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3 CHAPTER
Visualizing Data

3.1 Frequency Distributions
3.2 Displaying Qualitative Data Graphically

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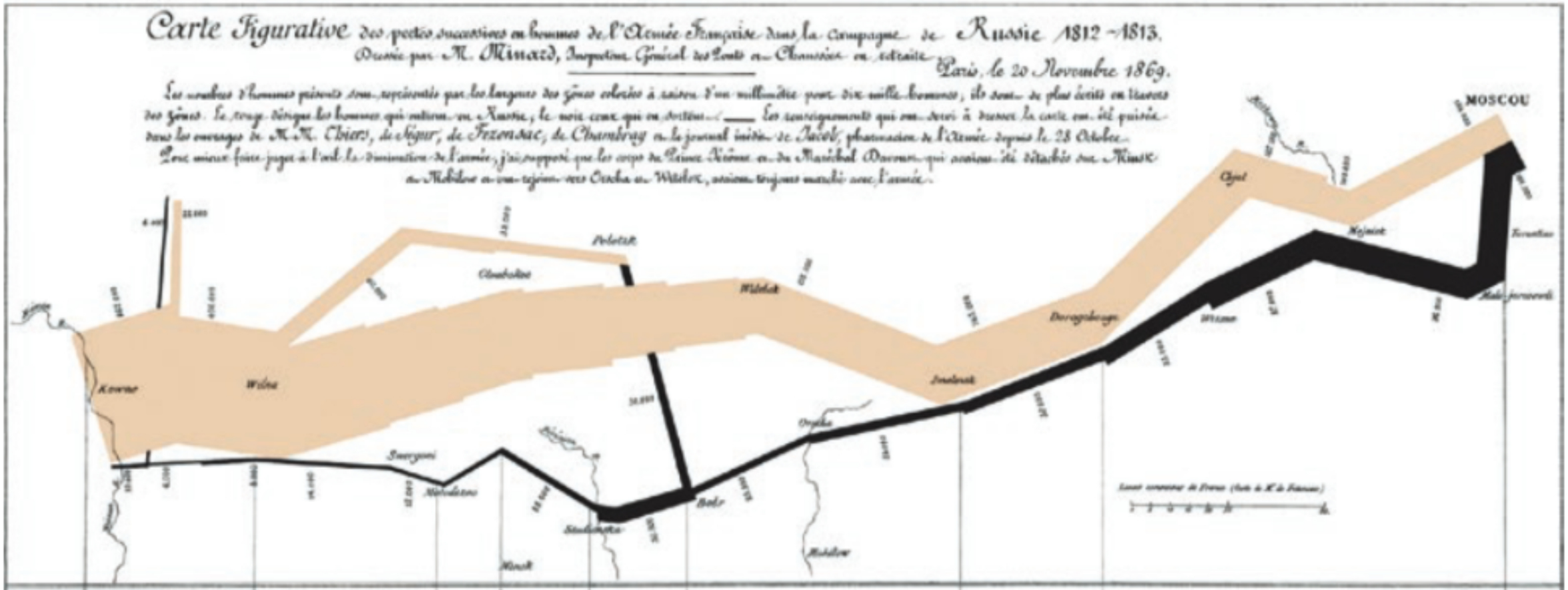
Carte Figurative des pertes successives en hommes de l'Armée Française dans la campagne de Russie 1812 – 1813.

Dressée par M. Minard, Inspecteur Général des Ponts et Chaussées en retraite.

Paris, le 20 Novembre 1869.

Les nombres d'hommes présents sont représentés par les largeurs des zônes colorées à raison d'un millimètre pour dix mille hommes ; ils sont de plus écrits en travers des zônes. Le rouge désigne les hommes qui entrent en Russie, le noir ceux qui en sortent. — Les renseignements qui ont servi à tracer la carte ont été puisés dans les ouvrages de MM. Thiers, de Ségur, de Fezensac, de Chambray et le journal inédit de Jacob, pharmacien de l'Armée depuis le 28 Octobre.

Pour mieux faire juger à l'œil la diminution de l'armée, j'ai supposé que les corps du Prince Jérôme et du Maréchal Davout qui avaient été détachés sur Minsk et Mohilow se sont rejoints vers Orcha et Witebsk, restant toujours unis avec l'armée.



Imp. Lith. Regnier et Bourdet.

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Frequency Distribution

A **frequency distribution** is a summary technique that organizes data into classes and provides in tabular form a list of the classes along with the number of observations in each class.

DEFINITION

Table 3.1.1 - Population of Individual States in 2010 and 2016

Geographic Area	Population Estimate		Change, 2010 to 2016	
	April 1, 2010	July 1, 2016	Number	Percent
Alabama	4,780,131	4,863,300	83,169	1.7
Alaska	710,249	741,894	31,645	4.5
Arizona	6,392,301	6,931,071	538,770	8.4
Arkansas	2,916,025	2,988,248	72,223	2.5
California	37,254,522	39,250,017	1,995,495	5.4
Colorado	5,029,324	5,540,545	511,221	10.2
. . .				

Frequency Distribution of Responses

In general, how would you rate the quality of American public schools?	
Excellent	462
Pretty good	288
Only fair	225
Poor	225
Not sure	50

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Frequency Distribution of Responses	
In general, how would you rate the quality of American public schools?	
Excellent	462
Pretty good	288
Only fair	225
Poor	225
Not sure	50

Total 1250

Relative Frequency Distribution of Responses	
In general, how would you rate the quality of American public schools?	
Excellent	37%
Pretty good	23%
Only fair	18%
Poor	18%
Not sure	4%

