


eBook developed by:

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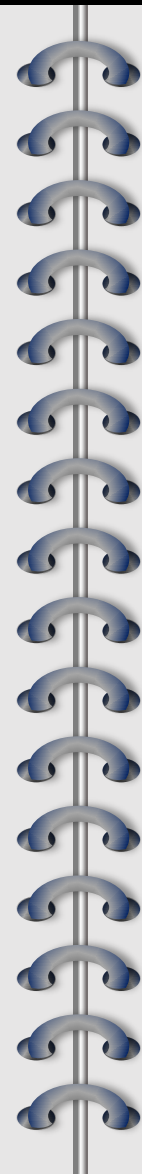
Describing and Presenting Variables

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Categorical Data

Nominal

Ordinals



Nominal Data	Categories
Sex	Male, female
Marital Status	Single, married, widowed, separated, divorced

Ordinal Data	Categories
Level of knowledge	Good, average, poor
Opinion of statement	Fully agree, agree, disagree, totally disagree

Review

- **Numerical Data (continuous)**

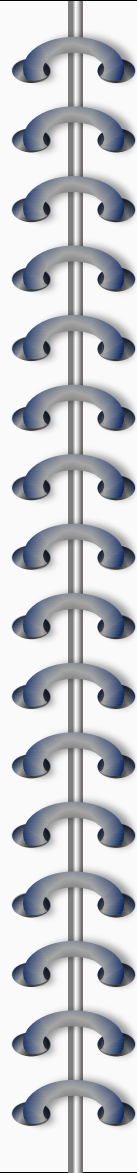
- **Height to the nearest centimeter or inch**
- **Temperature in degree Celsius**
- **Age to the last birthday**

Can be examined through:

- *Frequency distributions*
 - *Percentages, proportions, ratios, rates*
 - *Figures*
 - *Measures of central tendencies*

Frequency Distributions

Description of data presented in tabular form so that data will be more manageable. It gives the frequency with which (or the number of times) a particular value appears in the data.



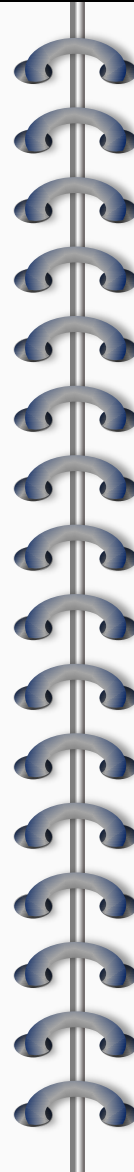
EXAMPLE

Negative	19
P. falciparum	13
P. Vivax	1
TOTAL	33

This data are NOMINAL. A frequency distribution is calculated by simply totaling the number of responses in each category

Frequency Distributions

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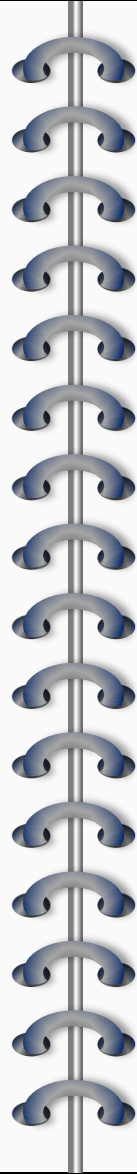
EXAMPLE

Never	47
Rarely	71
Occasionally	24
Frequently	6
TOTAL	148

This data are ORDINAL. The ordering of the categories is important as each category from top to bottom indicates increasing severity of the problem

Frequency Distributions

Description of data presented in tabular form so that data will be more manageable. It gives the frequency with which (or the number of times) a particular value appears in the data.



Procedures for making frequency distributions of NUMERICAL data are very similar to those for categorical data, except that now the data have to be grouped in categories.

