

# Descriptive Statistics and Graphing in JASP

## Descriptive Statistics

Lab\_1\_fixed data set\* (J:\Volumes\GoogleDrive\My Drive\teaching\Statistics\labs)

	Age	Year	Major	Income	Height	BirthState	BooksCost	Politics	Patience			
1	5	1	21	3	Biology	0	76	PA	250	2	7	8
2	10	1	21	4	Neuro,Psych	60000	70	PA	100	1	7	6
3	13	1	21	3	English,Psych	85000	68	PA	300	4	8	4
4	14	1	21	3	Psychology	71	IL	350	2	6	4	4
5	15	1	20	3	Spanish	40000	72	IL	300	1	3	8
6	16	1	19	2	Psychology	70000	71	MA	350	3	8	8
7	17	1	19	2	Psychology	45000	71	PA	350	1	7	5
8	23	1	21	2	Neuroscience	0	70	PA	400	4	8	7
9	24	1	21	2	Environmental Studie	35000	67	NY	370	4	8	6
10	26	1	20	3	History	65000	71	PA	300	1	10	7
11	35	1	18	1	Physics,Economics	120000	68	CA	200	1	4	3
12	1	2	19	2	Psychology	35000	65	MI		1	9	9
13	2	2	21	3	Political Science		68	non-US	450	1	8	7
14	3	2	19	3	Biology		67	NY	270	1	8	8
15	4	2	21	3	Psychology	15000	68	PA	200	1	9	8
16	6	2	20	3	Communication Arts	75000	72	CT	300	1	4	4
17	7	2	22	4	Neuroscience	0	72	non-US	600	3	8	5
18	8	2	21	4	Psych, Theatre	40000	67	PA	400	1	4	2
19	9	2	19	2	Neuro,Music,Psych	0	68	PA	260	1	9	9
20	11	2	21	3	Psychology	43000	66	PA	350	1	8	4
21	12	2	19	2	Psychology	40000	65	PA	400	1	4	2

Once you have opened your data set, click on “Descriptives” in the analysis menu bar. This will open the analysis options and output window

**Descriptive Statistics**

Variables: Exercise

Split:  Statistics

Percentile Values:  Quartiles,  Cut points for: 4,  Percentiles

Dispersion:  S.E. mean,  Std. deviation,  MAD,  MAD Robust,  IQR,  Variance,  Range,  Minimum,  Maximum

Central Tendency:  Mean,  Median,  Mode,  Sum

Distribution:  Skewness,  Kurtosis,  Shapiro-Wilk test

**Results**

**Descriptive Statistics**

Descriptive Statistics	
Exercise	
Valid	35
Missing	0
Mean	161.914
Median	120.000
Mode	0.000
Std. Deviation	159.666
Minimum	0.000
Maximum	420.000

As always in JASP, any options you choose on the left will immediately show up on the Results side on the right.

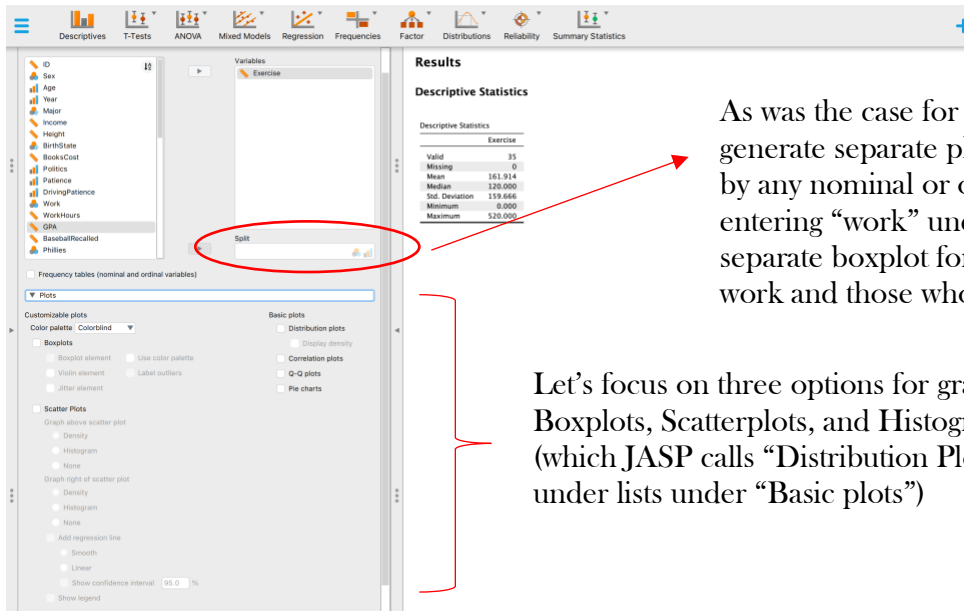
Once you have picked the variable you’re interested in, move it from the list of all variables in your data set to the window “variables”. Here, we look at exercise habits (in minutes) of the entire sample.

