Results

Descriptives

```
jmv::descriptives(
    data = data,
    vars = vars(Adverts, Sales, Airplay),
    hist = TRUE,
    box = TRUE,
    mode = TRUE,
    extreme = TRUE)
```

Descriptives

	Adverts	Sales	Airplay
N	200	200	200
Missing	0	0	0
Mean	614	193	27.5
Median	532	200	28.0
Mode	103 [a]	230	28.0
Standard deviation	486	80.7	12.3
Minimum	9.10	10.0	0.00
Maximum	2272	360	63.0

[a] More than one mode exists, only the first is reported

Extreme Values

Extreme values of Adverts

		Row number	Value
Highest	1	184	2271.86
	2	43	2000.00
	3	87	1985.12
	4	88	1837.52
	5	23	1789.66
Lowest	1	164	9.10
	2	1	10.26
	3	152	10.65
	4	80	15.31
	5	155	20.46

Extreme values of Sales

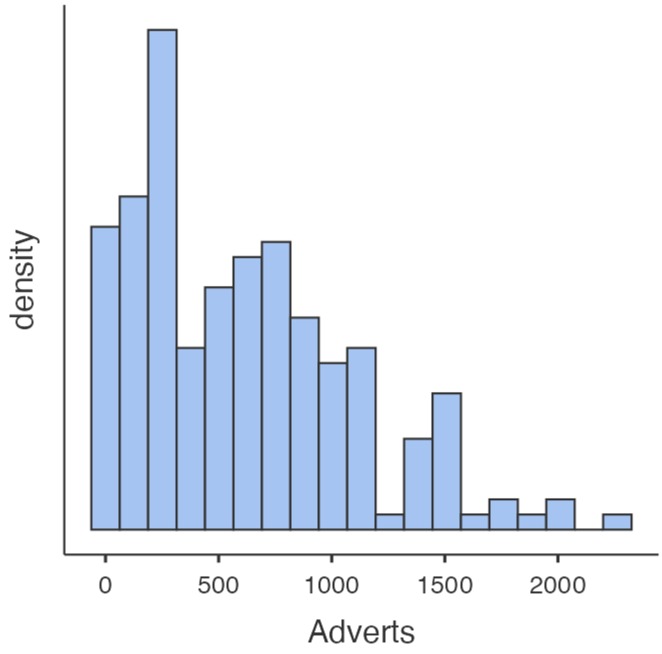
		Row number	Value
Highest	1	3	360.0
	2	86	360.0
	3	87	360.0
	4	124	360.0
	5	148	360.0
Lowest	1	125	10.0
	2	113	30.0
	3	47	40.0
	4	155	40.0
	5	167	40.0

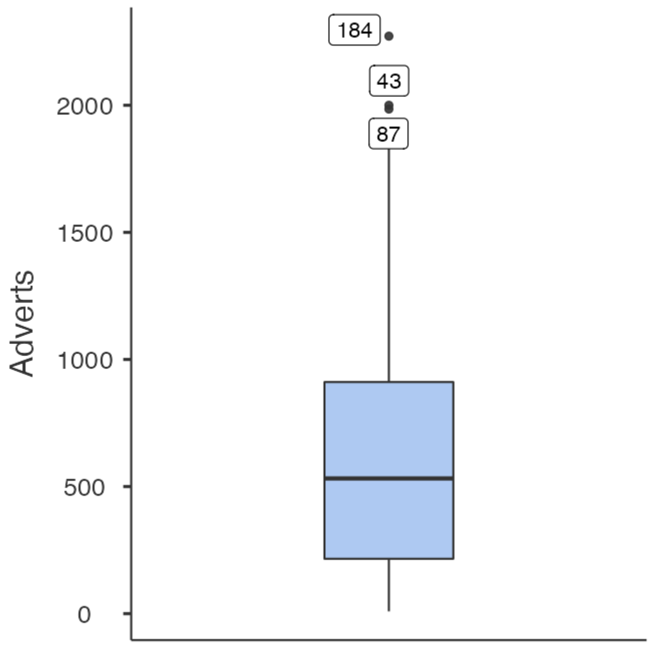
Extreme values of Airplay

		Row number	Value
Highest	1	42	63.00
	2	119	57.00
	3	99	55.00
	4	183	55.00
	5	105	54.00
Lowest	1	159	0.00
	2	82	1.00
	3	83	1.00
	4	94	1.00
	5	53	2.00

