Lesson 1.1 Guided Notes

Quantitative vs. Categorical Data

Quantitative data: Data that is _______________ (think ‘quantities’). The values have an inherent ___________.

List several examples of quantitative data:

Categorical data: Data where values are categories or group labels, which often ________________ ________________.

List several examples of categorical data:

<table>
<thead>
<tr>
<th>Student</th>
<th>Height (in)</th>
<th>Dominant Hand</th>
<th>Final Exam Score</th>
<th>Home Zip Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bill</td>
<td>72</td>
<td>Left</td>
<td>77</td>
<td>68494</td>
</tr>
<tr>
<td>Julius</td>
<td>64</td>
<td>Right</td>
<td>83</td>
<td>68492</td>
</tr>
<tr>
<td>Yesenia</td>
<td>67</td>
<td>Right</td>
<td>91</td>
<td>68490</td>
</tr>
</tbody>
</table>

1. Label each of the variables (height, favorite color, final exam score, home zip code) as either quantitative or categorical. For each, explain your reasoning.

Data Visualization & Misleading Graphs

How to spot a misleading graphic:

1. It may not have axis labels or _________________.
2. It may ________________ the x or y axis, or start at a weird place.
3. It may use ________________ for bar graphs (called a ‘pictograph’).
Example 1: “Kobe was a ball hog”

For each example, describe why the data visual might be misleading. Then, sketch a more transparent graph of the same data.

Example 2: “Chevy builds the most dependable trucks”

Lesson 1.1 Discussion

Discussion Question: Graph A was presented by a Republican Congressman during a hearing. Graph B was tweeted by a Democratic House political committee (the DCCC), with the caption: “Thanks, @JoeBiden.” Why might each graph be misleading? Explain.
Lesson 1.1 Practice

Please complete all exercises before turning to the next page!

Graphic ‘C’ was published on the White House’s official blog during the Obama Administration. It uses national school data prepared by the Department of Education.

Graphic ‘D’ was presented at summit of climate change skeptics. It uses global land-ocean temperature data from NASA’s Goddard Institute for Space Studies.

Graphic ‘E’ was shared on Twitter and has an unknown origin.

For each graph, answer the following questions: Is the visual misleading? Why or why not? If it is misleading, how would you change it?
This page presents the same data, but with adjusted graphs. For each graph, answer the following question: What makes this version of the graph less misleading? Explain.
Problems 1-6: Determine whether the variable described would produce data that is categorical or quantitative.

1) Number of leaves on each fig tree in an orchard

2) Mile-run times for students in a gym class

3) Dog breeds represented in dog food advertisements

4) Area codes in school staff’s cell phone numbers

5) Area of homeowners’ property covered in pavement

6) Whether voters agree or disagree with the local referendum

Further Practice

Teachers: We recommend providing additional practice exercises from your AP Stats textbook or from prior AP Stats exams. The following textbook sections and AP exam questions are aligned to the content covered in this lesson.

- *The Practice of Statistics*, 4th-6th editions: introduction and section 1.1
- *Statistics: Learning from Data*, 2nd edition: sections 2.1 & 2.5-2.6
- *Advanced High School Statistics*, sections 1.1 - 1.2
- *AP Exam Free Response Questions (FRQs)*: 2016 Q6 (parts a, c, e)