State of Children's Education 2021

Education Accessibility around the World

Objective

Analyze the world's state of children's education using out of school and completion rate data. This analysis will provide insights into countries with significant education accessibility and gender gaps for further action.

Data

1. UNICEF's State of the World's Children 2021 on Education. Dataset can be downloaded from [Completion Rate](), [Statistical tables](), [Others]().
2. GDP Per Capita data from World Bank. Dataset can be downloaded [here]().
3. 2022 Global Happiness Rank by World Happiness Report. Dataset can be downloaded [here]().

Tools & Skills

Data Exploring
Data Wrangling & Subsetting
Data Merging
Geographical Visualizations in Python
Supervised Machine Learning - Regression
Unsupervised Machine Learning - Clustering
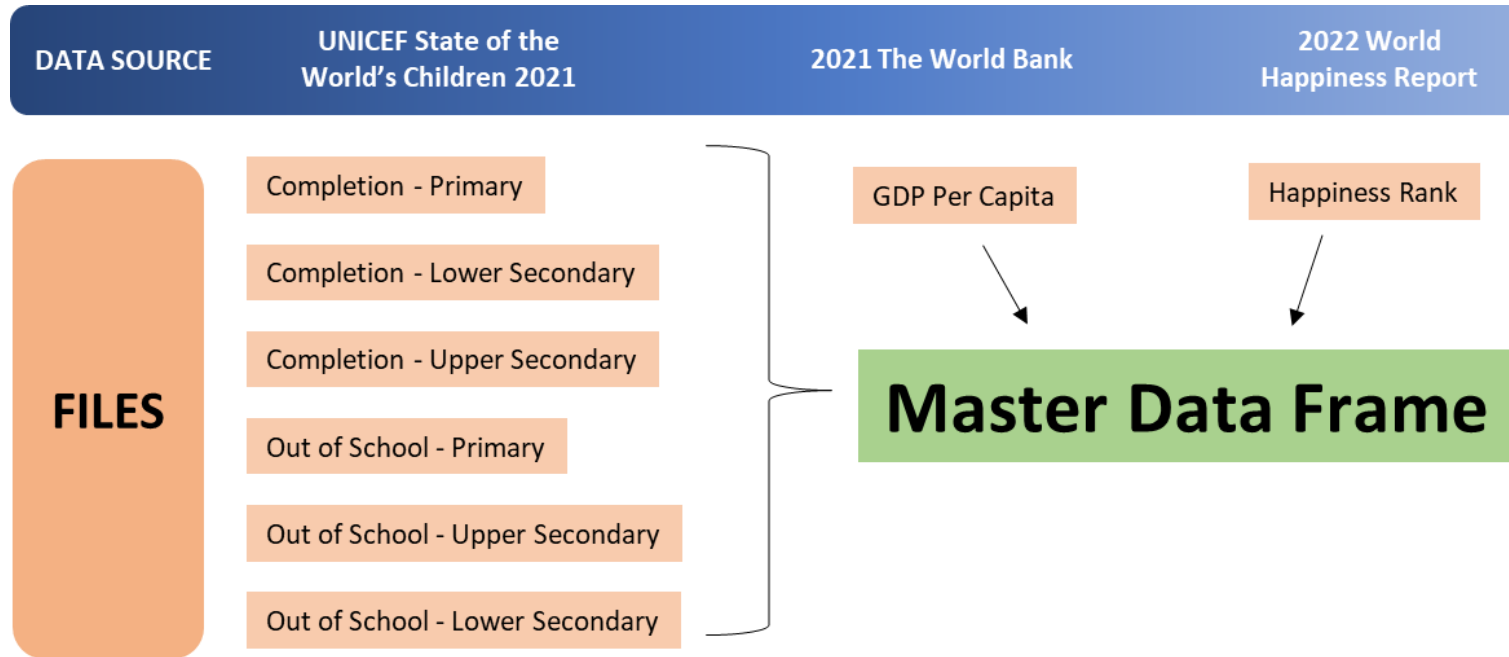
Data Integration
Data Transformation

Visualizations & Forecasting
[Tableau Link]()

GitHub

[GitHub Files]()

Sourcing Data & Cleaning in Python

DATA SOURCE	UNICEF State of the World's Children 2021	2021 The World Bank	2022 World Happiness Report

