Descriptive_statistics1

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0.1 # What's Data? Why is it important?

0.2 *Data can come in many forms:-*

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0.2.1 Text

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0.2.2 Video

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0.2.3 Spread Sheets

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0.2.4 Databases

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0.2.5 Images

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0.2.6 Audio

0.2.7 And There are many other forms of Data.

0.3 Utilizing the Data is so important in many fileds:-

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0.3.1 Inurance

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0.3.2 Banking

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0.3.3 Medicine

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0.3.4 Education

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0.3.5 Agriculture

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0.3.6 Automotive

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0.3.7 Manufacturing

0.4 You can utilize data to make better decisions and accomplish your goals.

0.5 # Data Types (Quantitative vs. Categorical)

0.6 Quantitative Data:-

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0.6.1 Numeric values that allow mathematical operations.

Example: * #### If I saw 5 dogs on manday and 6 dogs on tuesday that mean, I saw 11 dogs this week.

0.7 Categorical Data:-

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0.7.1 A Group or set of items.

Example: * #### Breed of Dogs.

0.8 # Data Types (Ordinal vs. Nominal)

0.9 Categorical Ordinal Data:

- *categorical values that are ranked.*

0.10 Categorical Nominal Data:

- *categorical values that don't have ranked order*

0.11 # Data Types (Continuous vs. Discrete)

0.12 Continous Data:

- *Quantitive values that can be split into smaller values.*
- *For Example:*

0.13 Discrete Data:

- *Quantitive values that are countable*
- *For Example: The number of dogs we interact with*

0.14 # Data Types Summary

0.15 # Measures of Center (Mean)

0.16 We need 4 main aspects when analyzing both discrete and quantative data:-

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0.17 Measures of Center:-

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0.18 Mean:

- *Sum of all values divided by the count of values.*

0.19 For Example: Data Of the dogs were seen in the coffe shop through the week:-

- *But it doesn't seem that the mean isn't in the middle of the data and it also is splitting our dogs into decimal values which will seem strange twhen we reporting it back.*

0.20 # Measures of Center (Median)

0.21 Median:-

- *It's the middle value of a dataset*

0.22 For Example:-

- *The median of the data we have which seem more reasonable more than the mean.*

0.23 Examples of Median Calculation:-

- *when the count of numbers is an odd number.*
- *when the count of the number is an even number.*
- *put the values in order.*
- *get the 2 numbers in the middle of the data.*

0.24 # Measures of Center (Mode)

0.25 Mode:-

- *the most frequent number in the data set.*

0.26 For Exmaple:-

0.27 # What is Notation?

0.28 # Random Variables

The best way to introduce Notation we will use spreadsheets

0.29 Example:-

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0.29.1 *Consider a websites for dogs'needs*

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0.29.2 So We need to answer some questions to make a better decisions about our website*

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0.29.3 *In order to answer these question we need to keep track of (Date of the visit, Day of the week of the visit, Amount of time spend on the site, Wether or not an individual buys an item)*

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0.29.4 *Each column of them assossiated with random variable*

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0.29.5 *With this spreadsheet we can answer out questions*

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0.29.6 *Mathematically we consider random variable or column using a capital letter, so consider (X related to "Time" column and Y related to "Buy" column)*

0.30 # Capital vs. Lower

0.31 *Random variables & Its subset:-*

0.32 For Example:-

0.33 # How to calculate the mean with Notation

0.34 For Example:-

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0.34.1 *If we want to sum the first 5 elements of "Time" column*

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0.34.2 *What if we want to sum 100 elements of the "Time" column*

0.35 we will use the concept of Aggregation to make simple to repesent multiple numbers into fewer numbers

0.36 $ Using Upper case Sigma $\sum$ to represen those numbers $:-

0.37 For Example:-

0.38 Other Aggregations

The $\sum$ sign is used for aggregating using summation, but we might choose to aggregate in other ways. Summing is one of the most common ways to need to aggregate. However, we might need to aggregate in alternative ways. If we wanted to multiply all of our values together we would use a product sign $\prod$, capital Greek letter pi. The way we aggregate continuous values is with something known as integration (a common technique in calculus), which uses the following symbol which is just a long s. We will not be using integrals or products for quizzes in this class, but you may see them in the future!

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$$Mean : \bar{x} = \frac{1}{n} \sum_{i=1}^{n} x_i$$

1.1 # Summary