

```

import pandas as pd
import matplotlib.pyplot as plt

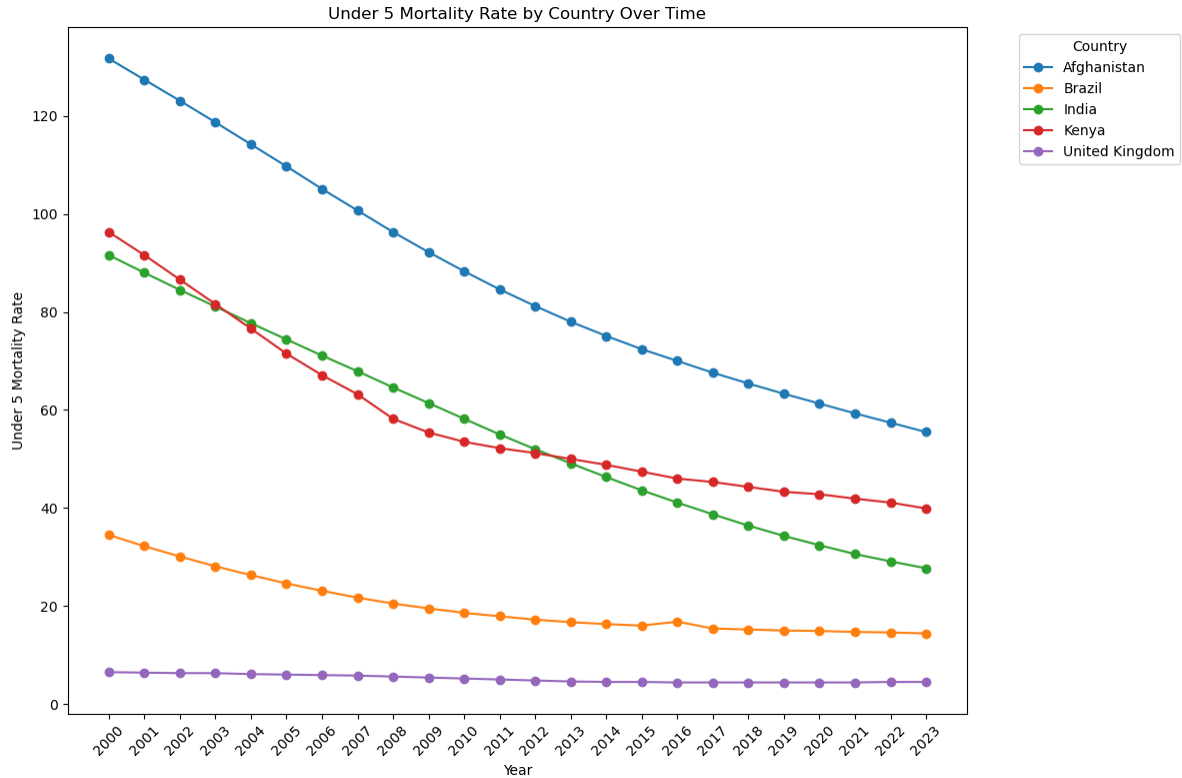
# Read the dataset
df = pd.read_csv('../data/population_dynamics_clean.csv')

#Under 5 Mortality Rate by Country Over Time

# Prepare the data for plotting
pivot_df = df.pivot(index='year', columns='country', values='under5_mortality')

# Plot the line graph
plt.figure(figsize=(12, 8))
pivot_df.plot(ax=plt.gca(), marker='o')
plt.title('Under 5 Mortality Rate by Country Over Time')
plt.xlabel('Year')
plt.ylabel('Under 5 Mortality Rate')
plt.legend(title='Country', bbox_to_anchor=(1.05, 1), loc='upper left')
plt.xticks(pivot_df.index, rotation=45)
plt.tight_layout()
plt.show()

```



```
# Average Under 5 Mortality Rate by Country
```

```
table_3 = (
    df[df['year'].between(2017, 2023)]
      .groupby('country', as_index=False)['under5_mortality']
      .mean()
      .round(3)
)
table_3.columns = ['Country', 'Under-5 Mortality (2017-2023)']
table_3
```

	Country	Under-5 Mortality (2017-2023)
0	Afghanistan	61.400
1	Brazil	14.886
2	India	32.743
3	Kenya	42.657
4	United Kingdom	4.429

```

# Under 5 Mortality Rate and Adolescent Fertility Rate

# Prepare the data for plotting
pivot_df_under5_mortality = df.pivot(index='year', columns='country', values='under5_mortality')
pivot_df_adolescent_fertility = df.pivot(index='year', columns='country', values='adolescent_fertility')

# Plot the graphs
fig, axes = plt.subplots(1, 2, figsize=(14, 6), sharex=True, sharey=True)

# Afghanistan
axes[0].plot(
    pivot_df_adolescent_fertility.index,
    pivot_df_adolescent_fertility['Afghanistan'],
    marker='o',
    label='Adolescent Fertility Rate',
    color='tab:blue'
)
axes[0].plot(
    pivot_df_under5_mortality.index,
    pivot_df_under5_mortality['Afghanistan'],
    marker='s',
    label='Under-5 Mortality Rate',
    color='tab:orange'
)
axes[0].set_title('Afghanistan')
axes[0].set_xlabel('Year')
axes[0].set_ylabel('Rate')
axes[0].legend()
axes[0].tick_params(axis='x', rotation=45)

# United Kingdom
axes[1].plot(
    pivot_df_adolescent_fertility.index,
    pivot_df_adolescent_fertility['United Kingdom'],
    marker='o',
    label='Adolescent Fertility Rate',
    color='tab:blue'
)
axes[1].plot(
    pivot_df_under5_mortality.index,
    pivot_df_under5_mortality['United Kingdom'],
    marker='s',

```

```

    label='Under-5 Mortality Rate',
    color='tab:orange'
)
axes[1].set_title('United Kingdom')
axes[1].set_xlabel('Year')
axes[1].legend()
axes[1].tick_params(axis='x', rotation=45)

fig.suptitle('Under-5 Mortality and Adolescent Fertility Rates\n(Afghanistan and United Kingdom)')
plt.tight_layout(rect=[0, 0.03, 1, 0.95])
plt.show()

```

