33_Central_African_Republic

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1 How have average years of total schooling among women evolved relative to the total population aged 15 and above in the Central African Republic between 1960 and 2010?

1.1 Abstract

Using World Bank World Development Indicators (WDI), this study examines the evolution of schooling in the Central African Republic between 1960 and 2010, focusing on differences between female education and the total population. The analysis compares two key indicators: average years of total schooling among women aged 15 and above and average years of total schooling for the entire population aged 15 and above. Over this fifty-year period, both indicators increased significantly, with total schooling rising approximately eightfold and female schooling rising even more sharply, approximately elevenfold. Notably, the accelerated growth in female schooling reflects substantial progress in gender inclusion and educational access over time. These trends highlight the country's evolving human capital landscape, the narrowing gender gap in educational attainment, and the broader socio-economic implications for labor productivity, social development, and long-term growth in a post-conflict context.

1.2 1. Question

How have average years of total schooling among women evolved relative to the total population aged 15 and above in the Central African Republic between 1960 and 2010?

- **Total schooling proxy**: Average years of total schooling, age 15+, total
- **Female schooling proxy**: Average years of total schooling, age 15+, female

1.3 2. Data

- **Source**: World Bank World Development Indicators (WDI)
- **Indicators**:
  - Average years of total schooling, age 15+, total
  - Average years of total schooling, age 15+, female
- **Coverage**: Central African Republic, 1960–2010
- **Notes**: National-level data only

1.4 3. Method

1. Filtered dataset for the Central African Republic and the relevant schooling indicators.
2. **Selected relevant columns**: Year, Indicator Name, and Value.

3. Pivoted total and female schooling data into separate series, ordered chronologically from 1960 to 2010.
4. Produced a dual-line graph comparing female and total schooling to visualize relative growth, structural trends, and gender inclusion progress over time.

(Analysis is descriptive; no causal inference applied.)

1.5 4. Results

- **Average years of total schooling (total population)**: Increased roughly eightfold between 1960 and 2010, reflecting gradual expansion of education opportunities across the population.
- **Average years of total schooling (female population)**: Rose approximately elevenfold, indicating accelerated gains in female access to schooling.
- **Comparison**: Female schooling growth outpaced total population growth, reflecting a significant narrowing of the gender gap in educational attainment over the study period.

(Figure 1. Central African Republic: Total vs Female Average Years of Schooling, 1960–2010)

(Table 1. Pivoted dataset summary)

1.6 5. Interpretation

- The sharp increase in female schooling illustrates meaningful progress in gender equity within the Central African Republic's education system.
- Total schooling growth confirms broader improvements in national human capital, contributing to long-term economic potential.
- Female schooling outpacing total growth signals successful policy or societal shifts facilitating girls' access to education.
- Despite these gains, the absolute levels of schooling remain relatively low, indicating ongoing challenges in achieving universal educational attainment.
- Understanding these trends is essential for designing targeted interventions that consolidate gains in female education while improving overall schooling quality and access.

1.7 6. Limitations

- National-level data may obscure regional disparities or differences in schooling quality and availability.
- WDI data rely on national reporting and modeled estimates, which may contain measurement uncertainty, particularly for earlier decades.
- Descriptive analysis does not account for causal factors such as conflict, policy changes, or socio-economic shocks affecting educational outcomes.

1.8 7. Next Steps / Extensions

- Disaggregate schooling data by region to identify areas lagging in female education access.
- Compare Central African Republic trends with other post-conflict African countries to contextualize progress.
- Examine relationships between schooling improvements and labor market participation, health outcomes, or economic growth.

- Explore policy interventions — such as scholarships, female-targeted literacy programs, or community education initiatives — that could further accelerate gender parity and overall educational attainment.

