# PREDICTING A WIN

## by Erika Harrell

July 2021

**Disclaimer: All opinions and conclusions in this project are those of the author and not of the U.S. Department of Justice.**

## Executive Summary

**This data science project was conducted to predict whether Tennessee State University (TSU) would win a football game and what factors are involved in winning a football game. Data on scores and other football statistics were scraped from multiple web pages from the TSU athletics website to create a data frame with information from 191 football games that TSU played from 2003 to 2019. The data scraped included the final scores from each game for TSU and their opponents; game attendance; year and location of each game; and statistics about rushing, receiving, tackles, and punts that TSU made in each game. After web scraping, all data was placed into a data frame with each row representing a single game. After data wrangling and cleaning were completed, exploratory data analysis was conducted. Continuous variables had their outliers replaced with the variable mean. Pearson correlations showed several pairs of features were at least moderately correlated (r >=0.5). Machine learning was conducted as the data frame was split into a test dataset (30% of cases) and a training dataset (70% of cases). Several different types of models were used to predict whether TSU won or loss a football game. Decision tree, random forest, and support vector machine models were evaluated on the training data. Based on the accuracy scores for each of the models, the random forest model gave the best accuracy when fitted to the test data, showing that a number of features were useful in predicting a TSU win. Among the features included in the model, TSU score, opponent score, TSU kick return yards, and TSU rushing yards were the most important in predicting a win.**

In [1]:

```
#importing libraries for project
#python's lxml library parses xml and html files
from lxml import html
#python requests library gets data from web pages
import requests
#libraries for data wrangling & cleaning
import pandas as pd
import numpy as np
import datetime as dt
#libraries for data visualization
import matplotlib.pyplot as plt
import seaborn as sns
#libraries for machine learning
from sklearn.tree import DecisionTreeClassifier # Decision tree algorithm
from sklearn.neighbors import KNeighborsClassifier #K nearest neighbors algorithm
from sklearn import svm # Support vector machines algorithm
from sklearn.ensemble import RandomForestClassifier  #Random Forest algorithm
from sklearn.model_selection import train_test_split # data split
from sklearn import metrics #evaluation metrics
from sklearn.metrics import accuracy_score
from sklearn import tree
```

# Web Scraping-getting data on location of games and scores from TSU websites

# Data Cleaning-correcting names and deleting extra text and spaces from lists

# Data Wrangling-putting data from TSU websites into lists (one list per year)

In [2]:
```
#2019 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/E018AE
mytree = html.fromstring(page.content)
schedule2019 = mytree.xpath('body//tr/td/font[@color="#000000"]/text()')
print(schedule2019)
```

```
['Nov 23, 2019\xa0\xa0', 'Cookeville, Tenn.   \xa0\xa0', 'Tennessee State 37, Tennessee Te
ch 27\xa0\xa0', '\xa0', 'Nov 16, 2019\xa0\xa0', 'Martin, Tenn.       \xa0\xa0', 'UT Martin
28, Tennessee State 17\xa0\xa0', '\xa0', 'Nov 09, 2019\xa0\xa0', 'Nashville, Tenn.    \xa0
\xa0', 'EIU 49, Tennessee State 38\xa0\xa0', '\xa0', 'Nov 02, 2019\xa0\xa0', 'Nashville, T
enn.    \xa0\xa0', 'SEMO 32, Tennessee State 13\xa0\xa0', '\xa0', 'Oct 19, 2019\xa0\xa0',
'Nashville, Tenn.    \xa0\xa0', 'Tennessee State 26, Austin Peay 24\xa0\xa0', '\xa0', 'Oct
12, 2019\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Murray State 31, Tennessee State 17\xa
0\xa0', '\xa0', 'Oct 05, 2019\xa0\xa0', 'Jacksonville, Ala.  \xa0\xa0', 'Jacksonville Stat
e 31, Tennessee State 23\xa0\xa0', '\xa0', 'Sep 28, 2019\xa0\xa0', 'Richmond, Ky.       \x
a0\xa0', 'Eastern Kentucky 42, Tennessee State 16\xa0\xa0', '\xa0', 'Sep 21, 2019\xa0\xa
0', 'Nashville, Tenn.    \xa0\xa0', 'UAPB 37, Tennessee State 31\xa0\xa0', '\xa0', 'Sep 1
4, 2019\xa0\xa0', 'Memphis, Tenn.      \xa0\xa0', 'Jackson State 49, Tennessee State 44\xa
0\xa0', '\xa0', 'Sep 7, 2019 \xa0\xa0', 'Murfreesboro, TN    \xa0\xa0', 'Middle Tennessee
45, Tennessee State 26\xa0\xa0', '\xa0', 'Aug 31, 2019\xa0\xa0', 'Nashville, Tenn.    \xa0
\xa0', 'Tennessee State 26, Mississippi Valley 20\xa0\xa0', '\xa0']
```

In [3]:
```
#cleaning 2019 list
schedule2019=[s.replace("UAPB","Pine Bluff") for s in schedule2019]
schedule2019=[t.replace("SEMO","Southeast Missouri") for t in schedule2019]
schedule2019=[u.replace("EIU","Eastern Illinois") for u in schedule2019]
schedule2019=[v.replace("UT","Tennessee") for v in schedule2019]
schedule2019=[w.replace(".", "") for w in schedule2019]
schedule2019=[x.replace("\xa0", "") for x in schedule2019]
schedule2019=[y.replace(",","") for y in schedule2019]
schedule2019=[z.strip() for z in schedule2019]
print(schedule2019)
```

```
['Nov 23 2019', 'Cookeville Tenn', 'Tennessee State 37 Tennessee Tech 27', '', 'Nov 16 201
9', 'Martin Tenn', 'Tennessee Martin 28 Tennessee State 17', '', 'Nov 09 2019', 'Nashville
Tenn', 'Eastern Illinois 49 Tennessee State 38', '', 'Nov 02 2019', 'Nashville Tenn', 'Sou
theast Missouri 32 Tennessee State 13', '', 'Oct 19 2019', 'Nashville Tenn', 'Tennessee St
ate 26 Austin Peay 24', '', 'Oct 12 2019', 'Nashville Tenn', 'Murray State 31 Tennessee St
ate 17', '', 'Oct 05 2019', 'Jacksonville Ala', 'Jacksonville State 31 Tennessee State 2
3', '', 'Sep 28 2019', 'Richmond Ky', 'Eastern Kentucky 42 Tennessee State 16', '', 'Sep 2
1 2019', 'Nashville Tenn', 'Pine Bluff 37 Tennessee State 31', '', 'Sep 14 2019', 'Memphis
Tenn', 'Jackson State 49 Tennessee State 44', '', 'Sep 7 2019', 'Murfreesboro TN', 'Middle
Tennessee 45 Tennessee State 26', '', 'Aug 31 2019', 'Nashville Tenn', 'Tennessee State 26
Mississippi Valley 20', '']
```

In [4]:
```
#2018 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/125803
mytree = html.fromstring(page.content)
schedule2018 = mytree.xpath('body//tr/td/font[@color="#000000"]/text()')
print(schedule2018)
```

```
['Nov 17, 2018\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Tennessee State 31, UTM 28\xa0\x
a0', '\xa0', 'Nov 10, 2018\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Jacksonville State 4
1, Tennessee State 14\xa0\xa0', '\xa0', '11-03-18    \xa0\xa0', 'Cape Girardeau, Mo. \xa0
```

```
\xa0', 'Southeast Missouri 38, Tennessee State 21\xa0\xa0', '\xa0', 'Oct 20, 2018\xa0\xa
0', 'Nashville, TN       \xa0\xa0', 'Tennessee State 41, Tennessee Tech 14\xa0\xa0', '\xa
0', 'Oct 13, 2018\xa0\xa0', 'Murray, Ky.         \xa0\xa0', 'Murray St. 45, Tennessee Stat
e 21\xa0\xa0', '\xa0', 'Oct 06, 2018\xa0\xa0', 'Clarksville, Tenn.  \xa0\xa0', 'Austin Pea
y 49, Tennessee State 34\xa0\xa0', '\xa0', 'Sep 29, 2018\xa0\xa0', 'Nashville, Tenn.    \x
a0\xa0', 'Vanderbilt 31, Tennessee State 27\xa0\xa0', '\xa0', 'Sep 22, 2018\xa0\xa0', 'Cha
rleston, Ill.    \xa0\xa0', 'Tennessee State 41, Eastern Illinois 40\xa0\xa0', '\xa0', 'Se
p 01, 2018\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Tennessee State 34, Bethune-Cookman
3\xa0\xa0', '\xa0']
```

In [5]:

```
#cleaning 2018 list
schedule2018=[q.replace('Vanderbilt','Vanderbilt University') for q in schedule2018]
schedule2018=[p.replace('Cape Girardeau','CapeGirardeau') for p in schedule2018]
schedule2018=[r.replace('11-03-18','Nov 03 2018') for r in schedule2018]
schedule2018=[s.replace("UTM","Tennessee Martin") for s in schedule2018]
schedule2018=[t.replace("SEMO","Southeast Missouri") for t in schedule2018]
schedule2018=[u.replace("Bethune-Cookman","Bethune Cookman") for u in schedule2018]
schedule2018=[w.replace(".", "") for w in schedule2018]
schedule2018=[x.replace("\xa0", "") for x in schedule2018]
schedule2018=[y.replace(",","") for y in schedule2018]
schedule2018=[z.strip() for z in schedule2018]
print(schedule2018)
```

```
['Nov 17 2018', 'Nashville Tenn', 'Tennessee State 31 Tennessee Martin 28', '', 'Nov 10 20
18', 'Nashville Tenn', 'Jacksonville State 41 Tennessee State 14', '', 'Nov 03 2018', 'Cap
eGirardeau Mo', 'Southeast Missouri 38 Tennessee State 21', '', 'Oct 20 2018', 'Nashville
TN', 'Tennessee State 41 Tennessee Tech 14', '', 'Oct 13 2018', 'Murray Ky', 'Murray St 45
Tennessee State 21', '', 'Oct 06 2018', 'Clarksville Tenn', 'Austin Peay 49 Tennessee Stat
e 34', '', 'Sep 29 2018', 'Nashville Tenn', 'Vanderbilt University 31 Tennessee State 27',
'', 'Sep 22 2018', 'Charleston Ill', 'Tennessee State 41 Eastern Illinois 40', '', 'Sep 01
2018', 'Nashville Tenn', 'Tennessee State 34 Bethune Cookman 3', '']
```

In [6]:

```
#2017 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/1EEBECA
mytree = html.fromstring(page.content)
schedule2017 = mytree.xpath('body//tr/td/font[@color="#000000"]/text()')
print(schedule2017)
```

```
['Nov 16, 2017\xa0\xa0', 'Jacksonville, Ala.  \xa0\xa0', 'Jacksonville State 36, Tennessee
State 6\xa0\xa0', '\xa0', 'Nov 11, 2017\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Tenness
ee State 23, SEMO 20\xa0\xa0', '\xa0', 'Nov 04, 2017\xa0\xa0', 'Nashville, Tenn.    \xa0\x
a0', 'Tennessee State 60, VUL 0\xa0\xa0', '\xa0', 'Oct 28, 2017\xa0\xa0', 'Cookeville, Ten
n.   \xa0\xa0', 'Tennessee Tech 30, Tennessee State 26\xa0\xa0', '\xa0', 'Oct 14, 2017\xa0
\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Austin Peay 21, Tennessee State 17\xa0\xa0', '\xa
0', 'Oct 07, 2017\xa0\xa0', 'Richmond, Ky.       \xa0\xa0', 'Tennessee State 45, Eastern K
entucky 21\xa0\xa0', '\xa0', 'Sep 30, 2017\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'East
ern Illinois 19, Tennessee State 16\xa0\xa0', '\xa0', 'Sep 23, 2017\xa0\xa0', 'Martin, Ten
n.       \xa0\xa0', 'UT Martin 31, Tennessee State 16\xa0\xa0', '\xa0', 'Sep 17, 2017\xa0
\xa0', 'Tampa, Fla          \xa0\xa0', 'Tennessee State 24, Florida A&M 13\xa0\xa0', '\xa
0', 'Sep 09, 2017\xa0\xa0', 'Memphis, Tenn.      \xa0\xa0', 'Tennessee State 17, Jackson S
tate 15\xa0\xa0', '\xa0', 'Aug 31, 2017\xa0\xa0', 'Atlanta, Ga.       \xa0\xa0', 'Tenness
ee State 17, Georgia State 10\xa0\xa0', '\xa0']
```

In [7]:

```
#cleaning 2017 list
schedule2017=[t.replace("VUL", "VirginiaU Lynchburg") for t in schedule2017]
schedule2017=[u.replace("SEMO","Southeast Missouri") for u in schedule2017]
schedule2017=[v.replace("UT","Tennessee")for v in schedule2017]
schedule2017=[w.replace(".", "") for w in schedule2017]
schedule2017=[x.replace("\xa0", "") for x in schedule2017]
schedule2017=[y.replace(",","") for y in schedule2017]
schedule2017=[z.strip() for z in schedule2017]
print(schedule2017)
```

```
['Nov 16 2017', 'Jacksonville Ala', 'Jacksonville State 36 Tennessee State 6', '', 'Nov 11
2017', 'Nashville Tenn', 'Tennessee State 23 Southeast Missouri 20', '', 'Nov 04 2017', 'N
ashville Tenn', 'Tennessee State 60 VirginiaU Lynchburg 0', '', 'Oct 28 2017', 'Cookeville
Tenn', 'Tennessee Tech 30 Tennessee State 26', '', 'Oct 14 2017', 'Nashville Tenn', 'Austi
n Peay 21 Tennessee State 17', '', 'Oct 07 2017', 'Richmond Ky', 'Tennessee State 45 Easte
rn Kentucky 21', '', 'Sep 30 2017', 'Nashville Tenn', 'Eastern Illinois 19 Tennessee State
16', '', 'Sep 23 2017', 'Martin Tenn', 'Tennessee Martin 31 Tennessee State 16', '', 'Sep
17 2017', 'Tampa Fla', 'Tennessee State 24 Florida A&M 13', '', 'Sep 09 2017', 'Memphis Te
nn', 'Tennessee State 17 Jackson State 15', '', 'Aug 31 2017', 'Atlanta Ga', 'Tennessee St
ate 17 Georgia State 10', '']
```

In [8]:

```
#2016 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/F8A9B1
mytree = html.fromstring(page.content)
schedule2016 = mytree.xpath('body//tr/td/font[@color="#000000"]/text()')
print(schedule2016)
```

```
['11-19-16    \xa0\xa0', 'Cape Girardeau, Mo. \xa0\xa0', 'Tennessee State 32, Southeast Mi
ssouri 31\xa0\xa0', '\xa0', 'Nov 12, 2016\xa0\xa0', 'Nashville, TN       \xa0\xa0', 'Tenne
ssee Tech 44, Tennessee State 16\xa0\xa0', '\xa0', 'Nov 05, 2016\xa0\xa0', 'Clarksville, T
enn.  \xa0\xa0', 'Tennessee State 41, Austin Peay 40\xa0\xa0', '\xa0', 'Oct 29, 2016\xa0\x
a0', 'Murray, Ky.         \xa0\xa0', 'Murray St. 38, Tennessee State 31\xa0\xa0', '\xa0',
'Oct 22, 2016\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Vanderbilt 35, Tennessee State 17
\xa0\xa0', '\xa0', 'Oct 15, 2016\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Tennessee Stat
e 35, Eastern Kentucky 28\xa0\xa0', '\xa0', 'Oct 08, 2016\xa0\xa0', 'Charleston, Ill.
\xa0\xa0', 'Eastern Illinois 35, Tennessee State 34\xa0\xa0', '\xa0', 'Oct 01, 2016\xa0\xa
0', 'Nashville, Tenn.    \xa0\xa0', 'Tennessee State 34, UT Martin 30\xa0\xa0', '\xa0', 'S
ep 17, 2016\xa0\xa0', 'Daytona Beach, Fla. \xa0\xa0', 'Tennessee State 31, Bethune-Cookman
24\xa0\xa0', '\xa0', 'Sep 10, 2016\xa0\xa0', 'Memphis, Tenn.      \xa0\xa0', 'Tennessee St
ate 40, Jackson State 26\xa0\xa0', '\xa0', 'Sep 03, 2016\xa0\xa0', 'Nashville, Tenn.    \x
a0\xa0', 'Tennessee State 44, Arkansas-Pine Bluff 0\xa0\xa0', '\xa0']
```

In [9]:

```
#cleaning 2016 data
schedule2016=[o.replace('Pine Bluff',"PineBluff") for o in schedule2016]
schedule2016=[p.replace('11-19-16','Nov 19 2016') for p in schedule2016]
schedule2016=[r.replace('Cape Girardeau','CapeGirardeau') for r in schedule2016]
schedule2016=[s.replace("Vanderbilt","Vanderbilt University") for s in schedule2016]
schedule2016=[t.replace("UT","Tennessee") for t in schedule2016]
schedule2016=[u.replace("Daytona Beach", "DaytonaBeach") for u in schedule2016]
schedule2016=[v.replace("-"," ") for v in schedule2016]
schedule2016=[w.replace(".", "") for w in schedule2016]
schedule2016=[x.replace("\xa0", "") for x in schedule2016]
schedule2016=[y.replace(",","") for y in schedule2016]
schedule2016=[z.strip() for z in schedule2016]
print(schedule2016)
```

```
['Nov 19 2016', 'CapeGirardeau Mo', 'Tennessee State 32 Southeast Missouri 31', '', 'Nov 1
2 2016', 'Nashville TN', 'Tennessee Tech 44 Tennessee State 16', '', 'Nov 05 2016', 'Clark
sville Tenn', 'Tennessee State 41 Austin Peay 40', '', 'Oct 29 2016', 'Murray Ky', 'Murray
St 38 Tennessee State 31', '', 'Oct 22 2016', 'Nashville Tenn', 'Vanderbilt University 35
Tennessee State 17', '', 'Oct 15 2016', 'Nashville Tenn', 'Tennessee State 35 Eastern Kent
ucky 28', '', 'Oct 08 2016', 'Charleston Ill', 'Eastern Illinois 35 Tennessee State 34',
'', 'Oct 01 2016', 'Nashville Tenn', 'Tennessee State 34 Tennessee Martin 30', '', 'Sep 17
2016', 'DaytonaBeach Fla', 'Tennessee State 31 Bethune Cookman 24', '', 'Sep 10 2016', 'Me
mphis Tenn', 'Tennessee State 40 Jackson State 26', '', 'Sep 03 2016', 'Nashville Tenn',
'Tennessee State 44 Arkansas PineBluff 0', '']
```

In [10]:

```
#2015 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/B871396
mytree = html.fromstring(page.content)
schedule2015 = mytree.xpath('body//tr/td/font[@color="#000000"]/text()')
print(schedule2015)
```

```
['Nov 21, 2015\xa0\xa0', 'Cookeville, Tenn.   \xa0\xa0', 'Tennessee Tech 30, Tennessee Sta
te 24\xa0\xa0', '\xa0', 'Nov 07, 2015\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Murray St
ate 46, Tennessee State 43\xa0\xa0', '\xa0', 'Oct 31, 2015\xa0\xa0', 'Nashville, Tenn.
\xa0\xa0', 'Tennessee State 20, Austin Peay 6\xa0\xa0', '\xa0', 'Oct 24, 2015\xa0\xa0', 'R
ichmond, Ky.       \xa0\xa0', 'Eastern Kentucky 45, Tennessee State 21\xa0\xa0', '\xa0',
'Oct 17, 2015\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Eastern Illinois 25, Tennessee St
ate 22\xa0\xa0', '\xa0', 'Oct 10, 2015\xa0\xa0', 'Martin, Tenn.       \xa0\xa0', 'UT Marti
n 28, Tennessee State 14\xa0\xa0', '\xa0', 'Sep 26, 2015\xa0\xa0', 'Tallahassee, Fla.   \x
a0\xa0', 'Tennessee State 30, FAMU 14\xa0\xa0', '\xa0', 'Sep 19, 2015\xa0\xa0', 'Jacksonvi
lle, Ala.  \xa0\xa0', 'Jacksonville State 48, Tennessee State 13\xa0\xa0', '\xa0', 'Sep 1
2, 2015\xa0\xa0', 'Memphis, TN         \xa0\xa0', 'Tennessee State 35, Jackson State Tiger
s 25\xa0\xa0', '\xa0', 'Sep 06, 2015\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Tennessee
State 24, Alabama State 14\xa0\xa0', '\xa0']
```

In [11]:

```
#cleaning 2015 list
schedule2015=[s.replace("Tigers","") for s in schedule2015]
schedule2015=[t.replace("UT","Tennessee") for t in schedule2015]
schedule2015=[u.replace("FAMU","Florida A&M") for u in schedule2015]
schedule2015=[v.replace("-"," ") for v in schedule2015]
schedule2015=[w.replace(".", "") for w in schedule2015]
schedule2015=[x.replace("\xa0", "") for x in schedule2015]
schedule2015=[y.replace(",","") for y in schedule2015]
schedule2015=[z.strip() for z in schedule2015]
print(schedule2015)
```

```
['Nov 21 2015', 'Cookeville Tenn', 'Tennessee Tech 30 Tennessee State 24', '', 'Nov 07 201
5', 'Nashville Tenn', 'Murray State 46 Tennessee State 43', '', 'Oct 31 2015', 'Nashville
Tenn', 'Tennessee State 20 Austin Peay 6', '', 'Oct 24 2015', 'Richmond Ky', 'Eastern Kent
ucky 45 Tennessee State 21', '', 'Oct 17 2015', 'Nashville Tenn', 'Eastern Illinois 25 Ten
nessee State 22', '', 'Oct 10 2015', 'Martin Tenn', 'Tennessee Martin 28 Tennessee State 1
4', '', 'Sep 26 2015', 'Tallahassee Fla', 'Tennessee State 30 Florida A&M 14', '', 'Sep 19
2015', 'Jacksonville Ala', 'Jacksonville State 48 Tennessee State 13', '', 'Sep 12 2015',
'Memphis TN', 'Tennessee State 35 Jackson State  25', '', 'Sep 06 2015', 'Nashville Tenn',
'Tennessee State 24 Alabama State 14', '']
```

In [12]:

```
#2014 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/26C45AE
mytree = html.fromstring(page.content)
schedule2014 = mytree.xpath('body//tr/td/font[@color="#000000"]/text()')
print(schedule2014)
```

```
['Nov 22, 2014\xa0\xa0', 'Murray, Ky.         \xa0\xa0', 'Tennessee State 48, Murray St. 3
3\xa0\xa0', '\xa0', 'Nov 08, 2014\xa0\xa0', 'Clarksville, Tenn.  \xa0\xa0', 'Tennessee Sta
te 31, Austin Peay 27\xa0\xa0', '\xa0', 'Nov 01, 2014\xa0\xa0', 'Nashville, Tenn.    \xa0
\xa0', 'Eastern Kentucky 56, Tennessee State 42\xa0\xa0', '\xa0', 'Oct 25, 2014\xa0\xa0',
'Charleston, Ill.    \xa0\xa0', 'Eastern Illinois 28, Tennessee State 3\xa0\xa0', '\xa0',
'Oct 18, 2014\xa0\xa0', 'Hale Stadium        \xa0\xa0', 'UT Martin 21, Tennessee State 16
\xa0\xa0', '\xa0', 'Oct 11, 2014\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Jacksonville S
tate 27, Tennessee State 20\xa0\xa0', '\xa0', '10-04-14    \xa0\xa0', 'Cape Girardeau, Mo.
\xa0\xa0', 'Southeast Missouri 28, Tennessee State 21\xa0\xa0', '\xa0', 'Sep 27, 2014\xa0
\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Tennessee State 27, Florida A&M 7\xa0\xa0', '\xa
0', 'Sep 20, 2014\xa0\xa0', 'Nashville, TN       \xa0\xa0', 'Tennessee State 10, Tennessee
Tech 7\xa0\xa0', '\xa0', 'Sep 13, 2014\xa0\xa0', 'Memphis, Tenn.      \xa0\xa0', 'Tennesse
e State 35, Jackson State 7\xa0\xa0', '\xa0', 'Sep 06, 2014\xa0\xa0', 'Montgomery, Ala.
\xa0\xa0', 'Alabama State 27, Tennessee State 21\xa0\xa0', '\xa0', 'Aug 30, 2014\xa0\xa0',
'Nashville, Tenn.    \xa0\xa0', 'Tennessee State 58, Edward Waters 6\xa0\xa0', '\xa0']
```

In [13]:

```
#cleaning 2014 list
schedule2014=[s.replace("Hale Stadium","Nashville, Tenn.") for s in schedule2014]
schedule2014=[t.replace("10-04-14","Oct 04, 2014") for t in schedule2014]
schedule2014=[u.replace("Cape Girardeau","CapeGirardeau") for u in schedule2014]
schedule2014=[v.replace("-"," ") for v in schedule2014]
schedule2014=[w.replace(".", "") for w in schedule2014]
schedule2014=[x.replace("\xa0", "") for x in schedule2014]
```

```
schedule2014=[y.replace(",","") for y in schedule2014]
schedule2014=[z.strip() for z in schedule2014]
print(schedule2014)
```

```
['Nov 22 2014', 'Murray Ky', 'Tennessee State 48 Murray St 33', '', 'Nov 08 2014', 'Clarks
ville Tenn', 'Tennessee State 31 Austin Peay 27', '', 'Nov 01 2014', 'Nashville Tenn', 'Ea
stern Kentucky 56 Tennessee State 42', '', 'Oct 25 2014', 'Charleston Ill', 'Eastern Illin
ois 28 Tennessee State 3', '', 'Oct 18 2014', 'Nashville Tenn', 'UT Martin 21 Tennessee St
ate 16', '', 'Oct 11 2014', 'Nashville Tenn', 'Jacksonville State 27 Tennessee State 20',
'', 'Oct 04 2014', 'CapeGirardeau Mo', 'Southeast Missouri 28 Tennessee State 21', '', 'Se
p 27 2014', 'Nashville Tenn', 'Tennessee State 27 Florida A&M 7', '', 'Sep 20 2014', 'Nash
ville TN', 'Tennessee State 10 Tennessee Tech 7', '', 'Sep 13 2014', 'Memphis Tenn', 'Tenn
essee State 35 Jackson State 7', '', 'Sep 06 2014', 'Montgomery Ala', 'Alabama State 27 Te
nnessee State 21', '', 'Aug 30 2014', 'Nashville Tenn', 'Tennessee State 58 Edward Waters
6', '']
```

In [14]:

```
#2013 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/E394BBE
mytree = html.fromstring(page.content)
schedule2013 = mytree.xpath('body//tr/td/font[@color="#000000"]/text()')
print(schedule2013)
```

```
['Dec 07, 2013\xa0\xa0', 'Charleston, Ill.    \xa0\xa0', 'Eastern Illinois 51, Tennessee S
tate 10\xa0\xa0', '\xa0', 'Nov 30, 2013\xa0\xa0', 'Indianapolis, Ind.  \xa0\xa0', 'Tenness
ee State 31, Butler 0\xa0\xa0', '\xa0', 'Nov 09, 2013\xa0\xa0', 'Nashville, Tenn.    \xa0
\xa0', 'Tennessee State 31, Austin Peay 6\xa0\xa0', '\xa0', 'Nov 16, 2013\xa0\xa0', 'Nashv
ille, Tenn.    \xa0\xa0', 'Tennessee State 17, Murray State 10\xa0\xa0', '\xa0', 'Nov 02,
2013\xa0\xa0', 'Richmond, Ky.       \xa0\xa0', 'Eastern Kentucky 44, Tennessee State 0\xa0
\xa0', '\xa0', 'Oct 26, 2013\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Eastern Illinois 3
4, Tennessee State 16\xa0\xa0', '\xa0', 'Oct 19, 2013\xa0\xa0', 'Martin, Tenn.       \xa0
\xa0', 'Tennessee State 29, UT Martin 15\xa0\xa0', '\xa0', 'Oct 12, 2013\xa0\xa0', 'Jackso
nville, Ala.  \xa0\xa0', 'Tennessee State 31, Jacksonville State 15\xa0\xa0', '\xa0', 'Oct
05, 2013\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Tennessee State 40, Southeast Missouri
16\xa0\xa0', '\xa0', 'Sep 28, 2013\xa0\xa0', 'St. Louis, Missouri \xa0\xa0', 'Tennessee St
ate 73, Central State 6\xa0\xa0', '\xa0', 'Sep 21, 2013\xa0\xa0', 'Cookeville, Tenn.   \xa
0\xa0', 'Tennessee State 41, Tennessee Tech 21\xa0\xa0', '\xa0', 'Sep 14, 2013\xa0\xa0',
'Memphis, Tenn.      \xa0\xa0', 'Tennessee State 26, Jackson State Tigers 16\xa0\xa0', '\x
a0', 'Sep 07, 2013\xa0\xa0', 'Tallahassee, Fla.   \xa0\xa0', 'Tennessee State 27, Florida
A&M 7\xa0\xa0', '\xa0', 'Sep 01, 2013\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Bethune-C
ookman 12, Tennessee State 9\xa0\xa0', '\xa0']
```

In [15]:

```
#cleaning 2013 list
schedule2013=[r.replace("St. Louis","StLouis") for r in schedule2013]
schedule2013=[s.replace("Butler","Butler University") for s in schedule2013]
schedule2013=[t.replace("UT","Tennessee") for t in schedule2013]
schedule2013=[u.replace("Tigers","") for u in schedule2013]
schedule2013=[v.replace("-"," ") for v in schedule2013]
schedule2013=[w.replace(".", "") for w in schedule2013]
schedule2013=[x.replace("\xa0", "") for x in schedule2013]
schedule2013=[y.replace(",","") for y in schedule2013]
schedule2013=[z.strip() for z in schedule2013]
print(schedule2013)
```

```
['Dec 07 2013', 'Charleston Ill', 'Eastern Illinois 51 Tennessee State 10', '', 'Nov 30 20
13', 'Indianapolis Ind', 'Tennessee State 31 Butler University 0', '', 'Nov 09 2013', 'Nas
hville Tenn', 'Tennessee State 31 Austin Peay 6', '', 'Nov 16 2013', 'Nashville Tenn', 'Te
nnessee State 17 Murray State 10', '', 'Nov 02 2013', 'Richmond Ky', 'Eastern Kentucky 44
Tennessee State 0', '', 'Oct 26 2013', 'Nashville Tenn', 'Eastern Illinois 34 Tennessee St
ate 16', '', 'Oct 19 2013', 'Martin Tenn', 'Tennessee State 29 Tennessee Martin 15', '',
'Oct 12 2013', 'Jacksonville Ala', 'Tennessee State 31 Jacksonville State 15', '', 'Oct 05
2013', 'Nashville Tenn', 'Tennessee State 40 Southeast Missouri 16', '', 'Sep 28 2013', 'S
tLouis Missouri', 'Tennessee State 73 Central State 6', '', 'Sep 21 2013', 'Cookeville Ten
n', 'Tennessee State 41 Tennessee Tech 21', '', 'Sep 14 2013', 'Memphis Tenn', 'Tennessee
State 26 Jackson State  16', '', 'Sep 07 2013', 'Tallahassee Fla', 'Tennessee State 27 Flo
```

```
rida A&M 7', '', 'Sep 01 2013', 'Nashville Tenn', 'Bethune Cookman 12 Tennessee State 9',
'']
```

In [16]:

```
#2012 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/BDF8C4E
mytree = html.fromstring(page.content)
schedule2012 = mytree.xpath('body//tr/td/font[@color="#000000"]/text()')
print(schedule2012)
```

```
['Nov 17, 2012\xa0\xa0', 'Martin, Tenn.       \xa0\xa0', 'UT Martin 35, Tennessee State 26
\xa0\xa0', '\xa0', 'Nov 03, 2012\xa0\xa0', 'Murray, Ky.         \xa0\xa0', 'Murray State 4
9, Tennessee State 28\xa0\xa0', '\xa0', 'Oct 27, 2012\xa0\xa0', 'Nashville, Tennessee\xa0
\xa0', 'Tennessee State 22, Tennessee Tech 21\xa0\xa0', '\xa0', 'Oct 20, 2012\xa0\xa0', 'J
acksonville, Ala.  \xa0\xa0', 'Jacksonville State 31, Tennessee State 28\xa0\xa0', '\xa0',
'Oct 13, 2012\xa0\xa0', 'Cape Girardeau, Mo. \xa0\xa0', 'Tennessee State 40, Southeast Mis
souri 28\xa0\xa0', '\xa0', 'Oct 05, 2012\xa0\xa0', 'Nashville, Tennessee\xa0\xa0', 'Tennes
see State 23, Eastern Kentucky 20\xa0\xa0', '\xa0', 'Sep 29, 2012\xa0\xa0', 'Nashville, Te
nnessee\xa0\xa0', 'Tennessee State 40, Arkansas Pine Bluff 13\xa0\xa0', '\xa0', 'Sep 22, 2
012\xa0\xa0', 'Daytona Beach, Fla. \xa0\xa0', 'Tennessee State 21, Bethune-Cookman 14\xa0
\xa0', '\xa0', 'Sep 15, 2012\xa0\xa0', 'Nashville, Tennessee\xa0\xa0', 'Tennessee State 3
4, Austin Peay 14\xa0\xa0', '\xa0', 'Sep 08, 2012\xa0\xa0', 'Memphis. Tennessee  \xa0\xa
0', 'Tennessee State 38, Jackson State 12\xa0\xa0', '\xa0', 'Sep 01, 2012\xa0\xa0', 'Nashv
ille, Tennessee\xa0\xa0', 'Tennessee State 17, Florida A&M 14\xa0\xa0', '\xa0']
```

In [17]:

```
#cleaning 2012 list
schedule2012=[r.replace("Cape Girardeau","CapeGirardeau") for r in schedule2012]
schedule2012=[s.replace("Daytona Beach","DaytonaBeach") for s in schedule2012]
schedule2012=[t.replace("UT","Tennessee") for t in schedule2012]
schedule2012=[u.replace("Pine Bluff","PineBluff") for u in schedule2012]
schedule2012=[v.replace("-"," ") for v in schedule2012]
schedule2012=[w.replace(".", "") for w in schedule2012]
schedule2012=[x.replace("\xa0", "") for x in schedule2012]
schedule2012=[y.replace(",","") for y in schedule2012]
schedule2012=[z.strip() for z in schedule2012]
print(schedule2012)
```

```
['Nov 17 2012', 'Martin Tenn', 'Tennessee Martin 35 Tennessee State 26', '', 'Nov 03 201
2', 'Murray Ky', 'Murray State 49 Tennessee State 28', '', 'Oct 27 2012', 'Nashville Tenne
ssee', 'Tennessee State 22 Tennessee Tech 21', '', 'Oct 20 2012', 'Jacksonville Ala', 'Jac
ksonville State 31 Tennessee State 28', '', 'Oct 13 2012', 'CapeGirardeau Mo', 'Tennessee
State 40 Southeast Missouri 28', '', 'Oct 05 2012', 'Nashville Tennessee', 'Tennessee Stat
e 23 Eastern Kentucky 20', '', 'Sep 29 2012', 'Nashville Tennessee', 'Tennessee State 40 A
rkansas PineBluff 13', '', 'Sep 22 2012', 'DaytonaBeach Fla', 'Tennessee State 21 Bethune
Cookman 14', '', 'Sep 15 2012', 'Nashville Tennessee', 'Tennessee State 34 Austin Peay 1
4', '', 'Sep 08 2012', 'Memphis Tennessee', 'Tennessee State 38 Jackson State 12', '', 'Se
p 01 2012', 'Nashville Tennessee', 'Tennessee State 17 Florida A&M 14', '']
```

In [18]:

```
#2011 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/CA83544
mytree = html.fromstring(page.content)
schedule2011 = mytree.xpath('body//tr/td/font[@color="#000000"]/text()')
print(schedule2011)
```

```
['Nov 19, 2011\xa0\xa0', 'Nashville, TN       \xa0\xa0', 'Jacksonville State 38, Tennessee
State 16\xa0\xa0', '\xa0', 'Nov 12, 2011\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Tennes
see State 35, UT Martin 30\xa0\xa0', '\xa0', 'Nov 05, 2011\xa0\xa0', 'Charleston, Ill.
\xa0\xa0', 'Tennessee State 18, Eastern Illinois 17\xa0\xa0', '\xa0', 'Oct 22, 2011\xa0\xa
0', 'Richmond, Ky.       \xa0\xa0', 'Eastern Kentucky 33, Tennessee State 22\xa0\xa0', '\x
a0', 'Oct 15, 2011\xa0\xa0', 'Cookeville, Tenn.   \xa0\xa0', 'Tennessee State 42, Tennesse
e Tech 40\xa0\xa0', '\xa0', 'Oct 08, 2011\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Tenne
ssee State 55, Southeast Missouri 3\xa0\xa0', '\xa0', 'Oct 01, 2011\xa0\xa0', 'Clarksvill
e, Tenn.  \xa0\xa0', 'Austin Peay 37, Tennessee State 34\xa0\xa0', '\xa0', 'Sep 24, 2011\x
a0\xa0', 'USAFA, Colo.        \xa0\xa0', 'Air Force 63, Tennessee State 24\xa0\xa0', '\xa
```

```
0', 'Sep 17, 2011\xa0\xa0', 'Murray, Ky.          \xa0\xa0', 'Murray State 58, Tennessee St
ate 27\xa0\xa0', '\xa0', 'Sep 10, 2011\xa0\xa0', 'Memphis, TN          \xa0\xa0', 'Jackson
State 35, Tennessee State 29\xa0\xa0', '\xa0', 'Sep 03, 2011\xa0\xa0', 'Nashville, TN
  \xa0\xa0', 'Tennessee State 33, Southern U. 7\xa0\xa0', '\xa0']
```

In [19]:

```
#cleaning 2011 list
schedule2011=[r.replace("USAFA","AirForceAcademy") for r in schedule2011]
schedule2011=[s.replace("UT","Tennessee") for s in schedule2011]
schedule2011=[t.replace("Southern U.","Southern University") for t in schedule2011]
schedule2011=[v.replace("-"," ") for v in schedule2011]
schedule2011=[w.replace(".", "") for w in schedule2011]
schedule2011=[x.replace("\xa0", "") for x in schedule2011]
schedule2011=[y.replace(",","") for y in schedule2011]
schedule2011=[z.strip() for z in schedule2011]
print(schedule2011)
```

```
['Nov 19 2011', 'Nashville TN', 'Jacksonville State 38 Tennessee State 16', '', 'Nov 12 20
11', 'Nashville Tenn', 'Tennessee State 35 Tennessee Martin 30', '', 'Nov 05 2011', 'Charl
eston Ill', 'Tennessee State 18 Eastern Illinois 17', '', 'Oct 22 2011', 'Richmond Ky', 'E
astern Kentucky 33 Tennessee State 22', '', 'Oct 15 2011', 'Cookeville Tenn', 'Tennessee S
tate 42 Tennessee Tech 40', '', 'Oct 08 2011', 'Nashville Tenn', 'Tennessee State 55 South
east Missouri 3', '', 'Oct 01 2011', 'Clarksville Tenn', 'Austin Peay 37 Tennessee State 3
4', '', 'Sep 24 2011', 'AirForceAcademy Colo', 'Air Force 63 Tennessee State 24', '', 'Sep
17 2011', 'Murray Ky', 'Murray State 58 Tennessee State 27', '', 'Sep 10 2011', 'Memphis T
N', 'Jackson State 35 Tennessee State 29', '', 'Sep 03 2011', 'Nashville TN', 'Tennessee S
tate 33 Southern University 7', '']
```

In [20]:

```
#2010 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/108733F
mytree = html.fromstring(page.content)
schedule2010 = mytree.xpath('body//tr/td/font[@color="#000000"]/text()')
print(schedule2010)
```

```
['Nov 20, 2010\xa0\xa0', 'Murray, Ky.          \xa0\xa0', 'Murray State 28, Tennessee State
23\xa0\xa0', '\xa0', 'Nov 13, 2010\xa0\xa0', 'Martin, Tenn.        \xa0\xa0', 'UT Martin 3
7, Tennessee State 0\xa0\xa0', '\xa0', 'Nov 06, 2010\xa0\xa0', 'Nashville, TN       \xa0\x
a0', 'Eastern Illinois 31, Tennessee State 28\xa0\xa0', '\xa0', 'Oct 23, 2010\xa0\xa0', 'N
ashville, TN       \xa0\xa0', 'Tennessee Tech 21, Tennessee State 10\xa0\xa0', '\xa0', 'Oc
t 16, 2010\xa0\xa0', 'Jacksonville, Ala.  \xa0\xa0', 'Jacksonville State 24, Tennessee Sta
te 0\xa0\xa0', '\xa0', 'Oct. 9, 2010\xa0\xa0', 'Cape Girardeau, Mo. \xa0\xa0', 'Southeast
Missouri 19, Tennessee State 17\xa0\xa0', '\xa0', 'Oct. 2, 2010\xa0\xa0', 'Indianapolis, I
nd.  \xa0\xa0', 'Tennessee State 37, North Carolina A&T 7\xa0\xa0', '\xa0', 'Sep 25, 2010
\xa0\xa0', 'Atlanta, GA          \xa0\xa0', 'Tennessee State 29, Florida A&M 18\xa0\xa0',
'\xa0', 'Sep 18, 2010\xa0\xa0', 'Nashville, TN       \xa0\xa0', 'Austin Peay 26, Tennessee
State 23\xa0\xa0', '\xa0', 'Sep 11, 2010\xa0\xa0', 'Memphis, TN          \xa0\xa0', 'Jackso
n State 33, Tennessee State 26\xa0\xa0', '\xa0', 'Sep 04, 2010\xa0\xa0', 'Nashville, TN
    \xa0\xa0', 'Tennessee State 27, Alabama A&M 14\xa0\xa0', '\xa0']
```

