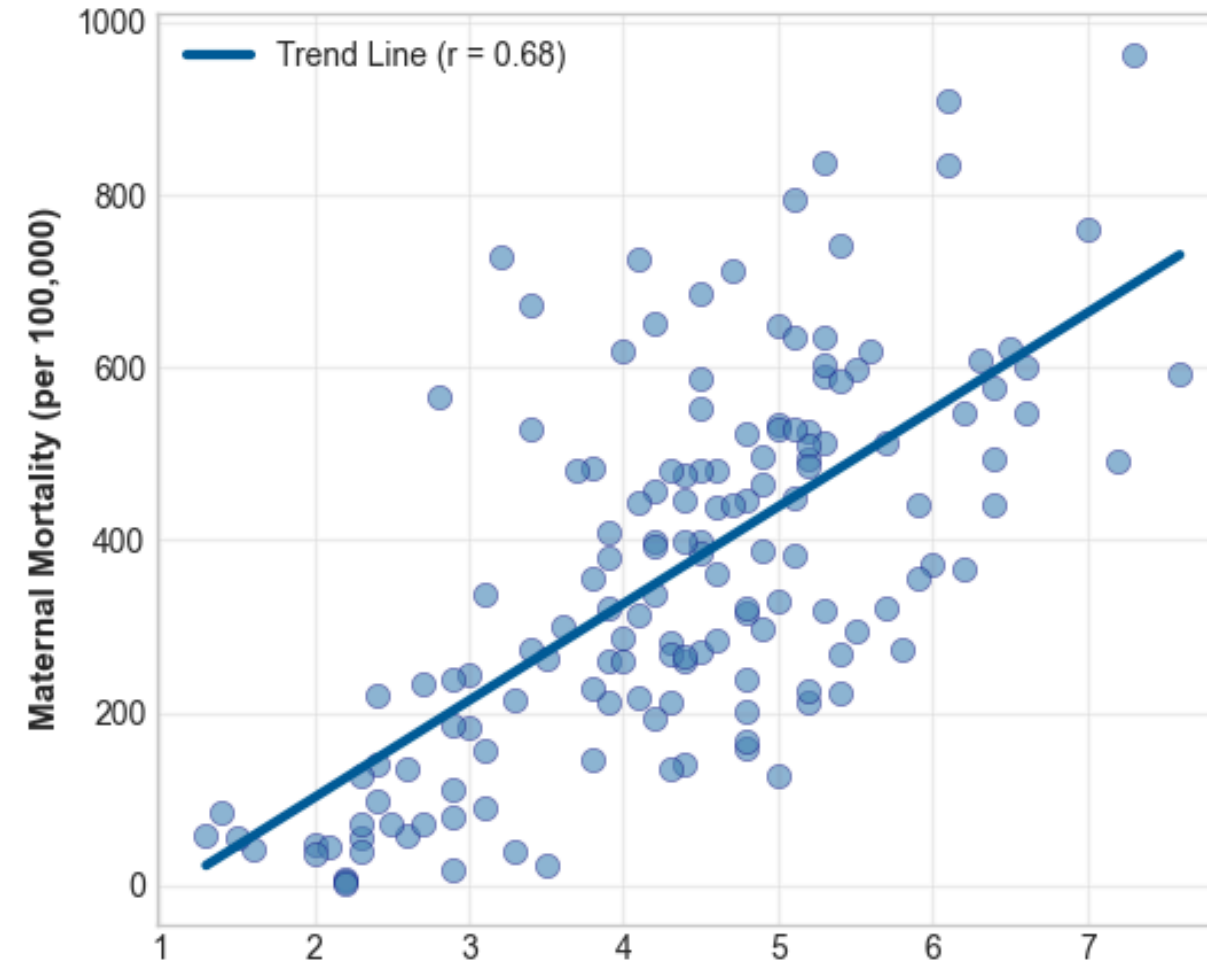
- Average gender gap: 3.70 years, with women better than men
- Gap is widening: Increased from 3.1 years (2010) to 4.1 years (2024)
- Both genders improving: Female LE: 60.3→66.1 years; Male LE: 57.2→62.0 years

