Skew The Script

AP Statistics Handout: Lesson 1.1

Topics: quantitative and categorical data, misleading graphs

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:

Student	Height (in)	Dominant Hand	Final Exam Score	Home Zip Code
Bill	72	Left	77	68494
Julius	64	Right	83	68492
Yesenia	67	Right	91	68490

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.
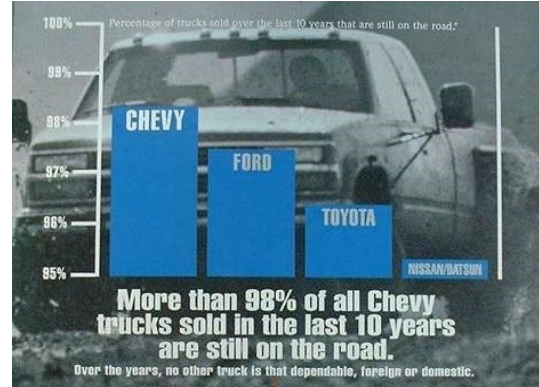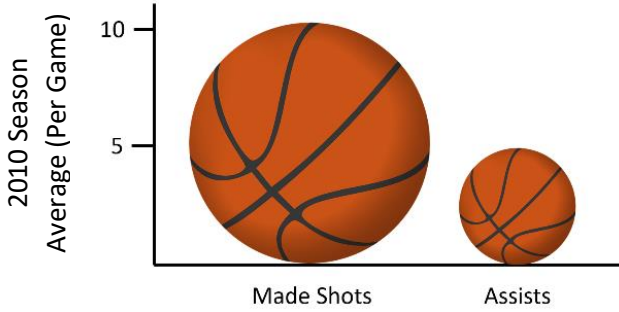
Data Visualization & Misleading Graphs

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').

Skew The Script
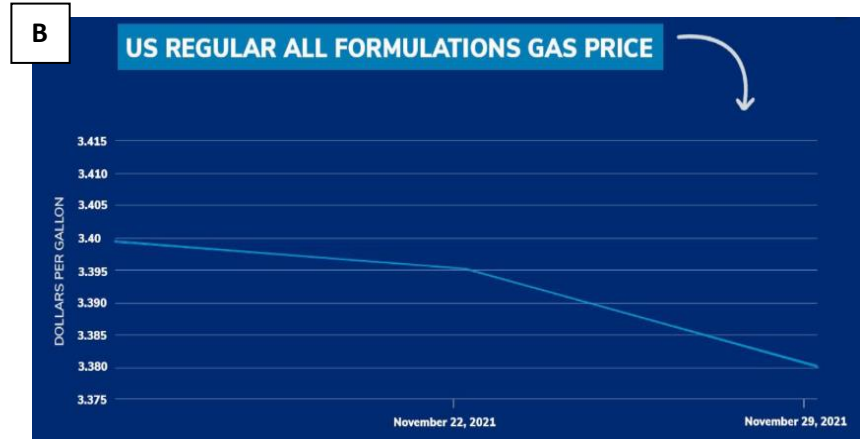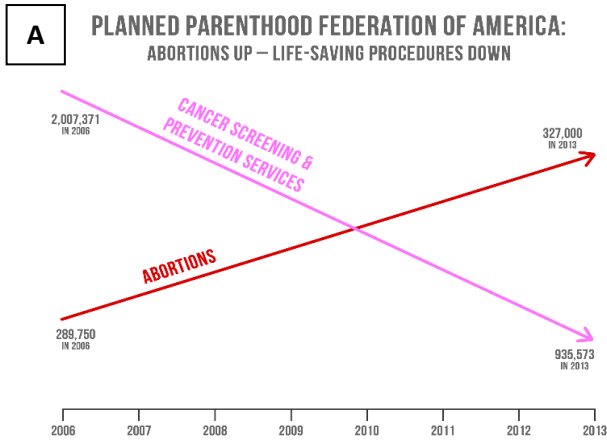
Example 1: "Kobe was a ball hog"

Example 2: "Chevy builds the most dependable trucks"

