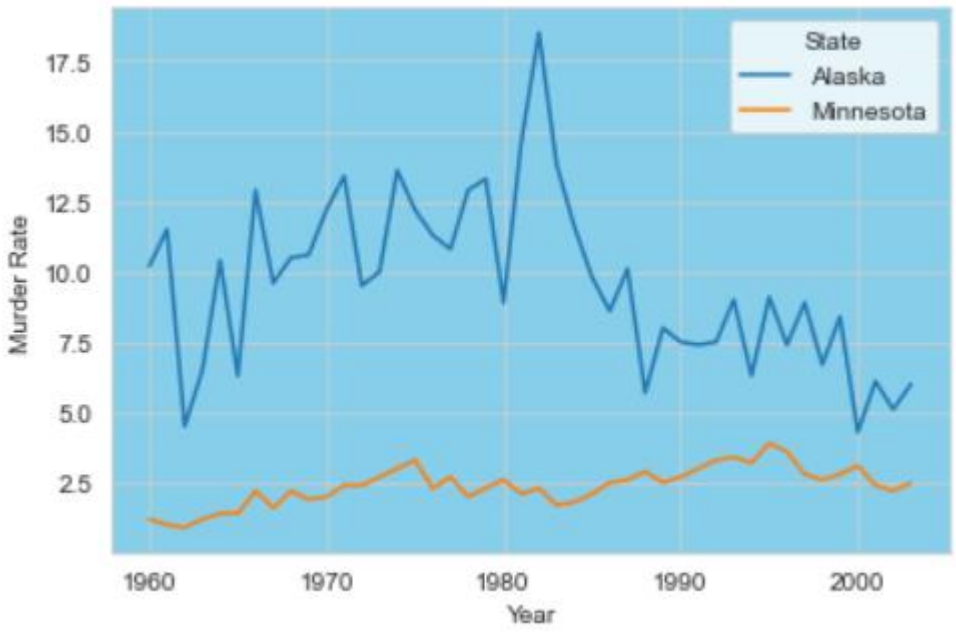
COURSE :INFO 5502 **ASSIGNMENT-5** **STUDENT ID:11442777**

1.1) What additional information will we need before we can check for that association?

All the individual states have implemented the death punishment or not. Even the murder rates fluctuate over the time period, the murder rates in particular states difference starting with one year then onto the next year.

