* Due Sunday 9/18
  + Reading questions week 2
  + Software setup
* Due 9/25
  + Reading questions week 3
  + Using R notebooks
  + DataCamp: Intro to R
* Is there a true zero?
* Interval Scales can have negative numbers (temperature)
  + All intervals are the same
* Ratio scales are non-negative
  + Could be all negative, but **never** a mix of negative and positive
* Circular scales wrap a max value back to zero
  + Calendar year, resets each year
  + degrees
* we build models from numbers
* theoretical distributions as models
  + we fit models to data
  + only approximately good models for our data
* Row Data Paradigm
  + Store data in row data format for ease of use
  + Rows are observations, samples, collection of observations
  + Columns represent attributes, variables, properties, or fields
* Frequentism
  + Populations are large (infinitely large using the frequentist model)
  + Samples are a subset of a population
  + Can observe all sampling units
  + Can characterize properties of a samples
  + Use a sample to infer something about a population
  + Sample is a group of observations
  + Sampling unit= SU
  + Variables are attributes of the SU
  + Statistical populations are subsets of the ecological population
  + Eco Pop -> Stat Pop -> Sample -> SU -> Variable/attribute
    - Eco Pop is a collection of all possible SU
    - Example
      * Eco pop for carp are all fish of that species
      * Stat pop will be limited to one lake
      * Sample is then a fish from the lake
      * SU is then part of the fish (could also be the whole fish if sample is a group of fish)
      * All depends on the final variable defined
    - Eco pops do not typically change because of how broad they are
* Interval Scale
  + Need same intervals between each number
* Ordinal
  + A scale that has an order of direction, increasing pain
* What is Frequentism?
  + Requires assumptions
  + Focuses on modeling process
  + Essentials
    - Population exists, is infinite
    - Pop parameters are true, but knowable quantities
    - Frequentist assumptions are often asymptotically true
    - Hypothesis testing: Ho and Ha
      * Confidence and significance
      * Confidence interval
        + If I were to repeat this experiment, 95% of the time, this interval contains the true value
        + It does not mean that 95% of the population has that true value
        + It has to be tested, it is not a given for a pop
      * Hypothesis testing
        + Complete randomness= no sig between variables (null hypothesis)
        + When there is a relationship between the variables: called the alternative model/hypothesis
  + Dual model paradigm
    - Model the noise and variability,
    - Deterministic model to categorize the behavior