## Chapter 2 Organizing the Data

**1.** A cross-tabulation of serious illnesses is a table in which the distribution of illnesses is

**a.** presented separately for the categories of a second variable, such as gender, age, or race.
**b.** presented in a table.
**c.** presented in a graph.
**d.** presented in a pie chart.

Answer: (a) presented separately for the categories of a second variable, such as gender, age, or race.

**2.** Frequency distributions can be used to

**a.** compare gender differences in violent criminal behavior.
**b.** display the grades on a midterm examination for all students in a sociology course.
**c.** compare attitudes of college students and their parents regarding war.
**d.** show attitudes of all students on a campus regarding war.
**e.** all of the above.

Answer: (e) all of the above.

**3.** By definition, class intervals contain more than one

**a.** score value
**b.** score
**c.** respondent
**d.** category

Answer: (a) score value

**4.** A cross-tabulation would be useful for comparing

**a.** the amount of attention – a little, a moderate amount, or a great deal – a particular teacher gives to two different students.
**b.** the amount of attention – a little, a moderate amount, or a great deal – a particular teacher gives to 30 black and 30 white students.
**c.** the amount of attention – a little, a moderate amount, or a great deal – a particular teacher gives 30 students.
**d.** the amount of attention – a little, a moderate amount, or a great deal – a particular teacher gives to honor students.

Answer: (b) the amount of attention – a little, a moderate amount, or a great deal – a particular teacher gives to 30 black and 30 white students.

**5.** A frequency distribution of the number of defendants sentenced to death in each of the 30 states during the year 2009 would be depicted best in the form of a

**a.** histogram
**b.** bar graph
**c.** frequency polygon
**d.** pie chart

Answer: (c) frequency polygon

**6.** The direction of skewness is determined by the relative position of the

**a.** peak of distribution.
**b.** midpoint of the distribution.
**c.** tail of the distribution.
**d.** class intervals of the distribution.

Answer: (c) tail of the distribution.

**7.** To show trends in birth rate from 1980 to the present, by year, a researcher would probably use a

**a.** pie chart
**b.** bar graph
**c.** line chart
**d.** frequency polygon

Answer: (c) line chart

**8.** From the following table representing achievement of 173 television viewers and 183 non-viewers, find (a) the percent of nonviewers who are high achievers, (b) the percent of viewers who are high achievers, (c) the proportion of nonviewers who are high achievers, and (d) the proportion of viewers who are high achievers.

**Achievements for Television Viewers and Nonviewers**

| | Viewing Status | |
|---|---|---|
| **Achievement** | *Nonviewers* | *Viewers* |
| High achievers | 93 | 46 |
| Low achievers | 90 | 127 |
| Total | 183 | 172 |

Answer:

**a.** The percent of nonviewers who are high achievers is determined by dividing the number of high achieving nonviewers by the total number of nonviewers and multiplying the result by 100 in order to transform it into a percentage:

$$93 / 183 = 0.508$$
$$0.508 * 100 = 50.8\%$$

**b.** The percent of viewers who are high achievers is determined by dividing the number of high achieving viewers by the total number of viewers and multiplying the result by 100 in order to transform it into a percentage:

$$46 / 172 = 0.266$$
$$0.266 * 100 = 26.6\%$$

**c.** The proportion of nonviewers who are high achievers is determined by dividing the number of high achieving nonviewers by the total number of nonviewers:

$$93 / 183 = 0.508$$
$$P = 0.51$$

**d.** The proportion of viewers who are high achievers is determined by dividing the number of high achieving viewers by the total number of viewers:

$$46 / 172 = 0.267$$
$$P = 0.27$$

**9.** From the following table representing family structure for black and white children in a particular community, find (a) the percent of black children having two-parent families, (b) the percent of white children having two-parent families, (c) the proportion of black children having two-parent families, and (d) the proportion of white children having two-parent families.