Procedure to follow:

1. Select groups for grouping the data
2. Count the number of measurements in each group
3. Add up and check the results

Frequency Distributions

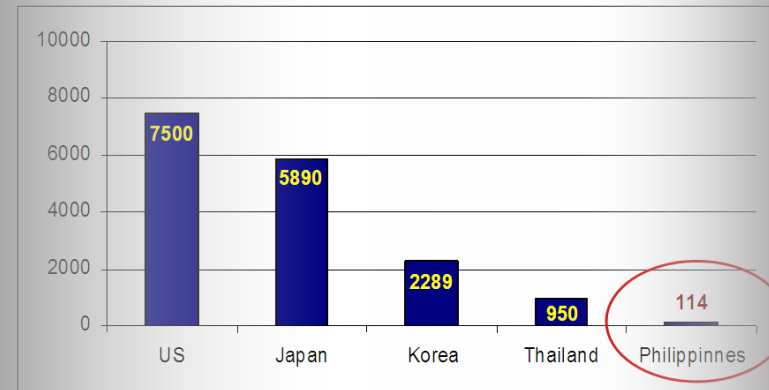
When grouping data the following rules are important:

- The groups must not overlap, otherwise there is confusion concerning in which group a measurement belongs.
- There must be a continuity from one group to the next, which means that there must be no gaps. Otherwise some measurements may not fit in a group.
- The groups must range from the lowest measurement to the highest measurement so that all of the measurements have a group to which they can be assigned.
- The groups should normally be of an equal width, so that counts in different groups can easily be compared.

	2005	2006	2010
Customer Contact	112,000	179,200	506,500
Back Office	22,500	40,500	337,000
Software Development	12,000	15,600	44,600
Medical Transcription	5,500	13,800	114,700
Animation	4,500	6,800	24,400
Others	6,750	10,100	55,600
TOTAL	163,250	266,000	1,082,800
Revenues (US \$)	2,184	3,484	12,793

Source: DICT, BIC, NIPAP and its Member Organizations

EDUCATION INVESTMENT



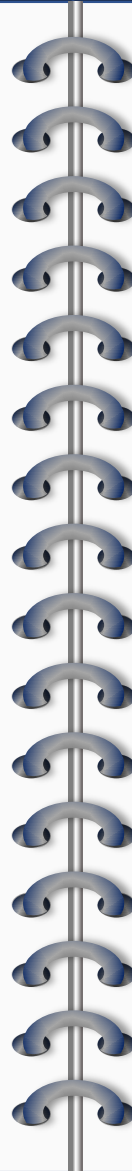
• only 12.35% of national budget

Percentages, Proportions, Ratios, and Rates

PERCENTAGE is the number of units with a certain characteristic divided by the total number of units in the sample and multiplied by 100

Percentages may also be called relative frequencies. Percentages standardize the data, which means that they make them easier to compare with similar data obtained in another sample of a different size

Usually you do not include missing data in the calculations of percentages.



NATIONAL ACHIEVEMENT TEST RESULTS

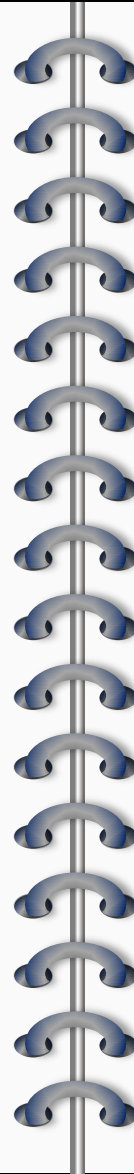
	SY 2003-2004	SY 2004-2005
Grade 6	50.03%	58.73%
HS 4 th year	44.36%	46.80%

Minimum mastery level: 75%

- **HS Readiness Test**
 - Out of 1.2 million Grade 6 examinees, only 8,000 passed
 - 75% of elementary graduates cannot read independently
- **Youth Literacy Rate: 95.1%**
- **Youth Functional Literacy Rate: 85.3%**

Percentages, Proportions, Ratios, and Rates

PROPORTION is a numerical expression that compares one part of the study units to the whole; a proportion can be expressed as a FRACTION or DECIMALS.

