Collecting and Analyzing Data

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What do we mean by collecting data?

▶ Collecting data means putting your design for a measurement system into operation.

▶ Collecting data involves *gathering* information through **observation, interviews, testing, surveys**, and/or other means; *recording* it in appropriate ways; and *organizing* it so that it's easier to work with.

What do we mean by analyzing data?

▶ Analyzing data involves examining the information you've collected in ways that reveal the **relationships**, patterns, trends, etc. that can be found within it.

▶ Data can be **quantitative** (collected as numbers, also called interval, ratio) or **qualitative** (collected as narrative information, records, journal notes, also called nominal, dichotomous, or ordinal)

▶ Quantitative data is usually analyzed by subjecting it to one or more graphical displays or statistical operations that demonstrate the significance of relationships among variables.

What do we mean by analyzing data?

▶ Data are also usually analyzed logically, by looking for patterns and relationships revealed within them.

▶ Qualitative data can sometimes be turned into quantitative data by, for instance, counting (e.g., the number of times a behavior occurs in various circumstances) or by rating on a number scale such dimensions as importance, satisfaction, or quality (e.g., the quality of housing or quality of life in neighborhoods).

▶ A combination of quantitative and qualitative data often yields the best overall picture.

Why should you collect and analyze data for your evaluation?

▶ This can show whether or not there was actually **any significant change in the dependent variable(s)** you hoped to influence.

▶ Significant change when a result shows at least a 95% certainty that it is correct **(called the .05 level of significance, since there is a 5% chance that it is wrong)**

▶ This can show **connections** between or among various factors that may have an effect on the results of your evaluation.

▶ This can imply or show the **reasons** that your work was effective or ineffective.

Why should you collect and analyze data for your evaluation?

▶ This can provide you with credible **evidence** to show funders and the community that your program is successful, or that you've uncovered, and are fixing, the elements that are barriers to success.

▶ This can show that you're serious about evaluation and about **improving** your work.

▶ This can show the field that what you're doing works well, and thus pave the way for **others to use similar methods** and approaches as best practices

When and by whom should data be collected and analyzed?

▶ Data collection should start **no later than when you** <u>begin your work</u> and continue throughout.

▶ If you want to see if any change is part of a <u>long-term trend</u>, you should collect data for **<u>some time before</u>** your program actually starts.

▶ If you want to understand <u>long-term effects</u>, you should collect data on participants for **<u>some time after</u>** they leave your program.

▶ Data should be collected and analyzed by people who are **<u>capable of doing</u>** so.

▶ Data collection and analysis can be done by anyone from community members who have been **<u>trained</u>** to professionals with experience in conducting studies.

# How do you collect and analyze data?

▶ Implement the observational system (the <u>measurement</u>, the <u>observer</u>, the <u>appropriate time and method of data reporting</u>) you've planned.

▶ <u>Organize</u> the data you've collected (as scores, numbers, etc...)

▶ Conduct <u>data graphing</u>, visual inspection, statistical analysis, or other operations on the data as appropriate.

▶ Take note of any **<u>significant</u>** or interesting results such as difference between groups, correlations, patterns.

▶ <u>Interpret</u> the results e.g., effect, no effect, neutral effect, negative effect, mixed or multiple effects.

Displaying Continuous Data

- ▶ A picture is worth a thousand words, or numbers.

- ▶ So, displaying data in a figure or graph will be the best way to look at them.
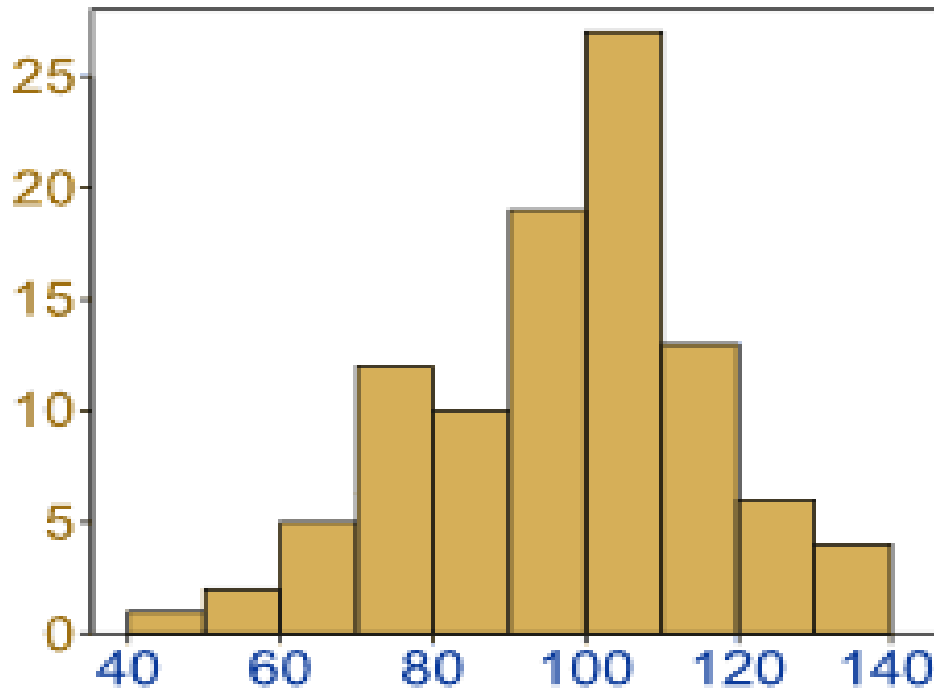
- ▶ Do not overwhelm the reader with too much detail.

Dot Plots

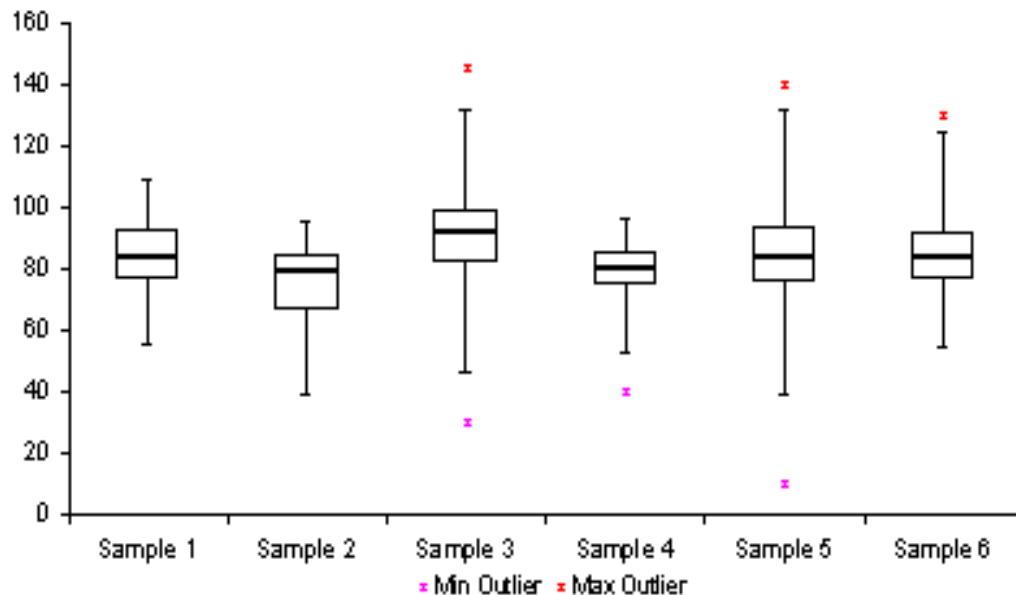▶ The simplest method of conveying as much information as possible.
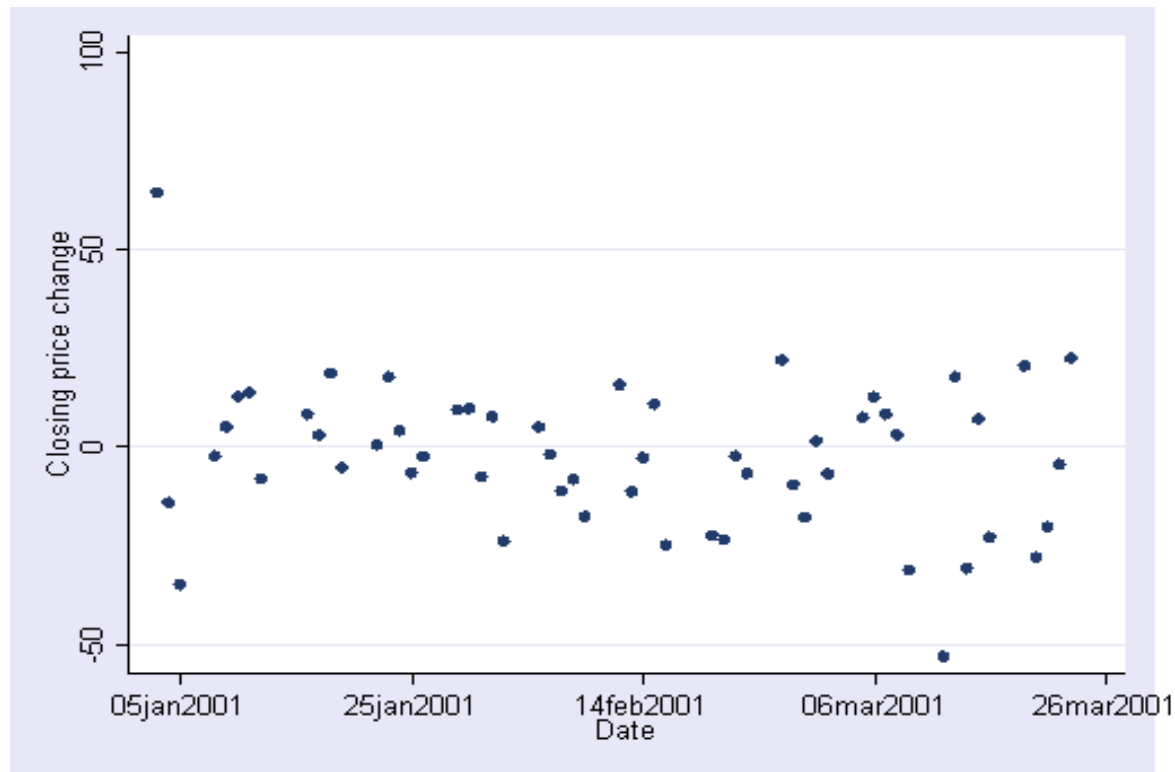
Histogram
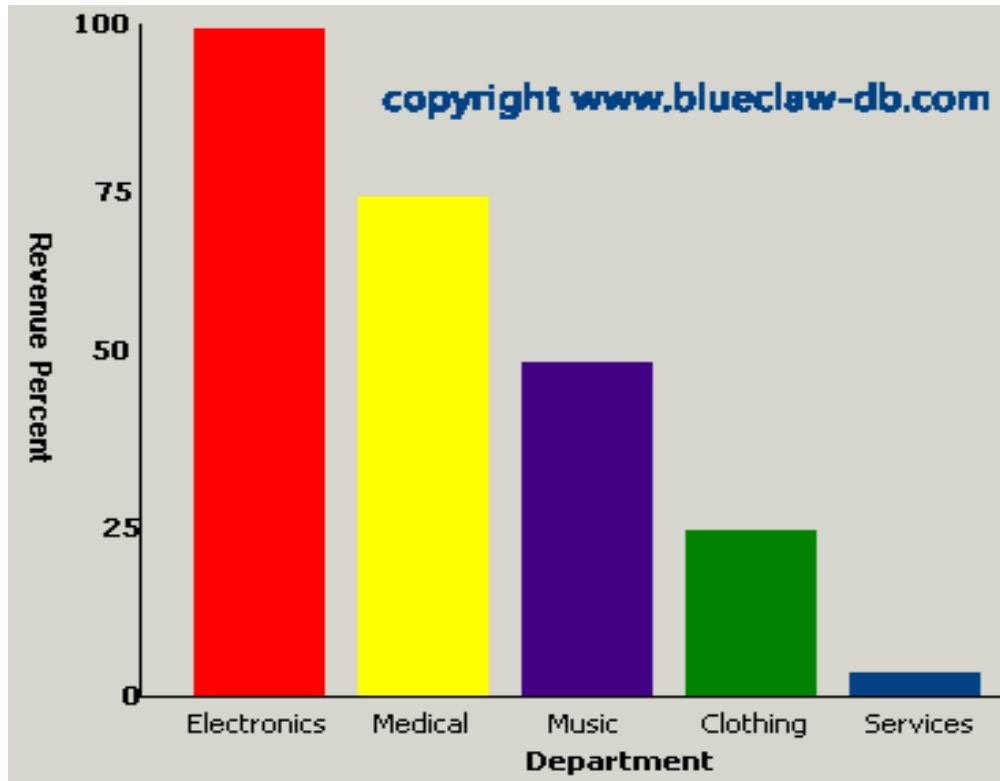
▶ Suitable for large data sets that can be subcategorized.

Box-Whisker plot

▶ Suitable for large number of data for more than one group.

Displaying Categorical Data

▶ Using bar-chart

Summarizing DATA

▶ **Continuous data**

* Mean or average, median.

▶ **Categorical data**

* Ratio or percentage

How to Analyze The Data

▶ Choose the appropriate statistical test according to the type of data.

▶ E.g., quantitative data use t-test, while qualitative data chi-square test.

SUMMARY

▶ Gathering information is the heart of evaluation research

▶ Collecting quantitative data and subjecting it to appropriate statistical analysis can tell whether your work is having the desired effect, correlations or cofactors.

▶ Collecting and analyzing qualitative data can provide insight into how participants experience the issue that you are addressing, barriers and advantages they experience, and the improvements needed.

REFRENCES

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Thank You