**Family Structure for Black and White Children**

| | Race of Child | |
|---|---|---|
| **Family Structure** | *Black* | *White* |
| One parent | 53 | 59 |
| Two parents | 60 | 167 |
| Total | 113 | 226 |

Answer:

**a.** The percent of black children having two-parent families is determined by dividing the number of black children with two-parent families by the total number of black children and multiplying the result by 100 in order to transform it into a percentage:

$$60 / 113 = 0.531$$
$$0.531 * 100 = 53.1\%$$

**b.** The percent of white children having two-parent families is determined by dividing the number of white children with two-parent families by the total number of white children and multiplying the result by 100 in order to transform it into a percentage:

$$167 / 226 = 0.739$$
$$0.739 * 100 = 73.9\%$$

**c.** The proportion of black children having two-parent families is determined by dividing the number of black children with two-parent families by the total number of black children:

$$60 / 113 = 0.531$$
$$P = 0.53$$

**d.** The proportion of white children having two-parent families is determined by dividing the number of white children with two-parent families by the total number of white children:

$$167 / 226 = 0.739$$
$$P = 0.74$$

**10.** From the following table illustrating the handedness of a random sample of men and women, find (a) the percent of men who are left-handed, (b) the percent of women who are left-handed, (c) the proportion of men who are left-handed and (d) the proportion of women who are left-handed. (e) What can you conclude about gender and the prevalence of left-handedness?

**Handedness of Men and Women**

| | **Gender** | |
|---|---|---|
| **Handedness** | *Male* | *Female* |
| Left-handed | 15 | 8 |
| Right-handed | 86 | 114 |
| Total | 101 | 122 |

Answer:

**a.** The percent of men who are left-handed is determined by dividing the number of left-handed men by the total number of men and multiplying the result by 100 in order to transform it into a percentage:

$$15 / 101 = 0.149$$
$$0.149 * 100 = 14.9\%$$

**b.** The percent of women who are left-handed is determined by dividing the number of left-handed women by the total number of women and multiplying the result by 100 in order to transform it into a percentage:

$$8 / 122 = 0.066$$
$$0.066 * 100 = 6.6\%$$

**c.** The proportion of men who are left-handed is determined by dividing the number of left-handed men by the total number of men:

$$15 / 101 = 0.149$$
$$P = 0.15$$

**d.** The proportion of women who are left-handed is determined by dividing the number of left-handed women by the total number of women:

$$8 / 122 = 0.066$$
$$P = 0.07$$

**e.** Left-handedness is more prevalent among men.

**11.** A researcher studying the prevalence of alcohol use among seniors in a particular high school asked 45 of these youths how many drinks they had consumed in the last week. Convert the distribution containing four class intervals, and (a) determine the size of the class intervals, (b) indicate the upper and lower limits of each class interval, (c) identify the midpoint of each class interval, (d) find the percentage for each class interval, (e) find the cumulative frequency of each class interval, and (f) find the cumulative percentage for each class interval.

| Number of Drinks | *f* |
|---|---|
| 7 | 5 |
| 6 | 9 |
| 5 | 6 |
| 4 | 11 |
| 3 | 4 |
| 2 | 3 |
| 1 | 3 |
| 0 | 4 |
| | *N* = 45 |

Answer:

| Number of Drinks | *f* |
|---|---|
| 6-7 | 14 |
| 4-5 | 17 |
| 2-3 | 7 |
| 0-1 | 7 |
| | *N* = 45 |

**a.**

$$\begin{aligned} i &= U - L \\ &= 7.5 - 6.5 \\ &= 2 \end{aligned}$$

**b.** 5.5-7.5, 3.5-5.5, 1.5-3.5, -.5-1.5

**c.** $m: 6.5, 4.5, 2.5, 0.5$

**d.**

Percentage for class interval $6-7 = (14/45) * 100 = 31.1\%$

Percentage for class interval $4\text{-}5 = (17/45) * 100 = 37.8\%$

Percentage for class interval $2\text{-}3 = (7/45) * 100 = 15.6\%$

Percentage for class interval $0\text{-}1 = (14/45) * 100 = 15.6\%$

**e.** cf: 45,31,14,7

**f.** c%: 100.0, 69.0, 31.2,15.6

**12.** The Psychopathy Checklist – Revised (PCL—R) is an assessment tool used to identify psychopaths, with scores ranging from 0 to 40 (a score of 30 or higher being indicative of psychopathy). A forensic psychologist interested in the prevalence of psychopaths in a prison administered the PCL—R to 74 random prison inmates and obtained the following distribution of scores. Convert this into a grouped frequency distribution containing five class intervals, and (a) determine the size of the class intervals, (b) indicate the upper and lower limits of each class interval, (c) identify the midpoint of each class interval, (d) find the percentage for each class interval, (e) find the cumulative frequency for each class interval, and (f) find the cumulative percentage for each class interval.