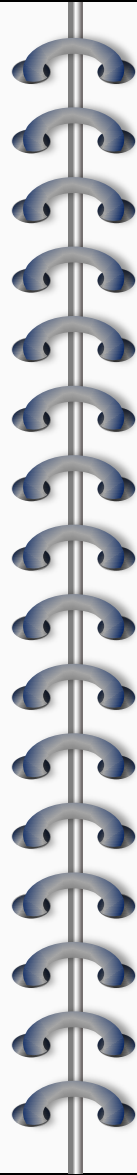


Example:

Out of a total 55 patients attending a clinic on a specific day 22 are males and 33 are females. We may say that the proportion of males is $22/55$ or $2/5$, which is equivalent to 0.40. (the numerator is 22, the denominator is 55)

Percentages, Proportions, Ratios, and Rates

RATIO is a numerical expression which indicates the relationship in quantity, amount or size between two or more parts.



Example:

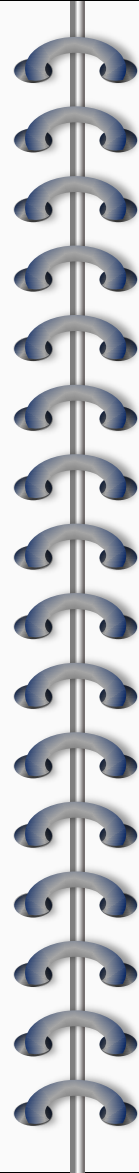
In previous example the ratio of males to females is 22:33 or 2:3

SHORTAGE OF QUALIFIED TEACHERS

- . **1:70 teacher: student ratio**
- . **Non-Majors among teachers**
 - **General Science 58%**
 - **Biology 56%**
 - **Chemistry 66%**
 - **Physics 73%**
 - **Math 20%**
- . **Low English Proficiency**
 - **80% have inadequate proficiency**
 - . **based on the Self-Assessment Test for English**

FIGURES

If your report contains many descriptive tables, it may gain in readability if you present the most important ones in figures.



Example:

The most frequently used figures for presenting data include:

Bar charts and Pie charts →
categorical data

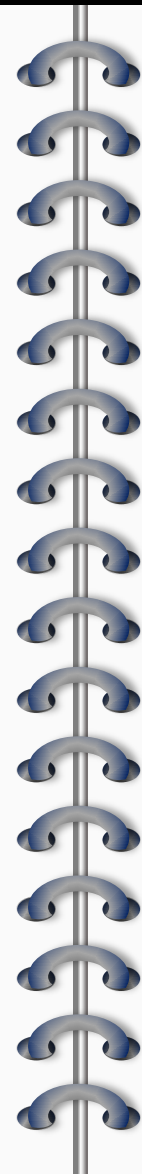
Line graphs and scatter diagrams →
numerical data

FIGURES

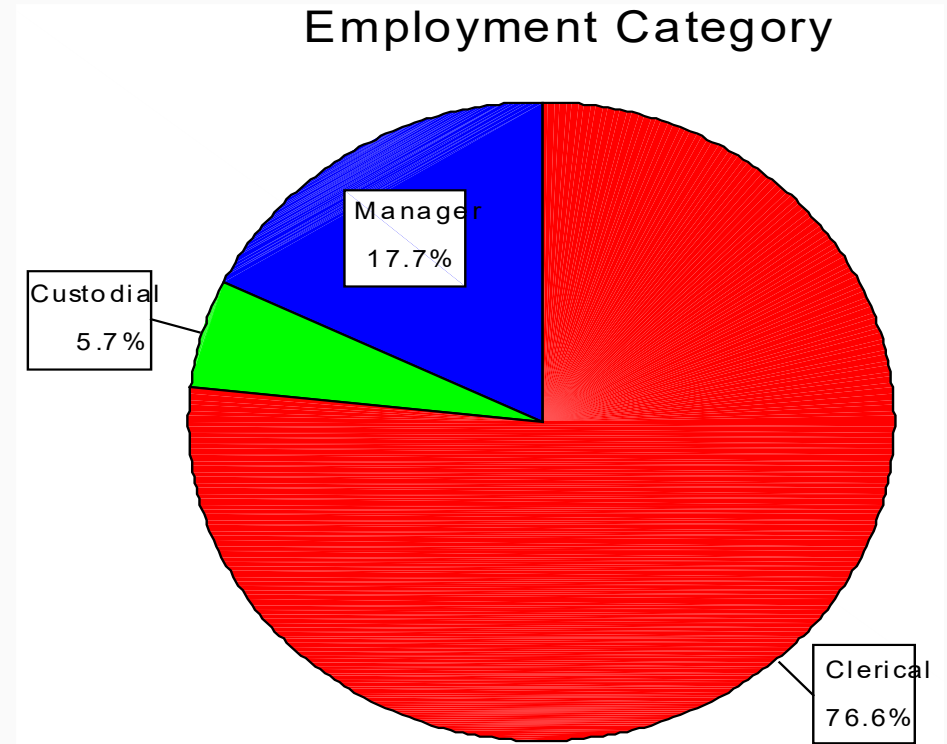
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Using Graphs/Figures

