HW 08

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2023-10-25

Instructions

- Write your solutions in the app.R starter file.
- Do not change the path of any files.
- Don't use functions that we didn't learn in class.
- Only commit plain text files (like .R files).
- **Make sure to commit regularly.**
- Only include the necessary code, not any extraneous code, to answer the questions.
- Learning objectives:
  - Use your shiny skills to build an App that interactively analyzes the housing sales dataset.

Housing Sales App

Researchers were interested in predicting residential home sales prices in a Midwestern city as a function of various characteristics of the home and surrounding property. Data on 522 transactions were obtained for home sales during the year 2002. The 13 variables are

- `Price`: Sales price of residence (in dollars)
- `Area`: Finished area of residence (in square feet)
- `Bed`: Total number of bedrooms in residence
- `Bath`: Total number of bathrooms in residence
- `AC`: 1 = presence of air conditioning, 0 = absence of air conditioning
- `Garage`: Number of cars that a garage will hold
- `Pool`: 1 = presence of a pool, 0 = absence of a pool
- `Year`: Year property was originally constructed
- `Quality`: Index for quality of construction. `High`, `Medium`, or `Low`.
- `Style`: Categorical variable indicating architectural style
- `Lot`: Lot size (in square feet)
- `Highway`: 1 = highway adjacent, 0 = highway not adjacent.

Build a Shiny App that has the following attributes:

1. Three tabs. The first tab is for univariate analysis. The second tab is for bivariate analysis. The third tab is for the a spreadsheet of the *numeric* variables in the data.
2. The inputs/outputs for the univariate analysis should be:
   - The variable.
   - Should we do the analysis on the log scale?
   - The number of bins in the histogram.
   - The null value for a one-sample t-test.
   - The results of the one-sample t-test.

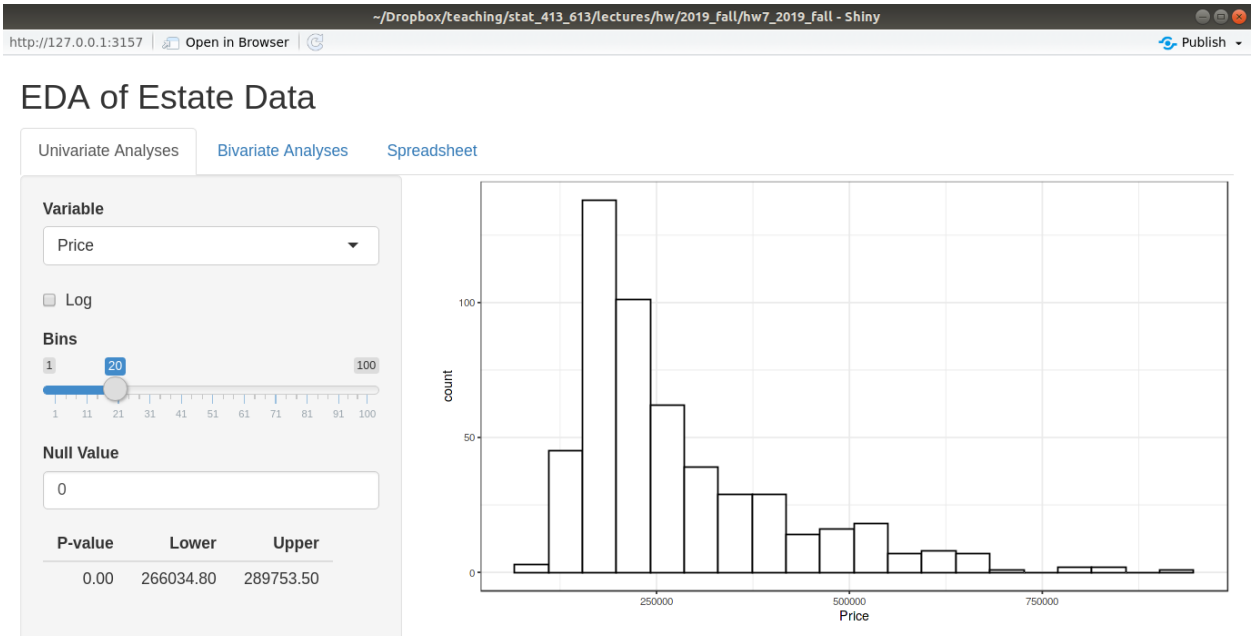
3. For the univariate analysis, you should make a histogram if the variable is numeric and make a barplot otherwise.
4. For the univariate analysis, the results of the test should be done on the log or non-log scale according to the user options.
5. The inputs for the bivariate analysis should be:
    - The two variables.
    - Whether we should log each variable.
    - Whether we should add an OLS line.
6. You should have a scatter plot if both variables are numeric, a boxplot if one is numeric and one is categorical, and a jitter plot if both are categorical. Only numeric variables should be logged.
7. The spreadsheet tab should contain a Data Table with **only the numeric variables**. Use a `map*()` function to select these.
8. Try to make your Shiny app as visually similar to my app as you can.