| **Score Value** | ***f*** |
|---|---|
| 39 | 4 |
| 38 | 4 |
| 35 | 2 |
| 32 | 3 |
| 31 | 4 |
| 27 | 9 |
| 26 | 7 |
| 25 | 6 |
| 21 | 13 |
| 20 | 10 |
| 17 | 5 |
| 15 | 7 |
| | $N = 74$ |

Answer:

| **Score Value** | ***f*** |
|---|---|
| 35-39 | 10 |
| 30-34 | 7 |
| 25-29 | 22 |
| 20-24 | 23 |
| 15-19 | 12 |
| | $N = 74$ |

**a.**

$$\begin{aligned} i &= U - L \\ &= 39.5 - 34.5 \\ &= 5 \end{aligned}$$

**b.** 34.5-39.5, 29.5-34.5, 24.5-29.5,19.5-24.5,14.5-19.5

**c.** $m: 37, 32, 27, 22, 17$

**d.**

Percentage for class interval $35-39 = (10/74)*100 = 13.5\%$

Percentage for class interval $30\text{-}34 = (7/74)*100 = 9.5\%$

Percentage for class interval $25\text{-}29 = (22/74)*100 = 29.7\%$

Percentage for class interval $20\text{-}24 = (23/74)*100 = 31.1\%$

Percentage for class interval $15\text{-}19 = (12/74)*100 = 16.2\%$

**e.** cf: 74, 64, 57, 35, 12

**f.** 100.0, 86.5, 77, 47.3, 16.2

**13.** The following is a cross-tabulation of whether respondents rent or own their home by social class for a sample of 240 heads of household:

| | **Housing Status** | | |
|---|---|---|---|
| **Social Class** | *Rent* | *Own* | **Total** |
| Lower class | 62 | 18 | 80 |
| Middle class | 47 | 63 | 110 |
| Upper class | 11 | 39 | 50 |
| Total | 120 | 120 | 240 |

**a.** Which is the independent variable and which is the dependent variable?

**b.** Compute row percents for the cross-tabulation.

**c.** What percent of the sample owns their home?

**d.** What percent of the sample rents?

**e.** What percent of the lower-class respondents owns?

**f.** What percent of the middle-class respondents rents? (f

**g.** Which social class has the greatest tendency to rent?

**h.** Which social class has the greatest tendency to own?

**i.** What can be concluded about the relationship between social class and housing status?

Answer:

**a.** IV = social class, DV = housing status

**b.**

| | Housing Status | | |
|---|---|---|---|
| **Social Class** | *Rent* | *Own* | **Total** |
| Lower class | 62 | 18 | 80 |
| | 77.5% | 22.5% | 100.0% |
| Middle class | 47 | 63 | 110 |
| | 42.7% | 57.3% | 100.0% |
| Upper class | 11 | 39 | 50 |
| | 22.0% | 78.0% | 100.0% |
| Total | 120 | 120 | 240 |
| | 50.0% | 50.0% | 100.0% |

**c.** 50.0%
**d.** 50.0%
**e.** 22.5%
**f.** 42.7%
**g.** Lower class
**h.** Upper class
**i.** The higher the social class, the greater the tendency to own rather than rent.

**14.** The following is a cross-tabulation of votes in the 2008 Democratic presidential primary by age for a local sample of respondents aged 18 and over:

| | Age | | | | |
|---|---|---|---|---|---|
| **Vote** | 18-29 | 30-44 | 45-59 | 60+ | **Total** |
| Clinton | 27 | 25 | 34 | 11 | 97 |
| Edwards | 23 | 35 | 10 | 10 | 78 |
| Obama | 30 | 20 | 10 | 15 | 75 |
| Total | 80 | 80 | 54 | 36 | 250 |

**a.** Which is the independent variable and which is the dependent variable?
**b.** Compute total percents for the cross-tabulation.
**c.** What percent of the sample voted for Kerry?
**d.** What percent of the 18-29 age group voted for Edwards?
**e.** Among which age group was Kerry most popular?
**f.** Among which age group was Edwards most popular?
**g.** Among which age group was Dean most popular?

