Section 1.2, Data Classification

1 Definitions and Terminology

- **Qualitative data** consist of attributes, labels, and other non-numerical entries. Sometimes this is called "categorical" data.

- **Quantitative data** consist of numerical measurements or counts.

- There are four different **levels of measurement** which determines which statistical calculations are meaningful. They are nominal, ordinal, interval, and ratio.

- Data at the **nominal level of measurement** are qualitative. No mathematical computations can be carried out.

- Data at the **ordinal level of measurement** are quantitative or qualitative. They can be arranged in order (ranked), but differences between entries are not meaningful.

- Data at the **interval level of measurement** are quantitative. They can be ordered, and meaningful differences between data entries can be calculated. The zero entry represents a position on a scale, but the entry is not inherently zero.

- Data at the **ratio level of measurement** satisfy the requirements for data at the interval level, except that the zero entry is an inherent zero.

2 Examples

1. Identify each of the following as qualitative or quantitative:

   (a) Gender Qualitative

   (b) High school GPA. Quantitative

   (c) The letter grade that you will receive for this course. Qualitative

   (d) Annual salary Quantitative

2. Identify each of the following as being at the nominal, ordinal, interval, or ratio level of measurement:

   (a) The years in which the LA Lakers won the NBA championship (for example, 2010) Interval

   (b) A restaurant's food and service rating (from 1–5 stars, with 1 being the lowest) Ordinal

   (c) A restaurant's food and service rating ("Horrible," "Poor", "Average," "Good," "Great") Ordinal

   (d) A collection of zip codes Nominal (a zip code is a number acting as a label)

   (e) Total touchdowns thrown by each quarterback in the NFL for the 2011 season Ratio

   (f) Annual salary Ratio

   (g) Today's temperature in degrees Fahrenheit Interval

   (h) Motion Picture Ratings (G, PG, PG-13, etc.) Ordinal