Plots

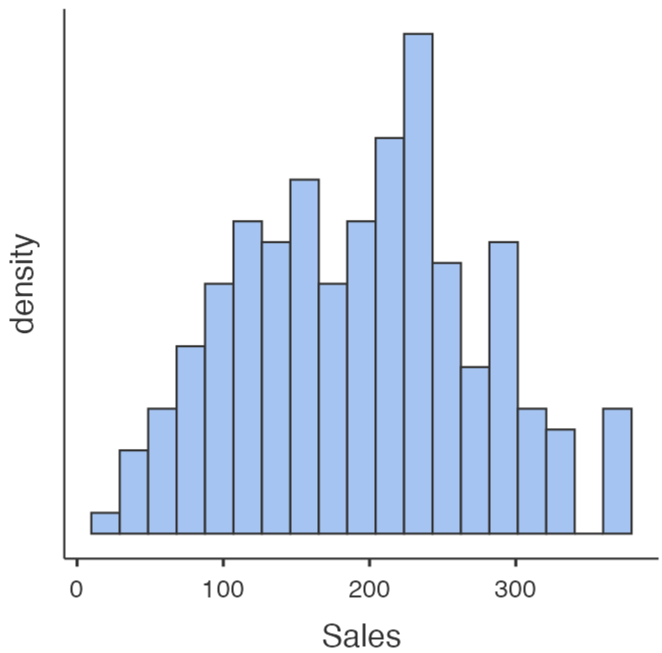
Adverts



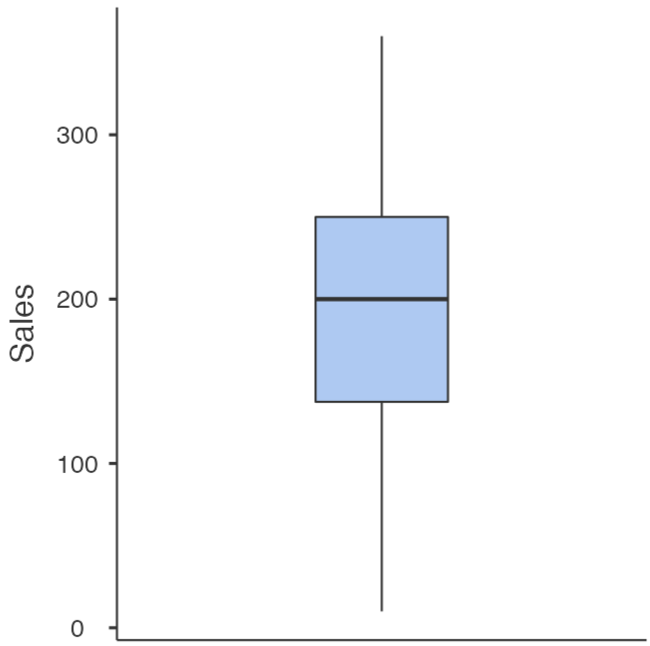


184
43
87
2000
1500
1000
500
0
Adverts

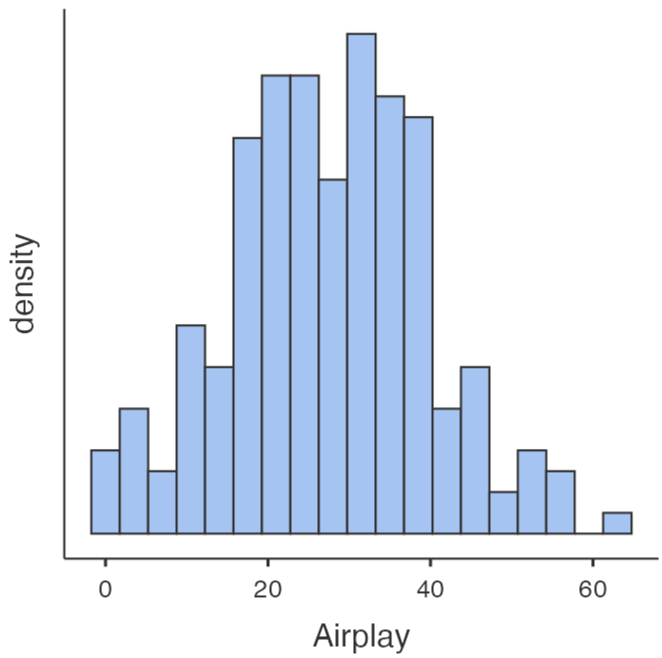
Sales

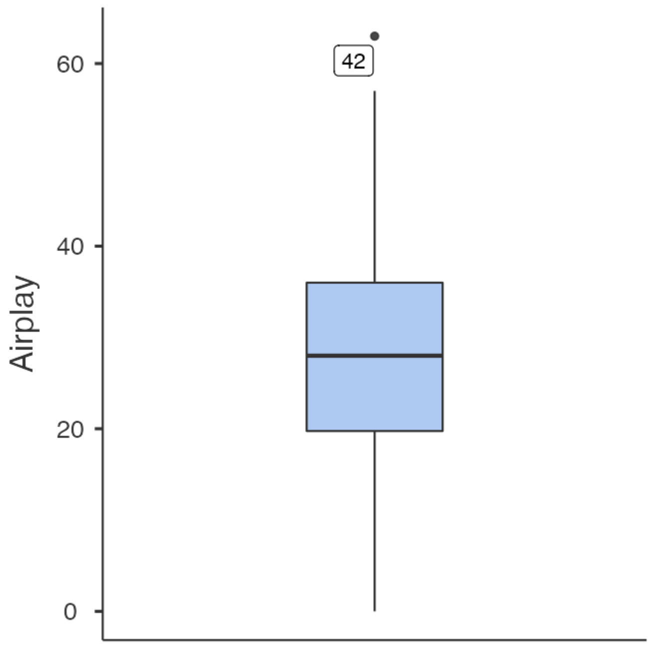


density
0
100
200
300
Sales



Airplay





Descriptives

```
jmv::descriptives(
    data = data,
    vars = Image,
    freq = TRUE,
    bar = TRUE)
```

Descriptives

	Image
N	200
Missing	0
Mean	6.77
Median	7.00
Standard deviation	1.40
Minimum	1
Maximum	10

