# BUS 232 Day 8 - sample distributions

## Sample mean distribution

Population is the entire group of individuals.
Sample is the part of the population we actually examine and for which we do have data.
A parameter is anumber describing a characteristic of the *population*.
A statistic is a number describing a characteristic of a *sample*.

xbar is a continous random variable. So we must use a density curve.

- Sample means are less variable than individual observations
- Sample means are centered around the population mean
- Sample means are more normal than individual observations

## The central limit theorem

Draw an SRS of size n from any population with mean u and standard deviation o. When n is large enough, the sampling distribution of xbar is approximately normal.

25~40 or more we don't care about the shape.

## Multiple Random Variables

x = N(8.12, 0.02)
y = N(16.19, 0.05)

What proportion for two x's greater than one y?

Let B = x + y
Get the standard deviation and mean of this.

now we want B-Y > 0

let W = B-Y
Get the standard deviation and mean of this.

Now use the z-table to get the proportion of W over 0.