FILES

- Completion - Primary
- Completion - Lower Secondary
- Completion - Upper Secondary
- Out of School - Primary
- Out of School - Upper Secondary
- Out of School - Lower Secondary

GDP Per Capita

Happiness Rank

Master Data Frame

Cleaned and merged data from 8 separate files to produce a master dataframe

Challenges:

Standardizing country names every time data is merged from a new source and geojson file.
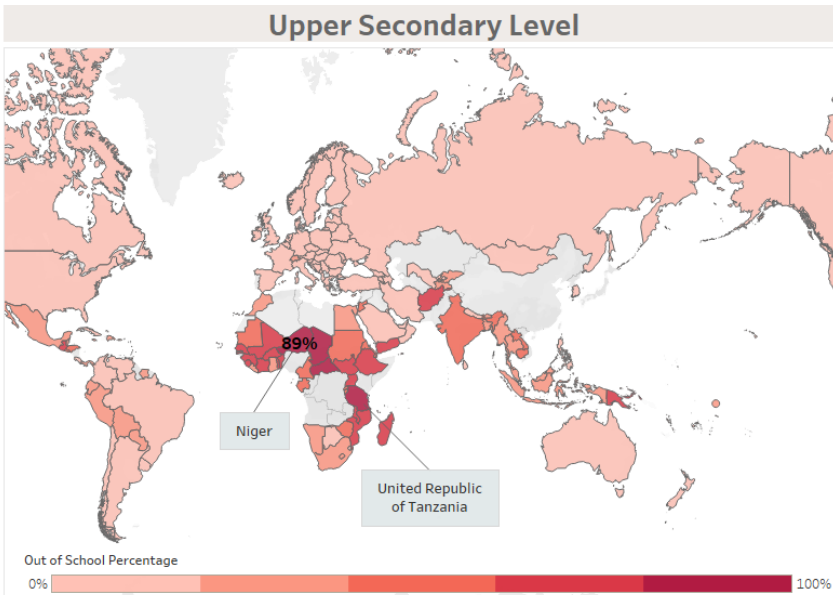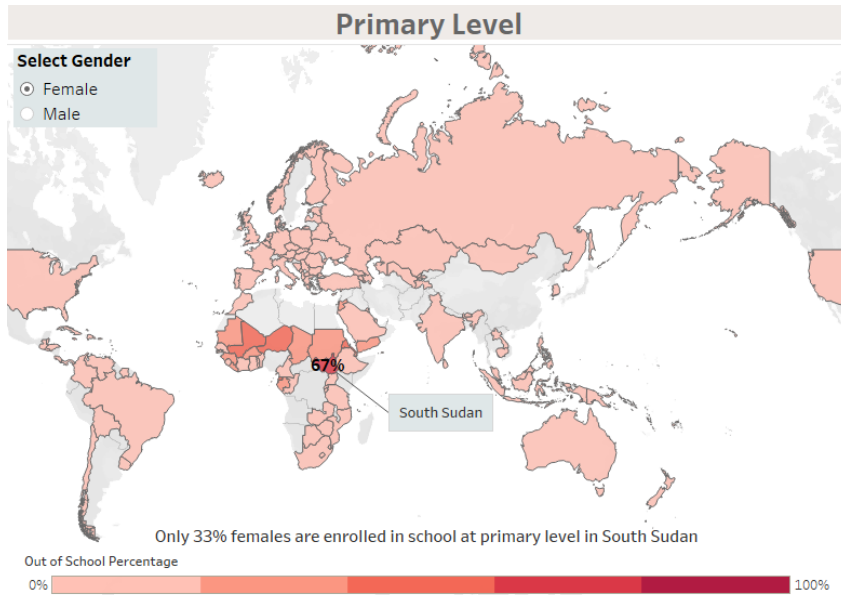
Solution: Create a reference country list based on UNICEF data. Conduct merge and look for left only or right ony values and proceed to rename the countries not joined based on the reference list.