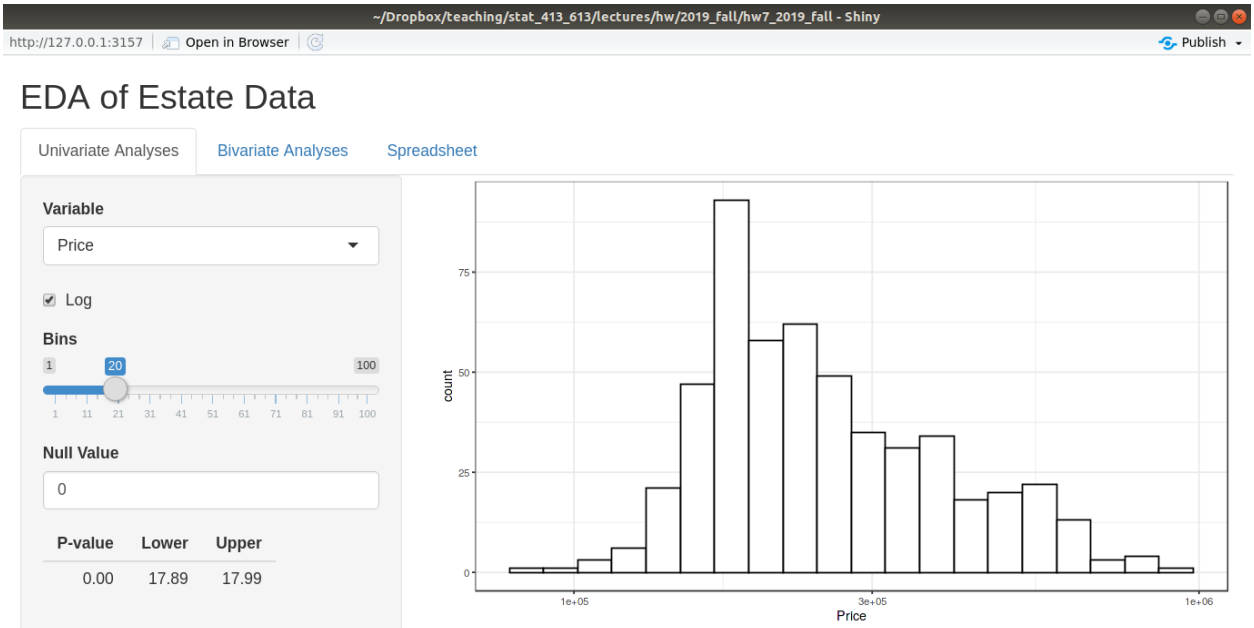
Hint: You can make this a lot easier by taking advantage of the modularity built into ggplot2:

```
pl <- ggplot(mtcars, aes(x = disp, y = mpg))
pl

pl <- pl + geom_point()
pl

pl <- pl + scale_x_log10()
pl
```

Hint: Think carefully about which variables should be treated as categorical and which should be treated as quantitative.