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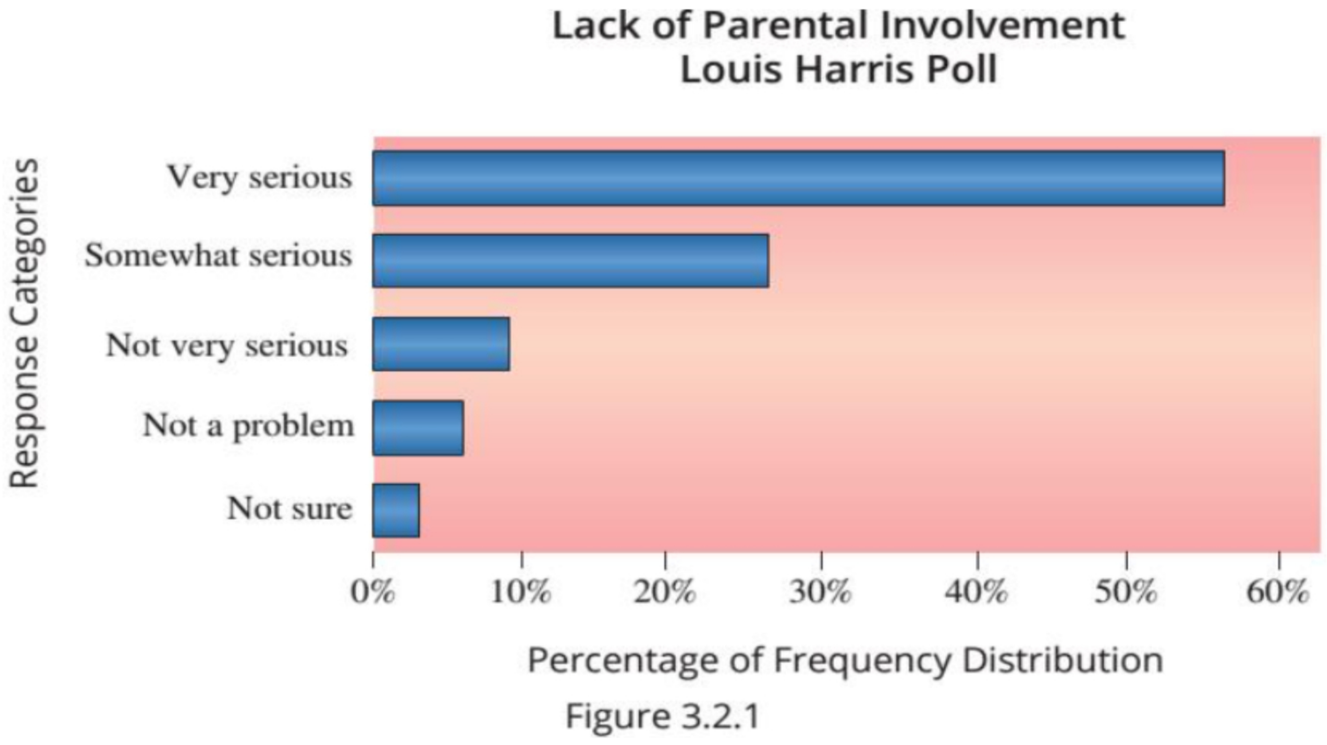

Figure 3.2.1

Frequency Distribution of Responses	
How serious is a lack of parental involvement with a child's education?	
Very serious	700
Somewhat serious	325
Not very serious	112
Not a problem	75
Not sure	38

Relative Frequency Distribution of Responses	
How serious is a lack of parental involvement with a child's education?	
Very serious	56%
Somewhat serious	26%
Not very serious	9%
Not a problem	6%
Not sure	3%

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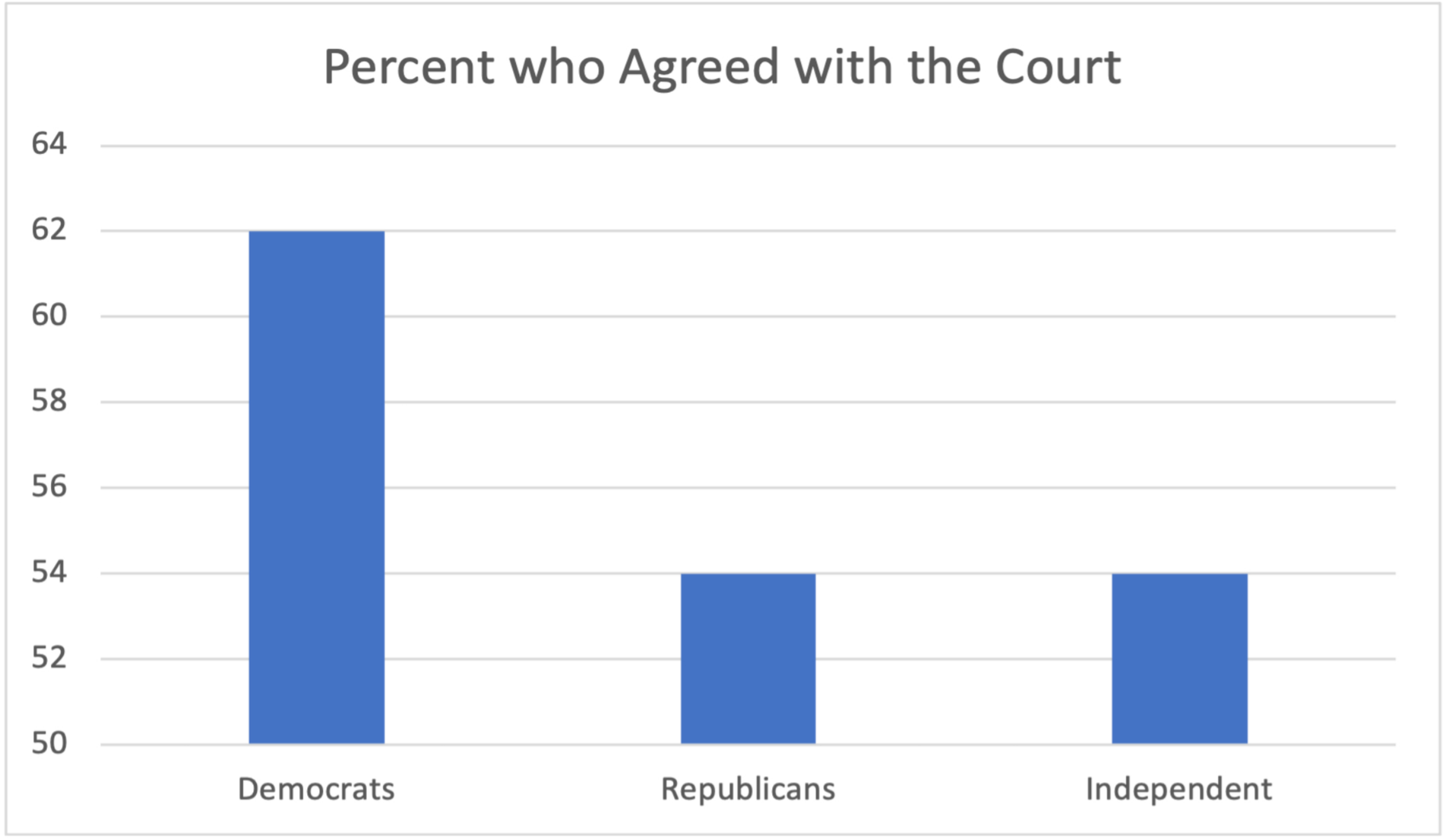