Answer:

**a.** IV = voter age, DV = vote

| | Age | | | | |
|---|---|---|---|---|---|
| **Vote** | 18-29 | 30-44 | 45-59 | 60+ | **Total** |
| Clinton | 27 | 25 | 34 | 11 | 97 |
| | 33.8% | 31.3% | 63.0% | 30.6% | 38.8% |
| Edwards | 23 | 35 | 10 | 10 | 78 |
| | 28.8% | 43.8% | 18.5% | 27.8% | 31.2% |
| Obama | 30 | 20 | 10 | 15 | 75 |
| | 37.5% | 25.0% | 18.5% | 41.7% | 30.0% |
| Total | 80 | 80 | 54 | 36 | 250 |
| | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

**b.** 38.8%
**c.** 28.8%
**d.** 45-59
**e.** 30-44
**f.** 60+

**15.** A sample of respondents was asked their opinions of the death penalty for convicted murderers and of mercy killing for the terminally ill. The responses are given in the following cross-tabulation:

| | Death Penalty | | |
|---|---|---|---|
| **Mercy Killing** | Favor | Oppose | **Total** |
| Favor | 63 | 29 | 92 |
| Oppose | 70 | 18 | 88 |
| Total | 133 | 47 | 180 |

**a.** Why is there no independent or dependent variable?
**b.** Compute total percents for the cross-tabulation.
**c.** What percent of the sample favors the use of the death penalty?
**d.** What percent of the sample favors mercy killing?
**e.** What percent of the sample favors both types of killing?
**f.** What percent of the sample opposes both types of killing?
**g.** What percent of the sample favors one type of killing but not the other?
**h.** What can be concluded about the relationship between the variables?

Answer:

**a.** Because neither opinion is clearly the result of the other.

| | Death Penalty | | |
|---|---|---|---|
| **Mercy Killing** | Favor | Oppose | **Total** |
| Favor | 63 | 29 | 92 |
| | 137.0% | 63.0% | 200.0% |
| Oppose | 70 | 18 | 88 |
| | 152.2% | 39.1% | 191.3% |
| Total | 133 | 47 | 180 |
| | 289.1% | 102.2% | 391.3% |

**b.** 73.9%
**c.** 51.1%
**d.** 35.0%
**e.** 10.0%
**f.** $38.9 + 16.1 = 55.0\%$
**g.** People who favor the death penalty are more likely to oppose mercy killing, whereas people who oppose the death penalty are more likely to favor mercy killing.

**16.** From the following table representing the gender of demonstrators outside a local Planned Parenthood, find (a) the percent of pro-choice demonstrators who are female, (b) the percent of pro-life demonstrators who are female, (c) the proportion of pro-choice demonstrators who are female, and (d) the proportion of pro-life demonstrators who are female.

**Gender of Pro-Choice and Pro-Life Demonstrators**

| | **Stance** | |
|---|---|---|
| **Gender** | *Pro-Choice* | *Pro-Life* |
| Male | 23 | 32 |
| Female | 37 | 39 |
| Total | 60 | 71 |

Answer:

**Gender of Pro-Choice and Pro-Life Demonstrators**

| | **Stance** | |
|---|---|---|
| **Gender** | *Pro-Choice* | *Pro-Life* |
| Male | 23 | 32 |
| | 38.3% | 45.1% |
| Female | 37 | 39 |
| | 61.7% | 54.9% |
| Total | 60 | 71 |
| | 100.0% | 100.0% |

**a.** 61.7%

**b.** 54.9%

**c.** The proportion of pro-choice demonstrators who are female is determined by dividing the number of female pro-choice demonstrators by the total number of pro-choice demonstrators.

$$P = 37 / 60$$
$$= .62$$

**d.** The proportion of pro-life demonstrators who are female is determined by dividing the number of female pro-life demonstrators by the total number of pro-life demonstrators.

$$P = 39 / 71$$
$$= .55$$

**17.** The following is a cross-tabulation of sexual orientation by gender for a random sample of respondents aged 18 and over living in Chicago:

| | Gender | | |
|---|---|---|---|
| **Sexual Orientation** | Male | Female | **Total** |
| Heterosexual | 87 | 106 | 193 |
| Homosexual | 14 | 9 | 23 |
| Bisexual | 6 | 3 | 9 |
| Total | 107 | 118 | 225 |

**a.** Are there independent and dependent variables in this case? If so, what are they? If not, explain why not.
**b.** Compute column percents for the cross-tabulation.
**c.** What percent of the sample is heterosexual?
**d.** What percent of the sample is comprised of female homosexuals?
**e.** What percent of the sample is bisexual?
**f.** What percent of the sample is comprised of male heterosexuals?
**g.** What can we conclude about gender differences in sexual orientation?

