```
! pip install pandas matplotlib openpyxl
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import zipfile
import os
# Define the path to the ZIP file
zip file path = 'Big Game Census data.zip'
extraction path = 'census data'
# Create a directory to extract the files
os.makedirs(extraction path, exist ok=True)
# Extract the ZIP file
with zipfile.ZipFile(zip_file_path, 'r') as zip_ref:
    zip ref.extractall(extraction path)
# List the extracted files
extracted files = os.listdir(extraction path)
print("Extracted files:", extracted files)
Extracted files: ['uscensusbureau-big-game-census-data-visualization']
Big Game Census datafile = os.path.join(extraction path, 'Big Game
Census data.xlsx') # Example file name
All states Census_2017data_file = os.path.join(extraction_path, 'All
states Census 2017 Population Estimates.xlsx')
All Places Census2016 data file = os.path.join(extraction path, 'All
Places Census 2016 Population Estimates.xlsx')# Example file name
Big Game Census data file = pd.read excel(r'C:\Users\mnprt\Desktop\
fdil3\census data\uscensusbureau-big-game-census-data-visualization\
Big Game Census data.xlsx')
All Places Census2016 data file = pd.read_excel(r'C:\Users\mnprt\
Desktop\fdi13\census data\uscensusbureau-big-game-census-data-
visualization\All Places Census 2016 Population Estimates.xlsx')
All states Census 2017 data file = pd.read excel(r'C:\Users\mnprt\
Desktop\fdi13\census data\uscensusbureau-big-game-census-data-
visualization\All states Census 2017 Population Estimates.xlsx')
print("Big Game Census data file Data:")
print(Big_Game_Census_data_file.head(10))
Big Game Census data file.columns
Big Game Census data file Data:
        Player Name Player Jersey Number Player Position Player
Age
     Devin McCourty
                                     #32
                                                    S/FS
                                                                30.0
```

1 Danny	Amendola		#80	PR/WR/KF	32.0
2 Johnson	Bademosi		#29	CB/SPTM/RCE	3 27.0
3 Chr	is Hogan		#15	WF	29.0
	Develin		#46	RB/FE	3 29.0
	Fleming		#71	T/R0T	
	ck Chung		#23	S/SS	
	_				
	an Jones		#31	CB/LCE	
8 Brand	in Cooks		#14	WF	24.0
9 Phillip	Dorsett		#13	WR/PF	25.0
Player W	eight (lbs.)	Years Play	ved Player	Birthplace (city, town,
0 Nanuet	195.0		8		
1	190.0		9		The
Woodlands 2	206.0		6		Silver
Spring 3	210.0		5		
Wyckoff 4	255.0		5		
Gilbertsvil	le				F
5 Hood	320.0		4		Fort
6 Kingston	215.0		9		
7 Carrollton	190.0		2		
8	189.0		4		
Stockton 9	185.0		3		Fort
Lauderdale					
Player Bi	rth State	Player Bir	rthplace (Combo) Player	College
Ó	New York	N	Nanuet, New	w York	Rutgers
1	Texas	The W	Woodlands,	Texas Te	exas Tech
2	Maryland	Silver S	Spring, Ma	ryland	Stanford

3 New	Jersey	Wyckoff, New Jersey Monmoutl	h
4 Penns	ylvania	Gilbertsville, Pennsylvania Brown	n
5	Texas	Fort Hood, Texas Stanford	d
6	Jamaica	Kingston, Jamaica Orego	n
7	Georgia	Carrollton, Georgia Auburn	n
8 Cal	ifornia	Stockton, California Oregon State	e
9	Florida	Fort Lauderdale, Florida Miami (FL)
birthplace) 0 0400000US3 74.013473 1 0400000US4 95.504686 2 0400000US2 77.026088 3 0400000US4 75.610184 5 0400000US4 97.771758 6 0400000US7 76.792813 7 0400000US7 85.076611 8 0400000US0 121.290780 9 0400000US1 80.143379	\ 6 8 4 4 2 8 3 3 6 2	All (player birthplace) Longitude (player 41.088707 30.173419 38.990666 41.009542 40.320097 31.201439 17.971215 33.580110 37.957702 26.122308 Number of Records \ 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	

```
American FactFinder Link for more Census data points \
0
   https://factfinder.census.gov/bkmk/cf/1.0/en/p...