# Women in countries with more children face greater maternal health risks.

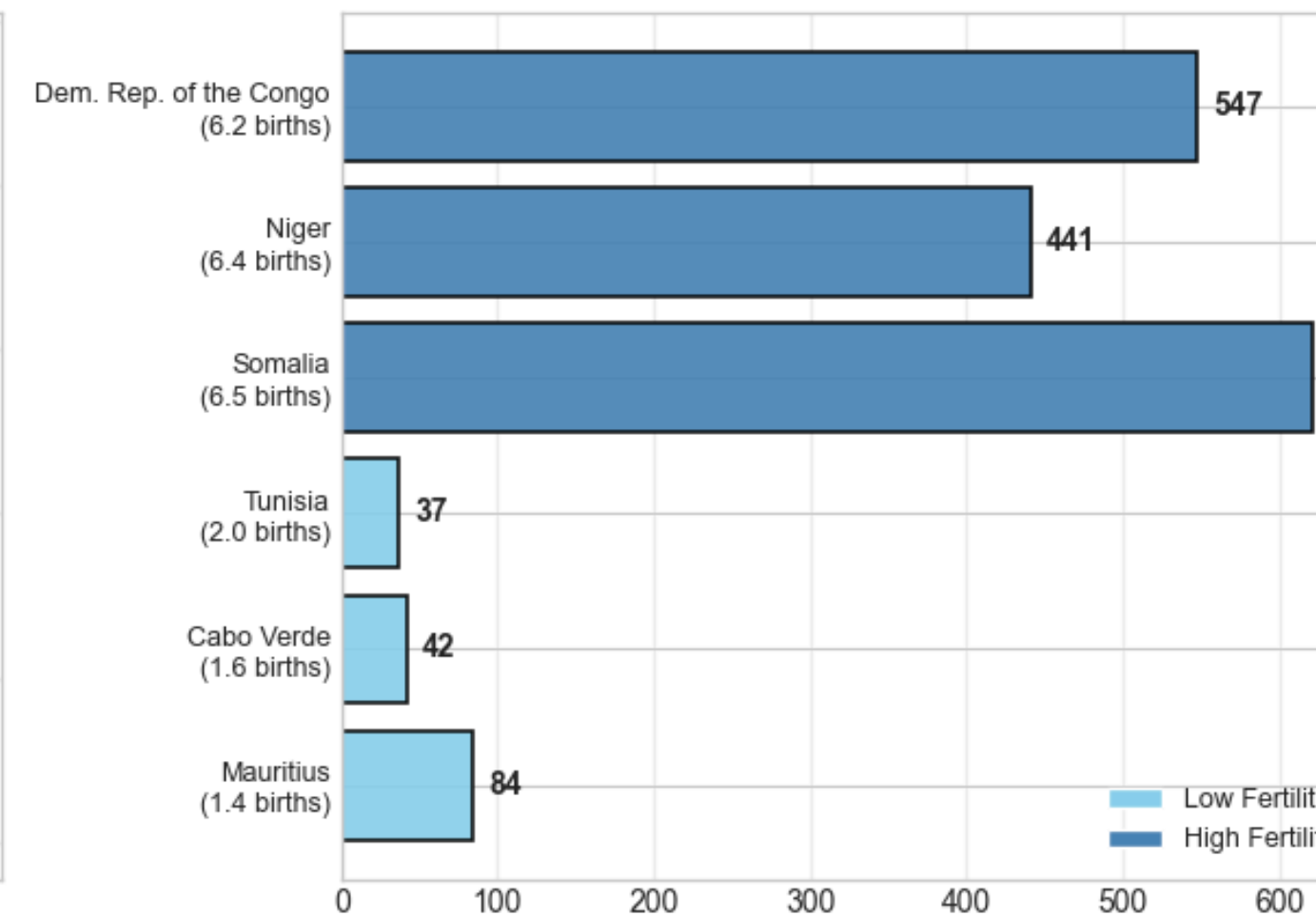
Maternal Mortality by Fertility Level



Higher Fertility Linked to Higher Maternal Deaths



Examples: Low vs. High Fertility Countries (2020)



## The Numbers:

- Low fertility (<3 births/woman): **111 maternal deaths per 100,000 births**
- Very high fertility (>5 births/woman): **527 maternal deaths per 100,000 births**
- That's 4x more maternal deaths in high-fertility countries.

