Chapter 1 - Basic Concepts

1.1 The entire student body of your college or university would be considered a population under any circumstances in which you want to generalize *only* to the student body of your college or university and no further.

1.3 The students of your college or university are a nonrandom sample of U.S. students, for example, because all U.S. students do not have an equal chance of being included in the sample.

1.5 Independent variables: (a) First grade students who attended Kindergarten versus those who did not. (b) Seniors, Masters, Submasters, and Juniors as categories of marathon runners. Dependent variables: (a) Social-adjustment scores assigned by first-grade teachers. (b) Time to run 26 miles, 385 yards.

1.7 Continuous variables: (a) Length of gestation. (b) Typing speed in words/minute. (c) Level of serotonin in a particular subcortical nucleus.

1.9 The planners of a marathon race would like to know the average times of Senior, Master, Submaster, and Junior runners so as to facilitate planning for handling the finish line.

1.11 Categorical data: (a) The number of Brown University students in an October, 1984, referendum voting For and the number voting Against the university's stockpiling suicide pills in case of nuclear disaster. (b) The number of students in a small midwestern college who are white, African-American, Hispanic-American, Asian, Native American, Alaskan Native, or Other. (c) One year after an experimental program to treat alcoholism, the number of participants who are "still on the wagon", "drinking without having sought treatment", or "again under treatment".

1.13 Children's scores in an inner-city elementary school could be reported numerically (a measurement variable), or the children could be categorized as Bluebirds ($X > 90$), Robins ($X = 70$–90), or Cardinals ($X < 70$).

1.15 For adults of a given height and sex, weight is a ratio scale of body weight, but it is *at best* an ordinal scale of physical health.

1.17 Speed is probably a much better index of motivation than of learning.

1.19 a. The final grade point averages for low-achieving students taking courses that interested them could be compared with the averages of low-achieving students

taking courses that don’t interest them. b. The quality of communication could be compared for happily versus unhappily married couples.