

LECTURE 5: APPLICATIONS OF DESCRIPTIVE STATISTICS

1. Practice

The following dataset represent the scores achieved by university Algerian EFL students in the International English Language Testing System (i.e., IELTS): 6.00, 5.50, 6.00, 7.00, 6.00, 6.50, 5.50, 6.50, 5.00, 6.00.

- Using these results, calculate the sum, mode, median, sample mean, sample variance, and standard deviation.

Students	IELTS Scores	Differences (xi - \bar{x})	Differences squared (xi - \bar{x}) ²
Student 1	6.00		
Student 2	5.50		
Student 3	6.00		
Student 4	7.00		
Student 5	6.00		
Student 6	6.50		
Student 7	5.50		
Student 8	6.50		
Student 9	5.00		
Student 10	6.00		
Sum (Σ):			$\Sigma(xi - \bar{x})^2 =$
Mode:			
Median:			
Sample mean (\bar{x}):			
Sample variance (S^2):			
Sample standard deviation (S):			

- Report the results in the table below.

Table 1. Algerian university EFL students' performance in the IELTS exam

<i>n</i>	<i>Min</i>	<i>Max</i>	\bar{x}	S^2	<i>S</i>
IELTS scores					

Notes. *n* = sample size, \bar{x} = sample mean, S^2 = sample variance, *S* = sample standard deviation.

2. Generating descriptive statistics in Excel

You can use Excel to generate descriptive statistics.

Statistics	Steps		
Sum (Σ):	<i>Student 1</i>	IELTS Scores 5.00	
	<i>Student 2</i>	4.50	
	<i>Student 3</i>	5.00	
	<i>Student 4</i>	6.00	
	<i>Student 5</i>	5.00	
	<i>Student 6</i>	5.50	
	<i>Student 7</i>	4.50	
	<i>Student 8</i>	5.50	
	<i>Student 9</i>	4.00	
	<i>Student 10</i>	5.00	
		Sum (Σ): =sum(B2:B11)	50.00

The mean (\bar{x}):		IELTS Scores		IELTS Scores	
Student 1		5.00		5.00	
Student 2		4.50		4.50	
Student 3		5.00		5.00	
Student 4		6.00		6.00	
Student 5		5.00		5.00	
Student 6		5.50		5.50	
Student 7		4.50		4.50	
Student 8		5.50		5.50	
Student 9		4.00		4.00	
Student 10		5.00		5.00	
Sum (Σ):		50.00		50.00	
Sample mean (\bar{x}):		=AVERAGE(B2:B11)		5.00	

The variance:		IELTS Scores	Differences (xi - \bar{x})	Differences squared (xi - \bar{x}) ²
Student 1		5.00	0.00	0.00
Student 2		4.50	-0.50	0.25
Student 3		5.00	0.00	0.00
Student 4		6.00	1.00	1.00
Student 5		5.00	0.00	0.00
Student 6		5.50	0.50	0.25
Student 7		4.50	-0.50	0.25
Student 8		5.50	0.50	0.25
Student 9		4.00	-1.00	1.00
Student 10		5.00	0.00	0.00
Sum (Σ):		50.00	$\Sigma(xi - \bar{x}) =$	3.00
Sample mean (\bar{x}):		5.00		
Sample variance (S ²):		=D13/9		
Sample standard deviation (S):				

Standard deviation:		IELTS Scores	Differences (xi - \bar{x})	Differences squared (xi - \bar{x}) ²
Student 1		5.00	0.00	0.00
Student 2		4.50	-0.50	0.25
Student 3		5.00	0.00	0.00
Student 4		6.00	1.00	1.00
Student 5		5.00	0.00	0.00
Student 6		5.50	0.50	0.25
Student 7		4.50	-0.50	0.25
Student 8		5.50	0.50	0.25
Student 9		4.00	-1.00	1.00
Student 10		5.00	0.00	0.00
Sum (Σ):		50.00	$\Sigma(xi - \bar{x}) =$	3.00
Sample mean (\bar{x}):		5.00		
Sample variance (S ²):		0.33		
Sample standard deviation (S):		=SQRT(B15)		

3. Generating Descriptive Statistics in SPSS

Descriptive statistics can also be easily generated using SPSS.

Step 1

Analyze | Graphs | Utilities | Extensions | Window | Help

- Reports
- Descriptive Statistics**
- Bayesian Statistics
- Tables
- Compare Means
- General Linear Model
- Generalized Linear Models
- Mixed Models
- Correlate
- Regression

- Frequencies...
- Descriptives...**
- Explore...
- Crosstabs...
- TURF Analysis
- Ratio...
- P-P Plots...
- Q-Q Plots...

Step 2

Descriptives

Variable(s): Gender [gender], IELTS Scores [ielts]

Options

Save standardized values as variables

OK | Paste | Reset | Cancel | Help

Descriptives: Options

Mean Sum

Dispersion

Std. deviation Minimum

Variance Maximum

Range S.E. mean

Characterize Posterior Distribution

Kurtosis Skewness

Display Order

Variable list

Alphabetic

Ascending means

Descending means

Continue | Cancel | Help