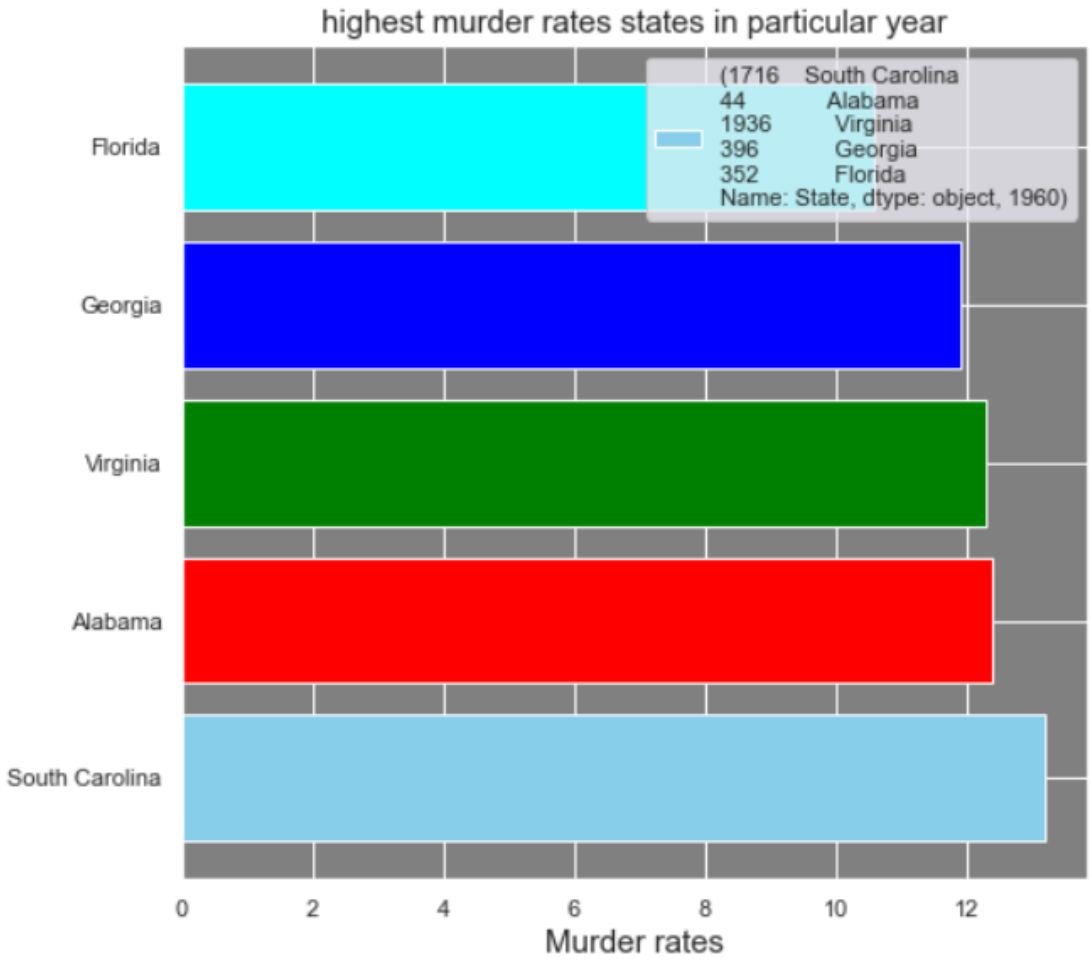
1.2. Draw a line plot with years on the horizontal axis and murder rates on the vertical axis. Include two lines: one for Alaska murder rates and one for Minnesota murder rates. Create this plot using a single call: ak mn.plot?



1.3) Implement the function most murderous, which takes a year (an integer) as its argument. It does two things:

1. It draws a horizontal bar chart of the 5 states that had the highest murder rate in that year.

2. It returns an array of the names of these states in order of increasing murder rate.



1.4) How many more people were murdered in California in 1988 than in 1975? Assign ca change to the answer.

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no_of_murders ::726
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2.1) Implement the function two year changes that takes an array of murder rates for a state, ordered by increasing year. For all two-year periods (e.g., from 1960 to 1962), it computes and returns the number of increases minus the number of decreases.