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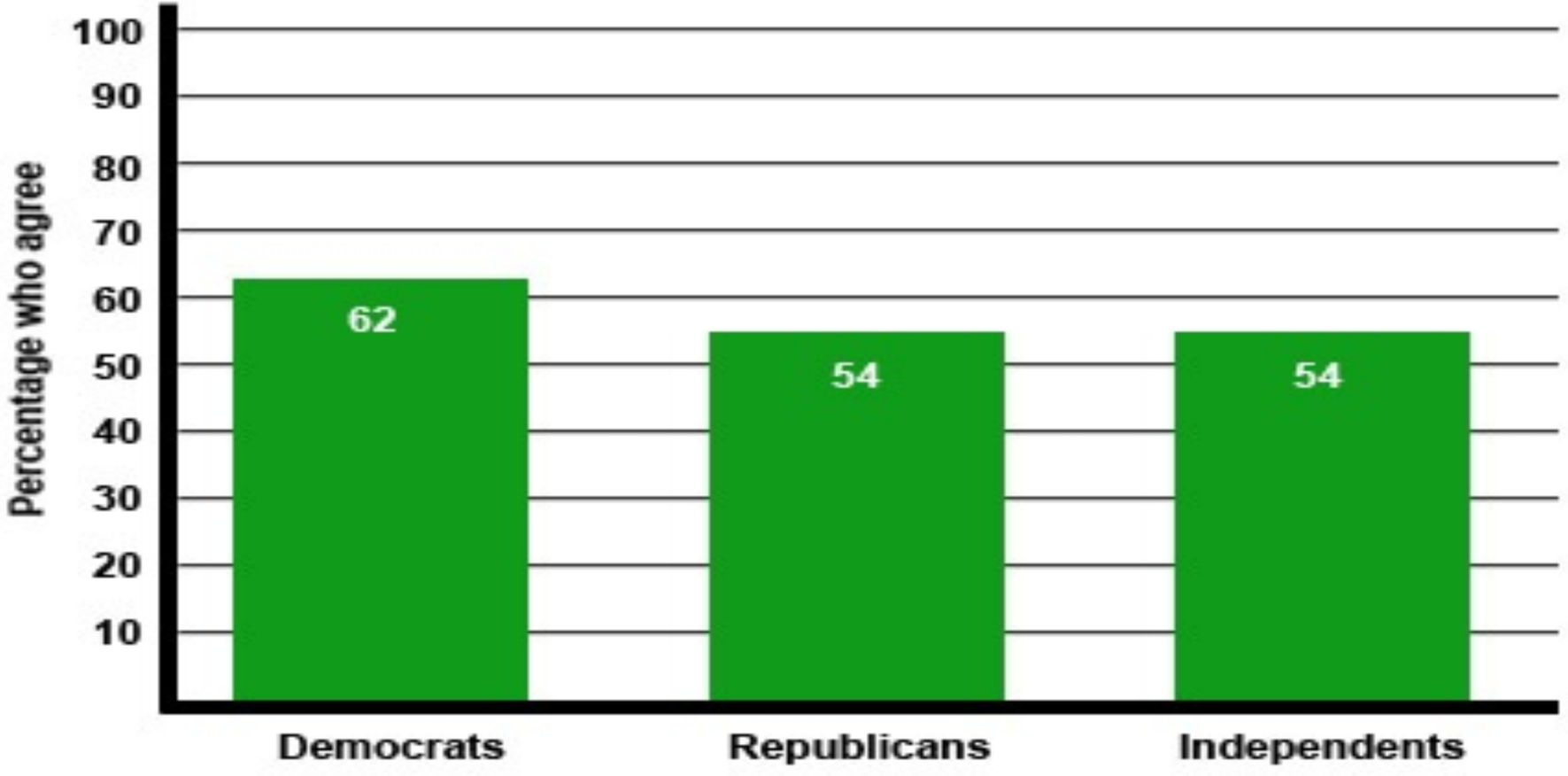
RESULTS BY PARTY: CNN/USA Today/Gallup Poll
Margin of error: +/- 7%

Question 2: Based on what you have heard or read about the case, do you agree with the court's decision to have the feeding tube removed?



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- Bar charts can be constructed horizontally or vertically. Customarily, horizontal orientation is used for categories that are descriptively labeled, and vertical (or columnar) orientation is used for categories that are numerical. It is important to remember that this idea is only a suggestion. If you believe that a vertical bar chart is more appealing, use it.
- If the categories have some associated order, they maintain that order in the bar chart. Otherwise, the categories may be listed alphabetically, in either ascending or descending order, or in some other pattern related to the nature of the data.
- Miscellaneous or "other" categories should be listed at the bottom of the chart (if oriented horizontally) or at the far right (if oriented vertically).

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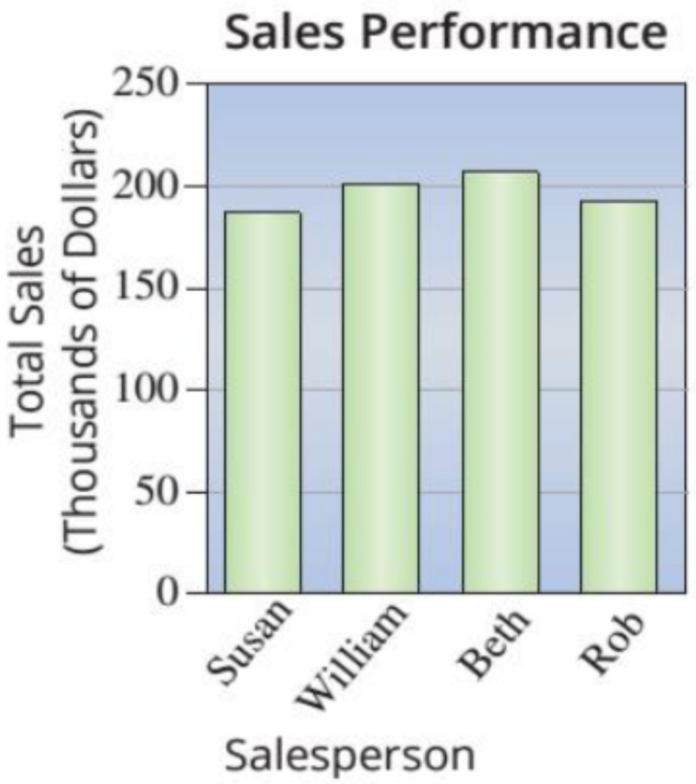