## Why It Matters?

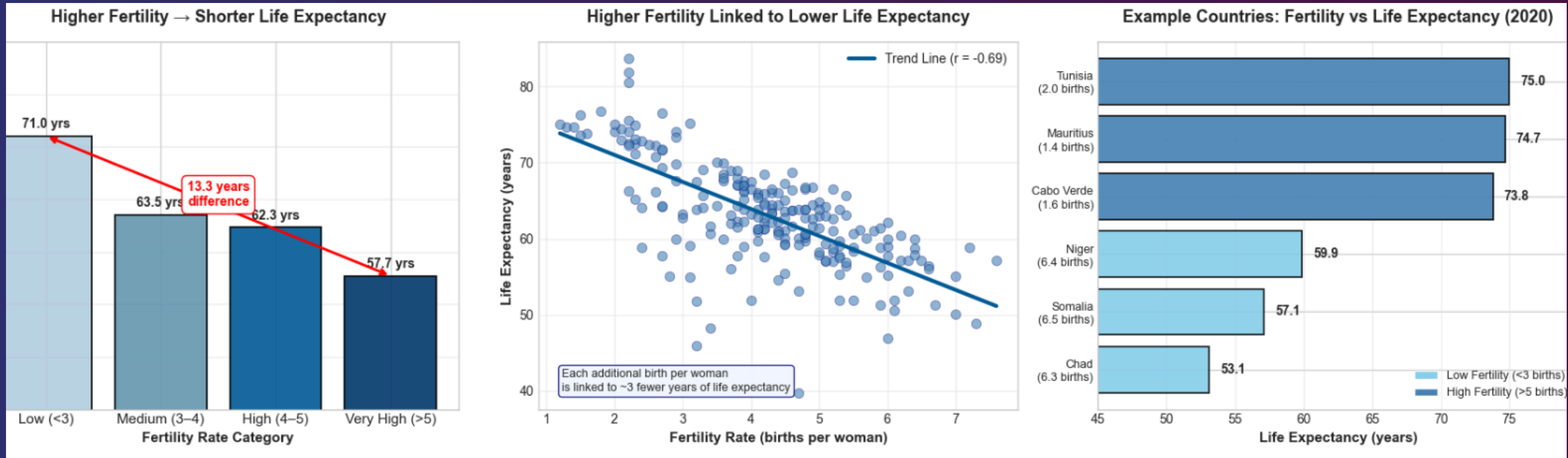
A correlation of 0.68 shows as fertility rises, maternal mortality tends to rise too.

## Real-World Contrast

- Mauritius: 2 births/woman → 84 maternal deaths
- Somalia: 7 births/woman → 621 maternal deaths
- That's 7x higher in Somalia



# What is the relationship between fertility rate and life expectancy in African countries?



## KEY INSIGHTS

Countries with high fertility rates tend to have lower life expectancies.

For example:

- Low fertility (<3 births): Life expectancy  $\approx$  71.0 years
- Very high fertility (>5 births): Life expectancy  $\approx$  57.7 years

That's a striking 13-year gap in average lifespan.

# Conclusion

## Good News: Africa is Getting Healthier (2010-2024)

- ✓ Population growth is slowing down - from 2.6% to 2.3% per year
- ✓ Women are having fewer children - from 4.9 to 4.2 children per woman
- ✓ People are living longer - life expectancy improved across all regions
- ✓ Fewer children are dying - some countries cut child deaths by 60+ per 1,000 births

## Important Connections We Discovered

- Where people live longer, population grows slower - Better health leads to smaller families
- More births = More mothers dying - High fertility countries have 4 times more maternal deaths
- More births = Shorter lives - Countries with many births have 13 years shorter life expectancy
- Women live longer than men - The gap increased from 3.1 to 4.1 years

## What this means

Investing in family planning and women's health helps in many ways:

Families get smaller → People live longer → Fewer mothers and children die → Population growth slows down

# REFERENCES

[1] United Nations, World Population Prospects 2024: Summary of Results, UN Department of Economic and Social Affairs, Population Division, New York, 2024.

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**THANK YOU!**