The Well Being of Women

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Reason Topic was Selected

As women, we care about women's well-being and strive to figure out what aspects of life most impact if women live long and happy lives.

Sources of data

3 Main Sources

1. LivWell (Kaggle)
2. Latitude/Longitude (Kaggle)
3. GDP (world bank data)

1. **Livwell (Kaggle)**
   a. LivWell is a global longitudinal database
   b. Provides a range of key indicators related to:
      i. Women’s socioeconomic status, health and well-being,
      ii. Women’s access to basic services, and demographic outcomes.
   c. https://www.kaggle.com/datasets/konradb/wellbeing-of-women-in-52-countries?resource=download

2. **Latitude and Longitude (Kaggle)**
   a. Latitude and Longitude for Every Country and State
   b. Provides the GPS coordinates for every world country and every USA state
   c. https://www.kaggle.com/datasets/paultimothymooney/latitude-and-longitude-for-every-country-and-state?select=world_country_and_usa_states_latitude_and_longitude_values.csv

3. **GDP (World Bank Data)**
   a. World Bank national accounts data, and OECD National Accounts data files
   b. https://data.worldbank.org/indicator/NY.GDP.MKTP.CD

Questions the team hopes to answer with data

- **Is there a relationship between country demographics and aspects of life indicators (domestic violence rate, marriage age, years of education, and fertility rate) that impact women's overall well-being?**

- **Does GDP relate to these aspects of life?**

Data Exploration and Analysis

Data Exploration

Data Cleaning:

- Pandas will be used to clean the data and perform an exploratory analysis.
- Further analysis will be completed using Python
  - Image below shows the main stats from the LivWell data

In [19]:
```
livewell_etl_df = livewell_etl_df.loc[livewell_etl_df['year']>= 2000]
livewell_etl_df.describe()
```

Out[19]:

	year	DM_age_15.19_p_se	DM_age_20.24_p_se	DM_age_25.29_p_se	DM_age_30.34_p_se	DM_age_35.39_p_se	DM_age_40.44_p_se
count	5967.000000	5967.000000	5967.00000	5967.000000	5967.000000	5967.000000	5967.000000
mean	2007.827216	1.243674	1.23557	1.239853	1.150581	1.063693	0.969010
std	4.755202	0.576403	0.48798	0.463376	0.411243	0.381618	0.374867
min	2000.000000	0.000000	0.00000	0.000000	0.000000	0.000000	0.000000
25%	2004.000000	0.876000	0.92000	0.935167	0.877321	0.808000	0.718000
50%	2008.000000	1.226667	1.18200	1.184000	1.104000	1.020000	0.920000
75%	2012.000000	1.557750	1.46775	1.457321	1.360000	1.262678	1.141833
max	2019.000000	7.924000	6.15400	6.020000	4.656000	4.016000	4.756000

8 rows × 38 columns

Data Exploration

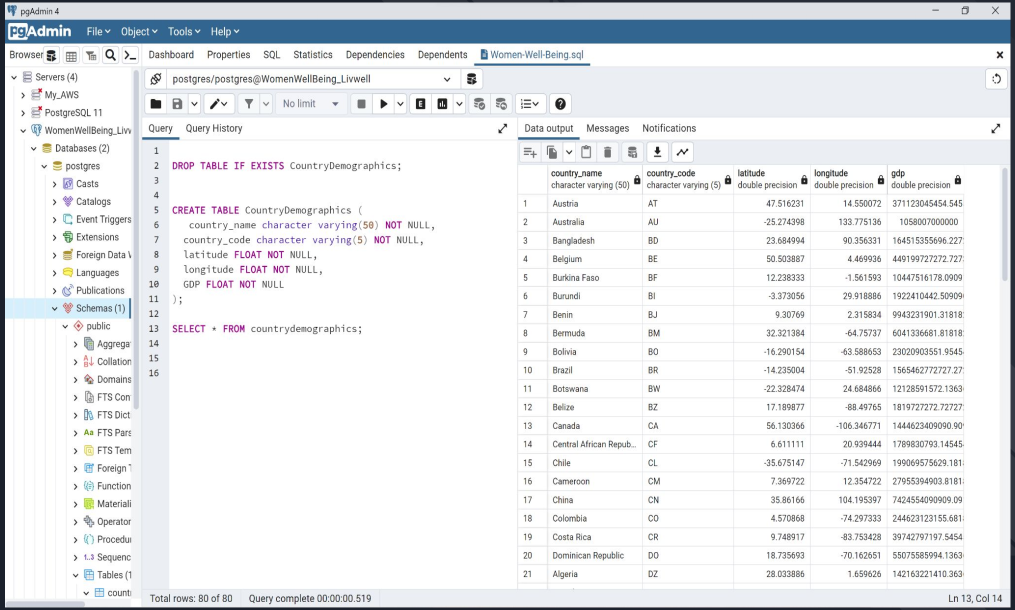
Database Storage:

- AWS RDS is the database setup
- Integration of Postgres sql to display the ETL process for country demographics.
- Created S3 buckets and uploaded data
- Rearranged columns
- Dropped null values into another dataframe
- Uploaded cleaned dataframe into database table in PostgresSQL for further analysis

Data Exploration

Database Storage:

- Screenshot of database updations



- Links:
  - PostgresSQL
    - https://github.com/Betsy-Kalkwarf/Women-Well-Being/blob/main/Women-Well-Being.sql
  - CountryETL.ipynb
    - https://github.com/Betsy-Kalkwarf/Women-Well-Being/blob/main/CountryETL.ipynb

