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Various Types of Plots

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VISUALISE ONE VARIABLE: DISTRIBUTION AND COUNT

Distribution

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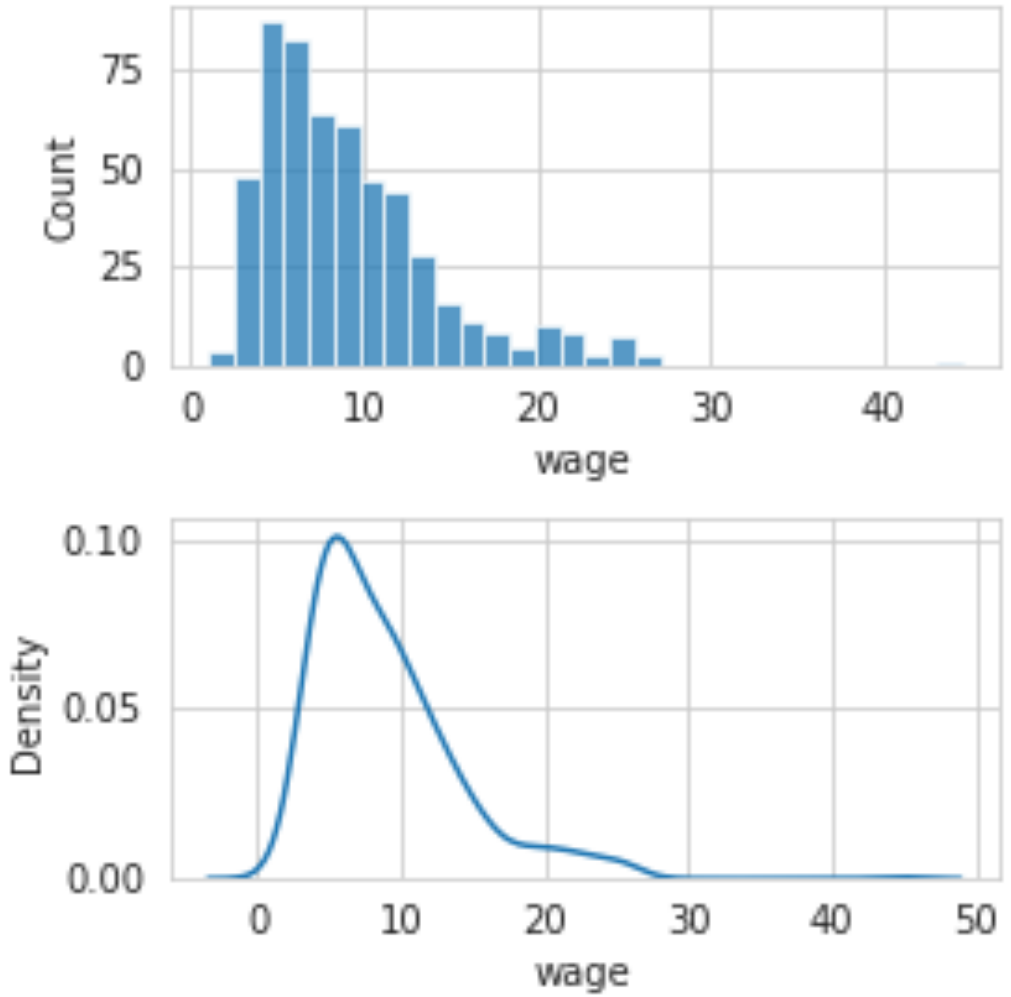
- When the variable is numeric (i.e. continuous or discrete)
- You will produce a figure where
  - x-axis: variable value
  - y-axis: value counts
- Two ways to do so
  - Histogram
  - Density plot
- For both, we need to consider the complexity
  - Number of bins
  - Flexibility of density plot



