

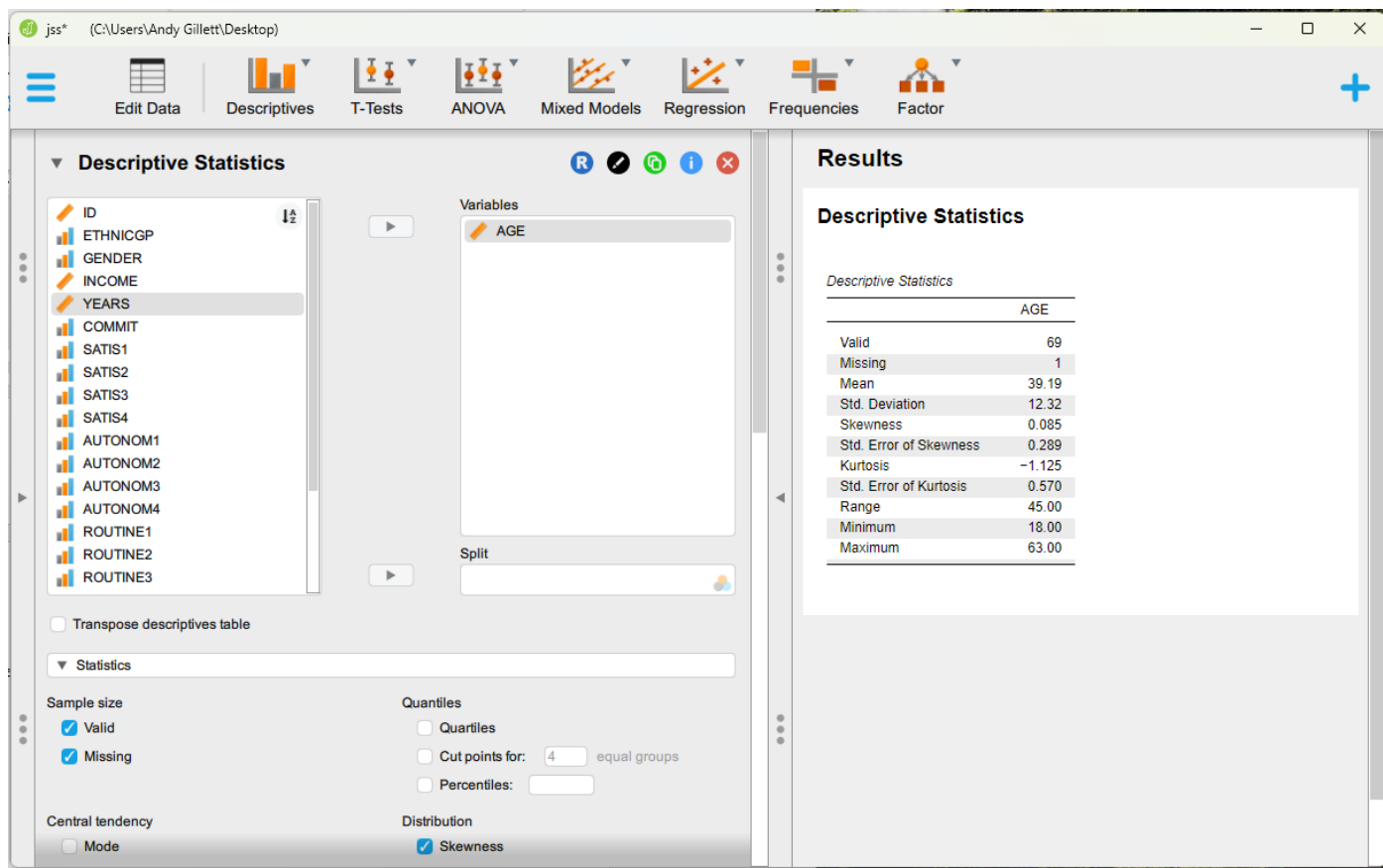
Statistical Analysis of Survey Data in JASP

The directors of a medium sized company have asked you to investigate answers to several HR related questions and write a short report. You have access to a survey of their employees that has recently been carried out. The questions you need to investigate – in some detail - are:

1. What is the age distribution of the workforce?
2. What proportion of employees belongs to each ethnic group?
3. What is the average income?
4. How is number of years worked related to salary, if at all?
5. How different are the average salaries of the different skill categories?
6. Is there a significant difference between the proportion of males and females who attended the firm's meeting last month?

