13_Bahrain

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1 How have gender disparities in educational attainment, measured by the percentage of the population aged 15 and above with no formal education, evolved in Bahrain between 1960 and 2010?

1.1 Abstract

Using World Bank World Development Indicators (WDI), this study examines gender differences in educational attainment in Bahrain from 1960 to 2010. Both the female population and the total population aged 15+ with no formal education declined significantly over this fifty-year period, reflecting substantial progress in literacy and access to schooling. However, female educational attainment lagged behind: the percentage of women with no formal education remained consistently about 5–10% higher than the population average. These findings highlight persistent gender disparities in education, even amid overall improvements, underscoring that broad gains in literacy do not automatically eliminate structural inequities between men and women.

1.2 1. Question

How have gender disparities in educational attainment, measured by the percentage of the population aged 15 and above with no formal education, evolved in Bahrain between 1960 and 2010?

- **Female education proxy**: Female population aged 15+ with no formal education (%)
- **Total population education proxy**: Population aged 15+ with no formal education (%)

1.3 2. Data

- **Source**: World Bank World Development Indicators (WDI)
- **Indicators**:
  - Female population aged 15+ with no formal education (%)
  - Total population aged 15+ with no formal education (%)
- **Coverage**: Bahrain, 1960–2010
- **Notes**: National-level data only

1.4 3. Method

1. Filtered dataset for Bahrain.
2. **Selected relevant columns**: Year, Indicator Name, Value.
3. Pivoted female and total population education indicators into separate columns and sorted by year.

4. Produced a line graph comparing female vs total population with no formal education over time.

(Analysis is descriptive; no causal inference applied.)

1.5 4. Results

- **Female population with no education (%)**: Declined steadily but remained consistently about 5–10% higher than the population average.
- **Total population with no education (%)**: Also declined significantly, reflecting broad educational progress.
- **Comparison**: Both indicators improved over time, yet the persistent gap demonstrates enduring gender disparities in educational access.

(Figure 1. Female vs Total Population Aged 15+ with No Education in Bahrain, 1960–2010)

(Table 1. Pivoted dataset)

1.6 5. Interpretation

- Bahrain made strong gains in reducing illiteracy and expanding education for all adults.
- The persistent gap between women and the overall population highlights gender-specific barriers that remained despite overall progress.
- Policies addressing educational inequality need to target these structural gaps to achieve full parity.

1.7 6. Limitations

- Only two indicators analyzed; differences by region, socioeconomic status, or urban/rural location are not captured.
- National-level data may obscure subpopulation variations.
- Descriptive analysis only; causal mechanisms for gender disparities are not formally tested.

1.8 7. Next Steps / Extensions

- Examine age cohorts to see whether younger generations show smaller gender gaps.
- Investigate regional or socioeconomic differences in female education.
- Compare Bahrain with other Gulf countries to contextualize gender disparities over time.
- Explore policy interventions that specifically contributed to narrowing (or maintaining) the female education gap.

```
[1]: # How have gender disparities in educational attainment, measured by the
     ↪percentage of the population aged 15 and above with no formal education,
     ↪evolved in Bahrain between 1960 and 2010?

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

     # Folders
```

```python
data_raw_folder = "data_raw/"
data_clean_folder = "data_clean/"
figures_folder = "figures/"

# Load CSV
filename = "education_bhr_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 Bahrain 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: Percentage of female population↵
 ↪age 15+ with no education"],
         marker='o', linestyle='-', label="Percentage of female population age↵
 ↪15+ with no education")
plt.plot(df_plot["Year"], df_plot["Barro-Lee: Percentage of population age 15+↵
 ↪with no education"],
         marker='o', linestyle='-', label="Percentage of population age 15+↵
 ↪with no education")

plt.title("Bahrain: Female Population without Education vs Total Population↵
 ↪without Education (%) (1960-2010)")
plt.xlabel("Year")
plt.ylabel("Percentage")
plt.legend()
plt.grid(True)
plt.tight_layout()
```

```
plt.savefig(os.path.join(figures_folder,␣
 ↪"bahrain_female_pop_without_edu_vs_total_pop_without_edu.png"))
plt.show()

# Save cleaned CSV
df_pivot.to_csv(os.path.join(data_clean_folder,␣
 ↪"bahrain_female_pop_without_edu_vs_total_pop_without_edu"), index=False)
```
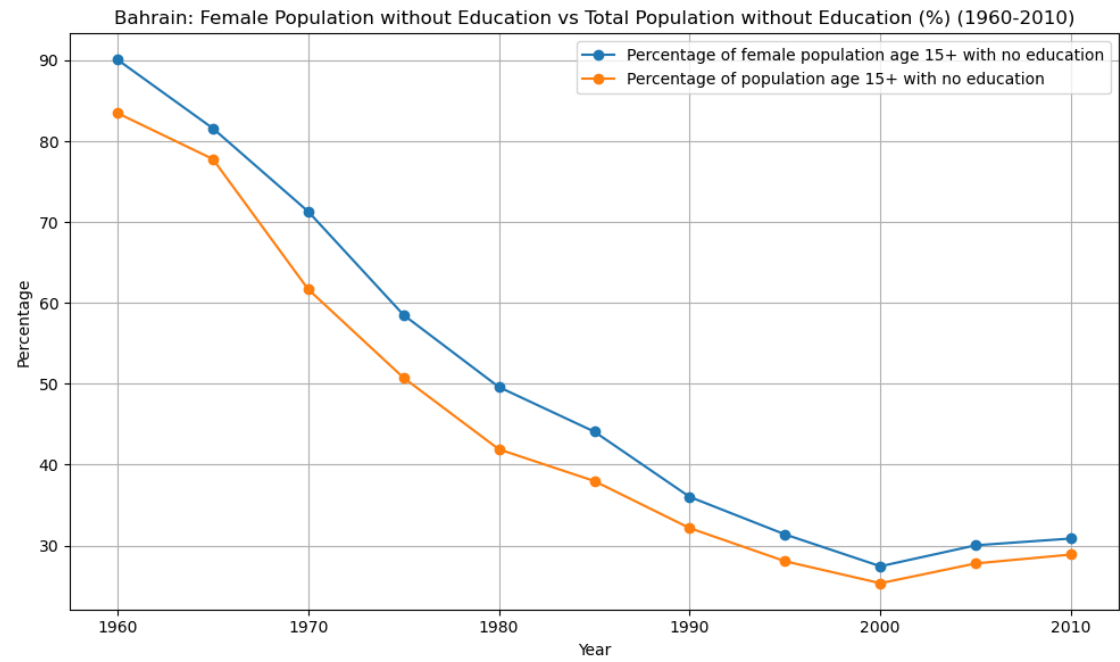
Pivoted Bahrain dataset:

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: Percentage of female population age 15+ with no␣↪education
0	90.09
1	81.60
2	71.31
3	58.52
4	49.60
5	44.09
6	36.02
7	31.38
8	27.44
9	30.03
10	30.87

Indicator Name	Barro-Lee: Percentage of population age 15+ with no education
0	83.48
1	77.80
2	61.69
3	50.75
4	41.90
5	37.98
6	32.16
7	28.06
8	25.34
9	27.79

Bahrain: Female Population without Education vs Total Population without Education (%) (1960-2010)

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