Count

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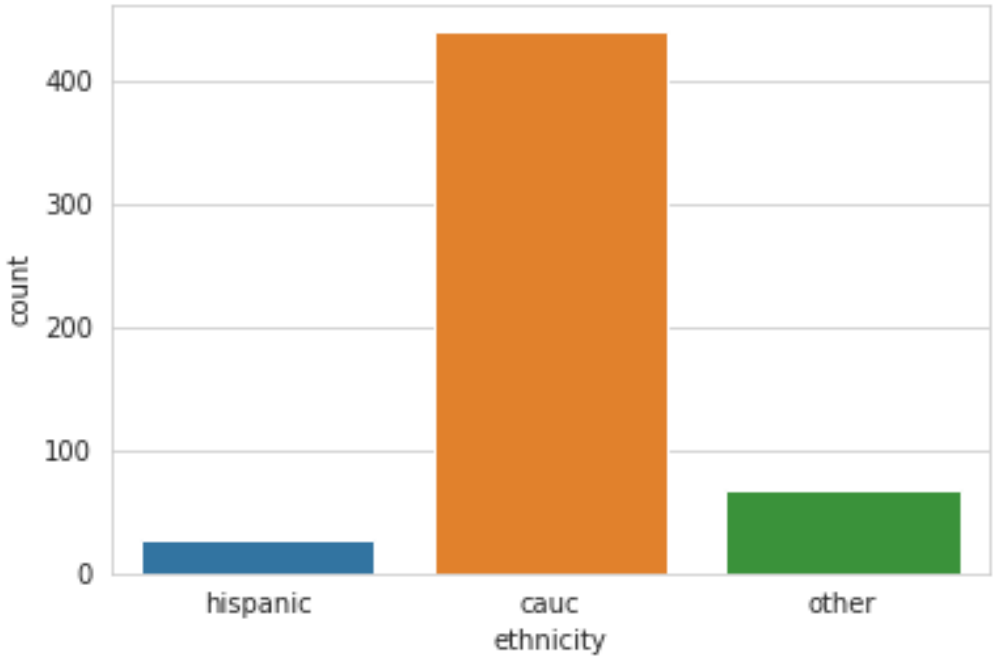
- When the variable is categorical
- You will produce a figure where
  - x-axis: categories
  - y-axis: value counts
- Need count plots



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VISUALISE TWO VARIABLES

Two variables

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- Now we move to the visualization of two variables
- We need to consider the types of variables involved
  1. Numerical-Numerical
  2. Categorical-Numerical
  3. Categorical-Categorical
- Visualising C-C is not common
  – Cross-tab is sufficient (may be heatmap?)