To compare different parts of a whole, we can use various types of pie charts, 100 % column charts, or sliding bar charts



	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
Clerical	363	76.6	76.6	76.6
Custodial	27	5.7	5.7	82.3
Manager	84	17.7	17.7	100.0
Total	474	100.0	100.0	

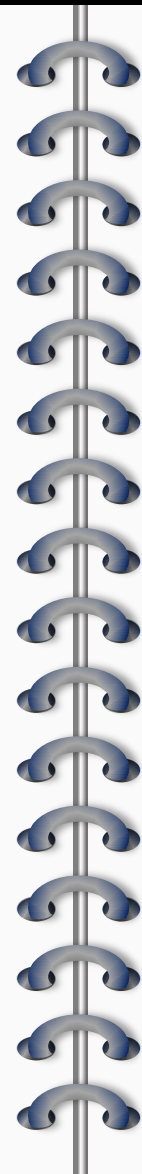


FIGURES

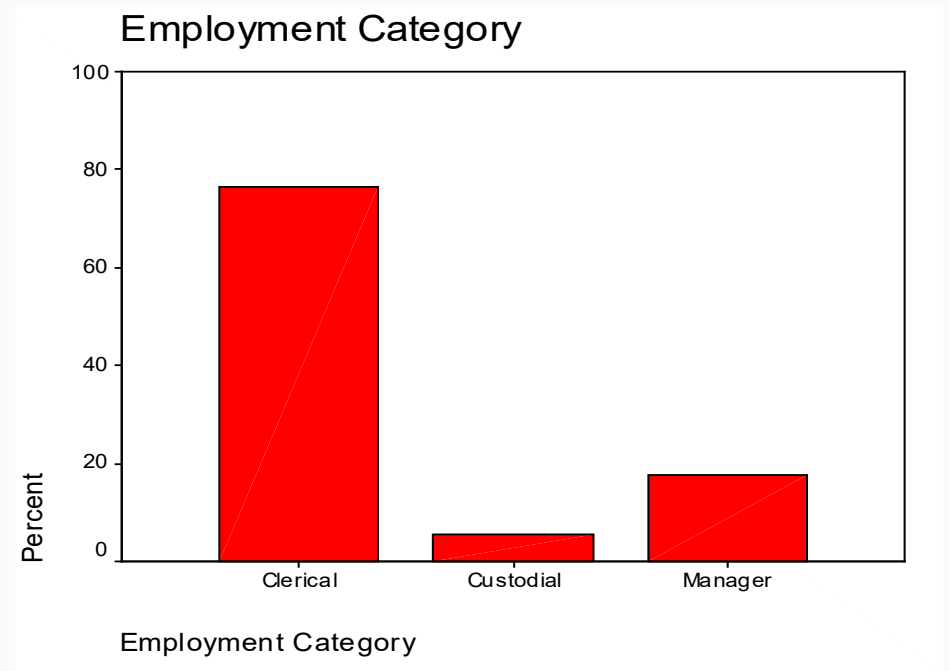