Cons: Does not work with geojson file. Had to rename to suit geojson file for visualization in Python. Working on solution that works by integrating geometry into main dataframe.
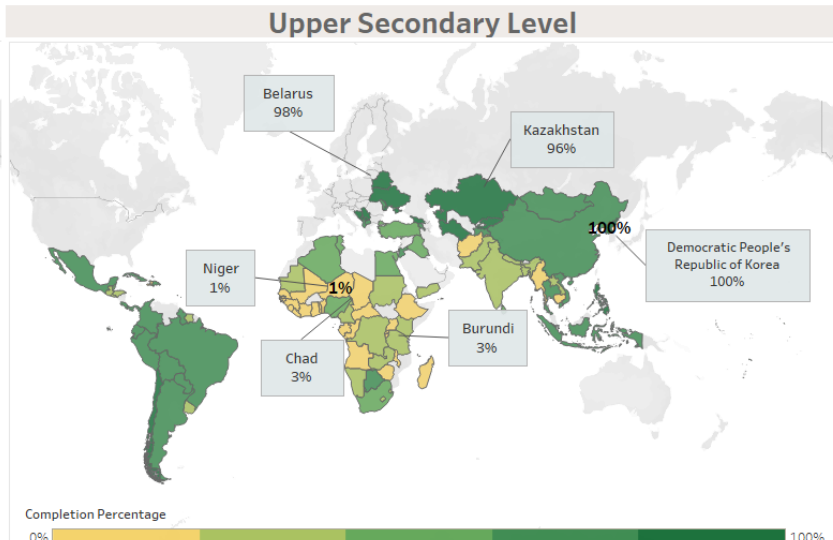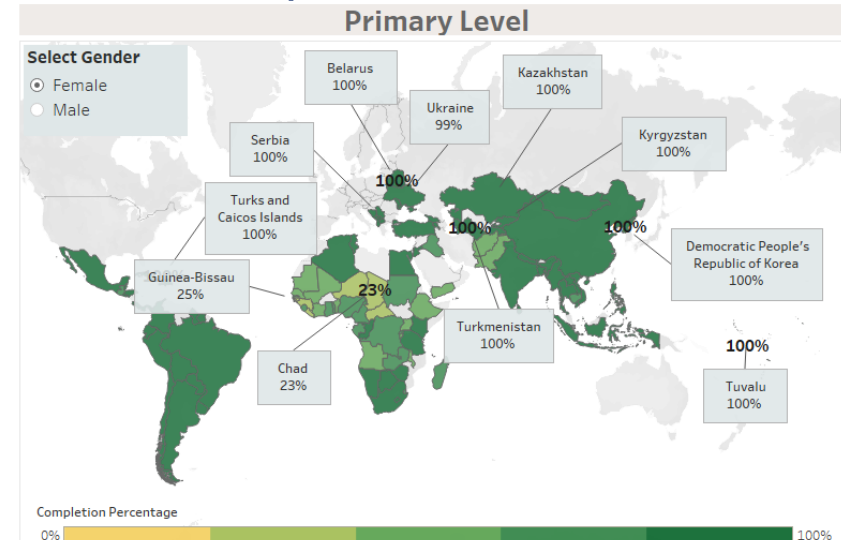
```python
# renaming more countries in df to match with geojson.
df['Country'] = df['Country'].replace({
    "Bolivia (Plurinational State of)":"Bolivia",
    'Brunei Darussalam':'Brunei',
    "Côte d'Ivoire":"Ivory Coast",
    'Congo':'Republic of Congo',
    'Cabo Verde':'Cape Verde',
    'Czechia':'Czech Republic',
    'Micronesia (Federated States of)':'Federated States of Micronesia',
    'Guinea-Bissau':'Guinea Bissau',
    'Iran (Islamic Republic of)':'Iran',
    "Republic of Korea":"South Korea",
    "Lao People's Democratic Republic":"Laos",
    "Republic of Moldova":"Moldova",
    "Democratic People's Republic of Korea":"North Korea",
    "State of Palestine":"Palestine",
    'Russian Federation':'Russia',
    'Serbia':'Republic of Serbia',
    'Timor-Leste':'East Timor',
    'Türkiye':'Turkey',
    'United States':'United States of America',
    'Holy See':'Vatican',
    'Venezuela (Bolivarian Republic of)':'Venezuela',
    "Viet Nam":"Vietnam",
})
```