Numerical-Numerical

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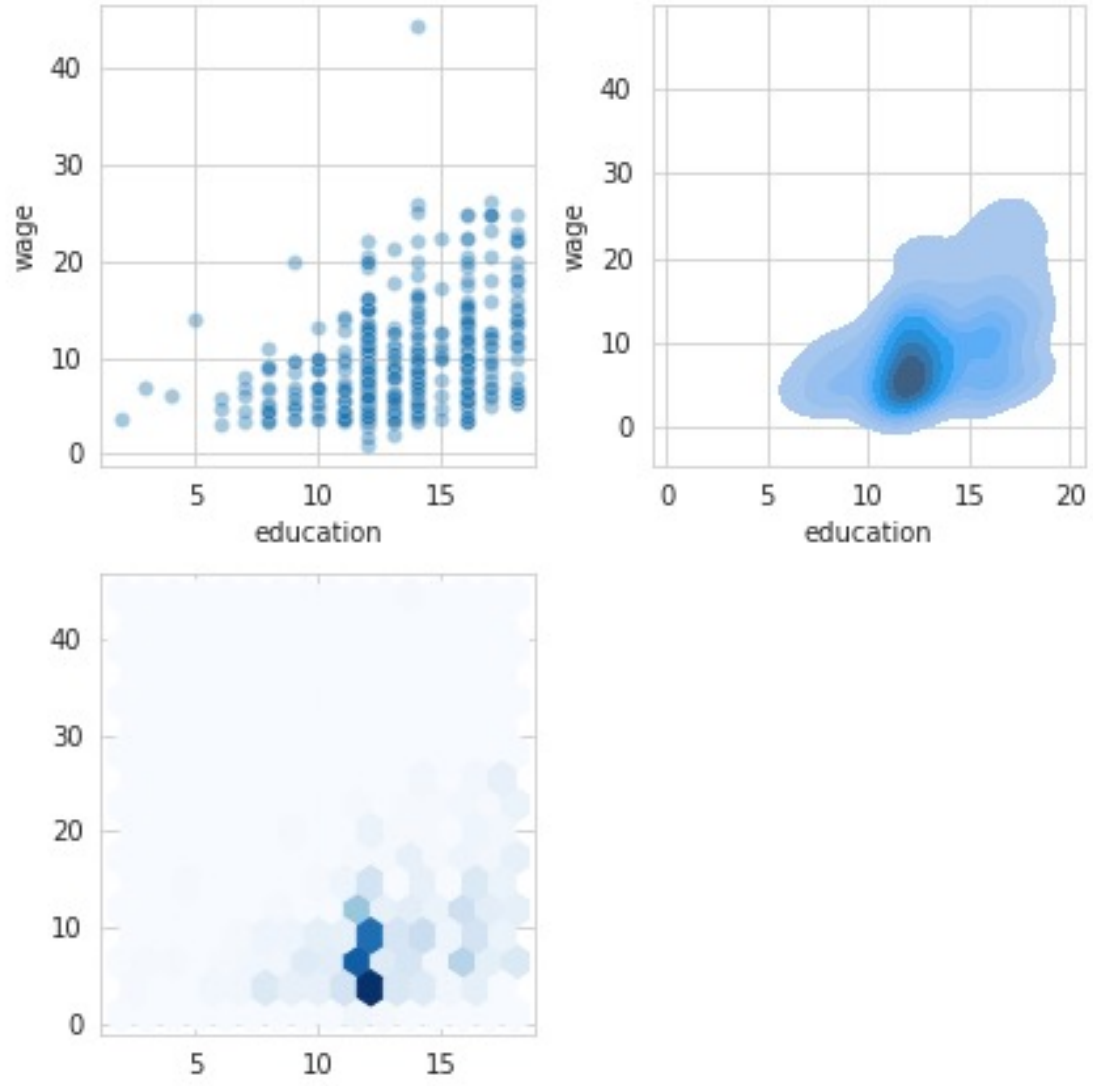
- Very common situation
  - x-axis: numerical (independent/input variable)
  - y-axis: numerical (depedent/outcome variable)
- Various options:
  - Scatter plot
  - Hex/tile plot
  - 2d-density/contour plot