If we wanted to look at the descriptives separated by year in school (Freshman, Sophomore, Junior, Senior) we could add “year” to the “split” window (again, notice that JASP reminds us with the little symbols in the right corner that we can only split by ordinal or nominal variables.)

If you only want to see Descriptive Statistics, choose “Statistics” in the options and click on the kinds of Statistics you want to calculate.

# Graphing

In the analysis options under “Descriptives”, you can choose “Statistics”, as we did above, or “Plots.” Let’s have a closer look at the options you have here:

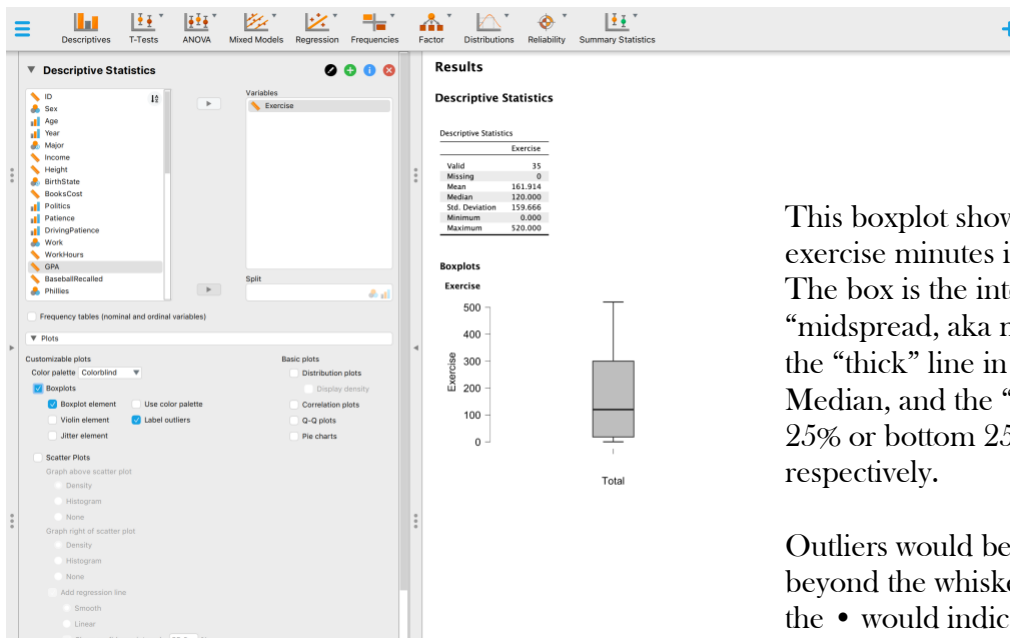


As was the case for descriptive Statistics, you can generate separate plots for your outcome variable by any nominal or ordinal variable here (e.g., entering “work” under “split” will generate a separate boxplot for exercise for students who work and those who don’t work)

Let’s focus on three options for graphs: Boxplots, Scatterplots, and Histograms (which JASP calls “Distribution Plots” under lists under “Basic plots”)

## 1. Box-and-whisker plots, aka Boxplots

As all graphs, boxplots provide a visual overview of the data and allow us to see central tendency (here: median) and spread pretty easily. They can also help in identifying outliers. Pick the variable of interest and select “Boxplots.” Play around with options, if you’d like, but for simplicity, focus on “boxplot element” and “label outliers.”

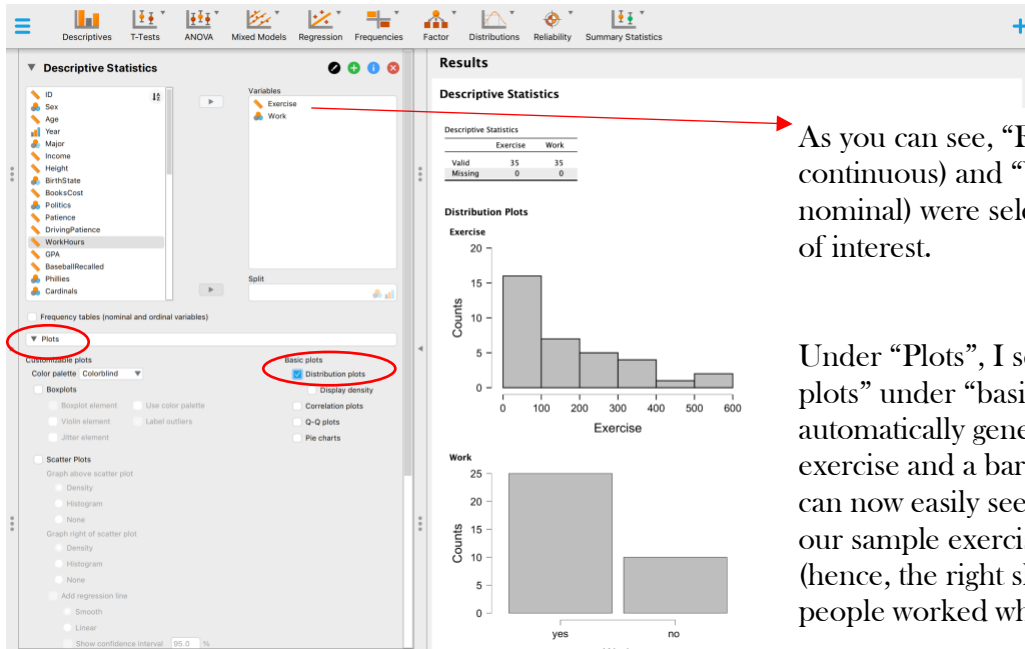


This boxplot shows the distribution of exercise minutes in our total sample. The box is the interquartile range (or “midspread, aka middle 50% of data), the “thick” line in the box is the Median, and the “whiskers” are the top 25% or bottom 25% of your data, respectively.

Outliers would be marked with a dot beyond the whiskers and the number by the • would indicate what row in your data set produced the outlier on this variable.

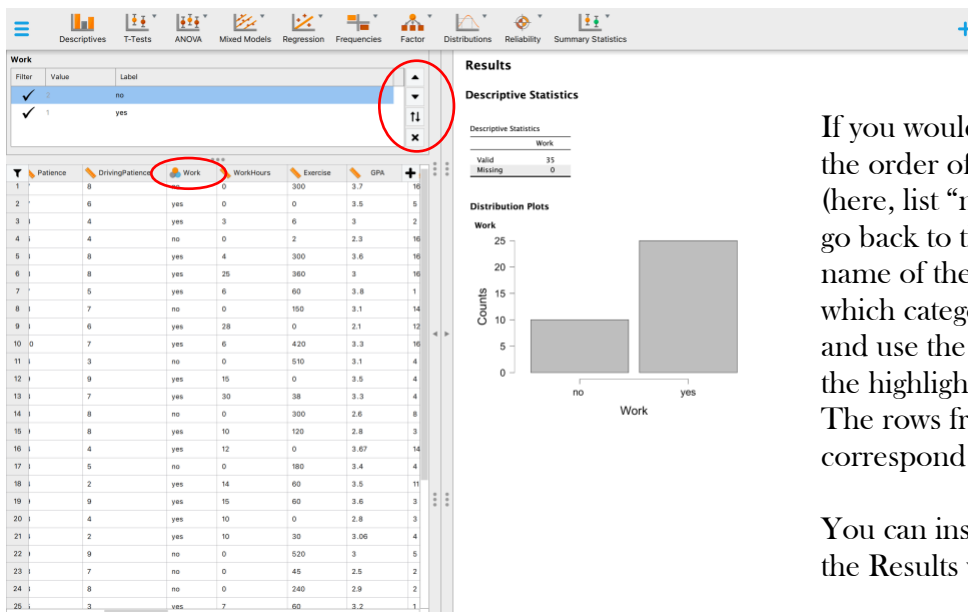
## 2. Histograms or Bar Graphs

Another plot option is your standard histogram (for continuous variables) or bar graph (for discrete variables). If (!) you checked to make sure your variables were correctly identified as scale (interval or ratio), ordinal, or nominal, JASP will automatically know to create a histogram for scale variables and a bar graph for discrete variables. Let's have a look:



As you can see, “Exercise” (in min, so continuous) and “Work” (yes vs no, so nominal) were selected as the variables of interest.

Under “Plots”, I selected “distribution plots” under “basic plots” and JASP automatically generated a histogram for exercise and a bar graph for work. We can now easily see that most people in our sample exercised relatively little (hence, the right skew) and that 25 people worked while 10 did not.



If you would like to reverse or change the order of categories in your bar graph (here, list “no” first, then “yes”), you can go back to the data editor, click on the name of the variable, then highlight which category you would like to move and use the arrows on the right to move the highlighted category up or down. The rows from top to bottom correspond to the bars from left to right.

You can instantly see your changes in the Results window.

### 3. Scatterplots

Scatterplots provide nice visual information about the relationship between two variables.

For a scatterplot, we want to select two continuous variables (here I chose GPA and exercise) and then click on “scatter plots”

For the easiest-to-look-at option, select “none” for graph above and to the right of the scatterplot.

It is useful to ask for linear regression line, which helps you get a sense of the relationship (here: a slight positive one).

### Editing and Exporting Graphs

You can edit the title of your analysis or output anytime, and you can add yourself a note here by clicking on the little triangle by the current title

JASP does not currently allow sophisticated editing of graphs (e.g., changing the scale on the axes), but you can copy or save your image as is or try to edit it in a different program. Click on the little triangle by the plot’s title.