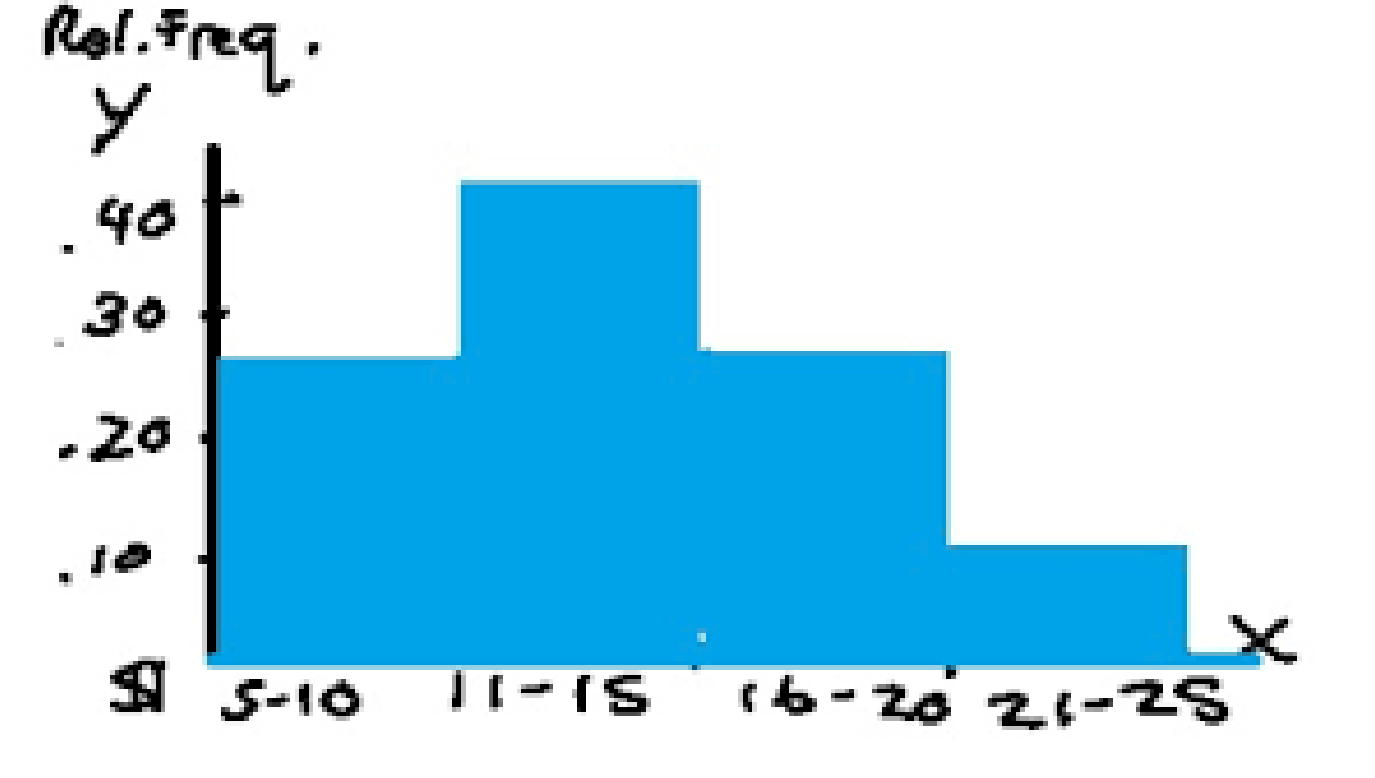
Descriptive Statistics in SPSS: Graphical Exploration

http://www.pelagicos.net/classes_biometry_fa16.htm

Features of the Histogram

- Metric of Abundance:
  - Count (Frequency)
  - Relative Frequency
- Bin Width / Location:
  - Count (Frequency)
  - Relative Frequency



Bin width:
Defines the range of values

Anchor:
Defines start of the range of values

Making Graphs - Histogram

Calculate the frequency and cumulative frequency of this dataset, consisting of 25 observed values:

1,2,2,3,3,3,4,4,4,4,5,5,5,5,5,6,6,6,6,7,7,7,8,8,9

Value	Count	Relative Frequency	Cumulative Frequency
1	1		
2	2		
3	3		
4	4		
5	5		
6	4		
7	3		
8	2		
9	1		

Calculating Frequencies

Dataset: 1,2,2,3,3,3,4,4,4,4,5,5,5,5,5,6,6,6,6,7,7,7,8,8,9

Value	Count	Relative Frequency	Cumulative Frequency
1	1	1 / 25 = 0.04	0.04
2	2	2 / 25 = 0.08	0.12
3	3	3 / 25 = 0.12	0.24
4	4	4 / 25 = 0.16	0.40
5	5	5 / 25 = 0.20	0.60
6	4	4 / 25 = 0.16	0.76
7	3	3 / 25 = 0.12	0.88
8	2	2 / 25 = 0.08	0.96
9	1	1 / 25 = 0.04	1.00
10	0	0 / 25 = 0.00	0.00
	SUM	1.00	5.00

What is the mode? 5

What is the median? 5

Making Histograms - 1

Create a histogram for this dataset, using a bin size of 2 and an anchor of 0. Report the bin midpoints and the frequencies for each bin on the table provided below. Draw the histogram in the space provided below

Midpoint	Count	Relative Frequency

Making Histograms

Create a histogram for this dataset, using a bin size of 2 and an anchor of 0. Report the bin midpoints and the frequencies for each bin on the table provided below.