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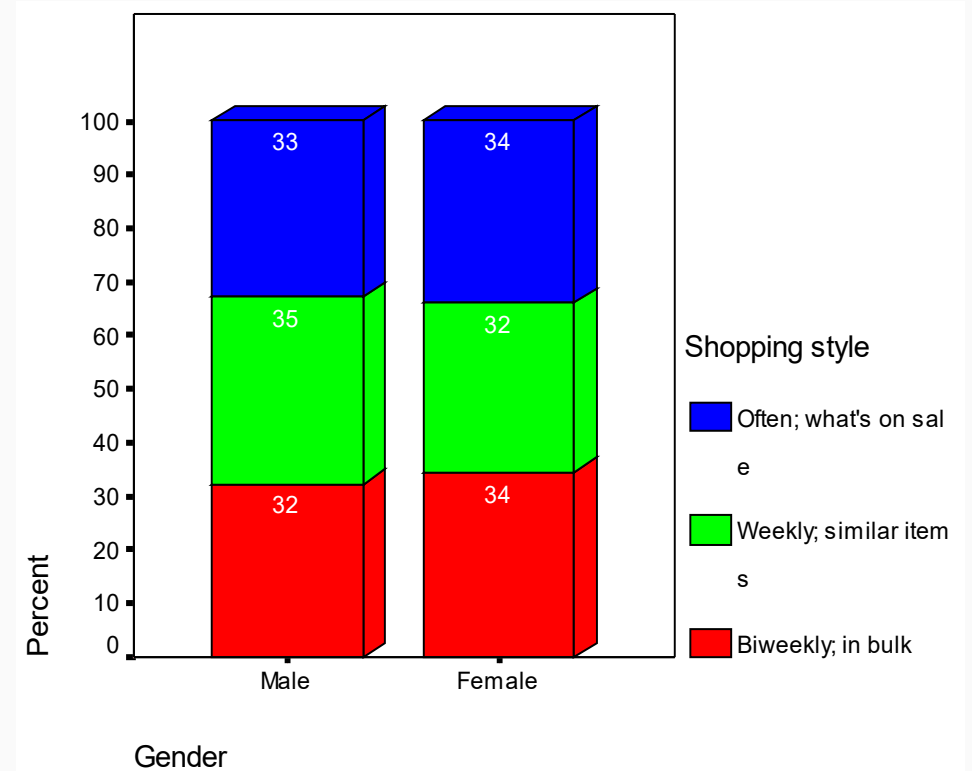


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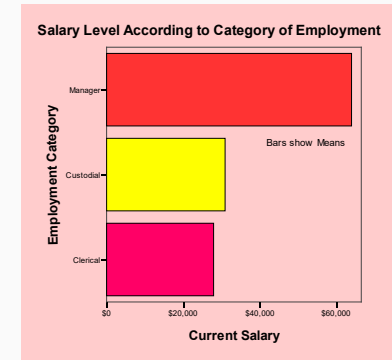


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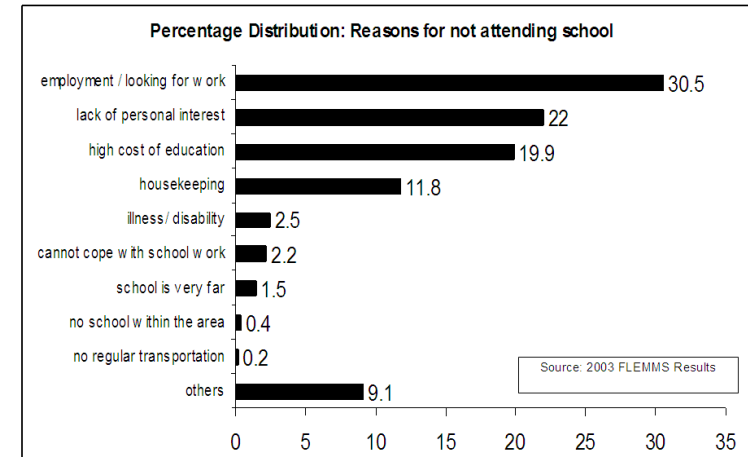
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Using Graphs/Figures