Findings

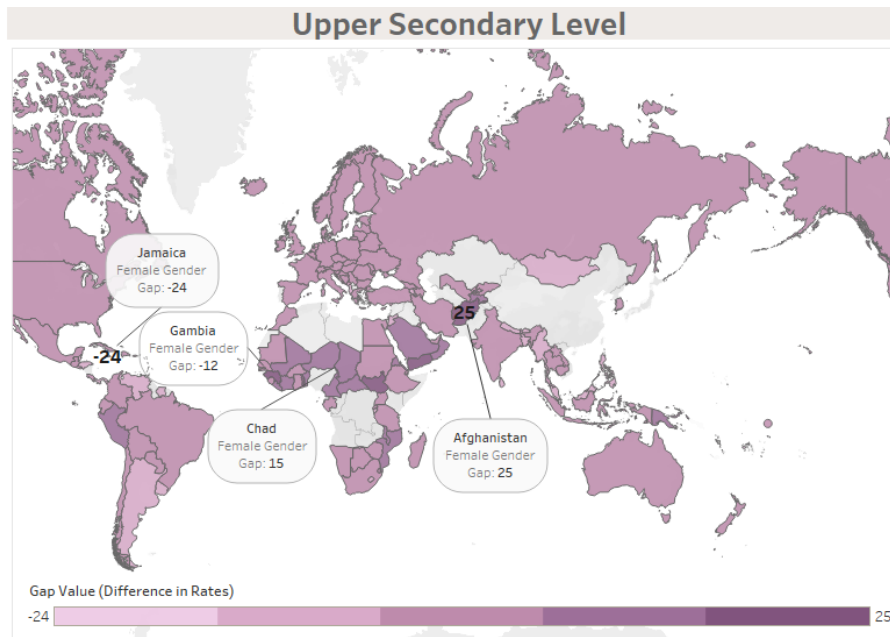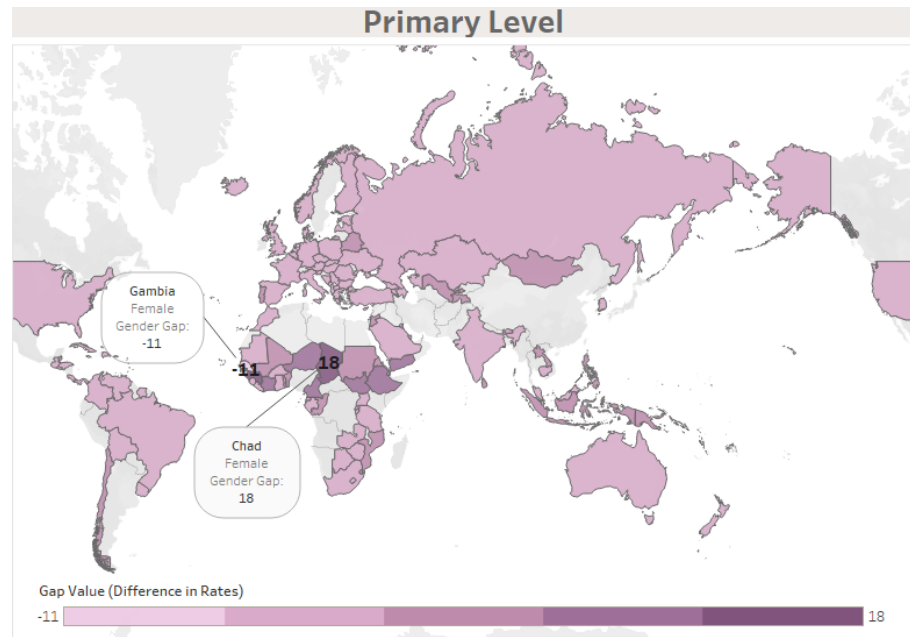**Out of school Rate:**

| Primary Level | Upper Secondary Level |

Select Gender: ⊙ Female ○ Male

South Sudan: 67%
Only 33% females are enrolled in school at primary level in South Sudan