For each example, describe why the data visual might be misleading. Then, sketch a more transparent graph of the same data.
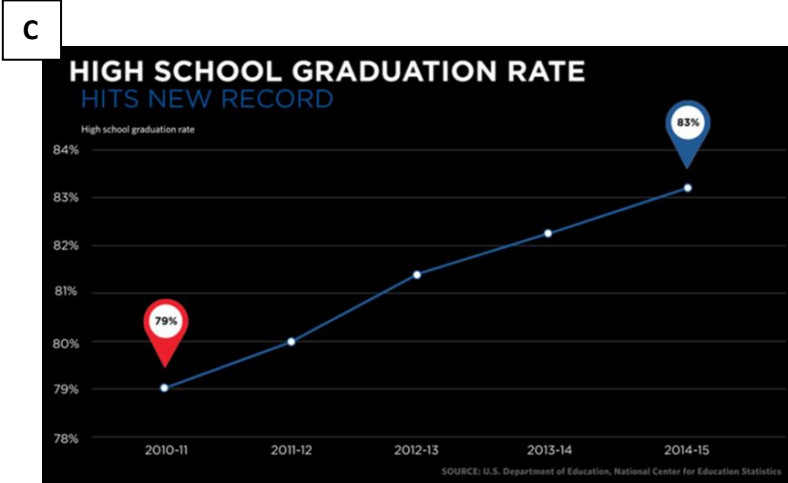
Lesson 1.1 Discussion

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.

Skew The
Script

Lesson 1.1 Practice

*Please complete all exercises **before turning to the next page**!*

C

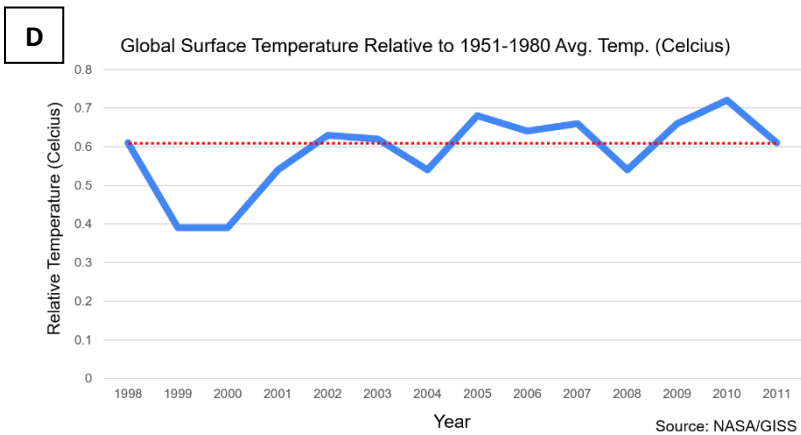**HIGH SCHOOL GRADUATION RATE**
HITS NEW RECORD

High school graduation rate

Source link: https://obamawhitehouse.archives.gov/blog/2016/10/17/graduation-rate-reaches-new-high-one-student-shares-his-story

D

Global Surface Temperature Relative to 1951-1980 Avg. Temp. (Celcius)

