

### Libraries to Import

|                                 |                             |
|---------------------------------|-----------------------------|
| <code>library(tidyverse)</code> | <code>library(broom)</code> |
| <code>library(mosaic)</code>    | <code>library(dplyr)</code> |

### Block 2 Quiz 1

|   |   |
|---|---|
| mutually exclusive  | two cannot be concurrent                                |
| independent   | no relevance/influence between 2 factors                |
| complement  | opposite  |
| <code>rbinom(# of trials, # of attempts within trial, success rate) mean(results &gt; amt)</code> | returns probability of success that the amt is exceeded |
| <code>mean(rbinom(simulatedTrials, #ofAttempts, successRate))</code>                              |   |
| <code>favstats(results)</code>  | finding 3rd quartile of probability                     |

`quantile(results, 0.75)`

`qbinom(0.75, size = #ofAttempts, prob = successRate)`

`choose(n, k)` n choose k. different ways for result

### Block 1 GR

|                     |                              |
|---------------------|------------------------------|
| Categorical         | non-number                   |
| Numerical           | can be categorized by number |
| continuous          | non-whole #                  |
| discrete            | whole #                      |
| stratified sampling | some of all groups           |

### Block 1 GR (cont)

|                        |                                    |
|------------------------|------------------------------------|
| cluster sampling       | one group, all variables           |
| simple random sampling | random selection across all groups |

observational study not experimenting

retrospective study data collected after the fact

prospective study data collected during event

skew tail is what skew it is

`favstats(colforeach~thiscol, data = dataSet)` returns min, max, SD, mean, median

explanatory variable x

response variable y

independence has no trend

`tally(~col1+col2, data = dataSet, format = "percent/decimal")` % of the dataset that applies to both

`tally((colforeach~thiscol, data = dataSet, format = "percent", margin = TRUE))` of col1, how many also in col2?

`dataSet%>% gf_props(Survived, fill = Pclass, position = "fill")%>% gf_labs(title = "", subtitle = "", x = "", y = "")%>% gf_theme(theme_bw())`

### Block 1 GR

|             |                              |
|-------------|------------------------------|
| Categorical | non-number                   |
| Numerical   | can be categorized by number |

continuous non-whole #

discrete whole #

stratified sampling some of all groups

cluster sampling one group, all variables

simple random sampling random selection across all groups

observational study not experimenting

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skew tail is what skew it is

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`tally((colforeach~thiscol, data = dataSet, format = "percent", margin = TRUE))` of col1, how many also in col2?

`dataSet%>%`



By **kaylahs**

[cheatography.com/kaylahs/](https://cheatography.com/kaylahs/)

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### Block 2 Quiz 2

`pnorm(value, mean mu, stdev)` returns CDF of normal distribution

Probability of randomly selecting within a range

upper bound `pnorm`  
- lower bound `pnorm`

`qnorm(percentile value, mu, stdev)` returns percentile of dataset

`integrate(function(x)-{functionInfo}, lowerBound, upperBound)$value`

Integrate

`adaptIntegrate(function, lowerLimit = c(lowerBound, lowerBoundY), upperLimit = c(upperBoundX, upperBoundY))$integral`

integrate with 2 variables

$Cov(X,Y) = E(XY) - E(X)E(Y)$

covariance

$Cov(X,Y) = 0$

Independence

CDF

cumulative density function. probability that a random variable will take on a value  $\leq$  given value. integral of PDF

PDF

probability density function. probability that a random variable will take on a given value. derivative of CDF.

### Block 2 Quiz 2 (cont)

`rexp(# of trials, mu) + 1 ///` exponential distribution

`mean(results < givenNumber)`

`pexp(xValueNumber, rate = mu)` exponential distribution

### Block 3

`lm()` im not done with this!

bootstrapping



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