Data Analysis

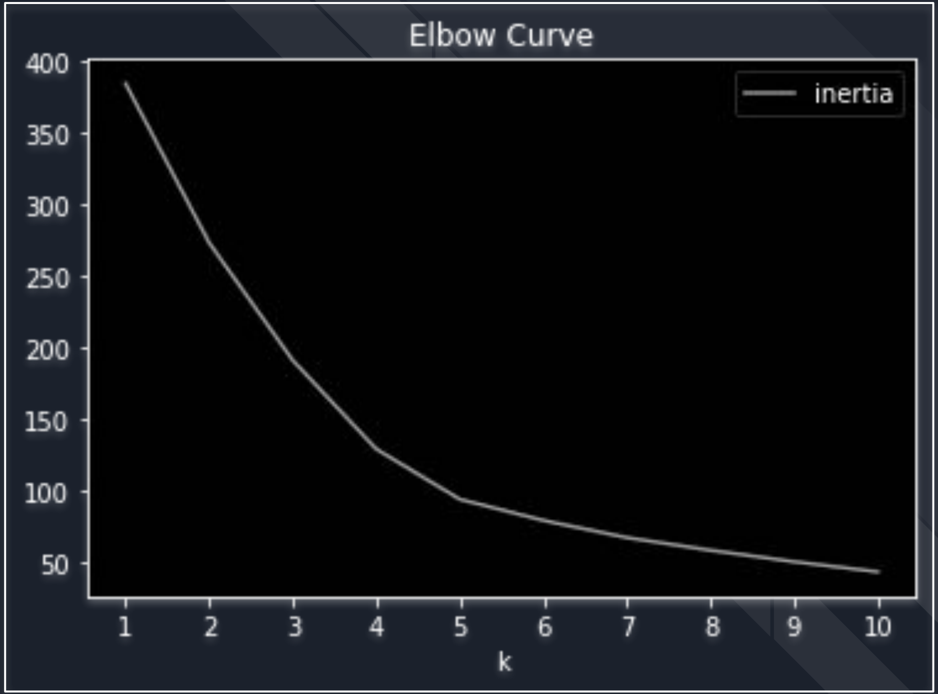
Machine Learning:

- **Training and Test set up is Unsupervised**
  - Chosen due to source not having any predictions
  - Wanted to cluster indicators chosen based on the country
- **SciKit Learn is the machine learning library we'll be using to create a classifier.**
  - Jupyter notebooks:
    - ML_indicators.ipynb
    - CountryETL.ipynb

Data Analysis

Machine Learning:

- Data was retrieved from database
- Set up ML model
- Scaled, fit and transformed the data
- Applied PCA for reduction
- Checked the Elbow Curve to decide the best K-value for clustering



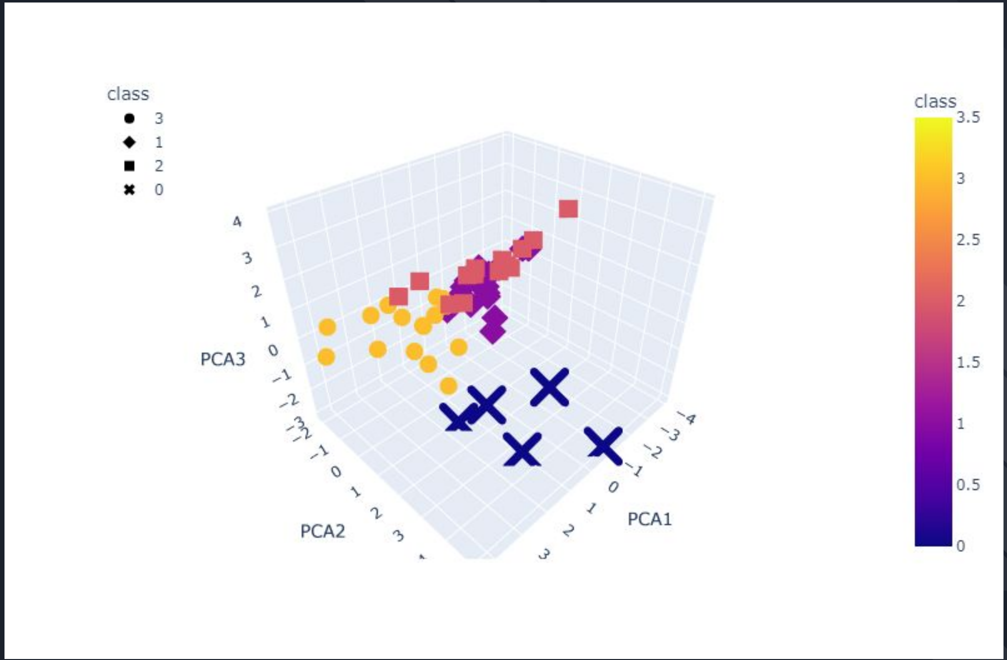
Edit the elbow curve pic to show which data we chose

Data Analysis

Machine Learning:

- 3D scatter plot created to check clusters

- Links
  - Code:
    - https://github.com/Betsy-Kalkwarf/Women-Well-Being/blob/main/ML_Indicators.ipynb
  - Picture:
    - https://github.com/Betsy-Kalkwarf/Women-Well-Being/blob/main/Resources/PCA-Cluster.png



Data Analysis

Dashboard:

The dashboard is hosted on Tableau.

Thanks!

Are there any questions?