1
   https://factfinder.census.gov/bkmk/cf/1.0/en/p...
2
   https://factfinder.census.gov/bkmk/cf/1.0/en/p...
3
   https://factfinder.census.gov/bkmk/cf/1.0/en/p...
4
   https://factfinder.census.gov/bkmk/cf/1.0/en/p...
5
   https://factfinder.census.gov/bkmk/cf/1.0/en/p...
6
   https://www.census.gov/popclock/world/jm?utm c...
7
   https://factfinder.census.gov/bkmk/cf/1.0/en/p...
8
   https://factfinder.census.gov/bkmk/cf/1.0/en/p...
   https://factfinder.census.gov/bkmk/cf/1.0/en/p...
                                     Quickfacts Link \
0
   https://www.census.gov/quickfacts/fact/table/N...
1
   https://www.census.gov/quickfacts/fact/table/T...
2
   https://www.census.gov/quickfacts/fact/table/S...
3
   https://www.census.gov/quickfacts/fact/table/W...
4
   https://www.census.gov/quickfacts/fact/table/G...
5
   https://www.census.gov/quickfacts/fact/table/F...
6
            https://www.census.gov/popclock/world/jm
7
   https://www.census.gov/quickfacts/fact/table/C...
8
   https://www.census.gov/quickfacts/fact/table/S...
   https://www.census.gov/guickfacts/fact/table/F...
                                     State Data Link \
   https://factfinder.census.gov/bkmk/cf/1.0/en/s...
1
   https://factfinder.census.gov/bkmk/cf/1.0/en/s...
2
   https://factfinder.census.gov/bkmk/cf/1.0/en/s...
3
   https://factfinder.census.gov/bkmk/cf/1.0/en/s...
   https://factfinder.census.gov/bkmk/cf/1.0/en/s...
4
5
   https://factfinder.census.gov/bkmk/cf/1.0/en/s...
   https://www.census.gov/popclock/world/jm?utm c...
7
   https://factfinder.census.gov/bkmk/cf/1.0/en/s...
   https://factfinder.census.gov/bkmk/cf/1.0/en/s...
8
   https://factfinder.census.gov/bkmk/cf/1.0/en/s...
                     Source (Population States 2017) \
   U.S. Census Bureau, 2017 Annual Estimates of t...
0
1
   U.S. Census Bureau, 2017 Annual Estimates of t...
2
   U.S. Census Bureau, 2017 Annual Estimates of t...
3
   U.S. Census Bureau, 2017 Annual Estimates of t...
4
   U.S. Census Bureau, 2017 Annual Estimates of t...
   U.S. Census Bureau, 2017 Annual Estimates of t...
5
6
   U.S. Census Bureau, International Data Base (d...
7
   U.S. Census Bureau, 2017 Annual Estimates of t...
8
  U.S. Census Bureau, 2017 Annual Estimates of t...
  U.S. Census Bureau, 2017 Annual Estimates of t...
                  Birthplace, Population Data Source
  U.S. Census Bureau, 2012-2016 American Communi...
```

```
U.S. Census Bureau, 2012-2016 American Communi...
  U.S. Census Bureau, International Data Base (d...
7
  U.S. Census Bureau, 2016 Annual Estimates of t...
  U.S. Census Bureau, 2016 Annual Estimates of t...