Figure 3.2.2

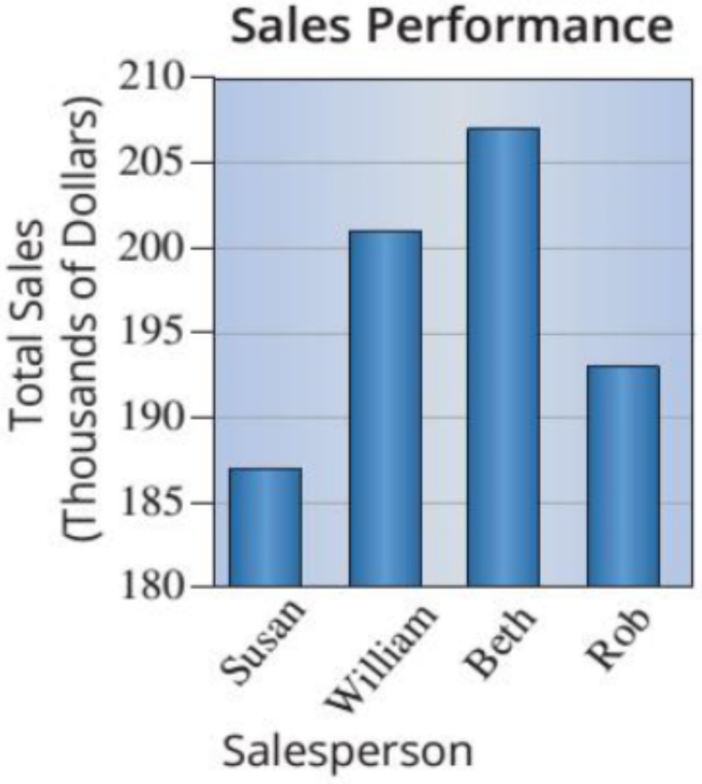

Figure 3.2.3

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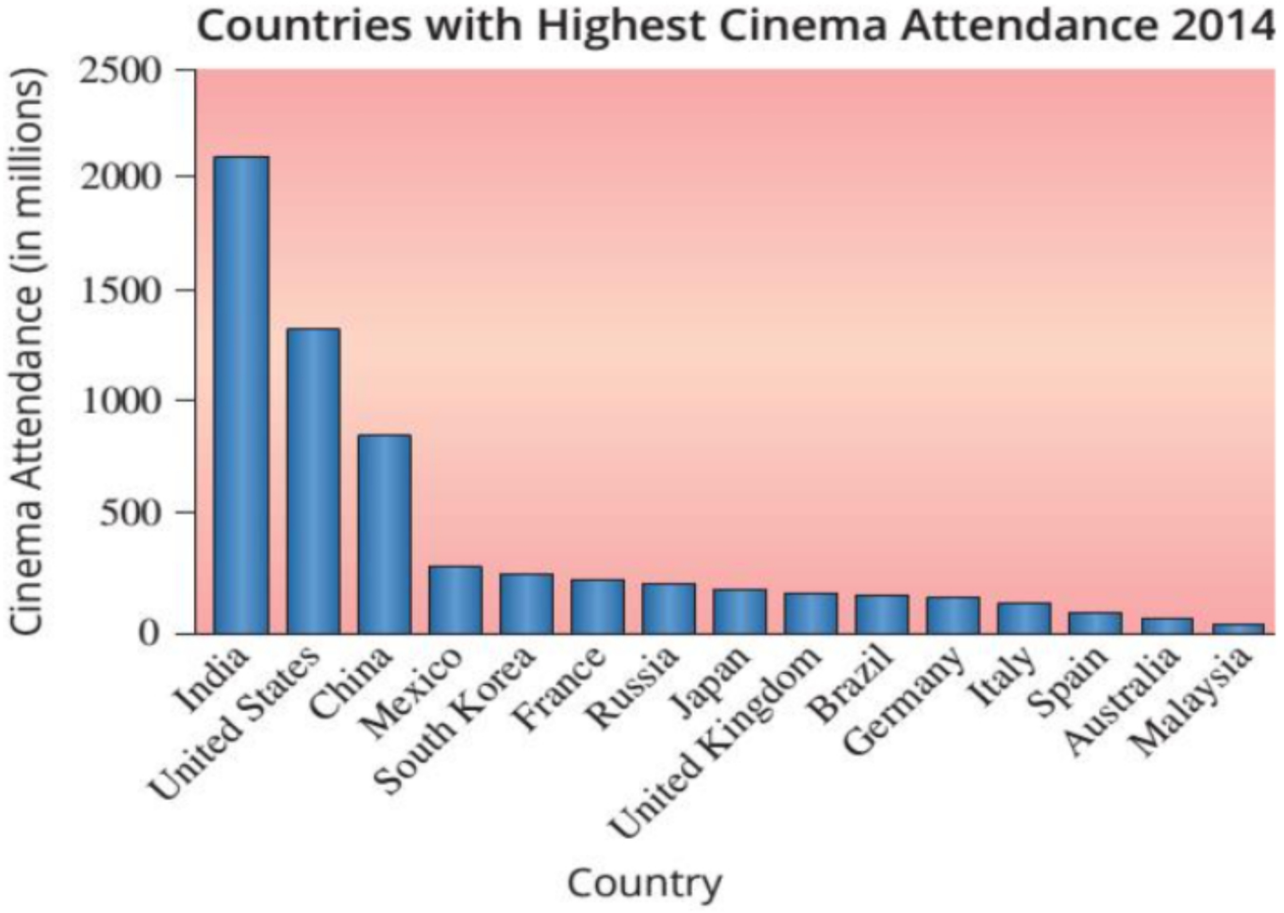
Pareto Chart

The **Pareto chart** is a bar graph whose bars are arranged in decreasing order of frequency.

DEFINITION



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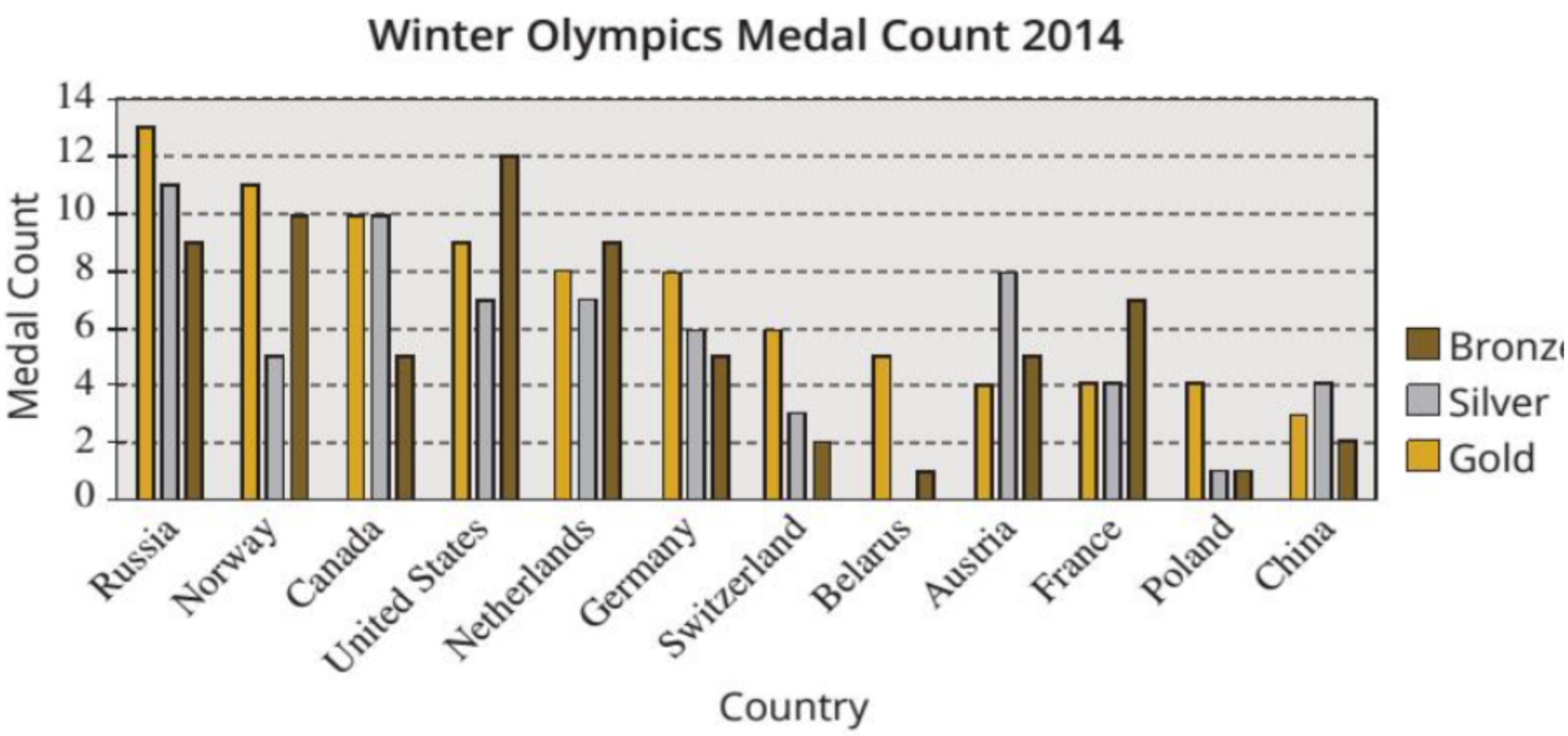