[1]:
```
# How have average years of total schooling among women evolved relative to the␣
↪total population aged 15 and above in the Central African Republic between␣
↪1960 and 2010?

import pandas as pd
import matplotlib.pyplot as plt
import os

# Folders
data_raw_folder = "data_raw/"
data_clean_folder = "data_clean/"
figures_folder = "figures/"

# Load CSV
filename = "education_caf_filtered.csv"  # Filtered dataset with only relevant␣
↪rows
df = pd.read_csv(os.path.join(data_raw_folder, filename))

# Keep only needed columns
df = df[["Year", "Indicator Name", "Value"]]

# Convert Year and Value to numeric, drop invalid rows
df["Year"] = pd.to_numeric(df["Year"], errors="coerce")
df["Value"] = pd.to_numeric(df["Value"], errors="coerce")
df = df.dropna(subset=["Year", "Value"])

# Pivot indicators into separate columns
df_pivot = df.pivot(index="Year", columns="Indicator Name", values="Value").
↪reset_index()
df_pivot = df_pivot.sort_values("Year")

print("Pivoted Central African Republic dataset:")
display(df_pivot)

# Interpolate missing values for smooth plotting (optional)
df_plot = df_pivot.interpolate(method='linear')

# Plot the two indicators
plt.figure(figsize=(10,6))
plt.plot(df_plot["Year"], df_plot["Barro-Lee: Average years of total schooling,␣
↪age 15+, total"],
         marker='o', linestyle='-', label="Average years of total schooling,␣
↪age 15+, total")
```

```
plt.plot(df_plot["Year"], df_plot["Barro-Lee: Average years of total schooling,␣
 ↪age 15+, female"],
        marker='o', linestyle='-', label="Average years of total schooling,␣
 ↪age 15+, female")

plt.title("Central African Republic: Female vs Total age 15+ average years of␣
 ↪total schooling (1960-2010)")
plt.xlabel("Year")
plt.ylabel("Average number of years")
plt.legend()
plt.grid(True)
plt.tight_layout()
plt.savefig(os.path.join(figures_folder,␣
 ↪"central_african_republic_female_vs_total_average_years_of_total_schooling.
 ↪png"))
plt.show()

# Save cleaned CSV
df_pivot.to_csv(os.path.join(data_clean_folder,␣
 ↪"central_african_republic_female_vs_total_average_years_of_total_schooling"),␣
 ↪index=False)
```

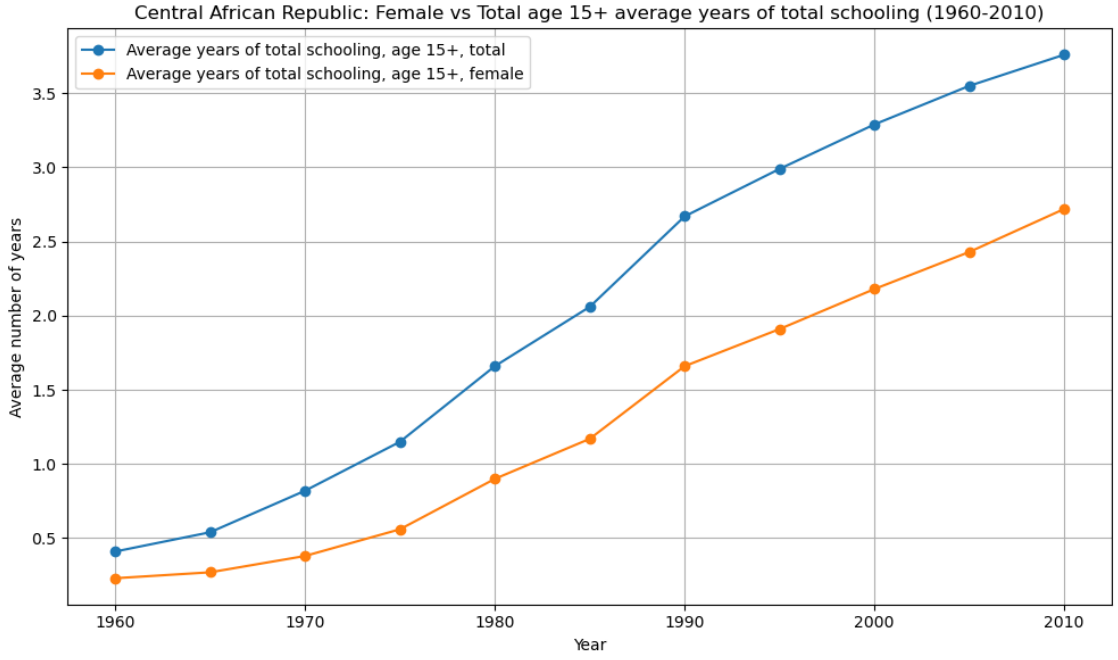
```
Pivoted Central African Republic dataset:

Indicator Name  Year  \
0               1960
1               1965
2               1970
3               1975
4               1980
5               1985
6               1990
7               1995
8               2000
9               2005
10              2010

Indicator Name  Barro-Lee: Average years of total schooling, age 15+, female  \
0                                                                         0.23
1                                                                         0.27
2                                                                         0.38
3                                                                         0.56
4                                                                         0.90
5                                                                         1.17
6                                                                         1.66
7                                                                         1.91
8                                                                         2.18
9                                                                         2.43
```

```
10                                                                2.72

Indicator Name  Barro-Lee: Average years of total schooling, age 15+, total
0                                                                 0.41
1                                                                 0.54
2                                                                 0.82
3                                                                 1.15
4                                                                 1.66
5                                                                 2.06
6                                                                 2.67
7                                                                 2.99
8                                                                 3.29
9                                                                 3.55
10                                                                3.76
```



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