COMMONLY USED STATISTICAL TESTS IN ASR

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CHI-SQUARE TESTS

- Best uses:
  - Likert scales (Ex: on a scale of 1-7 how much do you agree with the following example?)
  - Data in discrete units (non-continuous)
  - Qualitative data
- Graph types:
  - Bar graphs comparing responses
  - Double bar graphs comparing observed and expected
  - Double line graphs comparing observed and expected

CHI-SQUARE TESTS

- Likert scale example

	Number of responses per category of Likert Scale				
Question	1 on Likert scale	2 on Likert scale	3 on Likert scale	4 on Likert scale	5 on Likert scale
How much do you agree that red gummy bears are best?	25	43	68	99	117

- Observed= actual data collected above
- Expected= (usually) an equal distribution of all answers to indicate no trend whatsoever

CHI-SQUARE TESTS

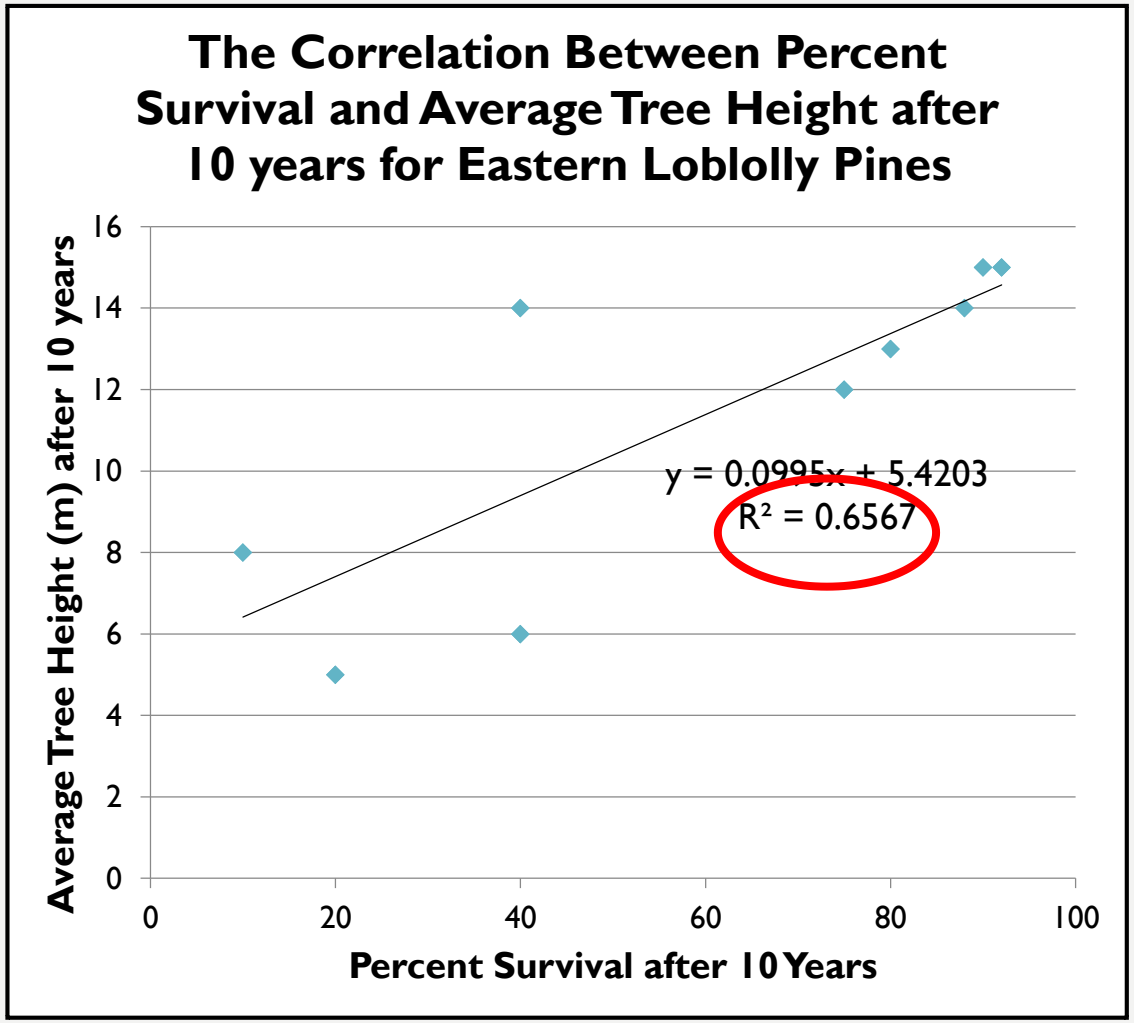
- Output= p-value
- P-value= the probability that these results would occur again due to chance
- The lower the p-value, the more statistically significant the results
- Usual alpha level of p=0.05
- Online calculators available (links on blog)

SCATTERPLOTS AND COEFFICIENTS OF DETERMINATION

- Best uses
  - Continuous data (ex: GDP, Age, Height, Population size)
- Measures the strength of the relationship between two variables

SCATTERPLOTS AND COEFFICIENTS OF DETERMINATION

- Output= R^2 value
- R^2 value= coefficient of determination
  - A numerical value indicating the strength of the relationship
  - R^2 value ≥ 0.5 indicates a strong relationships
  - Relationships can be positive (both variables increase or decrease together) or negative (one variable decreases while the other increases, and vice versa)



T-TESTS AND ANOVA TESTS COMPARED

T- TESTS

- Compares the means of TWO groups
- Ex: comparing average exam scores for two APES classes

ANOVA

- Compares the means of THREE OR MORE groups
- Ex: comparing average exam scores for four APES classes

- Output for both: p-value
- **T-TESTS AND ANOVA TESTS CANNOT BE USED FOR LIKERT SCALES!!**
- Online calculators available on the blog for both.