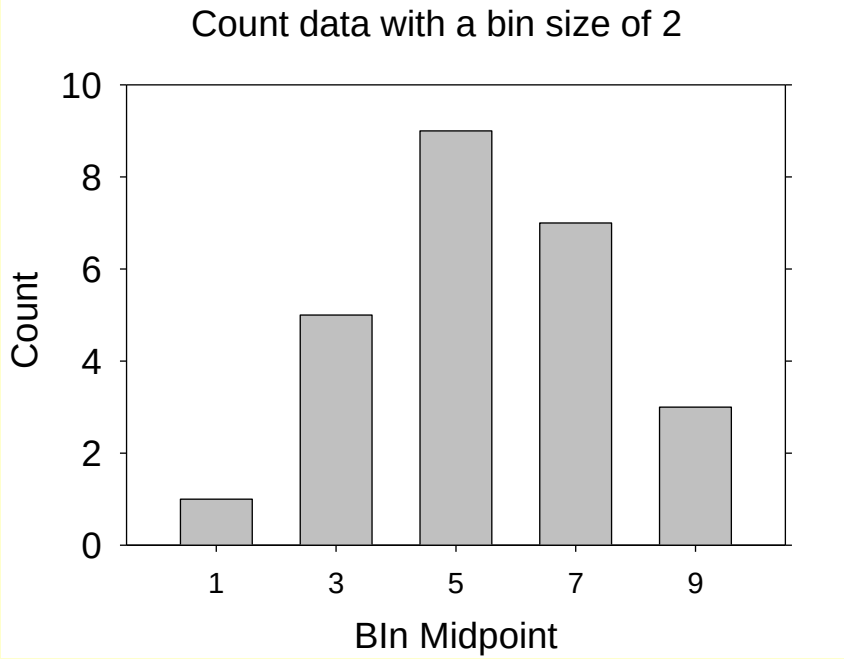
Midpoint	Count	Relative Frequency
1 (0 to 2)	1	0.04
3 (2 to 4)	5	0.20
5 (4 to 6)	9	0.36
7 (6 to 8)	7	0.28
9 (8 to 10)	3	0.12

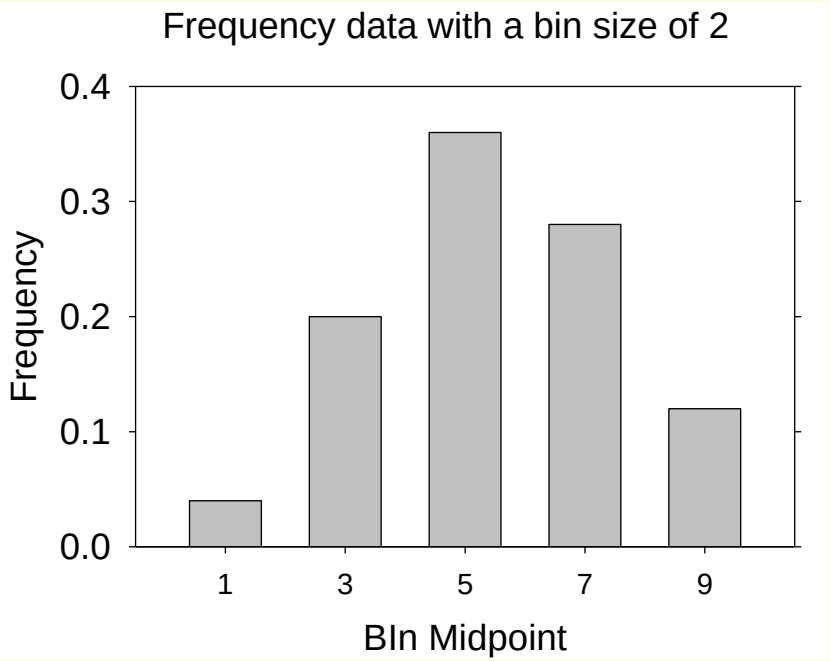
What is the mode? 5

What is the median? 5

Making Histograms

Draw the histogram in the space provided below:





What is the mode? 5

What is the median? 5

Making Histograms - 2

Create a histogram for this dataset, using a bin size of 5 and an anchor of 0. Report the bin midpoints and the frequencies for each bin on the table provided below.

Midpoint	Count	Relative Frequency

Making Histograms

Create a histogram for this dataset, using a bin size of 5 and an anchor of 0. Report the bin midpoints and the frequencies for each bin on the table provided below.

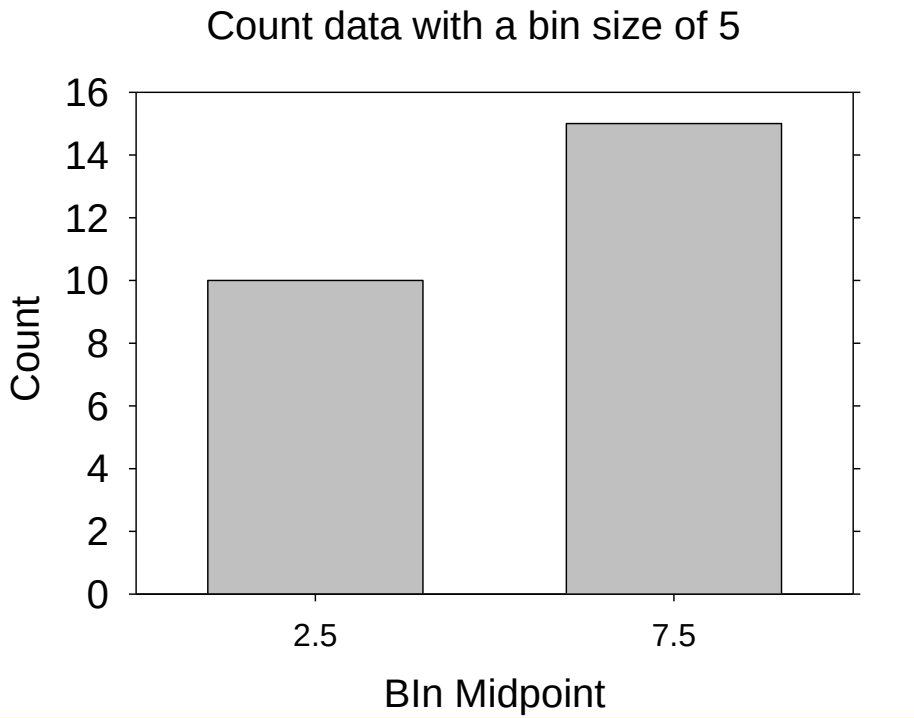
Midpoint	Count	Relative Frequency
2.5 (0 to 5)	10	0.4
7.5 (5 to 10)	15	0.6