Categorical-Numerical

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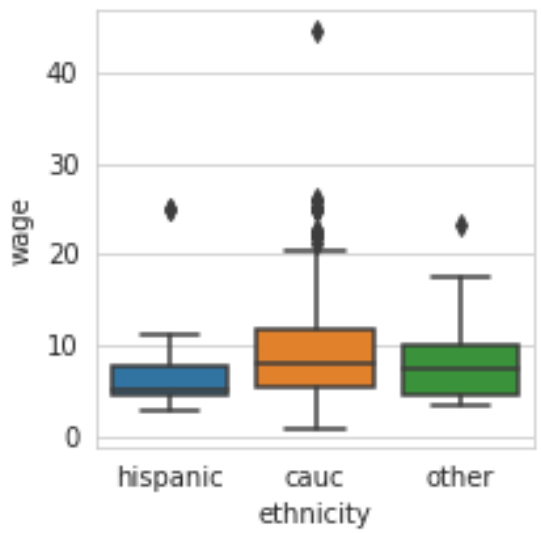
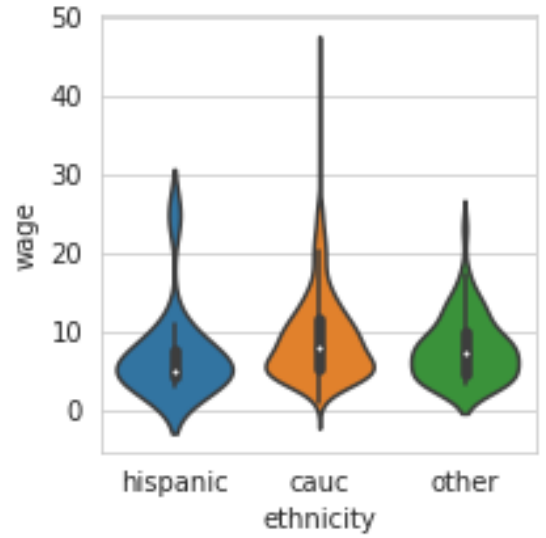
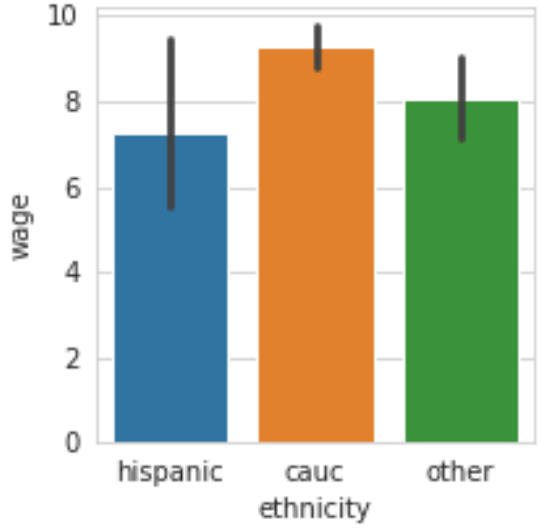
- Very common situation
  - x-axis: categorical
  - y-axis: numerical
- Options:
  - Use distribution of y
    - Boxplot
    - Violin plot
  - Use summary statistics of y
    - Bar plot







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ADDING MORE VARIABLES

Using more variables

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- We have covered many of the figure types commonly used
- We can include the information from other variables by changing
  - Colours
  - Size
  - Shape