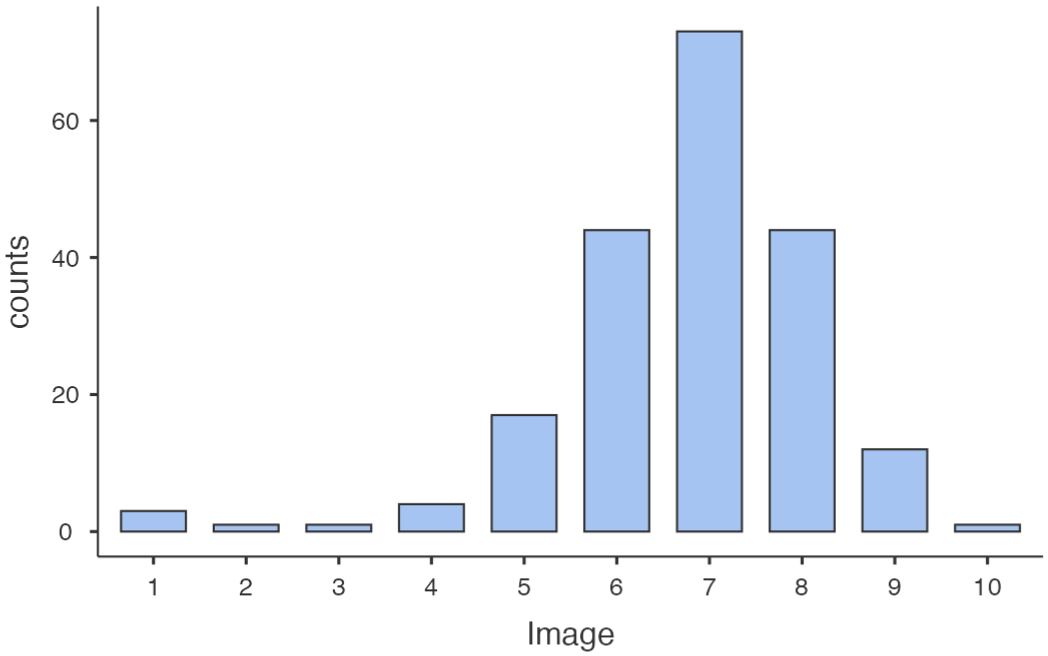
Frequencies

Frequencies of Image

Image	Counts	% of Total	Cumulative %
1	3	1.5 %	1.5 %
2	1	0.5 %	2.0 %
3	1	0.5 %	2.5 %
4	4	2.0 %	4.5 %
5	17	8.5 %	13.0 %
6	44	22.0 %	35.0 %
7	73	36.5 %	71.5 %
8	44	22.0 %	93.5 %
9	12	6.0 %	99.5 %
10	1	0.5 %	100.0 %

Plots

Image



Relationships, Prediction, and Group Comparisons

```
Statkat::correlational(
    data = data,
    dep = Airplay,
    independents = vars())
```

Welcome to Statkat! This tool will help you to find an appropriate statistical method given the measurement level of your data. Make sure you have correctly defined the measurement levels of your variables on the Data tab. You can change the measurement level of a variable via the Setup button on the Data tab, or by double clicking on a column header of interest. You have selected the Relationships, Prediction, and Group Comparisons option. This is the place to be if you are interested in

- the relationship between two or more variables, or
- predicting one variable from other variables, or
- the difference between independent (unrelated) groups on a certain variable.

To get started, drop a variable in the box below Variable 1 / Dependent Variable, and one or more variables in the box below Variable 2 / Independent Variables. Our tool will then come up with a statistical method that may be appropriate for your data! In addition, you can drop one or more variables in the box below Control Variables. Control variables are variables that you are not particularly interested in, but which may be related to the dependent variable and possibly also to the independent variables. In experiments (with random assignment), control variables are often included to increase power. In observational studies, control variables are often included mainly to equate subjects on the control variables. This prevents the control variables from confounding the relationships between the independent variables and the dependent variable. If your research question does not make a clear distinction between an independent variable and a dependent variable, the decision of which variable to define as Variable 1/Dependent Variable and which as Variable 2/Independent Variables can be arbitrary. But doesn't this decision affect the recommended method? Well, in some cases it does affect the primary method recommendation, but if a simpler method can be performed by flipping the two variables, this is usually mentioned. It is then up to you which of the recommended methods you prefer. It is important to keep in mind here that none of the correlational statistical techniques can say anything about causality anyway (not even a method like regression analysis), so even if you do make a distinction between an independent and dependent variable, the statistical method will only say something about association, not causation. Note: Our advice is based on the measurement level of your data and on the number of variables entered. There can be details related to your data, task, or assignment that may render the advice moot. Always check the assumptions made by the statistical method before interpreting the results. We always try to come up with the least complicated method that might be applicable given your data. Keep in mind that there may be other, more advanced, methods that might be applicable as well.