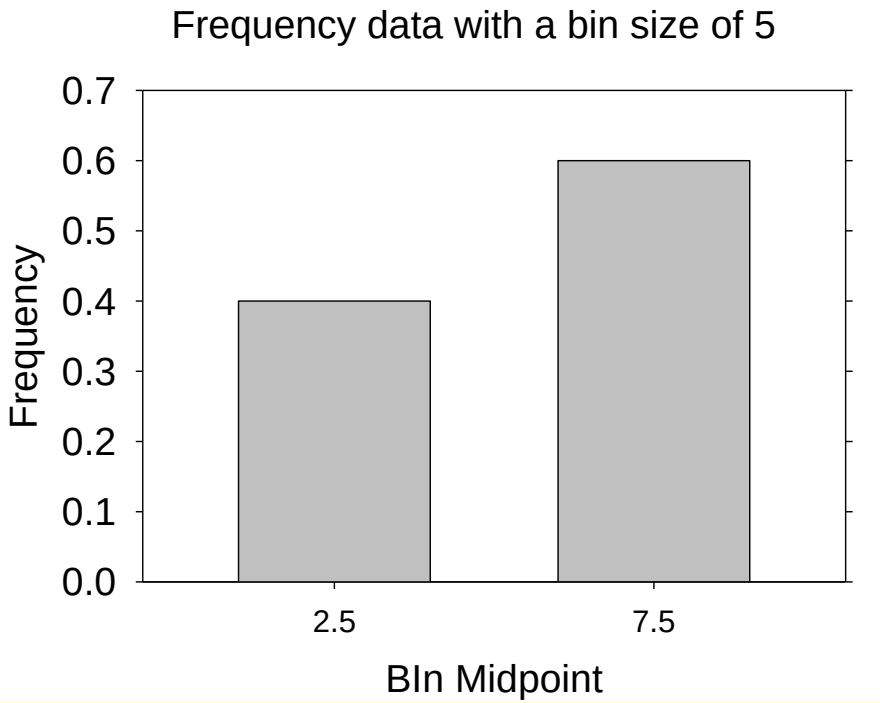
What is the mode? 7.5

What is the median? 7.5

Making Histograms

Draw the histogram in the space provided below:





What is the mode? 7.5

What is the median? 7.5

Making Histograms - 3

Create a histogram for this dataset, using a bin size of 2 and an anchor of 1. Report the bin midpoints and the frequencies for each bin on the table provided below.

Midpoint	Count	Relative Frequency

Making Histograms

Create a histogram for this dataset, using a bin size of 2 and an anchor of 0. Report the bin midpoints and the frequencies for each bin on the table provided below.

Midpoint	Count	Relative Frequency
2 (1 to 3)	3	0.12
4 (3 to 5)	7	0.28
6 (5 to 7)	9	0.36
8 (7 to 9)	5	0.20
10 (9 to 11)	1	0.04

What is the mode? 6

What is the median? 6

Making Histograms - 4

Create a histogram for this dataset, using a bin size of 5 and an anchor of 1. Report the bin midpoints and the frequencies for each bin on the table provided below.

Midpoint	Count	Relative Frequency

Making Histograms

Create a histogram for this dataset, using a bin size of 2 and an anchor of 0. Report the bin midpoints and the frequencies for each bin on the table provided below.