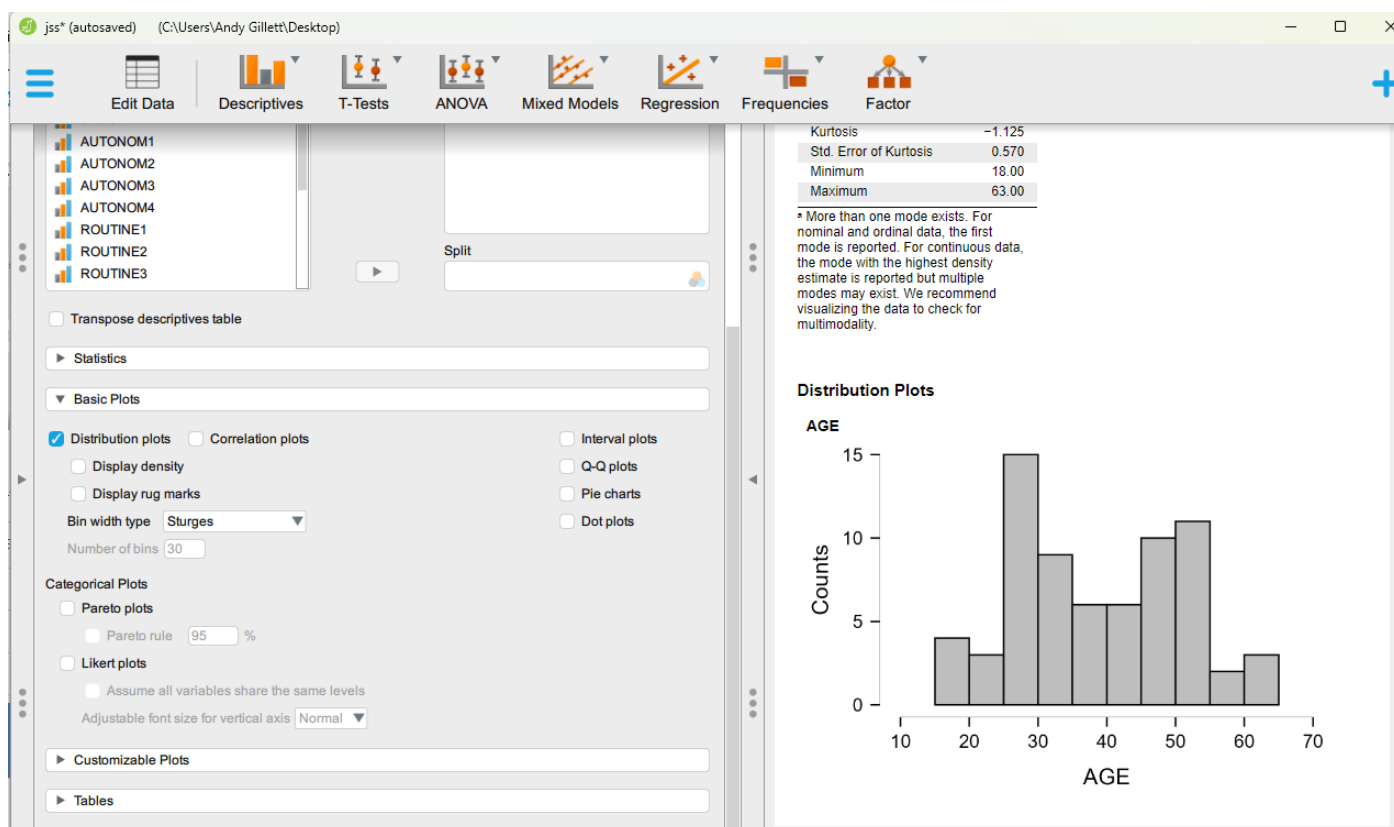
1. What is the age distribution of the workforce?

[Analyses -> Descriptives -> Descriptive Statistics] - Statistics



You could also:

[Analyses -> Descriptives -> Descriptive Statistics -> Basic Plots -> Distribution Plots] – Basic Plots for a histogram



Answer

histogram plus:

Maximum 63

Minimum 18

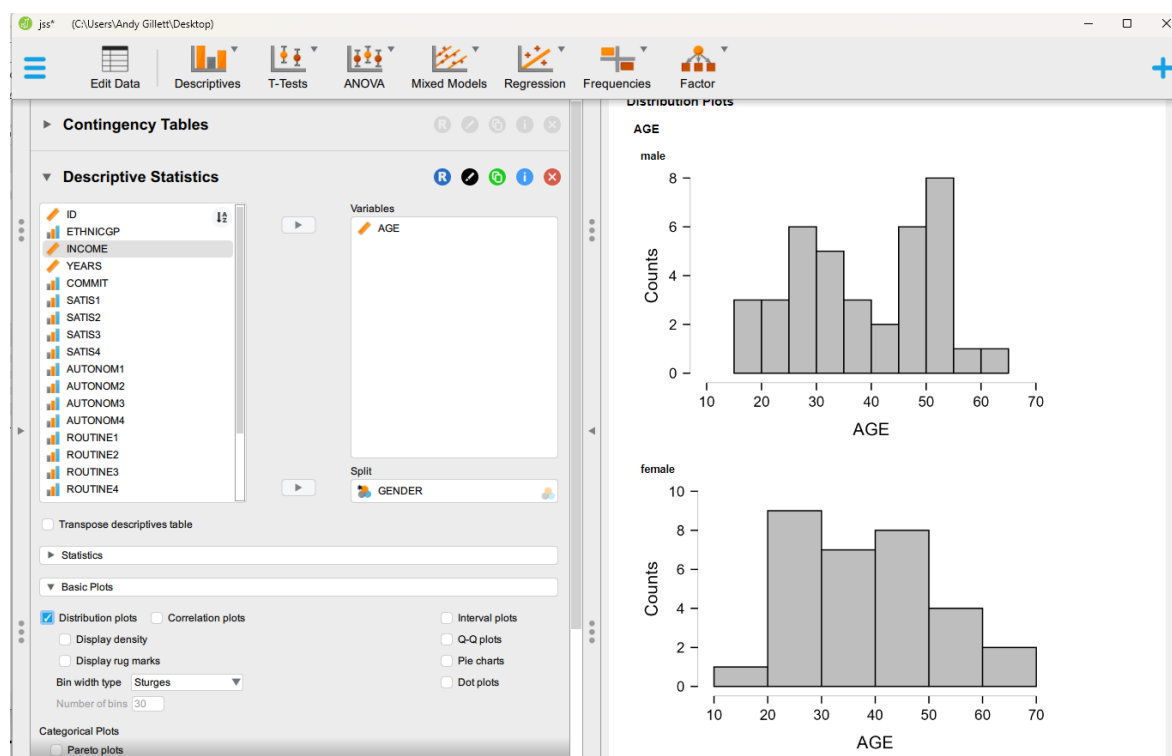
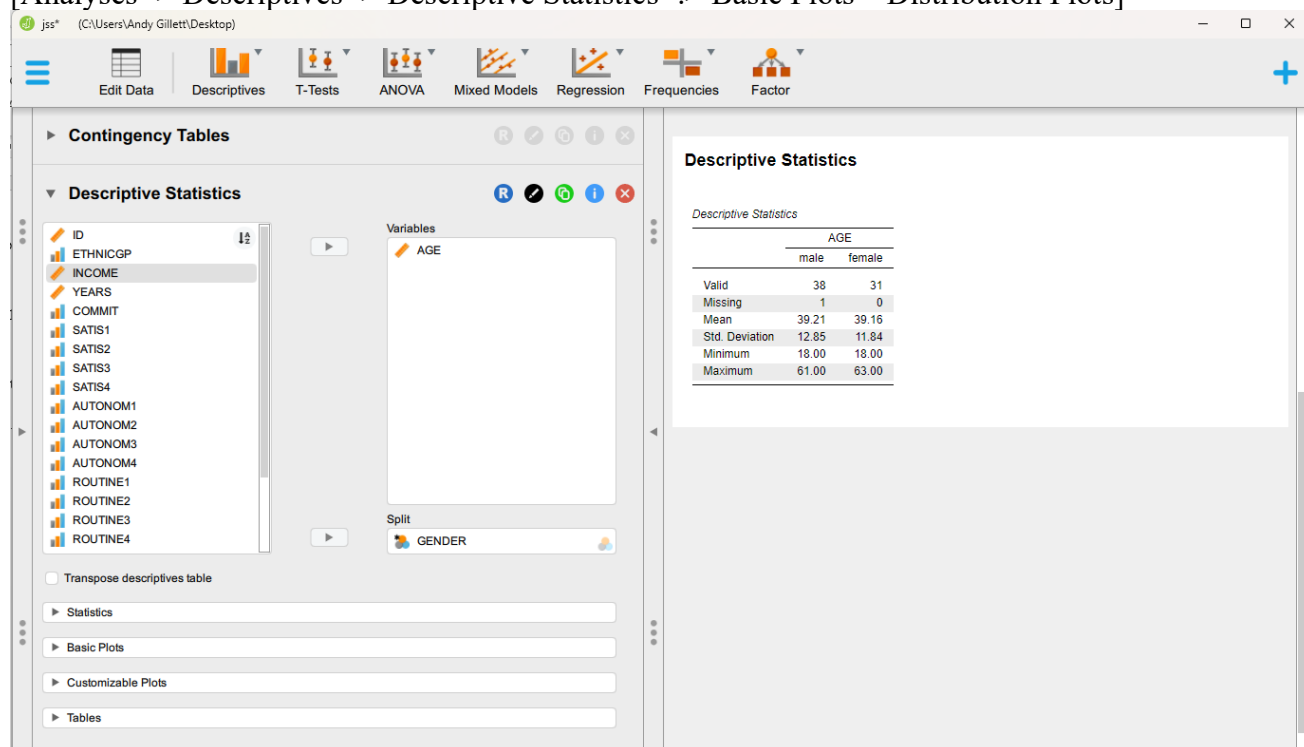
Range 45

Standard Deviation 12.32 – therefore 68% (± 1 SD) of employees are between 27 and 51.

Mean 39.19

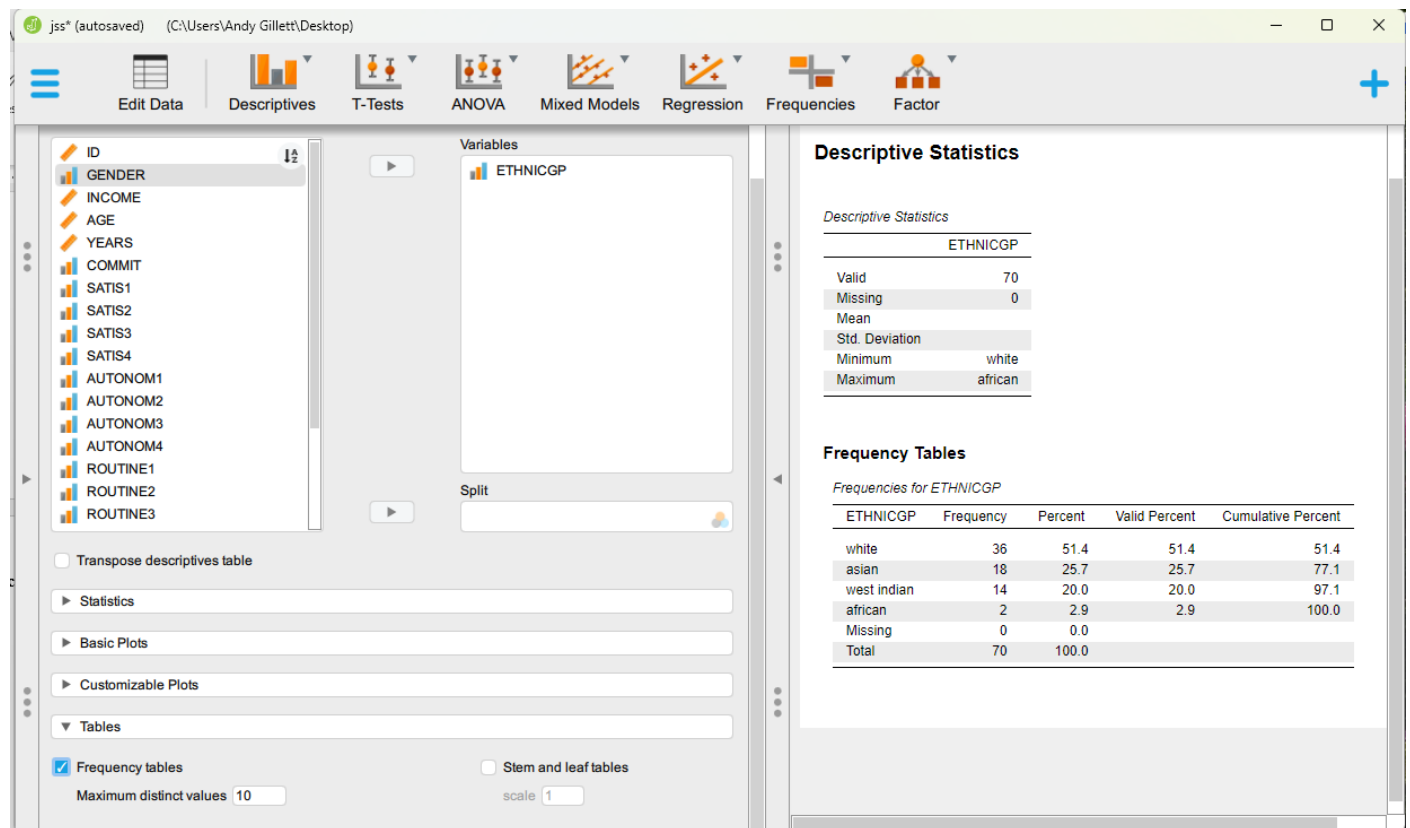
Could look at M/F etc distribution.

