Statistical Analysis of Salt Flooding on Juvenile Maritime Tree Species

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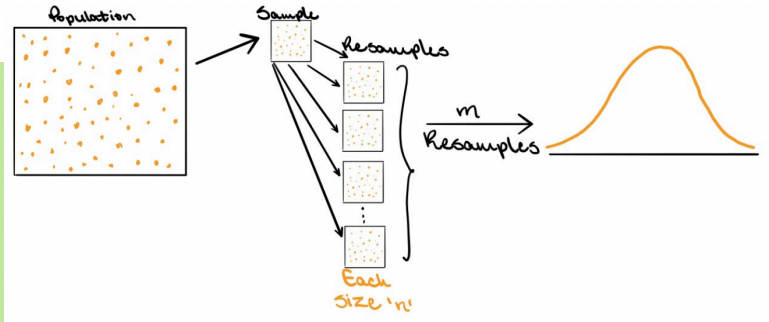
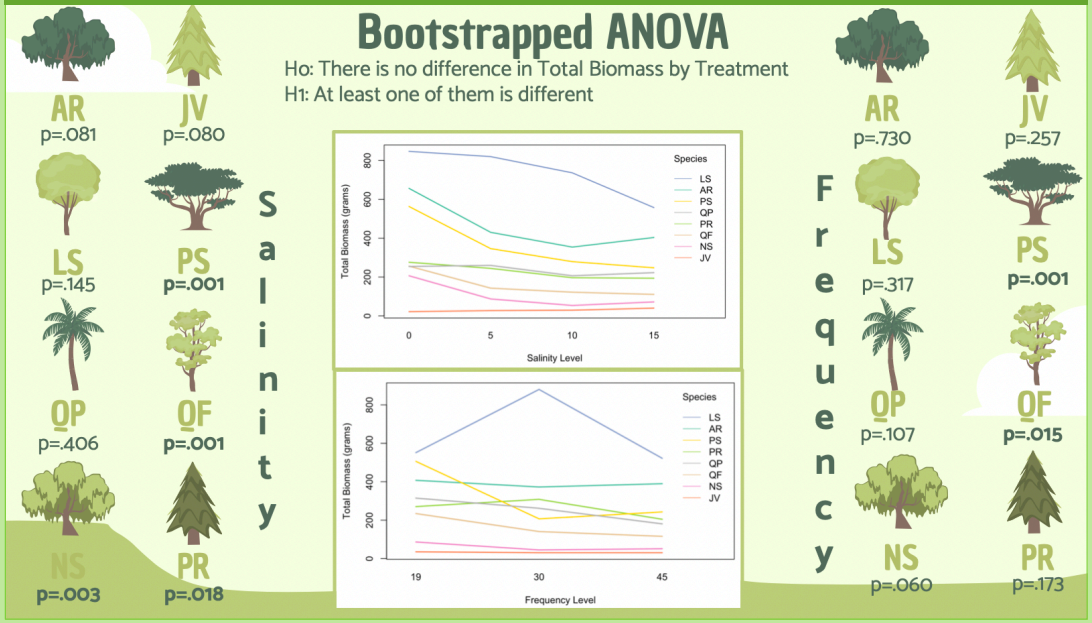
Background

What is Bootstrapping?

- Bootstrapping is sampling with replacement from observed data to create simulated samples. These simulated samples estimate the statistic of interest.
- Bootstrapping is a useful alternative to the traditional method of hypothesis testing.
- This method can be useful when the data does not meet the assumption of normality or equal variance.



Results



Methodology

Research Question: HOW DOES SALINITY AFFECT JUVENILE COASTAL TREES?

Research Hypothesis: As salinity goes up, the biomass will decrease. As frequency increases, the biomass will decrease.

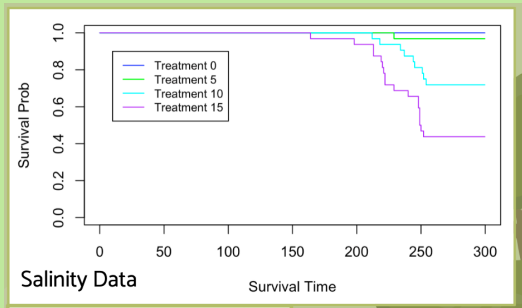
Explanatory
Treatments
Salinity Level
(0,10,15,20)
Frequency
(19,30,45)
Species

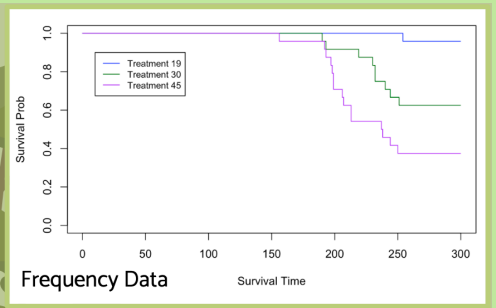
Response
Total Biomass
(grams)
Mortality
(Julian Date)

Descriptives (2 Experiments)

Salinity Data	Frequency Data
128 Trees	72 Trees
8 Species	8 Species
4 Salinity Levels	3 Frequency Levels
4 Repetitions	3 Repetitions

Survival Analysis





	n	events	median
Treatment=0	32	0	NA
Treatment=5	32	1	NA
Treatment=10	32	9	NA
Treatment=15	32	18	250

	n	events	median
Treatment=19	24	1	NA
Treatment=30	24	9	NA
Treatment=45	24	15	238

Pairwise comparisons using Log-Rank test

data: SalinityData and Treatment

	0	5	10
5	1.0000	-	-
10	0.0078	0.0408	-
15	3.0e-06	1.9e-05	0.1005

P value adjustment method: bonferroni

Pairwise comparisons using Log-Rank test

data: freqdata and Treatment

	19	30
30	0.011	-
45	2.8e-05	0.150

P value adjustment method: bonferroni