Midpoint	Count	Relative Frequency
3.5 (1 to 6)	15	0.6
8.5 (6 to 11)	10	0.4

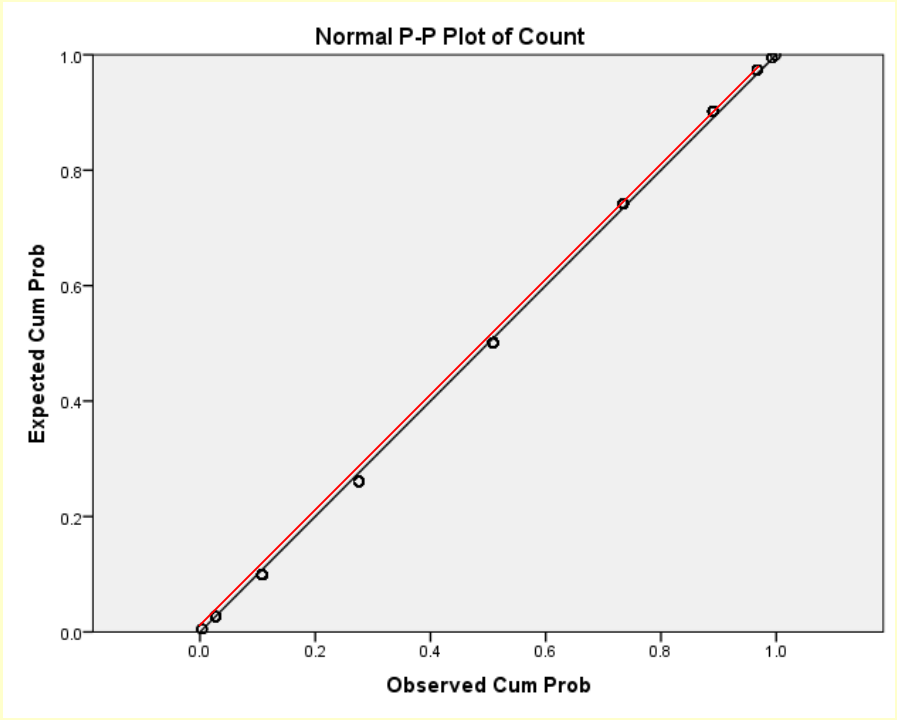
What is the mode? 3.5

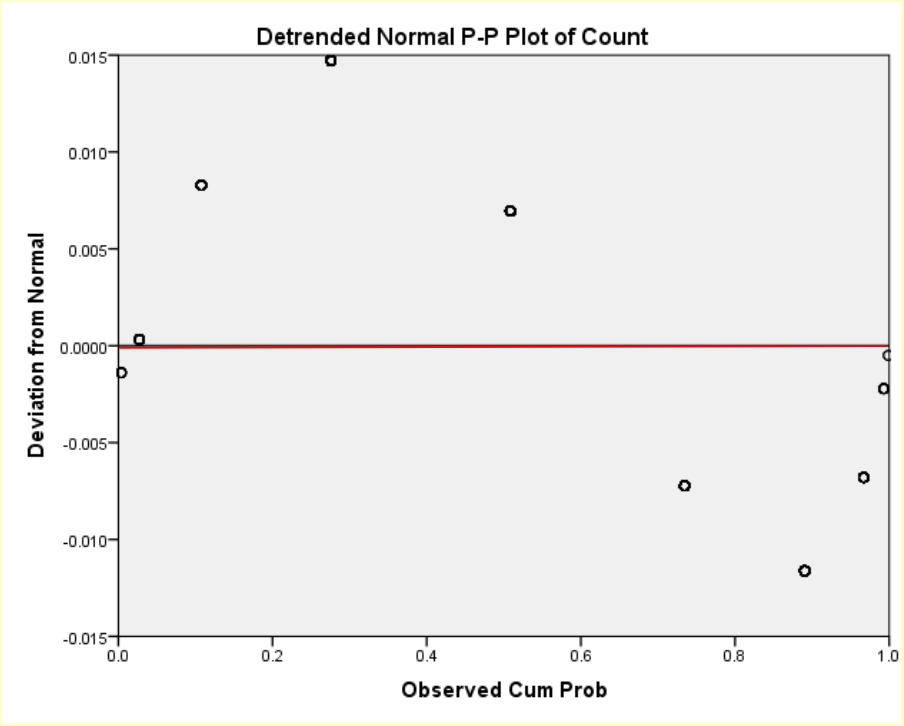
What is the median? 3.5

Features of the P-P Plot

- Observed Data:
  Cumulative
  Relative Frequency

- Expected Distribution:
  Cumulative
  Relative Frequency





Observed Dataset

Dataset: 1,2,2,3,3,3,4,4,4,4,5,5,5,5,5,6,6,6,6,7,7,7,8,8,9

Value	Count	Relative Frequency	Cumulative Frequency
1	1	1 / 25 = 0.04	0.04
2	2	2 / 25 = 0.08	0.12
3	3	3 / 25 = 0.12	0.24
4	4	4 / 25 = 0.16	0.40
5	5	5 / 25 = 0.20	0.60
6	4	4 / 25 = 0.16	0.76
7	3	3 / 25 = 0.12	0.88
8	2	2 / 25 = 0.08	0.96
9	1	1 / 25 = 0.04	1.00
10	0	0 / 25 = 0.00	1.00

Expected Dataset

Uniform Distribution:

Range = [1, 10] (10 values) Frequency = 1.00 / 10 = 0.1

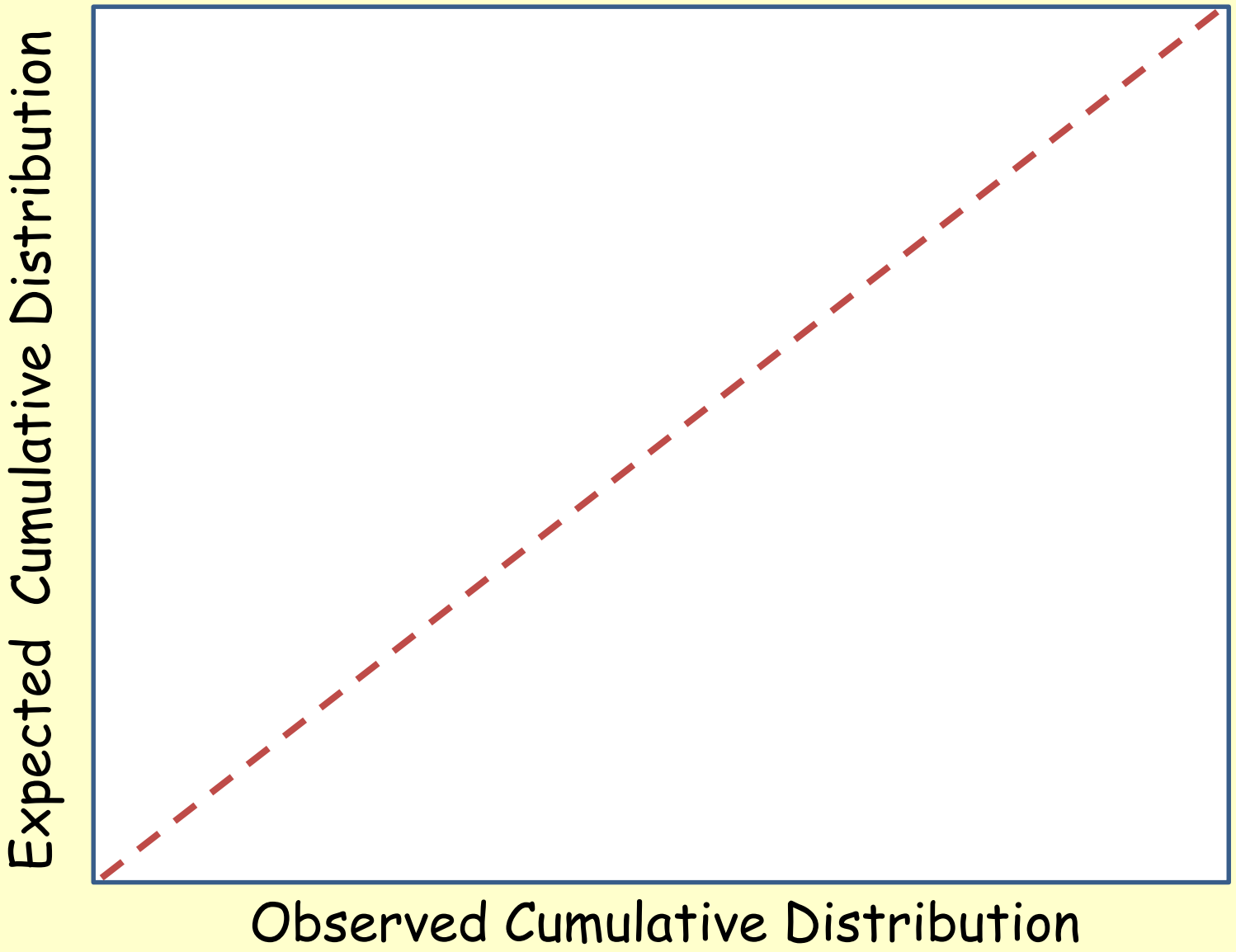
Value	Relative Frequency	Cumulative Frequency
1	0.10	0.10
2	0.10	0.20
3	0.10	0.30
4	0.10	0.40
5	0.10	0.50
6	0.10	0.60
7	0.10	0.70
8	0.10	0.80
9	0.10	0.90
10	0.10	1.00