In [21]:

```
#cleaning 2010 list
schedule2010=[r.replace("Oct. 9, 2010","Oct. 09, 2010") for r in schedule2010]
schedule2010=[r.replace("Oct. 2, 2010","Oct. 02, 2010") for r in schedule2010]
schedule2010=[r.replace("Cape Girardeau","CapeGirardeau") for r in schedule2010]
schedule2010=[s.replace("UT","Tennessee") for s in schedule2010]
schedule2010=[t.replace("North Carolina ","NorthCarolina ") for t in schedule2010]
schedule2010=[v.replace("-"," ") for v in schedule2010]
schedule2010=[w.replace(".", "") for w in schedule2010]
schedule2010=[x.replace("\xa0", "") for x in schedule2010]
schedule2010=[y.replace(",","") for y in schedule2010]
schedule2010=[z.strip() for z in schedule2010]
print(schedule2010)
```

```
['Nov 20 2010', 'Murray Ky', 'Murray State 28 Tennessee State 23', '', 'Nov 13 2010', 'Mar
tin Tenn', 'Tennessee Martin 37 Tennessee State 0', '', 'Nov 06 2010', 'Nashville TN', 'Ea
```

```
stern Illinois 31 Tennessee State 28', '', 'Oct 23 2010', 'Nashville TN', 'Tennessee Tech
21 Tennessee State 10', '', 'Oct 16 2010', 'Jacksonville Ala', 'Jacksonville State 24 Tenn
essee State 0', '', 'Oct 09 2010', 'CapeGirardeau Mo', 'Southeast Missouri 19 Tennessee St
ate 17', '', 'Oct 02 2010', 'Indianapolis Ind', 'Tennessee State 37 NorthCarolina A&T 7',
'', 'Sep 25 2010', 'Atlanta GA', 'Tennessee State 29 Florida A&M 18', '', 'Sep 18 2010',
'Nashville TN', 'Austin Peay 26 Tennessee State 23', '', 'Sep 11 2010', 'Memphis TN', 'Jac
kson State 33 Tennessee State 26', '', 'Sep 04 2010', 'Nashville TN', 'Tennessee State 27
Alabama A&M 14', '']
```

In [22]:

```
#2009 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/DEDBD68
mytree = html.fromstring(page.content)
schedule2009 = mytree.xpath('body//tr/td/font[@color="#000000"]/text()')
print(schedule2009)
```

```
['Nov 19, 2009\xa0\xa0', 'Charleston, Ill.    \xa0\xa0', 'Tennessee State 21, Eastern Illi
nois 10\xa0\xa0', '\xa0', 'Nov 14, 2009\xa0\xa0', 'Clarksville, Tenn.  \xa0\xa0', 'Austin
Peay 24, Tennessee State 21\xa0\xa0', '\xa0', 'Nov 07, 2009\xa0\xa0', 'Nashville, TN
\xa0\xa0', 'Tennessee Martin 28, Tennessee State 7\xa0\xa0', '\xa0', 'Oct 31, 2009\xa0\xa
0', 'Cookeville, Tenn.   \xa0\xa0', 'Tennessee Tech 20, Tennessee State 13\xa0\xa0', '\xa
0', 'Oct 17, 2009\xa0\xa0', 'Nashville, TN       \xa0\xa0', 'Murray State 9, Tennessee Sta
te 6\xa0\xa0', '\xa0', 'Oct 10, 2009\xa0\xa0', 'Richmond, Ky.       \xa0\xa0', 'Tennessee
State 20, Eastern Kentucky 17\xa0\xa0', '\xa0', 'Oct 03, 2009\xa0\xa0', 'Nashville, TN
   \xa0\xa0', 'Tennessee State 23, Southeast Missouri 17\xa0\xa0', '\xa0', 'Sep 26, 2009\x
a0\xa0', 'Atlanta, Ga.        \xa0\xa0', '#25 Florida A&M 31, Tennessee State 12\xa0\xa0',
'\xa0', 'Sep 19, 2009\xa0\xa0', 'Baton Rouge, LA     \xa0\xa0', 'Southern University 21, T
ennessee State 17\xa0\xa0', '\xa0', 'Sep 12, 2009\xa0\xa0', 'Memphis, TN         \xa0\xa
0', 'Tennessee State 14, Jackson State Tigers 7\xa0\xa0', '\xa0', 'Sep 05, 2009\xa0\xa0',
'Nashville, TN       \xa0\xa0', 'Alabama A&M 24, Tennessee State 7\xa0\xa0', '\xa0']
```

In [23]:

```
#cleaning 2009 list
schedule2009=[r.replace("#25","") for r in schedule2009]
schedule2009=[s.replace("Tigers","") for s in schedule2009]
schedule2009=[t.replace("Baton Rouge","BatonRouge") for t in schedule2009]
schedule2009=[v.replace("-"," ") for v in schedule2009]
schedule2009=[w.replace(".", "") for w in schedule2009]
schedule2009=[x.replace("\xa0", "") for x in schedule2009]
schedule2009=[y.replace(",","") for y in schedule2009]
schedule2009=[z.strip() for z in schedule2009]
print(schedule2009)
```

```
['Nov 19 2009', 'Charleston Ill', 'Tennessee State 21 Eastern Illinois 10', '', 'Nov 14 20
09', 'Clarksville Tenn', 'Austin Peay 24 Tennessee State 21', '', 'Nov 07 2009', 'Nashvill
e TN', 'Tennessee Martin 28 Tennessee State 7', '', 'Oct 31 2009', 'Cookeville Tenn', 'Ten
nessee Tech 20 Tennessee State 13', '', 'Oct 17 2009', 'Nashville TN', 'Murray State 9 Ten
nessee State 6', '', 'Oct 10 2009', 'Richmond Ky', 'Tennessee State 20 Eastern Kentucky 1
7', '', 'Oct 03 2009', 'Nashville TN', 'Tennessee State 23 Southeast Missouri 17', '', 'Se
p 26 2009', 'Atlanta Ga', 'Florida A&M 31 Tennessee State 12', '', 'Sep 19 2009', 'BatonRo
uge LA', 'Southern University 21 Tennessee State 17', '', 'Sep 12 2009', 'Memphis TN', 'Te
nnessee State 14 Jackson State  7', '', 'Sep 05 2009', 'Nashville TN', 'Alabama A&M 24 Ten
nessee State 7', '']
```

In [24]:

```
#2008 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/E0564A8
mytree = html.fromstring(page.content)
schedule2008 = mytree.xpath('body//tr/td/font[@color="#000000"]/text()')
print(schedule2008)
```

```
['Nov 22, 2008\xa0\xa0', 'Murray, Ky.         \xa0\xa0', 'Murray State 24, Tennessee State
17\xa0\xa0', '\xa0', 'Nov 15, 2008\xa0\xa0', 'Jacksonville, Ala.  \xa0\xa0', 'Jacksonville
State 26, Tennessee State 21\xa0\xa0', '\xa0', 'Nov 08, 2008\xa0\xa0', 'Nashville, TN
  \xa0\xa0', 'Tennessee State 45, Eastern Illinois 24\xa0\xa0', '\xa0', 'Nov 01, 2008\xa0
\xa0', 'Nashville, TN       \xa0\xa0', 'Tennessee State 41, Tennessee Tech 14\xa0\xa0',
```

```
'\xa0', 'Oct 25, 2008\xa0\xa0', 'Cape Girardeau, Mo. \xa0\xa0', 'Southeast Missouri 27, Te
nnessee State 20\xa0\xa0', '\xa0', 'Oct 18, 2008\xa0\xa0', 'Nashville, TN       \xa0\xa0',
'Tennessee State 37, Austin Peay 34\xa0\xa0', '\xa0', 'Oct 04, 2008\xa0\xa0', 'Martin, TN
        \xa0\xa0', 'Tennessee State 30, UT Martin 27\xa0\xa0', '\xa0', 'Sep 27, 2008\xa0
\xa0', 'Atlanta, GA         \xa0\xa0', 'Florida A&M 28, Tennessee State 21\xa0\xa0', '\xa
0', 'Sep 20, 2008\xa0\xa0', 'Nashville, TN       \xa0\xa0', 'Tennessee State 34, Eastern K
entucky 20\xa0\xa0', '\xa0', 'Sep 13, 2008\xa0\xa0', 'Memphis, TN         \xa0\xa0', 'Tenn
essee State 41, Jackson State 18\xa0\xa0', '\xa0', 'Sep 06, 2008\xa0\xa0', 'Nashville, TN
      \xa0\xa0', 'Tennessee State 34, Southern 32\xa0\xa0', '\xa0', 'Aug 30, 2008\xa0\xa
0', 'Huntsville, AL      \xa0\xa0', 'Tennessee State 34, Alabama A&M 13\xa0\xa0', '\xa0']
```

In [25]:

```
#cleaning 2008 list
schedule2008=[r.replace("Southern","Southern University") for r in schedule2008]
schedule2008=[s.replace("UT","Tennessee") for s in schedule2008]
schedule2008=[t.replace("Cape Girardeau","CapeGirardeau") for t in schedule2008]
schedule2008=[v.replace("-"," ") for v in schedule2008]
schedule2008=[w.replace(".", "") for w in schedule2008]
schedule2008=[x.replace("\xa0", "") for x in schedule2008]
schedule2008=[y.replace(",","") for y in schedule2008]
schedule2008=[z.strip() for z in schedule2008]
print(schedule2008)
```

```
['Nov 22 2008', 'Murray Ky', 'Murray State 24 Tennessee State 17', '', 'Nov 15 2008', 'Jac
ksonville Ala', 'Jacksonville State 26 Tennessee State 21', '', 'Nov 08 2008', 'Nashville
TN', 'Tennessee State 45 Eastern Illinois 24', '', 'Nov 01 2008', 'Nashville TN', 'Tenness
ee State 41 Tennessee Tech 14', '', 'Oct 25 2008', 'CapeGirardeau Mo', 'Southeast Missouri
27 Tennessee State 20', '', 'Oct 18 2008', 'Nashville TN', 'Tennessee State 37 Austin Peay
34', '', 'Oct 04 2008', 'Martin TN', 'Tennessee State 30 Tennessee Martin 27', '', 'Sep 27
2008', 'Atlanta GA', 'Florida A&M 28 Tennessee State 21', '', 'Sep 20 2008', 'Nashville T
N', 'Tennessee State 34 Eastern Kentucky 20', '', 'Sep 13 2008', 'Memphis TN', 'Tennessee
State 41 Jackson State 18', '', 'Sep 06 2008', 'Nashville TN', 'Tennessee State 34 Souther
n University 32', '', 'Aug 30 2008', 'Huntsville AL', 'Tennessee State 34 Alabama A&M 13',
'']
```

In [26]:

```
#2007 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/4C48DA5
mytree = html.fromstring(page.content)
schedule2007 = mytree.xpath('body//tr/td/font[@color="#000000"]/text()')
print(schedule2007)
```

```
['Nov 17, 2007\xa0\xa0', 'Nashville, TN       \xa0\xa0', 'Tennessee-Martin 43, Tennessee S
tate 38\xa0\xa0', '\xa0', 'Nov 08, 2007\xa0\xa0', 'Birmingham, AL      \xa0\xa0', 'Tenness
ee State 38, Samford 28\xa0\xa0', '\xa0', 'Nov 03, 2007\xa0\xa0', 'Nashville, TN       \xa
0\xa0', 'Tennessee State 42, Murray State 28\xa0\xa0', '\xa0', 'Oct 27, 2007\xa0\xa0', 'Na
shville, TN       \xa0\xa0', 'Eastern Illinois 38, Tennessee State 35\xa0\xa0', '\xa0', 'O
ct 20, 2007\xa0\xa0', 'Richmond, Ky.       \xa0\xa0', 'Eastern Kentucky 49, Tennessee Stat
e 7\xa0\xa0', '\xa0', 'Oct 11, 2007\xa0\xa0', 'Cookeville, TN      \xa0\xa0', 'Tennessee S
tate 45, Tennessee Tech 28\xa0\xa0', '\xa0', 'Sep 29, 2007\xa0\xa0', 'Atlanta, Ga
\xa0\xa0', 'Florida A&M 18, Tennessee State 17\xa0\xa0', '\xa0', 'Sep 22, 2007\xa0\xa0',
'Baton Rouge, LA     \xa0\xa0', 'Southern 41, Tennessee State 34\xa0\xa0', '\xa0', 'Sep 1
5, 2007\xa0\xa0', 'Clarksville, Tenn.  \xa0\xa0', 'Tennessee State 33, Austin Peay 32\xa0
\xa0', '\xa0', 'Sep 08, 2007\xa0\xa0', 'Memphis, TN         \xa0\xa0', 'Tennessee State 1
6, Jackson State 13\xa0\xa0', '\xa0', 'Sep 01, 2007\xa0\xa0', 'Nashville, TN       \xa0\xa
0', 'Alabama A&M 49, Tennessee State 23\xa0\xa0', '\xa0']
```

In [27]:

```
#cleaning 2007 list
schedule2007=[r.replace("Southern","Southern University") for r in schedule2007]
schedule2007=[s.replace("Samford","Samford University") for s in schedule2007]
schedule2007=[t.replace("Baton Rouge","BatonRouge") for t in schedule2007]
schedule2007=[v.replace("-"," ") for v in schedule2007]
schedule2007=[w.replace(".", "") for w in schedule2007]
schedule2007=[x.replace("\xa0", "") for x in schedule2007]
schedule2007=[y.replace(",","") for y in schedule2007]
```

```
schedule2007=[z.strip() for z in schedule2007]
print(schedule2007)
```

```
['Nov 17 2007', 'Nashville TN', 'Tennessee Martin 43 Tennessee State 38', '', 'Nov 08 200
7', 'Birmingham AL', 'Tennessee State 38 Samford University 28', '', 'Nov 03 2007', 'Nashv
ille TN', 'Tennessee State 42 Murray State 28', '', 'Oct 27 2007', 'Nashville TN', 'Easter
n Illinois 38 Tennessee State 35', '', 'Oct 20 2007', 'Richmond Ky', 'Eastern Kentucky 49
Tennessee State 7', '', 'Oct 11 2007', 'Cookeville TN', 'Tennessee State 45 Tennessee Tech
28', '', 'Sep 29 2007', 'Atlanta Ga', 'Florida A&M 18 Tennessee State 17', '', 'Sep 22 200
7', 'BatonRouge LA', 'Southern University 41 Tennessee State 34', '', 'Sep 15 2007', 'Clar
ksville Tenn', 'Tennessee State 33 Austin Peay 32', '', 'Sep 08 2007', 'Memphis TN', 'Tenn
essee State 16 Jackson State 13', '', 'Sep 01 2007', 'Nashville TN', 'Alabama A&M 49 Tenne
ssee State 23', '']
```

In [28]:

```
#2006 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/902C2D
mytree = html.fromstring(page.content)
schedule2006 = mytree.xpath('body//tr/td/font[@color="#000000"]/text()')
print(schedule2006)
```

```
['Nov 18, 2006\xa0\xa0', 'Richmond, Ky.       \xa0\xa0', 'Eastern Kentucky 20, Tennessee S
tate 3\xa0\xa0', '\xa0', 'Nov 11, 2006\xa0\xa0', 'Nashville, TN       \xa0\xa0', 'Tennesse
e State 31, Southeast Missouri 0\xa0\xa0', '\xa0', 'Nov 04, 2006\xa0\xa0', 'Charleston, IL
      \xa0\xa0', 'EASTERN ILLINOIS 29, Tennessee State 3\xa0\xa0', '\xa0', 'Oct 28, 2006\x
a0\xa0', 'Nashville, TN       \xa0\xa0', 'Tennessee State 29, Samford 7\xa0\xa0', '\xa0',
'Oct 21, 2006\xa0\xa0', 'Jacksonville, Ala.  \xa0\xa0', 'Tennessee State 38, Jacksonville
State 31\xa0\xa0', '\xa0', 'Oct 14, 2006\xa0\xa0', 'Nashville, TN       \xa0\xa0', 'Tennes
see State 30, Tennessee Tech 20\xa0\xa0', '\xa0', 'Sep 30, 2006\xa0\xa0', 'Atlanta, GA
     \xa0\xa0', 'Florida A&M 25, Tennessee State 22\xa0\xa0', '\xa0', 'Sep 23, 2006\xa0\xa
0', 'Nashville, TN       \xa0\xa0', 'Vanderbilt 38, Tennessee State 9\xa0\xa0', '\xa0', 'S
ep 16, 2006\xa0\xa0', 'Memphis, TN         \xa0\xa0', 'Tennessee State 31, Jackson State 3
0\xa0\xa0', '\xa0', 'Sep 09, 2006\xa0\xa0', 'Nashville, TN       \xa0\xa0', 'Tennessee Sta
te 25, Murray State Univ 15\xa0\xa0', '\xa0', 'Sep 02, 2006\xa0\xa0', 'Nashville,TN
\xa0\xa0', 'Alabama A&M 27, Tennessee State 20\xa0\xa0', '\xa0']
```

In [29]:

```
#cleaning 2006 list
schedule2006=[p.replace("Nashville,TN","Nashville, TN") for p in schedule2006]
schedule2006=[q.replace("Murray State Univ","Murray State") for q in schedule2006]
schedule2006=[r.replace("Vanderbilt","Vanderbilt University") for r in schedule2006]
schedule2006=[s.replace("Samford","Samford University") for s in schedule2006]
schedule2006=[t.replace("EASTERN ILLINOIS","Eastern Illinois") for t in schedule2006]
schedule2006=[v.replace("-"," ") for v in schedule2006]
schedule2006=[w.replace(".", "") for w in schedule2006]
schedule2006=[x.replace("\xa0", "") for x in schedule2006]
schedule2006=[y.replace(",","") for y in schedule2006]
schedule2006=[z.strip() for z in schedule2006]
print(schedule2006)
```

```
['Nov 18 2006', 'Richmond Ky', 'Eastern Kentucky 20 Tennessee State 3', '', 'Nov 11 2006',
'Nashville TN', 'Tennessee State 31 Southeast Missouri 0', '', 'Nov 04 2006', 'Charleston
IL', 'Eastern Illinois 29 Tennessee State 3', '', 'Oct 28 2006', 'Nashville TN', 'Tennesse
e State 29 Samford University 7', '', 'Oct 21 2006', 'Jacksonville Ala', 'Tennessee State
38 Jacksonville State 31', '', 'Oct 14 2006', 'Nashville TN', 'Tennessee State 30 Tennesse
e Tech 20', '', 'Sep 30 2006', 'Atlanta GA', 'Florida A&M 25 Tennessee State 22', '', 'Sep
23 2006', 'Nashville TN', 'Vanderbilt University 38 Tennessee State 9', '', 'Sep 16 2006',
'Memphis TN', 'Tennessee State 31 Jackson State 30', '', 'Sep 09 2006', 'Nashville TN', 'T
ennessee State 25 Murray State 15', '', 'Sep 02 2006', 'Nashville TN', 'Alabama A&M 27 Ten
nessee State 20', '']
```

In [30]:

```
#2005 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/99B728
mytree = html.fromstring(page.content)
```

```
schedule2005 = mytree.xpath('body//tr/td/font[@color="#000000"]/text()')
print(schedule2005)
```

```
['Nov 19, 2005\xa0\xa0', 'Nashville, TN       \xa0\xa0', 'EKU 49, Tennessee State 0\xa0\xa
0', '\xa0', 'Nov 12, 2005\xa0\xa0', 'Cape Girardeau, Mo. \xa0\xa0', 'SEMO 32, Tennessee St
ate 24\xa0\xa0', '\xa0', 'Nov 05, 2005\xa0\xa0', 'Nashville, TN       \xa0\xa0', 'Eastern
Illinois Uni 27, Tennessee State 3\xa0\xa0', '\xa0', 'Oct 29, 2005\xa0\xa0', 'Birmingham,
Ala.    \xa0\xa0', 'Samford 31, Tennessee State 11\xa0\xa0', '\xa0', 'Oct 22, 2005\xa0\xa
0', 'Nashville,TN        \xa0\xa0', 'Jacksonville State 33, Tennessee State 3\xa0\xa0',
'\xa0', 'Oct 13, 2005\xa0\xa0', 'Cookeville, Tenn.   \xa0\xa0', 'Tennessee State 31, Tenne
ssee Tech 20\xa0\xa0', '\xa0', 'Oct 01, 2005\xa0\xa0', 'Indianapolis, Ind.  \xa0\xa0', 'N
o. Carolina A&T St. 16, Tennessee State 3\xa0\xa0', '\xa0', 'Sep 24, 2005\xa0\xa0', 'Atlan
ta, GA         \xa0\xa0', 'Florida A&M 12, Tennessee State 7\xa0\xa0', '\xa0', 'Sep 17, 20
05\xa0\xa0', 'Martin, Tenn        \xa0\xa0', 'Tennessee-Martin 42, Tennessee State 20\xa0
\xa0', '\xa0', 'Sep 10, 2005\xa0\xa0', 'Memphis, TN         \xa0\xa0', 'Tennessee State 2
0, Jackson State 14\xa0\xa0', '\xa0', 'Sep 03, 2005\xa0\xa0', 'Nashville,TN        \xa0\xa
0', 'Alabama A&M Univ 27, Tennessee State 14\xa0\xa0', '\xa0']
```

In [31]:

```
#cleaning 2005 list
schedule2005=[m.replace("Eastern Illinois Uni","Eastern Illinois") for m in schedule2005]
schedule2005=[n.replace("No. Carolina A&T St.","NorthCarolina A&T") for n in schedule2005]
schedule2005=[o.replace("Alabama A&M Univ","Alabama A&M") for o in schedule2005]
schedule2005=[p.replace("Nashville,TN","Nashville, TN") for p in schedule2005]
schedule2005=[q.replace("Samford","Samford University") for q in schedule2005]
schedule2005=[r.replace("SEMO","Southeast Missouri") for r in schedule2005]
schedule2005=[s.replace("EKU","Eastern Kentucky") for s in schedule2005]
schedule2005=[t.replace("Cape Girardeau","CapeGirardeau") for t in schedule2005]
schedule2005=[v.replace("-"," ") for v in schedule2005]
schedule2005=[w.replace(".", "") for w in schedule2005]
schedule2005=[x.replace("\xa0", "") for x in schedule2005]
schedule2005=[y.replace(",","") for y in schedule2005]
schedule2005=[z.strip() for z in schedule2005]
print(schedule2005)
```

```
['Nov 19 2005', 'Nashville TN', 'Eastern Kentucky 49 Tennessee State 0', '', 'Nov 12 200
5', 'CapeGirardeau Mo', 'Southeast Missouri 32 Tennessee State 24', '', 'Nov 05 2005', 'Na
shville TN', 'Eastern Illinois 27 Tennessee State 3', '', 'Oct 29 2005', 'Birmingham Ala',
'Samford University 31 Tennessee State 11', '', 'Oct 22 2005', 'Nashville TN', 'Jacksonvil
le State 33 Tennessee State 3', '', 'Oct 13 2005', 'Cookeville Tenn', 'Tennessee State 31
Tennessee Tech 20', '', 'Oct 01 2005', 'Indianapolis Ind', 'NorthCarolina A&T 16 Tennessee
State 3', '', 'Sep 24 2005', 'Atlanta GA', 'Florida A&M 12 Tennessee State 7', '', 'Sep 17
2005', 'Martin Tenn', 'Tennessee Martin 42 Tennessee State 20', '', 'Sep 10 2005', 'Memphi
s TN', 'Tennessee State 20 Jackson State 14', '', 'Sep 03 2005', 'Nashville TN', 'Alabama
A&M 27 Tennessee State 14', '']
```

In [32]:

```
#2004 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/57C54C4
mytree = html.fromstring(page.content)
schedule2004 = mytree.xpath('body//tr/td/font[@color="#000000"]/text()')
print(schedule2004)
```

```
['Nov 20, 2004\xa0\xa0', 'Nashville, TN       \xa0\xa0', 'Murray State 30, Tennessee State
13\xa0\xa0', 'Nov 13, 2004\xa0\xa0', 'Richmond KY         \xa0\xa0', 'Eastern Kentucky 29,
Tennessee State 14\xa0\xa0', 'Nov 06, 2004\xa0\xa0', 'Nashville,TN        \xa0\xa0', 'Tenn
essee State 38, Southeast Missouri 36\xa0\xa0', 'Oct 30, 2004\xa0\xa0', 'Charleston, Illin
ois\xa0\xa0', 'Eastern Illinois 34, Tennessee State 24\xa0\xa0', 'Oct 23, 2004\xa0\xa0',
'Nashville, TN       \xa0\xa0', 'Samford University 42, Tennessee State 36\xa0\xa0', 'Oct
16, 2004\xa0\xa0', 'Jacksonville, Ala.  \xa0\xa0', 'Jacksonville State 49, Tennessee State
35\xa0\xa0', 'Oct 02, 2004\xa0\xa0', 'RCA Dome            \xa0\xa0', 'South Carolina State
30, Tennessee State 13\xa0\xa0', 'Sep 25, 2004\xa0\xa0', 'Atlanta, Georgia    \xa0\xa0',
'Florida A&M 21, Tennessee State 15\xa0\xa0', 'Sep 18, 2004\xa0\xa0', 'Memphis, Tennessee
\xa0\xa0', 'Tennessee State 21, Jackson State 20\xa0\xa0', 'Sep 09, 2004\xa0\xa0', 'Marti
n, Tennessee   \xa0\xa0', 'Tennessee State 27, Tennessee-Martin 13\xa0\xa0', 'Sep. 4, 2003
\xa0\xa0', 'Nashville, TN       \xa0\xa0', 'Tennessee State 42, Alabama A&M 7\xa0\xa0']
```

In [33]:

```
#cleaning 2004 list
schedule2004=[p.replace('Sep. 4, 2003','Sep 04 2004') for p in schedule2004]
schedule2004=[r.replace("Nashville,TN","Nashville, TN") for r in schedule2004]
schedule2004=[s.replace("South Carolina State","SouthCarolina State") for s in schedule200
schedule2004=[t.replace("RCA Dome","Indianapolis, IN") for t in schedule2004]
schedule2004=[v.replace("-"," ") for v in schedule2004]
schedule2004=[w.replace(".", "") for w in schedule2004]
schedule2004=[x.replace("\xa0", "") for x in schedule2004]
schedule2004=[y.replace(",","") for y in schedule2004]
schedule2004=[z.strip() for z in schedule2004]
schedule2004.insert(3, "")
schedule2004.insert(7, "")
schedule2004.insert(11, "")
schedule2004.insert(15, "")
schedule2004.insert(19, "")
schedule2004.insert(23, "")
schedule2004.insert(27, "")
schedule2004.insert(31, "")
schedule2004.insert(35, "")
schedule2004.insert(39, "")
schedule2004.insert(43, "")
print(schedule2004)
```

```
['Nov 20 2004', 'Nashville TN', 'Murray State 30 Tennessee State 13', '', 'Nov 13 2004',
'Richmond KY', 'Eastern Kentucky 29 Tennessee State 14', '', 'Nov 06 2004', 'Nashville T
N', 'Tennessee State 38 Southeast Missouri 36', '', 'Oct 30 2004', 'Charleston Illinois',
'Eastern Illinois 34 Tennessee State 24', '', 'Oct 23 2004', 'Nashville TN', 'Samford Univ
ersity 42 Tennessee State 36', '', 'Oct 16 2004', 'Jacksonville Ala', 'Jacksonville State
49 Tennessee State 35', '', 'Oct 02 2004', 'Indianapolis IN', 'SouthCarolina State 30 Tenn
essee State 13', '', 'Sep 25 2004', 'Atlanta Georgia', 'Florida A&M 21 Tennessee State 1
5', '', 'Sep 18 2004', 'Memphis Tennessee', 'Tennessee State 21 Jackson State 20', '', 'Se
p 09 2004', 'Martin Tennessee', 'Tennessee State 27 Tennessee Martin 13', '', 'Sep 04 200
4', 'Nashville TN', 'Tennessee State 42 Alabama A&M 7', '']
```

In [34]:

```
#2003 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/A5FB3AA
mytree = html.fromstring(page.content)
schedule2003 = mytree.xpath('body//tr/td/font[@color="#000000"]/text()')
print(schedule2003)
```

```
['Nov 22, 2003\xa0\xa0', 'Murray, Ky.         \xa0\xa0', 'Tennessee State 35, Murray State
10\xa0\xa0', 'Nov 15, 2003\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Eastern Kentucky 43,
Tennessee State 38\xa0\xa0', 'Nov 08, 2003\xa0\xa0', 'Cape Girardeau, Mo. \xa0\xa0', 'Sout
heast Missouri 52, Tennessee State 35\xa0\xa0', 'Nov 01, 2003\xa0\xa0', 'Nashville, Tenn.
   \xa0\xa0', 'Tennessee State 24, Eastern Illinois 14\xa0\xa0', 'Oct 25, 2003\xa0\xa0',
'Birmingham, Ala.    \xa0\xa0', 'Tennessee State 29, Samford 24\xa0\xa0', 'Oct 18, 2003\xa
0\xa0', 'Nashville, Tennessee\xa0\xa0', 'Jacksonville State 34, Tennessee State 7\xa0\xa
0', 'Oct 11, 2003\xa0\xa0', 'Cookeville, Tenn.   \xa0\xa0', 'Tennessee State 27, Tennessee
Tech 23\xa0\xa0', 'Sep 27, 2003\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Tennessee State
41, Tennessee-Martin 10\xa0\xa0', 'Sep 20, 2003\xa0\xa0', 'Atlanta, Ga.        \xa0\xa0',
'Florida A&M Univ. 10, Tennessee State 7\xa0\xa0', 'Sep 13, 2003\xa0\xa0', 'Memphis, Tenne
ssee  \xa0\xa0', 'Tennessee State 44, Jackson State Tigers 14\xa0\xa0', 'Sep. 6, 2003\xa0
\xa0', 'Huntsville, Alabama \xa0\xa0', 'Alabama A&M 31, Tennessee State 24\xa0\xa0', 'Aug
30, 2003\xa0\xa0', 'Nashville, Tenn.    \xa0\xa0', 'Tennessee State 37, South Carolina Sta
te 20\xa0\xa0']
```

In [35]:

```
#cleaning 2003 list
schedule2003=[q.replace("Univ.","") for q in schedule2003]
schedule2003=[r.replace("South Carolina State","SouthCarolina State") for r in schedule200
schedule2003=[s.replace("Samford","Samford University") for s in schedule2003]
schedule2003=[s.replace("Tigers","") for s in schedule2003]
schedule2003=[t.replace("Cape Girardeau","CapeGirardeau") for t in schedule2003]
schedule2003=[v.replace("-"," ") for v in schedule2003]
```

```
schedule2003=[w.replace(".", "") for w in schedule2003]
schedule2003=[x.replace("\xa0", "") for x in schedule2003]
schedule2003=[y.replace(",","") for y in schedule2003]
schedule2003=[z.strip() for z in schedule2003]
schedule2003
schedule2003.insert(3, "")
schedule2003.insert(7, "")
schedule2003.insert(11, "")
schedule2003.insert(15, "")
schedule2003.insert(19, "")
schedule2003.insert(23, "")
schedule2003.insert(27, "")
schedule2003.insert(31, "")
schedule2003.insert(35, "")
schedule2003.insert(39, "")
schedule2003.insert(43, "")
schedule2003.insert(47, "")
print(schedule2003)
```

```
['Nov 22 2003', 'Murray Ky', 'Tennessee State 35 Murray State 10', '', 'Nov 15 2003', 'Nas
hville Tenn', 'Eastern Kentucky 43 Tennessee State 38', '', 'Nov 08 2003', 'CapeGirardeau
Mo', 'Southeast Missouri 52 Tennessee State 35', '', 'Nov 01 2003', 'Nashville Tenn', 'Ten
nessee State 24 Eastern Illinois 14', '', 'Oct 25 2003', 'Birmingham Ala', 'Tennessee Stat
e 29 Samford University 24', '', 'Oct 18 2003', 'Nashville Tennessee', 'Jacksonville State
34 Tennessee State 7', '', 'Oct 11 2003', 'Cookeville Tenn', 'Tennessee State 27 Tennessee
Tech 23', '', 'Sep 27 2003', 'Nashville Tenn', 'Tennessee State 41 Tennessee Martin 10',
'', 'Sep 20 2003', 'Atlanta Ga', 'Florida A&M  10 Tennessee State 7', '', 'Sep 13 2003',
'Memphis Tennessee', 'Tennessee State 44 Jackson State  14', '', 'Sep 6 2003', 'Huntsville
Alabama', 'Alabama A&M 31 Tennessee State 24', '', 'Aug 30 2003', 'Nashville Tenn', 'Tenne
ssee State 37 SouthCarolina State 20', '']
```

In [36]:
```
#number of elements for 2003 list
len(schedule2003)
```

Out[36]:
```
48
```

In [37]:
```
#number of elements for 2004 list
len(schedule2004)
```

Out[37]:
```
44
```

In [38]:
```
#number of elements for 2005 list
len(schedule2005)
```

Out[38]:
```
44
```

In [39]:
```
#number of elements for 2006 list
len(schedule2006)
```

Out[39]:
```
44
```

In [40]:
```
#number of elements for 2007 list
len(schedule2007)
```

Out[40]:
```
44
```

In [41]:
```
#number of elements for 2008 list
```

```
len(schedule2008)
```

Out[41]: 48

In [42]:
```
#number of elements for 2009 list
len(schedule2009)
```

Out[42]: 44

In [43]:
```
#number of elements for 2010 list
len(schedule2010)
```

Out[43]: 44

In [44]:
```
#number of elements for 2011 list
len(schedule2011)
```

Out[44]: 44

In [45]:
```
#number of elements for 2012 list
len(schedule2012)
```

Out[45]: 44

In [46]:
```
#number of elements for 2013 list
len(schedule2013)
```

Out[46]: 56

In [47]:
```
#number of elements for 2014 list
len(schedule2014)
```

Out[47]: 48

In [48]:
```
#number of elements for 2015 list
len(schedule2015)
```

Out[48]: 40

In [49]:
```
#number of elements for 2016 list
len(schedule2016)
```

Out[49]: 44

In [50]:
```
#number of elements for 2017 list
len(schedule2017)
```

Out[50]: 44

In [51]:
```
#number of elements for 2018 list
len(schedule2018)
```

Out[51]:
```
36
```

In [52]:
```
#number of elements for 2019 list
len(schedule2019)
```

Out[52]:
```
48
```

In [53]:
```
#create a single list for all years
fulldata=schedule2003+schedule2004+schedule2005+schedule2006+schedule2007+schedule2008+sch
#number of elements for fulldata
len(fulldata)
```

Out[53]:
```
764
```

In [54]:
```
#create list of sublists from fulldata
list_of_sublists=[fulldata[i:i+4] for i in range(0,len(fulldata),4)]
print(list_of_sublists[:5])
```

```
[['Nov 22 2003', 'Murray Ky', 'Tennessee State 35 Murray State 10', ''], ['Nov 15 2003',
'Nashville Tenn', 'Eastern Kentucky 43 Tennessee State 38', ''], ['Nov 08 2003', 'CapeGira
rdeau Mo', 'Southeast Missouri 52 Tennessee State 35', ''], ['Nov 01 2003', 'Nashville Ten
n', 'Tennessee State 24 Eastern Illinois 14', ''], ['Oct 25 2003', 'Birmingham Ala', 'Tenn
essee State 29 Samford University 24', '']]
```

In [55]:
```
#create dataframe from list of sublists
df=pd.DataFrame(list_of_sublists, columns=['date','location','scores', 'reserve'])
df.head()
```

Out[55]:

| | date | location | scores | reserve |
|---|---|---|---|---|
| **0** | Nov 22 2003 | Murray Ky | Tennessee State 35 Murray State 10 | |
| **1** | Nov 15 2003 | Nashville Tenn | Eastern Kentucky 43 Tennessee State 38 | |
| **2** | Nov 08 2003 | CapeGirardeau Mo | Southeast Missouri 52 Tennessee State 35 | |
| **3** | Nov 01 2003 | Nashville Tenn | Tennessee State 24 Eastern Illinois 14 | |
| **4** | Oct 25 2003 | Birmingham Ala | Tennessee State 29 Samford University 24 | |

In [56]:
```
#check reserve column
df['reserve'].value_counts()
```

Out[56]:
```
    191
Name: reserve, dtype: int64
```

# Data Cleaning- dropping unneeded variables and creating needed variables

In [57]:
```
#drop reserve column
df=df.drop('reserve',axis=1)
df.head()
```

Out[57]:

| | date | location | scores |
|---|---|---|---|

| | date | location | scores |
|---|---|---|---|
| **0** | Nov 22 2003 | Murray Ky | Tennessee State 35 Murray State 10 |
| **1** | Nov 15 2003 | Nashville Tenn | Eastern Kentucky 43 Tennessee State 38 |
| **2** | Nov 08 2003 | CapeGirardeau Mo | Southeast Missouri 52 Tennessee State 35 |
| **3** | Nov 01 2003 | Nashville Tenn | Tennessee State 24 Eastern Illinois 14 |
| **4** | Oct 25 2003 | Birmingham Ala | Tennessee State 29 Samford University 24 |

In [58]:
```
#number of rows and columns in data frame
df.shape
```

Out[58]:
```
(191, 3)
```

In [59]:
```
#creating relevant columns & dropping unnecessary columns
df['date']=pd.to_datetime(df['date'],format='%b %d %Y')
df[['city','state']]=df.location.str.split(expand=True)
df[['win1','win2','winscore','los1','los2','losscore']]=df.scores.str.split(expand=True)
df['loser']=df['los1']+ ' ' +df['los2']
df['winner']=df['win1']+ ' ' +df['win2']
df['locale'] = np.where(df['city']== 'Nashville', 'Home', 'Away')
df['TSU score']=pd.to_numeric(np.where(df['winner']=='Tennessee State',df['winscore'],df['
df['opponent score']=pd.to_numeric(np.where(df['winner']=='Tennessee State',df['losscore']
df['winscore']=pd.to_numeric(df['winscore'])
df['losscore']=pd.to_numeric(df['losscore'])
df['scorediff']=df['TSU score']-df['opponent score']
df['scorediff_abs']=abs(df['scorediff'])
df['winloss']=np.where(df['winner']=='Tennessee State','Win','Loss')
df['year']=df.date.dt.year
df['year'].head()
df=df.drop(['location','scores','win1','win2','los1','los2'], axis=1)
df.columns
```

Out[59]:
```
Index(['date', 'city', 'state', 'winscore', 'losscore', 'loser', 'winner',
       'locale', 'TSU score', 'opponent score', 'scorediff', 'scorediff_abs',
       'winloss', 'year'],
      dtype='object')
```

In [60]:
```
#clean up city column
df['city'].unique()
```

Out[60]:
```
array(['Murray', 'Nashville', 'CapeGirardeau', 'Birmingham', 'Cookeville',
       'Atlanta', 'Memphis', 'Huntsville', 'Richmond', 'Charleston',
       'Jacksonville', 'Indianapolis', 'Martin', 'BatonRouge',
       'Clarksville', 'AirForceAcademy', 'DaytonaBeach', 'StLouis',
       'Tallahassee', 'Montgomery', 'Tampa', 'Murfreesboro'], dtype=object)
```

In [61]:
```
df['city']=df['city'].replace("CapeGirardeau","Cape Girardeau").replace("AirForceAcademy",
df['city']=df['city'].replace("DaytonaBeach","Daytona Beach").replace("StLouis", "St. Loui
df['city']=df['city'].replace("BatonRouge","Baton Rouge")
df['city'].unique()
```

Out[61]:
```
array(['Murray', 'Nashville', 'Cape Girardeau', 'Birmingham',
       'Cookeville', 'Atlanta', 'Memphis', 'Huntsville', 'Richmond',
       'Charleston', 'Jacksonville', 'Indianapolis', 'Martin',
       'Baton Rouge', 'Clarksville', 'Air Force Academy', 'Daytona Beach',
       'St. Louis', 'Tallahassee', 'Montgomery', 'Tampa', 'Murfreesboro'],
      dtype=object)
```

In [62]:
```
#clean up state column
df['state'].unique()
```

Out[62]:
```
array(['Ky', 'Tenn', 'Mo', 'Ala', 'Tennessee', 'Ga', 'Alabama', 'TN',
       'KY', 'Illinois', 'IN', 'Georgia', 'Ind', 'GA', 'IL', 'AL', 'LA',
       'Ill', 'Colo', 'Fla', 'Missouri'], dtype=object)
```

In [63]:
```
df['state']=df['state'].replace(["Ga","Georgia"],"GA").replace(["Tenn","Tennessee"],"TN").
df['state']=df['state'].replace(["Mo","Missouri"],"MO").replace(["Ala","Alabama"],"AL").re
df['state']=df['state'].replace(["Ill","Illinois"],"IL").replace("Fla","FL").replace("Colo
df['state'].unique()
```

Out[63]:
```
array(['KY', 'TN', 'MO', 'AL', 'GA', 'IL', 'IN', 'LA', 'CO', 'FL'],
      dtype=object)
```

In [64]:
```
#clean up loser column
df['loser'].unique()
```

Out[64]:
```
array(['Murray State', 'Tennessee State', 'Eastern Illinois',
       'Samford University', 'Tennessee Tech', 'Tennessee Martin',
       'Jackson State', 'SouthCarolina State', 'Southeast Missouri',
       'Alabama A&M', 'Jacksonville State', 'Austin Peay',
       'Eastern Kentucky', 'Southern University', 'NorthCarolina A&T',
       'Florida A&M', 'Arkansas PineBluff', 'Bethune Cookman',
       'Butler University', 'Central State', 'Murray St', 'Edward Waters',
       'Alabama State', 'VirginiaU Lynchburg', 'Georgia State',
       'Mississippi Valley'], dtype=object)
```

In [65]:
```
df['loser']=df['loser'].replace(["Murray St","Murray State"], "Murray State University")
df['loser']=df['loser'].replace("Tennessee State","Tennessee State University")
df['loser']=df['loser'].replace("Eastern Illinois","Eastern Illinois University")
df['loser']=df['loser'].replace("Tennessee Tech","Tennessee Tech University")
df['loser']=df['loser'].replace("Tennessee Martin", "University of Tennessee Martin")
df['loser']=df['loser'].replace("Jackson State","Jackson State University")
df['loser']=df['loser'].replace("SouthCarolina State","South Carolina State University")
df['loser']=df['loser'].replace('Southeast Missouri','Southeast Missouri State University'
df['loser']=df['loser'].replace('Alabama A&M','Alabama A&M University')
df['loser']=df['loser'].replace('Jacksonville State','Jacksonville State University')
df['loser']=df['loser'].replace('Austin Peay','Austin Peay State University')
df['loser']=df['loser'].replace('Eastern Kentucky','Eastern Kentucky University')
df['loser']=df['loser'].replace('Southern University','Southern University & A&M College')
df['loser']=df['loser'].replace("NorthCarolina A&T", "North Carolina A&T State University"
df['loser']=df['loser'].replace("Florida A&M", "Florida A&M University")
df['loser']=df['loser'].replace("Arkansas PineBluff","University of Arkansas Pine Bluff")
df['loser']=df['loser'].replace('Bethune Cookman','Bethune Cookman University')
df['loser']=df['loser'].replace('Central State','Central State University')
df['loser']=df['loser'].replace('Edward Waters','Edward Waters College')
df['loser']=df['loser'].replace('Alabama State','Alabama State University')
df['loser']=df['loser'].replace("VirginiaU Lynchburg","Virginia University Lynchburg")
df['loser']=df['loser'].replace('Georgia State','Georgia State University')
df['loser']=df['loser'].replace('Mississippi Valley','Mississippi Valley State University'
df['loser'].unique()
```

