



Parameter Estimation

- 'Parameter' is just a fancy word that means 'useful number'
- Parameters can be things like averages, sums, or even functions of other parameters (like the difference between groups)
- Parameter estimation is at the heart of all research. Everything we do in research is designed to give us the best estimate of something we are interested in, so that we might gain some insight into "the truth".
- "Bias" is a problem in epidemiological research because it impairs our ability to estimate parameters accurately
- Because we have limited resources we are obliged to sample. Because we are obliged to sample we are obliged to estimate.
- This introduces the potential for error because we might have sampled in such a way as to produce an estimate that is nowhere near the true population value.
- The population where you get your sample is the *only* population you're allowed to generalize the results to. If you only sample women, your results only apply to women. If you only sampled people aged 20 – 40 years, you cannot apply these results to the elderly.

Test yourself:

- I want to know how many calories I eat on an average day. What is my parameter of interest and how could I go about estimating it?
- I have a new drug that prevents acne. From early testing I suspect that it works on men better than women. What parameter do I need to estimate to work out if this is true?

Other things to think about:

- How do we know how many people we need in our sample?
- Can we quantify our *confidence in the estimate* we come up with?

Good luck out there!!

www.survivestatistics.com