Answer:

**a.** No, there is no IV or DV because gender does not cause sexual orientation
**b.**

| | Gender | | |
|---|---|---|---|
| **Sexual Orientation** | Male | Female | **Total** |
| Heterosexual | 87 | 106 | 193 |
| | 81.3% | 89.8% | 85.8% |
| Homosexual | 14 | 9 | 23 |
| | 13.1% | 7.6% | 10.2% |
| Bisexual | 6 | 3 | 9 |
| | 5.6% | 2.5% | 4.0% |
| Total | 107 | 118 | 225 |
| | 100.0% | 100.0% | 100.0% |

**c.** 85.8%
**d.** 4.0%
**e.** 4.0%
**f.** The percent of the sample that is comprised of male heterosexuals is determined by dividing the number of male heterosexuals demonstrators by the total number of individuals in the sample.

$$87 / 225 = 38.7\%$$

**g.** Both males and females tend to be heterosexual.

**18.** A random sample of women over the age of 18 was asked if they considered themselves to be depressed. Their responses are given next, cross-tabulated with their marital status:

| | Marital Status | | | | |
|---|---|---|---|---|---|
| **State of Depression** | Single | Married | Divorced | Widowed | **Total** |
| Depressed | 24 | 37 | 11 | 3 | 75 |
| Nondepressed | 113 | 82 | 68 | 14 | 277 |
| Total | 137 | 119 | 79 | 17 | 352 |

**a.** Compute total percents for the cross-tabulation.
**b.** What percent of the sample considered themselves to be depressed?
**c.** What percent of the sample did not consider themselves to be depressed?
**d.** What percent of the sample is divorced women who are not depressed?
**e.** What percent of the sample is single women who are depressed?
**f.** Which marital status is associated with the highest percentage of depressed women?

Answer:

**a.**

| | Marital Status | | | | |
|---|---|---|---|---|---|
| **State of Depression** | Single | Married | Divorced | Widowed | **Total** |
| Depressed | 24 | 37 | 11 | 3 | 75 |
| | 6.8% | 10.5% | 3.1% | 0.9% | 21.3% |
| Nondepressed | 113 | 82 | 68 | 14 | 277 |
| | 32.1% | 23.3% | 19.3% | 4.0% | 78.7% |
| Total | 137 | 119 | 79 | 17 | 352 |
| | 38.9% | 33.8% | 22.4% | 4.8% | 100.0% |

**b.** 21.3%
**c.** 78.7%
**d.** 19.3%
**e.** 6.8%
**f.** Married

**19.** A sample of respondents was asked their opinions of bilingual education and affirmative action. The responses are given in the following cross-tabulation:

| | Bilingual Education | | |
|---|---|---|---|
| **Affirmative Action** | *Favor* | *Oppose* | **Total** |
| Favor | 56 | 33 | 89 |
| Oppose | 25 | 97 | 122 |
| Total | 81 | 130 | 211 |

**a.** Why is there no independent variable?
**b.** Compute total percents for the cross-tabulation.
**c.** What percent of the sample favors affirmative action?
**d.** What percent of the sample favors bilingual education?
**e.** What percent of the sample favors both affirmative action and bilingual education?
**f.** What percent of the sample opposes them both?
**g.** What percent of the sample opposes one but not the other?
**h.** What can be concluded about the relationship between the variables?

Answer:

**a.** Because opinion on one subject does not cause opinion on the other.

**b.**

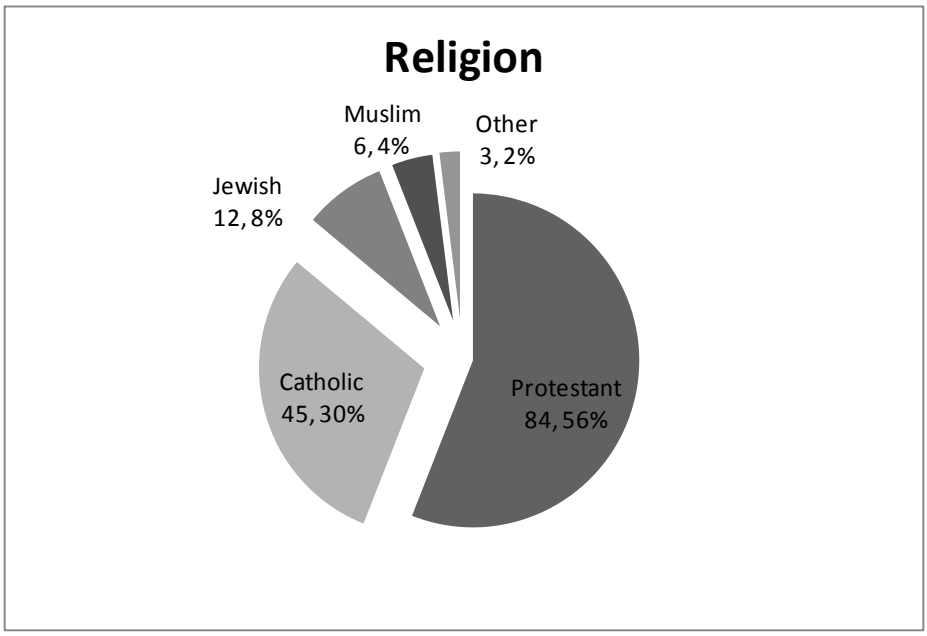
| | Bilingual Education | | |
|---|---|---|---|
| **Affirmative Action** | *Favor* | *Oppose* | **Total** |
| Favor | 56 | 33 | 89 |
| | 26.5% | 15.6% | 42.2% |
| Oppose | 25 | 97 | 122 |
| | 11.8% | 46.0% | 57.8% |
| Total | 81 | 130 | 211 |
| | 38.4% | 61.6% | 100.0% |

**c.** 42.2%
**d.** 38.4%
**e.** 26.5%
**f.** 46.0%
**g.** 27.5%
**h.** People who favor bilingual education tend to also favor affirmative action and people who oppose bilingual education also tend to oppose affirmative action.

**20.** Use a pie chart to depict the following information about the religious affiliation of students in a class.

| **Religion** | ***f*** | **%** |
|---|---|---|
| Protestant | 84 | 56 |
| Catholic | 45 | 30 |
| Jewish | 12 | 8 |
| Muslim | 6 | 4 |
| Other | 3 | 2 |
| | 150 | 100 |

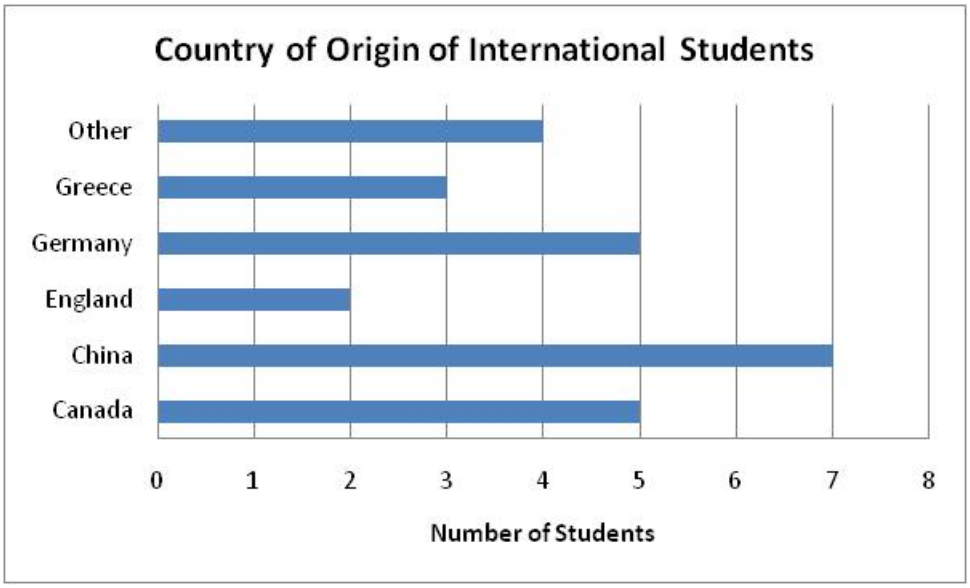
Answer:



**21.** Depict the following data in a bar graph:

| **Country of Origin of International Students** | *f* |
|---|---|
| Canada | 5 |
| China | 7 |
| England | 2 |
| Germany | 5 |
| Greece | 3 |
| Other | 4 |
| | *N* = 26 |

