United States Birthrates (1960 - 2020)

November 22, 2022

1 A quick illustration of reading in, filtering, modifying, and plotting data using Pandas and Matplotlib.

[6]:
```
import pandas as pd;
import numpy as np;
import matplotlib.pyplot as plt;
from datetime import datetime, timedelta;
```

[7]:
```
df = pd.read_csv('/Users/bradleywest/Documents/python_birthrates/fertility_rate.
 ↪csv', index_col = False);
```

2 Create dataframe specific to the United States by locating the column and transforming the matrix.

[3]:
```
us_data = df.loc[df['Country'] == 'United States']
us_data.reset_index(drop = True, inplace = True)
us_data = us_data.T
us_data.columns = us_data.iloc[0]
us_data = us_data[1:]
us_data.reset_index(inplace = True)
us_data.columns = ['year', 'birth_rate']
```

3 Print Summary Statistics of the United States birth rate.

[4]:
```
print(us_data.agg(
    {
        "birth_rate": ["min", "max", "median", "mean"],
    }
))
```

```
        birth_rate
min       1.640000
max       3.650000
```

```
median    2.000000
mean      2.113607
```

4 Create plot using matplotlib/pyplot to illustrate the decline in birth rates

[8]:
```
t = np.arange(datetime(1960,1,1), datetime(2021,1,1), timedelta(days=366)).
  ↪astype(datetime)
x = us_data['year']
y = us_data['birth_rate']
fig, ax = plt.subplots()
ax.plot(t,y, linewidth=2.0)
plt.ylabel('Birth Rate')
plt.title('Birth Rates in the United States')
```

[8]:
```
Text(0.5, 1.0, 'Birth Rates in the United States')
```