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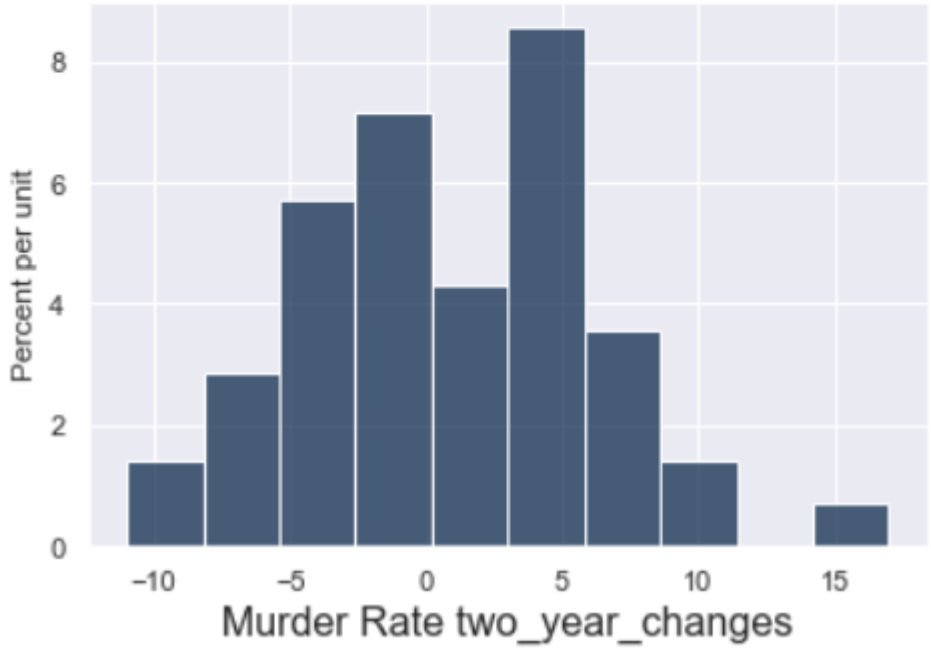
[-5, -6, -1, 1, 17, -4, 4, -3, -6, -3, -2, 4, -3, 8, 5, 5, -6, 8, 2, 9, 5, -4, 6, 0, -2, 0, -10, 1, 5, -3, 10, -1, 5, 3, 3,
1, -1, 5, 6, -11, -3, -2, 2, 5, -8, -1, 6, 1, 3, 0]
```

2.2) Assign changes by state to a table with one row per state that has two columns: the State name and the Murder Rate two year changes statistic computed across all years in our data set for that state.

State	Murder Rate two_year_changes
Alabama	-6
Alaska	-5
Arizona	1
Arkansas	-1
California	17
Colorado	-4
Connecticut	4
Delaware	-3
Florida	-6
Georgia	-3

... (40 rows omitted)



2.3) Assign total changes to the total increases minus the total decreases for all two-year periods and all states in our data set.

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total changes to the total increases minus the total decreases for all two-year periods and all states: 45.0
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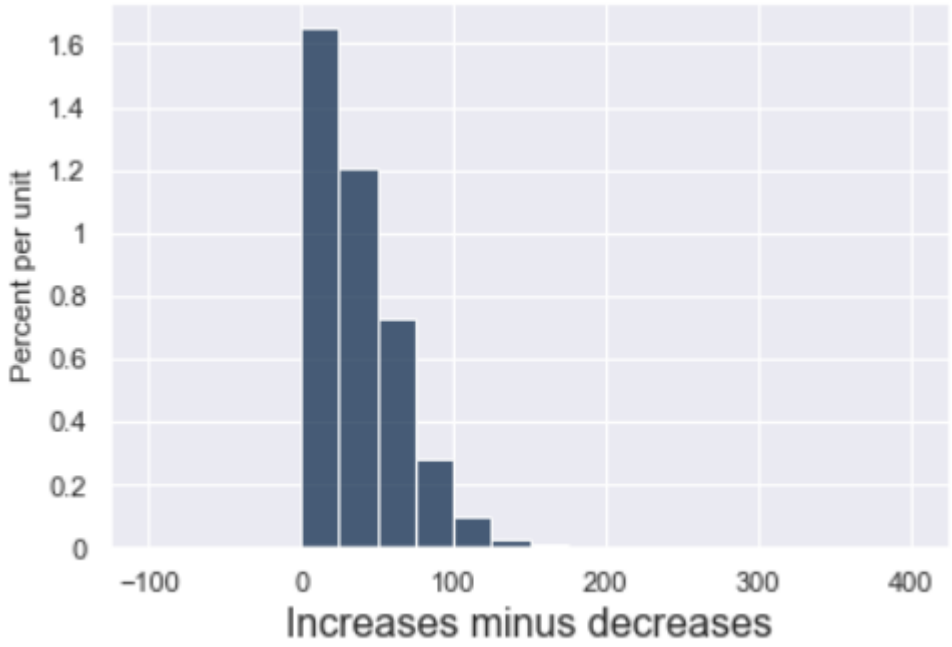
2.4) Set num changes to the number of different two-year periods in the entire data set that could result in a change of a state's murder rate. Include both those periods where a change occurred and the periods where a state's rate happened to stay the same.

2100

2.5) Given these null and alternative hypotheses, define a good test statistic.

Test statistic depend only on whether murder rates increased or decreased, not on the size

2.6) Complete the simulation below, which samples num changes increases/decreases at random many times and forms an empirical distribution of your test statistic under the null hypothesis. Your job is to.



3.1) Describe this investigation in terms of an experiment. What population are we studying? What is the control group? What is the treatment group? What outcome are we measuring?

