# Chapter 1

#### Statistics and the Scientific Method

1.1

1. The population of interest is all salmon released from fish farms located in Norway.
2. The samples are the two batches of salmon released (1,996 and 2,499 in northern and southern Norway, respectively).
3. The migration pattern and survival of salmon released from fish farms.
4. Since the sample is only a small proportion of the whole population, it is necessary to evaluate what the mean weight may be for any other random selection of farmed salmon.

1.2

1. All private water wells.
2. The 100 private water wells in or near the Barnett Shale in Texas.
3. The level of contaminants in the water wells.
4. We want to relate the level of contaminants of the 100 points in the sample to the level in the whole suspect area. Thus we need to know how accurate a portrayal of the population is provided by the 100 points in the sample.

1.3

1. All families that have had option of SNAP (food stamps).
2. 60,782 examined over the time period of 1968 to 2009.
3. Adult health and economic outcomes (specifically, the incidence of metabolic health outcomes and economic self-sufficiency).
4. In order to evaluate how closely the sample families represent the American population over this time period.

1.4

1. All head impacts resulting from playing football over a given period of time.
2. The 1,281,444 head impacts recorded.
3. The number (or percent) of concussions suffered through these impacts.
4. The advances in tackling techniques imply that there is variability in how a tackle is performed. We need to see if our sample was representative of the hits that may be sustained.

1.5

1. The population of interest is the population of those who would vote in the 2004 senatorial campaign.
2. The population from which the sample was selected is registered voters in this state.
3. The sample will adequately represent the population, unless there is a difference between registered voters in the state and those who would vote in the 2004 senatorial campaign.
4. The results from a second random sample of 5,000 registered voters will not be exactly the same as the results from the initial sample. Results vary from sample to sample. With either sample we hope that the results will be close to that of the views of the population of interest.

1.6

1. The professor’s population of interest is college freshmen at his university.
2. The sampled population is all freshmen enrolled in HIST 101.
3. Yes, there is a major difference in the two populations. Those enrolled in HIST 101 may not accurately reflect the population of all freshmen at his university. For example, they might be more interested in history.
4. Had the professor lectured on the American Revolution, those students in HIST 101 would be more likely to know which country controlled the original 13 states prior to the American Revolution than other freshmen at the university.