

Statistics in Gretl

Descriptive Statistics

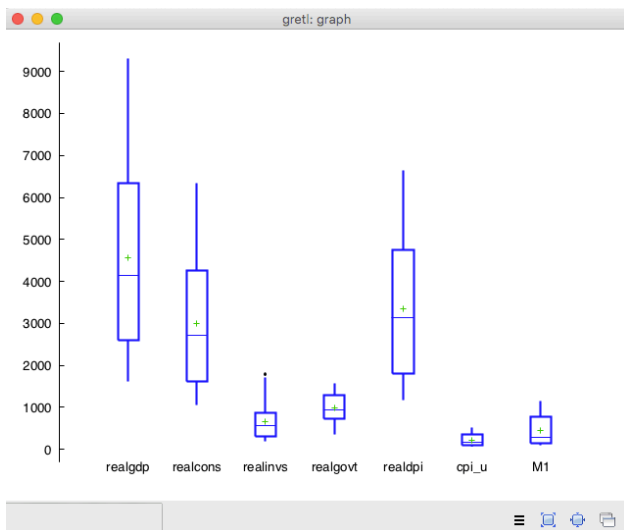
We have learned that summary statistics of variables can be shown from

> View > Summary statistics

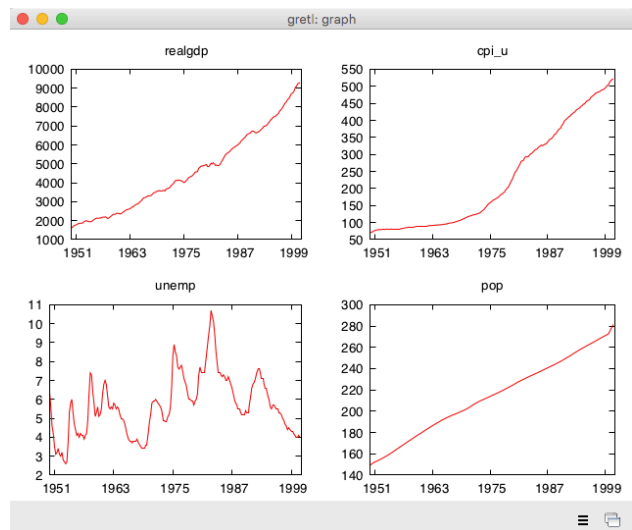
or from

> Variable > Summary statistics

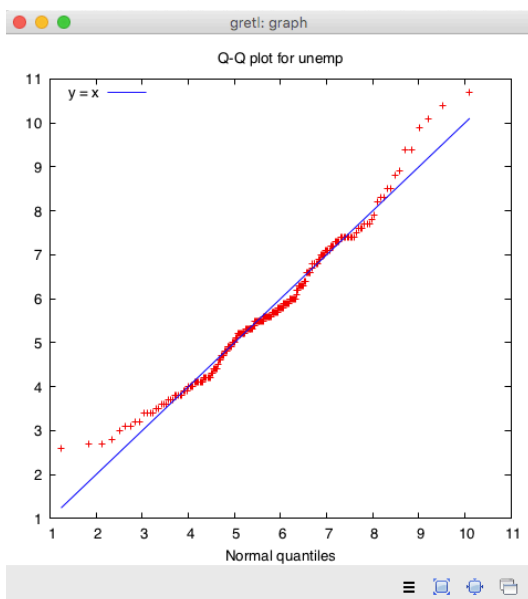
for a single variable. We can also draw various graphs to show properties of variables. Here we use the built-in dataset “greene5_1” (U.S. macro data, 1950-2000) to make a demonstration.



