2-5 Critical Thinking: Bad Graphs

Construction of a statistical graph can be misleading.

79/3. Ethics in Statistics

Assume that, as a newspaper reporter, you must graph data showing that increased smoking causes an increased risk of lung cancer. Given that people might be helped and lives might be saved by creating a graph that exaggerates the risk of lung cancer, is it ethical to construct such a graph?

79/4. Areas of Countries

In constructing a graph that compares the land areas of the five largest countries, you choose to depict the five areas with squares of different sizes. If the squares are drawn so that the areas are in proportion to the areas of the corresponding countries, is the resulting graph misleading? Why or why not?
2-5 Critical Thinking: Bad Graphs

79/6. Graph of Teaching Salaries See the accompanying graph that compares teaching salaries of women and men at private colleges and universities (based on data from the U.S. Department of Education). What impression does the graph create? Does the graph depict the data fairly? If not, construct a graph that depicts the data fairly.

2-5 Critical Thinking: Bad Graphs

79/7. Graph of Incomes The accompanying graph depicts average full-time incomes of women and men aged 18 and over. For a recent year, those incomes were $37,197 for women and $53,059 for men (based on data from the U.S. Census Bureau). Does the graph make a fair comparison of the data? Why or why not? If the graph distorts the data, construct a fair graph.

2-5 Critical Thinking: Bad Graphs

79/8. Graph of Oil Consumption The accompanying graph uses cylinders to represent barrels of oil consumed by the United States and Japan. Does the graph distort the data or does it depict the data fairly? Why or why not? If the graph distorts the data, construct a graph that depicts the data fairly.

2-5 Critical Thinking: Bad Graphs

79/9. Braking Distances The accompanying graph shows the braking distances for different cars measured under the same conditions. Describe the ways in which this graph may be deceptive. How much greater is the braking distance of the Acura RL than the braking distance of the Volvo S80? Draw the graph in a way that depicts the data more fairly.