CLOUD SEEDING EXPERIMENT

10. Displaying and Describing Seeded and Unseeded Rainfalls

In this part, we will demonstrate how to use SPSS to produce the computer outputs we referred to in Section 4. There are hyperlinks between the section and Section 4 containing the statistical outputs.

Open the file *case0301* with the data in the experiment. It consists of two columns, named *rain* and *code*. The column *rain* contains the rainfall amounts, the entry in the column *code* is 1 when the cloud is unseeded, 2 when the cloud is seeded.

In order to obtain side-by-side boxplots of the rainfall amounts for seeded and unseeded clouds, and then the summary statistics for each group, click on *Statistics* in the main menu, select *Summarize*, and then *Explore* from the pull-down menu.



Fill out the *Explore* dialog box as follows:

T Explore	×
	Dependent List: OK rain
	Eactor List: Cancel Help
	Label <u>C</u> ases by:
⊂Display <u> </u>	<u>Statistics</u> Plots <u>Options</u>

In order to make sure that your output will include side-by-side boxplots, click on Plots and check the radio button *Factor levels together*.

Eactor levels together	Descriptive	Continue
C Dependents together	⊟ <u>H</u> istogram	Cancel
○ <u>N</u> one		Help
Spread vs. Level with Leve	ene Test	_
Spread vs. Level with Leve © None	ene Test	
Spread vs. Level with Leve None Opwer estimation	ene Test	
Spread vs. Level with Level None Opower estimation Ofransformed Power:	Natural log	

Then click on Statistics tab in the *Explore* dialog box.

Explore: Statistics
©Descriptives Confidence Interval for Mean: 95 %
□ <u>M</u> -estimators
₽ <u>O</u> utliers
□ Percentiles
□ Grouped frequency tables
Continue Cancel Help

SPSS produces the following output:

RAIN By CODE 1.00			
Valid cases: 26.0 M	Aissing cases: .0 Percent missing:	.0	
Mean 164.5885 Median 44.2000 5% Trim 120.7350 95% CI (52.13, 277.05	Std Err54.6039Min1.0000Variance77521.26Max1202.6Std Dev278.4264Range1201.6IQR159.6000159.60001000	Skewness S E Skew Kurtosis S E Kurt	2.7892 .4556 8.1731 .8865

RAIN By CODE	2.00				
Valid cases:	26.0 Missing ca	ases: .0 Pe	ercent missing:	.0	
Mean 441.98 Median 221.60 5% Trim 351.7 95% CI (179.13	846 Std Err 000 Varianc 7201 Std Dev 8, 704.84) IQR	127.6299 M e 423524.0 M e 650.7872 Ra 365.3250	lin 4.1000 lax 2745.600 ange 2741.500	Skewness S E Skew Kurtosis S E Kurt	2.4352 .4556 6.0084 .8865

The side-by-side boxplots are displayed in Section 4.1. In order to obtain the side-by-side boxplots of rainfall amounts on the log scale, repeat the same procedure (leave *Statistics* tab in the Explore dialog box unchecked) but with the variable lograin defined as the natural logarithm of rain. The variable can be defined by clicking on *Transform* in the menu, and then on *Compute*.... Fill the dialog box obtained as follows:

Compute Variable	×
Compute Variable Target Variable: lograin Type&Label code rain	Numeric Expression: LN(rain) + < > 7 8 9 Functions: - <= >= 4 5 6 LG10(numexpr) N(numexor) LOWER(strexpr)
	I I
	Jf
	OK Paste Beset Cancel Help