Out[65]:
```
array(['Murray State University', 'Tennessee State University',
       'Eastern Illinois University', 'Samford University',
       'Tennessee Tech University', 'University of Tennessee Martin',
       'Jackson State University', 'South Carolina State University',
       'Southeast Missouri State University', 'Alabama A&M University',
       'Jacksonville State University', 'Austin Peay State University',
       'Eastern Kentucky University', 'Southern University & A&M College',
       'North Carolina A&T State University', 'Florida A&M University',
       'University of Arkansas Pine Bluff', 'Bethune Cookman University',
       'Butler University', 'Central State University',
```

```
       'Edward Waters College', 'Alabama State University',
       'Virginia University Lynchburg', 'Georgia State University',
       'Mississippi Valley State University'], dtype=object)
```

In [66]:
```
#clean up winner column
df['winner'].unique()
```

Out[66]:
```
array(['Tennessee State', 'Eastern Kentucky', 'Southeast Missouri',
       'Jacksonville State', 'Florida A&M', 'Alabama A&M', 'Murray State',
       'Eastern Illinois', 'Samford University', 'SouthCarolina State',
       'NorthCarolina A&T', 'Tennessee Martin', 'Vanderbilt University',
       'Southern University', 'Austin Peay', 'Tennessee Tech',
       'Jackson State', 'Air Force', 'Bethune Cookman', 'UT Martin',
       'Alabama State', 'Murray St', 'Pine Bluff', 'Middle Tennessee'],
      dtype=object)
```

In [67]:
```
df['winner']=df['winner'].replace("Tennessee State","Tennessee State University")
df['winner']=df['winner'].replace('Eastern Kentucky','Eastern Kentucky University')
df['winner']=df['winner'].replace('Southeast Missouri','Southeast Missouri State Universit
df['winner']=df['winner'].replace('Jacksonville State','Jacksonville State University')
df['winner']=df['winner'].replace("Florida A&M", "Florida A&M University")
df['winner']=df['winner'].replace('Alabama A&M','Alabama A&M University')
df['winner']=df['winner'].replace(["Murray St","Murray State"], "Murray State University")
df['winner']=df['winner'].replace("Eastern Illinois","Eastern Illinois University")
df['winner']=df['winner'].replace("SouthCarolina State","South Carolina State University")
df['winner']=df['winner'].replace("NorthCarolina A&T", "North Carolina A&T State Universit
df['winner']=df['winner'].replace(["UT Martin","Tennessee Martin"], "University of Tenness
df['winner']=df['winner'].replace('Southern University','Southern University & A&M College
df['winner']=df['winner'].replace('Austin Peay','Austin Peay State University')
df['winner']=df['winner'].replace("Tennessee Tech","Tennessee Tech University")
df['winner']=df['winner'].replace("Jackson State","Jackson State University")
df['winner']=df['winner'].replace("Air Force", "Air Force Academy")
df['winner']=df['winner'].replace('Bethune Cookman','Bethune Cookman University')
df['winner']=df['winner'].replace('Alabama State','Alabama State University')
df['winner']=df['winner'].replace("Pine Bluff","University of Arkansas Pine Bluff")
df['winner']=df['winner'].replace('Middle Tennessee','Middle Tennessee State University')
df['winner'].unique()
```

Out[67]:
```
array(['Tennessee State University', 'Eastern Kentucky University',
       'Southeast Missouri State University',
       'Jacksonville State University', 'Florida A&M University',
       'Alabama A&M University', 'Murray State University',
       'Eastern Illinois University', 'Samford University',
       'South Carolina State University',
       'North Carolina A&T State University',
       'University of Tennessee Martin', 'Vanderbilt University',
       'Southern University & A&M College',
       'Austin Peay State University', 'Tennessee Tech University',
       'Jackson State University', 'Air Force Academy',
       'Bethune Cookman University', 'Alabama State University',
       'University of Arkansas Pine Bluff',
       'Middle Tennessee State University'], dtype=object)
```

In [68]:
```
#sort rows by date
df=df.sort_values('date',ignore_index=True)
df.head()
```

Out[68]:

| | date | city | state | winscore | losscore | loser | winner | locale | TSU score | opponent score | scorediff | scorediff_ab |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | date | city | state | winscore | losscore | loser | winner | locale | TSU score | opponent score | scorediff | scorediff_ab |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **0** | 2003-08-30 | Nashville | TN | 37 | 20 | South Carolina State University | Tennessee State University | Home | 37 | 20 | 17 | 1 |
| **1** | 2003-09-06 | Huntsville | AL | 31 | 24 | Tennessee State University | Alabama A&M University | Away | 24 | 31 | -7 | |
| **2** | 2003-09-13 | Memphis | TN | 44 | 14 | Jackson State University | Tennessee State University | Away | 44 | 14 | 30 | 3 |
| **3** | 2003-09-20 | Atlanta | GA | 10 | 7 | Tennessee State University | Florida A&M University | Away | 7 | 10 | -3 | |
| **4** | 2003-09-27 | Nashville | TN | 41 | 10 | University of Tennessee Martin | Tennessee State University | Home | 41 | 10 | 31 | 3 |

In [69]:
```
#basic information on data frame
df.info
```

Out[69]:
```
<bound method DataFrame.info of           date        city state  winscore  losscore  \
0   2003-08-30   Nashville    TN        37        20
1   2003-09-06  Huntsville    AL        31        24
2   2003-09-13     Memphis    TN        44        14
3   2003-09-20     Atlanta    GA        10         7
4   2003-09-27   Nashville    TN        41        10
..         ...         ...   ...       ...       ...
186 2019-10-19   Nashville    TN        26        24
187 2019-11-02   Nashville    TN        32        13
188 2019-11-09   Nashville    TN        49        38
189 2019-11-16      Martin    TN        28        17
190 2019-11-23  Cookeville    TN        37        27

                              loser                              winner  \
0    South Carolina State University          Tennessee State University
1         Tennessee State University              Alabama A&M University
2           Jackson State University          Tennessee State University
3         Tennessee State University              Florida A&M University
4     University of Tennessee Martin          Tennessee State University
..                               ...                                ...
186     Austin Peay State University          Tennessee State University
187       Tennessee State University  Southeast Missouri State University
188       Tennessee State University         Eastern Illinois University
189       Tennessee State University       University of Tennessee Martin
190        Tennessee Tech University          Tennessee State University

    locale  TSU score  opponent score  scorediff  scorediff_abs winloss  year
0     Home         37              20         17             17     Win  2003
1     Away         24              31         -7              7    Loss  2003
2     Away         44              14         30             30     Win  2003
3     Away          7              10         -3              3    Loss  2003
4     Home         41              10         31             31     Win  2003
..     ...        ...             ...        ...            ...     ...   ...
186   Home         26              24          2              2     Win  2019
187   Home         13              32        -19             19    Loss  2019
188   Home         38              49        -11             11    Loss  2019
189   Away         17              28        -11             11    Loss  2019
```

```
190    Away          37               27          10              10      Win   2019

[191 rows x 14 columns]>
```

In [70]:
```
#save data frame with scores to folder
df.to_csv('scores.csv',encoding='utf-8')
```

# Web Scraping-getting individual years of stats data from TSU stats websites

# Data Cleaning-correcting text and deleting extra text and spaces

# Data Wrangling-putting data into lists and data frame

In [71]:
```
#2003 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/A5FB3A
mytree = html.fromstring(page.content)
```

In [72]:
```
#date data
date = mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[1:120:10]
date=[a.replace("\xa0","") for a in date]
date=[a.replace('Sep. 6, 2003','Sep 06 2003') for a in date]
date=[a.replace(",","") for a in date]
print(date)
```

```
['Aug 30 2003', 'Sep 06 2003', 'Sep 13 2003', 'Sep 20 2003', 'Sep 27 2003', 'Oct 11 2003',
'Oct 18 2003', 'Oct 25 2003', 'Nov 01 2003', 'Nov 08 2003', 'Nov 15 2003', 'Nov 22 2003']
```

In [73]:
```
#attendance data
attendance=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[9:120:10]
attendance=[a.replace("\xa0","") for a in attendance]
attendance=[a.strip() for a in attendance]
attendance=pd.to_numeric(attendance)
attendance
```

Out[73]:
```
array([18124, 18085, 52603, 70185,  8434,  8127,  8023, 10360, 25037,
       5375,  3875,  2814], dtype=int64)
```

In [74]:
```
#TSU rushing yards
TSUrushyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[124:380:23]
TSUrushyards=[a.replace("\xa0","") for a in TSUrushyards]
TSUrushyards=pd.to_numeric(TSUrushyards)
TSUrushyards
```

Out[74]:
```
array([113, 141, 209, 153, 142, 182,  47, 132, 223, 149, 144, 191],
      dtype=int64)
```

In [75]:
```
#TSU receiving yards
TSUreceiveyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[128:400:2
TSUreceiveyards=[a.replace("\xa0","") for a in TSUreceiveyards]
TSUreceiveyards=pd.to_numeric(TSUreceiveyards)
TSUreceiveyards
```

Out[75]:
```
array([365, 146, 132, 138, 285, 297, 175, 271, 184, 196, 371, 195],
```

```
      dtype=int64)
```

In [76]:
```
#TSU kick return yards
TSUkreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[136:400:2
TSUkreturnyards=[a.replace("\xa0","") for a in TSUkreturnyards]
TSUkreturnyards=pd.to_numeric(TSUkreturnyards)
TSUkreturnyards
```

Out[76]:
```
array([ 69, 147, 138,  86,  11,  33,  90,  50,   8, 139, 112,  63],
      dtype=int64)
```

In [77]:
```
#TSU punt return yards
TSUpreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[140:400:2
TSUpreturnyards=[a.replace("\xa0","") for a in TSUpreturnyards]
TSUpreturnyards=pd.to_numeric(TSUpreturnyards)
TSUpreturnyards
```

Out[77]:
```
array([ 88,   8, 107,   2,  29,  52, -17,  45,   9,  18,   0,  15],
      dtype=int64)
```

In [78]:
```
#TSU total tackles
TSUtackles=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[447:700:22]
TSUtackles=[a.replace("\xa0","") for a in TSUtackles]
TSUtackles=pd.to_numeric(TSUtackles)
TSUtackles
```

Out[78]:
```
array([69, 68, 84, 50, 76, 74, 79, 83, 65, 65, 75, 67], dtype=int64)
```

In [79]:
```
#TSU tackle yards
TSUtackleyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[449:700:22]
TSUtackleyd=[a.replace("\xa0","") for a in TSUtackleyd]
TSUtackleyd=pd.to_numeric(TSUtackleyd)
TSUtackleyd
```

Out[79]:
```
array([33, 22, 26, 22, 46, 44,  9, 34, 23, 23, 32, 37], dtype=int64)
```

In [80]:
```
#TSU sacks
TSUsacks=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[450:700:22]
TSUsacks=[a.replace("\xa0","") for a in TSUsacks]
TSUsacks=pd.to_numeric(TSUsacks)
TSUsacks
```

Out[80]:
```
array([3., 0., 1., 0., 4., 4., 1., 2., 2., 2., 4., 5.])
```

In [81]:
```
#TSU sack yards
TSUsackyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[451:700:22]
TSUsackyd=[a.replace("\xa0","") for a in TSUsackyd]
TSUsackyd=pd.to_numeric(TSUsackyd)
TSUsackyd
```

Out[81]:
```
array([21,  0,  4,  0, 22, 30,  9, 24, 12, 14, 20, 28], dtype=int64)
```

In [82]:
```
#TSU punts
TSUpunt=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[753:969:19]
TSUpunt=[a.replace("\xa0","") for a in TSUpunt]
TSUpunt=pd.to_numeric(TSUpunt)
TSUpunt
```

Out[82]:
```
array([ 5,  7,  5,  6,  3,  2,  6,  8,  5,  5, 10,  7], dtype=int64)
```

In [83]:
```
#create data frame
list_of_dicts={'date':date,'attendance':attendance,'TSUrushyards':TSUrushyards, 'TSUreceiv
     'TSUkreturnyards':TSUkreturnyards,'TSUpreturnyards':TSUpreturnyards,'TSUtackles':TSUt
     'TSUsacks':TSUsacks,'TSUsackyd':TSUsackyd,'TSUpunt':TSUpunt}
df2003=pd.DataFrame(list_of_dicts)
df2003.head()
```

Out[83]:

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|
| 0 | Aug 30 2003 | 18124 | 113 | 365 | 69 | 88 | 69 | 33 | |
| 1 | Sep 06 2003 | 18085 | 141 | 146 | 147 | 8 | 68 | 22 | |
| 2 | Sep 13 2003 | 52603 | 209 | 132 | 138 | 107 | 84 | 26 | |
| 3 | Sep 20 2003 | 70185 | 153 | 138 | 86 | 2 | 50 | 22 | |
| 4 | Sep 27 2003 | 8434 | 142 | 285 | 11 | 29 | 76 | 46 | |

In [84]:
```
#creating date column as a datetime column
df2003['date']=pd.to_datetime(df2003['date'],format='%b %d %Y')
#creating year column
df2003['year']=df2003.date.dt.year
df2003.columns
```

Out[84]:
```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [85]:
```
#info on data frame
df2003.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 12 entries, 0 to 11
Data columns (total 12 columns):
 #   Column           Non-Null Count  Dtype
---  ------           --------------  -----
 0   date             12 non-null     datetime64[ns]
 1   attendance       12 non-null     int64
 2   TSUrushyards     12 non-null     int64
 3   TSUreceiveyards  12 non-null     int64
 4   TSUkreturnyards  12 non-null     int64
 5   TSUpreturnyards  12 non-null     int64
 6   TSUtackles       12 non-null     int64
 7   TSUtackleyd      12 non-null     int64
 8   TSUsacks         12 non-null     float64
 9   TSUsackyd        12 non-null     int64
 10  TSUpunt          12 non-null     int64
 11  year             12 non-null     int64
```

```
dtypes: datetime64[ns](1), float64(1), int64(10)
memory usage: 1.2 KB
```

In [86]:
```
#sort rows by date
df2003=df2003.sort_values('date',ignore_index=True)
df2003['date'].head()
```

Out[86]:
```
0   2003-08-30
1   2003-09-06
2   2003-09-13
3   2003-09-20
4   2003-09-27
Name: date, dtype: datetime64[ns]
```

In [87]:
```
#save data frame to folder
df2003.to_csv('2003.csv',encoding='utf-8')
```

In [88]:
```
#2004 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/57C54C4
mytree = html.fromstring(page.content)
```

In [89]:
```
#date data
date = mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[1:110:10]
date=[a.replace("\xa0","") for a in date]
date=[a.replace('2003','2004') for a in date]
date=[a.replace(",","") for a in date]
date=[a.replace(".","") for a in date]
date=[a.replace(" 4"," 04") for a in date]
print(date)
```

```
['Sep 04 2004', 'Sep 09 2004', 'Sep 18 2004', 'Sep 25 2004', 'Oct 02 2004', 'Oct 16 2004',
'Oct 23 2004', 'Oct 30 2004', 'Nov 06 2004', 'Nov 13 2004', 'Nov 20 2004']
```

In [90]:
```
#attendance data
attendance=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[9:110:10]
attendance=[a.replace("\xa0","") for a in attendance]
attendance=[a.strip() for a in attendance]
attendance=pd.to_numeric(attendance)
attendance
```

Out[90]:
```
array([25117,  7019, 55015, 67712, 51082, 14722,  5041,  5422, 23421,
        7100,  4864], dtype=int64)
```

In [91]:
```
#TSU rushing yards
TSUrushyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[114:357:23]
TSUrushyards=[a.replace("\xa0","") for a in TSUrushyards]
TSUrushyards=pd.to_numeric(TSUrushyards)
TSUrushyards
```

Out[91]:
```
array([152, 156, 164, 161,  22, 106, 290,  22, 243, 194,  83], dtype=int64)
```

In [92]:
```
#TSU receiving yards
TSUreceiveyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[118:360:2
TSUreceiveyards=[a.replace("\xa0","") for a in TSUreceiveyards]
TSUreceiveyards=pd.to_numeric(TSUreceiveyards)
TSUreceiveyards
```

Out[92]:
```
array([203, 158, 149, 163, 173, 381, 211, 192, 215, 162, 142], dtype=int64)
```

In [93]:
```
#TSU kick return yards
TSUkreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[126:360:2
TSUkreturnyards=[a.replace("\xa0","") for a in TSUkreturnyards]
TSUkreturnyards=pd.to_numeric(TSUkreturnyards)
TSUkreturnyards
```

Out[93]:
```
array([ 24,  34,  39,  49,  57, 120, 127, 100,  76,  95, 130], dtype=int64)
```

In [94]:
```
#TSU punt return yards
TSUpreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[130:380:2
TSUpreturnyards=[a.replace("\xa0","") for a in TSUpreturnyards]
TSUpreturnyards=pd.to_numeric(TSUpreturnyards)
TSUpreturnyards
```

Out[94]:
```
array([26, 32, 10, 32,  0,  0, 36, 77, 22, 63,  0], dtype=int64)
```

In [95]:
```
#TSU total tackles
TSUtackles=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[414:650:22]
TSUtackles=[a.replace("\xa0","") for a in TSUtackles]
TSUtackles=pd.to_numeric(TSUtackles)
TSUtackles
```

Out[95]:
```
array([74, 65, 63, 78, 91, 77, 88, 66, 63, 67, 66], dtype=int64)
```

In [96]:
```
#TSU tackle yards
TSUtackleyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[416:650:22]
TSUtackleyd=[a.replace("\xa0","") for a in TSUtackleyd]
TSUtackleyd=pd.to_numeric(TSUtackleyd)
TSUtackleyd
```

Out[96]:
```
array([35, 60, 19, 70, 17,  0, 23,  6, 31, 25, 16], dtype=int64)
```

In [97]:
```
#TSU sacks
TSUsacks=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[417:650:22]
TSUsacks=[a.replace("\xa0","") for a in TSUsacks]
TSUsacks=pd.to_numeric(TSUsacks)
TSUsacks
```

Out[97]:
```
array([2., 4., 2., 5., 1., 0., 1., 0., 2., 1., 0.])
```

In [98]:
```
#TSU sack yards
TSUsackyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[418:650:22]
TSUsackyd=[a.replace("\xa0","") for a in TSUsackyd]
TSUsackyd=pd.to_numeric(TSUsackyd)
TSUsackyd
```

Out[98]:
```
array([12, 30,  7, 49,  4,  0,  5,  0, 12,  5,  0], dtype=int64)
```

In [99]:
```
#TSU punts
TSUpunt=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[698:900:19]
TSUpunt=[a.replace("\xa0","") for a in TSUpunt]
TSUpunt=pd.to_numeric(TSUpunt)
TSUpunt
```

Out[99]:
```
array([4, 7, 7, 9, 9, 4, 4, 8, 7, 6, 8], dtype=int64)
```

In [100…

```
#create data frame
list_of_dicts={'date':date,'attendance':attendance,'TSUrushyards':TSUrushyards, 'TSUreceiv
     'TSUkreturnyards':TSUkreturnyards,'TSUpreturnyards':TSUpreturnyards,'TSUtackles':TSUt
     'TSUsacks':TSUsacks,'TSUsackyd':TSUsackyd,'TSUpunt':TSUpunt}
df2004=pd.DataFrame(list_of_dicts)
df2004.head()
```

Out[100…

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|
| **0** | Sep 04 2004 | 25117 | 152 | 203 | 24 | 26 | 74 | 35 | |
| **1** | Sep 09 2004 | 7019 | 156 | 158 | 34 | 32 | 65 | 60 | |
| **2** | Sep 18 2004 | 55015 | 164 | 149 | 39 | 10 | 63 | 19 | |
| **3** | Sep 25 2004 | 67712 | 161 | 163 | 49 | 32 | 78 | 70 | |
| **4** | Oct 02 2004 | 51082 | 22 | 173 | 57 | 0 | 91 | 17 | |

In [101…

```
#creating date column as a datetime column
df2004['date']=pd.to_datetime(df2004['date'],format='%b %d %Y')
#creating year column
df2004['year']=df2004.date.dt.year
df2004.columns
```

Out[101…

```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [102…

```
#info on dataframe
df2004.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 11 entries, 0 to 10
Data columns (total 12 columns):
 #   Column           Non-Null Count  Dtype
---  ------           --------------  -----
 0   date             11 non-null     datetime64[ns]
 1   attendance       11 non-null     int64
 2   TSUrushyards     11 non-null     int64
 3   TSUreceiveyards  11 non-null     int64
 4   TSUkreturnyards  11 non-null     int64
 5   TSUpreturnyards  11 non-null     int64
 6   TSUtackles       11 non-null     int64
 7   TSUtackleyd      11 non-null     int64
 8   TSUsacks         11 non-null     float64
 9   TSUsackyd        11 non-null     int64
 10  TSUpunt          11 non-null     int64
 11  year             11 non-null     int64
dtypes: datetime64[ns](1), float64(1), int64(10)
memory usage: 1.2 KB
```

In [103…
```
#sort data
df2004=df2004.sort_values('date',ignore_index=True)
df2004['date'].head()
```

Out[103…
```
0   2004-09-04
1   2004-09-09
2   2004-09-18
3   2004-09-25
4   2004-10-02
Name: date, dtype: datetime64[ns]
```

In [104…
```
#save data frame to folder
df2004.to_csv('2004.csv',encoding='utf-8')
```

In [105…
```
#2005 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/99B728E
mytree = html.fromstring(page.content)
```

In [106…
```
#date data
date = mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[1:110:10]
date=[a.replace("\xa0","") for a in date]
date=[a.replace(",","") for a in date]
date=[a.replace(".","") for a in date]
print(date)
```

```
['Sep 03 2005', 'Sep 10 2005', 'Sep 17 2005', 'Sep 24 2005', 'Oct 01 2005', 'Oct 13 2005',
'Oct 22 2005', 'Oct 29 2005', 'Nov 05 2005', 'Nov 12 2005', 'Nov 19 2005']
```

In [107…
```
#attendance data
attendance=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[9:110:10]
attendance=[a.replace("\xa0","") for a in attendance]
attendance=[a.strip() for a in attendance]
attendance=pd.to_numeric(attendance)
attendance
```

Out[107…
```
array([25342, 48300,  5263, 56297, 42310, 10226,  6490,  8278, 23481,
       2512,  4779], dtype=int64)
```

In [108…
```
#TSU rushing yards
TSUrushyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[114:357:23]
TSUrushyards=[a.replace("\xa0","") for a in TSUrushyards]
TSUrushyards=pd.to_numeric(TSUrushyards)
TSUrushyards
```

Out[108…
```
array([ 72, 286,  77,  26, 117, 233, 157,  87,  50, 141, -18], dtype=int64)
```

In [109…
```
#TSU receiving yards
TSUreceiveyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[118:360:2
TSUreceiveyards=[a.replace("\xa0","") for a in TSUreceiveyards]
TSUreceiveyards=pd.to_numeric(TSUreceiveyards)
TSUreceiveyards
```

Out[109…
```
array([154, 103, 170, 238, 115,  78, 185, 160, 196, 286, 150], dtype=int64)
```

In [110…
```
#TSU kick return yards
TSUkreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[126:360:2
TSUkreturnyards=[a.replace("\xa0","") for a in TSUkreturnyards]
```

```
TSUkreturnyards=pd.to_numeric(TSUkreturnyards)
TSUkreturnyards
```

Out[110…
```
array([ 62,  11, 110,  10,  99,  71, 114,  78,  90, 128, 138], dtype=int64)
```

In [111…
```
#TSU punt return yards
TSUpreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[130:380:2
TSUpreturnyards=[a.replace("\xa0","") for a in TSUpreturnyards]
TSUpreturnyards=pd.to_numeric(TSUpreturnyards)
TSUpreturnyards
```

Out[111…
```
array([32, 47, -2, 67, 49, 53, 14,  3,  0,  1,  0], dtype=int64)
```

In [112…
```
#TSU total tackles
TSUtackles=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[414:650:22]
TSUtackles=[a.replace("\xa0","") for a in TSUtackles]
TSUtackles=pd.to_numeric(TSUtackles)
TSUtackles
```

Out[112…
```
array([47, 59, 95, 70, 75, 89, 62, 72, 61, 53, 64], dtype=int64)
```

In [113…
```
#TSU tackle yards
TSUtackleyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[416:650:22]
TSUtackleyd=[a.replace("\xa0","") for a in TSUtackleyd]
TSUtackleyd=pd.to_numeric(TSUtackleyd)
TSUtackleyd
```

Out[113…
```
array([20, 29, 17, 56, 56, 41,  9, 20, 26, 20,  6], dtype=int64)
```

In [114…
```
#TSU sacks
TSUsacks=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[417:650:22]
TSUsacks=[a.replace("\xa0","") for a in TSUsacks]
TSUsacks=pd.to_numeric(TSUsacks)
TSUsacks
```

Out[114…
```
array([2., 3., 1., 7., 6., 2., 0., 2., 1., 1., 0.])
```

In [115…
```
#TSU sack yards
TSUsackyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[418:650:22]
TSUsackyd=[a.replace("\xa0","") for a in TSUsackyd]
TSUsackyd=pd.to_numeric(TSUsackyd)
TSUsackyd
```

Out[115…
```
array([13, 16,  6, 50, 37, 11,  0,  8, 14,  7,  0], dtype=int64)
```

In [116…
```
#TSU punts
TSUpunt=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[698:900:19]
TSUpunt=[a.replace("\xa0","") for a in TSUpunt]
TSUpunt=pd.to_numeric(TSUpunt)
TSUpunt
```

Out[116…
```
array([4, 3, 6, 6, 6, 8, 5, 7, 5, 5, 8], dtype=int64)
```

In [117…
```
#create data frame
list_of_dicts={'date':date,'attendance':attendance,'TSUrushyards':TSUrushyards, 'TSUreceiv
```

```
    'TSUkreturnyards':TSUkreturnyards,'TSUpreturnyards':TSUpreturnyards,'TSUtackles':TSUt
    'TSUsacks':TSUsacks,'TSUsackyd':TSUsackyd,'TSUpunt':TSUpunt}
df2005=pd.DataFrame(list_of_dicts)
df2005.head()
```

Out[117…

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|
| **0** | Sep 03 2005 | 25342 | 72 | 154 | 62 | 32 | 47 | 20 | |
| **1** | Sep 10 2005 | 48300 | 286 | 103 | 11 | 47 | 59 | 29 | |
| **2** | Sep 17 2005 | 5263 | 77 | 170 | 110 | -2 | 95 | 17 | |
| **3** | Sep 24 2005 | 56297 | 26 | 238 | 10 | 67 | 70 | 56 | |
| **4** | Oct 01 2005 | 42310 | 117 | 115 | 99 | 49 | 75 | 56 | |

In [118…

```
#creating date column as a datetime column
df2005['date']=pd.to_datetime(df2005['date'],format='%b %d %Y')
#creating year column
df2005['year']=df2005.date.dt.year
df2005.columns
```

Out[118…

```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [119…

```
#info about dataframe
df2005.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 11 entries, 0 to 10
Data columns (total 12 columns):
 #   Column           Non-Null Count  Dtype         
---  ------           --------------  -----         
 0   date             11 non-null     datetime64[ns]
 1   attendance       11 non-null     int64         
 2   TSUrushyards     11 non-null     int64         
 3   TSUreceiveyards  11 non-null     int64         
 4   TSUkreturnyards  11 non-null     int64         
 5   TSUpreturnyards  11 non-null     int64         
 6   TSUtackles       11 non-null     int64         
 7   TSUtackleyd      11 non-null     int64         
 8   TSUsacks         11 non-null     float64       
 9   TSUsackyd        11 non-null     int64         
 10  TSUpunt          11 non-null     int64         
 11  year             11 non-null     int64         
dtypes: datetime64[ns](1), float64(1), int64(10)
memory usage: 1.2 KB
```

In [120…

```
#sort data
df2005=df2005.sort_values('date',ignore_index=True)
```

```
df2005['date'].head()
```

Out[120…
```
0   2005-09-03
1   2005-09-10
2   2005-09-17
3   2005-09-24
4   2005-10-01
Name: date, dtype: datetime64[ns]
```

In [121…
```
#save data
df2005.to_csv('2005.csv',encoding='utf-8')
```

In [122…
```
#2006 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/902C2D
mytree = html.fromstring(page.content)
```

In [123…
```
#date data
date = mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[1:110:10]
date=[a.replace("\xa0","") for a in date]
date=[a.replace(",","") for a in date]
date=[a.replace(".","") for a in date]
print(date)
```

```
['Sep 02 2006', 'Sep 09 2006', 'Sep 16 2006', 'Sep 23 2006', 'Sep 30 2006', 'Oct 14 2006',
'Oct 21 2006', 'Oct 28 2006', 'Nov 04 2006', 'Nov 11 2006', 'Nov 18 2006']
```

In [124…
```
#attendance data
attendance=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[9:110:10]
attendance=[a.replace("\xa0","") for a in attendance]
attendance=[a.strip() for a in attendance]
attendance=pd.to_numeric(attendance)
attendance
```

Out[124…
```
array([19487, 10613, 53441, 27460, 57885,  9720, 11800, 18758,  5912,
        4271,  5500], dtype=int64)
```

In [125…
```
#TSU rushing yards
TSUrushyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[114:357:23]
TSUrushyards=[a.replace("\xa0","") for a in TSUrushyards]
TSUrushyards=pd.to_numeric(TSUrushyards)
TSUrushyards
```

Out[125…
```
array([156, 111, 146,  71, 227, 310, 103, 247,  49, 133,  95], dtype=int64)
```

In [126…
```
#TSU receiving yards
TSUreceiveyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[118:360:2
TSUreceiveyards=[a.replace("\xa0","") for a in TSUreceiveyards]
TSUreceiveyards=pd.to_numeric(TSUreceiveyards)
TSUreceiveyards
```

Out[126…
```
array([206, 230, 167, 181, 210, 169, 260, 105, 162, 152, 162], dtype=int64)
```

In [127…
```
#TSU kick return yards
TSUkreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[126:360:2
TSUkreturnyards=[a.replace("\xa0","") for a in TSUkreturnyards]
TSUkreturnyards=pd.to_numeric(TSUkreturnyards)
TSUkreturnyards
```

Out[127…
```
array([105, 102,  77,  70,  98,  45, 119,  23, 115,   0, 126], dtype=int64)
```

In [128…
```
#TSU punt return yards
TSUpreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[130:380:2
TSUpreturnyards=[a.replace("\xa0","") for a in TSUpreturnyards]
TSUpreturnyards=pd.to_numeric(TSUpreturnyards)
TSUpreturnyards
```

Out[128…
```
array([ 0,  0, 24,  0, 16,  4, 20, 13,  0, 17,  7], dtype=int64)
```

In [129…
```
#TSU total tackles
TSUtackles=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[414:650:22]
TSUtackles=[a.replace("\xa0","") for a in TSUtackles]
TSUtackles=pd.to_numeric(TSUtackles)
TSUtackles
```

Out[129…
```
array([63, 76, 63, 59, 54, 64, 77, 45, 88, 44, 70], dtype=int64)
```

In [130…
```
#TSU tackle yards
TSUtackleyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[416:650:22]
TSUtackleyd=[a.replace("\xa0","") for a in TSUtackleyd]
TSUtackleyd=pd.to_numeric(TSUtackleyd)
TSUtackleyd
```

Out[130…
```
array([ 3, 38, 18, 25, 14, 15, 26, 28, 22, 27, 30], dtype=int64)
```

In [131…
```
#TSU sacks
TSUsacks=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[417:650:22]
TSUsacks=[a.replace("\xa0","") for a in TSUsacks]
TSUsacks=pd.to_numeric(TSUsacks)
TSUsacks
```

Out[131…
```
array([0., 3., 1., 1., 1., 1., 3., 3., 1., 4., 2.])
```

In [132…
```
#TSU sack yards
TSUsackyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[418:650:22]
TSUsackyd=[a.replace("\xa0","") for a in TSUsackyd]
TSUsackyd=pd.to_numeric(TSUsackyd)
TSUsackyd
```

Out[132…
```
array([ 0, 23,  6,  7,  4,  8, 20, 16, 10, 23, 14], dtype=int64)
```

In [133…
```
#TSU punts
TSUpunt=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[698:900:19]
TSUpunt=[a.replace("\xa0","") for a in TSUpunt]
TSUpunt=pd.to_numeric(TSUpunt)
TSUpunt
```

Out[133…
```
array([2, 5, 2, 3, 4, 4, 6, 3, 6, 4, 1], dtype=int64)
```

In [134…
```
#create data frame
list_of_dicts={'date':date,'attendance':attendance,'TSUrushyards':TSUrushyards, 'TSUreceiv
     'TSUkreturnyards':TSUkreturnyards,'TSUpreturnyards':TSUpreturnyards,'TSUtackles':TSUt
     'TSUsacks':TSUsacks,'TSUsackyd':TSUsackyd,'TSUpunt':TSUpunt}
```

```
df2006=pd.DataFrame(list_of_dicts)
df2006.head()
```

Out[134…

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|
| **0** | Sep 02 2006 | 19487 | 156 | 206 | 105 | 0 | 63 | 3 | |
| **1** | Sep 09 2006 | 10613 | 111 | 230 | 102 | 0 | 76 | 38 | |
| **2** | Sep 16 2006 | 53441 | 146 | 167 | 77 | 24 | 63 | 18 | |
| **3** | Sep 23 2006 | 27460 | 71 | 181 | 70 | 0 | 59 | 25 | |
| **4** | Sep 30 2006 | 57885 | 227 | 210 | 98 | 16 | 54 | 14 | |

In [135…

```
#creating date column as a datetime column
df2006['date']=pd.to_datetime(df2006['date'],format='%b %d %Y')
#creating year column
df2006['year']=df2006.date.dt.year
df2006.columns
```

Out[135…

```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [136…

```
#info on data frame
df2006.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 11 entries, 0 to 10
Data columns (total 12 columns):
 #   Column           Non-Null Count  Dtype         
---  ------           --------------  -----         
 0   date             11 non-null     datetime64[ns]
 1   attendance       11 non-null     int64         
 2   TSUrushyards     11 non-null     int64         
 3   TSUreceiveyards  11 non-null     int64         
 4   TSUkreturnyards  11 non-null     int64         
 5   TSUpreturnyards  11 non-null     int64         
 6   TSUtackles       11 non-null     int64         
 7   TSUtackleyd      11 non-null     int64         
 8   TSUsacks         11 non-null     float64       
 9   TSUsackyd        11 non-null     int64         
 10  TSUpunt          11 non-null     int64         
 11  year             11 non-null     int64         
dtypes: datetime64[ns](1), float64(1), int64(10)
memory usage: 1.2 KB
```

In [137…

```
#sort data
df2006=df2006.sort_values('date',ignore_index=True)
df2006['date'].head()
```

Out[137…
```
0   2006-09-02
1   2006-09-09
2   2006-09-16
3   2006-09-23
4   2006-09-30
Name: date, dtype: datetime64[ns]
```

In [138…
```
#save data
df2006.to_csv('2006.csv',encoding='utf-8')
```

In [139…
```
#2007 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/4C48DA5
mytree = html.fromstring(page.content)
```

In [140…
```
#date data
date = mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[1:110:10]
date=[a.replace("\xa0","") for a in date]
date=[a.replace(",","") for a in date]
date=[a.replace(".","") for a in date]
print(date)
```

```
['Sep 01 2007', 'Sep 08 2007', 'Sep 15 2007', 'Sep 22 2007', 'Sep 29 2007', 'Oct 11 2007',
'Oct 20 2007', 'Oct 27 2007', 'Nov 03 2007', 'Nov 08 2007', 'Nov 17 2007']
```

In [141…
```
#attendance data
attendance=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[9:110:10]
attendance=[a.replace("\xa0","") for a in attendance]
attendance=[a.strip() for a in attendance]
attendance=pd.to_numeric(attendance)
attendance
```

Out[141…
```
array([23440, 50879,  8359, 15371, 56990,  9369, 11500,  8935, 24878,
        4193,  7859], dtype=int64)
```

In [142…
```
#TSU rushing yards
TSUrushyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[114:357:23]
TSUrushyards=[a.replace("\xa0","") for a in TSUrushyards]
TSUrushyards=pd.to_numeric(TSUrushyards)
TSUrushyards
```

Out[142…
```
array([206, 153, 238, 133, 177, 320, 169, 166, 280, 187, 290], dtype=int64)
```

In [143…
```
#TSU receiving yards
TSUreceiveyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[118:360:2
TSUreceiveyards=[a.replace("\xa0","") for a in TSUreceiveyards]
TSUreceiveyards=pd.to_numeric(TSUreceiveyards)
TSUreceiveyards
```

Out[143…
```
array([176, 232, 233, 316, 309, 138, 127, 189,  69, 125, 173], dtype=int64)
```

In [144…
```
#TSU kick return yards
TSUkreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[126:360:2
TSUkreturnyards=[a.replace("\xa0","") for a in TSUkreturnyards]
TSUkreturnyards=pd.to_numeric(TSUkreturnyards)
TSUkreturnyards
```

Out[144…
```
array([154,  84,  83, 135, 111,  64, 122,  84,   6,  94, 222], dtype=int64)
```

In [145…
```
#TSU punt return yards
TSUpreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[130:380:2
TSUpreturnyards=[a.replace("\xa0","") for a in TSUpreturnyards]
TSUpreturnyards=pd.to_numeric(TSUpreturnyards)
TSUpreturnyards
```

Out[145…
```
array([35, 24, 14, 15, 33,  8,  0, 20, 77, -1, 31], dtype=int64)
```

In [146…
```
#TSU total tackles
TSUtackles=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[414:650:22]
TSUtackles=[a.replace("\xa0","") for a in TSUtackles]
TSUtackles=pd.to_numeric(TSUtackles)
TSUtackles
```

Out[146…
```
array([56, 63, 64, 80, 78, 70, 77, 88, 93, 75, 92], dtype=int64)
```

In [147…
```
#TSU tackle yards
TSUtackleyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[416:650:22]
TSUtackleyd=[a.replace("\xa0","") for a in TSUtackleyd]
TSUtackleyd=pd.to_numeric(TSUtackleyd)
TSUtackleyd
```

Out[147…
```
array([17, 30, 44, 56, 28, 23, 19, 12, 25, 35, 14], dtype=int64)
```

In [148…
```
#TSU sacks
TSUsacks=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[417:650:22]
TSUsacks=[a.replace("\xa0","") for a in TSUsacks]
TSUsacks=pd.to_numeric(TSUsacks)
TSUsacks
```

Out[148…
```
array([2, 2, 3, 3, 3, 0, 1, 0, 3, 1, 1], dtype=int64)
```

In [149…
```
#TSU sack yards
TSUsackyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[418:650:22]
TSUsackyd=[a.replace("\xa0","") for a in TSUsackyd]
TSUsackyd=pd.to_numeric(TSUsackyd)
TSUsackyd
```

Out[149…
```
array([15, 16, 26, 36, 23,  0, 10,  0, 15, 11,  8], dtype=int64)
```

In [150…
```
#TSU punts
TSUpunt=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[698:900:19]
TSUpunt=[a.replace("\xa0","") for a in TSUpunt]
TSUpunt=pd.to_numeric(TSUpunt)
TSUpunt
```

Out[150…
```
array([ 6,  5,  3,  7,  4,  4, 10,  5,  3,  5,  3], dtype=int64)
```

In [151…
```
#create data frame
list_of_dicts={'date':date,'attendance':attendance,'TSUrushyards':TSUrushyards, 'TSUreceiv
     'TSUkreturnyards':TSUkreturnyards,'TSUpreturnyards':TSUpreturnyards,'TSUtackles':TSUt
     'TSUsacks':TSUsacks,'TSUsackyd':TSUsackyd,'TSUpunt':TSUpunt}
df2007=pd.DataFrame(list_of_dicts)
df2007.head()
```

Out[151…

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|
| **0** | Sep 01 2007 | 23440 | 206 | 176 | 154 | 35 | 56 | 17 | |
| **1** | Sep 08 2007 | 50879 | 153 | 232 | 84 | 24 | 63 | 30 | |
| **2** | Sep 15 2007 | 8359 | 238 | 233 | 83 | 14 | 64 | 44 | |
| **3** | Sep 22 2007 | 15371 | 133 | 316 | 135 | 15 | 80 | 56 | |
| **4** | Sep 29 2007 | 56990 | 177 | 309 | 111 | 33 | 78 | 28 | |

In [152…

```
#creating date column as a datetime column
df2007['date']=pd.to_datetime(df2007['date'],format='%b %d %Y')
#creating year column
df2007['year']=df2007.date.dt.year
df2007.columns
```

Out[152…

```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [153…

```
#info for data frame
df2007.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 11 entries, 0 to 10
Data columns (total 12 columns):
 #   Column           Non-Null Count  Dtype         
---  ------           --------------  -----         
 0   date             11 non-null     datetime64[ns]
 1   attendance       11 non-null     int64         
 2   TSUrushyards     11 non-null     int64         
 3   TSUreceiveyards  11 non-null     int64         
 4   TSUkreturnyards  11 non-null     int64         
 5   TSUpreturnyards  11 non-null     int64         
 6   TSUtackles       11 non-null     int64         
 7   TSUtackleyd      11 non-null     int64         
 8   TSUsacks         11 non-null     int64         
 9   TSUsackyd        11 non-null     int64         
 10  TSUpunt          11 non-null     int64         
 11  year             11 non-null     int64         
dtypes: datetime64[ns](1), int64(11)
memory usage: 1.2 KB
```

In [154…

```
#sort values
df2007=df2007.sort_values('date',ignore_index=True)
df2007['date'].head()
```

Out[154…

```
0   2007-09-01
1   2007-09-08
2   2007-09-15
```

```
3   2007-09-22
4   2007-09-29
Name: date, dtype: datetime64[ns]
```

In [155…
```
#save data
df2007.to_csv('2007.csv',encoding='utf-8')
```

In [156…
```
#2008 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/E0564A8
mytree = html.fromstring(page.content)
```

In [157…
```
#date data
date = mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[1:120:10]
date=[a.replace("\xa0","") for a in date]
date=[a.replace(",","") for a in date]
date=[a.replace(".","") for a in date]
print(date)
```

