Rapport package team

Correlations

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Description

This template will return the correlation matrix of supplied numerical variables.

Introduction

Correlation is one of the most commonly used statistical tool. With the help of that we can get information about a possible linear relation between two variables. According to the definition of the correlation, one can call it also as the standardized covariance.

The maximum possible value of the correlation (the so-called correlation coefficient) could be 1, the minimum could be -1. In the first case there is a perfect positive (thus in the second case there is a perfect negative) linear relationship between the two variables, though perfect relationships, especially in the social sciences, are quite rare. If two variables are independent from each other, the correlation between them is 0, but 0 correlation coefficient only means certainly a linear independency.

Because extreme values occur seldom we have rule of thumbs for the coefficients, like other fields of statistics:

- we call two variables highly correlated if the absolute value of the correlation coefficient between them is higher than 0.7 and
- we call them uncorrelated if that is smaller than 0.2.

Please note that correlation has nothing to do with causal models, it only shows association but not effects.

Variable description

709 variables with *2* cases provided.

There are no highly correlated (r < -0.7 or r > 0.7) variables.

There are no uncorrelated correlated (r < -0.2 or r > 0.2) variables.

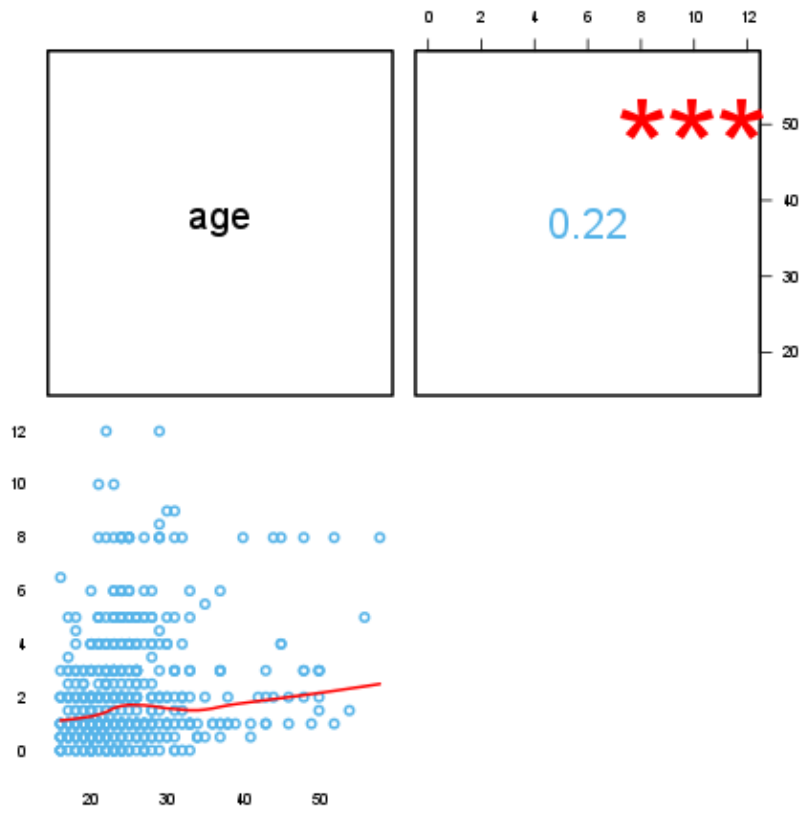
Correlation matrix

	age	edu
age		0.2185 * * *
edu	0.2185 * * *	

Table 1: Correlation matrix

Where the stars represent the significance levels of the bivariate correlation coefficients: one star for a p value below `0.05`, two for below `0.01` and three for below `0.001`.

On the plot one can see the correlation in two forms: below the diagonal visually, above that one can find the coefficient(s).



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Variable description

709 variables with *3* cases provided.

The highest correlation coefficient (*0.2273*) is between *edu* and *age* and the lowest (*-0.03377*) is between *leisure* and *age*. It seems that the strongest association (r=*0.2273*) is between *edu* and *age*.

There are no highly correlated (r < -0.7 or r > 0.7) variables.

Uncorrelated (-0.2 < r < 0.2) variables:

- *leisure* and *age* (-0.03)
- *leisure* and *edu* (0.17)

Correlation matrix

	age	edu	leisure
age		0.2273 * * *	-0.0338
edu	0.2273 * * *		0.1732 * * *
leisure	-0.0338	0.1732 * * *	

Table 2: Correlation matrix

Where the stars represent the significance levels of the bivariate correlation coefficients: one star for a p value below `0.05`, two for below `0.01` and three for below `0.001`.