To compare different units, we can use various types of horizontal (not vertical) bar charts (individual, segmented, clustered, deviation, or range)



2003 Functional Literacy, Education & Mass Media Survey

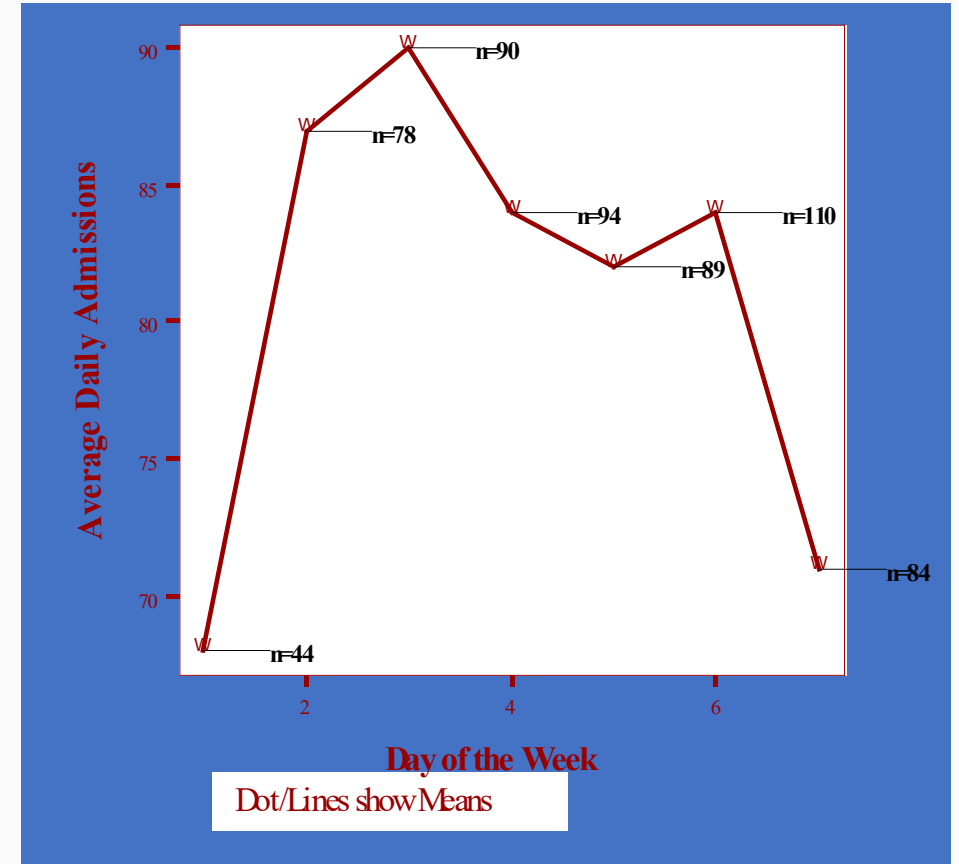


FIGURES

If your report contains many descriptive tables, it may gain in readability if you present the most important ones in figures.

Using Graphs/Figures

To compare different points in time, we can use various types of line charts (single, multiple), mountain charts, vertical bar (column) charts, pictographs, or historical timelines.

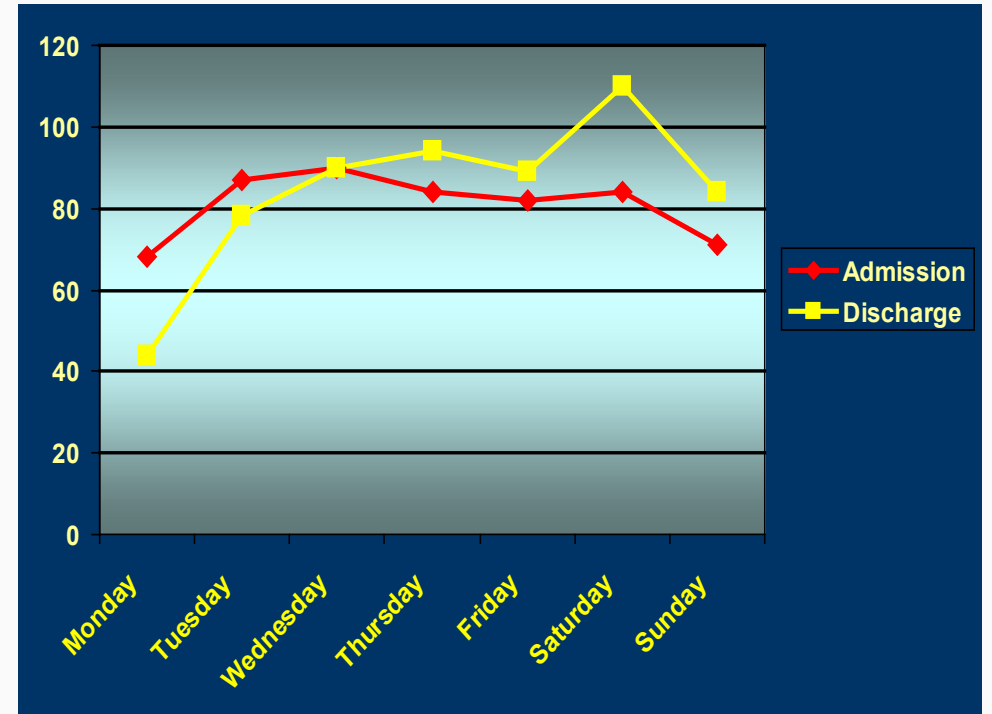


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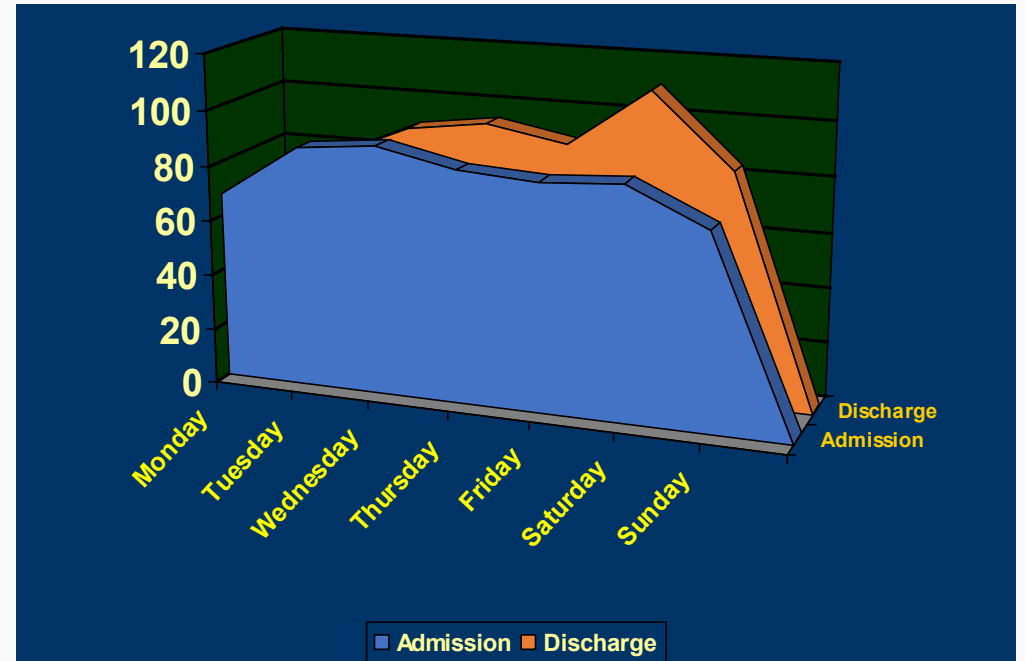


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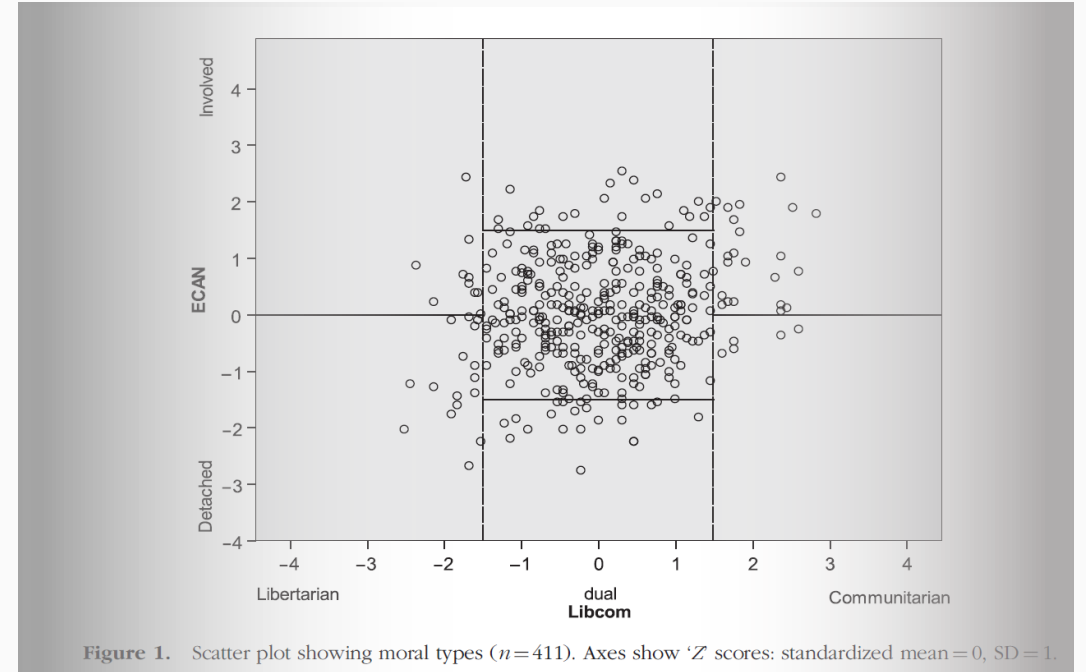
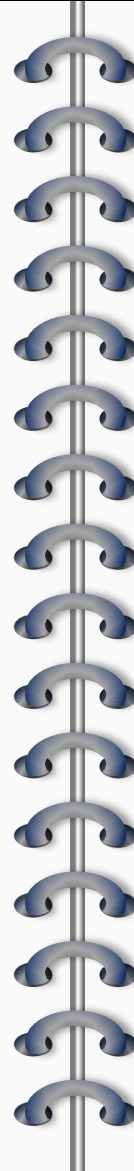


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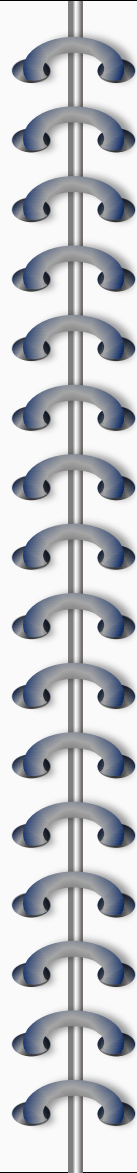
To compare two different variables, we can use scatter plots or paired-bar charts.



If your report contains many descriptive tables, it may gain in readability if you present the most important ones in figures.

To make decision ask the following questions:

- Which graphic is the most *accurate?* Which one conveys our message and nothing but our message?
- Which graphic is *simplest?* Which one conveys the greatest number of ideas in the shortest time with the least ink in the smallest space?



- Which graphic is *clearest?* Which one emphasizes the data to let us easily and readily see the message?
- Which graphic is most *attractive?* Which one most pleasantly reflects an artistic element?

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