Technical but Important: Five More Basic Principles

SOLUTIONS

1. For each of the following topics, indicate whether the variable or variables used to measure it are continuous or categorical, and single or multiple response.
   a. Categorical, single-response.
   b. Continuous, single-response.
   c. Continuous, multiple-response.
   d. Categorical, multiple-response.
   e. Continuous, single-response.
   f. Categorical, multiple-response.

3. “Squeeky the mouse solved the maze in an average of 10.4 seconds over nine trials.”

5. All measurements must be converted into consistent units (scale and system of measurement). I chose to convert all measurements to kilograms, using the conversion factor 2.2 pounds/kilogram (see revised table 4A). “Of the four specimens compared here, specimen 3 is the heaviest (0.70 kilograms). It is about twice as heavy as the lightest (specimen 4, 0.34 kg.). The other two specimens were about 70% as heavy as specimen 3.”

<table>
<thead>
<tr>
<th>Specimen</th>
<th>Weight (original units)</th>
<th>Weight (kg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.2 lbs.</td>
<td>0.54</td>
</tr>
<tr>
<td>2</td>
<td>500 grams</td>
<td>0.50</td>
</tr>
<tr>
<td>3</td>
<td>0.7 kilograms</td>
<td>0.70</td>
</tr>
<tr>
<td>4</td>
<td>12 ounces</td>
<td>0.34</td>
</tr>
</tbody>
</table>

7. Identify pertinent standards or cutoffs and other information needed to answer each of the following questions.
   a. Speed limit where he was driving and his actual speed.
   b. The weight-bearing capacity of the alloy (in weight per unit area) and the expected weight load (again, in weight per area) in the library.
   c. Her current height and a growth chart (height for age) for girls.
   d. Leah’s height and the minimum height requirement for the Ferris wheel.
e. The rate of inflation, current tuition, and rates of tuition increase at Public U over the past few years.
f. Today’s ozone measurement and the cutoff for an ozone warning.

9. a. Taken together, the two statements imply that 1 in 125,000 Americans are HIV positive and know it, clearly a misstatement of the facts.
b. Rewrite the second statement to clarify the intended meaning.
   i. “Half of HIV-positive Americans know they are infected.”
   ii. “1 in 500 Americans is HIV positive and knows it.”