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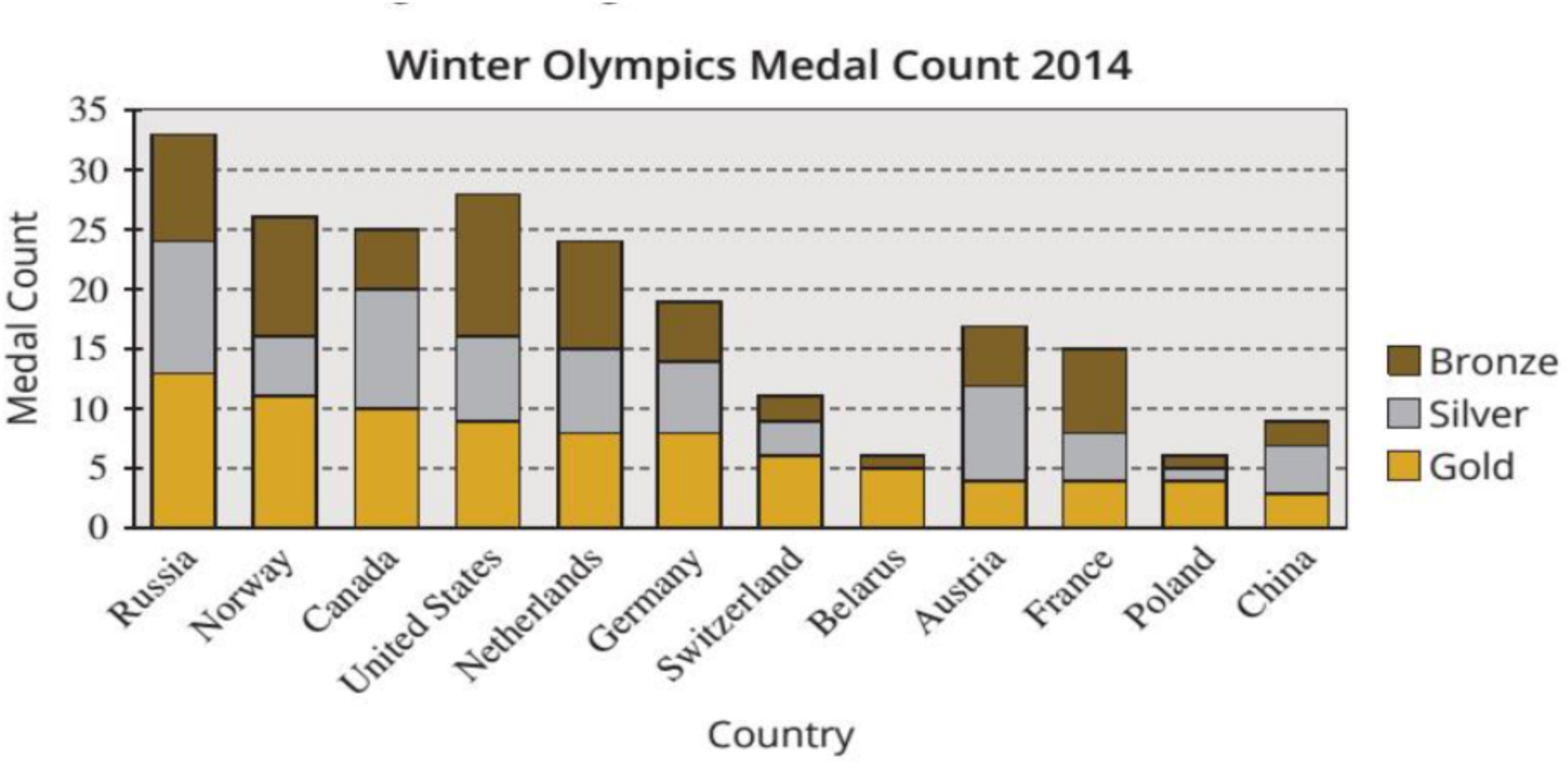

