

## **Level of Measurement**

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Assignment: Week 1.2 Assignment

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### Assignment: Level of Measurement

#### Variables Types:

Quantitative (Represents Amounts)	Discrete (Count of Individual items or values)		# of Students
	Continuous (Measurements of continuous or non-finite values)	Interval (measurement scale)	Distance Time Volume
		Ratio (the scale must have a true and meaningful zero point)	Time To respond
Qualitative/Categorical (Represents Grouping)	Binary (Yes/no outcomes)		Heads/tails Win/lose
	Nominal (Groups with no rank or order between them)		Species names Colors Brands
	Ordinal (Groups that are ranked in a specific order)		Finishing place in a race Rating scale responses in a survey

**Task 1:** What is the level of measurement of the following variables?

a) **The number of downloads of different bands' songs on iTunes.**

This is discrete variable. This represents the count of songs downloaded.

b) **The names of the bands that were downloaded.**

This is nominal variable. Bands can be identified by their name, but the names have no meaningful order.

c) **The position in the iTunes download chart.**

This is ordinal variable. The category is songs. It also ranked in specific order present in the iTunes.

**d) The money earned by the bands from the downloads.**

This is discrete variable. Money represents count of individual value and falls under quantitative variable.

**e) The weight of drugs bought by the bands with their royalties.**

This is continuous variable. Weight is measurement of continuous or non-infinite value.

**f) The type of drugs bought by the bands with their royalties.**

This is nominal variable. The category is drug and can be of any type. So, there is no meaningful order.

**g) The phone numbers that the bands obtained because of their fame.**

This is nominal variable. The category is phone numbers; However, phone numbers don't have any meaningful order.

**h) The gender of the people giving the bands their phone numbers.**

This is binary variable. The gender is classified as only 2 categories; male and female.

**i) The instruments played by the band members.**

This is nominal variable. Category as instruments. However, the instruments have no meaningful order.

**j) The time they had spent learning to play their instruments.**

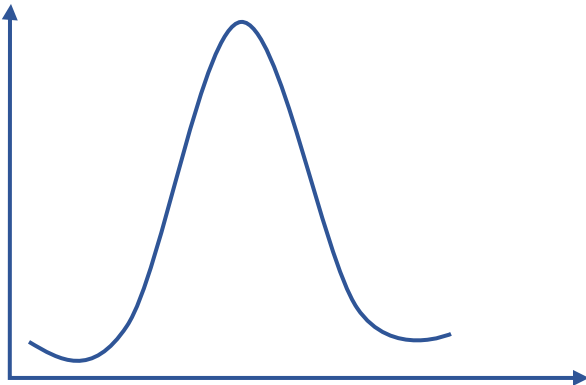
This is continuous and ratio variable. The amount of time could be split into infinitely small divisions and there is a meaningful true zero

**Task 2:** Say I own 857 CDs. My friend has written a computer program that uses a webcam to scan the shelves in my house where I keep my CDs and measure how many I have. His program says that I have 863 CDs. Define measurement error. What is the measurement error in my friend's CD-counting device?

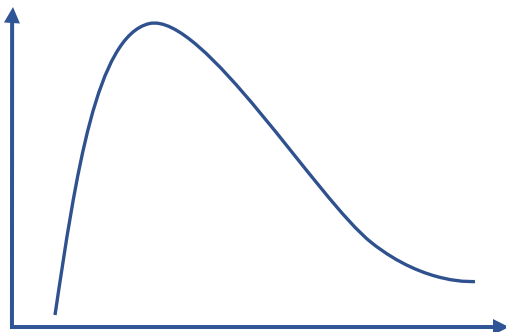
**Measurement error** is the difference between the true value of something and the numbers used to represent that value. In this example, we know the true value of number of CDs is 857 CDs. However, my friend's program calculated it as 863 CDs. So, measurement error is **6 CDs**.

**Task 3:** Sketch the shape of a normal distribution, a positively skewed distribution and a negatively skewed distribution.

**Normal Distribution:**



**Positively Skewed distribution:**



**Negatively Skewed distribution:**

