

Statistical Literacy for Everyone

1. *Stats are numbers in context. Social construction. Where do stats come from? Association and Causation. Take CARE1. Variation in measurements.*
2. *Comparing amounts and percentages. Take CARE2. Confounding, study design and effect size, Famous studies.*

Statistical Literacy for Citizens

3. *Measurements: Ranks, %tiles Center, Comparisons. Variation: Spread, Z-scores Measurement Comparisons: Confounder control: Selecting and Stratifying*
4. *Describing ratios: Function. Preposition, Ratio & Percent grammar. Percentage, Rate and Chance Grammar. Reading tables and graphs of ratios.*
5. *Comparing ratios; Named ratio and likely grammar. Percentage and Cases attributable. Evaluating survey data.% of vote vs chance of Winning*
6. *Explanatory statistics: Confusion inverse; Effect size; s^2 , RR, Medical tests, 3 variables, Law of Very Large Numbers. B'day problem.*
7. *Randomness, Coincidence, Sampling and Basic Chance-Based Distributions Inference: Confidence intervals, Statistical Significances. Confounder influence.*

Statistical Literacy for Decision Makers

8. *Where data comes from. Describing Data. Classifying data by type of graph. Classifying data by type of comparison. Study designs and confounder suppression. Decision making, choice of standards and influence of the outcome.*
9. *Reading and describing tables and graphs: Cross-sectional and longitudinal. Reading and analyzing studies and news stories.*
10. *Distributions Discrete: Binomial, Poisson, Central Limit Theorem. Distributions Continuous: Uniform, Normal, Log-Normal, Exponential & Logistic*
11. *Predictive statistics: Trend line and linear regression. Prediction Interval Predictive statistics: Multivariate and logistic regression; Classification*
12. *Explanatory statistics: Confusion of the Inverse, Cases/Pct attributable, Standardizing percentage data; Cornfield conditions and Effect Size*
13. *Randomness: Inference, CLT, Hypothesis tests, Type 1 and Type 2 Error. Bayes Rule, $P(H|D)$. Clinical trials and their flaws.*
14. *Causation: Scientific Experiments, Confounding and Clinical Trials Causation: Observational Statistics: Effect size, Standardize and Cornfield Cnd.*

Statistical Literacy for citizens (7 chapters): 1-7 [7 weeks]. Optional Ch 9 and 14.

Statistical Literacy for Decision Makers (9 chapters): 1-2, 8-14 [9 weeks]

Both plans leave instructors time – at least 3 weeks – to investigate related topics in more detail.

SL100 instructors may focus more on news stories, press releases and case studies.

SL102 instructors may focus more on statistical inference or on using Excel to summarize and present data..