SPSS Information Sheet 3 Frequency Distributions and Histograms

When we have a data set with a variable that has numerical values, we may wish to make a frequency distribution or, more likely, a histogram of the data from that variable in order to explore the shape of the data — center, spread, skew, gaps, unusually high or low values, etc. SPSS will not really make frequency distributions but it will make frequency tables and histograms easily.

We will use the data from Problem 2.16 which gives parts per trillion of dioxin (2,3,7,8-TCDD) in blood and fat tissue for 20 Massachusetts Vietnam war veterans, gotten as a result of exposure to Agent Orange.

Frequency Table

0

To make a frequency table, we first enter the data as described in other handouts:

	000	000					TCDD.sav – SPSS Data Editor		
	💿 F) 🖶 🖭	00	Щ 👗	? 🎮		4	R	
	1 : case		1						
		case	plasma	fat	var	var	var	var	
	1	1	2.5	4.9					
	2	2	3.1	5.9					
	3	3	2.1	4.4					
	4	4	3.5	6.9					
	5	5	3.1	7.0					
	6	6	1.8	4.2					
	7	7	0 a	10.0					
We then choo	se the Anal	yze menu:				\frown			
SPSS 11	File E	dit Vie	w Inse	ert Fo	rmat ()	Analyze	Graph	s	
0				TCD	D.spo -	SPSS View	wer		

and from it we choose the "Descriptive Statistics" sub-menu:

Analyze	Graphs	Utilities			
Reports					
Descriptive Statistics					
Compa	Compare Means				
Genera	Linear Mo	odel 🕨			
Mixed M	Mixed Models				
Correla	Correlate				
Regress	sion	•			
Logline	Loglinear				
Classify	Classify				
Data Re	Data Reduction				
Scale I					
Nonpar	Nonparametric Tests				
Surviva	Survival 🔹				

This opens a sub-menu window from which we can choose a Frequencies sub-menu:

Analyze	Graphs	Utilities	Window	Help	
Reports	/er	•			
Descrip	tive Statis	tics 🕨 🕨	Freque	ncies	
Compar	re Means	•	Descrip	otives	
General	Linear Mo	odel 🕨	Explore		
Mixed M	Aodels	•	Crosst	abs	
Correla	te		Ratio		
Regress	ion		-	_	
Logline	ar	•			
Classify		•			

This opens a window that allows us to define a frequency table:

00	Frequer	icies				
🚸 case	Variable(s):					
🚸 fat		🚸 plasma				
	×					
Statistics	Display freque	ncy tables ts) Format)				
? Reset	Paste	Cancel OK				

In this we choose a variable or variables for which to make a frequency table. In this case I have chosen the plasma concentration of dioxin (TCDD) for the 20 veterans. The default is to "Display Frequency Tables" so we need choose nothing further. We click OK (or its equivalent. This creates .spo output of a frequency table:

📒 Output						
🔻 📒 Graph	Ξ.					
🔚 Title		Frequencies				
📊 Histogram of plas				PLASMA		
🔻 📒 Graph					Valid	Cumulative
Title			Frequency	Percent	Percent	Percent
		Valid 1.6	1	5.0	5.0	5.0
Histogram of fat		1.8	2	10.0	10.0	15.0
		2.0	1	5.0	5.0	20.0
Frequencies		2.1	1	5.0	5.0	25.0
Li Title		2.5	2	10.0	10.0	35.0
Notes		3.0	1	5.0	5.0	40.0
→Lasma	11	3.1	2	10.0	10.0	50.0
Explore	11 🍑	3.3	1	5.0	5.0	55.0
Title		3.5	1	5.0	5.0	60.0
- Notes		4.1	1	5.0	5.0	65.0
		4.6	1	5.0	5.0	70.0
Case Processing 5		4.7	1	5.0	5.0	75.0
	=	6.0	1	5.0	5.0	80.0
🔻 📒 FAT		6.9	1	5.0	5.0	85.0
Title		7.2	1	5.0	5.0	90.0
💵 Stem-and-lea		20.	0 1	5.0	5.0	95.0
		36.	0 1	5.0	5.0	100.0
Title		Tot	al 20	100.0	100.0	

This table displays values, their frequencies, their percentages, and the cumulative percentage. It should be saved and then cut and pasted into a document. Here we select the table (as indicated by the box around it and arrow pointing to it) and then select "Copy Object" under the Edit menu. We can then paste it into a document:

PLASMA						
		Frequency	Percent	Valid Percent	Cumulative Percent	
Valid	1.6	1	5.0	5.0	5.0	
	1.8	2	10.0	10.0	15.0	
	2.0	1	5.0	5.0	20.0	
	2.1	1	5.0	5.0	25.0	
	2.5	2	10.0	10.0	35.0	
	3.0	1	5.0	5.0	40.0	
	3.1	2	10.0	10.0	50.0	
	3.3	1	5.0	5.0	55.0	
	3.5	1	5.0	5.0	60.0	
	4.1	1	5.0	5.0	65.0	
	4.6	1	5.0	5.0	70.0	
	4.7	1	5.0	5.0	75.0	
	6.0	1	5.0	5.0	80.0	
	6.9	1	5.0	5.0	85.0	
	7.2	1	5.0	5.0	90.0	
	20.0	1	5.0	5.0	95.0	
	36.0	1	5.0	5.0	100.0	
	Total	20	100.0	100.0		

Histograms

To make a histogram, we choose Histogram from the Graphs menu:



This opens a window that allows us to choose which variables we wish to make histograms of:

	Histogram			
🗢 case 🚸 plasma	Variable: Fat Template Use chart specifications from: File			
	Display normal curve Titles			
? Reset Paste	Cancel OK			

and, after having chosen, we click OK (or its equivalent). This will produce one or more histograms in the .spo output window (which should be saved). These can be moved to a document using Copy Object under the edit window and then pasting:



A double click allows the Chart Editor window to be used to alter the appearance of the histogram.

Exercises

- 1. Enter the data for Problem 2.14 in an SPSS Data Editor and save it as insect.sav on a floppy disk or hard drive.
- 2. Print the data from the Editor window.
- 3. Make a Frequency Table of the Thion variable from the data.
- 4. Make a Histogram of the Thion variable.
- 5. Write one paragraph describing the shape of the data for the Thion variable.
- 6. Make a Word document with the frequency table, histogram and your paragraph and turn it in along with a printo of the data from Step 2.