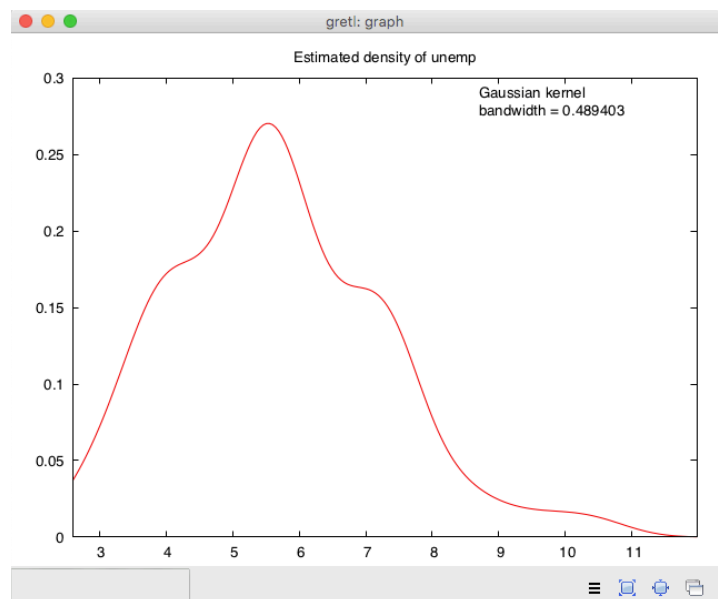
> View > Graph specified vars > Boxplots...



> View > Multiple graphs > Time series...



> Variable > Normal Q-Q plot...



> Variable > Estimated density plot...

Inference

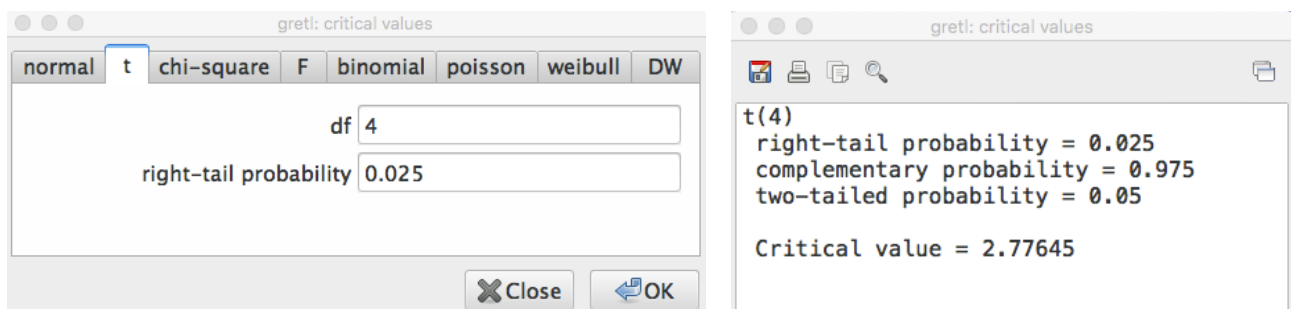
Gretl provides basic functionalities on statistical inference such as statistical tables, p -values, and computing test statistics. All of these are given in the Tool menu.

Find values from a statistical table

Suppose we want to find the two-sided 5% critical value of a Student t distribution with 4 d.f.. We can go to

> Tool > Statistical tables >

Click the t tab, specify the d.f. (4) and right-tail probability (0.025), then you will see the results.

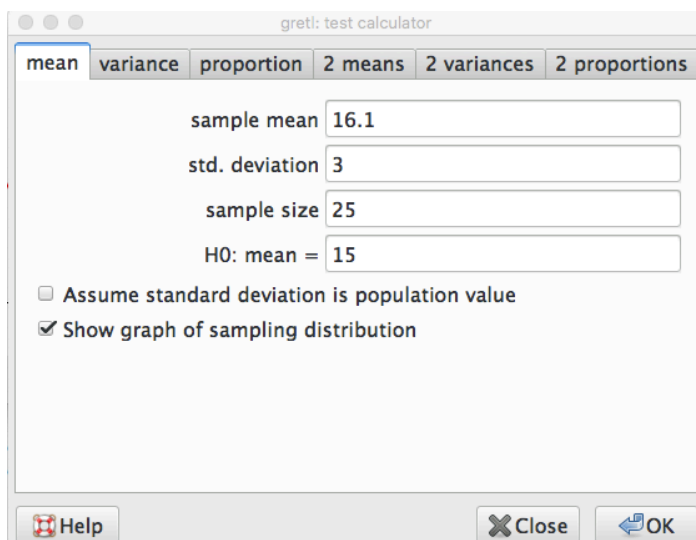


Exercise. Find the critical value of $N(0,1)$ for a one-sided test with a 0.1% significance level.