Expected Dataset

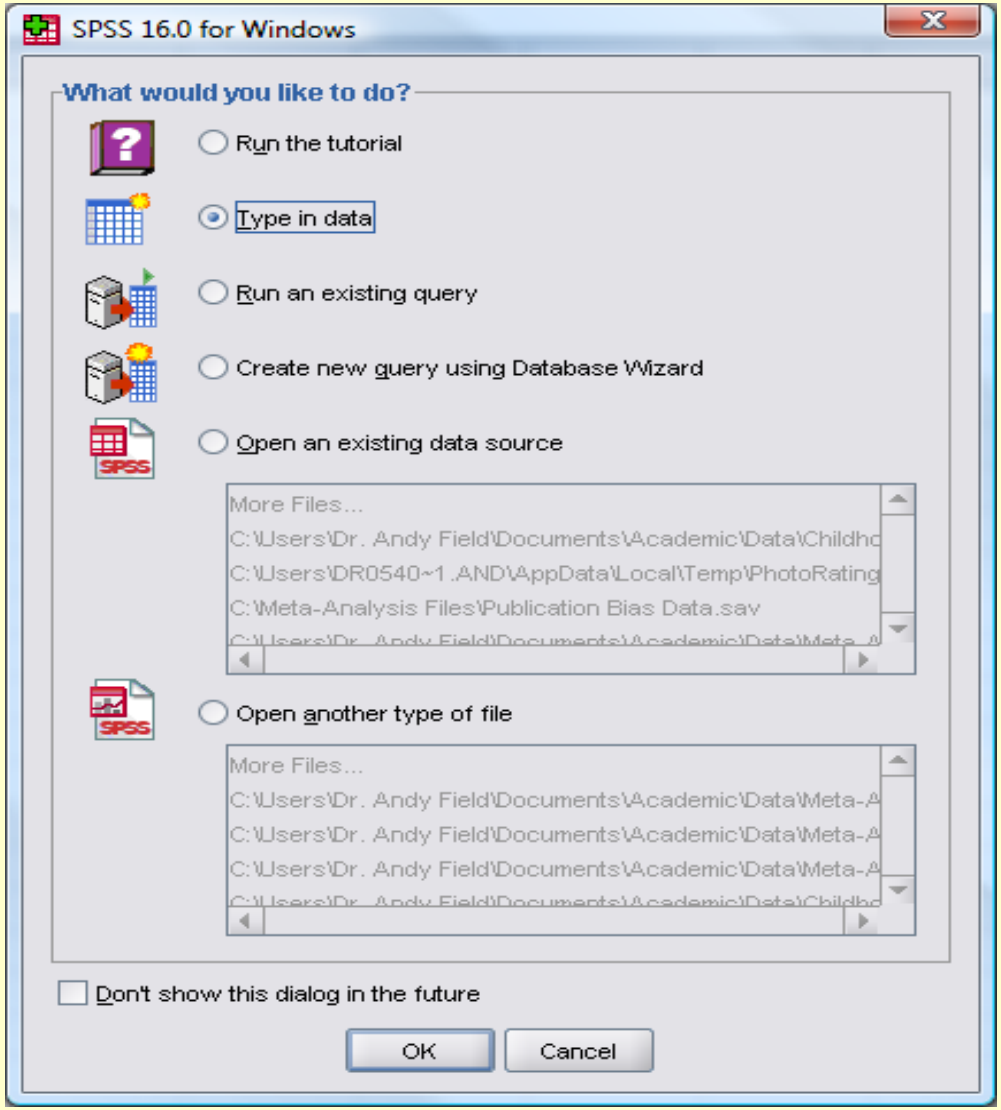
Comparing Observed Dataset to a Uniform Distribution:

Value	Observed Cumulative Frequency	Expected Cumulative Frequency
1	0.04	0.10
2	0.12	0.20
3	0.24	0.30
4	0.40	0.40
5	0.60	0.50
6	0.76	0.60
7	0.88	0.70
8	0.96	0.80
9	1.00	0.90
10	1.00	1.00

