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CSC-591: Foundations of Data Science
T/Th. 12:50-2:05pm. EBI-1005.

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W14: 11/17/15-19/12/15

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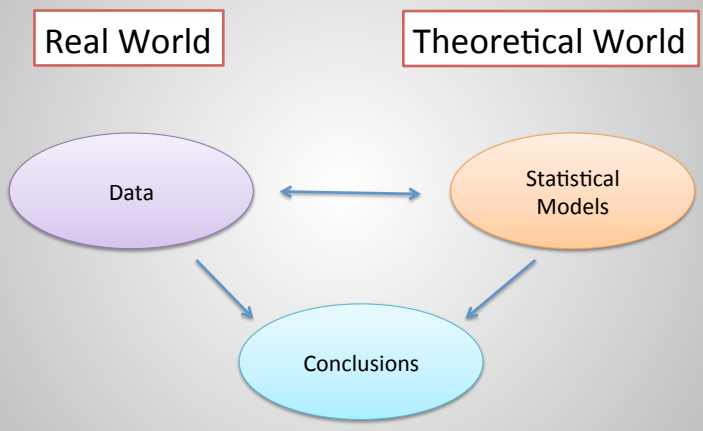
Big Picture of Statistical Inference



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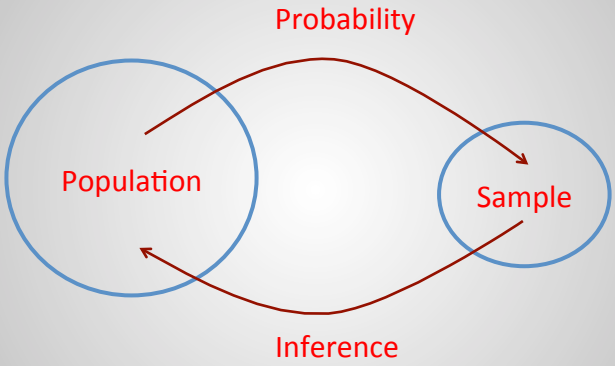
Big Picture of Statistical Inference



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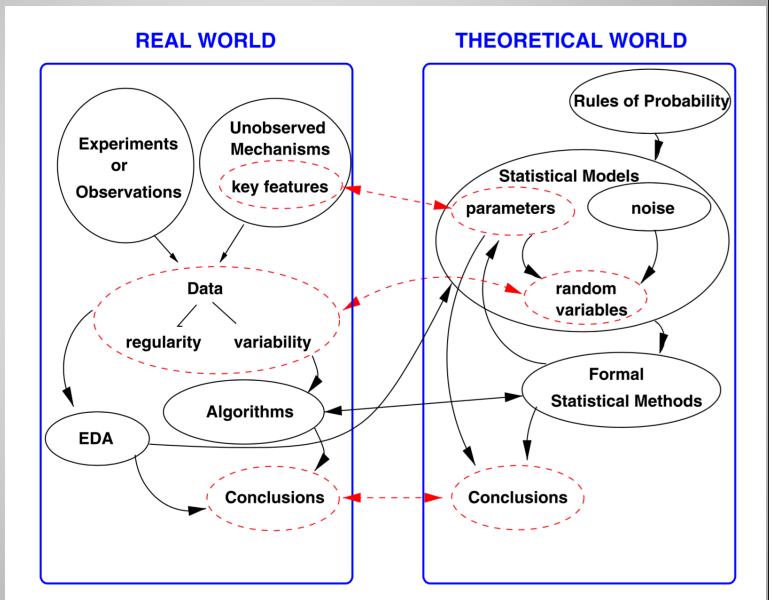

R. E. Kass

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Statistical Inference

- Statistical inference consists of those methods by which one makes inferences or generalizations about a population.

Classical Method of estimating a population parameter, whereby inferences are based strictly on information obtained from a random sample selected from the population

Bayesian method, which utilizes prior subjective knowledge about the probability distribution of the unknown parameters in conjunction with the information provided by the sample data

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Statistical Inference

- A statistical model is a set of assumptions concerning the generation of the observed data
  - Parametric and Nonparametric
- The conclusion of a statistical inference is a statistical proposition. Some common forms of statistical proposition are the following:
  - a point estimate, i.e. a particular value that best approximates some parameter of interest;
  - an interval estimate, e.g. a confidence interval, i.e. an interval constructed using a dataset drawn from a population so that, under repeated sampling of such datasets, such intervals would contain the true parameter value with the probability at the stated confidence level;
  - rejection of a hypothesis