9 U.S. Census Bureau, 2016 Annual Estimates of t...
[10 rows x 24 columns]
Index(['Player Name', 'Player Jersey Number', 'Player Position',
'Player Age',
       'Player Weight (lbs.)', 'Years Played',
'Player Birthplace (city, town, etc.)', 'Player Birth State',
       'Player Birthplace (Combo)', 'Player College', 'Player Team',
       'Conference',
       '2016 Population Estimates (except where otherwise noted)'
       'State GEO ID', 'Full GEOID', 'Latitude (player birthplace)',
       'Longitude (player birthplace)', 'Number from City',
       'Number of Records',
       'American FactFinder Link for more Census data points',
       'Quickfacts Link', 'State Data Link', 'Source (Population
States 2017)',
       'Birthplace, Population Data Source'],
      dtype='object')
print("All Places Census2016 data file :")
print(All Places Census2016 data file.head(10))
All Places Census2016 data file :
      Geographic ID
                     GEOID 2 Geography, full name (City, State) \
                                         Abbeville city, Alabama
   1620000US0100124
                       100124
                                        Adamsville city, Alabama
1
  1620000US0100460
                       100460
   1620000US0100484
                                           Addison town, Alabama
                       100484
3
   1620000US0100676
                       100676
                                              Akron town, Alabama
4
   1620000US0100820
                       100820
                                         Alabaster city, Alabama
5
   1620000US0100988
                                       Albertville city, Alabama
                       100988
  1620000US0101132
                       101132
                                    Alexander City city, Alabama
7
                                        Aliceville city, Alabama
   1620000US0101228
                       101228
8
   1620000US0101396
                       101396
                                           Allgood town, Alabama
  1620000US0101660
                       101660
                                           Altoona town, Alabama
  April 1, 2010 - Census
                          April 1, 2010 - Estimates Base \
0
                    2688
                                                      2688
                    4522
                                                      4522
1
2
                      758
                                                       756
3
                      356
                                                       356
4
                    30352
                                                     31066
```

```
5
                     21160
                                                        21127
6
                                                        14984
                     14875
7
                      2486
                                                         2481
8
                                                          622
                       622
9
                       933
                                                          937
   Population Estimate (as of July 1) - 2010 \
                                            2683
1
                                            4517
2
                                             754
3
                                             355
4
                                           31176
5
                                           21152
6
                                           14947
7
                                            2478
8
                                             623
9
                                             937
   Population Estimate (as of July 1) - 2011 \
0
                                            2685
1
                                            4495
2
                                             753
3
                                             345
4
                                           31362
5
                                           21335
6
                                           14932
7
                                            2431
8
                                             627
9
                                             935
   Population Estimate (as of July 1) - 2012
0
                                            2647
1
                                            4472
2
                                             748
3
                                             345
4
                                           31663
5
                                           21386
6
                                           14834
7
                                            2430
8
                                             628
9
                                             934
   Population Estimate (as of July 1) - 2013
0
                                            2631
1
                                            4447
2
                                             748
3
                                             342
4
                                           31960
5
                                           21408
6
                                           14928
```

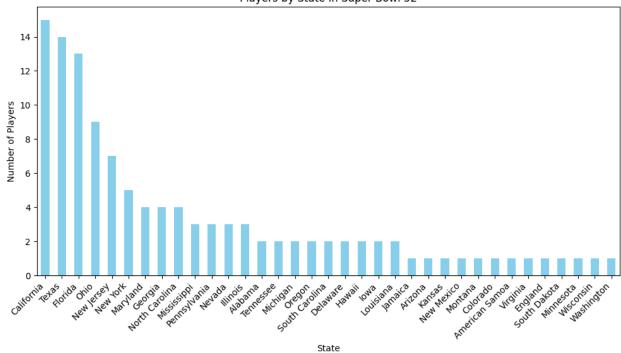
```
7
                                          2410
8
                                           628
9
                                           930
   Population Estimate (as of July 1) - 2014 \
0
                                          2619
1
                                          4428
2
                                           747
3
                                           337
4
                                         32167