Niger: 89%
United Republic of Tanzania
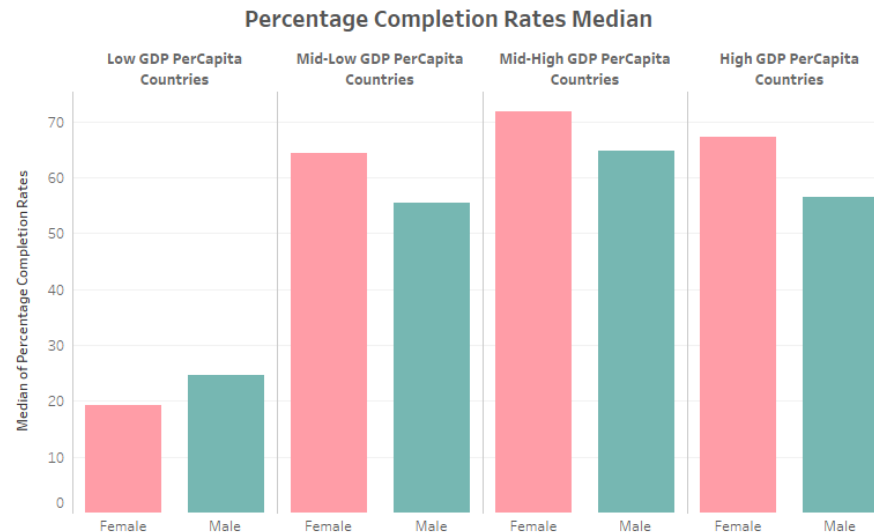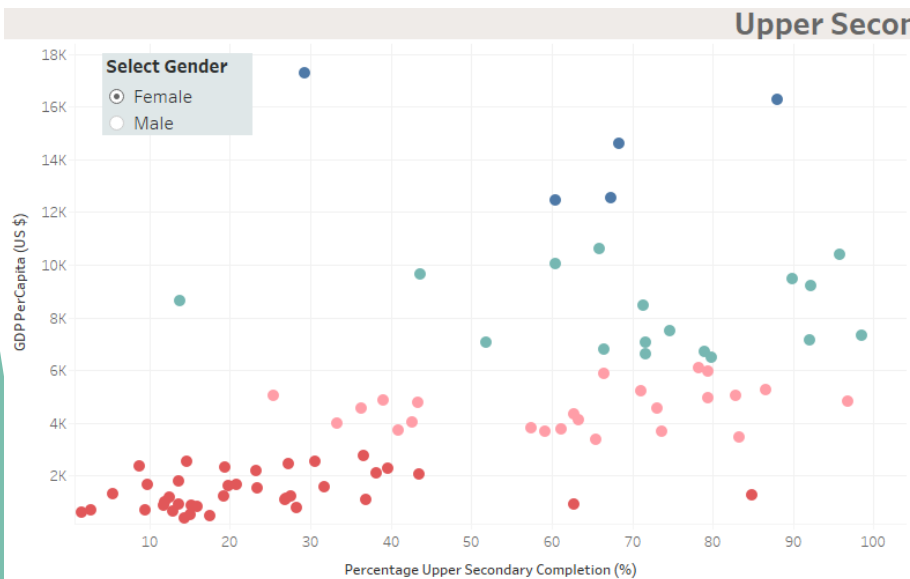
Out of School Percentage: 0% — 100%

- In South Sudan, 67% of female primary school aged children are not in school.

- Those who managed to be in school, still find it hard to complete their studies, for example Chad having as low as only 23% females completing it at primary level.

- As high as 89% of female upper secondary students in Niger did not complete their studies.

(Dynamic visualization on Tableau)

Education Completion Rate:

| Primary Level | Upper Secondary Level |

Select Gender: ⊙ Female ○ Male

Primary Level:
Belarus 100%
Kazakhstan 100%
Ukraine 99%
Serbia 100%
Kyrgyzstan 100%
Turks and Caicos Islands 100%
Guinea-Bissau 25%
Chad 23%
Turkmenistan 100%
Democratic People's Republic of Korea 100%
Tuvalu 100%

Completion Percentage: 0% — 100%

Upper Secondary Level:
Belarus 98%
Kazakhstan 96%
Niger 1%
Chad 3%
Burundi 3%
Democratic People's Republic of Korea 100%

Completion Percentage: 0% — 100%

Gender Gap Analysis and Cluster Analysis

- The out of school rates can give insights into how big of a gap between male and female who are in school. Afghanistan has the biggest female gap in the upper secondary level and Chad has the biggest gap for primary level.

- Education completion rates do impact the GDP as a measure of the country's development, evidently in the cluster analysis.

- Pushing for gender equality and access to education for females might benefit the country.

(Dynamic visualization on Tableau)

Next Steps

Run cluster analysis on Happiness Rank vs completion rates and examine relationships.

Deep dive into specific countries for further analysis on time series and forecasting if required