The death rates in the 50 various states in U.S. It is the group of states where the death penalty was not started .It is the cluster of states where the death penalty was begin. Whether there was an incline or decline in the death rate by considering the death penalty

3.3)Assign death penalty murder rates to a table with the same columns and data as murder rates, but that has only the rows for states that had the death penalty in 1971.

State	Year	Population	Murder Rate
Alabama	1960	3,266,740	12.4
Alabama	1961	3,302,000	12.9
Alabama	1962	3,358,000	9.4
Alabama	1963	3,347,000	10.2
Alabama	1964	3,407,000	9.3
Alabama	1965	3,462,000	11.4
Alabama	1966	3,517,000	10.9
Alabama	1967	3,540,000	11.7
Alabama	1968	3,566,000	11.8
Alabama	1969	3,531,000	13.7

... (1926 rows omitted)

3.4) Assign changes 72 to the value of the test statistic for the years 1971 to 1973 and the states in death penalty murder rates.

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test statistic for the years 1971 to 1973 : 22
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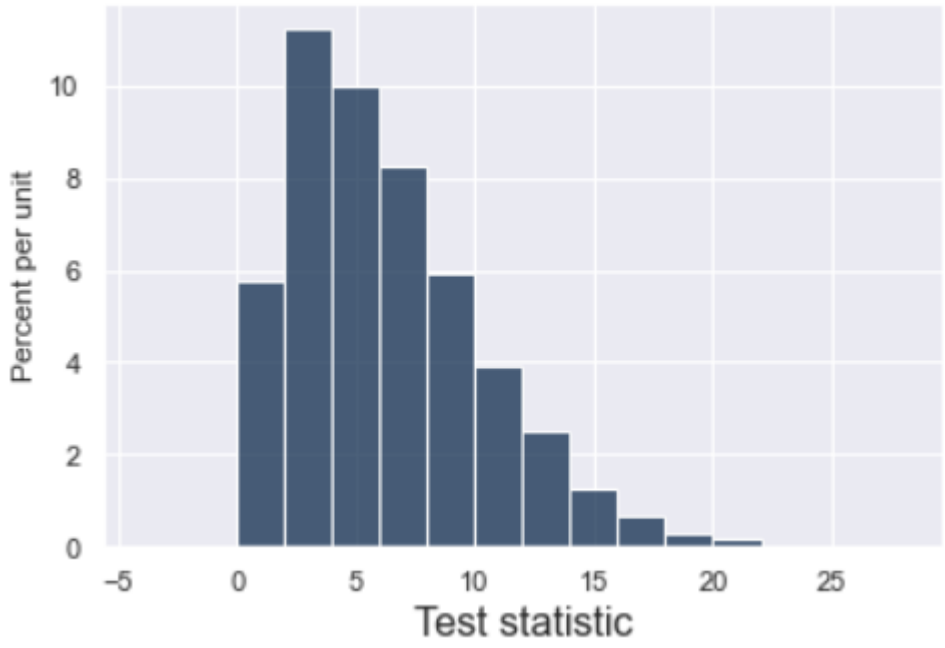
3.5) Draw an empirical histogram of the statistic under the null hypothesis by simulating the test statistic 5,000 times.



3.6. Complete the analysis as follows:

1. Compute a P-value.

2. Draw a conclusion about the null and alternative hypotheses.

3. Describe your findings using simple, non-technical language. Be careful not to claim that the statisticalanalysis has established more than it really has.

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0.001000100010001
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4.1) Implement run test, which takes the following arguments:

• A table of murder rates for certain states, sorted by state and year like murder rates, and• the year when the analysis starts. (The comparison group is two years later.)It prints out the observed test statistic and returns the P-value for this statistic under the null hypothesis.