Colours

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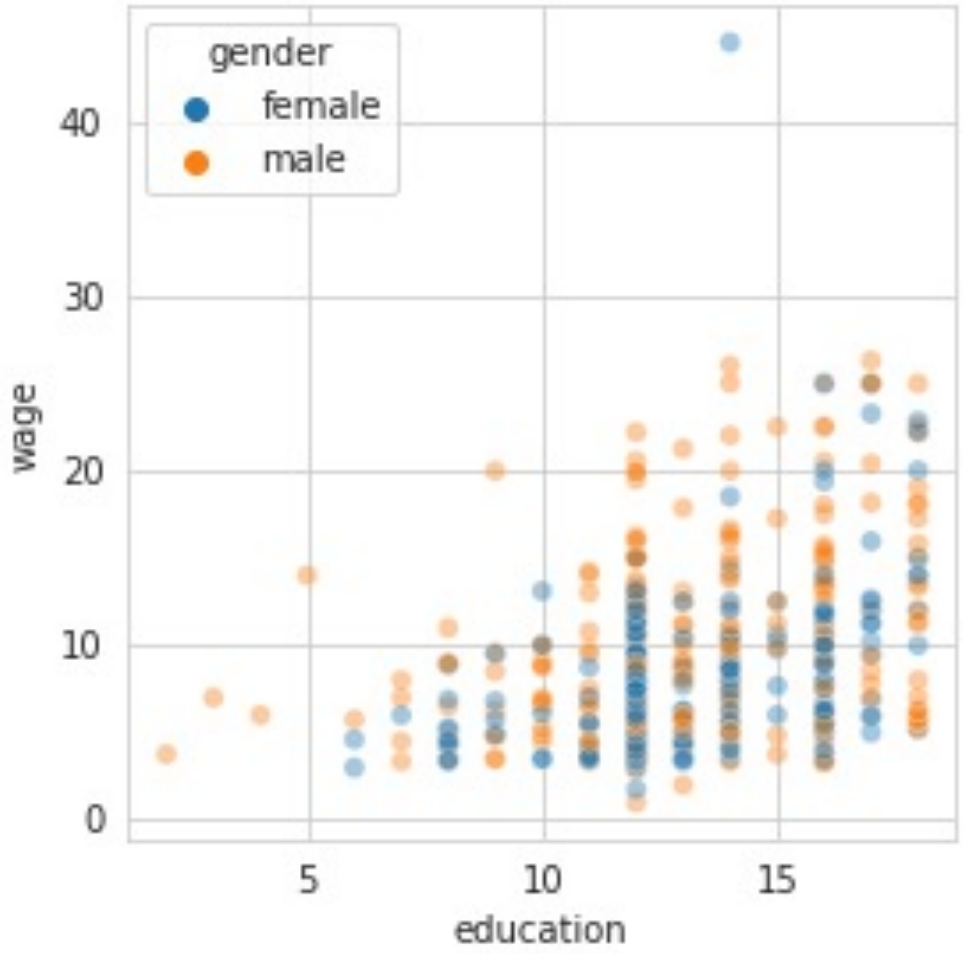
- When you use different colours in a figure, there has to be a reason to do so
- For example:
  - Grouping data
  - Representing data values
  - Highlighting