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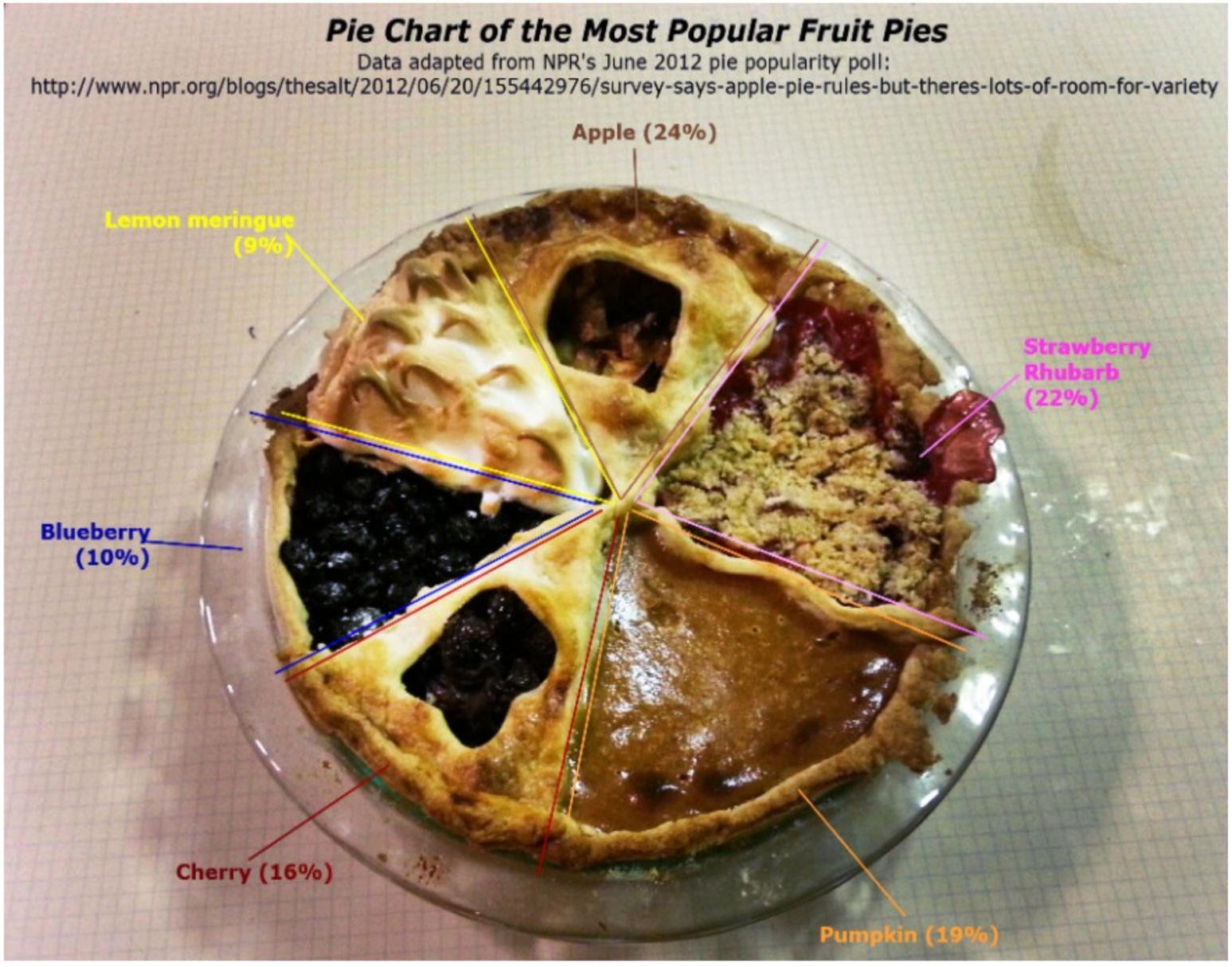
DEFINITION



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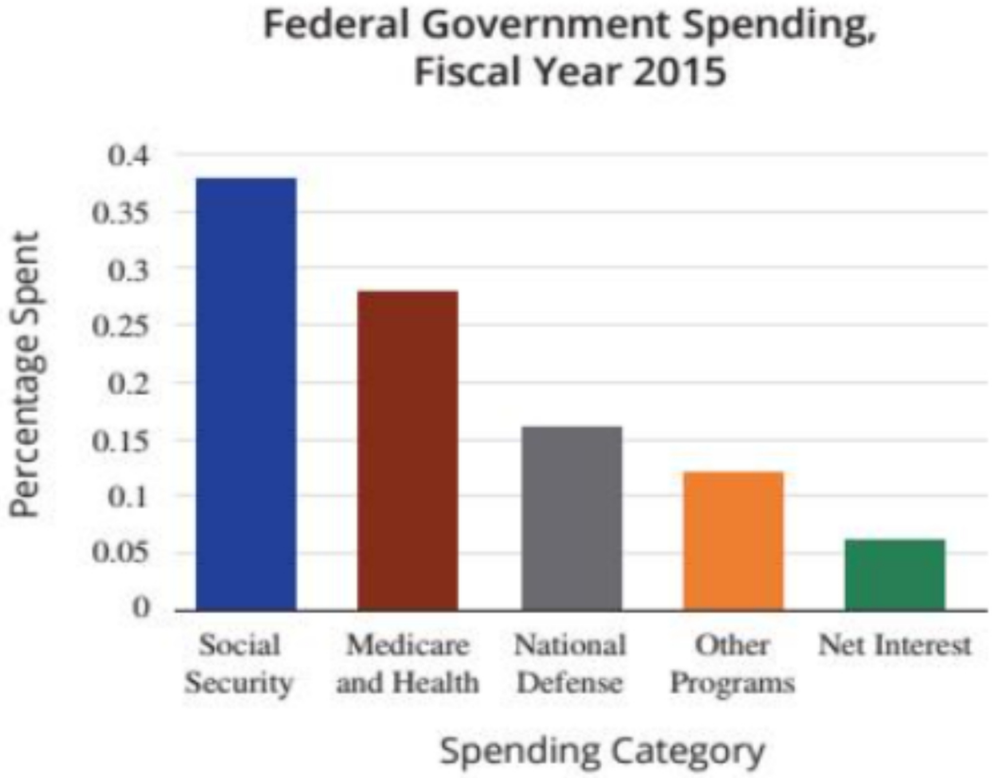