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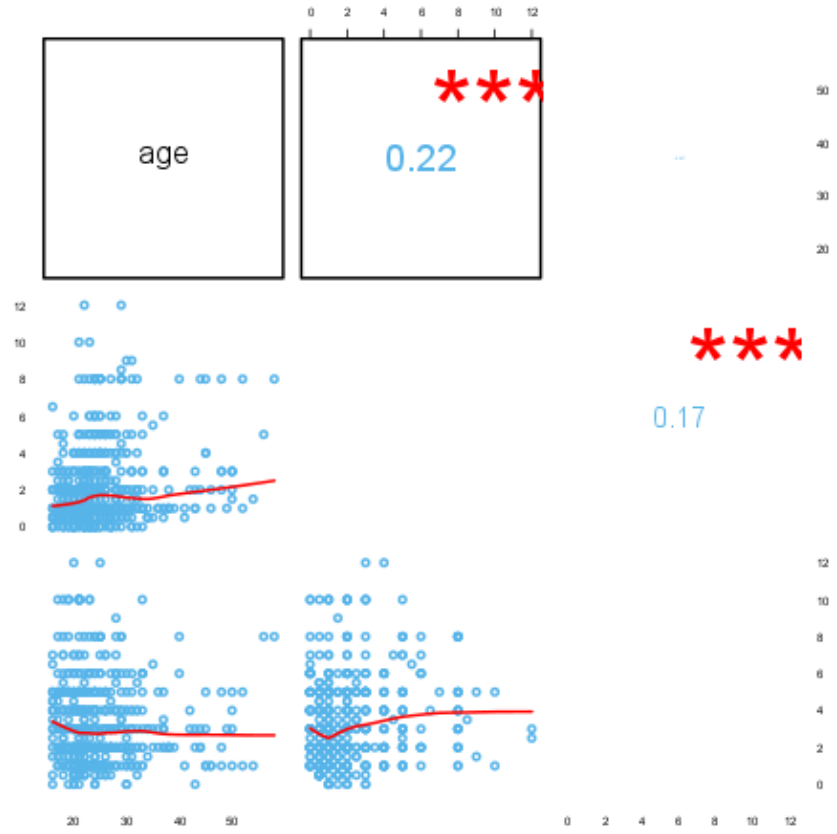

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- we call two variables highly correlated if the absolute value of the correlation coefficient between them is higher than 0.7 and
- we call them uncorrelated if that is smaller than 0.2.

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Variable description

32 variables with *11* cases provided.

The highest correlation coefficient (*0.902*) is between *disp* and *cyl* and the lowest (*-0.8677*) is between *wt* and *mpg*. It seems that the strongest association (r=*0.902*) is between *disp* and *cyl*.

Highly correlated ($r < -0.7$ or $r > 0.7$) variables:

- *cyl* and *mpg* (-0.85)
- *disp* and *mpg* (-0.85)
- *hp* and *mpg* (-0.78)
- *wt* and *mpg* (-0.87)
- *disp* and *cyl* (0.9)
- *hp* and *cyl* (0.83)
- *wt* and *cyl* (0.78)
- *vs* and *cyl* (-0.81)
- *hp* and *disp* (0.79)
- *drat* and *disp* (-0.71)
- *wt* and *disp* (0.89)
- *vs* and *disp* (-0.71)
- *qsec* and *hp* (-0.71)
- *vs* and *hp* (-0.72)
- *carb* and *hp* (0.75)
- *wt* and *drat* (-0.71)
- *am* and *drat* (0.71)
- *vs* and *qsec* (0.74)

- *gear* and *am* (0.79)

Uncorrelated (-0.2 < r < 0.2) variables:

- *gear* and *hp* (-0.13)
- *qsec* and *drat* (0.09)
- *carb* and *drat* (-0.09)
- *qsec* and *wt* (-0.17)
- *am* and *vs* (0.17)
- *carb* and *am* (0.06)

Correlation matrix

	mpg	cyl	disp
mpg		-0.8522 * * *	-0.8476 * * *
cyl	-0.8522 * * *		0.9020 * * *
disp	-0.8476 * * *	0.9020 * * *	
hp	-0.7762 * * *	0.8324 * * *	0.7909 * * *
drat	0.6812 * * *	-0.6999 * * *	-0.7102 * * *
wt	-0.8677 * * *	0.7825 * * *	0.8880 * * *
qsec	0.4187 *	-0.5912 * * *	-0.4337 *
vs	0.6640 * * *	-0.8108 * * *	-0.7104 * * *
am	0.5998 * * *	-0.5226 * *	-0.5912 * * *
gear	0.4803 * *	-0.4927 * *	-0.5556 * * *
carb	-0.5509 * *	0.5270 * *	0.3950 *