Source: NASA/GISS

E

Average Female Height
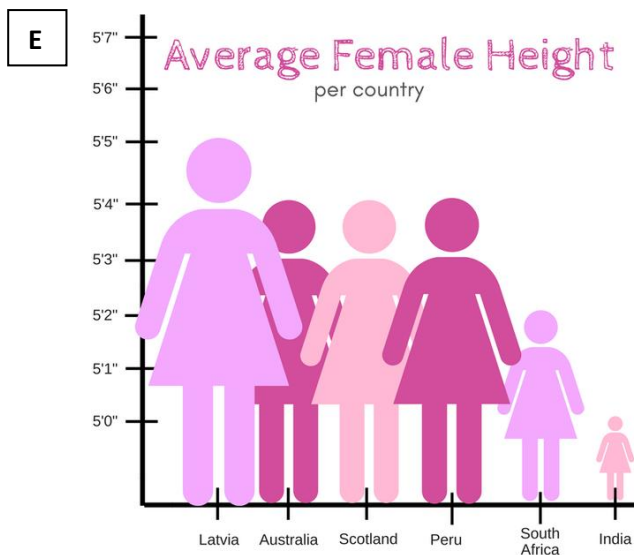per country

Graphic found by Sabah Ibrahim on twitter

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?
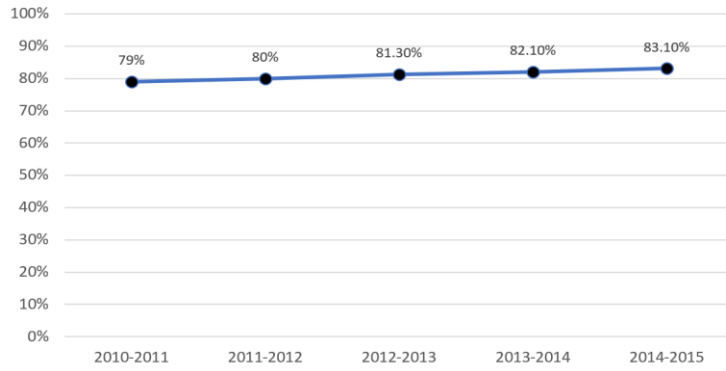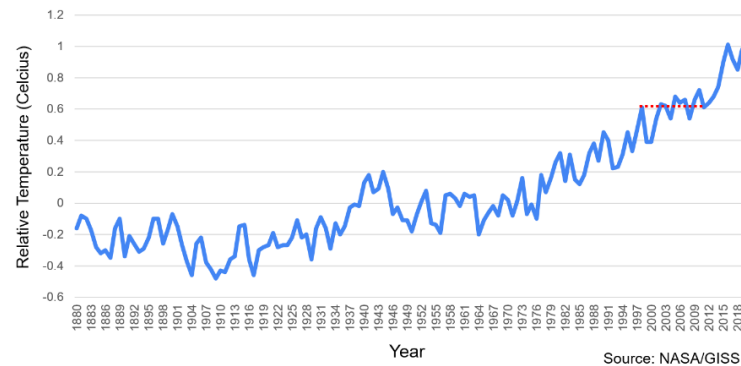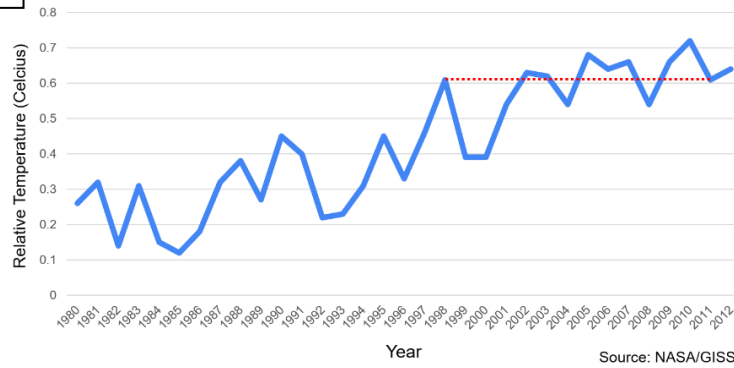
Skew The Script

C

U.S. High School Graduation Rates

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.
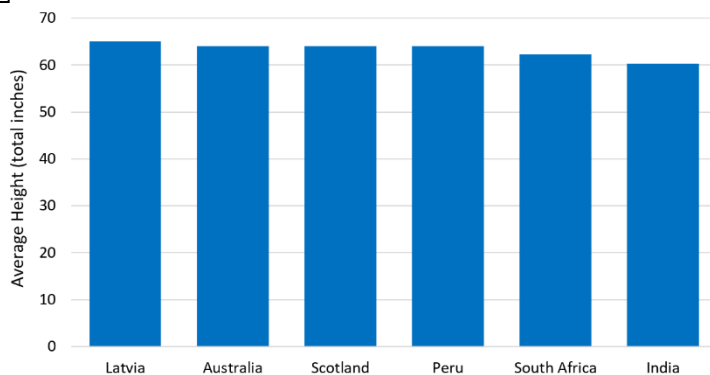
D

Global Surface Temperature Relative to 1951-1980 Avg. Temp. (Celcius)

Source: NASA/GISS

Source: NASA/GISS

E

Average Height Among Women in Different Countries

Skew The Script

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
- *Stats: Modeling the World*, 4th & 5th editions: chapters 1-2, 3rd edition: chapters 2-3
- *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)

Skew The
Script