```
['Aug 30 2008', 'Sep 06 2008', 'Sep 13 2008', 'Sep 20 2008', 'Sep 27 2008', 'Oct 04 2008',
'Oct 18 2008', 'Oct 25 2008', 'Nov 01 2008', 'Nov 08 2008', 'Nov 15 2008', 'Nov 22 2008']
```

In [158…
```
#attendance data
attendance=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[9:120:10]
attendance=[a.replace("\xa0","") for a in attendance]
attendance=[a.strip() for a in attendance]
attendance=pd.to_numeric(attendance)
attendance
```

Out[158…
```
array([10072, 28830, 50794,  8276, 50428,  7549,  9358,  9750, 24361,
        6393,  7956,  2292], dtype=int64)
```

In [159…
```
#TSU rushing yards
TSUrushyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[124:380:23]
TSUrushyards=[a.replace("\xa0","") for a in TSUrushyards]
TSUrushyards=pd.to_numeric(TSUrushyards)
TSUrushyards
```

Out[159…
```
array([107, 148, 148, 229, 136, 177, 377, 217, 212, 309, 177, 113],
      dtype=int64)
```

In [160…
```
#TSU receiving yards
TSUreceiveyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[128:383:2
TSUreceiveyards=[a.replace("\xa0","") for a in TSUreceiveyards]
TSUreceiveyards=pd.to_numeric(TSUreceiveyards)
TSUreceiveyards
```

Out[160…
```
array([292, 315, 137, 314, 241, 155, 108, 233, 138, 162, 170, 210],
      dtype=int64)
```

In [161…
```
#TSU kick return yards
TSUkreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[136:406:2
TSUkreturnyards=[a.replace("\xa0","") for a in TSUkreturnyards]
TSUkreturnyards=pd.to_numeric(TSUkreturnyards)
TSUkreturnyards
```

Out[161…
```
array([160,  66,  34,  84,  95,  93, 101,  72,  32,  59,  57,  57],
      dtype=int64)
```

In [162…
```
#TSU punt return yards
```

```
TSUpreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[140:403:2
TSUpreturnyards=[a.replace("\xa0","") for a in TSUpreturnyards]
TSUpreturnyards=pd.to_numeric(TSUpreturnyards)
TSUpreturnyards
```

Out[162…
```
array([ 2, 37, 38,  6,  2, 21,  0, 18, 37,  4, 42, -2], dtype=int64)
```

In [163…
```
#TSU total tackles
TSUtackles=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[447:694:22]
TSUtackles=[a.replace("\xa0","") for a in TSUtackles]
TSUtackles=pd.to_numeric(TSUtackles)
TSUtackles
```

Out[163…
```
array([46, 76, 58, 51, 61, 74, 62, 54, 67, 68, 69, 60], dtype=int64)
```

In [164…
```
#TSU tackle yards
TSUtackleyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[449:694:22]
TSUtackleyd=[a.replace("\xa0","") for a in TSUtackleyd]
TSUtackleyd=pd.to_numeric(TSUtackleyd)
TSUtackleyd
```

Out[164…
```
array([20, 29,  9, 48, 37, 13, 25, 27, 30, 19, 10, 26], dtype=int64)
```

In [165…
```
#TSU sacks
TSUsacks=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[450:694:22]
TSUsacks=[a.replace("\xa0","") for a in TSUsacks]
TSUsacks=pd.to_numeric(TSUsacks)
TSUsacks
```

Out[165…
```
array([1, 1, 0, 3, 3, 0, 2, 2, 2, 2, 1, 2], dtype=int64)
```

In [166…
```
#TSU sack yards
TSUsackyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[451:694:22]
TSUsackyd=[a.replace("\xa0","") for a in TSUsackyd]
TSUsackyd=pd.to_numeric(TSUsackyd)
TSUsackyd
```

Out[166…
```
array([10,  4,  0, 27, 23,  0, 22, 15, 16, 13,  8, 11], dtype=int64)
```

In [167…
```
#TSU punts
TSUpunt=[]
TSUpunt.append(mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[753][0])
TSUpunt.append(mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[772][0])
TSUpunt.append(mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[791][0])
TSUpunt.append(mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[810][0])
TSUpunt.append(mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[829][0])
TSUpunt.append(mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[848][0])
TSUpunt.append(mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[867][0])
TSUpunt.append(mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[886][0])
TSUpunt.append(mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[905][0])
TSUpunt.append(mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[924][0])
TSUpunt.append(mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[943][0])
TSUpunt.append(mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[962][0])
TSUpunt=pd.to_numeric(TSUpunt)
TSUpunt
```

Out[167…
```
array([3, 3, 3, 3, 5, 6, 1, 1, 4, 4, 7, 5], dtype=int64)
```

In [168…

```
#create data frame
list_of_dicts={'date':date,'attendance':attendance,'TSUrushyards':TSUrushyards, 'TSUreceiv
     'TSUkreturnyards':TSUkreturnyards,'TSUpreturnyards':TSUpreturnyards,'TSUtackles':TSUt
     'TSUsacks':TSUsacks,'TSUsackyd':TSUsackyd,'TSUpunt':TSUpunt}
df2008=pd.DataFrame(list_of_dicts)
df2008.head()
```

Out[168…

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|
| **0** | Aug 30 2008 | 10072 | 107 | 292 | 160 | 2 | 46 | 20 | |
| **1** | Sep 06 2008 | 28830 | 148 | 315 | 66 | 37 | 76 | 29 | |
| **2** | Sep 13 2008 | 50794 | 148 | 137 | 34 | 38 | 58 | 9 | |
| **3** | Sep 20 2008 | 8276 | 229 | 314 | 84 | 6 | 51 | 48 | |
| **4** | Sep 27 2008 | 50428 | 136 | 241 | 95 | 2 | 61 | 37 | |

In [169…

```
#creating date column as a datetime column
df2008['date']=pd.to_datetime(df2008['date'],format='%b %d %Y')
#creating year column
df2008['year']=df2008.date.dt.year
df2008.columns
```

Out[169…

```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [170…

```
#info on data frame
df2008.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 12 entries, 0 to 11
Data columns (total 12 columns):
 #   Column           Non-Null Count  Dtype
---  ------           --------------  -----
 0   date             12 non-null     datetime64[ns]
 1   attendance       12 non-null     int64
 2   TSUrushyards     12 non-null     int64
 3   TSUreceiveyards  12 non-null     int64
 4   TSUkreturnyards  12 non-null     int64
 5   TSUpreturnyards  12 non-null     int64
 6   TSUtackles       12 non-null     int64
 7   TSUtackleyd      12 non-null     int64
 8   TSUsacks         12 non-null     int64
 9   TSUsackyd        12 non-null     int64
 10  TSUpunt          12 non-null     int64
 11  year             12 non-null     int64
dtypes: datetime64[ns](1), int64(11)
memory usage: 1.2 KB
```

In [171…
```
#sort data
df2008=df2008.sort_values('date',ignore_index=True)
df2008['date'].head()
```

Out[171…
```
0   2008-08-30
1   2008-09-06
2   2008-09-13
3   2008-09-20
4   2008-09-27
Name: date, dtype: datetime64[ns]
```

In [172…
```
#save data
df2008.to_csv('2008.csv',encoding='utf-8')
```

In [173…
```
#2009 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/DEDBD68
mytree = html.fromstring(page.content)
```

In [174…
```
#date data
date = mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[1:110:10]
date=[a.replace("\xa0","") for a in date]
date=[a.replace(",","") for a in date]
date=[a.replace(".","") for a in date]
print(date)
```

```
['Sep 05 2009', 'Sep 12 2009', 'Sep 19 2009', 'Sep 26 2009', 'Oct 03 2009', 'Oct 10 2009',
'Oct 17 2009', 'Oct 31 2009', 'Nov 07 2009', 'Nov 14 2009', 'Nov 19 2009']
```

In [175…
```
#attendance data
attendance=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[9:110:10]
attendance=[a.replace("\xa0","") for a in attendance]
attendance=[a.strip() for a in attendance]
attendance=pd.to_numeric(attendance)
attendance
```

Out[175…
```
array([23871, 43306, 12247, 51950,  6314,  7100,  5572,  7999, 22092,
       6968,  3509], dtype=int64)
```

In [176…
```
#TSU rushing yards
TSUrushyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[114:357:23]
TSUrushyards=[a.replace("\xa0","") for a in TSUrushyards]
TSUrushyards=pd.to_numeric(TSUrushyards)
TSUrushyards
```

Out[176…
```
array([ 13, 217, 169, 167, 259, 159, 169, 152,  62, 104, 176], dtype=int64)
```

In [177…
```
#TSU receiving yards
TSUreceiveyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[118:360:2
TSUreceiveyards=[a.replace("\xa0","") for a in TSUreceiveyards]
TSUreceiveyards=pd.to_numeric(TSUreceiveyards)
TSUreceiveyards
```

Out[177…
```
array([178,  43,  86, 107,  95, 124,  68, 128, 207, 189, 135], dtype=int64)
```

In [178…
```
#TSU kick return yards
TSUkreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[126:360:2
TSUkreturnyards=[a.replace("\xa0","") for a in TSUkreturnyards]
```

```
TSUkreturnyards=pd.to_numeric(TSUkreturnyards)
TSUkreturnyards
```

Out[178…
```
array([46, 19, 75, 95, 72, 81, 64, 78, 97, 60, 55], dtype=int64)
```

In [179…
```
#TSU punt return yards
TSUpreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[130:383:2
TSUpreturnyards=[a.replace("\xa0","") for a in TSUpreturnyards]
TSUpreturnyards=pd.to_numeric(TSUpreturnyards)
TSUpreturnyards
```

Out[179…
```
array([ 0, 20, 13,  2, 30, 24,  5,  7,  7,  2, -4], dtype=int64)
```

In [180…
```
#TSU total tackles
TSUtackles=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[414:644:22]
TSUtackles=[a.replace("\xa0","") for a in TSUtackles]
TSUtackles=pd.to_numeric(TSUtackles)
TSUtackles
```

Out[180…
```
array([71, 60, 81, 63, 58, 52, 69, 56, 83, 73, 47], dtype=int64)
```

In [181…
```
#TSU tackle yards
TSUtackleyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[416:646:22]
TSUtackleyd=[a.replace("\xa0","") for a in TSUtackleyd]
TSUtackleyd=pd.to_numeric(TSUtackleyd)
TSUtackleyd
```

Out[181…
```
array([18, 42, 28, 14, 20, 24, 21, 35,  9,  6, 19], dtype=int64)
```

In [182…
```
#TSU sacks
TSUsacks=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[417:646:22]
TSUsacks=[a.replace("\xa0","") for a in TSUsacks]
TSUsacks=pd.to_numeric(TSUsacks)
TSUsacks
```

Out[182…
```
array([1, 3, 3, 1, 3, 3, 2, 2, 0, 0, 2], dtype=int64)
```

In [183…
```
#TSU sack yards
TSUsackyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[418:646:22]
TSUsackyd=[a.replace("\xa0","") for a in TSUsackyd]
TSUsackyd=pd.to_numeric(TSUsackyd)
TSUsackyd
```

Out[183…
```
array([ 7, 26, 15,  5, 15, 14, 12, 18,  0,  0, 11], dtype=int64)
```

In [184…
```
#TSU punts
TSUpunt=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[698:900:19]
TSUpunt=[a.replace("\xa0","") for a in TSUpunt]
TSUpunt=pd.to_numeric(TSUpunt)
TSUpunt
```

Out[184…
```
array([6, 9, 8, 6, 5, 8, 6, 7, 7, 8, 8], dtype=int64)
```

In [185…
```
#create data frame
#change dictionary of lists to data frame
```

```
list_of_dicts={'date':date,'attendance':attendance,'TSUrushyards':TSUrushyards, 'TSUreceiv
     'TSUkreturnyards':TSUkreturnyards,'TSUpreturnyards':TSUpreturnyards,'TSUtackles':TSUt
     'TSUsacks':TSUsacks,'TSUsackyd':TSUsackyd,'TSUpunt':TSUpunt}
df2009=pd.DataFrame(list_of_dicts)
df2009.head()
```

Out[185…

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|
| **0** | Sep 05 2009 | 23871 | 13 | 178 | 46 | 0 | 71 | 18 | |
| **1** | Sep 12 2009 | 43306 | 217 | 43 | 19 | 20 | 60 | 42 | |
| **2** | Sep 19 2009 | 12247 | 169 | 86 | 75 | 13 | 81 | 28 | |
| **3** | Sep 26 2009 | 51950 | 167 | 107 | 95 | 2 | 63 | 14 | |
| **4** | Oct 03 2009 | 6314 | 259 | 95 | 72 | 30 | 58 | 20 | |

In [186…

```
#creating date column as a datetime column
df2009['date']=pd.to_datetime(df2009['date'],format='%b %d %Y')
#creating year column
df2009['year']=df2009.date.dt.year
df2009.columns
```

Out[186…

```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [187…

```
#info on data frame
df2009.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 11 entries, 0 to 10
Data columns (total 12 columns):
 #   Column           Non-Null Count  Dtype         
---  ------           --------------  -----         
 0   date             11 non-null     datetime64[ns]
 1   attendance       11 non-null     int64         
 2   TSUrushyards     11 non-null     int64         
 3   TSUreceiveyards  11 non-null     int64         
 4   TSUkreturnyards  11 non-null     int64         
 5   TSUpreturnyards  11 non-null     int64         
 6   TSUtackles       11 non-null     int64         
 7   TSUtackleyd      11 non-null     int64         
 8   TSUsacks         11 non-null     int64         
 9   TSUsackyd        11 non-null     int64         
 10  TSUpunt          11 non-null     int64         
 11  year             11 non-null     int64         
dtypes: datetime64[ns](1), int64(11)
memory usage: 1.2 KB
```

In [188…

```
#sort data
```

```
df2009=df2009.sort_values('date',ignore_index=True)
df2009['date'].head()
```

Out[188…
```
0   2009-09-05
1   2009-09-12
2   2009-09-19
3   2009-09-26
4   2009-10-03
Name: date, dtype: datetime64[ns]
```

In [189…
```
#save data
df2009.to_csv('2009.csv',encoding='utf-8')
```

In [190…
```
#2010 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/108733
mytree = html.fromstring(page.content)
```

In [191…
```
#date data
date = mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[1:110:10]
date=[a.replace("\xa0","") for a in date]
date=[a.replace(",","") for a in date]
date=[a.replace(".","") for a in date]
date=[a.replace("2 ","02 ") for a in date]
date=[a.replace("9 ","09 ") for a in date]
print(date)
```

```
['Sep 04 2010', 'Sep 11 2010', 'Sep 18 2010', 'Sep 25 2010', 'Oct 02 2010', 'Oct 09 2010',
'Oct 16 2010', 'Oct 23 2010', 'Nov 06 2010', 'Nov 13 2010', 'Nov 20 2010']
```

In [192…
```
#attendance data
attendance=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[9:110:10]
attendance=[a.replace("\xa0","") for a in attendance]
attendance=[a.strip() for a in attendance]
attendance=pd.to_numeric(attendance)
attendance
```

Out[192…
```
array([22607, 44688,  8502, 54202, 35217, 10316, 15218,  6739, 21596,
       3141,  2904], dtype=int64)
```

In [193…
```
#TSU rushing yards
TSUrushyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[114:357:23]
TSUrushyards=[a.replace("\xa0","") for a in TSUrushyards]
TSUrushyards=pd.to_numeric(TSUrushyards)
TSUrushyards
```

Out[193…
```
array([107, 224, 162, 304, 379, 152, 154, 158, 180,  72, 198], dtype=int64)
```

In [194…
```
#TSU receiving yards
TSUreceiveyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[118:360:2
TSUreceiveyards=[a.replace("\xa0","") for a in TSUreceiveyards]
TSUreceiveyards=pd.to_numeric(TSUreceiveyards)
TSUreceiveyards
```

Out[194…
```
array([127, 185, 225, 109, 142, 147,  65, 203, 277,  51, 289], dtype=int64)
```

In [195…
```
# TSU kick return yards
TSUkreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[126:360:2
TSUkreturnyards=[a.replace("\xa0","") for a in TSUkreturnyards]
```

```
TSUkreturnyards=pd.to_numeric(TSUkreturnyards)
TSUkreturnyards
```

Out[195…
```
array([127, 133, 134,  33,  20,  90,  61,  56,  29, 116, 134], dtype=int64)
```

In [196…
```
#TSU punt return yards
TSUpreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[130:383:2
TSUpreturnyards=[a.replace("\xa0","") for a in TSUpreturnyards]
TSUpreturnyards=pd.to_numeric(TSUpreturnyards)
TSUpreturnyards
```

Out[196…
```
array([ 36,  28,  25, 142,  13,   0, -19,   1,  21,   2,   1], dtype=int64)
```

In [197…
```
#TSU total tackles
TSUtackles=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[414:644:22]
TSUtackles=[a.replace("\xa0","") for a in TSUtackles]
TSUtackles=pd.to_numeric(TSUtackles)
TSUtackles
```

Out[197…
```
array([64, 60, 57, 58, 66, 86, 66, 67, 66, 55, 65], dtype=int64)
```

In [198…
```
#TSU tackle yards
TSUtackleyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[416:646:22]
TSUtackleyd=[a.replace("\xa0","") for a in TSUtackleyd]
TSUtackleyd=pd.to_numeric(TSUtackleyd)
TSUtackleyd
```

Out[198…
```
array([42, 26, 24, 60, 34, 17, 11, 24, 19, 12, 30], dtype=int64)
```

In [199…
```
#TSU sacks
TSUsacks=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[417:646:22]
TSUsacks=[a.replace("\xa0","") for a in TSUsacks]
TSUsacks=pd.to_numeric(TSUsacks)
TSUsacks
```

Out[199…
```
array([7., 0., 2., 8., 5., 1., 0., 1., 1., 1., 1.])
```

In [200…
```
#TSU sack yards
TSUsackyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[418:646:22]
TSUsackyd=[a.replace("\xa0","") for a in TSUsackyd]
TSUsackyd=pd.to_numeric(TSUsackyd)
TSUsackyd
```

Out[200…
```
array([40,  0, 13, 48, 31,  9,  0,  4,  7,  7,  4], dtype=int64)
```

In [201…
```
#TSU punts
TSUpunt=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[698:900:19]
TSUpunt=[a.replace("\xa0","") for a in TSUpunt]
TSUpunt=pd.to_numeric(TSUpunt)
TSUpunt
```

Out[201…
```
array([6, 6, 3, 5, 4, 5, 8, 3, 7, 9, 5], dtype=int64)
```

In [202…
```
#create data frame
list_of_dicts={'date':date,'attendance':attendance,'TSUrushyards':TSUrushyards, 'TSUreceiv
```

```
    'TSUkreturnyards':TSUkreturnyards,'TSUpreturnyards':TSUpreturnyards,'TSUtackles':TSUt
    'TSUsacks':TSUsacks,'TSUsackyd':TSUsackyd,'TSUpunt':TSUpunt}
df2010=pd.DataFrame(list_of_dicts)
df2010.head()
```

Out[202…

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|
| **0** | Sep 04 2010 | 22607 | 107 | 127 | 127 | 36 | 64 | 42 | |
| **1** | Sep 11 2010 | 44688 | 224 | 185 | 133 | 28 | 60 | 26 | |
| **2** | Sep 18 2010 | 8502 | 162 | 225 | 134 | 25 | 57 | 24 | |
| **3** | Sep 25 2010 | 54202 | 304 | 109 | 33 | 142 | 58 | 60 | |
| **4** | Oct 02 2010 | 35217 | 379 | 142 | 20 | 13 | 66 | 34 | |

In [203…

```
#creating date column as a datetime column
df2010['date']=pd.to_datetime(df2010['date'],format='%b %d %Y')
#creating year column
df2010['year']=df2010.date.dt.year
df2010.columns
```

Out[203…

```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [204…

```
#info for data frame
df2010.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 11 entries, 0 to 10
Data columns (total 12 columns):
 #   Column           Non-Null Count  Dtype         
---  ------           --------------  -----         
 0   date             11 non-null     datetime64[ns]
 1   attendance       11 non-null     int64         
 2   TSUrushyards     11 non-null     int64         
 3   TSUreceiveyards  11 non-null     int64         
 4   TSUkreturnyards  11 non-null     int64         
 5   TSUpreturnyards  11 non-null     int64         
 6   TSUtackles       11 non-null     int64         
 7   TSUtackleyd      11 non-null     int64         
 8   TSUsacks         11 non-null     float64       
 9   TSUsackyd        11 non-null     int64         
 10  TSUpunt          11 non-null     int64         
 11  year             11 non-null     int64         
dtypes: datetime64[ns](1), float64(1), int64(10)
memory usage: 1.2 KB
```

In [205…

```
#sort data
df2010=df2010.sort_values('date',ignore_index=True)
```

```
df2010['date'].head()
```

Out[205…
```
0   2010-09-04
1   2010-09-11
2   2010-09-18
3   2010-09-25
4   2010-10-02
Name: date, dtype: datetime64[ns]
```

In [206…
```
#save data
df2010.to_csv('2010.csv',encoding='utf-8')
```

In [207…
```
#2011 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/CA83544
mytree = html.fromstring(page.content)
```

In [208…
```
#date data
date = mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[1:110:10]
date=[a.replace("\xa0","") for a in date]
date=[a.replace(",","") for a in date]
date=[a.replace(".","") for a in date]
print(date)
```

```
['Sep 03 2011', 'Sep 10 2011', 'Sep 17 2011', 'Sep 24 2011', 'Oct 01 2011', 'Oct 08 2011',
'Oct 15 2011', 'Oct 22 2011', 'Nov 05 2011', 'Nov 12 2011', 'Nov 19 2011']
```

In [209…
```
#attendance data
attendance=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[9:110:10]
attendance=[a.replace("\xa0","") for a in attendance]
attendance=[a.strip() for a in attendance]
attendance=pd.to_numeric(attendance)
attendance
```

Out[209…
```
array([25209, 43532, 10031, 33487,  8614,  6234,  8676, 10800,  6774,
       19537,  6137], dtype=int64)
```

In [210…
```
#TSU rushing yards
TSUrushyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[114:357:23]
TSUrushyards=[a.replace("\xa0","") for a in TSUrushyards]
TSUrushyards=pd.to_numeric(TSUrushyards)
TSUrushyards
```

Out[210…
```
array([342,  78, 168, 188, 162, 258, 166,  65, 200, 253,  87], dtype=int64)
```

In [211…
```
#TSU receiving yards
TSUreceiveyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[118:360:2
TSUreceiveyards=[a.replace("\xa0","") for a in TSUreceiveyards]
TSUreceiveyards=pd.to_numeric(TSUreceiveyards)
TSUreceiveyards
```

Out[211…
```
array([170, 226, 207, 206, 304, 278, 232, 343, 118, 263, 262], dtype=int64)
```

In [212…
```
#TSU kick return yards
TSUkreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[126:360:2
TSUkreturnyards=[a.replace("\xa0","") for a in TSUkreturnyards]
TSUkreturnyards=pd.to_numeric(TSUkreturnyards)
TSUkreturnyards
```

Out[212…
```
array([ 48, 146, 197,  97, 158,  15, 118, 112,  64,  46, 129], dtype=int64)
```

In [213…
```
#TSU punt return yards
TSUpreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[130:383:2
TSUpreturnyards=[a.replace("\xa0","") for a in TSUpreturnyards]
TSUpreturnyards=pd.to_numeric(TSUpreturnyards)
TSUpreturnyards
```

Out[213…
```
array([  0,   5,  17,   0,   0, 115,   5,  17,   0,   5,  16], dtype=int64)
```

In [214…
```
#TSU total tackles
TSUtackles=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[414:644:22]
TSUtackles=[a.replace("\xa0","") for a in TSUtackles]
TSUtackles=pd.to_numeric(TSUtackles)
TSUtackles
```

Out[214…
```
array([45, 64, 94, 88, 61, 54, 88, 80, 59, 53, 50], dtype=int64)
```

In [215…
```
#TSU tackle yards
TSUtackleyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[416:646:22]
TSUtackleyd=[a.replace("\xa0","") for a in TSUtackleyd]
TSUtackleyd=pd.to_numeric(TSUtackleyd)
TSUtackleyd
```

Out[215…
```
array([41, 45, 32,  0, 20, 17, 38, 20, 23, 14, 18], dtype=int64)
```

In [216…
```
#TSU sacks
TSUsacks=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[417:646:22]
TSUsacks=[a.replace("\xa0","") for a in TSUsacks]
TSUsacks=pd.to_numeric(TSUsacks)
TSUsacks
```

Out[216…
```
array([5., 3., 3., 0., 2., 1., 5., 3., 3., 1., 2.])
```

In [217…
```
#TSU sack yards
TSUsackyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[418:646:22]
TSUsackyd=[a.replace("\xa0","") for a in TSUsackyd]
TSUsackyd=pd.to_numeric(TSUsackyd)
TSUsackyd
```

Out[217…
```
array([30, 31, 21,  0, 10,  9, 32, 14, 17,  1, 10], dtype=int64)
```

In [218…
```
#TSU punts
TSUpunt=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[698:900:19]
TSUpunt=[a.replace("\xa0","") for a in TSUpunt]
TSUpunt=pd.to_numeric(TSUpunt)
TSUpunt
```

Out[218…
```
array([3, 6, 9, 8, 2, 2, 5, 4, 7, 5, 5], dtype=int64)
```

In [219…
```
#create data frame
list_of_dicts={'date':date,'attendance':attendance,'TSUrushyards':TSUrushyards, 'TSUreceiv
     'TSUkreturnyards':TSUkreturnyards,'TSUpreturnyards':TSUpreturnyards,'TSUtackles':TSUt
     'TSUsacks':TSUsacks,'TSUsackyd':TSUsackyd,'TSUpunt':TSUpunt}
```

```
df2011=pd.DataFrame(list_of_dicts)
df2011.head()
```

Out[219…

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|
| **0** | Sep 03 2011 | 25209 | 342 | 170 | 48 | 0 | 45 | 41 | |
| **1** | Sep 10 2011 | 43532 | 78 | 226 | 146 | 5 | 64 | 45 | |
| **2** | Sep 17 2011 | 10031 | 168 | 207 | 197 | 17 | 94 | 32 | |
| **3** | Sep 24 2011 | 33487 | 188 | 206 | 97 | 0 | 88 | 0 | |
| **4** | Oct 01 2011 | 8614 | 162 | 304 | 158 | 0 | 61 | 20 | |

In [220…

```
#creating date column as a datetime column
df2011['date']=pd.to_datetime(df2011['date'],format='%b %d %Y')
#creating year column
df2011['year']=df2011.date.dt.year
df2011.columns
```

Out[220…

```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [221…

```
#info from data frame
df2011.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 11 entries, 0 to 10
Data columns (total 12 columns):
 #   Column           Non-Null Count  Dtype         
---  ------           --------------  -----         
 0   date             11 non-null     datetime64[ns]
 1   attendance       11 non-null     int64         
 2   TSUrushyards     11 non-null     int64         
 3   TSUreceiveyards  11 non-null     int64         
 4   TSUkreturnyards  11 non-null     int64         
 5   TSUpreturnyards  11 non-null     int64         
 6   TSUtackles       11 non-null     int64         
 7   TSUtackleyd      11 non-null     int64         
 8   TSUsacks         11 non-null     float64       
 9   TSUsackyd        11 non-null     int64         
 10  TSUpunt          11 non-null     int64         
 11  year             11 non-null     int64         
dtypes: datetime64[ns](1), float64(1), int64(10)
memory usage: 1.2 KB
```

In [222…

```
#sort data
df2011=df2011.sort_values('date',ignore_index=True)
df2011['date'].head()
```

Out[222…
```
0   2011-09-03
1   2011-09-10
2   2011-09-17
3   2011-09-24
4   2011-10-01
Name: date, dtype: datetime64[ns]
```

In [223…
```
#save data
df2011.to_csv('2011.csv',encoding='utf-8')
```

In [224…
```
#2012 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/BDF8C4F
mytree = html.fromstring(page.content)
```

In [225…
```
#date data
date = mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[1:110:10]
date=[a.replace("\xa0","") for a in date]
date=[a.replace(",","") for a in date]
date=[a.replace(".","") for a in date]
print(date)
```

```
['Sep 01 2012', 'Sep 08 2012', 'Sep 15 2012', 'Sep 22 2012', 'Sep 29 2012', 'Oct 05 2012',
'Oct 13 2012', 'Oct 20 2012', 'Oct 27 2012', 'Nov 03 2012', 'Nov 17 2012']
```

In [226…
```
#attendance data
attendance=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[9:110:10]
attendance=[a.replace("\xa0","") for a in attendance]
attendance=[a.strip() for a in attendance]
attendance=pd.to_numeric(attendance)
attendance
```

Out[226…
```
array([15652, 42257, 14264,  9461, 31765,  9878,  4800, 14867, 11373,
       3112,  6322], dtype=int64)
```

In [227…
```
#TSU rushing yards
TSUrushyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[114:357:23]
TSUrushyards=[a.replace("\xa0","") for a in TSUrushyards]
TSUrushyards=pd.to_numeric(TSUrushyards)
TSUrushyards
```

Out[227…
```
array([138, 235, 112, 200, 201, 139, 306, 184, 158, 138, 122], dtype=int64)
```

In [228…
```
#TSU receiving yards
TSUreceiveyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[118:360:2
TSUreceiveyards=[a.replace("\xa0","") for a in TSUreceiveyards]
TSUreceiveyards=pd.to_numeric(TSUreceiveyards)
TSUreceiveyards
```

Out[228…
```
array([263, 137, 322, 157, 262, 227, 154, 311, 294, 273, 355], dtype=int64)
```

In [229…
```
#get TSU kick return yards
TSUkreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[126:360:2
TSUkreturnyards=[a.replace("\xa0","") for a in TSUkreturnyards]
TSUkreturnyards=pd.to_numeric(TSUkreturnyards)
TSUkreturnyards
```

Out[229…
```
array([ 52,  69,  24,  41,  47,  63,  56,  62,  54, 195, 101], dtype=int64)
```

In [230…
```
#TSU punt return yards
TSUpreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[130:383:2
TSUpreturnyards=[a.replace("\xa0","") for a in TSUpreturnyards]
TSUpreturnyards=pd.to_numeric(TSUpreturnyards)
TSUpreturnyards
```

Out[230…
```
array([ 8, 42,  7, 37,  4,  0,  6,  0, 44,  0,  0], dtype=int64)
```

In [231…
```
#TSU total tackles
TSUtackles=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[414:644:22]
TSUtackles=[a.replace("\xa0","") for a in TSUtackles]
TSUtackles=pd.to_numeric(TSUtackles)
TSUtackles
```

Out[231…
```
array([49, 66, 55, 84, 62, 67, 74, 62, 48, 72, 79], dtype=int64)
```

In [232…
```
#TSU tackle yards
TSUtackleyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[416:646:22]
TSUtackleyd=[a.replace("\xa0","") for a in TSUtackleyd]
TSUtackleyd=pd.to_numeric(TSUtackleyd)
TSUtackleyd
```

Out[232…
```
array([28, 21, 13, 52, 40, 11, 21, 15, 13, 11, 24], dtype=int64)
```

In [233…
```
#TSU sacks
TSUsacks=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[417:646:22]
TSUsacks=[a.replace("\xa0","") for a in TSUsacks]
TSUsacks=pd.to_numeric(TSUsacks)
TSUsacks
```

Out[233…
```
array([1, 3, 1, 4, 3, 3, 2, 1, 1, 1, 1], dtype=int64)
```

In [234…
```
#TSU sack yards
TSUsackyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[418:646:22]
TSUsackyd=[a.replace("\xa0","") for a in TSUsackyd]
TSUsackyd=pd.to_numeric(TSUsackyd)
TSUsackyd
```

Out[234…
```
array([ 5, 20,  9, 30, 29,  6, 13,  9,  8,  7,  6], dtype=int64)
```

In [235…
```
#TSU punts
TSUpunt=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[698:900:19]
TSUpunt=[a.replace("\xa0","") for a in TSUpunt]
TSUpunt=pd.to_numeric(TSUpunt)
TSUpunt
```

Out[235…
```
array([5, 8, 3, 7, 4, 5, 1, 5, 4, 6, 5], dtype=int64)
```

In [236…
```
#create data frame
list_of_dicts={'date':date,'attendance':attendance,'TSUrushyards':TSUrushyards, 'TSUreceiv
     'TSUkreturnyards':TSUkreturnyards,'TSUpreturnyards':TSUpreturnyards,'TSUtackles':TSUt
     'TSUsacks':TSUsacks,'TSUsackyd':TSUsackyd,'TSUpunt':TSUpunt}
df2012=pd.DataFrame(list_of_dicts)
df2012.head()
```

Out[236…

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|
| **0** | Sep 01 2012 | 15652 | 138 | 263 | 52 | 8 | 49 | 28 | |
| **1** | Sep 08 2012 | 42257 | 235 | 137 | 69 | 42 | 66 | 21 | |
| **2** | Sep 15 2012 | 14264 | 112 | 322 | 24 | 7 | 55 | 13 | |
| **3** | Sep 22 2012 | 9461 | 200 | 157 | 41 | 37 | 84 | 52 | |
| **4** | Sep 29 2012 | 31765 | 201 | 262 | 47 | 4 | 62 | 40 | |

In [237…

```
#creating date column as a datetime column
df2012['date']=pd.to_datetime(df2012['date'],format='%b %d %Y')
#creating year column
df2012['year']=df2012.date.dt.year
df2012.columns
```

Out[237…

```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [238…

```
#info for data frame
df2012.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 11 entries, 0 to 10
Data columns (total 12 columns):
 #   Column           Non-Null Count  Dtype         
---  ------           --------------  -----         
 0   date             11 non-null     datetime64[ns]
 1   attendance       11 non-null     int64         
 2   TSUrushyards     11 non-null     int64         
 3   TSUreceiveyards  11 non-null     int64         
 4   TSUkreturnyards  11 non-null     int64         
 5   TSUpreturnyards  11 non-null     int64         
 6   TSUtackles       11 non-null     int64         
 7   TSUtackleyd      11 non-null     int64         
 8   TSUsacks         11 non-null     int64         
 9   TSUsackyd        11 non-null     int64         
 10  TSUpunt          11 non-null     int64         
 11  year             11 non-null     int64         
dtypes: datetime64[ns](1), int64(11)
memory usage: 1.2 KB
```

In [239…

```
#sort data
df2012=df2012.sort_values('date',ignore_index=True)
df2012['date'].head()
```

Out[239…

```
0   2012-09-01
1   2012-09-08
2   2012-09-15
```

```
3   2012-09-22
4   2012-09-29
Name: date, dtype: datetime64[ns]
```

In [240…
```
#save data
df2012.to_csv('2012.csv',encoding='utf-8')
```

In [241…
```
#2013 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/E394BBE
mytree = html.fromstring(page.content)
```

In [242…
```
#date data
date = mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[1:140:10]
date=[a.replace("\xa0","") for a in date]
date=[a.replace(",","") for a in date]
date=[a.replace(".","") for a in date]
print(date)
```

```
['Sep 01 2013', 'Sep 07 2013', 'Sep 14 2013', 'Sep 21 2013', 'Sep 28 2013', 'Oct 05 2013',
'Oct 12 2013', 'Oct 19 2013', 'Oct 26 2013', 'Nov 02 2013', 'Nov 16 2013', 'Nov 09 2013',
'Nov 30 2013', 'Dec 07 2013']
```

In [243…
```
#attendance data
attendance=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[9:140:10]
attendance=[a.replace("\xa0","") for a in attendance]
attendance=[a.strip() for a in attendance]
attendance=pd.to_numeric(attendance)
attendance
```

Out[243…
```
array([16108, 14237, 42400, 10044, 22000,  7374, 19092,  4166, 22157,
        5700,  6412,  5258,  1928,  4825], dtype=int64)
```

In [244…
```
#TSU rushing yards
TSUrushyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[144:446:23]
TSUrushyards=[a.replace("\xa0","") for a in TSUrushyards]
TSUrushyards=pd.to_numeric(TSUrushyards)
TSUrushyards
```

Out[244…
```
array([116, 268, 174,  95, 311, 264, 215,  69, 126,  71, 241, 146, 152,
        45], dtype=int64)
```

In [245…
```
#TSU receiving yards
TSUreceiveyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[148:466:2
TSUreceiveyards=[a.replace("\xa0","") for a in TSUreceiveyards]
TSUreceiveyards=pd.to_numeric(TSUreceiveyards)
TSUreceiveyards
```

Out[245…
```
array([132, 131, 111, 343, 228, 280, 133, 170, 212, 101,  60, 173, 263,
       242], dtype=int64)
```

In [246…
```
#TSU kick return yards
TSUkreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[156:460:2
TSUkreturnyards=[a.replace("\xa0","") for a in TSUkreturnyards]
TSUkreturnyards=pd.to_numeric(TSUkreturnyards)
TSUkreturnyards
```

Out[246…
```
array([ 84, 111,  64,  63,  46,  24,  48,  64,  19,  96,  45,   8,  -9,
        52], dtype=int64)
```

In [247…
```
#TSU punt return yards
TSUpreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[160:460:2
TSUpreturnyards=[a.replace("\xa0","") for a in TSUpreturnyards]
TSUpreturnyards=pd.to_numeric(TSUpreturnyards)
TSUpreturnyards
```

Out[247…
```
array([51, 17, 11, 23, 75,  7, 46,  0, 56, -1, 19, 13, -3,  2],
      dtype=int64)
```

In [248…
```
#TSU total tackles
TSUtackles=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[513:800:22]
TSUtackles=[a.replace("\xa0","") for a in TSUtackles]
TSUtackles=pd.to_numeric(TSUtackles)
TSUtackles
```

Out[248…
```
array([62, 41, 69, 76, 70, 37, 70, 78, 70, 63, 54, 60, 47, 73],
      dtype=int64)
```

In [249…
```
#TSU tackle yards
TSUtackleyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[515:822:22]
TSUtackleyd=[a.replace("\xa0","") for a in TSUtackleyd]
TSUtackleyd=pd.to_numeric(TSUtackleyd)
TSUtackleyd
```

Out[249…
```
array([ 7, 35, 26, 51, 44, 12, 61, 56, 31,  3, 31, 59, 21, 13],
      dtype=int64)
```

In [250…
```
#TSU sacks
TSUsacks=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[516:822:22]
TSUsacks=[a.replace("\xa0","") for a in TSUsacks]
TSUsacks=pd.to_numeric(TSUsacks)
TSUsacks
```

Out[250…
```
array([1., 3., 2., 3., 3., 1., 5., 5., 3., 0., 3., 5., 2., 1.])
```

In [251…
```
#TSU sack yards
TSUsackyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[517:822:22]
TSUsackyd=[a.replace("\xa0","") for a in TSUsackyd]
TSUsackyd=pd.to_numeric(TSUsackyd)
TSUsackyd
```

Out[251…
```
array([ 4, 18, 13, 28, 17,  8, 18, 35, 27,  0, 20, 37,  7,  5],
      dtype=int64)
```

In [252…
```
#TSU punts
TSUpunt=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[863:1119:19]
TSUpunt=[a.replace("\xa0","") for a in TSUpunt]
TSUpunt=pd.to_numeric(TSUpunt)
TSUpunt
```

Out[252…
```
array([5, 4, 3, 5, 1, 3, 6, 6, 8, 9, 8, 5, 4, 8], dtype=int64)
```

In [253…
```
#create data frame
list_of_dicts={'date':date,'attendance':attendance,'TSUrushyards':TSUrushyards, 'TSUreceiv
     'TSUkreturnyards':TSUkreturnyards,'TSUpreturnyards':TSUpreturnyards,'TSUtackles':TSUt
     'TSUsacks':TSUsacks,'TSUsackyd':TSUsackyd,'TSUpunt':TSUpunt}
df2013=pd.DataFrame(list_of_dicts)
df2013.head()
```

Out[253…

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|
| **0** | Sep 01 2013 | 16108 | 116 | 132 | 84 | 51 | 62 | 7 | |
| **1** | Sep 07 2013 | 14237 | 268 | 131 | 111 | 17 | 41 | 35 | |
| **2** | Sep 14 2013 | 42400 | 174 | 111 | 64 | 11 | 69 | 26 | |
| **3** | Sep 21 2013 | 10044 | 95 | 343 | 63 | 23 | 76 | 51 | |
| **4** | Sep 28 2013 | 22000 | 311 | 228 | 46 | 75 | 70 | 44 | |

In [254…

```
#creating date column as a datetime column
df2013['date']=pd.to_datetime(df2013['date'],format='%b %d %Y')
#creating year column
df2013['year']=df2013.date.dt.year
df2013.columns
```

Out[254…

```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [255…

```
#info on data frame
df2013.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 14 entries, 0 to 13
Data columns (total 12 columns):
 #   Column           Non-Null Count  Dtype         
---  ------           --------------  -----         
 0   date             14 non-null     datetime64[ns]
 1   attendance       14 non-null     int64         
 2   TSUrushyards     14 non-null     int64         
 3   TSUreceiveyards  14 non-null     int64         
 4   TSUkreturnyards  14 non-null     int64         
 5   TSUpreturnyards  14 non-null     int64         
 6   TSUtackles       14 non-null     int64         
 7   TSUtackleyd      14 non-null     int64         
 8   TSUsacks         14 non-null     float64       
 9   TSUsackyd        14 non-null     int64         
 10  TSUpunt          14 non-null     int64         
 11  year             14 non-null     int64         
dtypes: datetime64[ns](1), float64(1), int64(10)
memory usage: 1.4 KB
```

In [256…

```
#sort data
df2013=df2013.sort_values('date',ignore_index=True)
df2013['date'].head()
```

Out[256…

```
0   2013-09-01
1   2013-09-07
2   2013-09-14
```

```
3   2013-09-21
4   2013-09-28
Name: date, dtype: datetime64[ns]
```

In [257…
```
#save data
df2013.to_csv('2013.csv',encoding='utf-8')
```

In [258…
```
#2014 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/26C45AE
mytree = html.fromstring(page.content)
```

In [259…
```
#date data
date = mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[1:120:10]
date=[a.replace("\xa0","") for a in date]
date=[a.replace(",","") for a in date]
date=[a.replace(".","") for a in date]
date=[a.replace('10-04-14    ','Oct 04 2014') for a in date]
print(date)
```