Making a P – P Plot



Starting SPSS



Tutorial

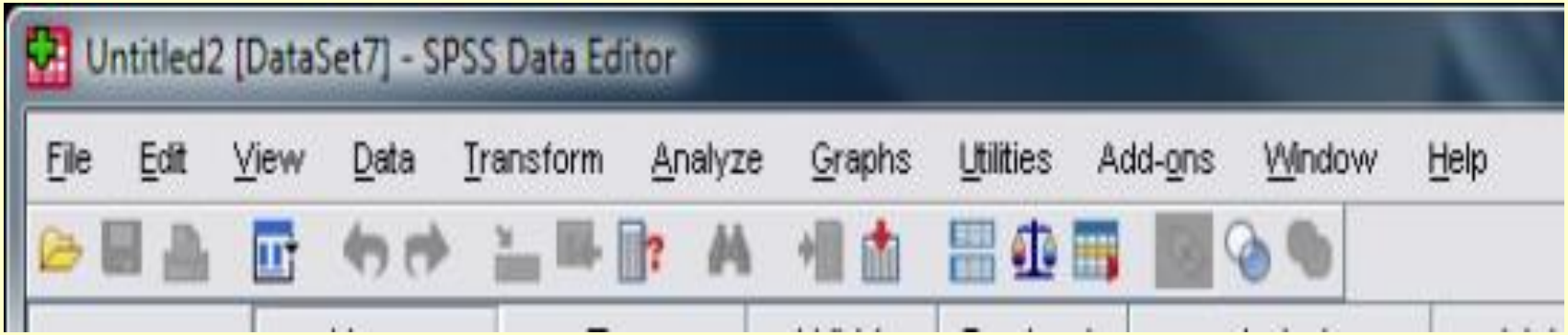
Type in the data

Create Queries

Open existing SPSS file

Open existing SPSS file

Starting SPSS – Top Menu



File: Input / Output

Edit: Find, Copy / Paste, Undo

View: Customize View

Data: Define, Sort, Split

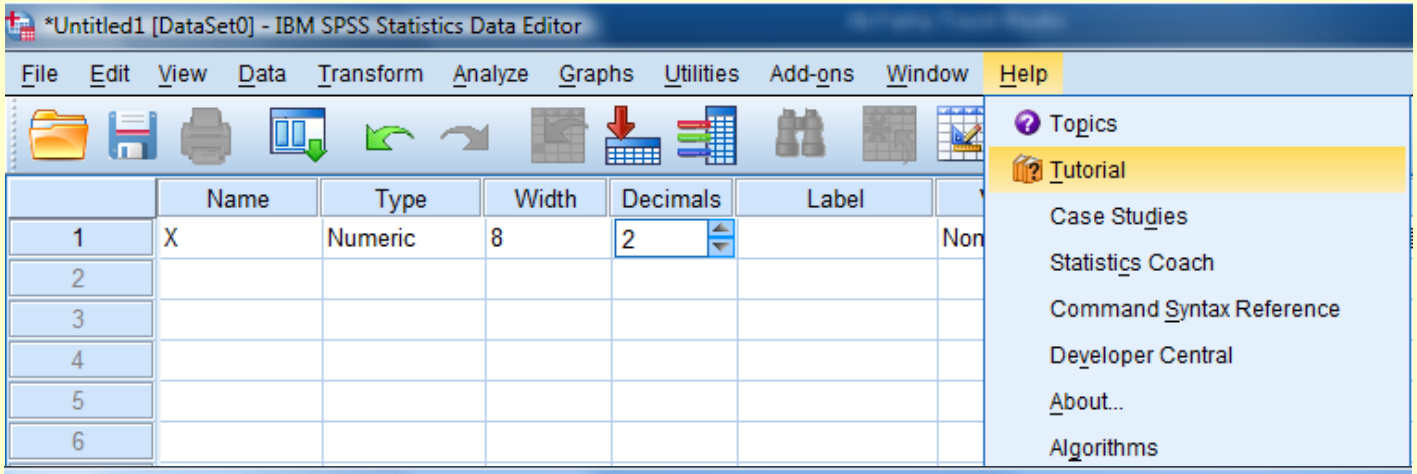
Graphs: Create figures

Utilities: Sets / Scripts

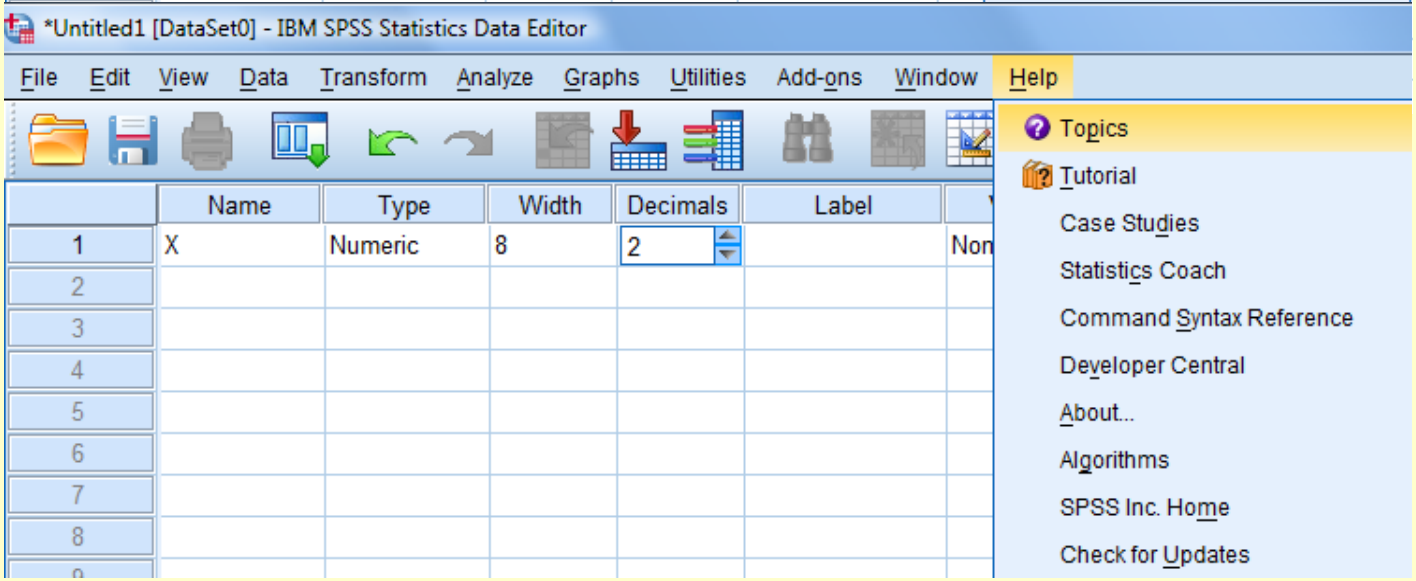
Transform + Analyze:

Manipulate / Analyze Data

Getting Help in SPSS

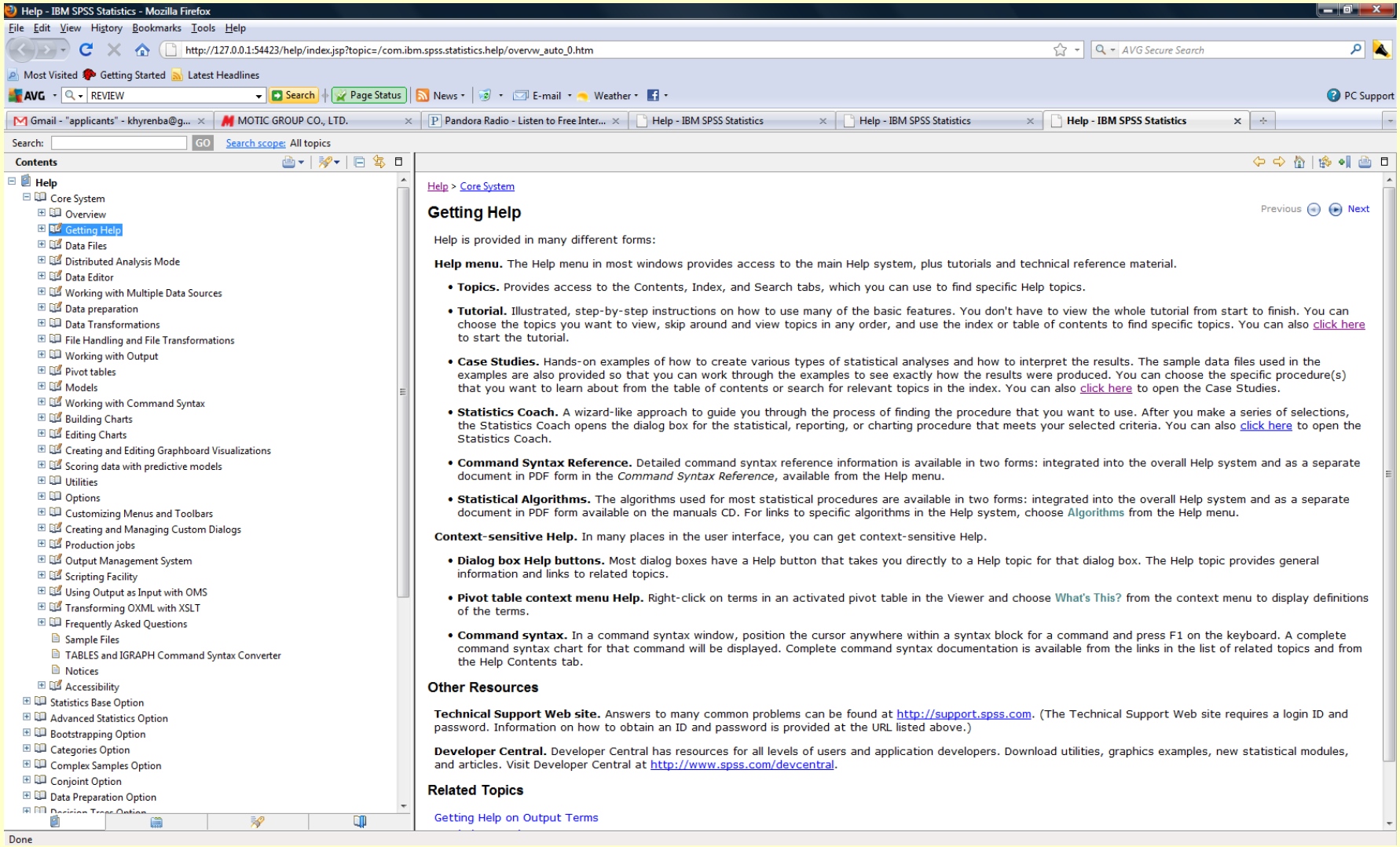


Tutorial

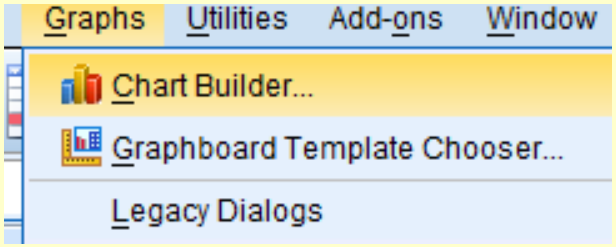


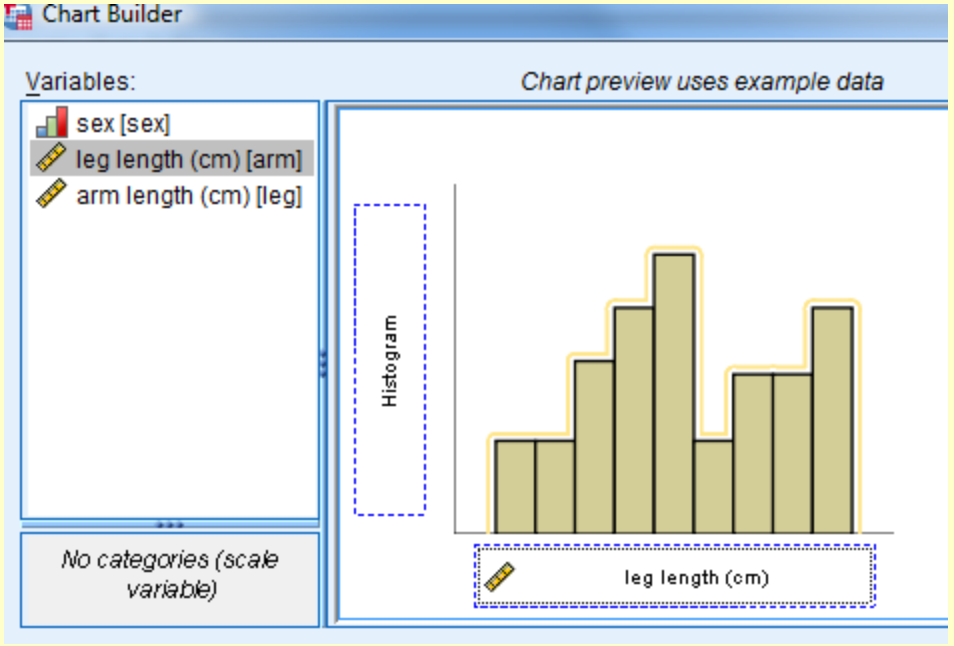
Help Topics

Getting Help in SPSS



Making Graphs with SPSS





Select a histogram

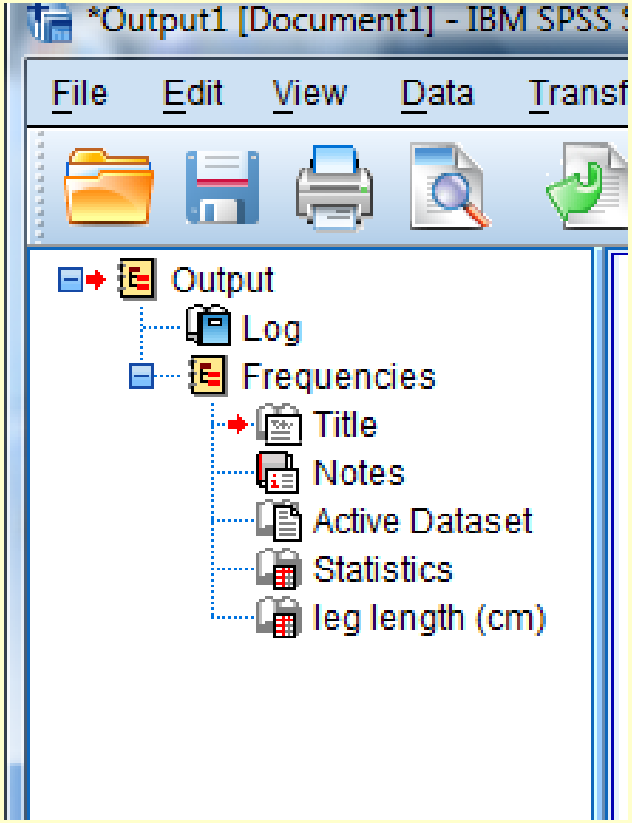
- Drag variable

- Select features

