

STATISTICS (SPSS FOR BEGINNERS)

Chapter 1

Introduction to Statistics & SPSS

Dimaz Ramananda, S.E., M.Ak

- Statistical science is often associated with a series of numbers, it is often interpreted as a numerical description. For example, statistical data can be in the form of movements in the stock market, the number of visitors of department stores and etc. Statistical data is all data that can be collected and organized in a certain way.
- Statistics in the field of science is used to analyze the data, such as create a table of data or graphics, do test for the hypothesis, and more.
- Statistical science can be divided into two;
 1. Descriptive statistics
Descriptive statistics picturing various characteristics of the data, such as the mean, median and others.
 2. Inductive statistics
Inductive statistics contain inferences to a set of data derived from a sample (hypothesis testing and etc.).

• Statistical Elements

There are several elements that are commonly found in a statistical problem,

1. Population

Population is a collection of data that identifies a phenomenon

Example:

- All workers in Singapore can be identified as population;
- All employees in start-up A located in Singapore can be identified as population;
- All male employees in start-up A located in Singapore are also can be identified as population.

2. Sample

Sample is a collection of data taken from a population . Example:

If all male employees at start-up A located in Singapore are the population, then the sample is “some of the male employees” at start-up A located in Singapore.

3. Variable

Variable defined as a concept, quality, characteristics, attributes, or properties of an object (person, object, place, etc.) whose value varies between one object with the others.

Example:

A researcher want to examine the satisfaction level of male employees at start-up A located in Singapore, a sample of 20 male employees is taken . From that sample, The researcher taking the data for the variables **level of education , age , period**

of employment, and etc.

- **Type of Statistical Data**

Based on the method of measurement, statistical data is divided into :

- 1. Qualitative data**

Qualitative data is data that relates to the grouping or characteristics that are not be able to measure its size. In simple term, qualitative data is data that is not a number.

Qualitative data is divided into two:

- a. Nominal Data**

Data that are obtained by categorization (classification), means the grouping based on the same characteristics. Each group (classification) is given a symbol in the form of a number as a differentiator so that it can be used (processed) in statistics . Example of nominal data:

- Type of Gender : male , female
- Type of work : private employee , self-employed and others
- Years of birth : 2000, 2001, 2002 and others

- b. Ordinal Data**

The data are arranged based on certain levels in order from the lowest to the highest. Ordinal data arranged according to the particular characteristics of and within the order is not the same between one to another. Example of ordinal data:

- Class rank : 1, 2, 3
- Position : Director , Manager , Staff

- 2. Quantitative Data**

Quantitative is data that can be expressed in numbers and can be measured in size.

Examples of quantitative data is the price of a smartphone, weight and height, the

number of buyers, and etc . Quantitative data is divided into two :

- a. Interval data**

Interval data is a data measurements where the range from one degree to another degree is the same.

Example : Body temperature

- 31-34 degrees : low
- 35-38 degrees : normal
- 39-42 degrees : high

- b. Ratio data**

Ratio data is the data that has a value of absolute zero and have a range that is equal. Ratio data have characteristics that are similar to the interval data, the difference was ratio data has a value of zero absolute which showed no presence of the characteristic. Example : Human age

- **SPSS 25**

- a. Data View : place to input the data
- b. Variable View : place to input the variable

- **Variable View Parts**

- a. **Name** is the variable's machine readable name. This is the name used to refer to the variable in SPSS's underlying code and, if no "Label" is defined, the name that will appear at the top of the column in the "Data View."
- b. **Type** indicates the type of data that can be stored in the variable's column. The most frequently used types are "String" (for text) and "Numeric." SPSS uses the type to know what rules can be applied to a specific variable. It won't do arithmetic on a string variable, for example.
- c. **Width** indicates the allowed number of characters per instance.
- d. **Decimals** sets the number of decimal places allowed in variable instances.
- e. **Label** sets the name that will be displayed at the top of the column in the Data Editor, allowing for a human readable representation of the variable name.
- f. **Values** sets names given to coded values (e.g. if the variable contains survey responses where a "0" represents "no" and "1" represents a "yes" this field can be used to tell SPSS to display the text values instead of the numerical raw data).
- g. **Missing** sets the values that will be encoded as "Missing."
- h. **Columns** sets the displayed column length.
- i. **Align** sets the displayed alignment (right, left, or center).
- j. **Measure** sets the statistical level of measurement. SPSS distinguishes between "Scale" (variables that represent a continuous scale like population or temperature), "Ordinal" (variables that can be rank ordered but do not represent precisely measured values), and "Nominal" (variables that cannot be ranked such as those that represent labels or classifications).
- k. **Role** is used by some SPSS dialogues to distinguish between the variable's intended usage in some predictive applications (e.g. regression, clustering, classification). For most dialogues the role won't be significant.

*Source: <https://guides.library.illinois.edu/c.php?g=347869&p=2345385>

ASSIGNMENT 1

NAME	WEIGHT	GENDER
ALI	78.54	male
CICI	45.77	female
INE	58.99	female
JOHN	76.92	male
SAM	55.67	female
LINDA	78.67	male
BRAD	87.56	male
LIANNE	44.86	female
DIANE	50.21	female
MIKE	77.86	male
HENRY	80.23	male
VERONICA	48.96	female
VENNY	44.76	female
PATRICK	79.57	male
ANA	40.23	female

Information:

VALUE (CODE)	VALUE LABEL
1	female
2	male

Please create a table like the example above in SPSS!

ASSIGNMENT 2

NUMBER	GENDER	FIELD	STATUS	EDUCATION	SALARY	AGE	PERIOD
9524	male	marketing	single	high school	138.00	24	4
9526	female	marketing	single	high school	294.00	22	4
9528	female	accounting	married	university	378.00	23	6
9530	male	accounting	married	academy	438.00	23	5
9532	male	accounting	single	high school	600.00	25	7
9534	female	accounting	single	academy	462.00	26	6
9536	male	marketing	single	academy	510.00	26	6
9538	male	production	single	university	420.00	27	5
9540	female	service	married	university	560.00	23	6
9542	female	production	married	academy	180.00	24	7
9544	female	service	single	university	138.00	25	5
9546	male	service	married	high school	294.00	23	3
9548	female	service	married	high school	438.00	25	5
9550	male	production	single	academy	600.00	26	2
9552	female	accounting	single	university	462.00	26	1
9554	female	marketing	married	academy	510.00	27	3
9556	male	marketing	single	high school	420.00	26	7
9558	male	accounting	married	academy	510.00	27	5
9560	male	production	single	high school	420.00	23	3
9562	female	service	married	university	560.00	24	5
9564	male	service	single	university	180.00	25	2

9566	female	accounting	single	high school	138.00	25	3
9568	male	production	married	high school	294.00	23	5
9570	male	marketing	married	academy	438.00	25	2
9572	female	marketing	single	academy	600.00	26	1
9574	female	accounting	married	academy	462.00	26	3
9576	female	production	single	university	510.00	26	7
9578	male	service	single	university	420.00	27	2
9580	male	service	married	academy	560.00	26	3
9582	female	production	married	high school	560.00	27	5
9584	female	production	single	high school	180.00	23	2
9586	male	service	married	academy	438.00	25	1
9588	male	marketing	single	university	510.00	25	3
9590	female	marketing	married	academy	462.00	23	7
9592	male	accounting	single	high school	560.00	25	2
9594	female	accounting	married	high school	180.00	26	3
9596	male	accounting	single	academy	180.00	27	5
9598	female	production	married	academy	560.00	23	2
9600	male	marketing	single	academy	180.00	25	1

9602 male marketing married university 180.00 25 3

9604	female	production	married	university	438.00	23	7
------	--------	------------	---------	------------	--------	----	---

Information:

VALUE (CODE)	VALUE LABEL
0	female
1	male

VALUE (CODE)	VALUE LABEL
1	marketing
2	accounting
3	service
4	production

VALUE (CODE)	VALUE LABEL
1	single
2	married

VALUE (CODE)	VALUE LABEL
1	high school
2	academy
3	university

Please create a table like the example above in SPSS!