

Fall semester, 2005

Special section of STA 2014, Introduction to Statistics for Health/Social Sciences

Statistics for Biology



Mondays & Wednesdays
4:30-5:45 CRN 80517

Tuesdays & Thursdays
3:05-4:20 CRN 80516

Permission is required for this section. Call 620-2653.

‘Grass is green’. ‘Is it always green?’ ‘Are all varieties are equally green?’

These questions lead us to measure greenness of grass. The progression from qualitative to quantitative is found in all the sciences, and is not by itself enough to explain why statistical methods are of special use to the biologist.

If we measure greenness on five samples today and on five more samples in a week’s time, the ten measurements may well all be different. This is a simple example of biological variation, a statistical measure.

The statistical approach is not concerned to any great extent with the causes of variation. In comparing our ten samples of grass, we may be able to decide whether there are important differences in greenness between the two groups of five without knowing why the samples differ within the groups. This approach gives biologists a tool, known as statistical inference.



We must remember that, although the variation can be regarded as random, there must be causes which would explain it if we knew them. However when we look for these causes we will continue to encounter random variation, so will again need to use statistical tools.



When we set out to discover why greenness varied we would at some stage, arrive at a list of possible causes: soil, water content, hours of sunshine- and would like to measure and compare their effects. To do this we should have to change the state of nature and observe what effect the changes had on greenness. The process is known as experiment, and the knowledge of statistics helps the biologists to design an experiment.

If you want to be a biologist or a specialist in a related field, take the section of your recommended course- STA 2014 that is listed as ‘for the biologists’.

For further information contact the Department of Mathematics and Statistics at 620-3711 or stop by the office: Building 14/Room 2731