Below are screenshots of my app under different user inputs:

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http://127.0.0.1:3157
Open in Browser
Publish
EDA of Estate Data
Univariate Analyses
Bivariate Analyses
Spreadsheet
Variable
Price
Log
Bins
1
20
100
1 11 21 31 41 51 61 71 81 91 100
Null Value
0
P-value Lower Upper
0.00 17.89 17.99
count
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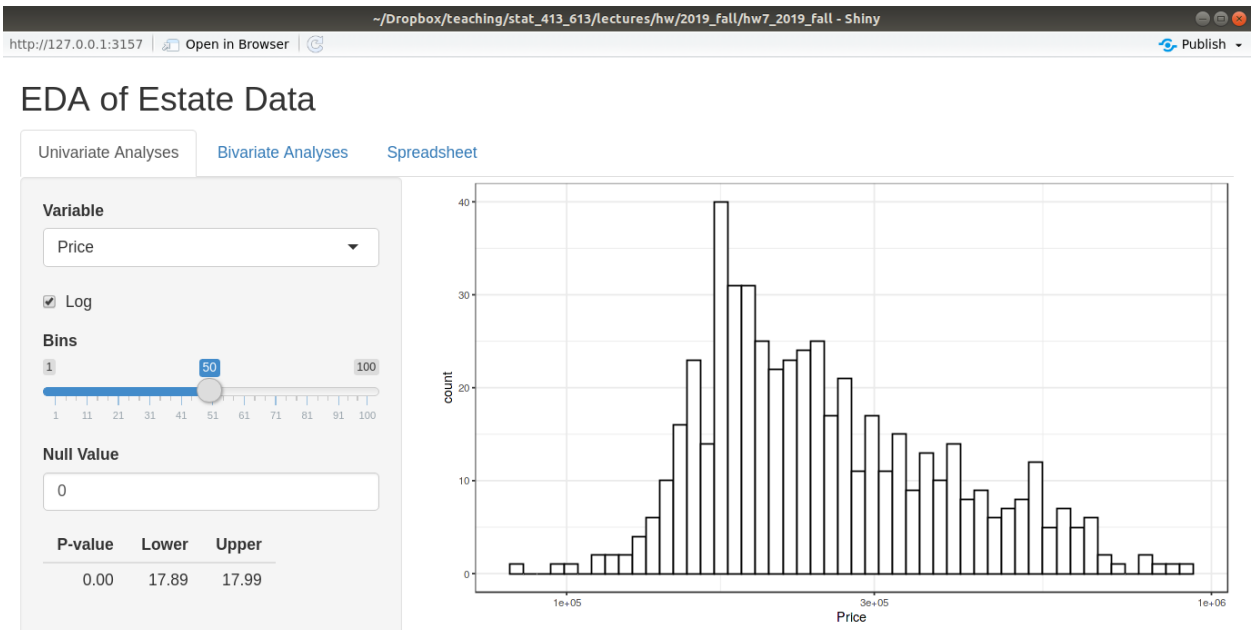
25
0
1e+05
3e+05
1e+06
Price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Null Value
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10