Table 3: Correlation matrix (continued below)

	hp	drat	wt
mpg	-0.7762 * * *	0.6812 * * *	-0.8677 * * *
cyl	0.8324 * * *	-0.6999 * * *	0.7825 * * *
disp	0.7909 * * *	-0.7102 * * *	0.8880 * * *
hp		-0.4488 * *	0.6587 * * *

drat	-0.4488 * *		-0.7124 * * *
wt	0.6587 * * *	-0.7124 * * *	
qsec	-0.7082 * * *	0.0912	-0.1747
vs	-0.7231 * * *	0.4403 *	-0.5549 * * *
am	-0.2432	0.7127 * * *	-0.6925 * * *
gear	-0.1257	0.6996 * * *	-0.5833 * * *
carb	0.7498 * * *	-0.0908	0.4276 *

Table 4: Table continues below

	qsec	vs	am
mpg	0.4187 *	0.6640 * * *	0.5998 * * *
cyl	-0.5912 * * *	-0.8108 * * *	-0.5226 * *
disp	-0.4337 *	-0.7104 * * *	-0.5912 * * *
hp	-0.7082 * * *	-0.7231 * * *	-0.2432
drat	0.0912	0.4403 *	0.7127 * * *
wt	-0.1747	-0.5549 * * *	-0.6925 * * *
qsec		0.7445 * * *	-0.2299
vs	0.7445 * * *		0.1683
am	-0.2299	0.1683	
gear	-0.2127	0.2060	0.7941 * * *
carb	-0.6562 * * *	-0.5696 * * *	0.0575

Table 5: Table continues below

	gear	carb
mpg	0.4803 * *	-0.5509 * *
cyl	-0.4927 * *	0.5270 * *
disp	-0.5556 * * *	0.3950 *
hp	-0.1257	0.7498 * * *

drat	0.6996 * * *	-0.0908
wt	-0.5833 * * *	0.4276 *
qsec	-0.2127	-0.6562 * * *
vs	0.2060	-0.5696 * * *
am	0.7941 * * *	0.0575
gear		0.2741
carb	0.2741	

Where the stars represent the significance levels of the bivariate correlation coefficients: one star for a p value below `0.05`, two for below `0.01` and three for below `0.001`.

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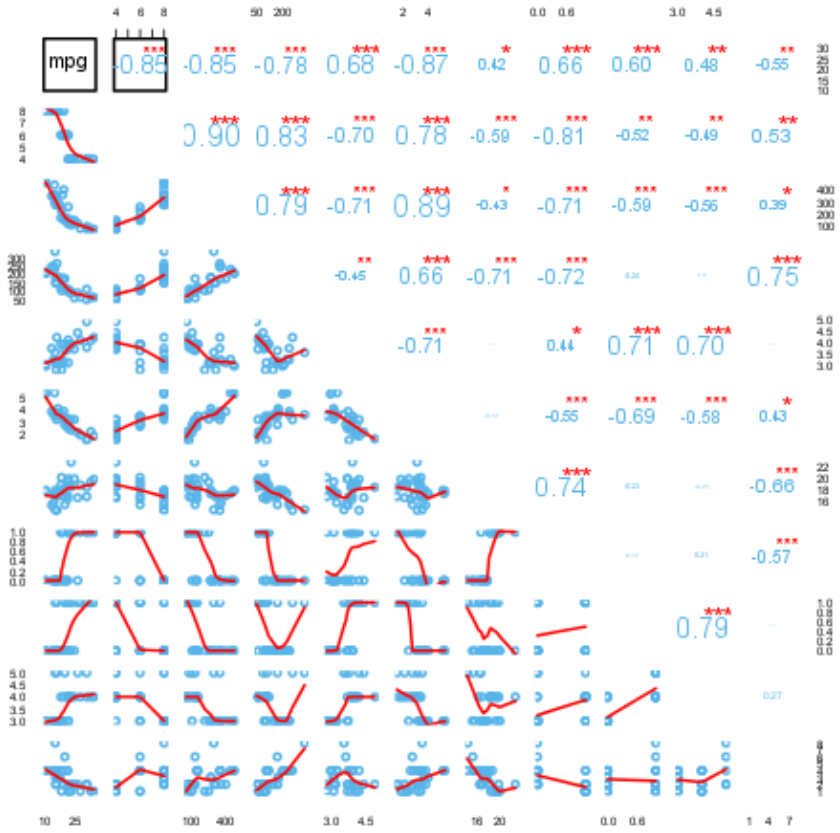

This report was generated with R (3.0.1) and rapport (0.51) in *4.769* sec on x86_64-unknown-linux-gnu platform.

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