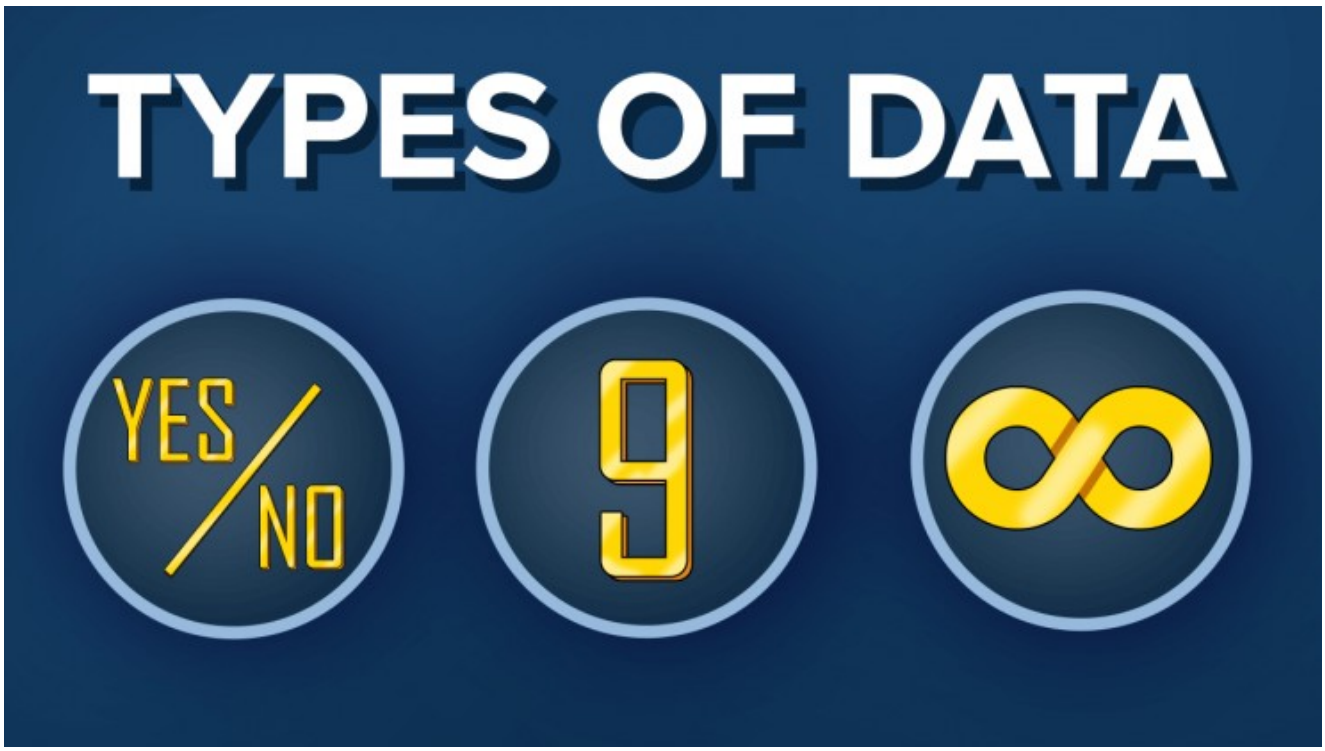

Introduction: **Types of Variables**

Data science is all about experimenting with raw or structured data. Data is the fuel that can drive a business to the right path or at least provide actionable insights that can help strategize current campaigns, easily organize the launch of new products, or try out different experiments.

Data has so much importance in our life then it becomes important to properly store and process this without any error. When dealing with datasets, the category of data plays an important role to determine which preprocessing strategy would work for a particular set to get the right results or which type of statistical analysis should be applied for the best results. Let's dive into some of the commonly used categories of data.

Qualitative Data Type

Qualitative or Categorical Data describes the object under consideration using a finite set of discrete classes. It means that this type of data can't be counted or

measured easily using numbers and therefore divided into categories. The gender of a person (male, female, or others) is a good example of this data type.

The two types are;

1. Nominal
2. Ordinal

Nominal

These are the set of values that don't possess a natural ordering. Let's understand this with some examples. The color of a smartphone can be considered as a nominal data type as we can't compare one color with others.

It is not possible to state that 'Red' is greater than 'Blue'. The gender of a person is another one where we can't differentiate between male, female, or others. Mobile phone categories whether it is midrange, budget segment, or premium smartphone is also nominal data type.

Ordinal

These types of values have a natural ordering while maintaining their class of values. If we consider the size of a clothing brand then we can easily sort them according to their name tag in the order of small < medium < large. The grading system while marking candidates in a test can also be considered as an ordinal data type where A+ is definitely better than B grade.

Quantitative Data Type

This data type tries to quantify things and it does by considering numerical values that make it countable in nature. The price of a smartphone, discount offered, number of ratings on a product, the frequency of processor of a smartphone, or ram of that particular phone, all these things fall under the category of Quantitative data types.

The key thing is that there can be an infinite number of values a feature can take. For instance, the price of a smartphone can vary from x amount to any value and it can be further broken down based on fractional values:

The two types are;

1. Discrete
2. Continuous

Discrete

The numerical values which fall under are integers or whole numbers are placed under this category. The number of speakers in the phone, cameras, cores in the processor, the number of sims supported all these are some of the examples of the discrete data type.

Continuous

The fractional numbers are considered as continuous values. These can take the form of the operating frequency of the processors, the android version of the phone, wifi frequency, temperature of the cores, and so on.

Can Ordinal and Discrete type overlap?

If you pay attention to this, you can give numbering to the ordinal classes, and then it should be called discrete type or ordinal? The truth is that it is still ordinal. The reason for this is that even if the numbering is done, it doesn't convey the actual distances between the classes.

For instance, consider the grading system of a test. The respective grades can be A, B, C, D, E, and if we number them from starting then it would be 1,2,3,4,5. Now according to the numerical differences, the distance between E grade and D grade is the same as the distance between the D and C grade which is not very accurate as we all know that C grade is still acceptable as compared to E grade but the mid difference declares them as equal.

Useful links

https://www.questionpro.com/blog/nominal-ordinal-interval-ratio/

https://www.formpl.us/blog/nominal-ordinal-data

https://www.statisticshowto.com/probability-and-statistics/statistics-definitions/discrete-vs-continuous-variables/