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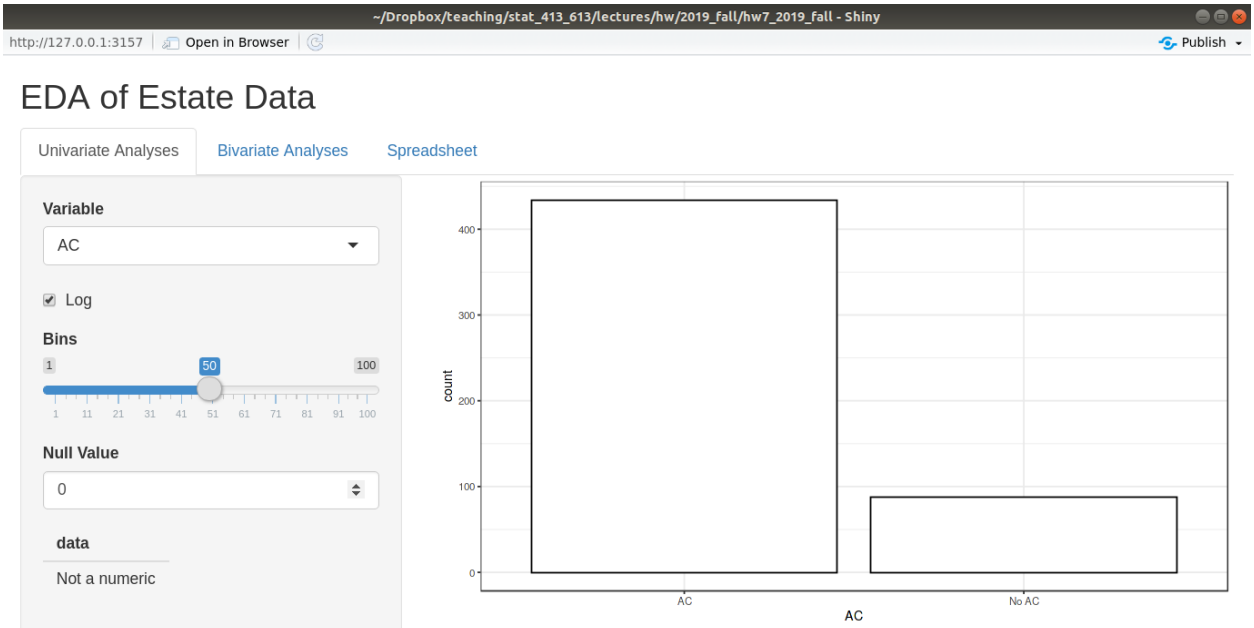
1e+05
3e+05
1e+06
Price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Null Value
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data
Not a numeric
count
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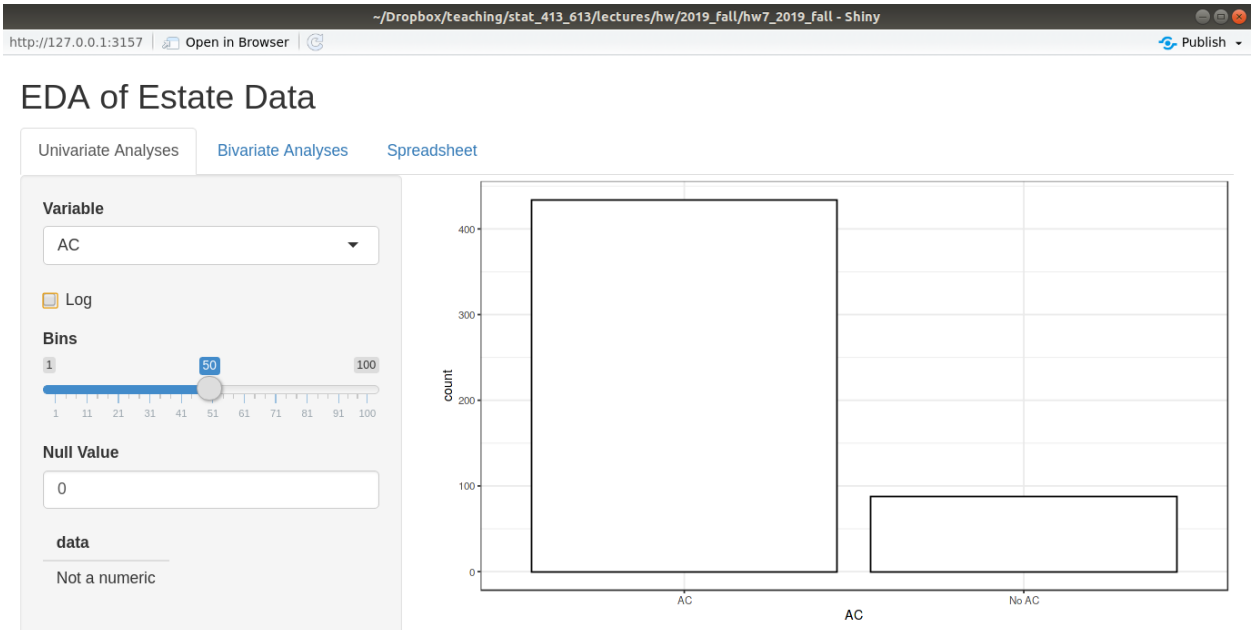
AC
No AC