Relationships, Prediction, and Group Comparisons

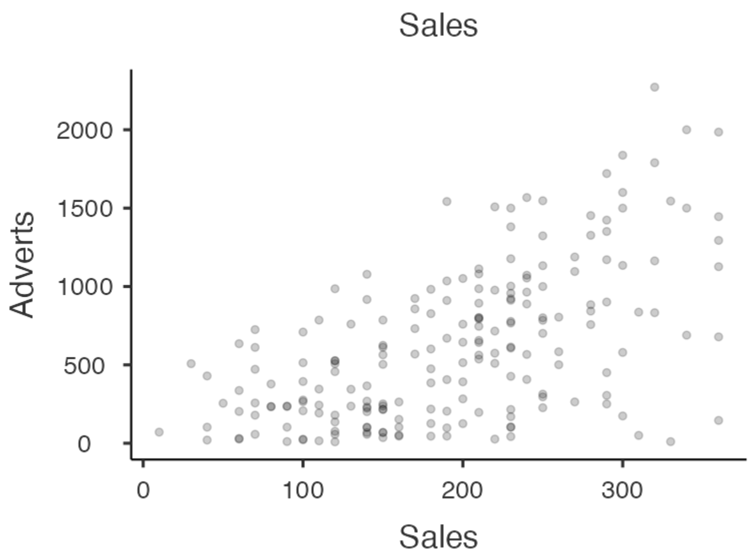
```
Statkat::correlational(
    data = data,
    dep = Adverts,
    independents = Sales)
```

You have entered a numeric variable for Variable 1 / Dependent Variable and a numeric variable for Variable 2 / Independent Variables. Hence, the [Pearson correlation coefficient](), which is a measure for the strength of the linear relationship between two variables, seems to be a good option for you! In order to run this analysis in jamovi, go to: Regression > Correlation Matrix

- Drop your two variables in the white box at the right
- Under Correlation Coefficients, select Pearson (selected by default)
- Under Hypothesis, select your alternative hypothesis

Alternatively, you could perform a [linear regression analysis](). The test outcomes of both methods will be equivalent. Click on the links to learn more about these methods!

Scatter Plots of Bivariate Relationships - Dependent/Independent Variables



Relationships, Prediction, and Group Comparisons

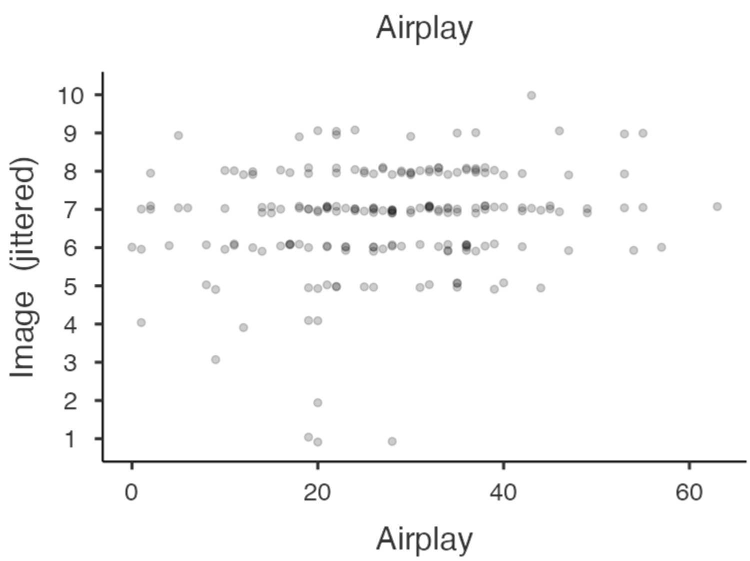
```
Statkat::correlational(
    data = data,
    dep = Image,
    independents = Airplay)
```

You have entered an ordinal variable for Variable 1 / Dependent Variable and a numeric variable for Variable 2 / Independent Variables. Hence, [Spearman's rank correlation coefficient](), which is a measure for the strength of the monotonic relationship between two variables, seems to be a good option for you! In order to run this analysis in jamovi, go to: Regression > Correlation Matrix