```
['Aug 30 2014', 'Sep 06 2014', 'Sep 13 2014', 'Sep 20 2014', 'Sep 27 2014', 'Oct 04 2014',
'Oct 11 2014', 'Oct 18 2014', 'Oct 25 2014', 'Nov 01 2014', 'Nov 08 2014', 'Nov 22 2014']
```

In [260…
```
#attendance data
attendance=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[9:120:10]
attendance=[a.replace("\xa0","") for a in attendance]
attendance=[a.strip() for a in attendance]
attendance=pd.to_numeric(attendance)
attendance
```

Out[260…
```
array([10541, 15725, 46914,  9217, 29225,  8089,  5849,  6738,  8289,
       5052,  6143,  1962], dtype=int64)
```

In [261…
```
#TSU rushing yards
TSUrushyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[124:400:23]
TSUrushyards=[a.replace("\xa0","") for a in TSUrushyards]
TSUrushyards=pd.to_numeric(TSUrushyards)
TSUrushyards
```

Out[261…
```
array([439,  92, 137,  92, 125, 143,  43,  53, 107, 105, 111, 114],
      dtype=int64)
```

In [262…
```
#TSU receiving yards
TSUreceiveyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[128:400:2
TSUreceiveyards=[a.replace("\xa0","") for a in TSUreceiveyards]
TSUreceiveyards=pd.to_numeric(TSUreceiveyards)
TSUreceiveyards
```

Out[262…
```
array([ 71, 340, 187, 113, 153, 362, 364, 314, 180, 326, 395, 463],
      dtype=int64)
```

In [263…
```
#TSU kick return yards
TSUkreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[136:400:2
TSUkreturnyards=[a.replace("\xa0","") for a in TSUkreturnyards]
TSUkreturnyards=pd.to_numeric(TSUkreturnyards)
TSUkreturnyards
```

Out[263…
```
array([ 77, 111,  29,   0,  24,  53,  63,  32, 136, 198,  58,  48],
      dtype=int64)
```

In [264…
```
#TSU punt return yards
TSUpreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[140:400:2
TSUpreturnyards=[a.replace("\xa0","") for a in TSUpreturnyards]
TSUpreturnyards=pd.to_numeric(TSUpreturnyards)
TSUpreturnyards
```

Out[264…
```
array([57, 22, 40, 15, 56, 24, 12, -1,  1,  0, -2,  0], dtype=int64)
```

In [265…
```
#TSU total tackles
TSUtackles=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[447:723:23]
TSUtackles=[a.replace("\xa0","") for a in TSUtackles]
TSUtackles=pd.to_numeric(TSUtackles)
TSUtackles
```

Out[265…
```
array([53, 89, 54, 48, 64, 81, 75, 73, 54, 84, 85, 81], dtype=int64)
```

In [266…
```
#TSU tackle yards
TSUtackleyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[449:711:23]
TSUtackleyd=[a.replace("\xa0","") for a in TSUtackleyd]
TSUtackleyd=pd.to_numeric(TSUtackleyd)
TSUtackleyd
```

Out[266…
```
array([38, 28, 40, 31, 51,  9, 21, 48, 17, 19, 29, 63], dtype=int64)
```

In [267…
```
#TSU sacks
TSUsacks=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[450:711:23]
TSUsacks=[a.replace("\xa0","") for a in TSUsacks]
TSUsacks=pd.to_numeric(TSUsacks)
TSUsacks
```

Out[267…
```
array([2., 3., 7., 6., 7., 0., 2., 3., 1., 2., 2., 8.])
```

In [268…
```
#TSU sack yards
TSUsackyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[451:711:23]
TSUsackyd=[a.replace("\xa0","") for a in TSUsackyd]
TSUsackyd=pd.to_numeric(TSUsackyd)
TSUsackyd
```

Out[268…
```
array([13, 13, 33, 28, 44,  0, 13, 22,  9,  4, 15, 51], dtype=int64)
```

In [269…
```
#TSU punts
TSUpunt=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[767:981:19]
TSUpunt=[a.replace("\xa0","") for a in TSUpunt]
TSUpunt=pd.to_numeric(TSUpunt)
TSUpunt
```

Out[269…
```
array([1, 8, 8, 9, 7, 5, 3, 8, 6, 5, 0, 6], dtype=int64)
```

In [270…
```
#create data frame
list_of_dicts={'date':date,'attendance':attendance,'TSUrushyards':TSUrushyards, 'TSUreceiv
     'TSUkreturnyards':TSUkreturnyards,'TSUpreturnyards':TSUpreturnyards,'TSUtackles':TSUt
     'TSUsacks':TSUsacks,'TSUsackyd':TSUsackyd,'TSUpunt':TSUpunt}
df2014=pd.DataFrame(list_of_dicts)
df2014.head()
```

Out[270…

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|
| **0** | Aug 30 2014 | 10541 | 439 | 71 | 77 | 57 | 53 | 38 | |
| **1** | Sep 06 2014 | 15725 | 92 | 340 | 111 | 22 | 89 | 28 | |
| **2** | Sep 13 2014 | 46914 | 137 | 187 | 29 | 40 | 54 | 40 | |
| **3** | Sep 20 2014 | 9217 | 92 | 113 | 0 | 15 | 48 | 31 | |
| **4** | Sep 27 2014 | 29225 | 125 | 153 | 24 | 56 | 64 | 51 | |

In [271…

```
#creating date column as a datetime column
df2014['date']=pd.to_datetime(df2014['date'],format='%b %d %Y')
#creating year column
df2014['year']=df2014.date.dt.year
df2014.columns
```

Out[271…

```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [272…

```
#info on data frame
df2014.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 12 entries, 0 to 11
Data columns (total 12 columns):
 #   Column           Non-Null Count  Dtype         
---  ------           --------------  -----         
 0   date             12 non-null     datetime64[ns]
 1   attendance       12 non-null     int64         
 2   TSUrushyards     12 non-null     int64         
 3   TSUreceiveyards  12 non-null     int64         
 4   TSUkreturnyards  12 non-null     int64         
 5   TSUpreturnyards  12 non-null     int64         
 6   TSUtackles       12 non-null     int64         
 7   TSUtackleyd      12 non-null     int64         
 8   TSUsacks         12 non-null     float64       
 9   TSUsackyd        12 non-null     int64         
 10  TSUpunt          12 non-null     int64         
 11  year             12 non-null     int64         
dtypes: datetime64[ns](1), float64(1), int64(10)
memory usage: 1.2 KB
```

In [273…

```
#sort data
df2014=df2014.sort_values('date',ignore_index=True)
df2014['date'].head()
```

Out[273…

```
0   2014-08-30
1   2014-09-06
2   2014-09-13
```

```
3   2014-09-20
4   2014-09-27
Name: date, dtype: datetime64[ns]
```

In [274…
```
#save data
df2014.to_csv('2014.csv',encoding='utf-8')
```

In [275…
```
#2015 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/B871396
mytree = html.fromstring(page.content)
```

In [276…
```
#date data
date = mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[1:100:10]
date=[a.replace("\xa0","") for a in date]
date=[a.replace(",","") for a in date]
date=[a.replace(".","") for a in date]
print(date)
```

```
['Sep 06 2015', 'Sep 12 2015', 'Sep 19 2015', 'Sep 26 2015', 'Oct 10 2015', 'Oct 17 2015',
'Oct 24 2015', 'Oct 31 2015', 'Nov 07 2015', 'Nov 21 2015']
```

In [277…
```
#attendance data
attendance=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[9:100:10]
attendance=[a.replace("\xa0","") for a in attendance]
attendance=[a.strip() for a in attendance]
attendance=pd.to_numeric(attendance)
attendance
```

Out[277…
```
array([22455, 48385, 23413, 18020,  7123, 22144,  9400,  5985,  7897,
       3924], dtype=int64)
```

In [278…
```
#TSU rushing yards
TSUrushyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[104:320:23]
TSUrushyards=[a.replace("\xa0","") for a in TSUrushyards]
TSUrushyards=pd.to_numeric(TSUrushyards)
TSUrushyards
```

Out[278…
```
array([142, 110,  24, 169,  85, 162, 129, 165, 125, 123], dtype=int64)
```

In [279…
```
#TSU receiving yards
TSUreceiveyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[108:320:2
TSUreceiveyards=[a.replace("\xa0","") for a in TSUreceiveyards]
TSUreceiveyards=pd.to_numeric(TSUreceiveyards)
TSUreceiveyards
```

Out[279…
```
array([188, 304, 184, 238, 205, 125, 222,  76, 329, 221], dtype=int64)
```

In [280…
```
#TSU kick return yards
TSUkreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[116:340:2
TSUkreturnyards=[a.replace("\xa0","") for a in TSUkreturnyards]
TSUkreturnyards=pd.to_numeric(TSUkreturnyards)
TSUkreturnyards
```

Out[280…
```
array([ 58, 152, 102,  46,  40,  22,   4,  46,  86,  61], dtype=int64)
```

In [281…
```
#TSU punt return yards
```

```
TSUpreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[120:340:2
TSUpreturnyards=[a.replace("\xa0","") for a in TSUpreturnyards]
TSUpreturnyards=pd.to_numeric(TSUpreturnyards)
TSUpreturnyards
```

Out[281…
```
array([38, 48,  0, 15,  4, 22, 11, -2,  3,  9], dtype=int64)
```

In [282…
```
#TSU total tackles
TSUtackles=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[381:600:23]
TSUtackles=[a.replace("\xa0","") for a in TSUtackles]
TSUtackles=pd.to_numeric(TSUtackles)
TSUtackles
```

Out[282…
```
array([47, 83, 83, 68, 71, 60, 65, 62, 92, 53], dtype=int64)
```

In [283…
```
#TSU tackle yards
TSUtackleyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[383:600:23]
TSUtackleyd=[a.replace("\xa0","") for a in TSUtackleyd]
TSUtackleyd=pd.to_numeric(TSUtackleyd)
TSUtackleyd
```

Out[283…
```
array([21, 38,  4, 44,  7, 12, 12,  7, 69, 28], dtype=int64)
```

In [284…
```
#TSU sacks
TSUsacks=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[384:600:23]
TSUsacks=[a.replace("\xa0","") for a in TSUsacks]
TSUsacks=pd.to_numeric(TSUsacks)
TSUsacks
```

Out[284…
```
array([1., 5., 0., 4., 0., 0., 0., 0., 8., 3.])
```

In [285…
```
#TSU sack yards
TSUsackyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[385:600:23]
TSUsackyd=[a.replace("\xa0","") for a in TSUsackyd]
TSUsackyd=pd.to_numeric(TSUsackyd)
TSUsackyd
```

Out[285…
```
array([12, 31,  0, 22,  0,  0,  0,  0, 55, 25], dtype=int64)
```

In [286…
```
#TSU punts
TSUpunt=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[655:838:19]
TSUpunt=[a.replace("\xa0","") for a in TSUpunt]
TSUpunt=pd.to_numeric(TSUpunt)
TSUpunt
```

Out[286…
```
array([5, 5, 7, 8, 6, 7, 5, 7, 6, 5], dtype=int64)
```

In [287…
```
#create data frame
list_of_dicts={'date':date,'attendance':attendance,'TSUrushyards':TSUrushyards, 'TSUreceiv
     'TSUkreturnyards':TSUkreturnyards,'TSUpreturnyards':TSUpreturnyards,'TSUtackles':TSUt
     'TSUsacks':TSUsacks,'TSUsackyd':TSUsackyd,'TSUpunt':TSUpunt}
df2015=pd.DataFrame(list_of_dicts)
df2015.head()
```

Out[287…

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|
| **0** | Sep 06 2015 | 22455 | 142 | 188 | 58 | 38 | 47 | 21 | |
| **1** | Sep 12 2015 | 48385 | 110 | 304 | 152 | 48 | 83 | 38 | |
| **2** | Sep 19 2015 | 23413 | 24 | 184 | 102 | 0 | 83 | 4 | |
| **3** | Sep 26 2015 | 18020 | 169 | 238 | 46 | 15 | 68 | 44 | |
| **4** | Oct 10 2015 | 7123 | 85 | 205 | 40 | 4 | 71 | 7 | |

In [288…

```
#creating date column as a datetime column
df2015['date']=pd.to_datetime(df2015['date'],format='%b %d %Y')
#creating year column
df2015['year']=df2015.date.dt.year
df2015.columns
```

Out[288…

```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [289…

```
#info on data frame
df2015.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 10 entries, 0 to 9
Data columns (total 12 columns):
 #   Column           Non-Null Count  Dtype         
---  ------           --------------  -----         
 0   date             10 non-null     datetime64[ns]
 1   attendance       10 non-null     int64         
 2   TSUrushyards     10 non-null     int64         
 3   TSUreceiveyards  10 non-null     int64         
 4   TSUkreturnyards  10 non-null     int64         
 5   TSUpreturnyards  10 non-null     int64         
 6   TSUtackles       10 non-null     int64         
 7   TSUtackleyd      10 non-null     int64         
 8   TSUsacks         10 non-null     float64       
 9   TSUsackyd        10 non-null     int64         
 10  TSUpunt          10 non-null     int64         
 11  year             10 non-null     int64         
dtypes: datetime64[ns](1), float64(1), int64(10)
memory usage: 1.1 KB
```

In [290…

```
#sort data
df2015=df2015.sort_values('date',ignore_index=True)
df2015['date'].head()
```

Out[290…

```
0   2015-09-06
1   2015-09-12
2   2015-09-19
```

```
3   2015-09-26
4   2015-10-10
Name: date, dtype: datetime64[ns]
```

In [291…
```
#save data
df2015.to_csv('2015.csv',encoding='utf-8')
```

In [292…
```
#2016 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/F8A9B1
mytree = html.fromstring(page.content)
```

In [293…
```
#date data
date = mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[1:110:10]
date=[a.replace("\xa0","") for a in date]
date=[a.replace(",","") for a in date]
date=[a.replace(".","") for a in date]
date=[a.replace( '11-19-16    ','Nov 19 2016') for a in date]
print(date)
```

```
['Sep 03 2016', 'Sep 10 2016', 'Sep 17 2016', 'Oct 01 2016', 'Oct 08 2016', 'Oct 15 2016',
'Oct 22 2016', 'Oct 29 2016', 'Nov 05 2016', 'Nov 12 2016', 'Nov 19 2016']
```

In [294…
```
#attendance data
attendance=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[9:110:10]
attendance=[a.replace("\xa0","") for a in attendance]
attendance=[a.strip() for a in attendance]
attendance=pd.to_numeric(attendance)
attendance
```

Out[294…
```
array([15078, 46263,  9385, 10001,  4319, 21053, 31084,  8605,  6041,
        8981,  3117], dtype=int64)
```

In [295…
```
#TSU rushing yards
TSUrushyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[114:346:23]
TSUrushyards=[a.replace("\xa0","") for a in TSUrushyards]
TSUrushyards=pd.to_numeric(TSUrushyards)
TSUrushyards
```

Out[295…
```
array([202, 121, 210, 141,  76, 200, 125, 226, 246,  93, 196], dtype=int64)
```

In [296…
```
#TSU receiving yards
TSUreceiveyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[118:369:2
TSUreceiveyards=[a.replace("\xa0","") for a in TSUreceiveyards]
TSUreceiveyards=pd.to_numeric(TSUreceiveyards)
TSUreceiveyards
```

Out[296…
```
array([259, 273, 184, 223, 303, 181, 285, 329, 212, 202, 279], dtype=int64)
```

In [297…
```
#TSU kick return yards
TSUkreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[126:363:2
TSUkreturnyards=[a.replace("\xa0","") for a in TSUkreturnyards]
TSUkreturnyards=pd.to_numeric(TSUkreturnyards)
TSUkreturnyards
```

Out[297…
```
array([ 29,  96, 122,  80, 113,  78,  59, 142,  86,  93,  93], dtype=int64)
```

In [298…

```
#TSU punt return yards
TSUpreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[130:363:2
TSUpreturnyards=[a.replace("\xa0","") for a in TSUpreturnyards]
TSUpreturnyards=pd.to_numeric(TSUpreturnyards)
TSUpreturnyards
```

Out[298…
```
array([64, 11, 23,  0,  0,  0,  0, 10, 14, 17, 17], dtype=int64)
```

In [299…
```
#TSU total tackles
TSUtackles=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[414:646:23]
TSUtackles=[a.replace("\xa0","") for a in TSUtackles]
TSUtackles=pd.to_numeric(TSUtackles)
TSUtackles
```

Out[299…
```
array([52, 61, 52, 63, 75, 74, 65, 74, 90, 53, 69], dtype=int64)
```

In [300…
```
#TSU tackle yards
TSUtackleyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[416:660:23]
TSUtackleyd=[a.replace("\xa0","") for a in TSUtackleyd]
TSUtackleyd=pd.to_numeric(TSUtackleyd)
TSUtackleyd
```

Out[300…
```
array([39, 40, 17, 28,  6, 14,  6, 20, 24,  2, 36], dtype=int64)
```

In [301…
```
#TSU sacks
TSUsacks=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[417:660:23]
TSUsacks=[a.replace("\xa0","") for a in TSUsacks]
TSUsacks=pd.to_numeric(TSUsacks)
TSUsacks
```

Out[301…
```
array([5., 3., 1., 2., 1., 0., 1., 2., 2., 1., 3.])
```

In [302…
```
#TSU sack yards
TSUsackyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[418:660:23]
TSUsackyd=[a.replace("\xa0","") for a in TSUsackyd]
TSUsackyd=pd.to_numeric(TSUsackyd)
TSUsackyd
```

Out[302…
```
array([31, 21,  1, 12,  3,  0,  5, 14, 13,  0, 26], dtype=int64)
```

In [303…
```
#TSU punts
TSUpunt=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[711:919:19]
TSUpunt=[a.replace("\xa0","") for a in TSUpunt]
TSUpunt=pd.to_numeric(TSUpunt)
TSUpunt
```

Out[303…
```
array([3, 6, 5, 1, 5, 3, 3, 2, 5, 3, 3], dtype=int64)
```

In [304…
```
#create data frame
list_of_dicts={'date':date,'attendance':attendance,'TSUrushyards':TSUrushyards, 'TSUreceiv
     'TSUkreturnyards':TSUkreturnyards,'TSUpreturnyards':TSUpreturnyards,'TSUtackles':TSUt
     'TSUsacks':TSUsacks,'TSUsackyd':TSUsackyd,'TSUpunt':TSUpunt}
df2016=pd.DataFrame(list_of_dicts)
df2016.head()
```

Out[304…

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|
| **0** | Sep 03 2016 | 15078 | 202 | 259 | 29 | 64 | 52 | 39 | |
| **1** | Sep 10 2016 | 46263 | 121 | 273 | 96 | 11 | 61 | 40 | |
| **2** | Sep 17 2016 | 9385 | 210 | 184 | 122 | 23 | 52 | 17 | |
| **3** | Oct 01 2016 | 10001 | 141 | 223 | 80 | 0 | 63 | 28 | |
| **4** | Oct 08 2016 | 4319 | 76 | 303 | 113 | 0 | 75 | 6 | |

In [305…

```
#creating date column as a datetime column
df2016['date']=pd.to_datetime(df2016['date'],format='%b %d %Y')
#creating year column
df2016['year']=df2016.date.dt.year
df2016.columns
```

Out[305…

```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [306…

```
#info on data frame
df2016.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 11 entries, 0 to 10
Data columns (total 12 columns):
 #   Column           Non-Null Count  Dtype         
---  ------           --------------  -----         
 0   date             11 non-null     datetime64[ns]
 1   attendance       11 non-null     int64         
 2   TSUrushyards     11 non-null     int64         
 3   TSUreceiveyards  11 non-null     int64         
 4   TSUkreturnyards  11 non-null     int64         
 5   TSUpreturnyards  11 non-null     int64         
 6   TSUtackles       11 non-null     int64         
 7   TSUtackleyd      11 non-null     int64         
 8   TSUsacks         11 non-null     float64       
 9   TSUsackyd        11 non-null     int64         
 10  TSUpunt          11 non-null     int64         
 11  year             11 non-null     int64         
dtypes: datetime64[ns](1), float64(1), int64(10)
memory usage: 1.2 KB
```

In [307…

```
#sort data
df2016=df2016.sort_values('date',ignore_index=True)
df2016['date'].head()
```

Out[307…

```
0   2016-09-03
1   2016-09-10
2   2016-09-17
```

```
3   2016-10-01
4   2016-10-08
Name: date, dtype: datetime64[ns]
```

In [308…
```
#save data
df2016.to_csv('2016.csv',encoding='utf-8')
```

In [309…
```
#2017 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/1EEBECA
mytree = html.fromstring(page.content)
```

In [310…
```
#date data
date = mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[1:110:10]
date=[a.replace("\xa0","") for a in date]
date=[a.replace(",","") for a in date]
date=[a.replace(".","") for a in date]
print(date)
```

```
['Aug 31 2017', 'Sep 09 2017', 'Sep 17 2017', 'Sep 23 2017', 'Sep 30 2017', 'Oct 07 2017',
'Oct 14 2017', 'Oct 28 2017', 'Nov 04 2017', 'Nov 11 2017', 'Nov 16 2017']
```

In [311…
```
#attendance data
attendance=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[9:110:10]
attendance=[a.replace("\xa0","") for a in attendance]
attendance=[a.strip() for a in attendance]
attendance=pd.to_numeric(attendance)
attendance
```

Out[311…
```
array([24333, 47407, 17102,  6484, 11013,  8410, 21127,  5235,  7487,
       8693, 18782], dtype=int64)
```

In [312…
```
#TSU rushing yards
TSUrushyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[114:346:23]
TSUrushyards=[a.replace("\xa0","") for a in TSUrushyards]
TSUrushyards=pd.to_numeric(TSUrushyards)
TSUrushyards
```

Out[312…
```
array([238, 160, 241, 100,  83, 193, 106,  83, 174, 147,  15], dtype=int64)
```

In [313…
```
#TSU receiving yards
TSUreceiveyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[118:369:2
TSUreceiveyards=[a.replace("\xa0","") for a in TSUreceiveyards]
TSUreceiveyards=pd.to_numeric(TSUreceiveyards)
TSUreceiveyards
```

Out[313…
```
array([145,  78, 273, 159, 195, 106, 208, 331, 274, 196,  82], dtype=int64)
```

In [314…
```
#TSU kick return yards
TSUkreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[126:363:2
TSUkreturnyards=[a.replace("\xa0","") for a in TSUkreturnyards]
TSUkreturnyards=pd.to_numeric(TSUkreturnyards)
TSUkreturnyards
```

Out[314…
```
array([ 44,  49,  63, 160,  48,  25,  64, 135,  18, 103, 140], dtype=int64)
```

In [315…
```
#TSU punt return yards
```

```
TSUpreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[130:363:2
TSUpreturnyards=[a.replace("\xa0","") for a in TSUpreturnyards]
TSUpreturnyards=pd.to_numeric(TSUpreturnyards)
TSUpreturnyards
```

Out[315…
```
array([ 0, 41,  7,  3,  0, -3, 13, -2, 94, 29,  1], dtype=int64)
```

In [316…
```
#TSU total tackles
TSUtackles=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[414:646:23]
TSUtackles=[a.replace("\xa0","") for a in TSUtackles]
TSUtackles=pd.to_numeric(TSUtackles)
TSUtackles
```

Out[316…
```
array([59, 76, 38, 77, 73, 60, 61, 62, 41, 57, 71], dtype=int64)
```

In [317…
```
#TSU tackle yards
TSUtackleyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[416:660:23]
TSUtackleyd=[a.replace("\xa0","") for a in TSUtackleyd]
TSUtackleyd=pd.to_numeric(TSUtackleyd)
TSUtackleyd
```

Out[317…
```
array([26, 21, 19, 21, 14,  8, 11, 28, 45, 14, 18], dtype=int64)
```

In [318…
```
#TSU sacks
TSUsacks=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[417:660:23]
TSUsacks=[a.replace("\xa0","") for a in TSUsacks]
TSUsacks=pd.to_numeric(TSUsacks)
TSUsacks
```

Out[318…
```
array([3., 4., 0., 1., 0., 1., 1., 1., 6., 1., 1.])
```

In [319…
```
#TSU sack yards
TSUsackyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[418:660:23]
TSUsackyd=[a.replace("\xa0","") for a in TSUsackyd]
TSUsackyd=pd.to_numeric(TSUsackyd)
TSUsackyd
```

Out[319…
```
array([17, 18,  0,  5,  0,  1,  0,  9, 34,  5,  9], dtype=int64)
```

In [320…
```
#TSU punts
TSUpunt=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[711:919:19]
TSUpunt=[a.replace("\xa0","") for a in TSUpunt]
TSUpunt=pd.to_numeric(TSUpunt)
TSUpunt
```

Out[320…
```
array([ 5,  6,  2,  6,  6,  5,  4,  4,  3,  4, 11], dtype=int64)
```

In [321…
```
#create data frame
list_of_dicts={'date':date,'attendance':attendance,'TSUrushyards':TSUrushyards, 'TSUreceiv
     'TSUkreturnyards':TSUkreturnyards,'TSUpreturnyards':TSUpreturnyards,'TSUtackles':TSUt
     'TSUsacks':TSUsacks,'TSUsackyd':TSUsackyd,'TSUpunt':TSUpunt}
df2017=pd.DataFrame(list_of_dicts)
df2017.head()
```

Out[321…

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|
| **0** | Aug 31 2017 | 24333 | 238 | 145 | 44 | 0 | 59 | 26 | |
| **1** | Sep 09 2017 | 47407 | 160 | 78 | 49 | 41 | 76 | 21 | |
| **2** | Sep 17 2017 | 17102 | 241 | 273 | 63 | 7 | 38 | 19 | |
| **3** | Sep 23 2017 | 6484 | 100 | 159 | 160 | 3 | 77 | 21 | |
| **4** | Sep 30 2017 | 11013 | 83 | 195 | 48 | 0 | 73 | 14 | |

In [322…

```
#creating date column as a datetime column
df2017['date']=pd.to_datetime(df2017['date'],format='%b %d %Y')
#creating year column
df2017['year']=df2017.date.dt.year
df2017.columns
```

Out[322…

```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [323…

```
#info on data frame
df2017.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 11 entries, 0 to 10
Data columns (total 12 columns):
 #   Column           Non-Null Count  Dtype         
---  ------           --------------  -----         
 0   date             11 non-null     datetime64[ns]
 1   attendance       11 non-null     int64         
 2   TSUrushyards     11 non-null     int64         
 3   TSUreceiveyards  11 non-null     int64         
 4   TSUkreturnyards  11 non-null     int64         
 5   TSUpreturnyards  11 non-null     int64         
 6   TSUtackles       11 non-null     int64         
 7   TSUtackleyd      11 non-null     int64         
 8   TSUsacks         11 non-null     float64       
 9   TSUsackyd        11 non-null     int64         
 10  TSUpunt          11 non-null     int64         
 11  year             11 non-null     int64         
dtypes: datetime64[ns](1), float64(1), int64(10)
memory usage: 1.2 KB
```

In [324…

```
#sort data
df2017=df2017.sort_values('date',ignore_index=True)
df2017['date'].head()
```

Out[324…

```
0   2017-08-31
1   2017-09-09
2   2017-09-17
```

```
3   2017-09-23
4   2017-09-30
Name: date, dtype: datetime64[ns]
```

In [325…
```
#save data
df2017.to_csv('2017.csv',encoding='utf-8')
```

In [326…
```
#2018 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/125803
mytree = html.fromstring(page.content)
```

In [327…
```
#date data
date = mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[1:90:10]
date=[a.replace("\xa0","") for a in date]
date=[a.replace(",","") for a in date]
date=[a.replace(".","") for a in date]
date=[a.strip() for a in date]
date=[a.replace('11-03-18' ,'Nov 03 2018') for a in date]
print(date)
```

```
['Sep 01 2018', 'Sep 22 2018', 'Sep 29 2018', 'Oct 06 2018', 'Oct 13 2018', 'Oct 20 2018',
'Nov 03 2018', 'Nov 10 2018', 'Nov 17 2018']
```

In [328…
```
#attendance data
attendance=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[9:90:10]
attendance=[a.replace("\xa0","") for a in attendance]
attendance=[a.strip() for a in attendance]
attendance=pd.to_numeric(attendance)
attendance
```

Out[328…
```
array([14069,  7670, 27340, 12201,  3318, 17283,  3481,  6718,  3618],
      dtype=int64)
```

In [329…
```
#TSU rushing yards
TSUrushyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[94:300:23]
TSUrushyards=[a.replace("\xa0","") for a in TSUrushyards]
TSUrushyards=pd.to_numeric(TSUrushyards)
TSUrushyards
```

Out[329…
```
array([201, 195, 104, 164,  63, 149, 253, 178,  89], dtype=int64)
```

In [330…
```
#TSU receiving yards
TSUreceiveyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[98:300:2
TSUreceiveyards=[a.replace("\xa0","") for a in TSUreceiveyards]
TSUreceiveyards=pd.to_numeric(TSUreceiveyards)
TSUreceiveyards
```

Out[330…
```
array([324, 349, 269, 325, 307, 323, 255, 164, 170], dtype=int64)
```

In [331…
```
#TSU kick return yards
TSUkreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[106:300:2
TSUkreturnyards=[a.replace("\xa0","") for a in TSUkreturnyards]
TSUkreturnyards=pd.to_numeric(TSUkreturnyards)
TSUkreturnyards
```

Out[331…
```
array([ 49, 150, 105, 134, 140,  48,  78,  36,  63], dtype=int64)
```

In [332…
```
#TSU punt return yards
TSUpreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[110:300:2
TSUpreturnyards=[a.replace("\xa0","") for a in TSUpreturnyards]
TSUpreturnyards=pd.to_numeric(TSUpreturnyards)
TSUpreturnyards
```

Out[332…
```
array([64, 51,  3, 34, -1, 14,  0,  0, 29], dtype=int64)
```

In [333…
```
#TSU total tackles
TSUtackles=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[348:546:23]
TSUtackles=[a.replace("\xa0","") for a in TSUtackles]
TSUtackles=pd.to_numeric(TSUtackles)
TSUtackles
```

Out[333…
```
array([54, 63, 69, 77, 74, 77, 65, 60, 64], dtype=int64)
```

In [334…
```
#TSU tackle yards
TSUtackleyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[350:546:23]
TSUtackleyd=[a.replace("\xa0","") for a in TSUtackleyd]
TSUtackleyd=pd.to_numeric(TSUtackleyd)
TSUtackleyd
```

Out[334…
```
array([43, 30,  5, 19, 19, 28, 28, 27, 38], dtype=int64)
```

In [335…
```
#TSU sacks
TSUsacks=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[351:540:23]
TSUsacks=[a.replace("\xa0","") for a in TSUsacks]
TSUsacks=pd.to_numeric(TSUsacks)
TSUsacks
```

Out[335…
```
array([5., 2., 0., 0., 1., 4., 2., 2., 2.])
```

In [336…
```
#TSU sack yards
TSUsackyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[352:540:23]
TSUsackyd=[a.replace("\xa0","") for a in TSUsackyd]
TSUsackyd=pd.to_numeric(TSUsackyd)
TSUsackyd
```

Out[336…
```
array([35, 15,  0,  0,  7, 21, 14, 19, 18], dtype=int64)
```

In [337…
```
#TSU punts
TSUpunt=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[599:769:19]
TSUpunt=[a.replace("\xa0","") for a in TSUpunt]
TSUpunt=pd.to_numeric(TSUpunt)
TSUpunt
```

Out[337…
```
array([6, 4, 4, 4, 5, 4, 3, 5, 7], dtype=int64)
```

In [338…
```
#create data frame
list_of_dicts={'date':date,'attendance':attendance,'TSUrushyards':TSUrushyards, 'TSUreceiv
     'TSUkreturnyards':TSUkreturnyards,'TSUpreturnyards':TSUpreturnyards,'TSUtackles':TSUt
     'TSUsacks':TSUsacks,'TSUsackyd':TSUsackyd,'TSUpunt':TSUpunt}
df2018=pd.DataFrame(list_of_dicts)
df2018.head()
```

Out[338…

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|
| **0** | Sep 01 2018 | 14069 | 201 | 324 | 49 | 64 | 54 | 43 | |
| **1** | Sep 22 2018 | 7670 | 195 | 349 | 150 | 51 | 63 | 30 | |
| **2** | Sep 29 2018 | 27340 | 104 | 269 | 105 | 3 | 69 | 5 | |
| **3** | Oct 06 2018 | 12201 | 164 | 325 | 134 | 34 | 77 | 19 | |
| **4** | Oct 13 2018 | 3318 | 63 | 307 | 140 | -1 | 74 | 19 | |

In [339…

```
#creating date column as a datetime column
df2018['date']=pd.to_datetime(df2018['date'],format='%b %d %Y')
#creating year column
df2018['year']=df2018.date.dt.year
df2018.columns
```

Out[339…

```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [340…

```
#info from data frame
df2018.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 9 entries, 0 to 8
Data columns (total 12 columns):
 #   Column           Non-Null Count  Dtype         
---  ------           --------------  -----         
 0   date             9 non-null      datetime64[ns]
 1   attendance       9 non-null      int64         
 2   TSUrushyards     9 non-null      int64         
 3   TSUreceiveyards  9 non-null      int64         
 4   TSUkreturnyards  9 non-null      int64         
 5   TSUpreturnyards  9 non-null      int64         
 6   TSUtackles       9 non-null      int64         
 7   TSUtackleyd      9 non-null      int64         
 8   TSUsacks         9 non-null      float64       
 9   TSUsackyd        9 non-null      int64         
 10  TSUpunt          9 non-null      int64         
 11  year             9 non-null      int64         
dtypes: datetime64[ns](1), float64(1), int64(10)
memory usage: 992.0 bytes
```

In [341…

```
#sort values
df2018=df2018.sort_values('date',ignore_index=True)
df2018['date'].head()
```

Out[341…

```
0   2018-09-01
1   2018-09-22
2   2018-09-29
```

```
3   2018-10-06
4   2018-10-13
Name: date, dtype: datetime64[ns]
```

In [342…
```
#save data
df2018.to_csv('2018.csv',encoding='utf-8')
```

In [343…
```
#2019 data
page = requests.get('https://tennstate_ftp.sidearmsports.com/custompages/tsutigers/E018AE
mytree = html.fromstring(page.content)
```

In [344…
```
#date data
date = mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[1:120:10]
date=[a.replace("\xa0","") for a in date]
date=[a.replace(",","") for a in date]
date=[a.replace(".","") for a in date]
date=[a.replace("7 ","07 ") for a in date]
date=[a.strip() for a in date]
print(date)
```

```
['Aug 31 2019', 'Sep 07 2019', 'Sep 14 2019', 'Sep 21 2019', 'Sep 28 2019', 'Oct 05 2019',
'Oct 12 2019', 'Oct 19 2019', 'Nov 02 2019', 'Nov 09 2019', 'Nov 16 2019', 'Nov 23 2019']
```

In [345…
```
#attendance data
attendance=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[9:120:10]
attendance=[a.replace("\xa0","") for a in attendance]
attendance=[a.strip() for a in attendance]
attendance=pd.to_numeric(attendance)
attendance
```

Out[345…
```
array([13458, 20912, 48347,  8683,  8861, 16589,  5324, 16389,  4738,
       4131,  1776,  2728], dtype=int64)
```

In [346…
```
#TSU rushing yards
TSUrushyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[124:383:23]
TSUrushyards=[a.replace("\xa0","") for a in TSUrushyards]
TSUrushyards=pd.to_numeric(TSUrushyards)
TSUrushyards
```

Out[346…
```
array([117, 207, 141,  71, 112, 230, 108, 116,  83,  97, 193, 198],
      dtype=int64)
```

In [347…
```
#TSU receiving yards
TSUreceiveyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[128:383:2
TSUreceiveyards=[a.replace("\xa0","") for a in TSUreceiveyards]
TSUreceiveyards=pd.to_numeric(TSUreceiveyards)
TSUreceiveyards
```

Out[347…
```
array([330, 259, 389, 334, 270, 240, 312, 220, 217, 209, 123, 225],
      dtype=int64)
```

In [348…
```
#TSU kick return yards
TSUkreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[136:400:2
TSUkreturnyards=[a.replace("\xa0","") for a in TSUkreturnyards]
TSUkreturnyards=pd.to_numeric(TSUkreturnyards)
TSUkreturnyards
```

Out[348…
```
array([ 13, 108, 155,  74,  38,  56,  55,  66, 113, 162, 105,  51],
      dtype=int64)
```

In [349…
```
#TSU punt return yards
TSUpreturnyards=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[140:400:2
TSUpreturnyards=[a.replace("\xa0","") for a in TSUpreturnyards]
TSUpreturnyards=pd.to_numeric(TSUpreturnyards)
TSUpreturnyards
```

Out[349…
```
array([61,  0,  0, 15,  7,  0,  8,  0, 13, 62,  6, 25], dtype=int64)
```

In [350…
```
#TSU total tackles
TSUtackles=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[447:723:23]
TSUtackles=[a.replace("\xa0","") for a in TSUtackles]
TSUtackles=pd.to_numeric(TSUtackles)
TSUtackles
```

Out[350…
```
array([58, 49, 55, 65, 74, 75, 67, 60, 62, 63, 67, 79], dtype=int64)
```

In [351…
```
#TSU tackle yards
TSUtackleyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[449:723:23]
TSUtackleyd=[a.replace("\xa0","") for a in TSUtackleyd]
TSUtackleyd=pd.to_numeric(TSUtackleyd)
TSUtackleyd
```

Out[351…
```
array([ 3, 13, 19, 13, 11, 13, 21, 11, 17, 46, 26, 22], dtype=int64)
```

In [352…
```
#TSU sacks
TSUsacks=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[450:723:23]
TSUsacks=[a.replace("\xa0","") for a in TSUsacks]
TSUsacks=pd.to_numeric(TSUsacks)
TSUsacks
```

Out[352…
```
array([0., 1., 1., 1., 1., 1., 1., 1., 2., 2., 2., 2.])
```

In [353…
```
#TSU sack yards
TSUsackyd=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[451:723:23]
TSUsackyd=[a.replace("\xa0","") for a in TSUsackyd]
TSUsackyd=pd.to_numeric(TSUsackyd)
TSUsackyd
```

Out[353…
```
array([ 0,  7,  8,  3,  5,  7,  7,  0,  8, 21, 12, 14], dtype=int64)
```

In [354…
```
#TSU punts
TSUpunt=mytree.xpath('body/center//tr/td/font[@color="#000000"]/text()')[767:980:19]
TSUpunt=[a.replace("\xa0","") for a in TSUpunt]
TSUpunt=pd.to_numeric(TSUpunt)
TSUpunt
```

Out[354…
```
array([6, 5, 3, 6, 5, 3, 3, 6, 4, 3, 6, 4], dtype=int64)
```

In [355…
```
#create data frame
list_of_dicts={'date':date,'attendance':attendance,'TSUrushyards':TSUrushyards, 'TSUreceiv
     'TSUkreturnyards':TSUkreturnyards,'TSUpreturnyards':TSUpreturnyards,'TSUtackles':TSUt
     'TSUsacks':TSUsacks,'TSUsackyd':TSUsackyd,'TSUpunt':TSUpunt}
df2019=pd.DataFrame(list_of_dicts)
df2019.head()
```

Out[355…

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd | T |
|---|---|---|---|---|---|---|---|---|---|
| **0** | Aug 31 2019 | 13458 | 117 | 330 | 13 | 61 | 58 | 3 | |
| **1** | Sep 07 2019 | 20912 | 207 | 259 | 108 | 0 | 49 | 13 | |
| **2** | Sep 14 2019 | 48347 | 141 | 389 | 155 | 0 | 55 | 19 | |
| **3** | Sep 21 2019 | 8683 | 71 | 334 | 74 | 15 | 65 | 13 | |
| **4** | Sep 28 2019 | 8861 | 112 | 270 | 38 | 7 | 74 | 11 | |

In [356…

```
#creating date column as a datetime column
df2019['date']=pd.to_datetime(df2019['date'],format='%b %d %Y')
#creating year column
df2019['year']=df2019.date.dt.year
df2019.columns
```

Out[356…

```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [357…

```
#info for data frame
df2019.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 12 entries, 0 to 11
Data columns (total 12 columns):
 #   Column           Non-Null Count  Dtype         
---  ------           --------------  -----         
 0   date             12 non-null     datetime64[ns]
 1   attendance       12 non-null     int64         
 2   TSUrushyards     12 non-null     int64         
 3   TSUreceiveyards  12 non-null     int64         
 4   TSUkreturnyards  12 non-null     int64         
 5   TSUpreturnyards  12 non-null     int64         
 6   TSUtackles       12 non-null     int64         
 7   TSUtackleyd      12 non-null     int64         
 8   TSUsacks         12 non-null     float64       
 9   TSUsackyd        12 non-null     int64         
 10  TSUpunt          12 non-null     int64         
 11  year             12 non-null     int64         
dtypes: datetime64[ns](1), float64(1), int64(10)
memory usage: 1.2 KB
```

In [358…

```
#sort data
df2019=df2019.sort_values('date',ignore_index=True)
df2019['date'].head()
```

Out[358…

```
0   2019-08-31
1   2019-09-07
2   2019-09-14
```

```
3   2019-09-21
4   2019-09-28
Name: date, dtype: datetime64[ns]
```

In [359…
```
#save data
df2019.to_csv('2019.csv',encoding='utf-8')
```

# Merge TSU scores and annual stats data frames for all years into a single data frame

In [360…
```
#read in annual stats datafiles
#2003
df2003=pd.read_csv('2003.csv')
df2003=df2003.iloc[:,1:]
df2003.columns
```

Out[360…
```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [361…
```
#2004
df2004=pd.read_csv('2004.csv')
df2004=df2004.iloc[:,1:]
df2004.columns
```

Out[361…
```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [362…
```
#2005
df2005=pd.read_csv('2005.csv')
df2005=df2005.iloc[:,1:]
df2005.columns
```

Out[362…
```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [363…
```
#2006
df2006=pd.read_csv('2006.csv')
df2006=df2006.iloc[:,1:]
df2006.columns
```

Out[363…
```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [364…
```
#2007
df2007=pd.read_csv('2007.csv')
df2007=df2007.iloc[:,1:]
df2007.columns
```

Out[364…
```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
```

```
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [365…
```
#2008
df2008=pd.read_csv('2008.csv')
df2008=df2008.iloc[:,1:]
df2008.columns
```

Out[365…
```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [366…
```
#2009
df2009=pd.read_csv('2009.csv')
df2009=df2009.iloc[:,1:]
df2009.columns
```

Out[366…
```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [367…
```
#2010
df2010=pd.read_csv('2010.csv')
df2010=df2010.iloc[:,1:]
df2010.columns
```

Out[367…
```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [368…
```
#2011
df2011=pd.read_csv('2011.csv')
df2011=df2011.iloc[:,1:]
df2011.columns
```

Out[368…
```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [369…
```
#2012
df2012=pd.read_csv('2012.csv')
df2012=df2012.iloc[:,1:]
df2012.columns
```

Out[369…
```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [370…
```
#2013
df2013=pd.read_csv('2013.csv')
df2013=df2013.iloc[:,1:]
df2013.columns
```

Out[370…
```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
```

```
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [371…
```
#2014
df2014=pd.read_csv('2014.csv')
df2014=df2014.iloc[:,1:]
df2014.columns
```