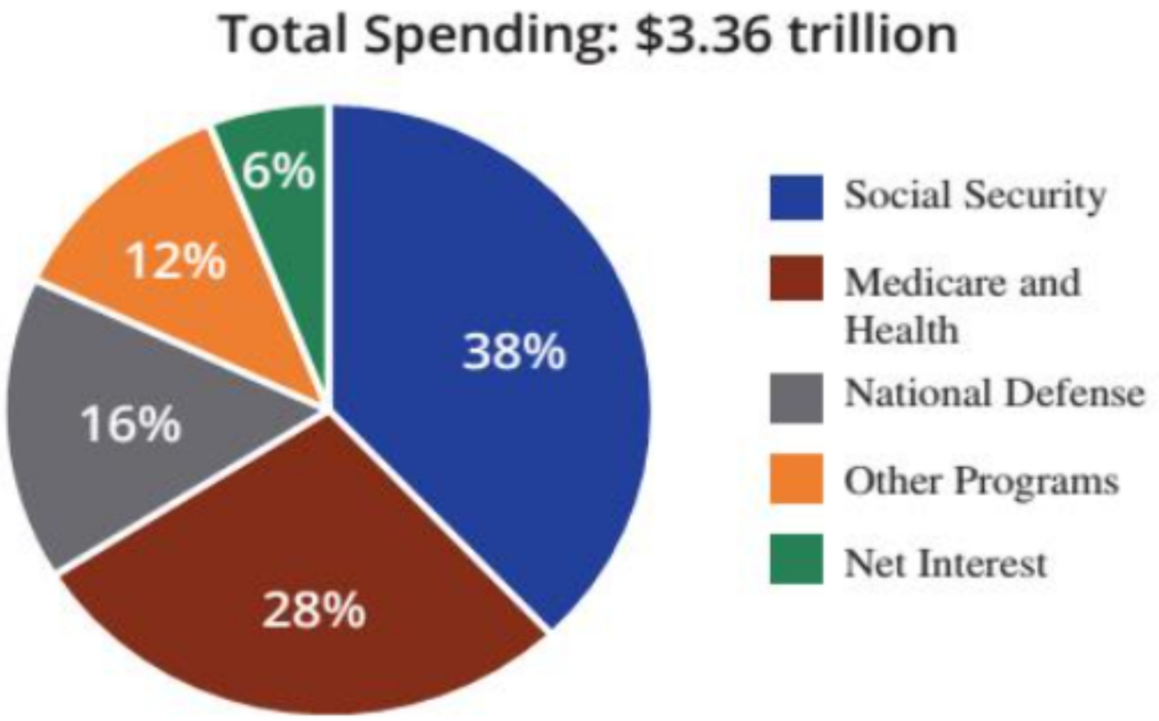

Figure 3.2.9

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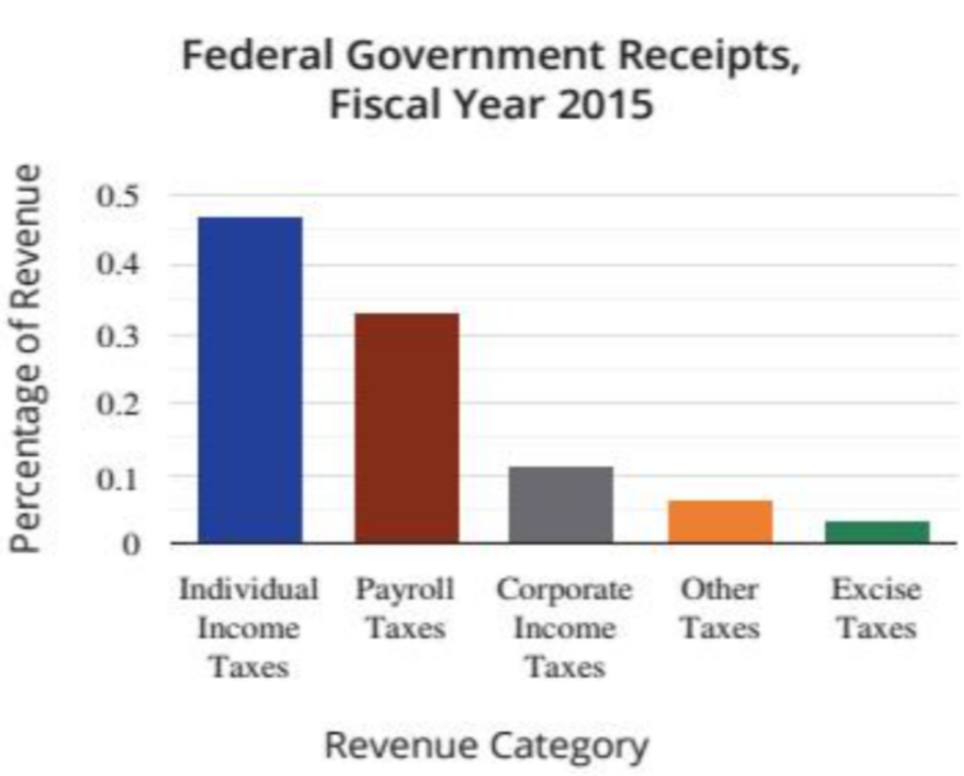