- Drop your two variables in the white box at the right
- Under Correlation Coefficients, select Spearman
- Under Hypothesis, select your alternative hypothesis

An alternative option would be ordinal logistic regression, with your ordinal variable as dependent variable and your numeric variable as independent variable. The advantage of this method is that it treats the numeric variable as an interval variable, whereas the Spearman correlation treats both variables as ordinal. However, the Spearman correlation is a much easier option than ordinal logistic regression. Finally, if you would flip variable 1 and variable 2, you could also perform a [one way ANOVA](), which is a test for the difference between several population means. Your numeric variable would be the dependent variable and your ordinal variable would be the independent variable (grouping factor). The disadvantage of the one way ANOVA is that it will not take the ranked nature of the ordinal independent variable into account. That is, it will treat the ordinal independent variable as a nominal variable. Click on the links to learn more about these methods!

Scatter Plots of Bivariate Relationships - Dependent/Independent Variables



Relationships, Prediction, and Group Comparisons

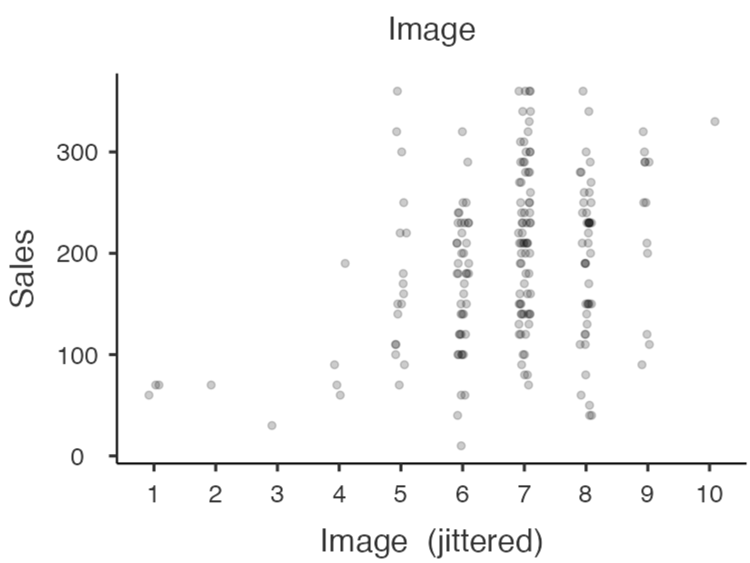
```
Statkat::correlational(
    data = data,
    dep = Sales,
    independents = Image)
```

You have entered a numeric variable for Variable 1 / Dependent Variable and an ordinal variable for Variable 2 / Independent Variables. Hence, [Spearman's rank correlation coefficient](), which is a measure for the strength of the monotonic relationship between two variables, seems to be a good option for you! In order to run this analysis in , go to: Regression > Correlation Matrix

- Drop your two variables in the white box at the right
- Under Correlation Coefficients, select Spearman
- Under Hypothesis, select your alternative hypothesis

An alternative option would be [one way ANOVA](), which is is a test for the difference between several population means. Your numeric variable would be the dependent variable and your ordinal variable would be the independent variable (grouping factor). The disadvantage of the one way ANOVA is that it will not take the ranked nature of the ordinal independent variable into account. That is, it will treat the ordinal independent variable as a nominal variable. On the other hand, the disadvantage of Spearman's rho is that it treats the numeric variable as an ordinal variable, rather than an interval/ratio variable. Click on the links to learn more about these methods!