5
                                         21383
6
                                         14905
7
                                          2384
8
                                           627
9
                                           927
   Population Estimate (as of July 1) - 2015 \
0
                                          2616
1
                                          4395
2
                                           740
3
                                           337
4
                                         32751
5
                                         21454
6
                                         14792
7
                                          2376
8
                                           628
9
                                           922
   Population Estimate (as of July 1) - 2016
0
                                          2603
1
                                          4360
2
                                           738
3
                                           334
4
                                         32948
5
                                         21525
6
                                         14773
7
                                          2357
8
                                           627
                                           919
print("All states Census 2017 data file :")
print(All_states_Census_2017_data_file.head(10))
All_states_Census_2017_data_file :
         GEOID GEOID2
                               Geography Name April 1, 2010 -
Census \
                                       Alabama
0 0400000US01
                                                                 4779736
                      1
1 0400000US02
                      2
                                        Alaska
                                                                  710231
```

```
0400000US04
                     4
                                      Arizona
                                                               6392017
                     5
3 0400000US05
                                                               2915918
                                     Arkansas
4 0400000US06
                                   California
                     6
                                                              37253956
5 0400000US08
                     8
                                     Colorado
                                                               5029196
6 0400000US09
                     9
                                  Connecticut
                                                               3574097
7 040000US10
                    10
                                                                897934
                                     Delaware
8 040000US11
                    11
                        District of Columbia
                                                                601723
9 0400000US12
                    12
                                      Florida
                                                              18801310
   April 1, 2010 - Estimates Base Population Estimate (as of July 1)
- 2010 \
                           4780135
4785579
                            710249
714015
                           6392309
6407002
                           2916031
2921737
                          37254518
37327690
                           5029325
5048029
                           3574114
3580171
                            897936
899712
                            601766
605040
                          18804594
18846461
   Population Estimate (as of July 1) - 2011 \
0
                                      4798649
1
                                       722259
2
                                      6465488
3
                                      2938640
4
                                     37672654
5
                                      5116411
6
                                      3591927
7
                                       907884
8
                                       620336
```

```
9
                                       19097369
   Population Estimate (as of July 1) - 2012
0
                                        4813946
1
                                         730825
2
                                        6544211
3
                                        2949208
4
                                       38019006
5
                                        5186330
6
                                        3597705
7
                                         916868
8
                                         635630
9
                                       19341327
   Population Estimate (as of July 1) - 2013
0
                                        4827660
1
                                         736760
2
                                        6616124
3
                                        2956780
4
                                       38347383
5
                                        5262556
6
                                        3602470
7
                                         925114
8
                                         650114
9
                                       19584927
   Population Estimate (as of July 1) - 2014
0
                                        4840037
1
                                         736759
2
                                        6706435
3
                                        2964800
4
                                       38701278
5
                                        5342311
6
                                        3600188
7
                                         934805
8