Colours

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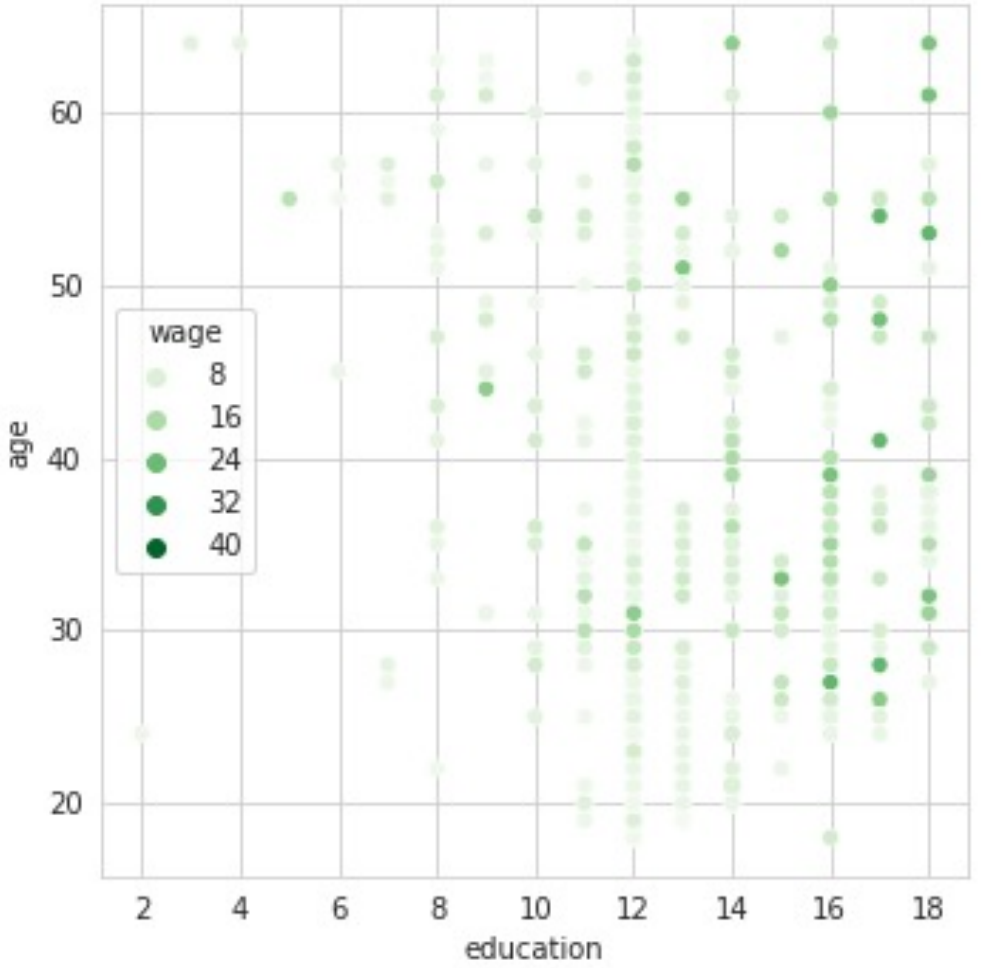
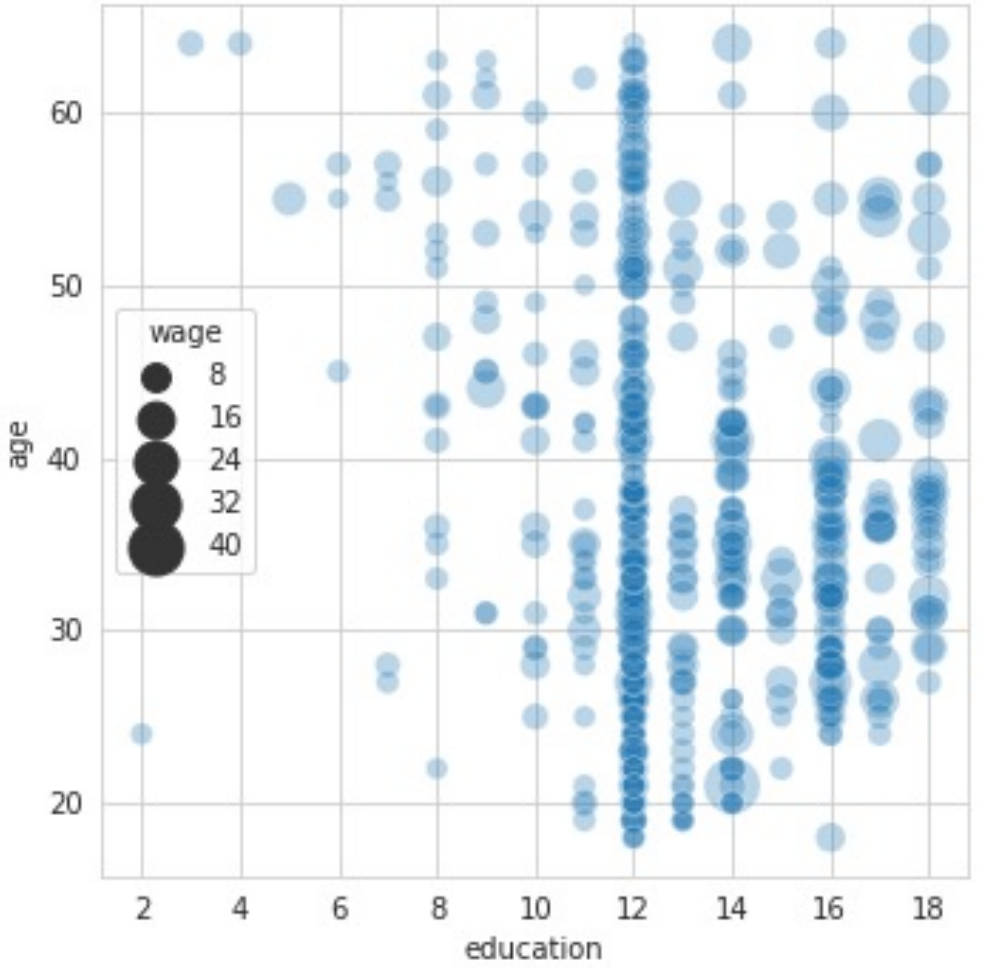
- You can use continuous colours



Sizes

- In the same manner, you can change the size



Colours in other plots

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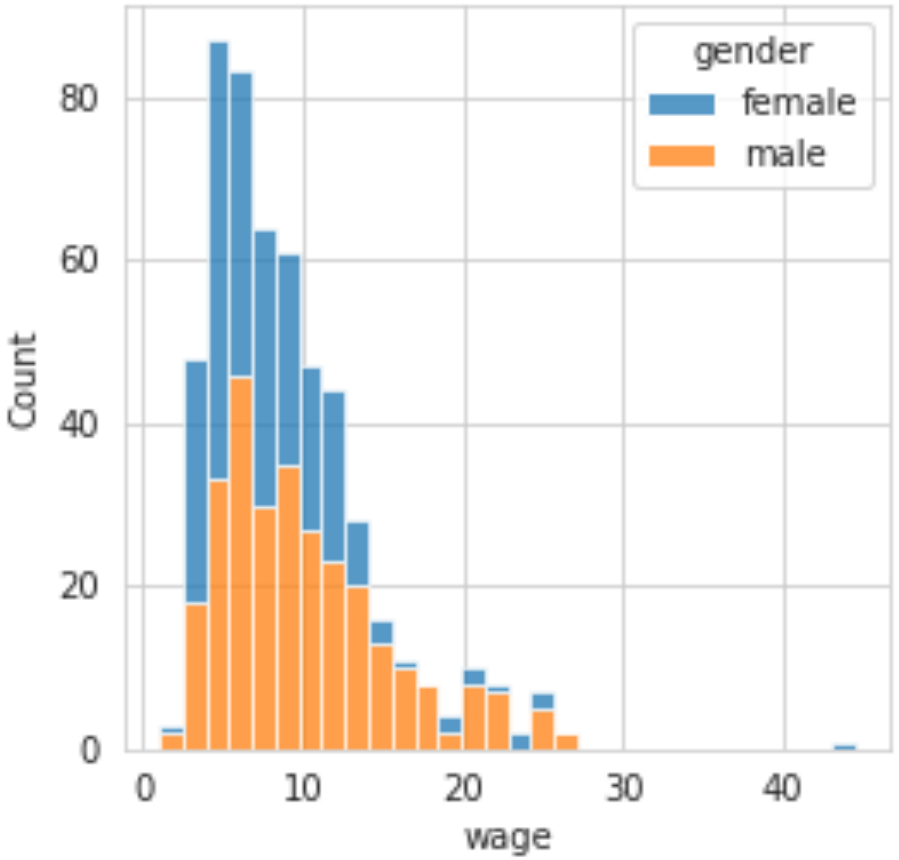
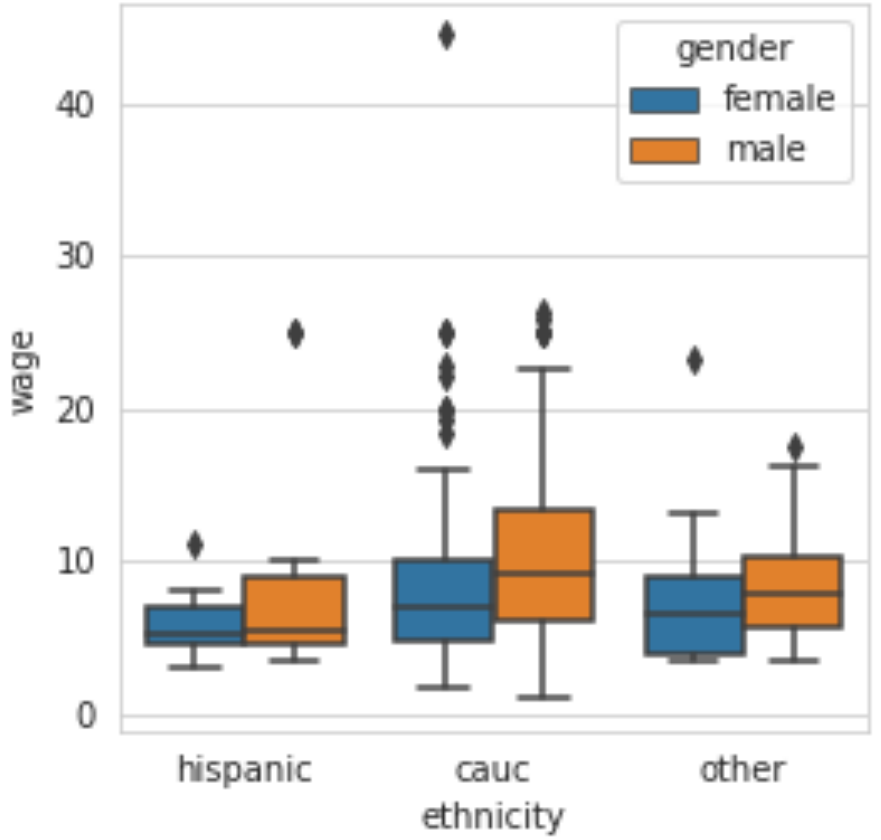
Histogram



Boxplot



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MISCELLANEOUS

Other types of plots

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- Matplotlib/Seaborn has other useful figures, such as
  - Joint plot
  - Pair plot
  - Geospace (class)

Examples:

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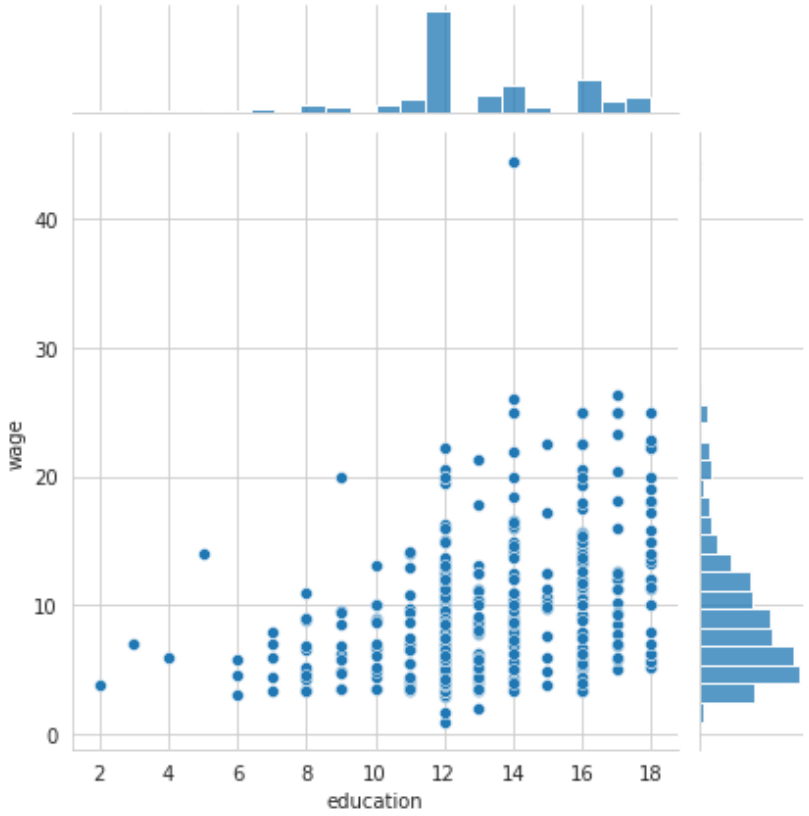
Joint Plot



Pair Plot