[Analyses -> Descriptives -> Descriptive Statistics -> Basic Plots – Distribution Plots]



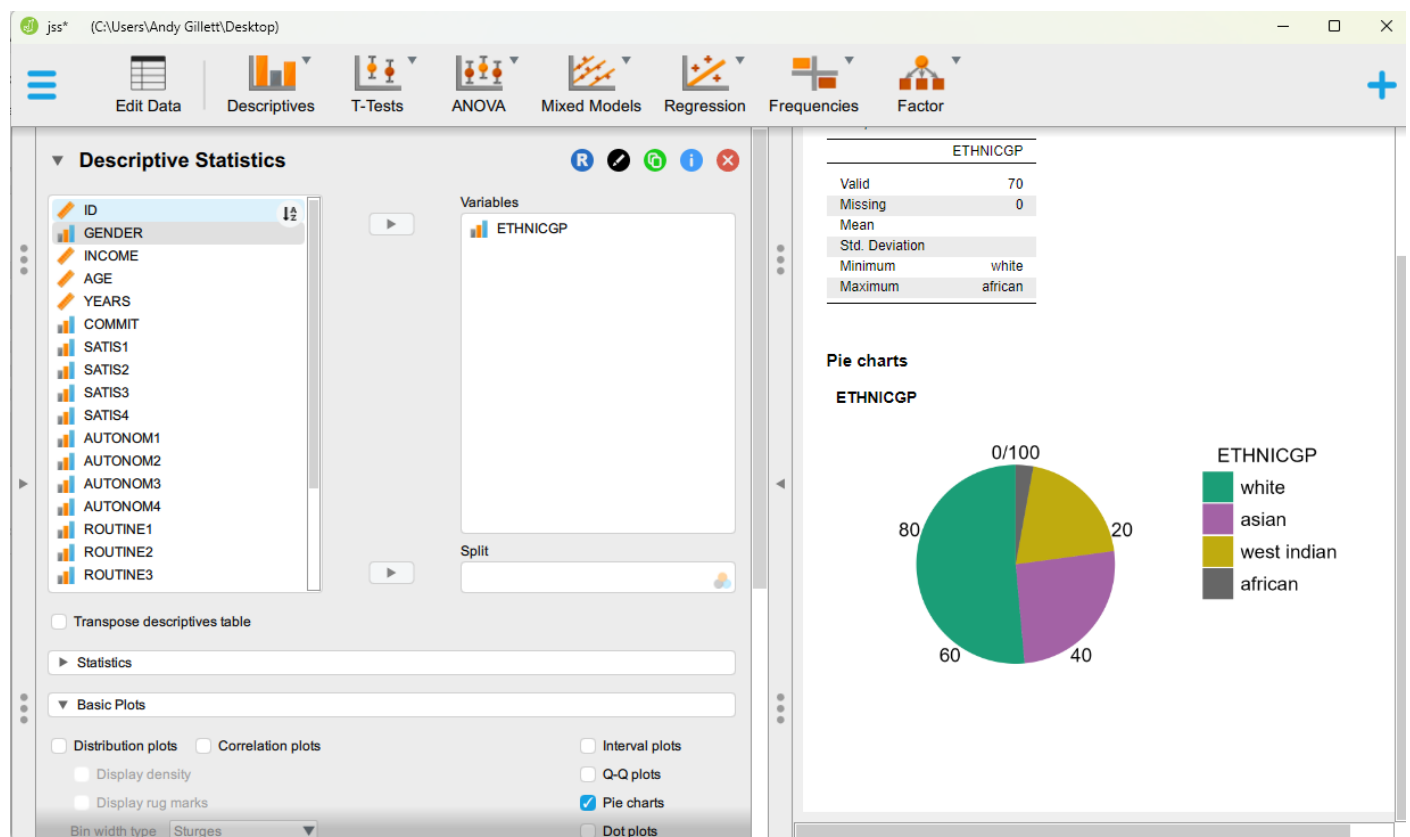
2. What proportion of employees belongs to each ethnic group?

[Analyses -> Descriptives -> Descriptive Statistics] - Tables



Or for a pie chart.

[Analyses -> Descriptives -> Descriptive Statistics] - Basic Plots - Pie Chart



Numbers

White 36

Asian 18

West Indian 14

African 2

Others 0

Total 70.

Percentages

White 52%

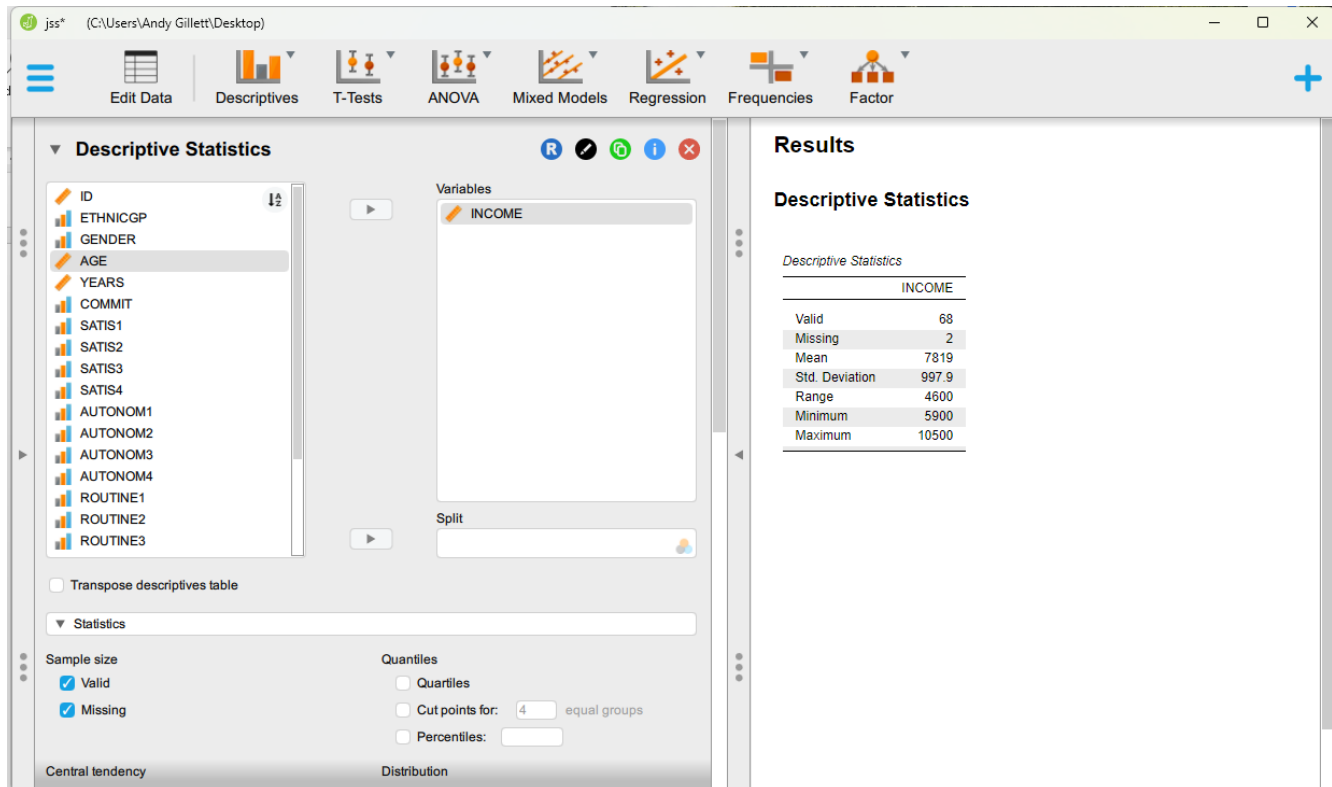
Asian 26%

West Indian 20%

African 2%

3. What is the average income?

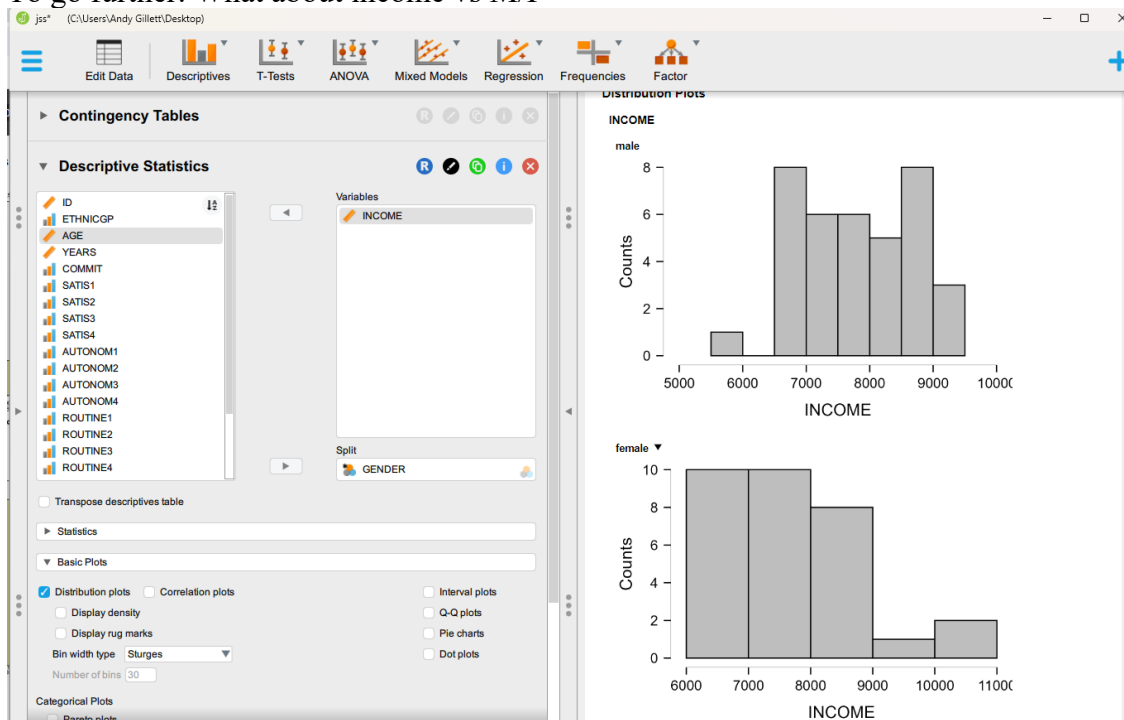
[Analyses -> Descriptives -> Descriptive Statistics] - Statistics



Answer:

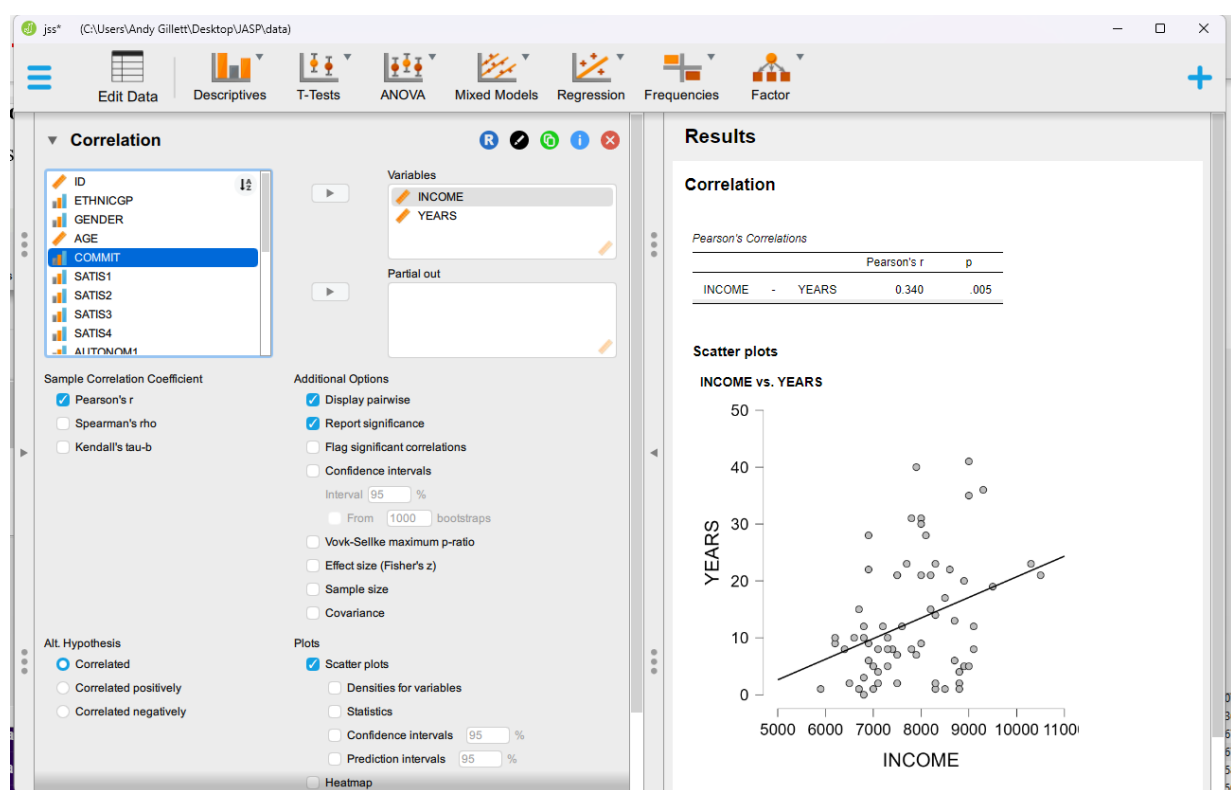
- Max £10,500
- Min £5,900
- Mean £7,819.12
- SD £997.95
- Range £4,600

To go further: What about income vs M/F



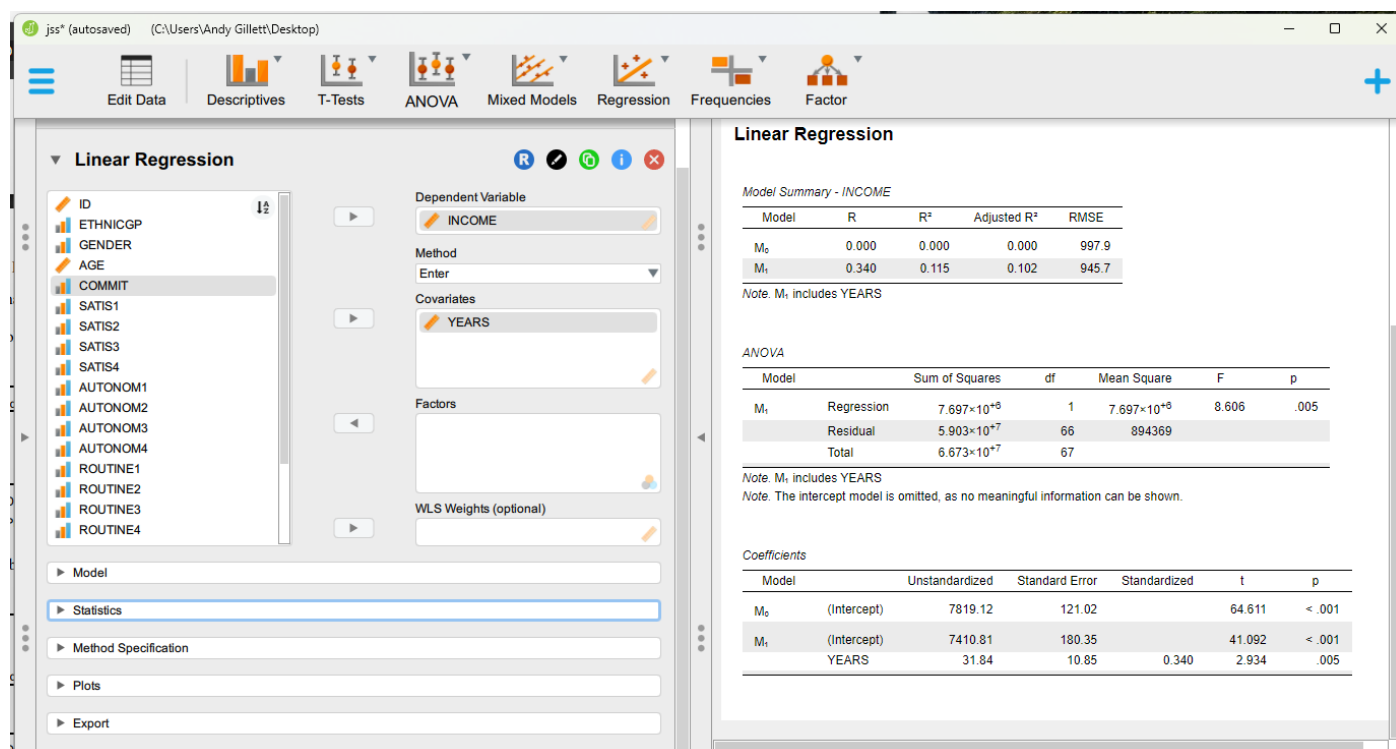
4. How is number of years worked related to salary, if at all?

[Analyses -> Regression -> Correlation] - Scatter Plot



$r = 0.340$

[Analyses -> Regression -> Linear Regression]



$t = 2.934$ with 66 df. Sig = 0.005 < 0.05. Therefore it is probably not by chance. So there is a positive significant relationship between years worked and salary etc.

What exactly is the relationship?

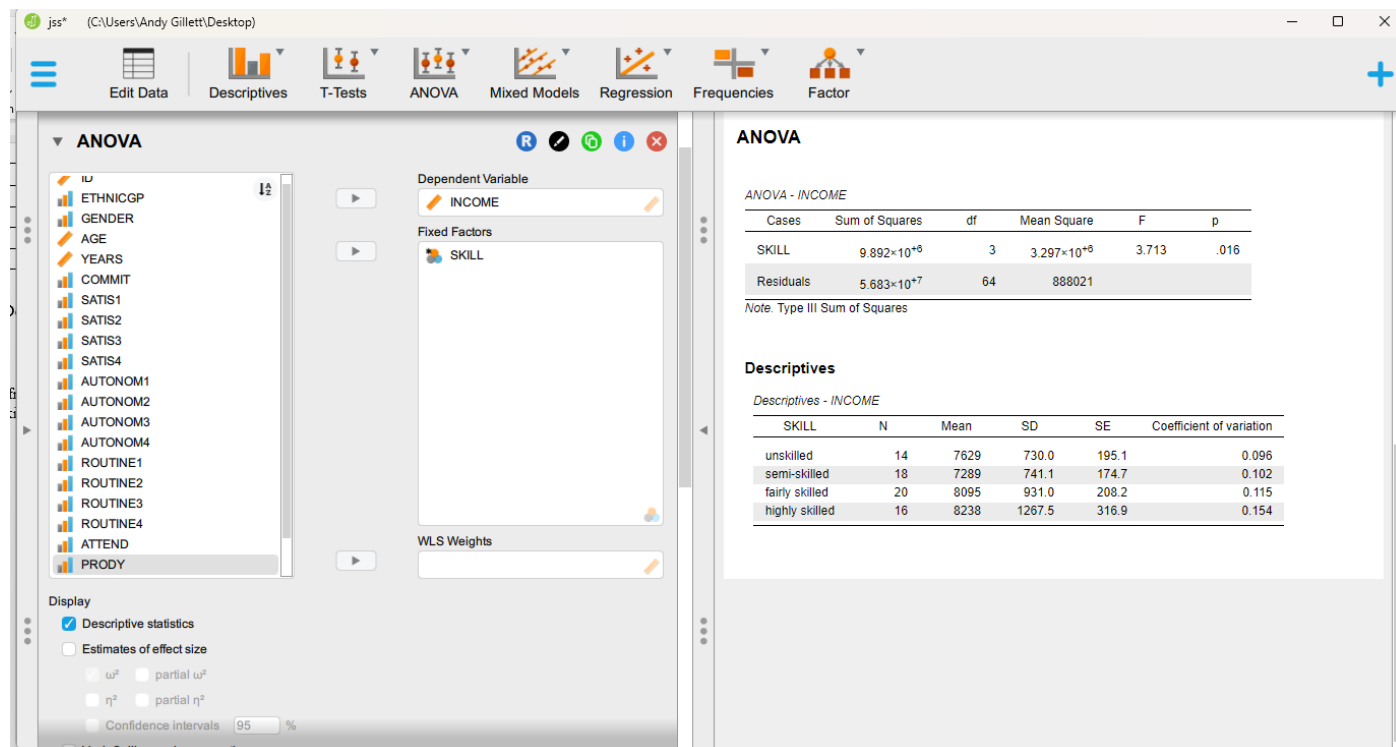
Relationship between years worked and salary is: $\text{Salary} = £7410 + 31.84 \times \text{Years Worked}$

Correlation = 0.340 Weak +ve, and significant ($p=0.005$)

There is a weak positive ($r = .340$) significant ($p = 0.005$) relationship ($\text{Salary} = £7410 + 31.84 \times \text{Years Worked}$) between years worked and salary.

