

Exercise: Vectors

Day 1, Part B

- Create the following vectors:
 - The names of everyone sitting at your table (**friends**).
 - Every calendar year since 1995 (**years**).
 - A sequence from 0 to 1 by 0.1 (**tenths**).
 - For each day this week, whether or not you have/will attend a boot camp class (**classes**).
- Consider the vectors from question 1.
 - What class is each vector?
 - What happens to each vector when it is coerced to an integer?
 - What happens to each vector when it is coerced to a numeric?
 - What happens to each vector when it is coerced to a character?
 - What happens to each vector when it is coerced to a logical?
 - [Bonus] In general, what happens when you convert numerics/integers to a logical? (hint: try running different numbers through `as.logical()` until the pattern becomes clear)
 - [Bonus] Is it ever possible to convert a character vector to a numeric or logical vector without introducing NAs?
- Consider the following vectors which contain data about counties in the Puget sound region:

```
# Name
cnty_name <- c("Jefferson", "Kitsap", "Pierce", "King", "Snohomish", "Skagit", "Whatcom",
              "San Juan", "Island")
# Population
cnty_pop <- c(30183, 255104, 835555, 2089564, 763963, 120718, 208935, 16029, 79291)
# Area (sq. miles)
cnty_area <- c(1855, 450.6, 1781, 2238.8, 2116.4, 1771.7, 2175, 254.4, 219.1)
# Life expectancy (yrs)
cnty_e0 <- c(81.3, 79.7, 78.7, 81.4, 80.2, 79.8, 81, 83.7, 81.9)
```

 - Calculate the population density of these counties.
 - What is the minimum and maximum life expectancy?
 - Which county has the lowest life expectancy? The highest?
 - What is the median population size?
 - Which counties have populations greater than 100,000?
 - What is the mean area of counties with populations greater than 100,000?
- Create a vector called **draws** that is 100 random draws from a Normal(0,1) distribution (hint: see `rnorm()`).
 - Find the mean, variance, and standard deviation of **draws**.
 - Create a second vector (**log_draws**) that is the natural log of the **draws** vector.
 - Show just the non-missing values of **log_draws**.
 - How many values of **log_draws** are missing? (hint: this requires two functions)