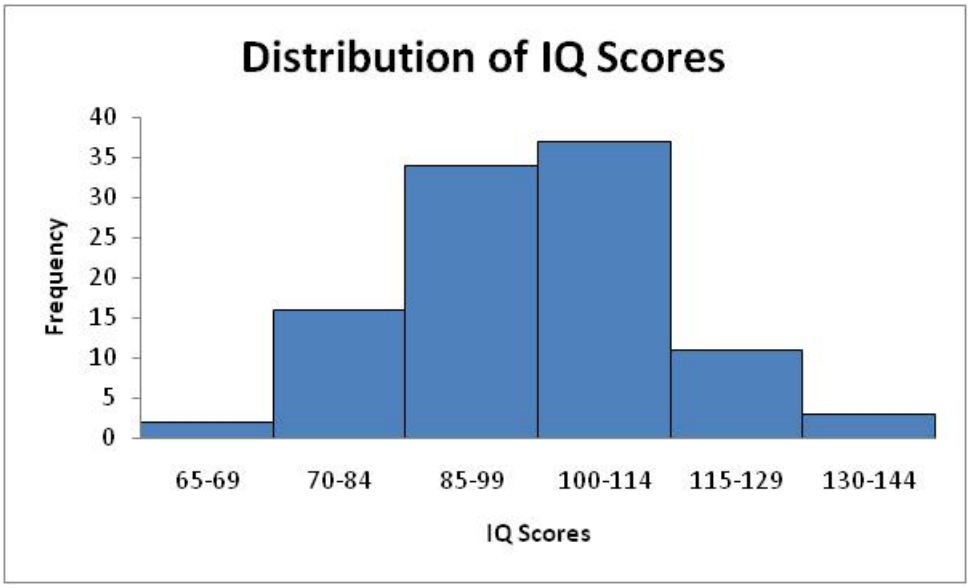
Answer:

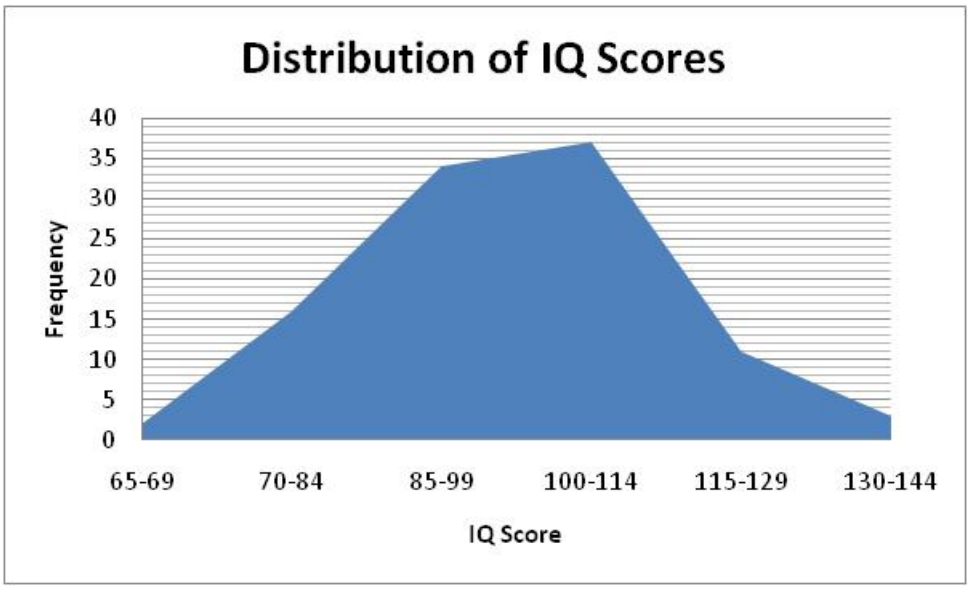


**22.** On graph paper, draw both a histogram and a frequency polygon to illustrate the following distribution of IQ scores:

| **Class Interval** | ***f*** |
|---|---|
| 130-144 | 3 |
| 115-129 | 11 |
| 100-114 | 37 |
| 85-99 | 34 |
| 70-84 | 16 |
| 65-69 | 2 |
| | *N* = 103 |

Answer:




Distribution of IQ Scores
Frequency
40
35
30
25
20
15
10
5
0
65-69
70-84
85-99
100-114
115-129
130-144
IQ Score

**23.** Display the following suicide rates (per 100,000) as a histogram:

| Age | Suicide Rate |
|---|---|
| 15-24 | 13.1 |
| 25-34 | 15.7 |
| 35-44 | 15.2 |
| 45-54 | 16.4 |
| 55-64 | 17.0 |
| 65-74 | 19.7 |
| 75-84 | 25.2 |
| 85+ | 20.8 |

Answer: