

Statistical Analysis

Part I: One Variable Statistics

min | median | mode | mean (μ) | max | range | quartile | standard deviation (σ) | histograms

Enter

- Plan layout
- Engage
- Build
- Enter data

Analyse

- Multiply
- Calculate
- Create Info
- Interpret

Present

- Coordinate
- Collaborate
- Group & Simplify
- Visualize

...continued

Yoda Tips

- Part I: Layout, Navigation, Data Entry
- Part II: Formula Basics
- Part III: Advanced Skills
- Part IV: Copying

One Variable Statistics

- Mean, Median, Mode
- Min, Max, Range, Standard Deviation
- Distributions

Two Variable Statistics

- Correlation
- Linear Regression
- Scatter Plots

Analyse

Yoda Tips Part III

- Perform**
 - 1. One variable
 - 2. Two variable
- Visualize**
 - 1. Box plots
 - 2. Histograms
 - 3. Scatter plots
 - 4. Error
- Interpret results**
 - Think of each formula as determining what could be changing in a formula or determining what could cause this or determining what could cause that, etc... continue until you reach a root cause.
- Make models to predict outcomes / make decisions**

In-depth Analysis:

Get data

Break into groups by characteristics

Put it down, draw, and talk about the more than one demographic of a group

Analyse

One Variable Statistics: Range & Dispersment

Problem

Autistic Application

Basic Practice

Initial Attempt

Revised Solution

Final Release

What was wrong with this again?

What's the implication of this knowledge? Why?

Class A

$\mu = 75\%$

Class B

$\mu = 80\%$

What can we do about this variation from the central tendency of μ so we're not misled by it anymore?

Analyse

One Variable Statistics: Range & Dispersment

Problem

Autistic Application

Basic Practice

Initial Attempt

Revised Solution

Final Release

Group Exercise

Invent your own statistic to measure the amount of variation in the individual data relative to the mean.

You must:

- take all data into account
- use mathematical calculations
- be able to tell others how to do it

Class A

$\mu = 75\%$

Class B

$\mu = 80\%$

Analyse

σ

One Variable Statistics: Range & Dispersment (continuous data)

Standard Deviation (σ)

Excel Notation	Meaning	Limitations
=stdev() =stdevp()		

Analyse

One Variable Statistics: Range & Dispersment (discrete data)

Histograms

Meaning

Analyse

One Variable Statistics: Range & Dispersment

Box (and Whisker) Plot

Meaning

Analyse

Yoda Tips Part IV

Data Analysis Add-Ins in Excel:

- Analysis Toolpack
- Histograms
- Box and Whisker Plots
- Charts and Graphs
- Descriptive Statistics
- Confidence Intervals

Analyse

The interpretation of statistics is equally as important as the calculation of statistics!

An Exercise

Which battery supplier would you recommend? Justify your choice by quoting appropriate one variable statistics.

Note to self:
Let's come back to this with expected value. Add prob. and battery costs.

The Data

Qualitative:	Quantitative:
<p>You have been hired by a company that manufactures portable MP3 players to choose a battery supplier. LowTech guarantees that it will repair or replace any MP3 player that does not recharge 200 times.</p> <p>The original supplier of the battery was supplier Gallant's Gizmos Inc. Their competition, Boulton's Best Batteries, wants to be the new exclusive battery supplier for LowTech.</p>	<p>Boulton's Best Batteries: 254, 259, 256, 253, 252, 250, 250, 249, 256, 254, 250, 251, 250, 248, 248, 254, 258, 255, 258, 255</p> <p>Gallant's Gizmos Inc.: 257, 306, 179, 245, 192, 164, 325, 283, 289, 293, 287, 305, 155, 267, 331, 192, 265, 279, 312, 274</p>

Analyse

The interpretation of statistics is equally as important as the calculation of statistics!

An Exercise

Apply your knowledge of one variable statistics and graphical representations to analyze the IRHS data.