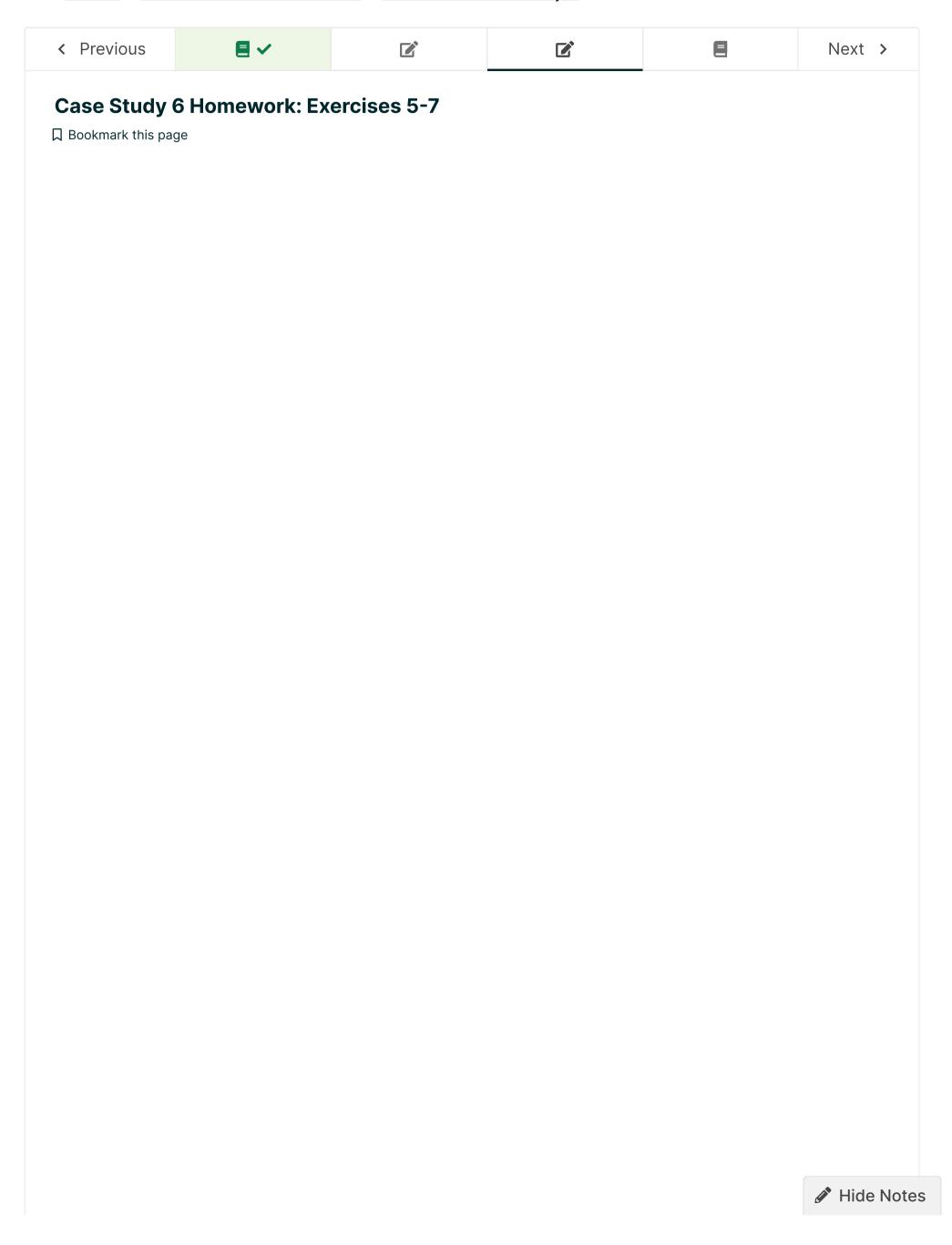
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☆ Course / Week 4: Case Studies Part 2 / Homework: Case Study 6



Homework due Jul 14, 2021 05:59 +06

Exercise 5

1/1 point (graded)

In Exercise 5, we will create a function that computes the observed homophily given a village and characteristic.

Instructions

Complete the function homophily(), which takes a network G, a dictionary of node characteristics chars, and node IDs IDs. For each node pair, determine whether a tie exists between them, as well as whether they share a characteristic. The total count of these is num_ties and num_same_ties , respectively, and their ratio is the homophily of chars in G . Complete the function by choosing where to increment <code>num_same_ties</code> and <code>num_ties</code>.

Complete this function:

```
def homophily(G, chars, IDs):
Given a network G, a dict of characteristics chars for node IDs,
and dict of node IDs for each node in the network,
find the homophily of the network.
.....
num_same_ties = 0
num ties = 0
for n1, n2 in G.edges():
    if IDs[n1] in chars and IDs[n2] in chars:
        if G.has_edge(n1, n2):
            # Should `num_ties` be incremented? What about `num_same_ties`?
            if chars[IDs[n1]] == chars[IDs[n2]]:
                # Should `num_ties` be incremented? What about `num_same_ties`?
return (num_same_ties / num_ties)
```

What should be done if the first conditional statement, if G.has_edge(n1, n2), is True?

- Increment | num_ties | and decrement | num_same_ties Do nothing to num_ties and increment num_same_ties Decrement num_ties and do nothing to num_same_ties Increment num_ties and do nothing to num_same_ties

You have used 1 of 2 attempts

✓ Correct (1/1 point)

Exercise 6

1/1 point (graded)

In Exercise 6, we will obtain the personal IDs for Villages 1 and 2. These will be used in the next exercise to calculate homophily for these villages.

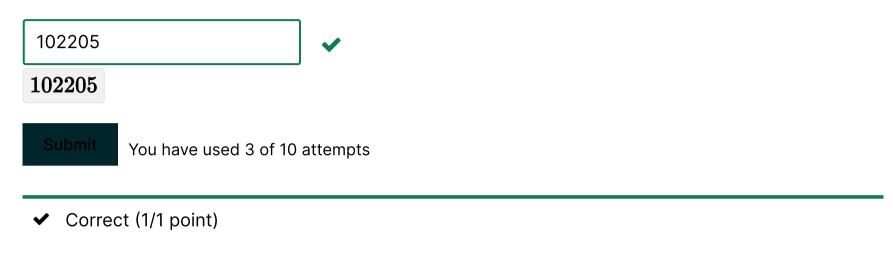
Instructions

In this dataset, each individual has a personal ID, or PID, stored in key_vilno_1.csv and key_vilno_1.csv and data_filepath1 and data_filepath2 contain the URLs to the datasets used in this exercise. Use pd.read_csv to read in and store key_vilno_1.csv and key_vilno_1.csv and key_vilno_1.csv and key_vilno_1.csv and key_vilno_1.csv and key_vilno_3.csv and <a href="key_v

The code to get you started can be found here:

```
data_filepath1 = "https://courses.edx.org/asset-v1:HarvardX+PH526x+2T2019+type@asset+block@key_vilno
data_filepath2 = "https://courses.edx.org/asset-v1:HarvardX+PH526x+2T2019+type@asset+block@key_vilno_2.csv
# Enter code here!
```

What is the personal ID of the person at index 100 in village 1?



Exercise 7

1/1 point (graded)

In Exercise 7, we will compute the homophily of several network characteristics for Villages 1 and 2 and compare them to homophily due to chance alone. The networks for these villages have been stored as networks graph objects G1 and G2.

Instructions

- Use your homophily() function to compute the observed homophily for sex, caste, and religion in Villages 1 and 2. Print all six values.
- Use chance_homophily() to compare the observed homophily values to the chance homophily values. Are observed values higher or lower than those expected by chance?

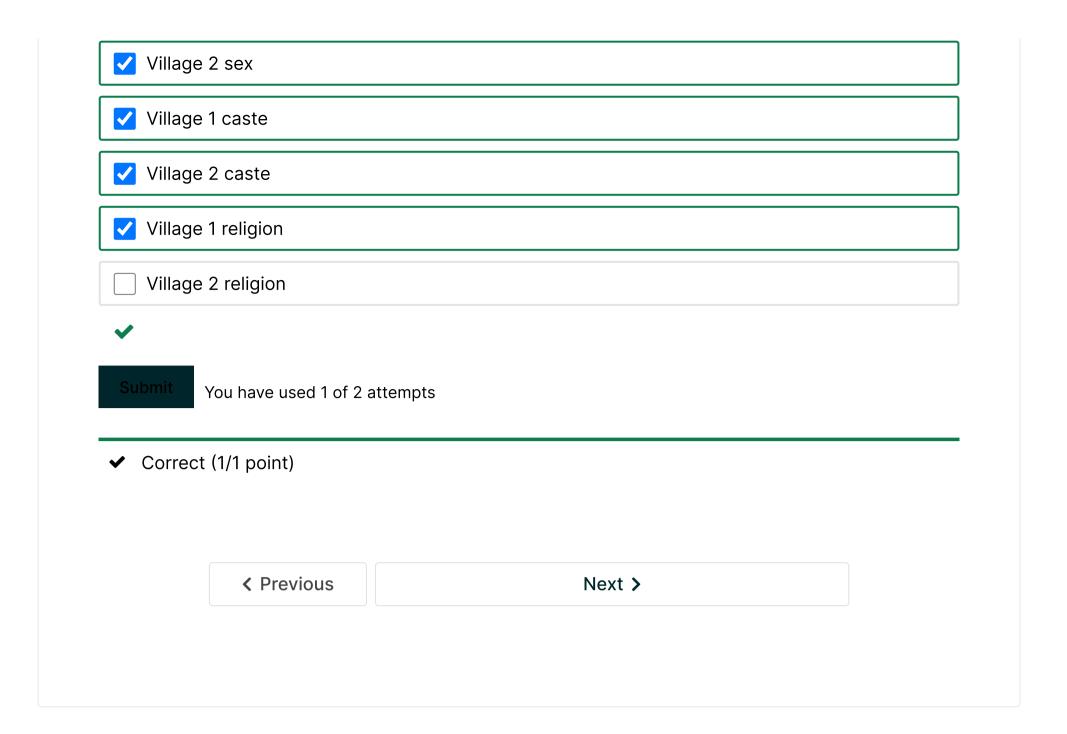
Here's the code to get you started:

```
import networkx as nx
A1 = np.array(pd.read_csv("https://courses.edx.org/asset-v1:HarvardX+PH526x+2T2019+type@asset+block@adj_al
A2 = np.array(pd.read_csv("https://courses.edx.org/asset-v1:HarvardX+PH526x+2T2019+type@asset+block@adj_al
G1 = nx.to_networkx_graph(A1)
G2 = nx.to_networkx_graph(A2)

pid1 = pd.read_csv(data_filepath1, dtype=int)['0'].to_dict()
pid2 = pd.read_csv(data_filepath2, dtype=int)['0'].to_dict()
# Enter your code here!
```

For which characteristics is the observed homophily higher than the chance homophily? Select ALL that apply.





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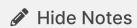
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