Scatter Plots of Bivariate Relationships - Dependent/Independent Variables



Correlation Matrix

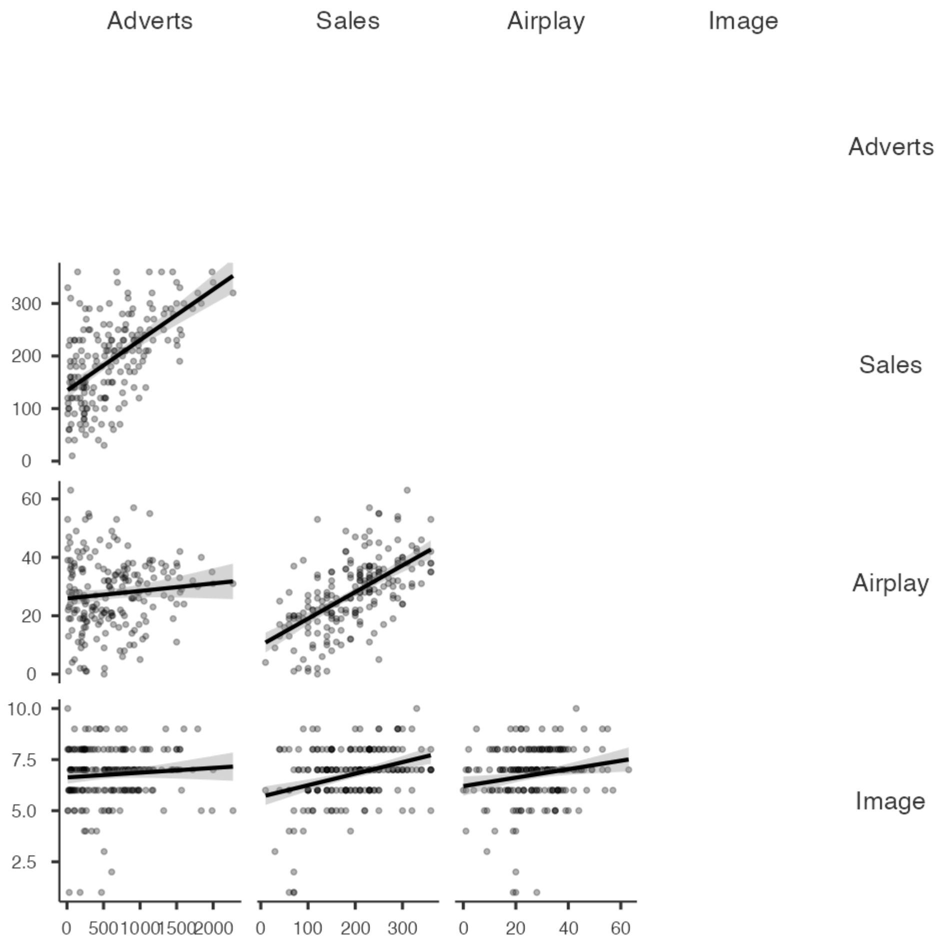
```
jmv::corrMatrix(
    data = data,
```

```
vars = vars(Adverts, Sales, Airplay, Image),
spearman = TRUE,
plots = TRUE)
```

Correlation Matrix

		Adverts	Sales	Airplay	Image
Adverts	Pearson's r	—			
	p-value	—			
	Spearman's rho	—			
	p-value	—			
Sales	Pearson's r	0.578	—		
	p-value	< .001	—		
	Spearman's rho	0.554	—		
	p-value	< .001	—		
Airplay	Pearson's r	0.102	0.599	—	
	p-value	0.151	< .001	—	
	Spearman's rho	0.093	0.628	—	
	p-value	0.189	< .001	—	
Image	Pearson's r	0.081	0.326	0.182	—
	p-value	0.256	< .001	0.010	—
	Spearman's rho	0.067	0.268	0.161	—
	p-value	0.345	< .001	0.023	—

Plot



References

[1] The jamovi project (2022). *jamovi*. (Version 2.3) [Computer Software]. Retrieved from https://www.jamovi.org.

[2] R Core Team (2021). *R: A Language and environment for statistical computing*. (Version 4.1) [Computer software]. Retrieved from https://cran.r-project.org. (R packages retrieved from MRAN snapshot 2022-01-01).