                                         660797
9
                                       19897747
   Population Estimate (as of July 1) - 2015
0
                                        4850858
1
                                         737979
2
                                        6802262
3
                                        2975626
4
                                       39032444
5
                                        5440445
6
                                        3593862
7
                                         944107
8
                                         672736
9
                                       20268567
```

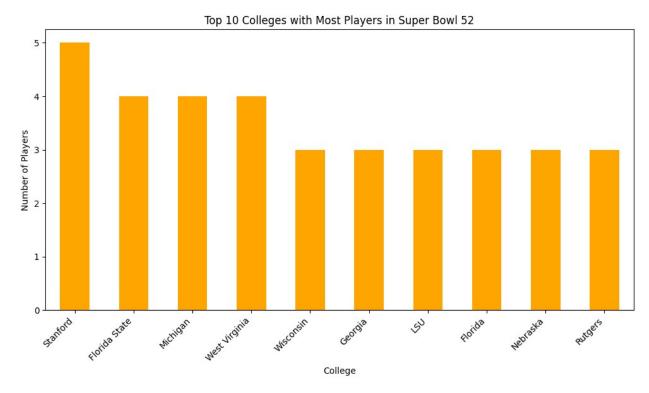
```
Population Estimate (as of July 1) - 2016 \
0
                                      4860545
1
                                       741522
2
                                      6908642
3
                                      2988231
4
                                     39296476
5
                                      5530105
6
                                      3587685
7
                                       952698
8
                                       684336
9
                                     20656589
   Population Estimate (as of July 1) - 2017
0
                                      4874747
1
                                       739795
2
                                      7016270
3
                                      3004279
4
                                     39536653
5
                                      5607154
6
                                      3588184
7
                                       961939
8
                                       693972
9
                                     20984400
Big Game Census data file.columns
All Places Census2016 data file.columns
All states Census 2017 data file.columns
Index(['GEOID', 'GEOID2', 'Geography Name', 'April 1, 2010 - Census',
       'April 1, 2010 - Estimates Base',
       'Population Estimate (as of July 1) - 2010',
       'Population Estimate (as of July 1) - 2011'
       'Population Estimate (as of July 1) - 2012',
       'Population Estimate (as of July 1) - 2013',
       'Population Estimate (as of July 1) - 2014'
       'Population Estimate (as of July 1) - 2015',
       'Population Estimate (as of July 1) - 2016'
       'Population Estimate (as of July 1) - 2017'],
      dtype='object')
# Counting the number of players by team
players by team = Big Game Census data file['Player
Team'l.value counts()
print(f"Players by Team:\n{players by team}")
Players by Team:
Player Team
New England
                60
Philadelphia
                58
Name: count, dtype: int64
```

```
# Finding the most common birthplaces (state and city) in the dataset
birthplaces = Big Game Census data file['Player Birthplace
(Combo)'].value counts().head(10)
print(f"Top 10 birthplaces of players:\n{birthplaces}")
Top 10 birthplaces of players:
Player Birthplace (Combo)
Cleveland, Ohio
                            3
Fort Lauderdale, Florida
                            2
                            2
Orange, California
                            2
Miami, Florida
Buffalo, New York
                            2
                            2
Baton Rouge, Louisiana
Honolulu, Hawaii
                            2
                            1
Fort Hood, Texas
Carrollton, Georgia
                            1
Stockton, California
                            1
Name: count, dtype: int64
# Grouping by 'State' to see how many players come from each state
players by state = Big Game Census data file['Player Birth
State'].value counts()
# Plotting the state distribution of players
plt.figure(figsize=(10, 6))
players by state.plot(kind='bar', color='skyblue')
plt.title("Players by State in Super Bowl 52")
plt.xlabel('State')
plt.ylabel('Number of Players')
plt.xticks(rotation=45, ha="right")
plt.tight_layout()
plt.show()
```



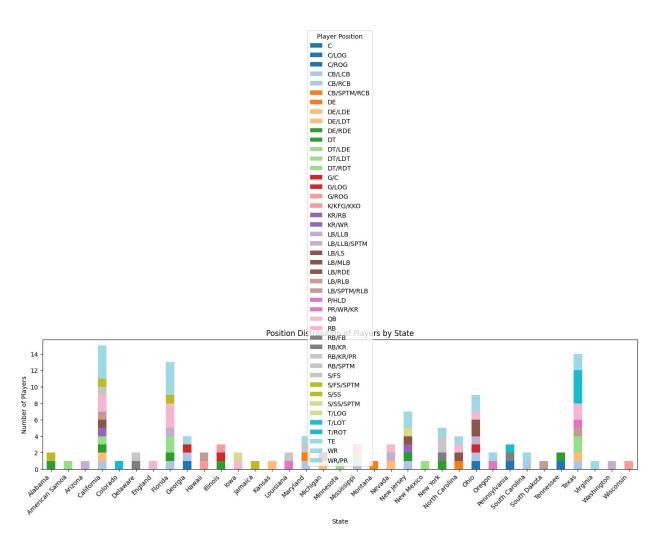
```
if 'Player College' in Big Game Census data file.columns:
    colleges = Big Game_Census_data_file['Player
College'].value counts().head(\overline{10})
    print(f"Top 10 Colleges with Most Players:\n{colleges}")
Top 10 Colleges with Most Players:
Player College
Stanford
Florida State
                 4
Michigan
                 4
West Virginia
                 4
Wisconsin
                 3
                 3
Georgia
                 3
LSU
                 3
Florida
                 3
Nebraska
Rutgers
Name: count, dtype: int64
# Plotting the most common colleges
plt.figure(figsize=(10, 6))
colleges.plot(kind='bar', color='orange')
plt.title("Top 10 Colleges with Most Players in Super Bowl 52")
plt.xlabel('College')
plt.ylabel('Number of Players')
plt.xticks(rotation=45, ha="right")
```

```
plt.tight_layout()
plt.show()
```



```
if 'Player Position' in Big_Game_Census_data_file.columns:
    position_by_state = Big_Game_Census_data_file.groupby(['Player
Birth State', 'Player Position']).size().unstack().fillna(0)

position_by_state.plot(kind='bar', stacked=True, figsize=(14, 8),
    colormap='tab20')
plt.title("Position Distribution of Players by State")
plt.xlabel('State')
plt.xlabel('State')
plt.ylabel('Number of Players')
plt.xticks(rotation=45, ha="right")
plt.tight_layout()
plt.show()
```



```
if 'Player Age' in Big_Game_Census_data_file.columns:
    # Plotting the distribution of player ages
    plt.figure(figsize=(10, 6))
    sns.histplot(Big_Game_Census_data_file['Player Age'], bins=10,
kde=True, color='purple')
    plt.title('Distribution of Player Ages in Super Bowl 52')
    plt.xlabel('Age')
    plt.ylabel('Number of Players')
    plt.tight_layout()
    plt.show()
```

