

# 07-Pandas-Exercises

October 19, 2022

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## 1 Pandas Exercises

Time to test your new pandas skills! Use the `population_by_county.csv` file in the Data folder to complete the tasks in bold below!

NOTE: ALL TASKS CAN BE DONE IN ONE LINE OF PANDAS CODE. GET STUCK? NO PROBLEM! CHECK OUT THE SOLUTIONS LECTURE!

IMPORTANT NOTE! Make sure you don't run the cells directly above the example output shown, otherwise you will end up writing over the example output!

**1. Import pandas and read in the `population_by_county.csv` file into a dataframe called `pop`.**

```
[1]:
```

```
[2]:
```

**2. Show the head of the dataframe**

```
[ ]: # CODE HERE
```

```
[3]: # DON'T WRITE HERE
```

```
[3]:
```

	County	State	2010Census	2017PopEstimate
0	Abbeville County	South Carolina	25417	24722
1	Acadia Parish	Louisiana	61773	62590
2	Accomack County	Virginia	33164	32545
3	Ada County	Idaho	392365	456849
4	Adair County	Iowa	7682	7054

### 3. What are the column names?

```
[ ]:
```

```
[4]: # DON'T WRITE HERE
```

```
[4]: Index(['County', 'State', '2010Census', '2017PopEstimate'], dtype='object')
```

4. How many States are represented in this data set? Note: the data includes the District of Columbia

```
[ ]:
```

```
[5]: # DON'T WRITE HERE
```

```
[5]: 51
```

### 5. Get a list or array of all the states in the data set.

```
[ ]:
```

```
[6]: # DON'T WRITE HERE
```

```
[6]: array(['South Carolina', 'Louisiana', 'Virginia', 'Idaho', 'Iowa',  
        'Kentucky', 'Missouri', 'Oklahoma', 'Colorado', 'Illinois',  
        'Indiana', 'Mississippi', 'Nebraska', 'North Dakota', 'Ohio',  
        'Pennsylvania', 'Washington', 'Wisconsin', 'Vermont', 'Minnesota',  
        'Florida', 'North Carolina', 'California', 'New York', 'Wyoming',  
        'Michigan', 'Alaska', 'Maryland', 'Kansas', 'Tennessee', 'Texas',  
        'Maine', 'Arizona', 'Georgia', 'Arkansas', 'New Jersey',  
        'South Dakota', 'Alabama', 'Oregon', 'West Virginia',  
        'Massachusetts', 'Utah', 'Montana', 'New Hampshire', 'New Mexico',  
        'Rhode Island', 'Nevada', 'District of Columbia', 'Connecticut',  
        'Hawaii', 'Delaware'], dtype=object)
```

### 6. What are the five most common County names in the U.S.?

```
[ ]:
```

```
[7]: # DON'T WRITE HERE
```

```
[7]: Washington County    30  
     Jefferson County    25  
     Franklin County    24  
     Jackson County    23  
     Lincoln County    23  
     Name: County, dtype: int64
```

7. What are the top 5 most populated Counties according to the 2010 Census?

[ ]:

[8]: # DON'T WRITE HERE

```
[8]:
      County      State  2010Census  2017PopEstimate
1713 Los Angeles County California   9818605       10163507
 628      Cook County    Illinois   5194675       5211263
1209    Harris County      Texas   4092459       4652980
1784  Maricopa County    Arizona   3817117       4307033
2501  San Diego County  California   3095313       3337685
```

8. What are the top 5 most populated States according to the 2010 Census?

[ ]:

[9]: # DON'T WRITE HERE

```
[9]:
      State      2010Census  2017PopEstimate
California   37253956       39536653
Texas        25145561       28304596
New York     19378102       19849399
Florida      18801310       20984400
Illinois     12830632       12802023
```

9. How many Counties have 2010 populations greater than 1 million?

[ ]:

[10]: # DON'T WRITE HERE

[10]: 39

10. How many Counties don't have the word "County" in their name?

[ ]:

[11]: # DON'T WRITE HERE

[11]: 135

11. Add a column that calculates the percent change between the 2010 Census and the 2017 Population Estimate

```
[ ]: # CODE HERE
```

```
# USE THIS TO SHOW THE RESULT  
pop.head()
```

```
[12]: # DON'T WRITE HERE
```

```
[12]:
```

	County	State	2010Census	2017PopEstimate	\
0	Abbeville County	South Carolina	25417	24722	
1	Acadia Parish	Louisiana	61773	62590	
2	Accomack County	Virginia	33164	32545	
3	Ada County	Idaho	392365	456849	
4	Adair County	Iowa	7682	7054	

  

	PercentChange
0	-2.734390
1	1.322584
2	-1.866482
3	16.434697
4	-8.174954

Bonus: What States have the highest estimated percent change between the 2010 Census and the 2017 Population Estimate? This will take several lines of code, as it requires a recalculation of PercentChange.

```
[ ]: # CODE HERE
```

```
[13]: # DON'T WRITE HERE
```

```
[13]:
```

	2010Census	2017PopEstimate	PercentChange
State			
District of Columbia	601723	693972	15.330808
Texas	25145561	28304596	12.562993
North Dakota	672591	755393	12.310899
Utah	2763885	3101833	12.227282
Florida	18801310	20984400	11.611372

## 2 GREAT JOB!