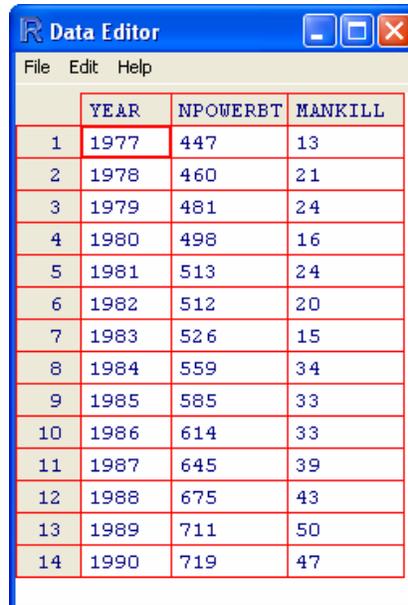


Quantile-comparison Plot and Test for Normality

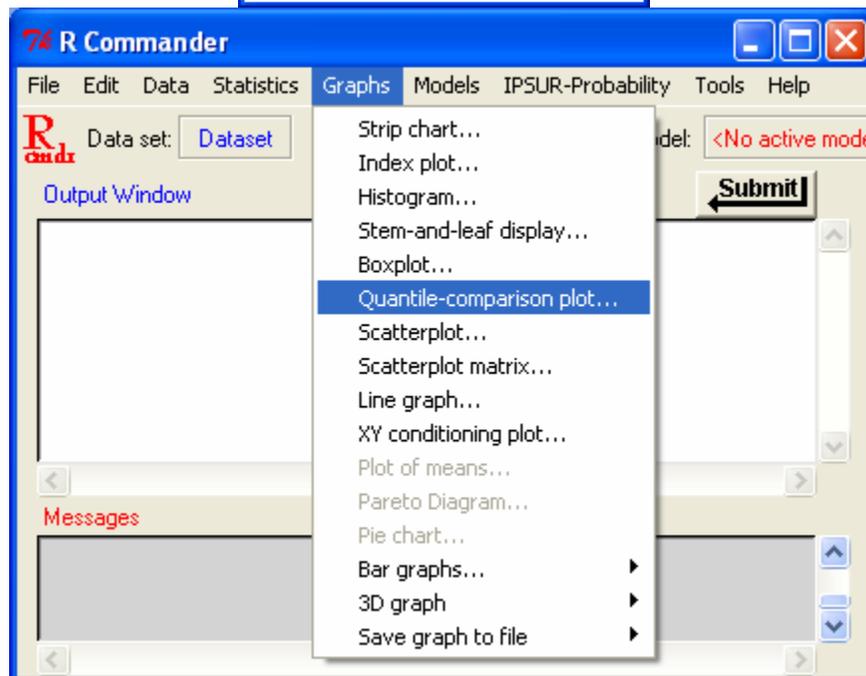
Quantile-comparison Plot

Example: Given a set of 14 values in the variable NPOWERBT, test the normality using a Quantile-comparison plot.

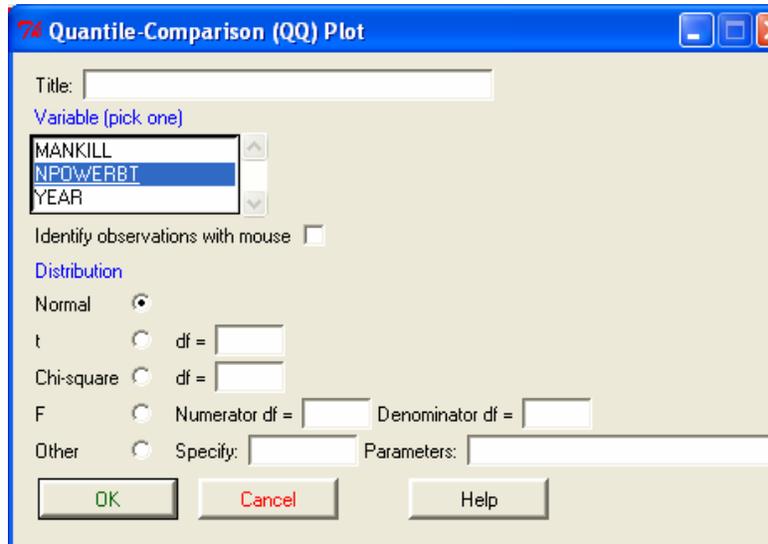
- 1) With the data set in the following Data Editor, from R Commander, click and select **Graphs > Quantile-comparison plot...**



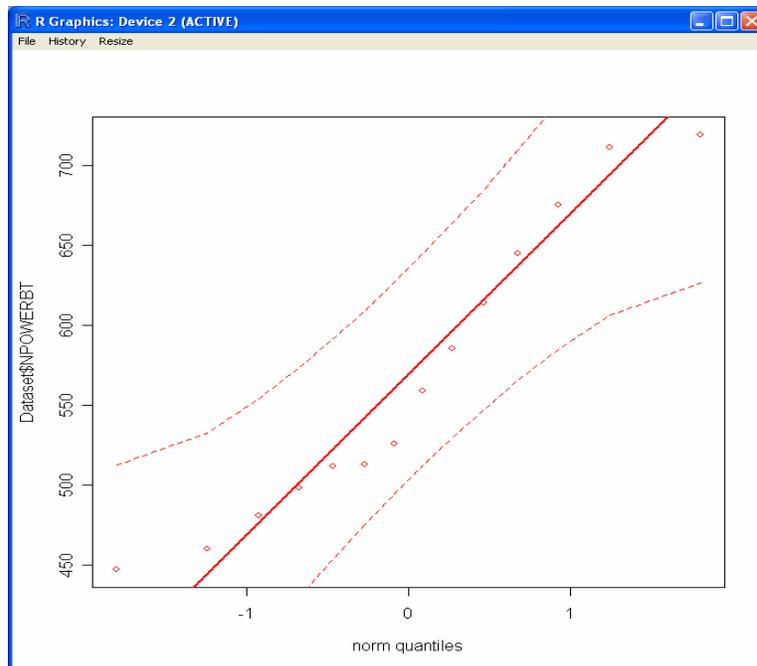
	YEAR	NPOWERBT	MANKILL
1	1977	447	13
2	1978	460	21
3	1979	481	24
4	1980	498	16
5	1981	513	24
6	1982	512	20
7	1983	526	15
8	1984	559	34
9	1985	585	33
10	1986	614	33
11	1987	645	39
12	1988	675	43
13	1989	711	50
14	1990	719	47



- 2) Once in the Quantile-Comparison (QQ) Plot dialog box, enter the title of the plot, although, this is not necessary. Then click on the variable you wish to test and be sure the Normal distribution bullet is checked and click “OK.”



- 3) Go back to the RGui and there should be a new window with a quantile comparison plot in front of all other windows.

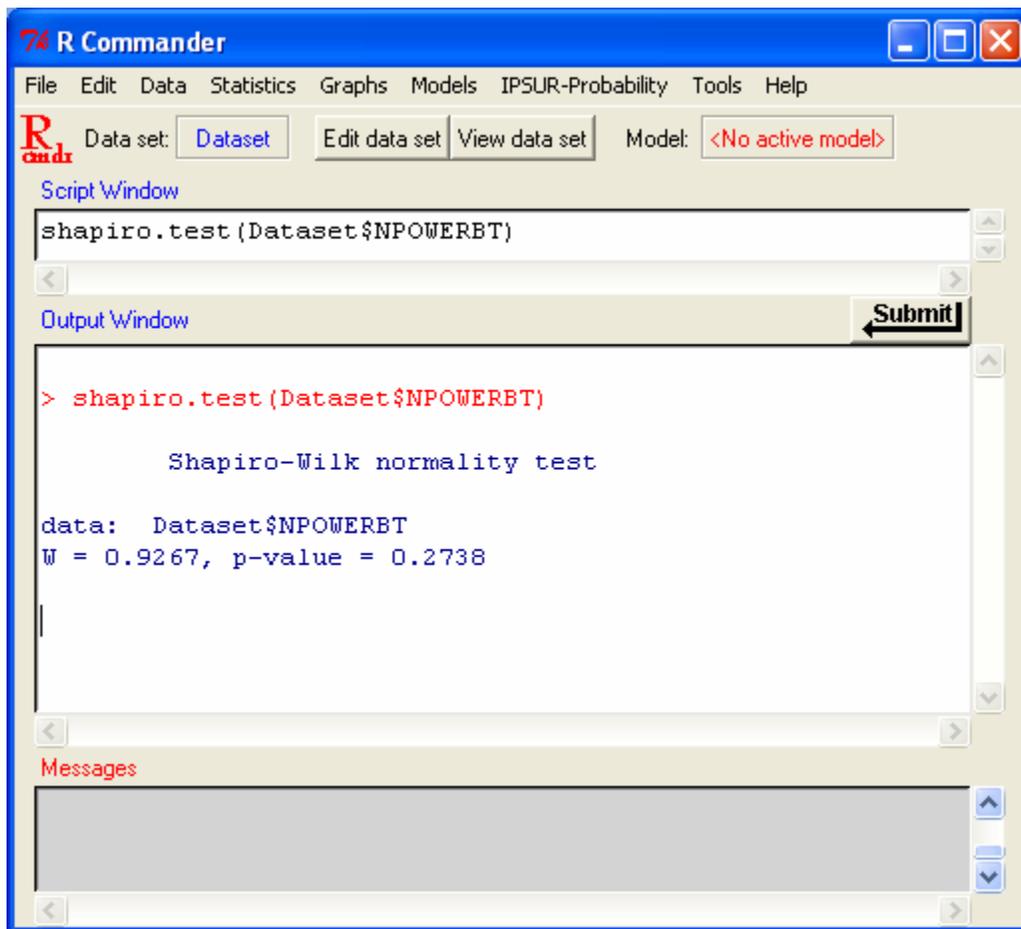


Because all of the points on this plot are within the dotted line boundaries, the sample data set can be assumed to be from a normal distribution. Otherwise, one can assume the set does not follow a normal distribution.

Normality Test

Example: Given the same data set, use the test for normality to check the normality of the MANKILL variable at 5% level of significance.

- 1) First, determine the name of the dataset as well as the name of the variable within the dataset being tested. In this case the dataset is named “Dataset” and the variable name is “NPOWERBT.” Then in the **Script Window** type “shapiro.test(Dataset\$NPOWERBT)” where “Dataset” is the name of the dataset, and “NPOWERBT” is the name of the variable being tested and click “Submit.”



```
R Commander
File Edit Data Statistics Graphs Models IPSUR-Probability Tools Help
Data set: Dataset Edit data set View data set Model: <No active model>
Script Window
shapiro.test(Dataset$NPOWERBT)
Output Window
Submit
> shapiro.test(Dataset$NPOWERBT)
      Shapiro-Wilk normality test
data:  Dataset$NPOWERBT
W = 0.9267, p-value = 0.2738
Messages
```

Interpret:

- 2) The output of the file will look like information in the lower half of the window above.

The p-value inside the red box is the important part of this test. If the test p-value is greater than 5%, then the normality assumption is acceptable. In this case, the p-value is **0.2738** which is greater than 0.05 that implies the normality assumption of this data set is acceptable at 5% level of significance.