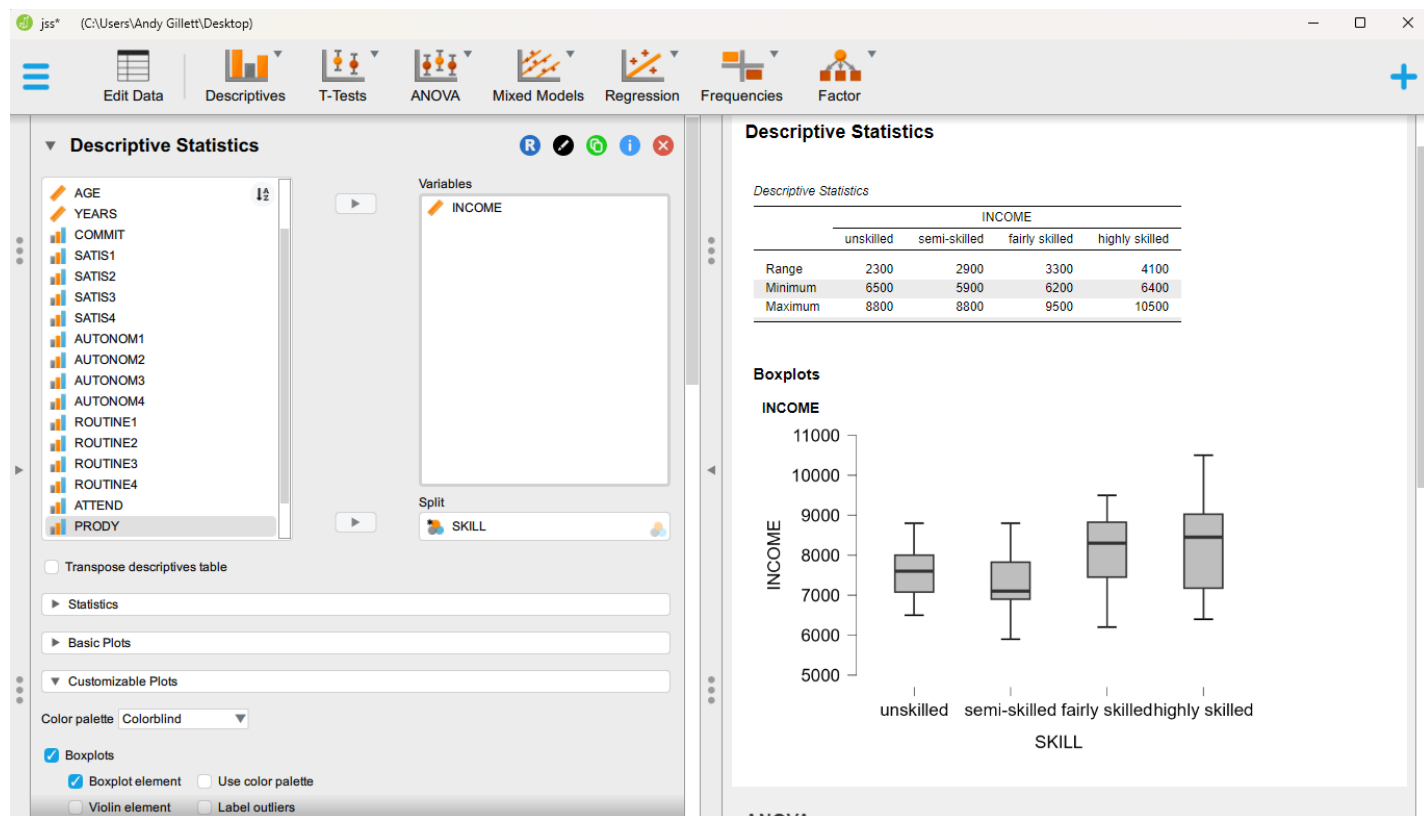
5. How different are the average salaries of the different skill categories?

[Analyses -> ANOVA -> ANOVA] Display - Descriptive Statistics



F = 3.713 with 3, 64 degrees of freedom. p value = 0.016 which is < 0.05 therefore there is a significant difference between salary and skill level.

[Analyses -> Descriptive Statistics] Customizable Plot – Box Plot



6. Is there a significant difference between the proportion of males and females who attended the firm's meeting last month?

[Analyses -> Frequencies -> Contingency Tables] Statistics - χ^2 (Chi Squared), Percentages – Row.

The screenshot shows the SPSS interface. The 'Contingency Tables' dialog box is open, with 'GENDER' selected for Rows and 'ATTEND' for Columns. The 'Statistics' section is expanded, showing 'Cells' with 'Observed' and 'Expected' counts selected, and 'Row' percentages selected. The 'Residuals' section has 'Unstandardized' selected. The 'Margin' section has 'Show totals' selected. The output window shows the 'Contingency Tables' table and the 'Chi-Squared Tests' table.

GENDER		ATTEND		Total
		yes	no	
male	Count	21.00	18.00	39.00
	% within row	53.85 %	46.15 %	100.00 %
female	Count	15.00	16.00	31.00
	% within row	48.39 %	51.61 %	100.00 %
Total	Count	36.00	34.00	70.00
	% within row	51.43 %	48.57 %	100.00 %

	Value	df	p
χ^2	0.206	1	.650
N	70		

χ^2 (Chi Squared) $p = 0.650$

Altogether 36 people attended the meeting and 34 did not. 21 men and 15 women attended the meeting. 18 men and 16 women did not attend the meeting. 54% of men attended the meeting, whereas 48% of women attended the meeting.

54% of men attended the meeting, whereas 48% of women attended the meeting. So the percentage of men attending the meeting was higher than the percentage of women attending the meeting. However, Sig = 0.650. Therefore, there is no significant difference between M/F attendance at meeting.