Out[371…
```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [372…
```
#2015
df2015=pd.read_csv('2015.csv')
df2015=df2015.iloc[:,1:]
df2015.columns
```

Out[372…
```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [373…
```
#2016
df2016=pd.read_csv('2016.csv')
df2016=df2016.iloc[:,1:]
df2016.columns
```

Out[373…
```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [374…
```
#2017
df2017=pd.read_csv('2017.csv')
df2017=df2017.iloc[:,1:]
df2017.columns
```

Out[374…
```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [375…
```
#2018
df2018=pd.read_csv('2018.csv')
df2018=df2018.iloc[:,1:]
df2018.columns
```

Out[375…
```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [376…
```
#2019
df2019=pd.read_csv('2019.csv')
df2019=df2019.iloc[:,1:]
df2019.columns
```

Out[376…
```
Index(['date', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
```

```
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'year'],
      dtype='object')
```

In [377…

```
#append all annual stats data frames into a single data frame and sort by date
fullstats=df2003.append([df2004,df2005,df2006,df2007,df2008,df2009,df2010,df2011,
                         df2012,df2013,df2014,df2015,df2016,df2017,df2018,df2019],ignore_i
fullstats=fullstats.sort_values('date')
fullstats.head()
```

Out[377…

| | date | attendance | TSUrushyards | TSUreceiveyards | TSUkreturnyards | TSUpreturnyards | TSUtackles | TSUtackleyd |
|---|---|---|---|---|---|---|---|---|
| **0** | 2003-08-30 | 18124 | 113 | 365 | 69 | 88 | 69 | 33 |
| **1** | 2003-09-06 | 18085 | 141 | 146 | 147 | 8 | 68 | 22 |
| **2** | 2003-09-13 | 52603 | 209 | 132 | 138 | 107 | 84 | 26 |
| **3** | 2003-09-20 | 70185 | 153 | 138 | 86 | 2 | 50 | 22 |
| **4** | 2003-09-27 | 8434 | 142 | 285 | 11 | 29 | 76 | 46 |

In [378…

```
#read in scores data
scores=pd.read_csv('scores.csv')
scores=scores.iloc[:,1:]
scores.head()
```

Out[378…

| | date | city | state | winscore | losscore | loser | winner | locale | TSU score | opponent score | scorediff | scorediff_ab |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **0** | 2003-08-30 | Nashville | TN | 37 | 20 | South Carolina State University | Tennessee State University | Home | 37 | 20 | 17 | 1 |
| **1** | 2003-09-06 | Huntsville | AL | 31 | 24 | Tennessee State University | Alabama A&M University | Away | 24 | 31 | -7 | |
| **2** | 2003-09-13 | Memphis | TN | 44 | 14 | Jackson State University | Tennessee State University | Away | 44 | 14 | 30 | 3 |
| **3** | 2003-09-20 | Atlanta | GA | 10 | 7 | Tennessee State University | Florida A&M University | Away | 7 | 10 | -3 | |
| **4** | 2003-09-27 | Nashville | TN | 41 | 10 | University of Tennessee Martin | Tennessee State University | Home | 41 | 10 | 31 | 3 |

In [379…

```
#merge scores and fullstats data frames
mydata=scores.merge(fullstats,on='date', suffixes=('_scores','_fullstats'))
mydata.head()
```

Out[379…

| | date | city | state | winscore | losscore | loser | winner | locale | TSU score | opponent score | … | TSUrushyards | TSU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | date | city | state | winscore | losscore | loser | winner | locale | TSU score | opponent score | ... | TSUrushyards | TSU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **0** | 2003-08-30 | Nashville | TN | 37 | 20 | South Carolina State University | Tennessee State University | Home | 37 | 20 | ... | 113 | |
| **1** | 2003-09-06 | Huntsville | AL | 31 | 24 | Tennessee State University | Alabama A&M University | Away | 24 | 31 | ... | 141 | |
| **2** | 2003-09-13 | Memphis | TN | 44 | 14 | Jackson State University | Tennessee State University | Away | 44 | 14 | ... | 209 | |
| **3** | 2003-09-20 | Atlanta | GA | 10 | 7 | Tennessee State University | Florida A&M University | Away | 7 | 10 | ... | 153 | |
| **4** | 2003-09-27 | Nashville | TN | 41 | 10 | University of Tennessee Martin | Tennessee State University | Home | 41 | 10 | ... | 142 | |

5 rows × 25 columns

In [380…

```
#information on full data frame
mydata.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 191 entries, 0 to 190
Data columns (total 25 columns):
 #   Column           Non-Null Count  Dtype  
---  ------           --------------  -----  
 0   date             191 non-null    object 
 1   city             191 non-null    object 
 2   state            191 non-null    object 
 3   winscore         191 non-null    int64  
 4   losscore         191 non-null    int64  
 5   loser            191 non-null    object 
 6   winner           191 non-null    object 
 7   locale           191 non-null    object 
 8   TSU score        191 non-null    int64  
 9   opponent score   191 non-null    int64  
 10  scorediff        191 non-null    int64  
 11  scorediff_abs    191 non-null    int64  
 12  winloss          191 non-null    object 
 13  year_scores      191 non-null    int64  
 14  attendance       191 non-null    int64  
 15  TSUrushyards     191 non-null    int64  
 16  TSUreceiveyards  191 non-null    int64  
 17  TSUkreturnyards  191 non-null    int64  
 18  TSUpreturnyards  191 non-null    int64  
 19  TSUtackles       191 non-null    int64  
 20  TSUtackleyd      191 non-null    int64  
 21  TSUsacks         191 non-null    float64
 22  TSUsackyd        191 non-null    int64  
 23  TSUpunt          191 non-null    int64  
 24  year_fullstats   191 non-null    int64  
dtypes: float64(1), int64(17), object(7)
memory usage: 38.8+ KB
```

# More Data Wrangling-creating variables for opponent and

## game type (conference/nonconference), dropping one of the year variables, and making date a datetime variable

In [381…

```
#create opponent column
mydata['opponent']=np.where(mydata['loser']!='Tennessee State University',mydata['loser'],
#frequency of opponents-
#From 2003 and 2019,TSU played Eastern Illinois University more than any other school (17
mydata['opponent'].value_counts()
```

Out[381…

```
Eastern Illinois University             17
Jackson State University                16
University of Tennessee Martin          16
Tennessee Tech University               16
Southeast Missouri State University     15
Eastern Kentucky University             15
Murray State University                 15
Jacksonville State University           14
Austin Peay State University            13
Florida A&M University                  13
Alabama A&M University                   8
Samford University                       5
Bethune Cookman University               4
Southern University & A&M College        4
Vanderbilt University                    3
University of Arkansas Pine Bluff        3
Alabama State University                 2
South Carolina State University          2
North Carolina A&T State University      2
Air Force Academy                        1
Central State University                 1
Butler University                        1
Edward Waters College                    1
Georgia State University                 1
Virginia University Lynchburg            1
Mississippi Valley State University      1
Middle Tennessee State University        1
Name: opponent, dtype: int64
```

In [382…

```
#create variable for conference/nonconference games
mydata['gametype']=np.where(mydata['opponent'].isin(["Austin Peay State University","South
                                                     "Tennessee Tech University","Eastern
                                                      "Belmont University","Eastern Kentuck
                                                      "Jacksonville State University", "Mor
                                                     "Murray State University", "Southern
                                                     "University of Tennessee Martin"]),
                            "conference", "nonconference")
#frequency of game type
#From 2003 to 2019, TSU played 51 more conference games than nonconference games between 2
mydata['gametype'].value_counts()
```

Out[382…

```
conference       121
nonconference     70
Name: gametype, dtype: int64
```

In [383…

```
#drop one of the year variables from the merge and make date a datetime column
mydata['year']=mydata['year_scores']
mydata=mydata.drop(['year_scores','year_fullstats'], axis=1)
mydata['date']=pd.to_datetime(mydata['date'],format='%Y-%m-%d')
mydata.dtypes
```

Out[383…

```
date               datetime64[ns]
city                       object
```

```
state                  object
winscore                int64
losscore                int64
loser                  object
winner                 object
locale                 object
TSU score               int64
opponent score          int64
scorediff               int64
scorediff_abs           int64
winloss                object
attendance              int64
TSUrushyards            int64
TSUreceiveyards         int64
TSUkreturnyards         int64
TSUpreturnyards         int64
TSUtackles              int64
TSUtackleyd             int64
TSUsacks              float64
TSUsackyd               int64
TSUpunt                 int64
opponent               object
gametype               object
year                    int64
dtype: object
```

In [384…

```
#save data with additional variables
mydata.to_csv("mydata.csv", encoding="utf-8")
```

# Exploratory Data Analysis

In [385…

```
#read in full dataset
mydata=pd.read_csv('mydata.csv')
mydata=mydata.iloc[:,1:]
mydata.head()
```

Out[385…

| | date | city | state | winscore | losscore | loser | winner | locale | TSU score | opponent score | ... | TSUkreturnyards |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **0** | 2003-08-30 | Nashville | TN | 37 | 20 | South Carolina State University | Tennessee State University | Home | 37 | 20 | ... | 69 |
| **1** | 2003-09-06 | Huntsville | AL | 31 | 24 | Tennessee State University | Alabama A&M University | Away | 24 | 31 | ... | 147 |
| **2** | 2003-09-13 | Memphis | TN | 44 | 14 | Jackson State University | Tennessee State University | Away | 44 | 14 | ... | 138 |
| **3** | 2003-09-20 | Atlanta | GA | 10 | 7 | Tennessee State University | Florida A&M University | Away | 7 | 10 | ... | 86 |
| **4** | 2003-09-27 | Nashville | TN | 41 | 10 | University of Tennessee Martin | Tennessee State University | Home | 41 | 10 | ... | 11 |

5 rows × 26 columns

In [386…

```
#data types of columns in data frame
mydata.dtypes
```

Out[386…

```
date                object
city                object
state               object
winscore             int64
losscore             int64
loser               object
winner              object
locale              object
TSU score            int64
opponent score       int64
scorediff            int64
scorediff_abs        int64
winloss             object
attendance           int64
TSUrushyards         int64
TSUreceiveyards      int64
TSUkreturnyards      int64
TSUpreturnyards      int64
TSUtackles           int64
TSUtackleyd          int64
TSUsacks           float64
TSUsackyd            int64
TSUpunt              int64
opponent            object
gametype            object
year                 int64
dtype: object
```

In [387…

```
#Descriptive statistics for numeric columns in the full data frame
#There were 191 rows in the data frame and each row provided data on all 17 numeric columns
mydata.describe()
```

Out[387…

| | winscore | losscore | TSU score | opponent score | scorediff | scorediff_abs | attendance | TSUrushyards | TSUrec |
|---|---|---|---|---|---|---|---|---|---|
| **count** | 191.000000 | 191.000000 | 191.000000 | 191.00000 | 191.000000 | 191.000000 | 191.000000 | 191.000000 | 1 |
| **mean** | 32.984293 | 18.481675 | 25.643979 | 25.82199 | -0.178010 | 14.502618 | 16985.230366 | 157.769634 | 2 |
| **std** | 10.659553 | 10.215490 | 12.489530 | 12.94969 | 19.109373 | 12.400286 | 15493.766885 | 74.855646 | |
| **min** | 9.000000 | 0.000000 | 0.000000 | 0.00000 | -49.000000 | 1.000000 | 1776.000000 | -18.000000 | |
| **25%** | 26.500000 | 12.000000 | 17.000000 | 15.00000 | -11.000000 | 5.000000 | 6402.500000 | 107.000000 | 1 |
| **50%** | 31.000000 | 17.000000 | 26.000000 | 27.00000 | -3.000000 | 11.000000 | 10001.000000 | 152.000000 | 2 |
| **75%** | 40.000000 | 26.000000 | 34.000000 | 33.50000 | 10.000000 | 21.500000 | 22306.000000 | 200.000000 | 2 |
| **max** | 73.000000 | 44.000000 | 73.000000 | 63.00000 | 67.000000 | 67.000000 | 70185.000000 | 439.000000 | 4 |

In [388…

```
#NAs in the data frame (There were none.)
mydata.isna().sum()
```

Out[388…

```
date              0
city              0
state             0
winscore          0
losscore          0
loser             0
```

```
winner              0
locale              0
TSU score           0
opponent score      0
scorediff           0
scorediff_abs       0
winloss             0
attendance          0
TSUrushyards        0
TSUreceiveyards     0
TSUkreturnyards     0
TSUpreturnyards     0
TSUtackles          0
TSUtackleyd         0
TSUsacks            0
TSUsackyd           0
TSUpunt             0
opponent            0
gametype            0
year                0
dtype: int64
```

In [389…

```
#null values in the data frame (There were none.)
mydata.isnull().sum()
```

Out[389…

```
date                0
city                0
state               0
winscore            0
losscore            0
loser               0
winner              0
locale              0
TSU score           0
opponent score      0
scorediff           0
scorediff_abs       0
winloss             0
attendance          0
TSUrushyards        0
TSUreceiveyards     0
TSUkreturnyards     0
TSUpreturnyards     0
TSUtackles          0
TSUtackleyd         0
TSUsacks            0
TSUsackyd           0
TSUpunt             0
opponent            0
gametype            0
year                0
dtype: int64
```

In [390…

```
#number of wins and losses
#Across the 2003-2019 time span, TSU had a record of 92-99.
mydata.winloss.value_counts()
```

Out[390…

```
Loss    99
Win     92
Name: winloss, dtype: int64
```

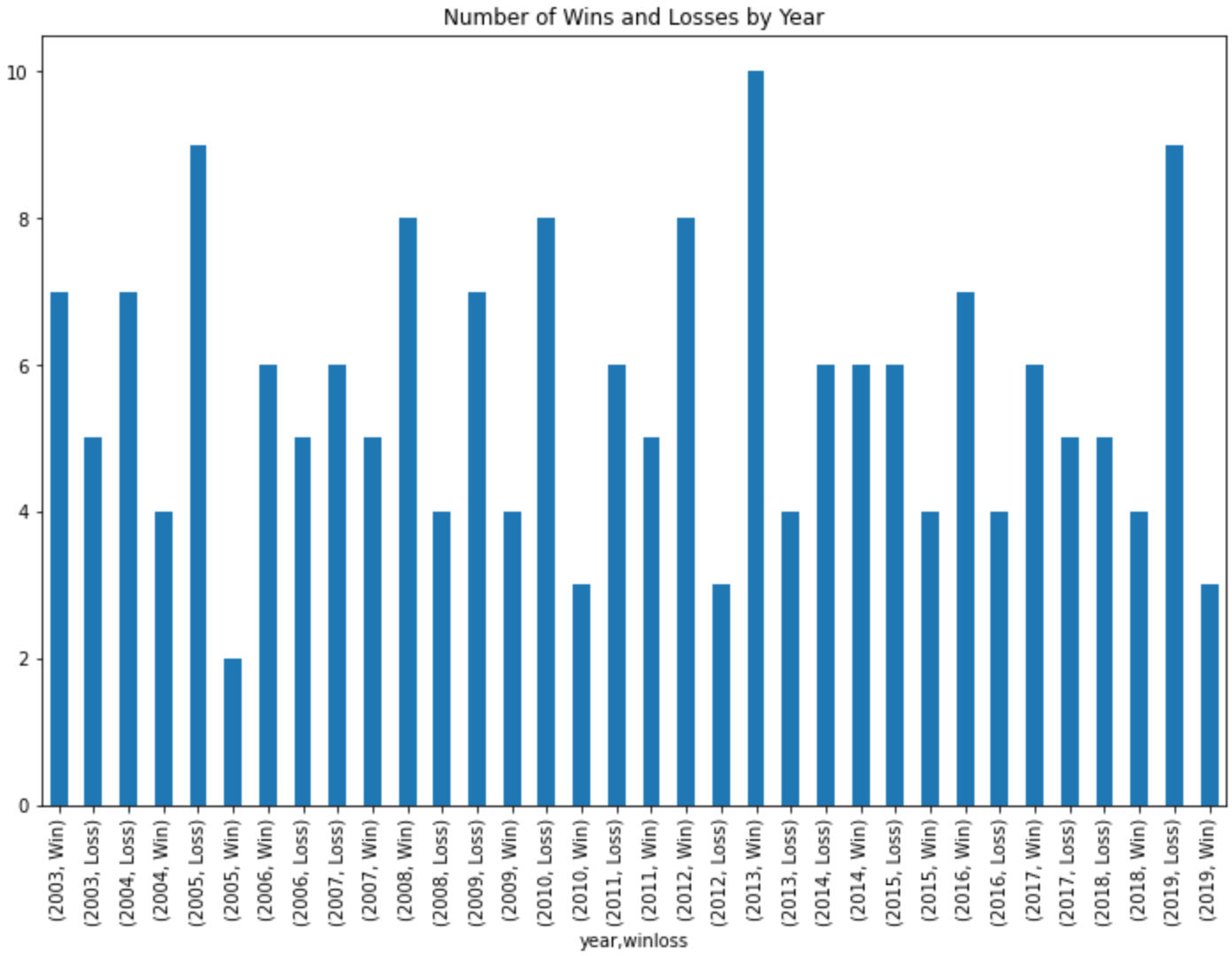
In [391…

```
#number of wins and losses per year
#There was flucuations in the numbers of wins and losses each year. 2013 had the highest r
plt.rcParams['figure.figsize']=[12,8]
```

```
winloss_by_year=mydata.groupby("year")["winloss"].value_counts()
winloss_by_year.plot(kind="bar",title="Number of Wins and Losses by Year")
```

Out[391…

```
<AxesSubplot:title={'center':'Number of Wins and Losses by Year'}, xlabel='year,winloss'>
```

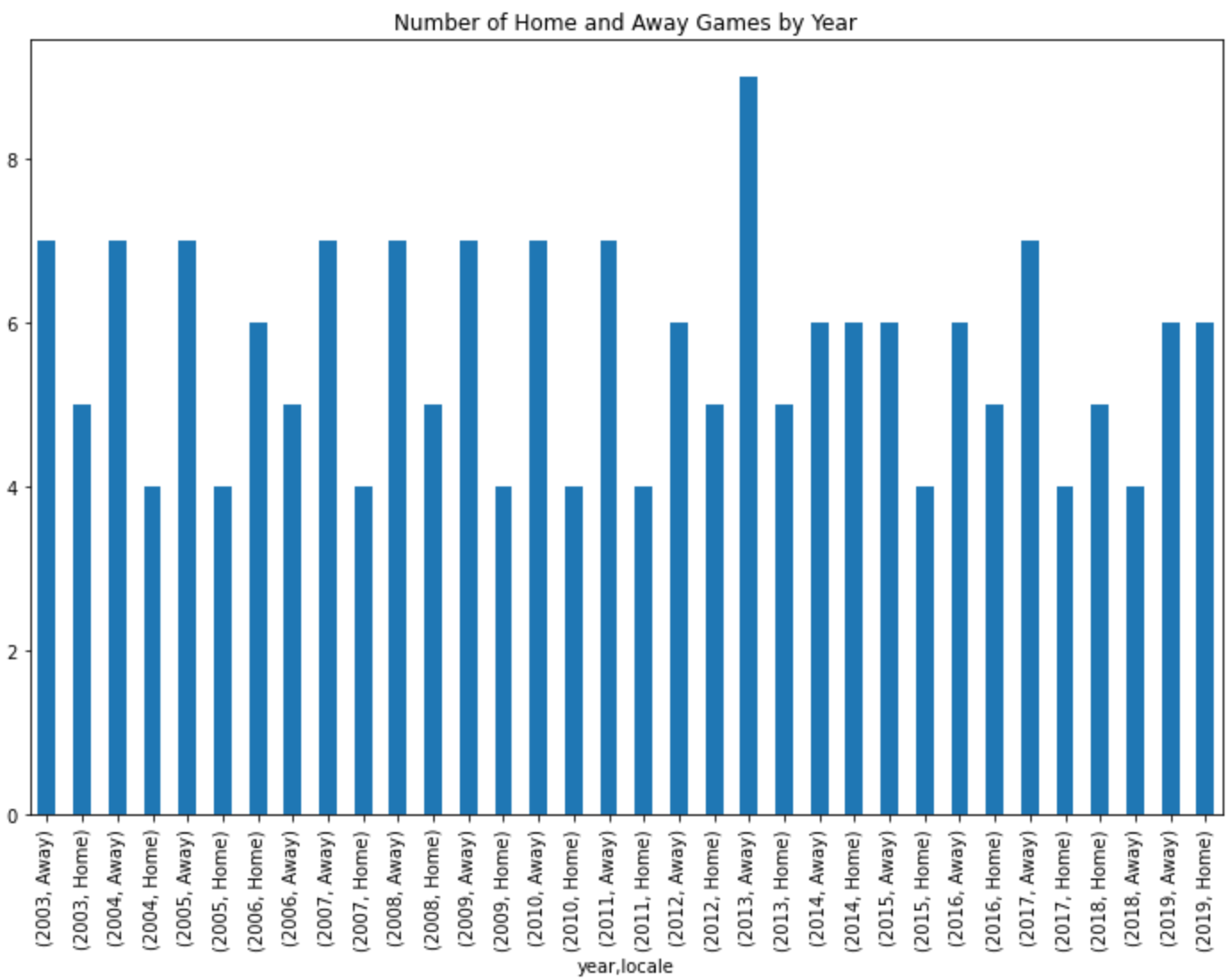



In [392…

```
#number of games by locale (home/away) by year
#The number of home and away games varied by year but there appeared to be some stability
plt.rcParams['figure.figsize']=[12,8]
locale_by_year=mydata.groupby("year")["locale"].value_counts()
locale_by_year.plot(kind="bar",title="Number of Home and Away Games by Year")
```

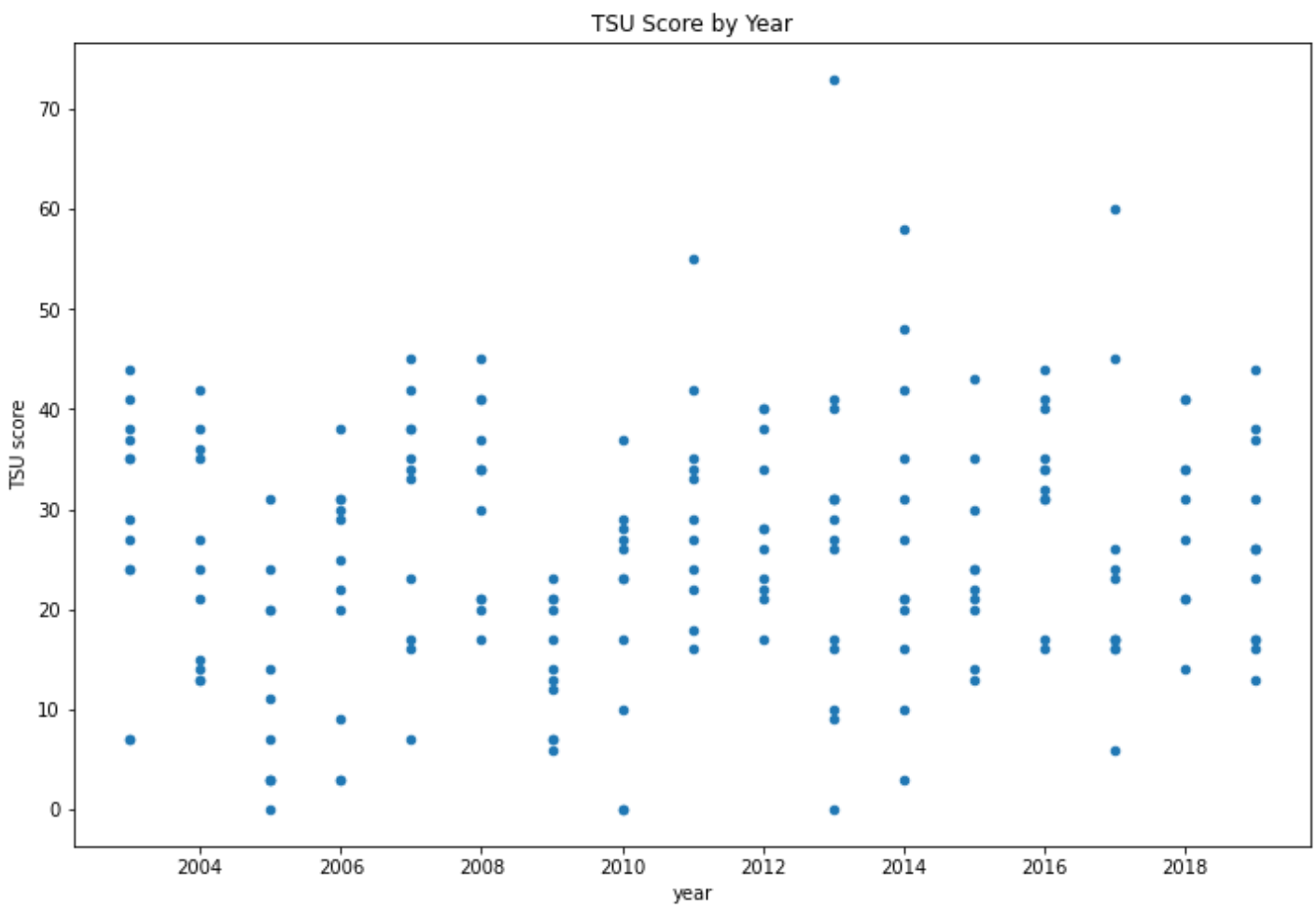
Out[392…

```
<AxesSubplot:title={'center':'Number of Home and Away Games by Year'}, xlabel='year,local
e'>
```




In [393…

```
#TSU score by year
#For most games, the TSU score remained between about 10 and 45 points. Based on the scatt
plt.rcParams['figure.figsize']=[12,8]
mydata.plot(x="year",y="TSU score",kind="scatter", title="TSU Score by Year")
plt.show()
```




In [394…

```
#outliers of TSU score
#There were 2 outliers on the TSU score, a 73 point game against Central State University
q1 = mydata["TSU score"].quantile(0.25)
q3 = mydata["TSU score"].quantile(0.75)
outlier_top_lim = q3 + 1.5 * (q3 - q1)
outlier_bottom_lim = q1 - 1.5 * (q3 - q1)
mydata[["date","city","opponent","TSU score"]][(mydata["TSU score"]>outlier_top_lim) | (my
```

Out[394…

| | date | city | opponent | TSU score |
|---|---|---|---|---|
| **116** | 2013-09-28 | St. Louis | Central State University | 73 |
| **167** | 2017-11-04 | Nashville | Virginia University Lynchburg | 60 |

In [395…

```
#replace outliers of TSU score with the mean
mydata["TSU score_new"]=np.where((mydata["TSU score"]>outlier_top_lim) | (mydata["TSU scor
```

In [396…

```
#descriptive statistics for TSU score
mydata["TSU score"].describe()
```

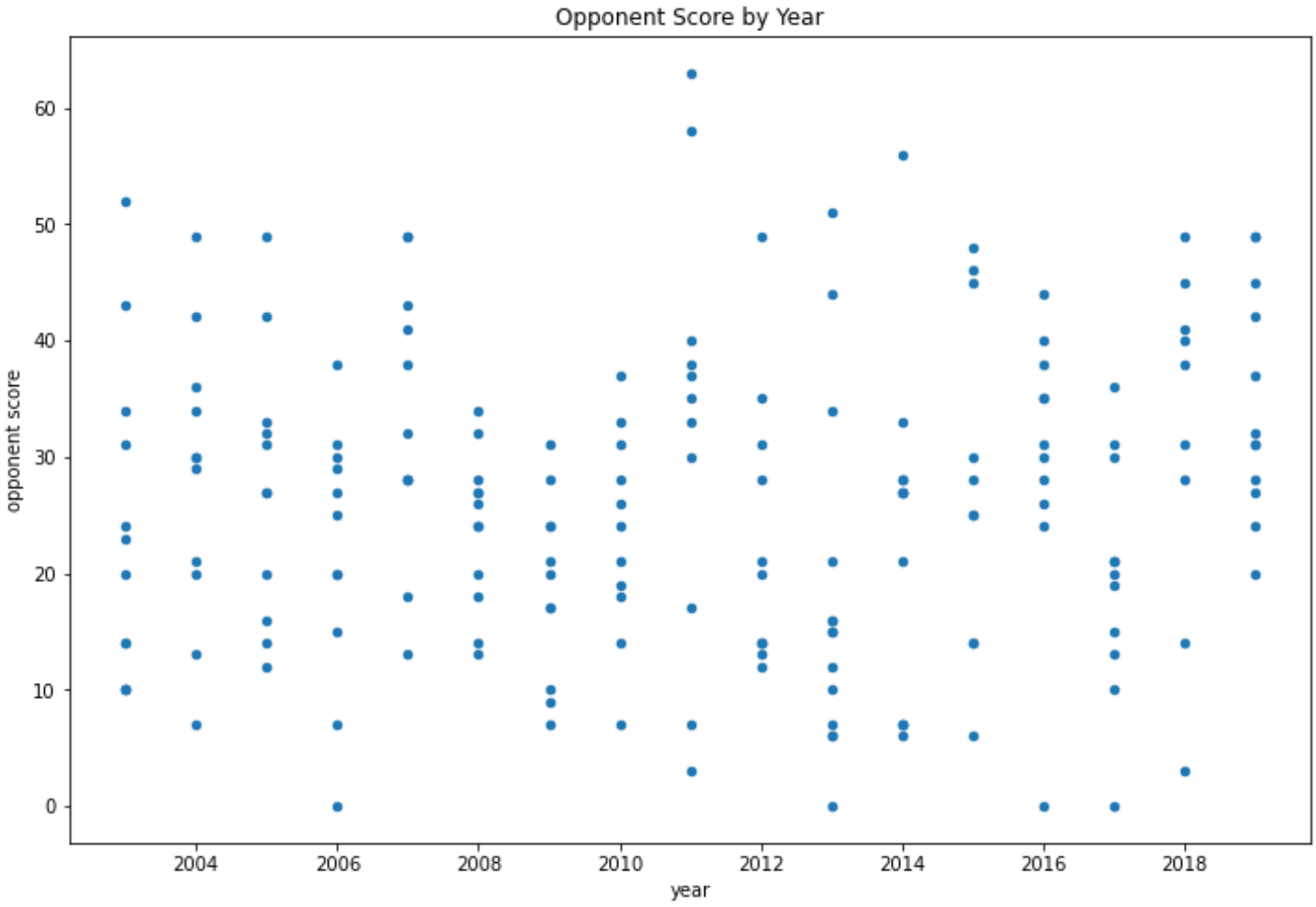
Out[396…

```
count    191.000000
mean      25.643979
std       12.489530
min        0.000000
25%       17.000000
50%       26.000000
75%       34.000000
max       73.000000
Name: TSU score, dtype: float64
```

In [397…
```
#descriptive statistics for TSU score with corrected outliers
#The descriptive statistics for the new variable showed a lower mean (25.2 compared to 25.
mydata["TSU score_new"].describe()
```

Out[397…
```
count    191.000000
mean      25.216167
std       11.738355
min        0.000000
25%       17.000000
50%       25.643979
75%       34.000000
max       58.000000
Name: TSU score_new, dtype: float64
```

In [398…
```
#opponent score by year
#The scatterplot of the opponent score showed that for most games the opponents score rema
plt.rcParams['figure.figsize']=[12,8]
mydata.plot(x="year",y="opponent score",kind="scatter", title="Opponent Score by Year")
plt.show()
```




In [399…
```
#outliers of opponent score
#There was one outlier on the opponent score variable, 63 points scored by the Air Force A
q1 = mydata["opponent score"].quantile(0.25)
q3 = mydata["opponent score"].quantile(0.75)
outlier_top_lim = q3 + 1.5 * (q3 - q1)
outlier_bottom_lim = q1 - 1.5 * (q3 - q1)
mydata[["date","city","opponent","opponent score"]][(mydata["opponent score"]>outlier_top_
```

Out[399…

| | date | city | opponent | opponent score |
|---|---|---|---|---|
| **93** | 2011-09-24 | Air Force Academy | Air Force Academy | 63 |

In [400…

```
#replace outlier of opponent score with the mean
mydata["opponent score_new"]=np.where((mydata["opponent score"]>outlier_top_lim) | (mydata
```

In [401…

```
#descriptive statistics for opponent score
mydata["opponent score"].describe()
```

Out[401…

```
count    191.00000
mean      25.82199
std       12.94969
min        0.00000
25%       15.00000
50%       27.00000
75%       33.50000
max       63.00000
Name: opponent score, dtype: float64
```

In [402…

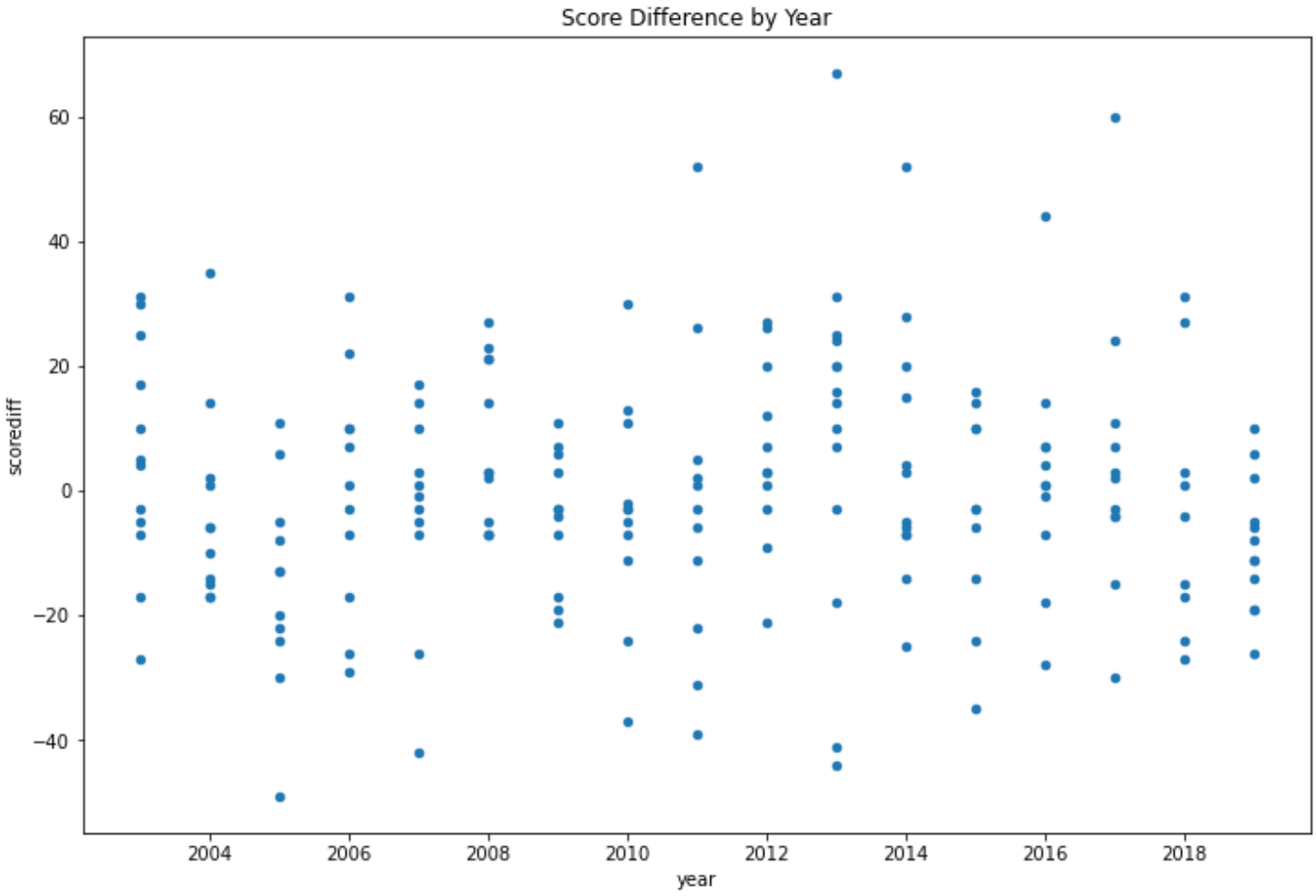
```
#descriptive statistics for opponent score with outliers replaced
#The replacement slightly lowered the mean (25.8 to 25.6) and standard deviation (12.9 to
mydata["opponent score_new"].describe()
```

Out[402…

```
count    191.000000
mean      25.627340
std       12.664186
min        0.000000
25%       15.000000
50%       27.000000
75%       33.000000
max       58.000000
Name: opponent score_new, dtype: float64
```

In [403…

```
#score difference by year
#The scatterplot of the score difference showed that it remained between -20 and 40 for mo
plt.rcParams['figure.figsize']=[12,8]
mydata.plot(x="year",y="scorediff",kind="scatter", title="Score Difference by Year")
plt.show()
```




In [404…

```
#outliers of score difference
#There were 7 outliers on the score difference variable. Two were games in which TSU lost
#at least 44 points. The other 5 games where those in which TSU won by at least 44 points.
q1 = mydata["scorediff"].quantile(0.25)
q3 = mydata["scorediff"].quantile(0.75)
outlier_top_lim = q3 + 1.5 * (q3 - q1)
outlier_bottom_lim = q1 - 1.5 * (q3 - q1)
mydata[["date","city","opponent","scorediff"]][(mydata["scorediff"]>outlier_top_lim) | (my
```

Out[404…

| | date | city | opponent | scorediff |
|---|---|---|---|---|
| **33** | 2005-11-19 | Nashville | Eastern Kentucky University | -49 |
| **95** | 2011-10-08 | Nashville | Southeast Missouri State University | 52 |
| **116** | 2013-09-28 | St. Louis | Central State University | 67 |
| **121** | 2013-11-02 | Richmond | Eastern Kentucky University | -44 |
| **126** | 2014-08-30 | Nashville | Edward Waters College | 52 |
| **148** | 2016-09-03 | Nashville | University of Arkansas Pine Bluff | 44 |
| **167** | 2017-11-04 | Nashville | Virginia University Lynchburg | 60 |

In [405…

```
#replace outliers of score difference with mean
mydata["scorediff_new"]=np.where((mydata["scorediff"]>outlier_top_lim) | (mydata["scorediff
```

In [406…

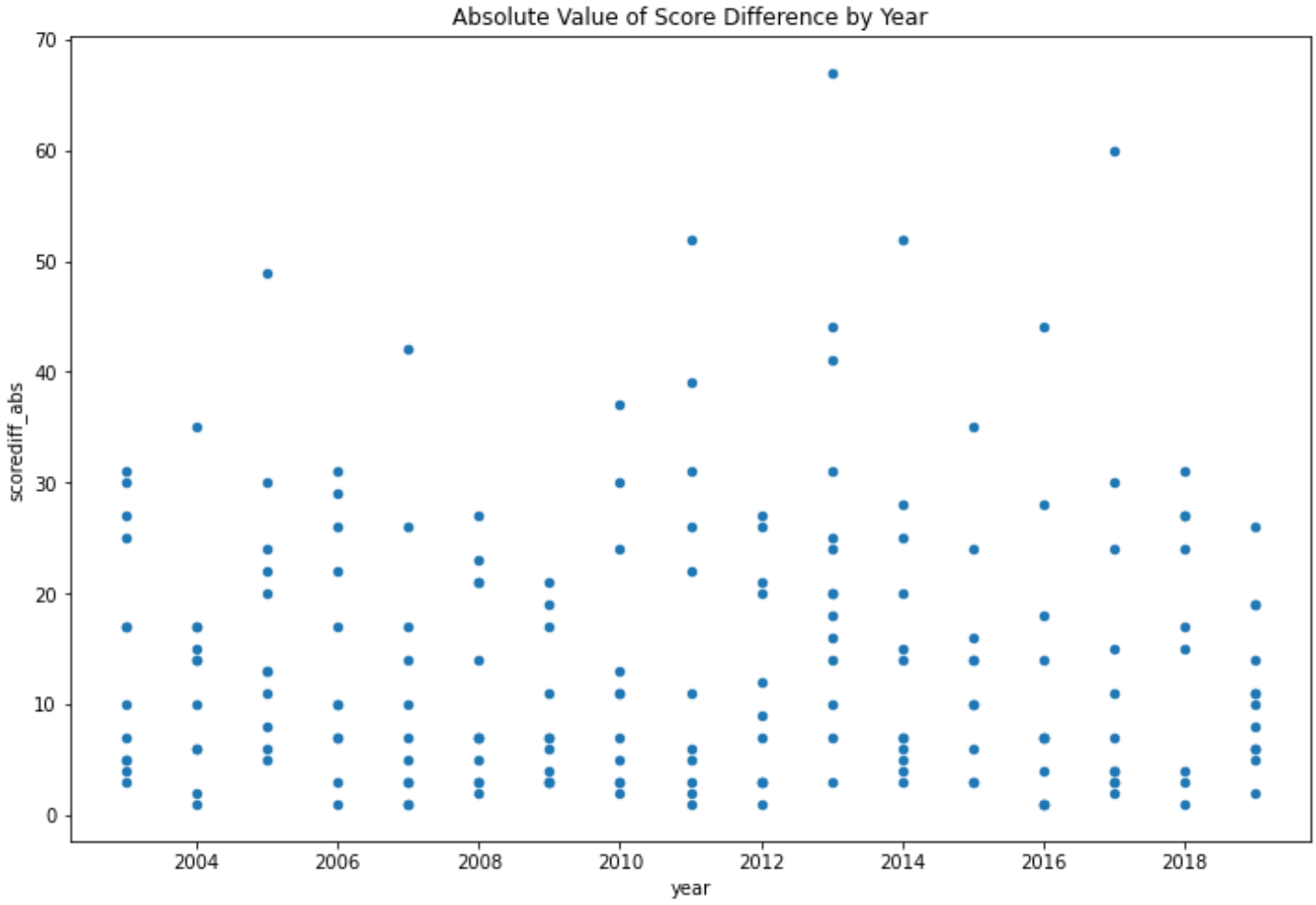
```
#descriptive statistics for score difference
mydata.scorediff.describe()
```

Out[406…
```
count    191.000000
mean      -0.178010
std       19.109373
min      -49.000000
25%      -11.000000
50%       -3.000000
75%       10.000000
max       67.000000
Name: scorediff, dtype: float64
```

In [407…
```
#descriptive statistics for score difference with outliers replaced
#With the outliers replaced with the mean, the mean of the score difference dropped to -1.
mydata.scorediff_new.describe()
```

Out[407…
```
count    191.000000
mean      -1.137414
std       16.119802
min      -42.000000
25%      -11.000000
50%       -1.000000
75%       10.000000
max       35.000000
Name: scorediff_new, dtype: float64
```

In [408…
```
#absolute value of score difference by year
#Based on the scatterplot below, for most games, the absolute value of the score differenc
plt.rcParams['figure.figsize']=[12,8]
mydata.plot(x="year",y="scorediff_abs",kind="scatter", title="Absolute Value of Score Diff
plt.show()
```




In [409…
```
#outliers of absolute value of score difference
#There were 5 outliers on the absolute value of the score difference variable. These occu
```