AC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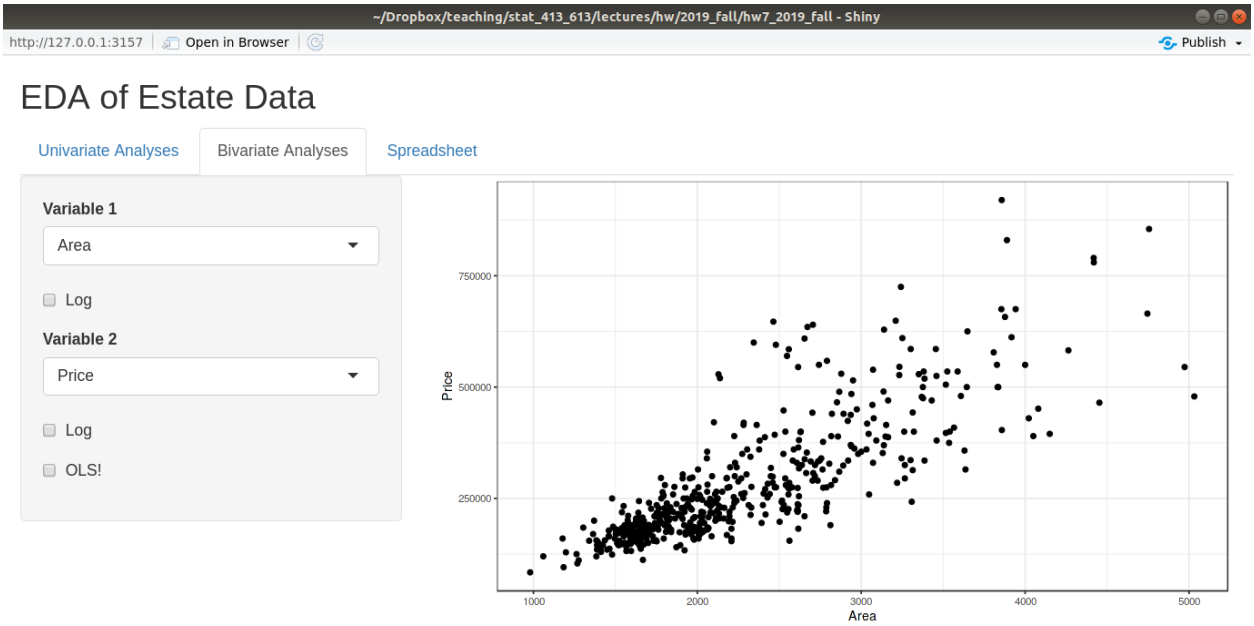
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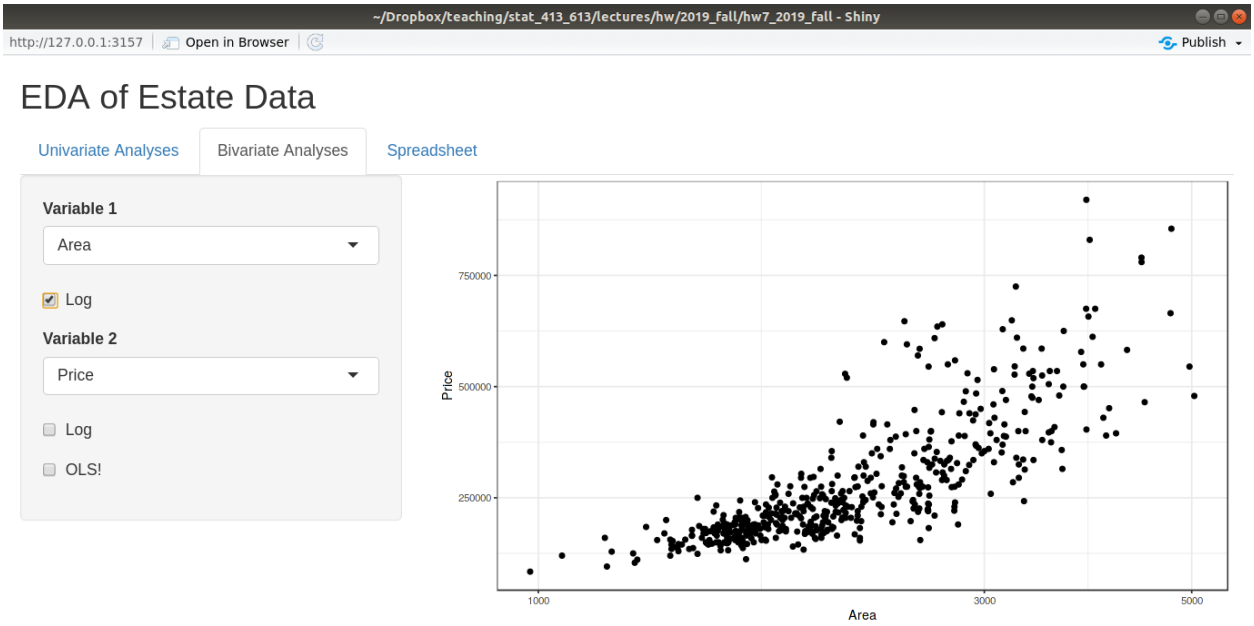
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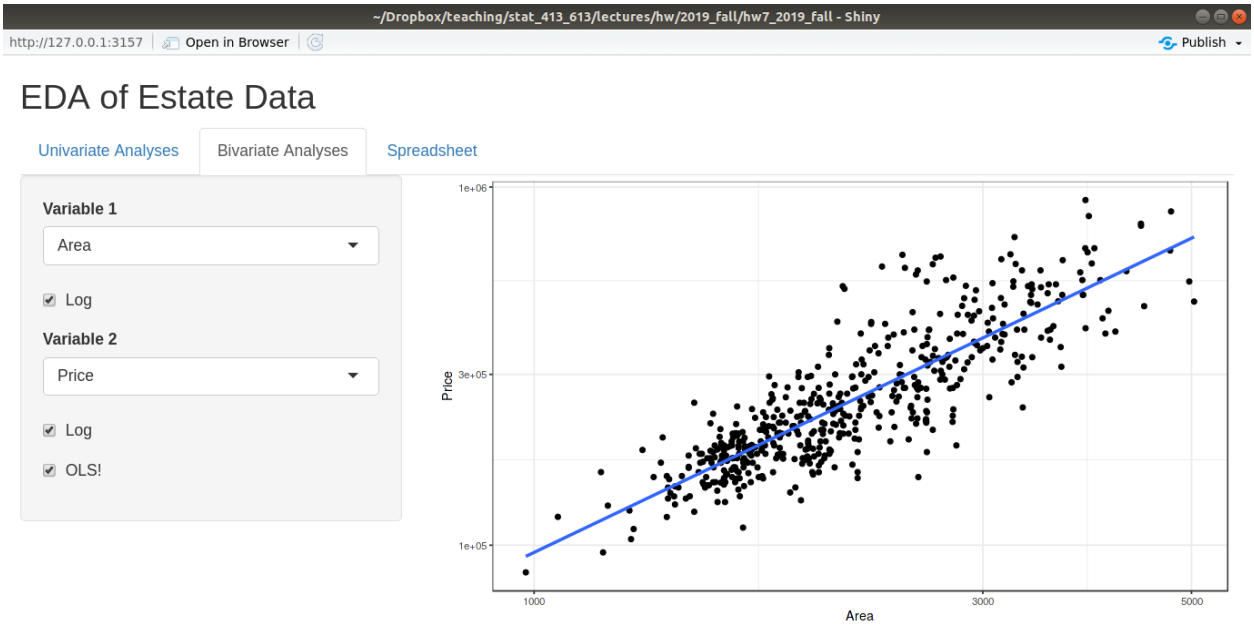