Exporting Graphs from SPSS

Export using

Copy / paste



HINTS:

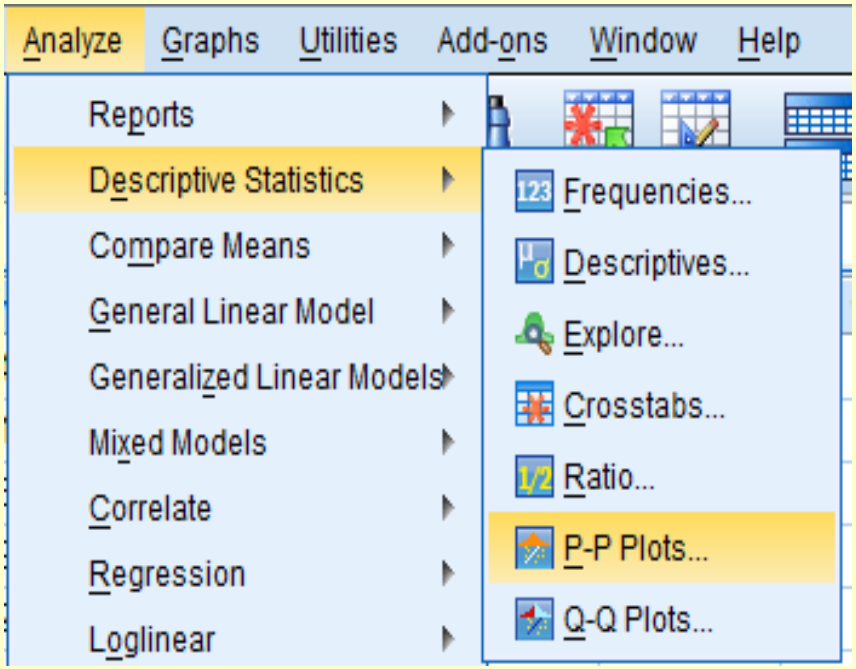
Locate figure in output log

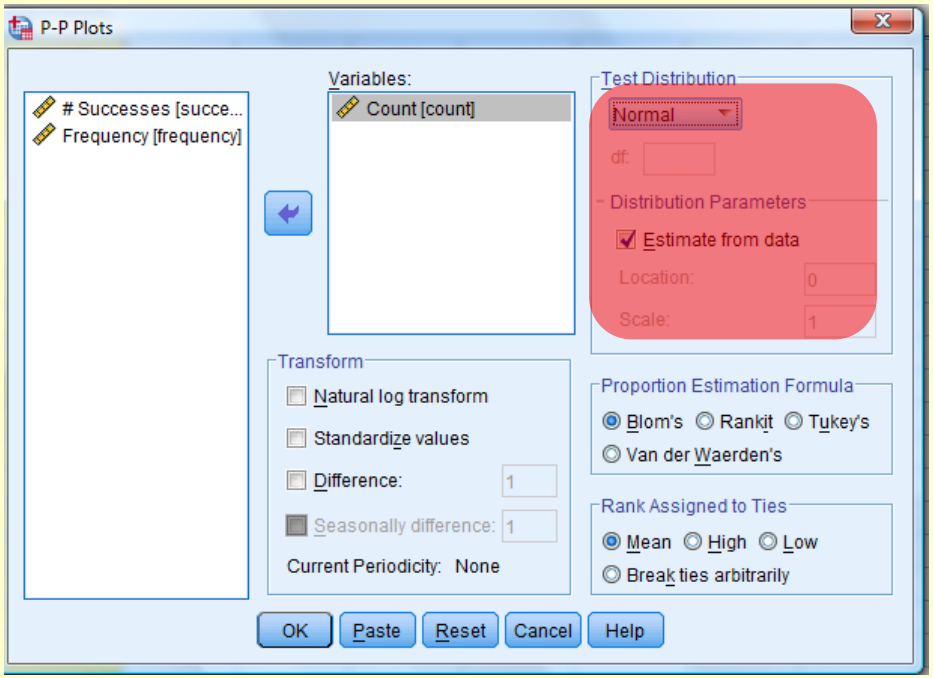
Click icon to go to figure

Copy / paste

Assessing Normality - Graphically

Making a P-P Plot



Test Distribution (df)

Select Parameters
(determined or estimated)