```
q1 = mydata["scorediff_abs"].quantile(0.25)
q3 = mydata["scorediff_abs"].quantile(0.75)
outlier_top_lim = q3 + 1.5 * (q3 - q1)
outlier_bottom_lim = q1 - 1.5 * (q3 - q1)
mydata[["date","city","opponent","scorediff_abs"]][(mydata["scorediff_abs"]>outlier_top_li
```

Out[409…

| | date | city | opponent | scorediff_abs |
|---|---|---|---|---|
| **33** | 2005-11-19 | Nashville | Eastern Kentucky University | 49 |
| **95** | 2011-10-08 | Nashville | Southeast Missouri State University | 52 |
| **116** | 2013-09-28 | St. Louis | Central State University | 67 |
| **126** | 2014-08-30 | Nashville | Edward Waters College | 52 |
| **167** | 2017-11-04 | Nashville | Virginia University Lynchburg | 60 |

In [410…

```
#replace outliers of absolute value of score difference with mean
mydata["scorediff_abs_new"]=np.where((mydata["scorediff_abs"]>outlier_top_lim) | (mydata['
```

In [411…

```
#descriptive statistics for absolute difference of score difference
mydata.scorediff_abs.describe()
```

Out[411…

```
count    191.000000
mean      14.502618
std       12.400286
min        1.000000
25%        5.000000
50%       11.000000
75%       21.500000
max       67.000000
Name: scorediff_abs, dtype: float64
```

In [412…

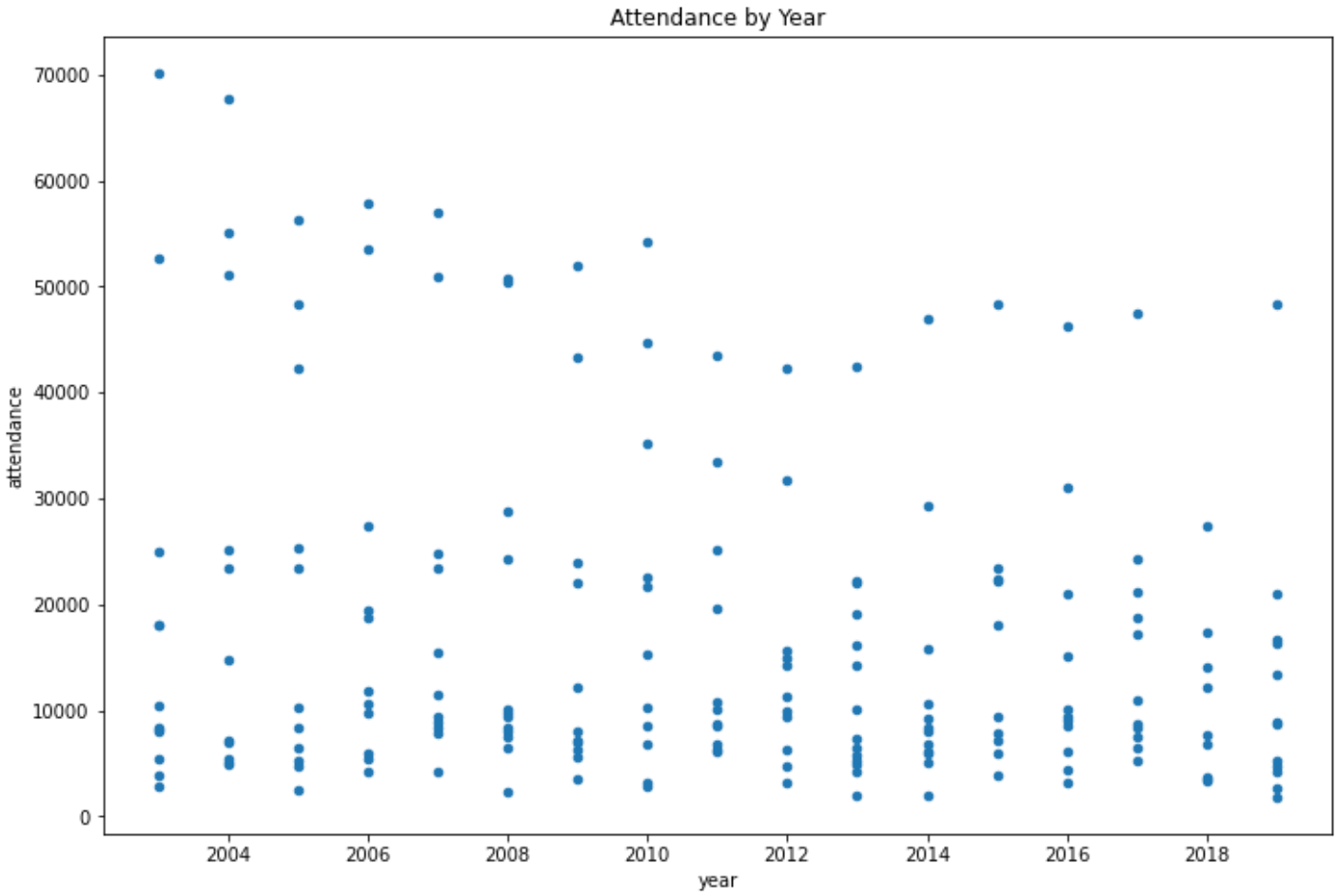
```
#descriptive statistics for absolute difference of score difference with outliers replaced
#As with the previous variables that replaced the outliers with the mean, the mean and sta
mydata.scorediff_abs_new.describe()
```

Out[412…

```
count    191.000000
mean      13.416299
std       10.301300
min        1.000000
25%        5.000000
50%       11.000000
75%       20.000000
max       44.000000
Name: scorediff_abs_new, dtype: float64
```

In [413…

```
#attendance by year
#The scatter plot for attendance showed that for most games, the attendance was less than
#to be a group of games that had attendance of at least 45,000. The outliers were assessed
plt.rcParams["figure.figsize"]=[12,8]
mydata.plot(x="year",y="attendance", kind="scatter", title="Attendance by Year")
plt.show()
```




In [414…

```
#outliers of attendance
#There were 20 outliers for attendance. These games had attendance figures of at least abo
q1 = mydata["attendance"].quantile(0.25)
q3 = mydata["attendance"].quantile(0.75)
outlier_top_lim = q3 + 1.5 * (q3 - q1)
outlier_bottom_lim = q1 - 1.5 * (q3 - q1)
mydata[["date","city","opponent","attendance"]][(mydata["attendance"]>outlier_top_lim) |
```

Out[414…

| | date | city | opponent | attendance |
|---|---|---|---|---|
| **2** | 2003-09-13 | Memphis | Jackson State University | 52603 |
| **3** | 2003-09-20 | Atlanta | Florida A&M University | 70185 |
| **14** | 2004-09-18 | Memphis | Jackson State University | 55015 |
| **15** | 2004-09-25 | Atlanta | Florida A&M University | 67712 |
| **16** | 2004-10-02 | Indianapolis | South Carolina State University | 51082 |
| **24** | 2005-09-10 | Memphis | Jackson State University | 48300 |
| **26** | 2005-09-24 | Atlanta | Florida A&M University | 56297 |
| **36** | 2006-09-16 | Memphis | Jackson State University | 53441 |
| **38** | 2006-09-30 | Atlanta | Florida A&M University | 57885 |
| **46** | 2007-09-08 | Memphis | Jackson State University | 50879 |
| **49** | 2007-09-29 | Atlanta | Florida A&M University | 56990 |
| **58** | 2008-09-13 | Memphis | Jackson State University | 50794 |
| **60** | 2008-09-27 | Atlanta | Florida A&M University | 50428 |

| | date | city | opponent | attendance |
|---|---|---|---|---|
| **71** | 2009-09-26 | Atlanta | Florida A&M University | 51950 |
| **82** | 2010-09-25 | Atlanta | Florida A&M University | 54202 |
| **128** | 2014-09-13 | Memphis | Jackson State University | 46914 |
| **139** | 2015-09-12 | Memphis | Jackson State University | 48385 |
| **149** | 2016-09-10 | Memphis | Jackson State University | 46263 |
| **160** | 2017-09-09 | Memphis | Jackson State University | 47407 |
| **181** | 2019-09-14 | Memphis | Jackson State University | 48347 |

In [415…

```
#replace outliers of attendance with mean
mydata["attendance_new"]=np.where((mydata["attendance"]>outlier_top_lim) | (mydata["attenc
```

In [416…

```
#descriptive statistics for attendance
mydata.attendance.describe()
```

Out[416…

```
count      191.000000
mean     16985.230366
std      15493.766885
min       1776.000000
25%       6402.500000
50%      10001.000000
75%      22306.000000
max      70185.000000
Name: attendance, dtype: float64
```

In [417…

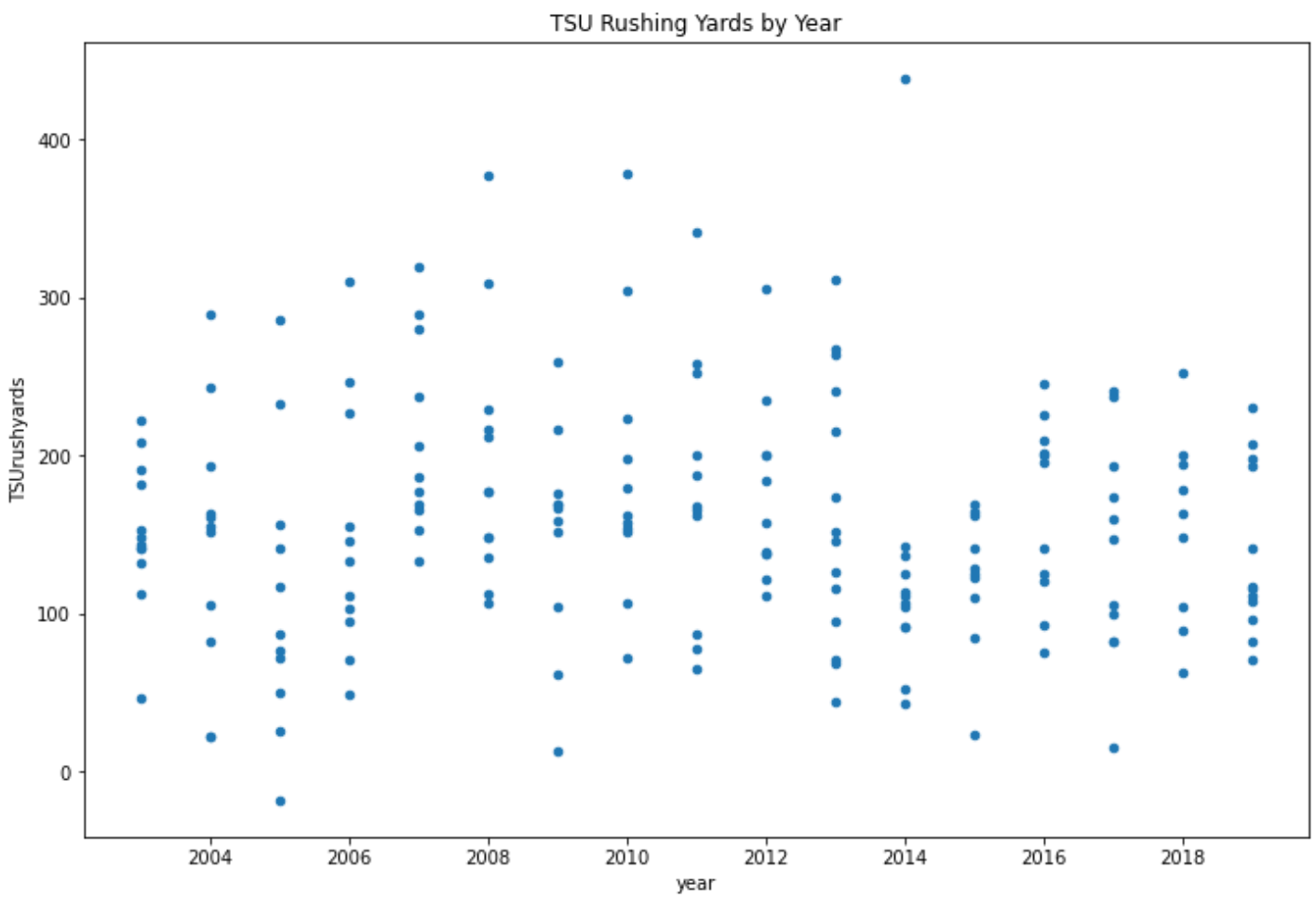
```
#descriptive statistics for attendance with outliers replaced
#When the outliers were replaced, the mean of attendance dropped from 16,985 to 13,187. Th
mydata.attendance_new.describe()
```

Out[417…

```
count      191.000000
mean     13187.458677
std       9113.636740
min       1776.000000
25%       6402.500000
50%      10001.000000
75%      16985.230366
max      44688.000000
Name: attendance_new, dtype: float64
```

In [418…

```
#TSU rushing yards by year
#The scatter plot for TSU rushing yards showed that the rushing yards ranged from 0 to abo
plt.rcParams["figure.figsize"]=[12,8]
mydata.plot(x="year",y="TSUrushyards",kind="scatter",title="TSU Rushing Yards by Year")
plt.show()
```




In [419…

```
#outliers of TSU rushing yards
#There were 4 outliers on the TSU rushing yards variable.They were in games against Austi
q1 = mydata["TSUrushyards"].quantile(0.25)
q3 = mydata["TSUrushyards"].quantile(0.75)
outlier_top_lim = q3 + 1.5 * (q3 - q1)
outlier_bottom_lim = q1 - 1.5 * (q3 - q1)
mydata[["date","city","opponent","TSUrushyards"]][(mydata["TSUrushyards"]>outlier_top_lim)
```

Out[419…

| | date | city | opponent | TSUrushyards |
|---|---|---|---|---|
| **62** | 2008-10-18 | Nashville | Austin Peay State University | 377 |
| **83** | 2010-10-02 | Indianapolis | North Carolina A&T State University | 379 |
| **90** | 2011-09-03 | Nashville | Southern University & A&M College | 342 |
| **126** | 2014-08-30 | Nashville | Edward Waters College | 439 |

In [420…

```
#replace outliers of TSU rushing yards with mean
mydata["TSUrushyards_new"]=np.where((mydata["TSUrushyards"]>outlier_top_lim) | (mydata["TS
```

In [421…

```
#descriptive statistics for TSU rushing yards
mydata.TSUrushyards.describe()
```

Out[421…

```
count    191.000000
mean     157.769634
std       74.855646
min      -18.000000
25%      107.000000
50%      152.000000
```

```
75%      200.000000
max      439.000000
Name: TSUrushyards, dtype: float64
```

In [422…

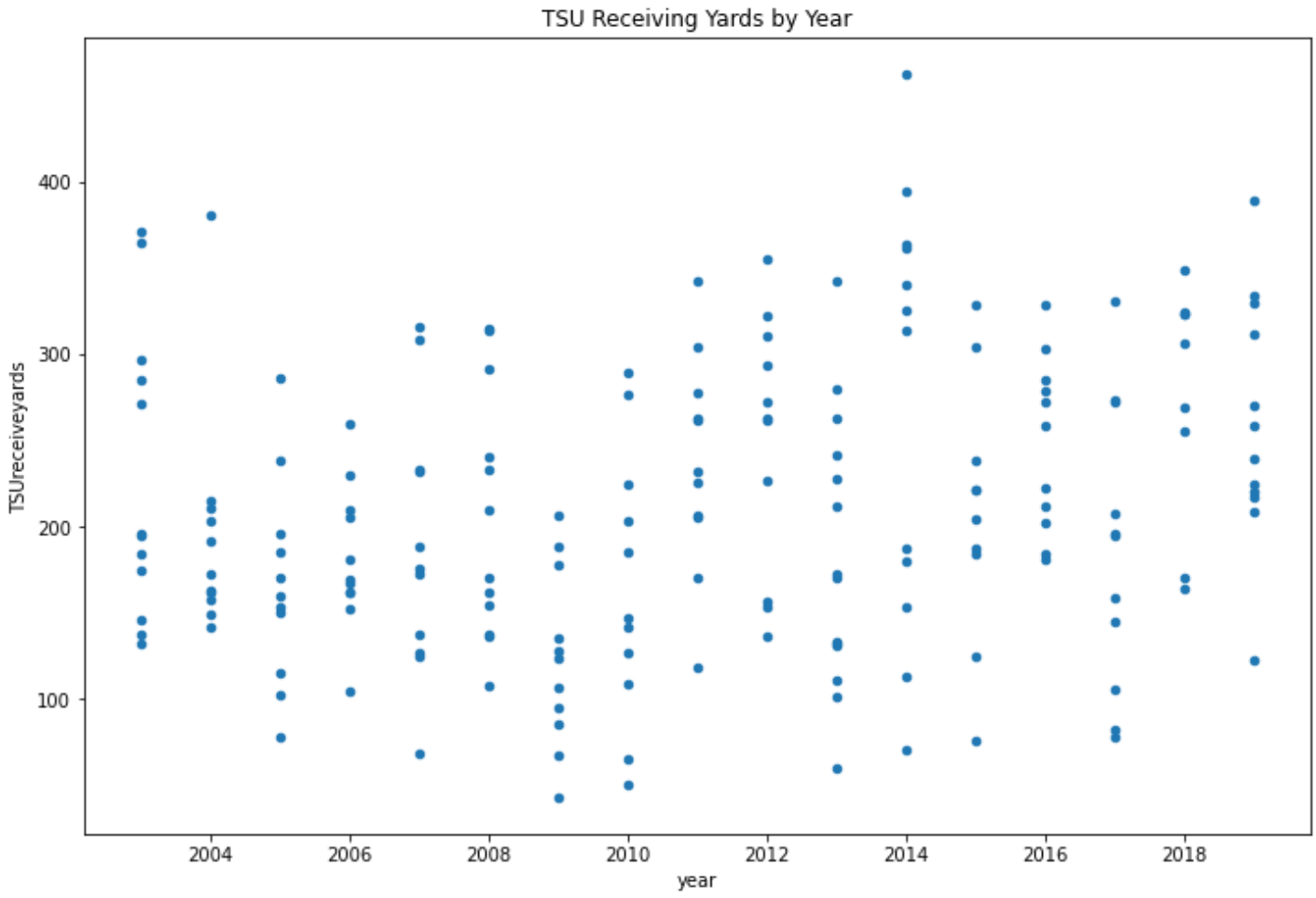
```
#descriptive statistics for TSU rushing yards with outliers replaced
#The mean and standard deviation for TSU rushing yards dropped to 153 and about 67, respec
mydata.TSUrushyards_new.describe()
```

Out[422…

```
count    191.000000
mean     153.026589
std       66.897678
min      -18.000000
25%      107.000000
50%      152.000000
75%      195.500000
max      320.000000
Name: TSUrushyards_new, dtype: float64
```

In [423…

```
#TSU receiving yards by year
#A scatterplot of TSU recieving yards showed that for most games the TSU's receiving yards
plt.rcParams["figure.figsize"]=[12,8]
mydata.plot(x="year",y="TSUreceiveyards",kind="scatter",title="TSU Receiving Yards by Year
plt.show()
```




In [424…

```
#outliers of TSU receiving yards
#There was 1 outlier on the TSU receiving yards variable, a game against Murray State Univ
q1 = mydata["TSUreceiveyards"].quantile(0.25)
q3 = mydata["TSUreceiveyards"].quantile(0.75)
outlier_top_lim = q3 + 1.5 * (q3 - q1)
outlier_bottom_lim = q1 - 1.5 * (q3 - q1)
mydata[["date","city","opponent","TSUreceiveyards"]][(mydata["TSUreceiveyards"]>outlier_to
```

Out[424…

| | date | city | opponent | TSUreceiveyards |
|---|---|---|---|---|
| **137** | 2014-11-22 | Murray | Murray State University | 463 |

In [425…

```
#replace outliers of TSU receiving yards with mean
mydata["TSUreceiveyards_new"]=np.where((mydata["TSUreceiveyards"]>outlier_top_lim) | (myda
```

In [426…

```
#descriptive statistics for TSU receiving yards
mydata.TSUreceiveyards.describe()
```

Out[426…

```
count    191.000000
mean     210.361257
std       82.371433
min       43.000000
25%      151.000000
50%      203.000000
75%      273.000000
max      463.000000
Name: TSUreceiveyards, dtype: float64
```

In [427…

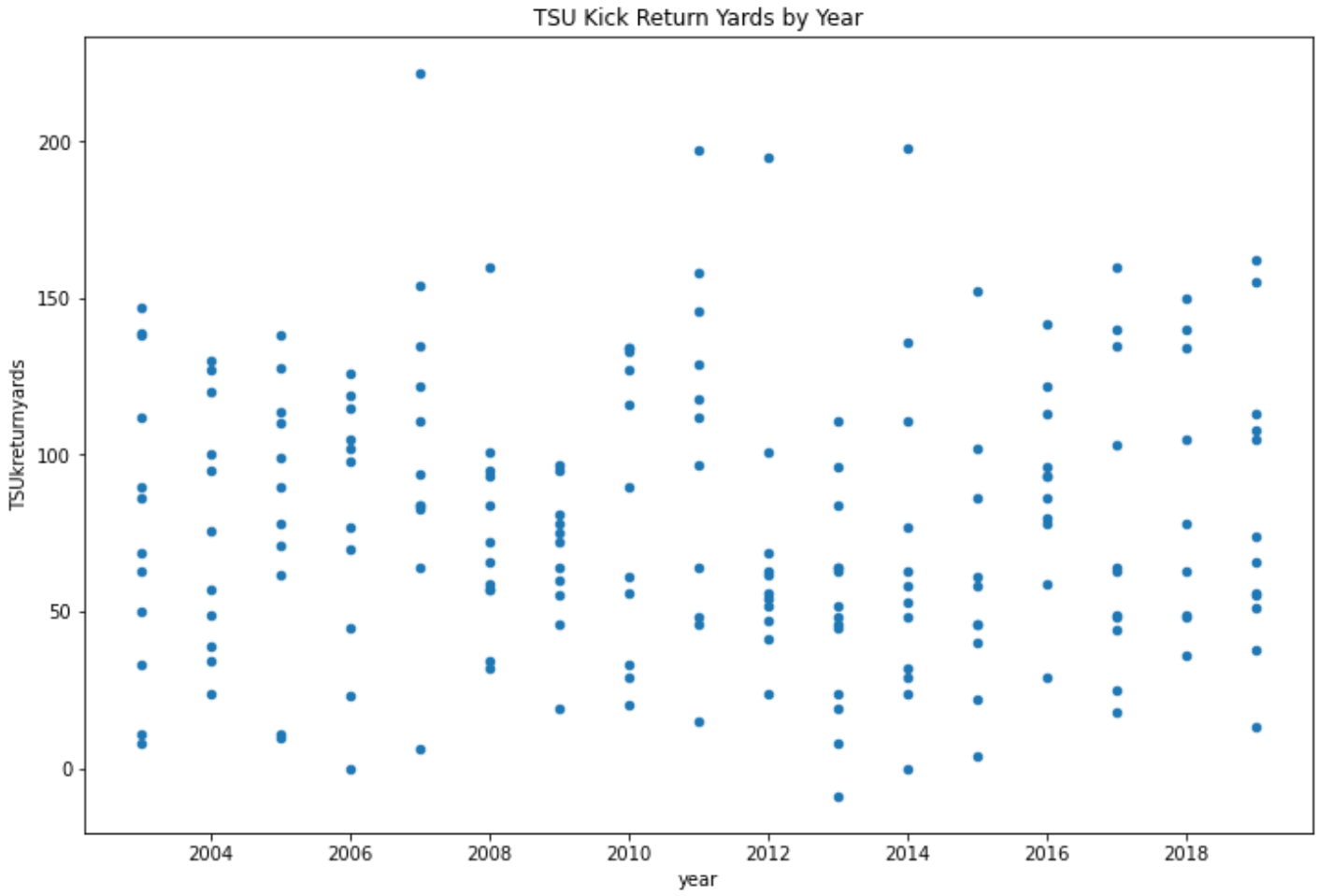
```
#descriptive statistics for TSU receiving yards with outliers replaced
#Replacing the outlier with the mean lowered the mean of the variable slightly to 210 and
mydata.TSUreceiveyards_new.describe()
```

Out[427…

```
count    191.000000
mean     209.038541
std       80.295493
min       43.000000
25%      151.000000
50%      203.000000
75%      272.000000
max      395.000000
Name: TSUreceiveyards_new, dtype: float64
```

In [428…

```
#TSU kick return yards by year
#A scatterplot of kick return yards showed that for most games, the kick return yards rang
plt.rcParams['figure.figsize']=[12,8]
mydata.plot(x="year",y="TSUkreturnyards",kind="scatter", title="TSU Kick Return Yards by Y
plt.show()
```




In [429…

```
#outliers of TSU kick return yards
#There was 1 outlier on the TSU kick return yards variable. It was in a game against Unive
q1 = mydata["TSUkreturnyards"].quantile(0.25)
q3 = mydata["TSUkreturnyards"].quantile(0.75)
outlier_top_lim = q3 + 1.5 * (q3 - q1)
outlier_bottom_lim = q1 - 1.5 * (q3 - q1)
mydata[["date","city","opponent","TSUkreturnyards"]][(mydata["TSUkreturnyards"]>outlier_to
```

Out[429…

| | date | city | opponent | TSUkreturnyards |
|---|---|---|---|---|
| **55** | 2007-11-17 | Nashville | University of Tennessee Martin | 222 |

In [430…

```
#replace outliers of TSU kick return yards with mean
mydata["TSUkreturnyards_new"]=np.where((mydata["TSUkreturnyards"]>outlier_top_lim) | (myda
```

In [431…

```
#descriptive statistics for TSU kick return yards
mydata.TSUkreturnyards.describe()
```

Out[431…

```
count    191.000000
mean      78.670157
std       44.059662
min       -9.000000
25%       48.000000
50%       72.000000
75%      110.500000
max      222.000000
Name: TSUkreturnyards, dtype: float64
```

In [432…

```
#descriptive statistics for TSU kick return yards with outliers replaced
```

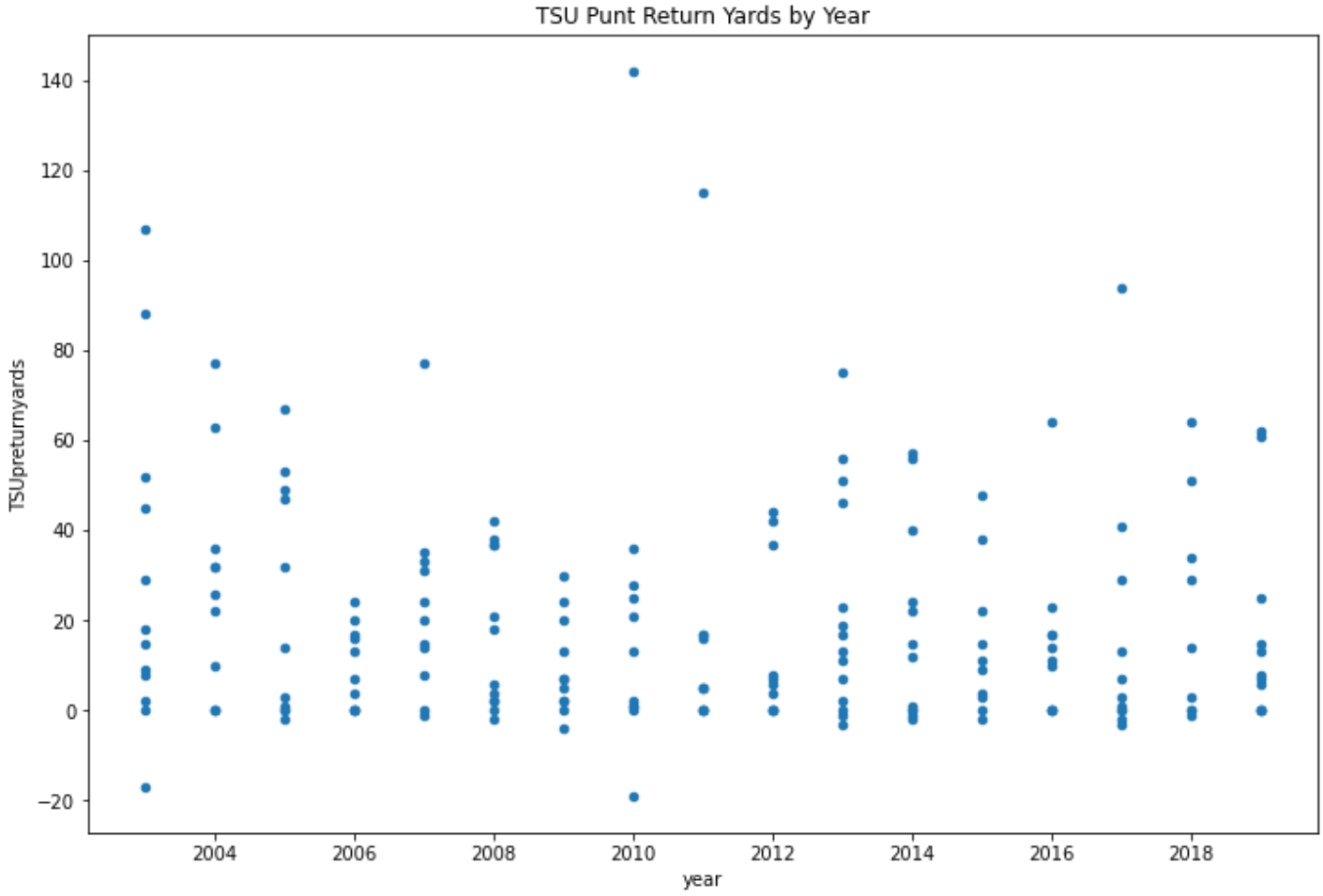
```
#Replacing the value on the outlier caused the mean and standard deviation of TSU kick ret
mydata.TSUkreturnyards_new.describe()
```

Out[432…

```
count    191.000000
mean      77.919739
std       42.808461
min       -9.000000
25%       48.000000
50%       72.000000
75%      109.000000
max      198.000000
Name: TSUkreturnyards_new, dtype: float64
```

In [433…

```
#TSU punt return yards by year
#A scatter plot of the TSU punt return yards showed that for most games it ranged from 0 t
plt.rcParams['figure.figsize']=[12,8]
mydata.plot(x="year",y="TSUpreturnyards",kind="scatter", title="TSU Punt Return Yards by Y
plt.show()
```




In [434…

```
#outliers of punt return yards
#There were 8 outliers on the TSU punt return yards variable. In each of these games, TSU
q1 = mydata["TSUpreturnyards"].quantile(0.25)
q3 = mydata["TSUpreturnyards"].quantile(0.75)
outlier_top_lim = q3 + 1.5 * (q3 - q1)
outlier_bottom_lim = q1 - 1.5 * (q3 - q1)
mydata[["date","city","opponent","TSUpreturnyards"]][(mydata["TSUpreturnyards"]>outlier_to
```

Out[434…

| | date | city | opponent | TSUpreturnyards |
|---|---|---|---|---|
| **0** | 2003-08-30 | Nashville | South Carolina State University | 88 |
| **2** | 2003-09-13 | Memphis | Jackson State University | 107 |

| | date | city | opponent | TSUpreturnyards |
|---|---|---|---|---|
| **19** | 2004-10-30 | Charleston | Eastern Illinois University | 77 |
| **53** | 2007-11-03 | Nashville | Murray State University | 77 |
| **82** | 2010-09-25 | Atlanta | Florida A&M University | 142 |
| **95** | 2011-10-08 | Nashville | Southeast Missouri State University | 115 |
| **116** | 2013-09-28 | St. Louis | Central State University | 75 |
| **167** | 2017-11-04 | Nashville | Virginia University Lynchburg | 94 |

In [435…

```
#replace outliers of TSU punt return yards with mean
mydata["TSUpreturnyards_new"]=np.where((mydata["TSUpreturnyards"]>outlier_top_lim) | (myda
```

In [436…

```
#descriptive statistics for TSU punt return yards
mydata.TSUpreturnyards.describe()
```

Out[436…

```
count    191.000000
mean      18.753927
std       24.579563
min      -19.000000
25%        0.000000
50%       11.000000
75%       29.000000
max      142.000000
Name: TSUpreturnyards, dtype: float64
```

In [437…

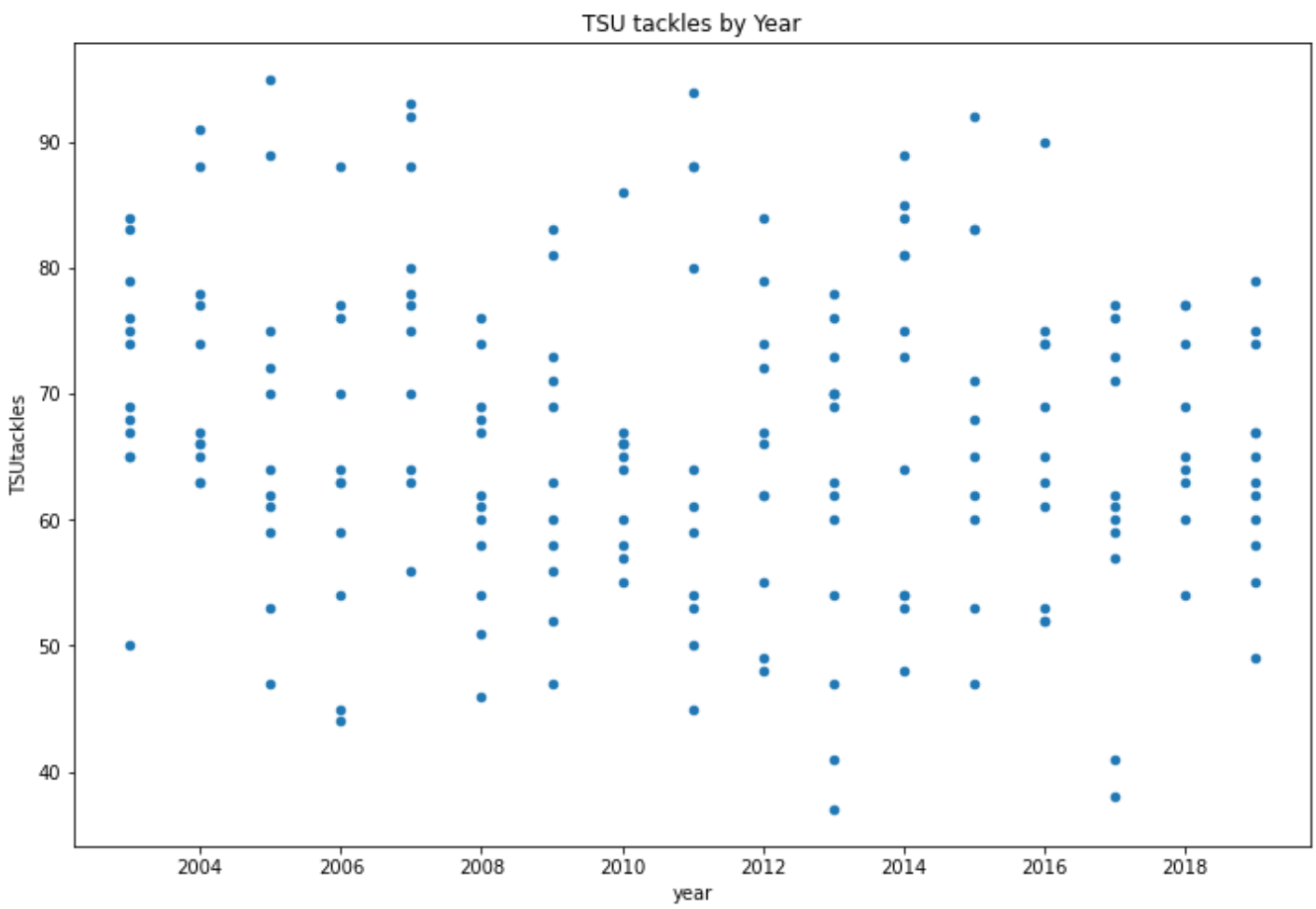
```
#descriptive statistics for TSU punt return yards with outliers replaced
#Replacing the outliers dropped the mean of the variable to 15 and the standard deviation
mydata.TSUpreturnyards_new.describe()
```

Out[437…

```
count    191.000000
mean      15.481840
std       17.785031
min      -19.000000
25%        0.000000
50%       11.000000
75%       24.000000
max       67.000000
Name: TSUpreturnyards_new, dtype: float64
```

In [438…

```
#TSU tackles by year
#A scatter plot of TSU tackes per game showed that for most games TSU 's tackles ranged fi
plt.rcParams['figure.figsize']=[12,8]
mydata.plot(x="year",y="TSUtackles",kind="scatter", title="TSU tackles by Year")
plt.show()
```




In [439…

```
#outliers of TSU tackles
#There were no outliers on the variable so no change was made to the variable.
q1 = mydata["TSUtackles"].quantile(0.25)
q3 = mydata["TSUtackles"].quantile(0.75)
outlier_top_lim = q3 + 1.5 * (q3 - q1)
outlier_bottom_lim = q1 - 1.5 * (q3 - q1)
mydata[["date","city","opponent","TSUtackles"]][(mydata["TSUtackles"]>outlier_top_lim) |
```

Out[439…

| | date | city | opponent | TSUtackles |
|---|---|---|---|---|

In [440…

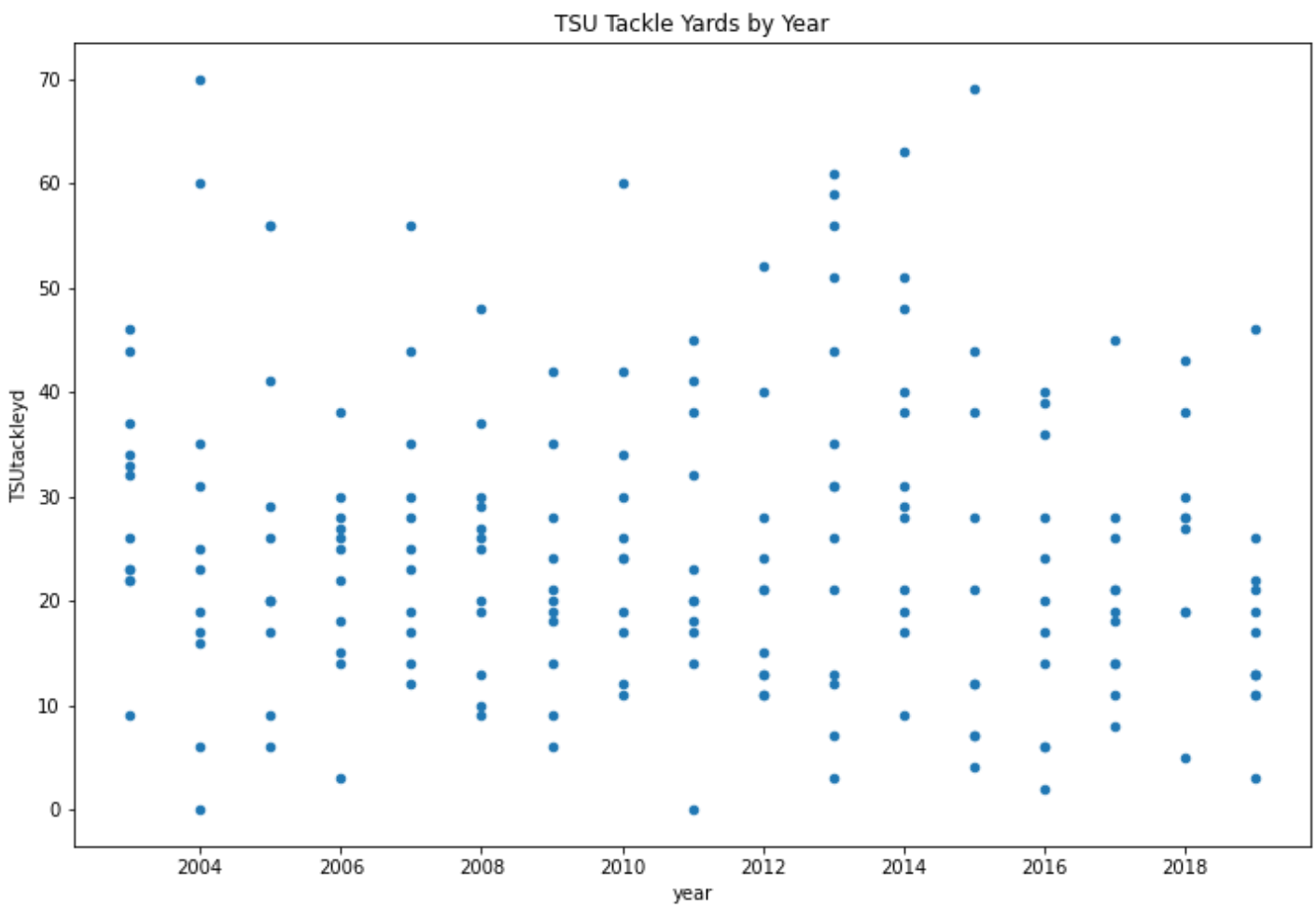
```
#descriptive statistics for TSU tackles
mydata.TSUtackles.describe()
```

Out[440…

```
count    191.000000
mean      66.685864
std       12.195588
min       37.000000
25%       59.000000
50%       66.000000
75%       75.000000
max       95.000000
Name: TSUtackles, dtype: float64
```

In [441…

```
#TSU tackle yards by year
#TSU tackle yards for most games from 2003 to 2019 ranged from 0 to about 45 per game, bas
plt.rcParams['figure.figsize']=[12,8]
mydata.plot(x="year",y="TSUtackleyd",kind="scatter", title="TSU Tackle Yards by Year")
plt.show()
```




In [442…

```
#outliers of TSU tackle yards
#There were 6 outliers for TSU tackle yards. They came in 2 games against Florida A&M Univ
q1 = mydata["TSUtackleyd"].quantile(0.25)
q3 = mydata["TSUtackleyd"].quantile(0.75)
outlier_top_lim = q3 + 1.5 * (q3 - q1)
outlier_bottom_lim = q1 - 1.5 * (q3 - q1)
mydata[["date","city","opponent","TSUtackleyd"]][(mydata["TSUtackleyd"]>outlier_top_lim) |
```

Out[442…

| | date | city | opponent | TSUtackleyd |
|---|---|---|---|---|
| **13** | 2004-09-09 | Martin | University of Tennessee Martin | 60 |
| **15** | 2004-09-25 | Atlanta | Florida A&M University | 70 |
| **82** | 2010-09-25 | Atlanta | Florida A&M University | 60 |
| **118** | 2013-10-12 | Jacksonville | Jacksonville State University | 61 |
| **137** | 2014-11-22 | Murray | Murray State University | 63 |
| **146** | 2015-11-07 | Nashville | Murray State University | 69 |

In [443…