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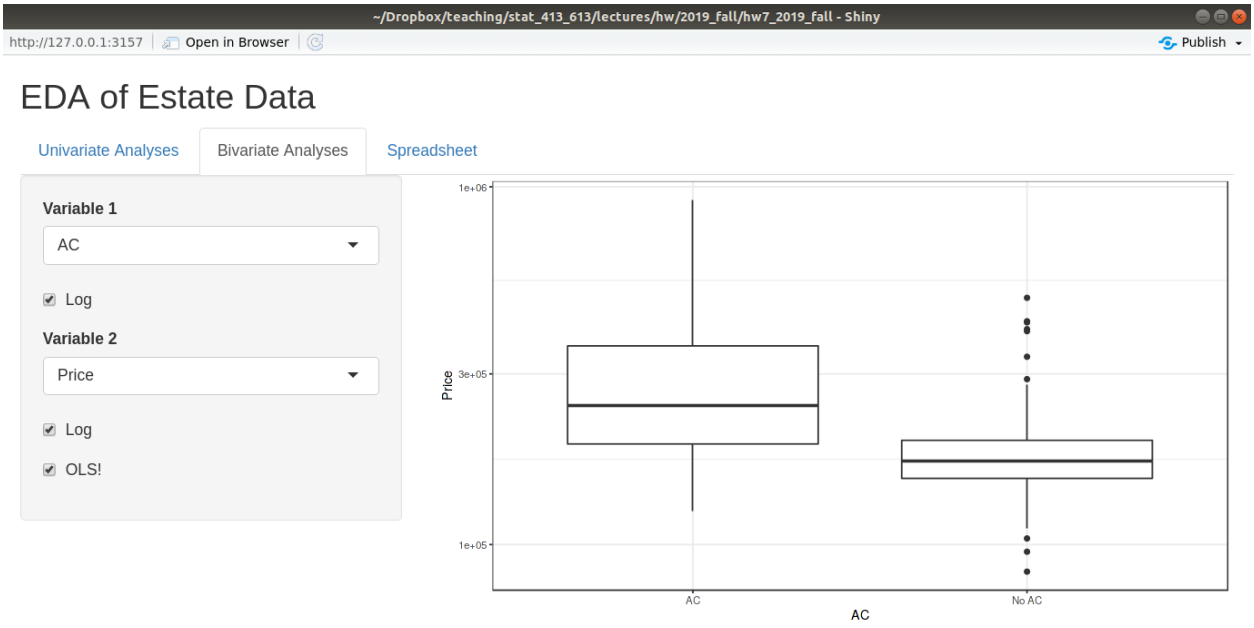
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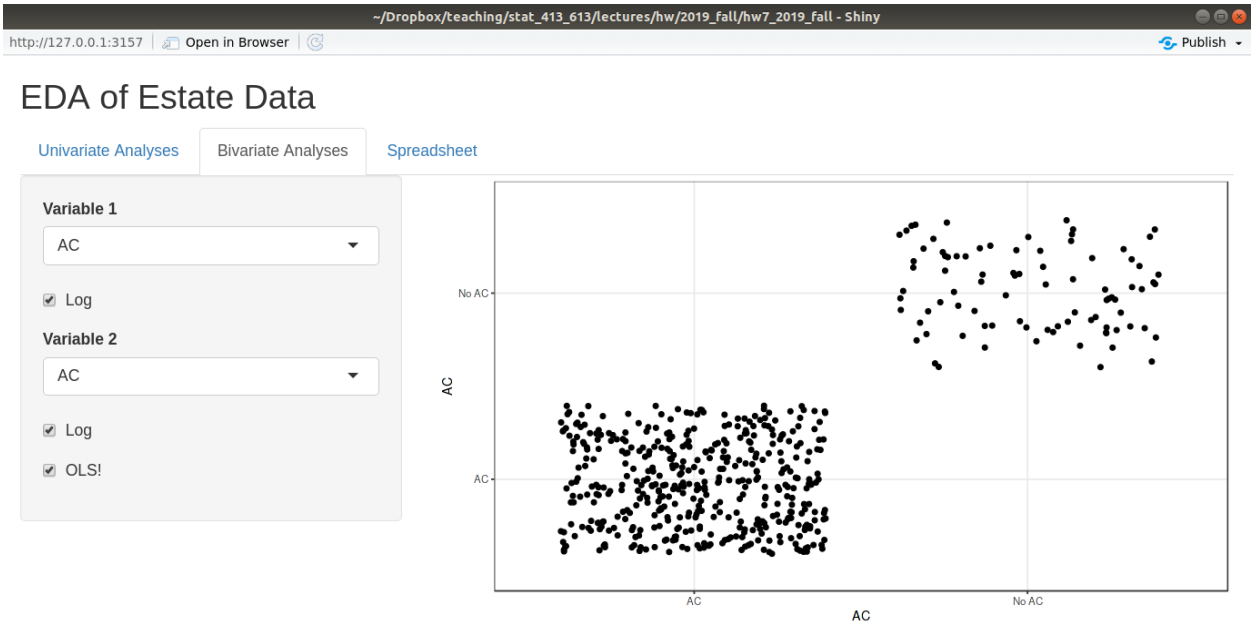
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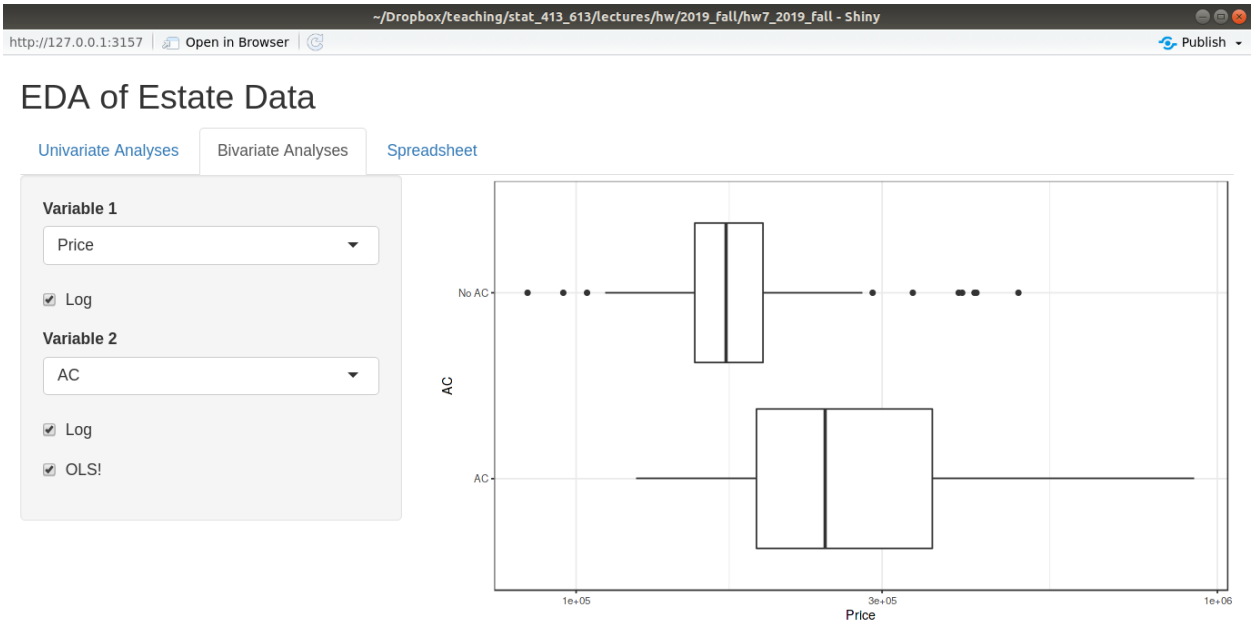
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EDA of Estate Data

Univariate Analyses | Bivariate Analyses | Spreadsheet

Variable 1

Price

☐ Log

Variable 2

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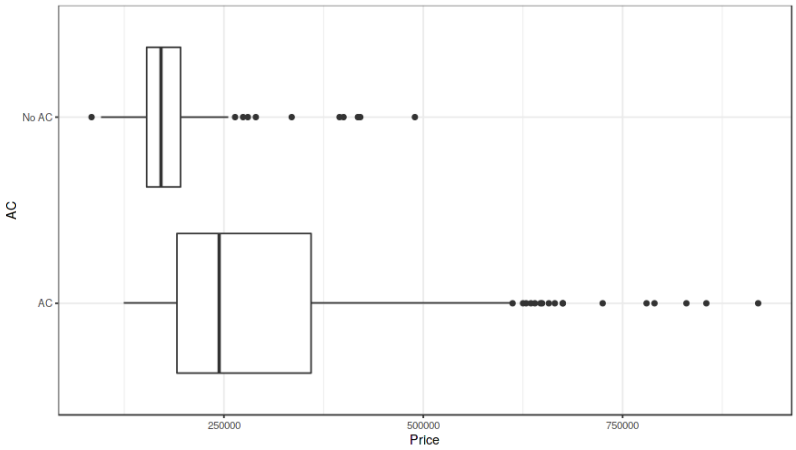
☑ Log

☑ OLS!



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EDA of Estate Data

Univariate Analyses | Bivariate Analyses | Spreadsheet

Show 10 entries Search:

Price	Area	Bed	Bath	Garage	Year	Lot
360000	3032	4	4	2	1972	22221
340000	2058	4	2	2	1976	22912
250000	1780	4	3	2	1980	21345
205500	1638	4	2	2	1963	17342
275500	2196	4	3	2	1968	21786
248000	1966	4	3	5	1972	18902
229900	2216	3	2	2	1972	18639
150000	1597	2	1	1	1955	22112
195000	1622	3	2	2	1975	14321
160000	1976	3	3	1	1918	32358
Price	Area	Bed	Bath	Garage	Year	Lot

Showing 1 to 10 of 522 entries

Previous 1 2 3 4 5 … 53 Next