INFLUENCE

STAT 341

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WHAT IS INFLUENCE?

- How can we evaluate a population attribute a(P)?
  - One way: We can measure the effect that removing the variate value for a unit, y_u, has on the attribute
  - This is called the **influence** of that variate value
  - Mathematically, the influence is computed using the following equation:

$$\Delta(a,u) = a(y_1,\ldots,y_{u-1},y_u,y_{u+1},\ldots,y_N) - a(y_1,\ldots,y_{u-1},y_{u+1},\ldots,y_N)$$

    - where the attribute is evaluated including unit u and is subtracted by the attributed evaluated **not including** u
    - We calculate this equation for every unit in the population

WHY USE INFLUENCE?

- Influence is a measure that is often used for outlier detection
- Usually, most variate values in a population have a similar influence value but if one variate value y_u has a very different influence measurement this can give us information
  - This value may be an error so we may need to explore it further
  - Since it is very different from other values, it may be an interesting unit to investigate further

INFLUENCE PLOT