```
#replace outliers of TSU tackle yards with mean
mydata["TSUtackleyd_new"]=np.where((mydata["TSUtackleyd"]>outlier_top_lim) | (mydata["TSUt
```

In [444…

```
#descriptive statistics for TSU tackle yards
mydata.TSUtackleyd.describe()
```

Out[444…

```
count    191.000000
mean      25.350785
std       14.392157
```

```
min         0.000000
25%        14.500000
50%        23.000000
75%        32.500000
max        70.000000
Name: TSUtackleyd, dtype: float64
```

In [445…

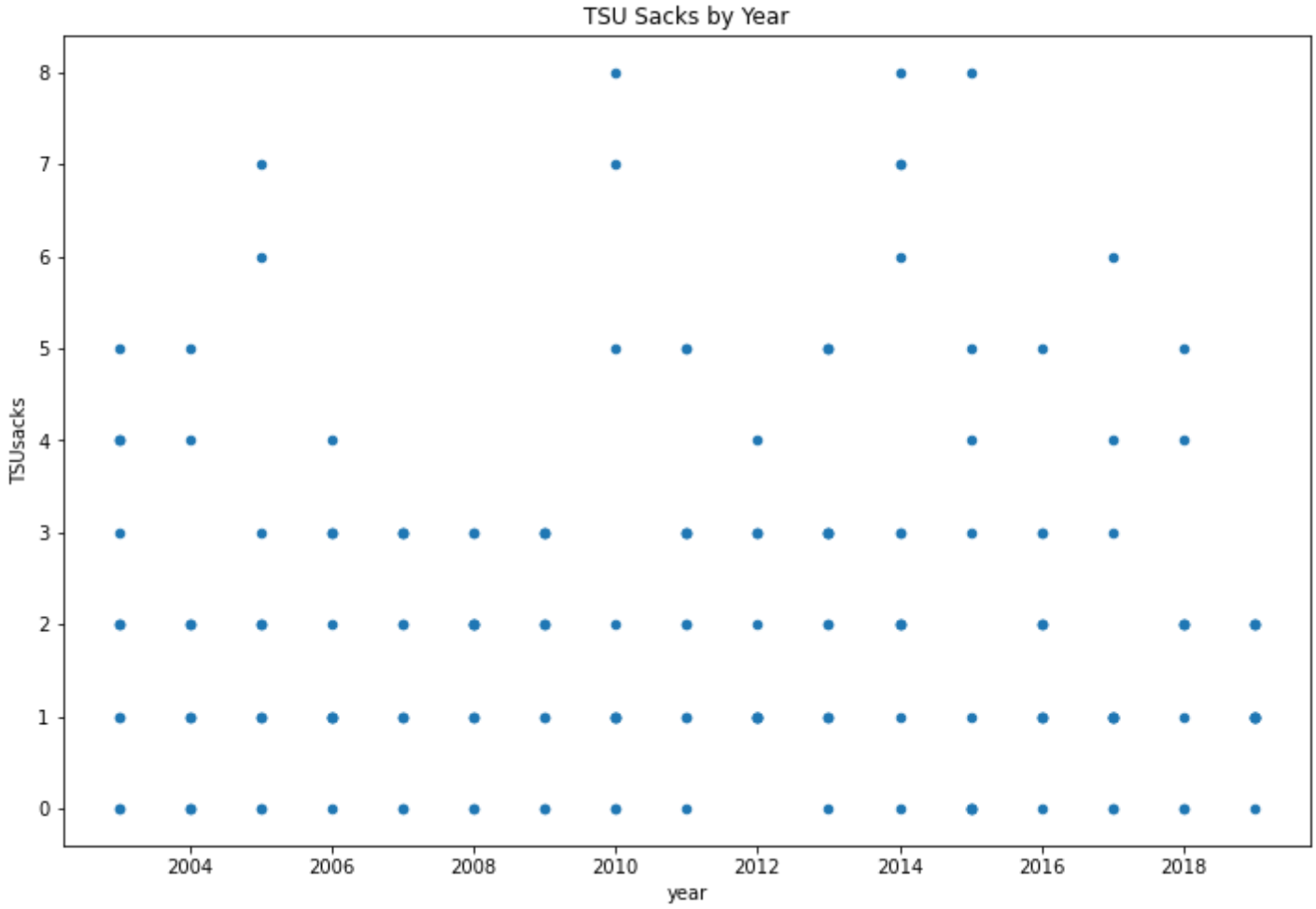
```
#descriptive statistics for TSU tackle yards with outliers replaced
#Replacing the outliers on TSU tackle yards lowered the mean slightly to 24 and lowered it
mydata.TSUtackleyd_new.describe()
```

Out[445…

```
count    191.000000
mean      24.141909
std       12.584055
min        0.000000
25%       14.500000
50%       23.000000
75%       30.500000
max       59.000000
Name: TSUtackleyd_new, dtype: float64
```

In [446…

```
#TSU sacks by year
#For most games from 2003 to 2019, TSU had 5 sacks or fewer. The scatterplot of the TSU sa
plt.rcParams['figure.figsize']=[12,8]
mydata.plot(x="year",y="TSUsacks",kind="scatter", title="TSU Sacks by Year")
plt.show()
```




In [447…

```
#outliers of TSU sacks
#There were 7 outliers on the TSU sacks variable in games against Florida A&M University,
q1 = mydata["TSUsacks"].quantile(0.25)
q3 = mydata["TSUsacks"].quantile(0.75)
```

```
outlier_top_lim = q3 + 1.5 * (q3 - q1)
outlier_bottom_lim = q1 - 1.5 * (q3 - q1)
mydata[["date","city","opponent","TSUsacks"]][(mydata["TSUsacks"]>outlier_top_lim) | (myda
```

Out[447…

| | date | city | opponent | TSUsacks |
|---|---|---|---|---|
| **26** | 2005-09-24 | Atlanta | Florida A&M University | 7.0 |
| **79** | 2010-09-04 | Nashville | Alabama A&M University | 7.0 |
| **82** | 2010-09-25 | Atlanta | Florida A&M University | 8.0 |
| **128** | 2014-09-13 | Memphis | Jackson State University | 7.0 |
| **130** | 2014-09-27 | Nashville | Florida A&M University | 7.0 |
| **137** | 2014-11-22 | Murray | Murray State University | 8.0 |
| **146** | 2015-11-07 | Nashville | Murray State University | 8.0 |

In [448…

```
#replace outliers of TSU sacks with mean
mydata["TSUsacks_new"]=np.where((mydata["TSUsacks"]>outlier_top_lim) | (mydata["TSUsacks"]
```

In [449…

```
#descriptive statistics for TSU sacks
mydata.TSUsacks.describe()
```

Out[449…

```
count    191.000000
mean       2.089005
std        1.776287
min        0.000000
25%        1.000000
50%        2.000000
75%        3.000000
max        8.000000
Name: TSUsacks, dtype: float64
```

In [450…

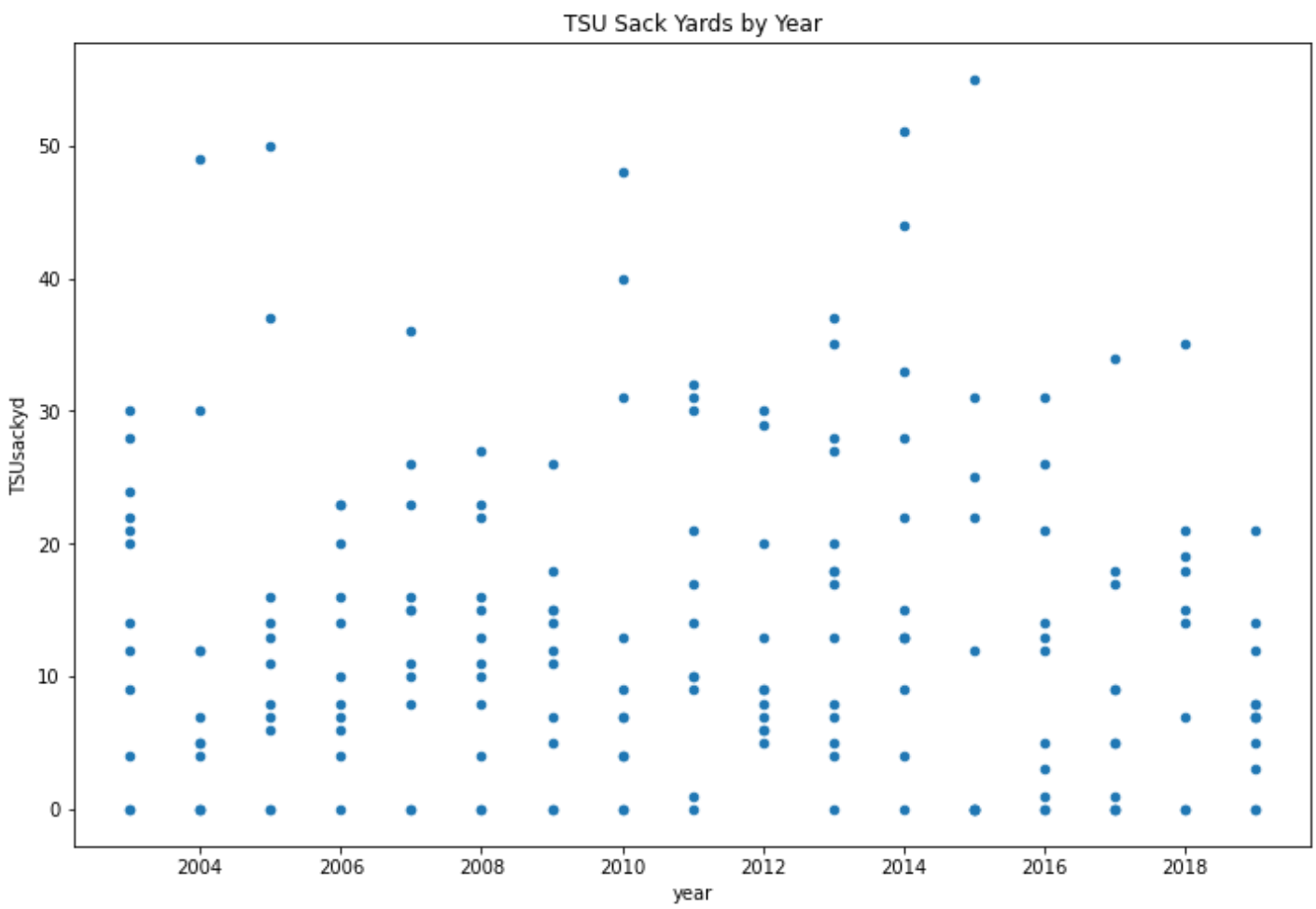
```
#descriptive statistics for TSU sacks with outliers replaced
#With the outliers replaced, the mean TSU sacks were 1.9 with a standard deviation of 1.4
mydata.TSUsacks_new.describe()
```

Out[450…

```
count    191.000000
mean       1.893314
std        1.434319
min        0.000000
25%        1.000000
50%        2.000000
75%        3.000000
max        6.000000
Name: TSUsacks_new, dtype: float64
```

In [451…

```
#TSU sack yards by year
#A scatterplot shows that for most games the TSU sack yards ranged from 0 to 30 yards. Ou
plt.rcParams['figure.figsize']=[12,8]
mydata.plot(x="year",y="TSUsackyd",kind="scatter", title="TSU Sack Yards by Year")
plt.show()
```




In [452…

```
#outliers of TSU sack yards
#There were 6 outliers on the TSU sack yards variable. These were in games against Florida
q1 = mydata["TSUsackyd"].quantile(0.25)
q3 = mydata["TSUsackyd"].quantile(0.75)
outlier_top_lim = q3 + 1.5 * (q3 - q1)
outlier_bottom_lim = q1 - 1.5 * (q3 - q1)
mydata[["date","city","opponent","TSUsackyd"]][(mydata["TSUsackyd"]>outlier_top_lim) | (my
```

Out[452…

| | date | city | opponent | TSUsackyd |
|---|---|---|---|---|
| **15** | 2004-09-25 | Atlanta | Florida A&M University | 49 |
| **26** | 2005-09-24 | Atlanta | Florida A&M University | 50 |
| **82** | 2010-09-25 | Atlanta | Florida A&M University | 48 |
| **130** | 2014-09-27 | Nashville | Florida A&M University | 44 |
| **137** | 2014-11-22 | Murray | Murray State University | 51 |
| **146** | 2015-11-07 | Nashville | Murray State University | 55 |

In [453…

```
#replace outliers of TSU sack yards with mean
mydata["TSUsackyd_new"]=np.where((mydata["TSUsackyd"]>outlier_top_lim) | (mydata["TSUsacky
```

In [454…

```
#descriptive statistics for TSU sack yards
mydata.TSUsackyd.describe()
```

Out[454…

```
count    191.000000
mean      13.534031
std       11.944946
```

```
min         0.000000
25%         5.000000
50%        11.000000
75%        20.000000
max        55.000000
Name: TSUsackyd, dtype: float64
```

In [455…

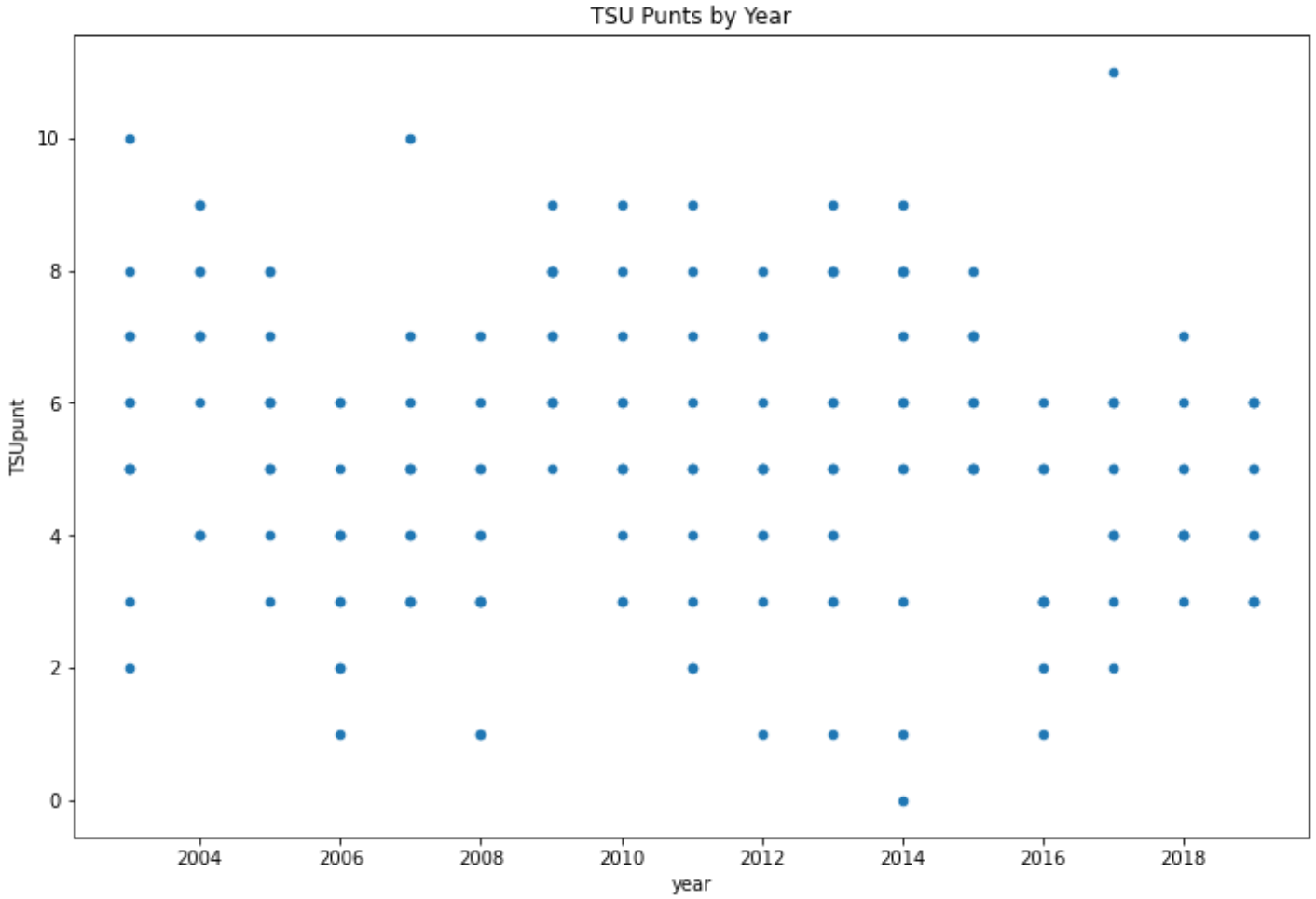
```
#descriptive statistics for TSU sack yards with outliers replaced
#Replacing these outliers, caused the mean of TSU sack yards to drop to 12.4 while the sta
mydata.TSUsackyd_new.describe()
```

Out[455…

```
count    191.000000
mean      12.404210
std       10.010235
min        0.000000
25%        5.000000
50%       11.000000
75%       18.000000
max       40.000000
Name: TSUsackyd_new, dtype: float64
```

In [456…

```
#TSU punts by year
#A scatter plot of TSU punts shows that for most games, TSU had between 3 and 8 punts. Ou
plt.rcParams['figure.figsize']=[12,8]
mydata.plot(x="year",y="TSUpunt",kind="scatter", title="TSU Punts by Year")
plt.show()
```




In [457…

```
#outliers of TSU punt
#There were 4 outliers on the TSU punts variable. They occurred in a game against Austin
q1 = mydata["TSUpunt"].quantile(0.25)
q3 = mydata["TSUpunt"].quantile(0.75)
outlier_top_lim = q3 + 1.5 * (q3 - q1)
```

```
outlier_bottom_lim = q1 - 1.5 * (q3 - q1)
mydata[["date","city","opponent","TSUpunt"]][(mydata["TSUpunt"]>outlier_top_lim) | (mydata
```

Out[457…

| | date | city | opponent | TSUpunt |
|---|---|---|---|---|
| **10** | 2003-11-15 | Nashville | Eastern Kentucky University | 10 |
| **51** | 2007-10-20 | Richmond | Eastern Kentucky University | 10 |
| **136** | 2014-11-08 | Clarksville | Austin Peay State University | 0 |
| **169** | 2017-11-16 | Jacksonville | Jacksonville State University | 11 |

In [458…

```
#replace outliers of TSU punts with mean
mydata["TSUpunt_new"]=np.where((mydata["TSUpunt"]>outlier_top_lim) | (mydata["TSUpunt"]<ou
```

In [459…

```
#descriptive statistics for TSU punts
mydata.TSUpunt.describe()
```

Out[459…

```
count    191.000000
mean       5.162304
std        2.064702
min        0.000000
25%        4.000000
50%        5.000000
75%        6.000000
max       11.000000
Name: TSUpunt, dtype: float64
```

In [460…

```
#descriptive statistics for TSU punts with outliers replaced
#Replacing the outliers made neglibile difference in the mean and standard deviation for t
mydata.TSUpunt_new.describe()
```

Out[460…

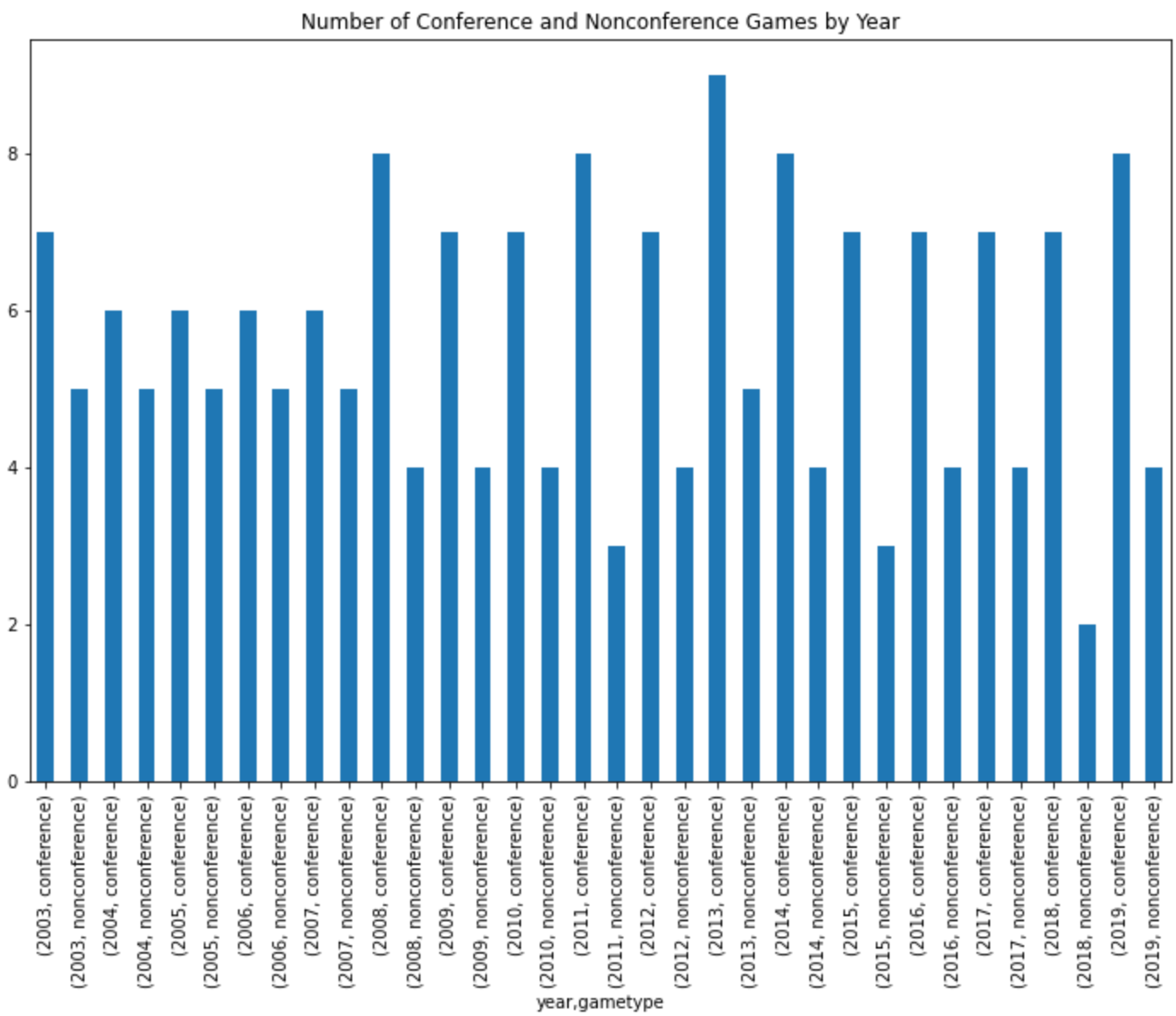
```
count    191.000000
mean       5.108111
std        1.921996
min        1.000000
25%        4.000000
50%        5.000000
75%        6.000000
max        9.000000
Name: TSUpunt_new, dtype: float64
```

In [461…

```
#number of games by game type by year
#The number of conference and nonconference games varied by year. TSU had more conference
plt.rcParams['figure.figsize']=[12,8]
gametype_by_year=mydata.groupby("year")["gametype"].value_counts()
gametype_by_year.plot(kind="bar",title="Number of Conference and Nonconference Games by Ye
```

Out[461…

```
<AxesSubplot:title={'center':'Number of Conference and Nonconference Games by Year'}, xlab
el='year,gametype'>
```




# More data wrangling to prep for machine learning

In [462…

```
#creating and saving new file with variables with outliers replaced
mydata_1=mydata
mydata_1.to_csv("mydata_1.csv",encoding='utf-8')
```

In [463…

```
#reading in data frame & checking column names
mydata_1=pd.read_csv("mydata_1.csv")
mydata_1=mydata_1.iloc[:,1:]
mydata_1.columns
```

Out[463…

```
Index(['date', 'city', 'state', 'winscore', 'losscore', 'loser', 'winner',
       'locale', 'TSU score', 'opponent score', 'scorediff', 'scorediff_abs',
       'winloss', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'opponent', 'gametype', 'year',
       'TSU score_new', 'opponent score_new', 'scorediff_new',
       'scorediff_abs_new', 'attendance_new', 'TSUrushyards_new',
       'TSUreceiveyards_new', 'TSUkreturnyards_new', 'TSUpreturnyards_new',
       'TSUtackleyd_new', 'TSUsacks_new', 'TSUsackyd_new', 'TSUpunt_new'],
      dtype='object')
```

In [464…

```
#creating bivariate locale and gametype numeric variables
```

```
mydata_1["locale_01"]=np.where(mydata_1["locale"]=="Home",1,0)
mydata_1["gametype_01"]=np.where(mydata_1["gametype"]=="conference",1,0)
mydata_1.columns
```

Out[464…
```
Index(['date', 'city', 'state', 'winscore', 'losscore', 'loser', 'winner',
       'locale', 'TSU score', 'opponent score', 'scorediff', 'scorediff_abs',
       'winloss', 'attendance', 'TSUrushyards', 'TSUreceiveyards',
       'TSUkreturnyards', 'TSUpreturnyards', 'TSUtackles', 'TSUtackleyd',
       'TSUsacks', 'TSUsackyd', 'TSUpunt', 'opponent', 'gametype', 'year',
       'TSU score_new', 'opponent score_new', 'scorediff_new',
       'scorediff_abs_new', 'attendance_new', 'TSUrushyards_new',
       'TSUreceiveyards_new', 'TSUkreturnyards_new', 'TSUpreturnyards_new',
       'TSUtackleyd_new', 'TSUsacks_new', 'TSUsackyd_new', 'TSUpunt_new',
       'locale_01', 'gametype_01'],
      dtype='object')
```

In [465…
```
mydata_1=mydata_1[['year','TSU score_new', 'opponent score_new',
        'attendance_new', 'TSUrushyards_new','TSUreceiveyards_new', 'TSUkreturnyards_new',
        'TSUpreturnyards_new', 'TSUtackles','TSUtackleyd_new', 'TSUsacks_new',
        'TSUsackyd_new', 'TSUpunt_new','locale_01','winloss','gametype_01']]
mydata_1.columns
```

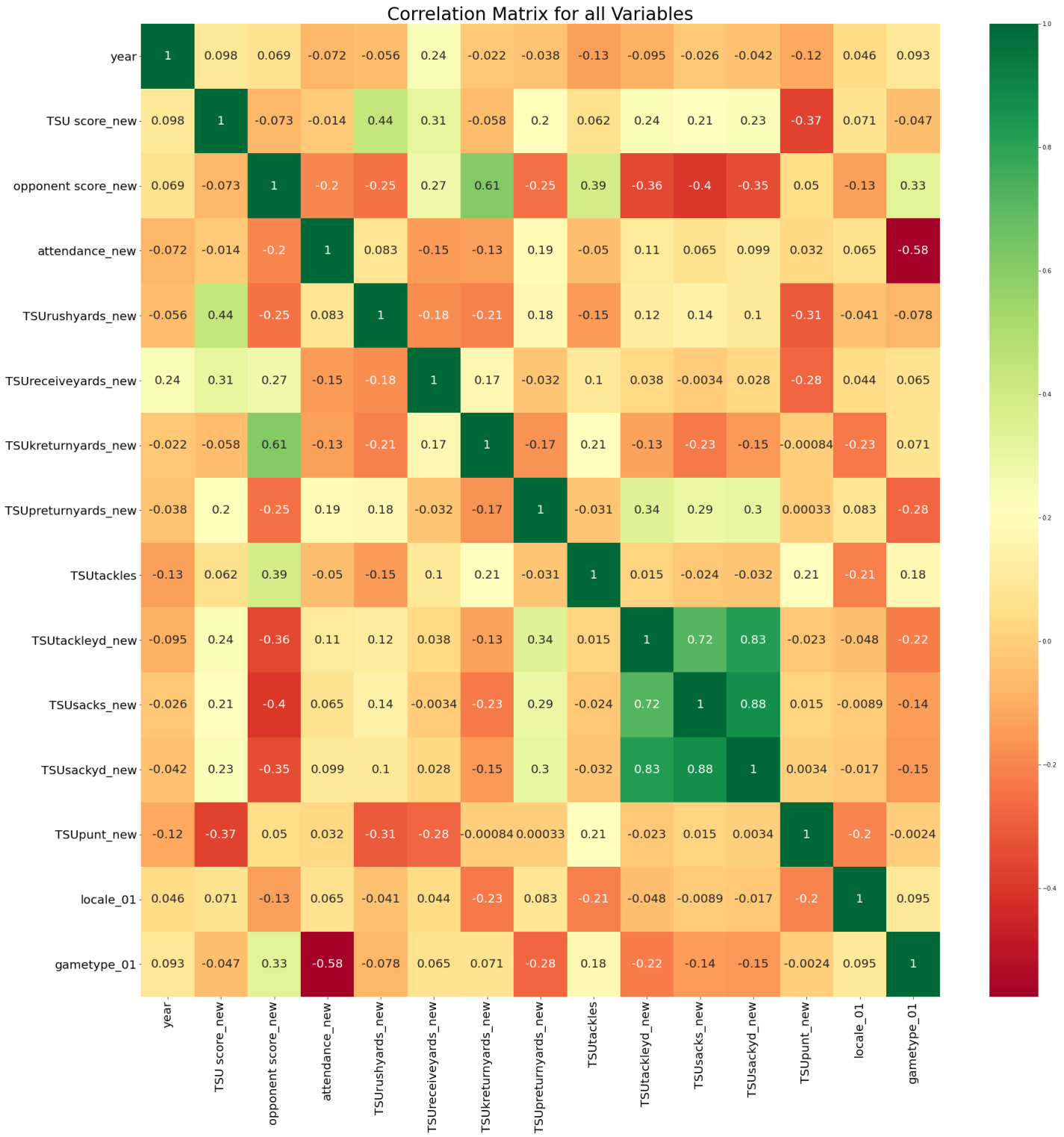
Out[465…
```
Index(['year', 'TSU score_new', 'opponent score_new', 'attendance_new',
       'TSUrushyards_new', 'TSUreceiveyards_new', 'TSUkreturnyards_new',
       'TSUpreturnyards_new', 'TSUtackles', 'TSUtackleyd_new', 'TSUsacks_new',
       'TSUsackyd_new', 'TSUpunt_new', 'locale_01', 'winloss', 'gametype_01'],
      dtype='object')
```

In [466…
```
#info on dataset
mydata_1.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 191 entries, 0 to 190
Data columns (total 16 columns):
 #   Column               Non-Null Count  Dtype  
---  ------               --------------  -----  
 0   year                 191 non-null    int64  
 1   TSU score_new        191 non-null    float64
 2   opponent score_new   191 non-null    float64
 3   attendance_new       191 non-null    float64
 4   TSUrushyards_new     191 non-null    float64
 5   TSUreceiveyards_new  191 non-null    float64
 6   TSUkreturnyards_new  191 non-null    float64
 7   TSUpreturnyards_new  191 non-null    float64
 8   TSUtackles           191 non-null    int64  
 9   TSUtackleyd_new      191 non-null    float64
 10  TSUsacks_new         191 non-null    float64
 11  TSUsackyd_new        191 non-null    float64
 12  TSUpunt_new          191 non-null    float64
 13  locale_01            191 non-null    int32  
 14  winloss              191 non-null    object 
 15  gametype_01          191 non-null    int32  
dtypes: float64(11), int32(2), int64(2), object(1)
memory usage: 22.5+ KB
```

In [467…
```
# heatmap of correlations of all variables in dataset
corrmat=mydata_1.corr()
feature_ind=corrmat.index
plt.figure(figsize=(30,30))
sns.heatmap(mydata_1[feature_ind].corr(),
            annot=True,cmap="RdYlGn", annot_kws={"size":20})
plt.yticks(fontsize=20)
plt.xticks(fontsize=20)
```

```
plt.title("Correlation Matrix for all Variables", fontsize=30)
plt.show()
```




In [468…

```
#column pairs with moderate to high correlations (r >= 0.5)
corrmat_abs=mydata_1.corr().abs()
s = corrmat_abs.unstack()
so = s.sort_values(ascending=True)
print(so[so>=.5])
#These results show 5 pairs of features that are at least moderately correlated (absolute
```

```
gametype_01          attendance_new          0.575838
attendance_new       gametype_01             0.575838
opponent score_new   TSUkreturnyards_new     0.607815
TSUkreturnyards_new  opponent score_new      0.607815
TSUtackleyd_new      TSUsacks_new            0.720046
TSUsacks_new         TSUtackleyd_new         0.720046
```

```
TSUtackleyd_new      TSUsackyd_new          0.825525
TSUsackyd_new        TSUtackleyd_new        0.825525
                     TSUsacks_new           0.875692
TSUsacks_new         TSUsackyd_new          0.875692
year                 year                   1.000000
TSUpreturnyards_new  TSUpreturnyards_new    1.000000
TSUpunt_new          TSUpunt_new            1.000000
TSUsackyd_new        TSUsackyd_new          1.000000
TSUsacks_new         TSUsacks_new           1.000000
TSUtackleyd_new      TSUtackleyd_new        1.000000
TSUtackles           TSUtackles             1.000000
TSUkreturnyards_new  TSUkreturnyards_new    1.000000
TSUreceiveyards_new  TSUreceiveyards_new    1.000000
TSUrushyards_new     TSUrushyards_new       1.000000
attendance_new       attendance_new         1.000000
opponent score_new   opponent score_new     1.000000
TSU score_new        TSU score_new          1.000000
locale_01            locale_01              1.000000
gametype_01          gametype_01            1.000000
dtype: float64
```

In [469…

```
#save updated file
mydata_1.to_csv("mydata_1.csv",encoding="utf-8")
```

# Machine learning

In [470…

```
#read in file for machine learning
mydata_1=pd.read_csv("mydata_1.csv")
mydata_1=mydata_1.iloc[:,1:]
mydata_1.head()
```

Out[470…

| | year | TSU score_new | opponent score_new | attendance_new | TSUrushyards_new | TSUreceiveyards_new | TSUkreturnyards_new | TSU |
|---|---|---|---|---|---|---|---|---|
| **0** | 2003 | 37.0 | 20.0 | 18124.000000 | 113.0 | 365.0 | 69.0 | |
| **1** | 2003 | 24.0 | 31.0 | 18085.000000 | 141.0 | 146.0 | 147.0 | |
| **2** | 2003 | 44.0 | 14.0 | 16985.230366 | 209.0 | 132.0 | 138.0 | |
| **3** | 2003 | 7.0 | 10.0 | 16985.230366 | 153.0 | 138.0 | 86.0 | |
| **4** | 2003 | 41.0 | 10.0 | 8434.000000 | 142.0 | 285.0 | 11.0 | |

In [471…

```
#create datasets for features and outcome variable (winloss)
x = mydata_1.drop('winloss', axis = 1).values
y =mydata_1['winloss'].values
```

# Decision tree

In [472…

```
#create test and training datasets
x_train, x_test, y_train, y_test = train_test_split(x, y, test_size = 0.3, random_state =0
#create decision tree model with entropy index
dt_model = DecisionTreeClassifier(max_depth = 5, criterion = 'entropy',random_state=0)
#train model to training data
dt_model.fit(x_train, y_train)
#predict on test data
dt_pred = dt_model.predict(x_test)
```

```
#accuracy
accuracy_dt=accuracy_score(y_test, dt_pred)
```

## Random Forest

In [473…

```
#create test and training datasets
x_train, x_test, y_train, y_test = train_test_split(x, y, test_size = 0.3, random_state =0
#create a random forest model
rf_model=RandomForestClassifier(random_state=1000)
#train the model using the training sets
rf_model.fit(x_train,y_train)
#predict test data
rf_pred=rf_model.predict(x_test)
#accuracy
accuracy_rf=accuracy_score(y_test, rf_pred)
```

## Support Vector Machine

In [474…

```
#create test and training datasets
mydata_1['winloss_01'] = pd.to_numeric(np.where(mydata_1['winloss']== 'Win', 1, 0))
x = mydata_1[['year', 'TSU score_new', 'opponent score_new', 'attendance_new',
       'TSUrushyards_new', 'TSUreceiveyards_new', 'TSUkreturnyards_new',
       'TSUpreturnyards_new', 'TSUtackles', 'TSUtackleyd_new', 'TSUsacks_new',
       'TSUsackyd_new', 'TSUpunt_new', 'locale_01', 'gametype_01']]
y=mydata_1['winloss_01']
x_train, x_test, y_train, y_test = train_test_split(x, y, test_size = 0.3, random_state =0
#create support vector machine model
svm_model = svm.SVC(kernel='poly', degree=2)
#train model
svm_model.fit(x_train, y_train)
#predict on test data
svm_predict = svm_model.predict(x_test)
#accuracy score
accuracy_svm = accuracy_score(y_test, svm_predict)
```

## Accuracy

In [475…

```
#The accuracy scores of the different models run over the test data are below.
print("The accuracy of the decision tree model is ", accuracy_dt, ".")
print("The accuracy of the random forest model is ", accuracy_rf, ".")
print("The accuracy of the support vector machine model is ", accuracy_svm, ".")
```

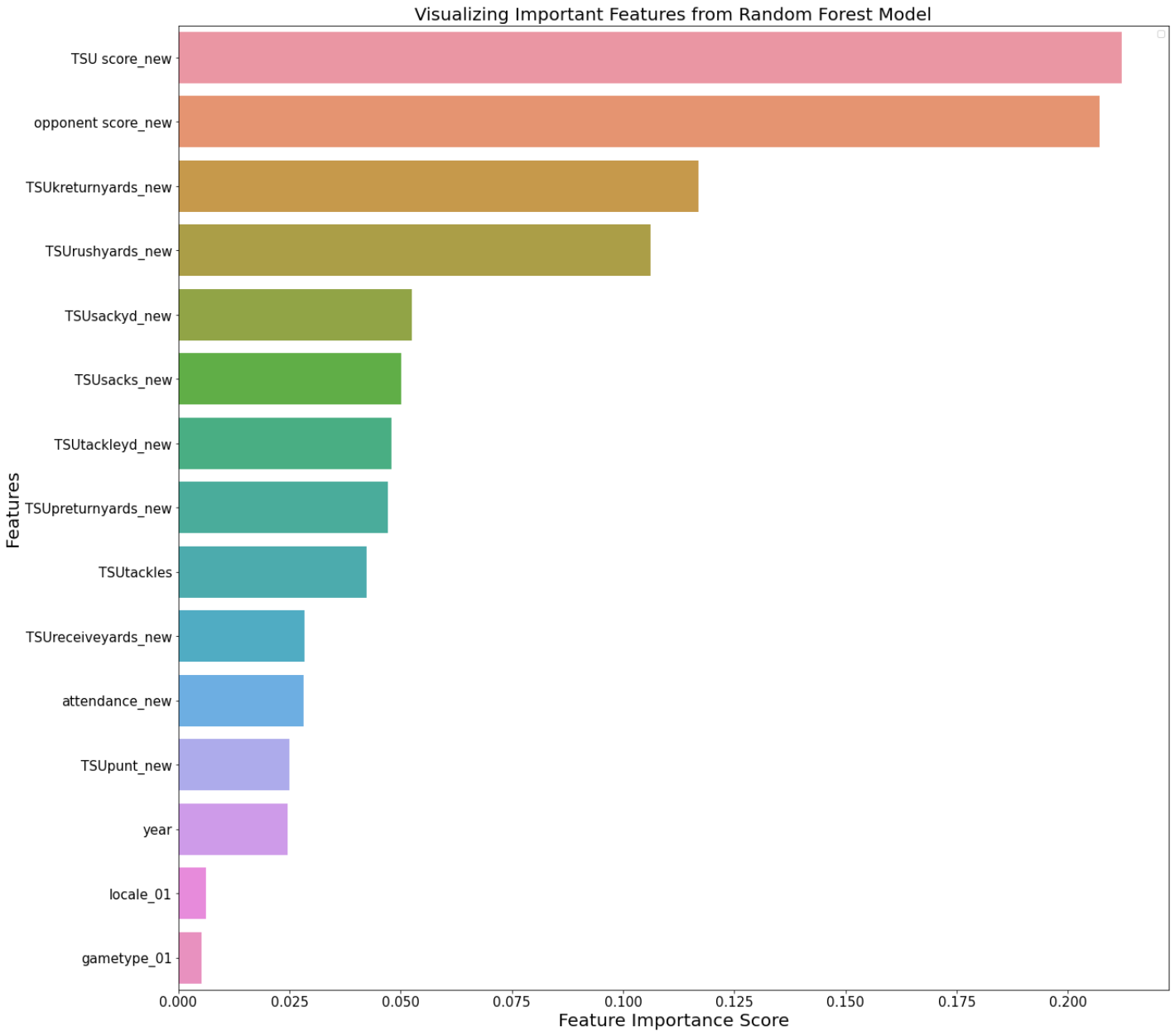
```
The accuracy of the decision tree model is  0.7586206896551724 .
The accuracy of the random forest model is  0.8275862068965517 .
The accuracy of the support vector machine model is  0.43103448275862066 .
```

## Final model

**The accuracy of the decision trees model was good (.76). The support vector machine model had lower accuracy ( .43). Of the three types of models ran, the random forest model had the highest accuracy (.83). Visualizing the features based on their feature importance scores from the random forest shows that TSU score, opponent score, TSU kick return yards, and TSU rushing yards were the most important in predicting a win. Locale and game type appeared to be unimportant in predicting a TSU win.**

In [476…

```
# Creating a bar plot for important features
import pandas as pd
fn=['year', 'TSU score_new', 'opponent score_new', 'attendance_new',
       'TSUrushyards_new', 'TSUreceiveyards_new', 'TSUkreturnyards_new',
       'TSUpreturnyards_new', 'TSUtackles', 'TSUtackleyd_new', 'TSUsacks_new',
       'TSUsackyd_new', 'TSUpunt_new', 'locale_01', 'gametype_01']
feature_imp = pd.Series(rf_model.feature_importances_,index=fn).sort_values(ascending=Fals
feature_imp
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline
plt.figure(figsize=(20,20))
plots=sns.barplot(x=feature_imp,y=feature_imp.index)
plt.yticks(fontsize=15)
plt.xticks(fontsize=15)
plt.xlabel('Feature Importance Score',fontsize=20)
plt.ylabel('Features',fontsize=20)
plt.title("Visualizing Important Features from Random Forest Model", fontsize=20)
plt.legend([],)
plt.show()
```




In [ ]: