**Chapter 1 – Answers to All Exercises**

1. Once our research question, the hypothesis, and the study variables have been selected, we move on to the next stage of the research process – measuring and collecting the data. The choice of a particular data collection method or instrument depends to our study objective. After our data have been collected, we have to find a systematic way to organize and analyze our data and set up some set of procedures to decide what we mean.

2. a. Females have less education than males; males retire at a greater age than females.

1. Whites have greater incomes than any other race. Hispanics have incomes greater than blacks but less than whites.
2. As the number of police in a city increases, the crime rate will decrease.
3. Life satisfaction may vary with marital status, with satisfaction higher among married persons than those not married.

e. As military expenditures as a percentage of GNP increase, the overall level of security may decrease, as witnessed by many Third World countries, or in the troubled Middle East. In fact, military expenditures (except during the Cold War) often increase *because* of rising conflict, but those expenditures may or may not guarantee more security.

f. Minorities are more likely to care for their elderly parents than non-minorities.

3. a. Interval ratio

b. Nominal

c. Interval ratio

d. Ordinal

e. Nominal

f. Interval ratio

g. Interval ratio

h. Nominal

4. a. Discrete

c. Continuous

f. Discrete

g. Continuous

5. There are many possible variables from which to choose. Some of the most common selections by students will probably be: type of occupation or industry, work experience, and educational training or expertise. Students should first address the relationship between these variables and gender. For example, Men have more years of work experience than women in the same occupation. Student may also consider measuring structural bias or discrimination.

6. a. Unemployment records could be used to determine the actual number of unemployed; a descriptive statistic based upon the population.

b. A survey is taken to estimate student opinions about the quality of food; inferential statistic.

c. National health records can be used to determine the incidence rate of breast cancer among all Asian women, so this would be a descriptive statistic.

d. The ratings will be gathered from a survey, so this is inferential.

e. A university should be able to report GPA by major, so this is a descriptive statistic based upon the population.

f. In theory, the U.S. records accurately all immigrants to this country. Therefore, the number of South East Asian immigrants would be a descriptive statistic. However, because of illegal immigration, surveys are also taken to estimate the total number of legal and unauthorized immigrants. In that event, the number of immigrants would be an inferential statistic.

7. In general, the difficulty with studying criminal acts is that the criminal act needs to be reported first. It is estimated that the majority of crimes are not reported to authorities. Data on reported crimes are routinely collected by the Federal Bureau of Investigation and the Bureau of Justice.

8. At the nominal level, a simple measure of political participation is whether or not someone voted in the most recent general election. This variable would be coded either “yes” or “no.”

At the ordinal level, a composite measure could be constructed of both voting and political party membership, like this:

|  |  |  |
| --- | --- | --- |
|  | Behavior | Code |
|  | Didn’t vote, no membership | 0 |
|  | Voted, no membership OR Membership, didn’t vote | 1 |
|  | Voted and membership | 2 |

These codes are ordinal in scale because the amount of political participation can be ranked from high to low. Other possible ordinal variables can be constructed from other sets of behaviors, such as working in a candidate’s campaign, signing a petition, and so forth. The key points are to create a variable whose values can be ranked and whose values are not on an interval-ratio scale.

At the interval-ratio level, political participation could be measured by the percentage of elections in which a person has voted since becoming eligible to vote, or the amount of money a person donated to political candidates during some specified time period.

9.

Individual age: This variable could be measured as an interval-ratio variable, with actual age in years reported. As discussed in the chapter, interval ratio variables are the highest level of measurement and can also be measured at ordinal or nominal levels.

Annual income: This variable could be measured as an interval-ratio variable, with actual dollar earnings reported.

Religiosity: This variable could be measured in several ways. For example, as church attendance, the variable could be ordinal (number of times attended church in a month: every week, at least twice a month, less than two times a month, none at all).

Student performance: This could be measured as an interval-ratio variable as GPA or test score.

Social class: This variable is an ordinal variable, with categories low, working, middle and upper.

Attitude toward gun control: This variable is an ordinal variable, with categories strongly disagree, disagree, neutral, agree and strongly agree.

**SPSS Solutions**

**NA**