```
22
pval: 0.00400008001600320064
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4.3) Now we've analyzed states where the death penalty went away and came back, as well as states where the death penalty was outlawed all along. What do you conclude from the results of the tests we have conducted so far? Does all the evidence consistently point toward one conclusion, or is there a contradiction?

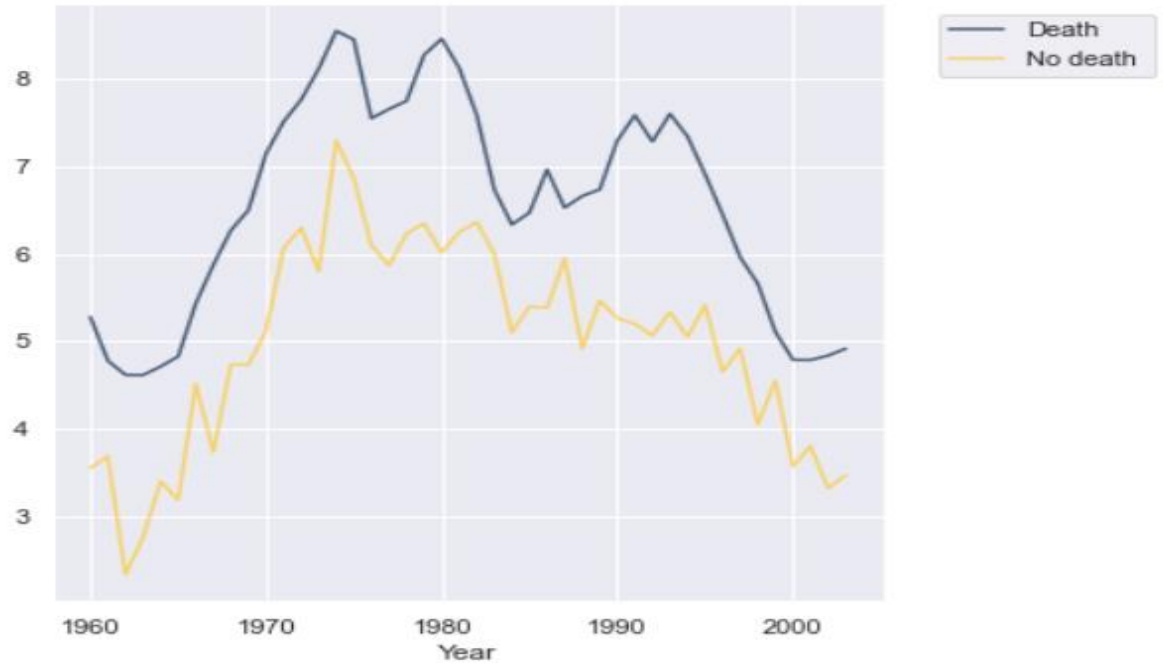
Total downwards in the death rates among death penalty rates, we forgot to accept the null hypothesis as the increase or decrease were because of random sample and we accept the alternate hypothesis and we can find the association between initial death penalty and murder rates diminishing are not.

5) Create a table called average murder rates with 1 row for each year in murder rates. It should have 3 columns:

Year	Death	No death
1960	5.27955	3.55
1961	4.77727	3.68333
1962	4.61591	2.33333
1963	4.61364	2.75
1964	4.71136	3.4
1965	4.82727	3.18333
1966	5.43182	4.51667
1967	5.875	3.73333
1968	6.27045	4.73333
1969	6.50227	4.73333

... (34 rows omitted)

Describe in one short sentence a high-level takeaway from the line plot below. Are the murder rates in these two groups of states related? average murder rates.plot('Year').



What assumption(s) did we make in Parts 1 through 4 of the project that led us to believe that the death penalty deterred murder, when in fact the line plots tell a different story?

we assumed the death rates increase and on factors of whether or not the death penalty was started and it failed to consider other factors and we had a low p-value and thus we failed to accept the null hypothesis, and we assumed that it was due to the death penalty policy ,when it comes to the project which we did ,it was due to other factors which was shown in the line plots above.