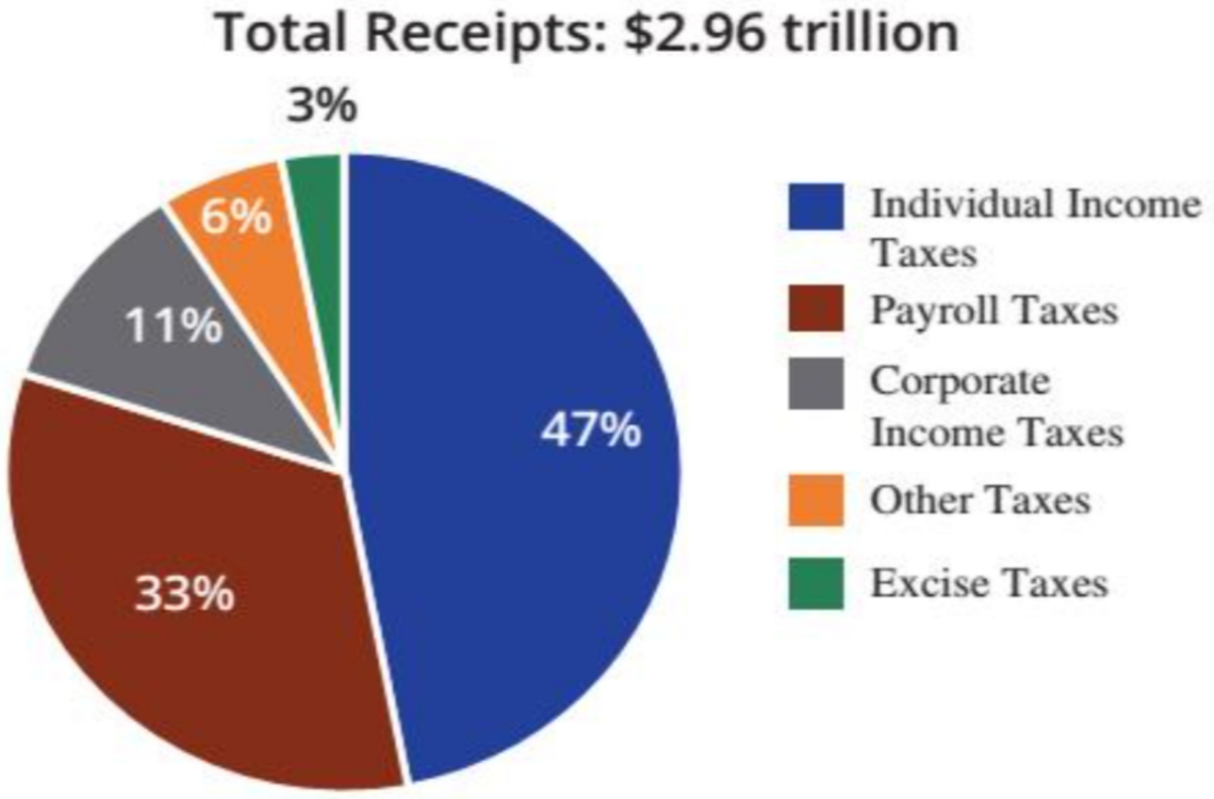

Figure 3.2.10

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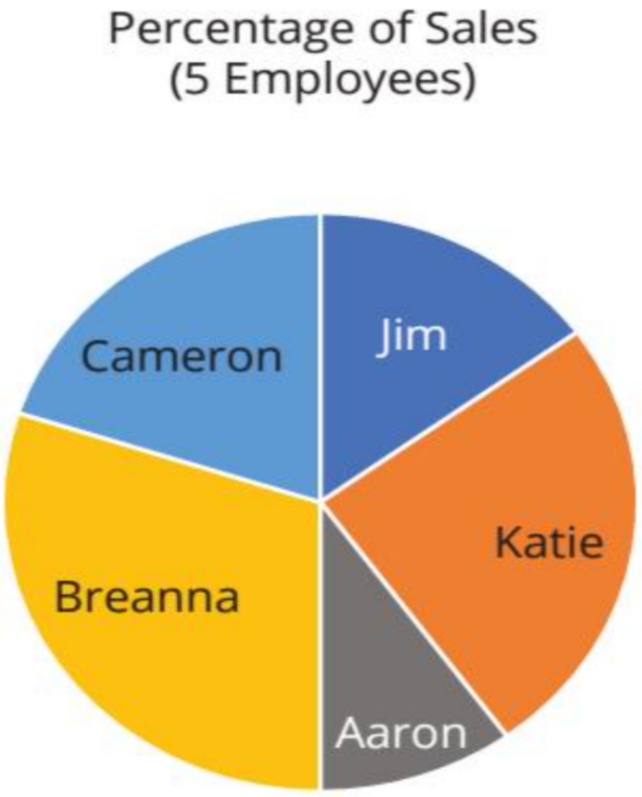

Figure 3.2.11

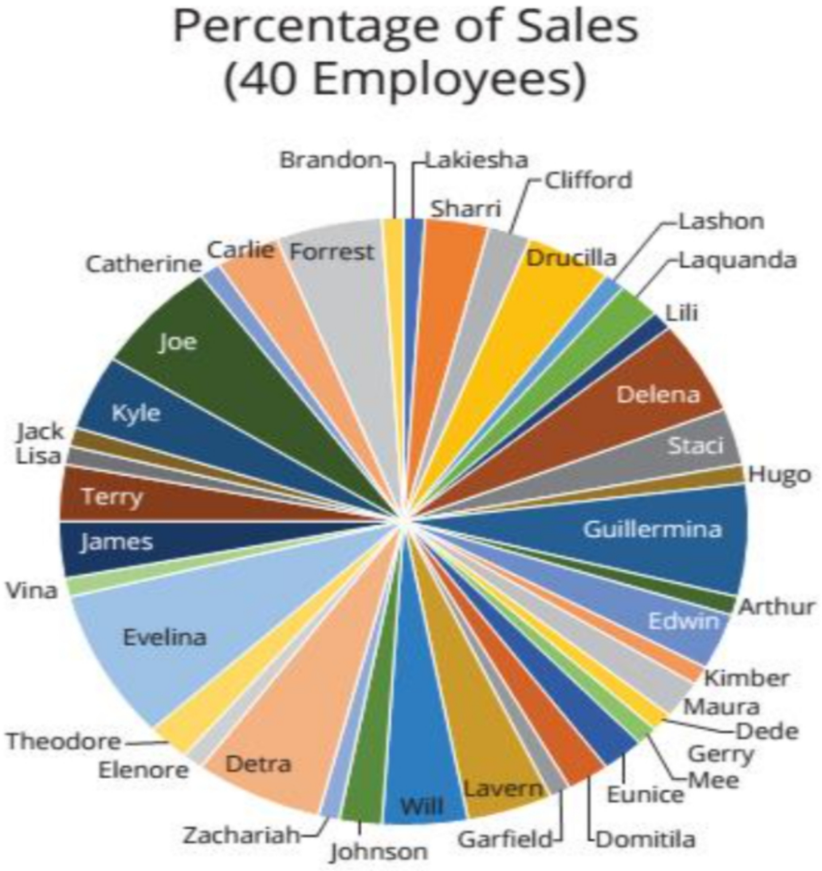

Figure 3.2.12

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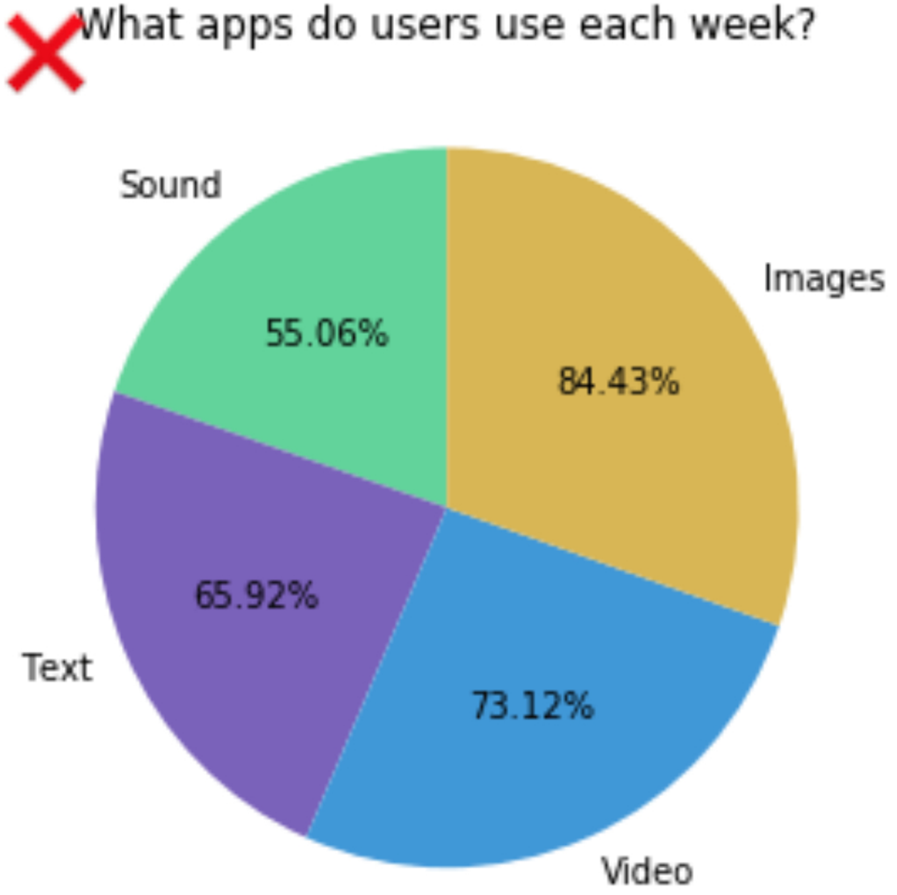

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