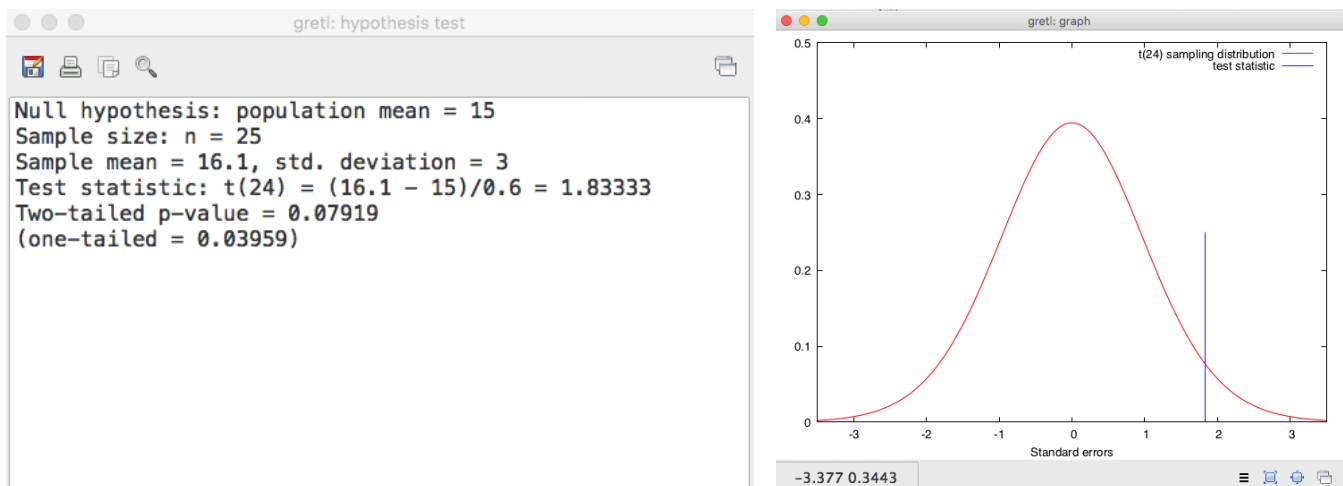
Compute test statistics and find p -values

Suppose we are testing the null hypothesis $H_0 : \mu = 15$ against $H_1 : \mu \neq 15$ with a sample X_1, \dots, X_n such that $n = 25$, $\bar{X} = 16.1$, $s_X^2 = 9$. We use a t -test where the test statistic can be calculated from

> Tools > Test statistic calculator >



Results are shown in the following form.

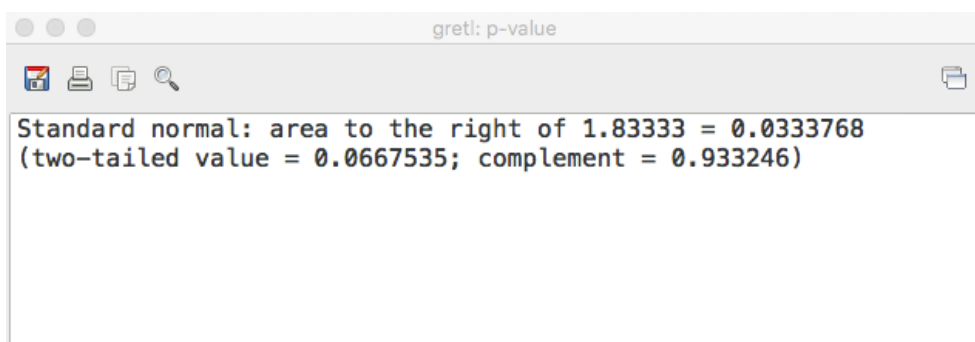


The test statistic is 1.83333 and the two-sided p -value is 0.07919. Here a Student t distribution with 24 d.f. is used. If we use a normal distribution instead, we need to find the p -value from

> Tools > P-value finder >

and specify parameters as follows (fill the value of test statistic into the “value” field)

Then we see the p -value becomes 0.0667535.



Exercise. Construct a 97% two-sided confidence interval for μ in the above problem using normal distribution.

Hint: you need to find the standard error of the sample mean as well as the 97% critical value.

If a dataset is loaded, it is also possible to calculate test statistics use variables from data. In this case, the sample statistics are automatically filled.