

1.1.1 Identify various aspects of studies and experiments and/or classify variables.

1. Viamedia, the cable industry's leading independent cable rep firm and provider of online advertising services, sponsored an online survey in June, 2013 to understand television viewing habits. The survey was given to 2,029 American adults age 18 and older, of whom 1,958 watch television programming. Of interest was how Americans watched television –72% watch cable TV while 33% watch on a device (tablet, smartphone, computer). Describe the W's for the information given.

- Who:
- What:
- When:
- Where:
- How:
- Why:

1.2.2 Identify various aspects of studies and experiments and/or classify variables.

2. The following tables display some of the demographic data collected in a recent (2012) Nielsen Global Survey analyzing Asian American purchasing behaviors and television viewing patterns. List the variables in the data set. Indicate whether each variable is categorical or quantitative. If the variable is quantitative, give the units.

<i>Income Ranges</i>	<i>% Total U.S. Households</i>	<i>% Asian-American Households</i>
< \$25,000	24%	20%
\$25,000–\$34,999	11%	8%
\$35,000–\$49,999	16%	13%
\$50,000–\$74,999	20%	18%
\$75,000–\$99,999	12%	14%
\$100,000+	18%	29%

<i>Age Distribution</i>	<i>% Total U.S. Households</i>	<i>% Asian-American Households</i>
0–9	13%	12%
10–17	11%	10%
18–24	10%	10%
25–34	13%	16%
45–54	14%	14%
55–74	20%	14%
75+	6%	4%

<i>Composition of Asian-Americans</i>	<i>% Composition</i>
Asian-Indian	19%
Vietnamese	11%
Chinese	23%
Korean	10%
Filipino	17%
Japanese	5%
Other Asian	15%

1.2.1 Identify various aspects of studies and experiments and/or classify variables.

3. In addition to the variables listed above, data were also collected on the variables listed below. Indicate whether each is nominal or ordinal.

- *Region of U.S.* (NE, NW, MW, SW, SE)
- *Education* (Less than High School, High School, Some College, College +)
- *Marital Status* (Single, Widowed, Divorced, Married)

1.2.3 Identify various aspects of studies and experiments and/or classify variables.

4. For each of the following, indicate whether the data are cross-sectional or time series:

- *Monthly spending on household goods*
- *Change in population for 5 consecutive years*
- *Percentage of adults who bank online*
- *Composition of types of Asian American families in the most populated U.S. cities.*
- *Monthly demand for a technology item*
- *Percentage of adults who purchase goods online*

**Chapter 1: Data and Decisions – Quiz A – Key**

1. Viamedia, the cable industry's leading independent cable rep firm and provider of online advertising services, sponsored an online survey in June, 2013 to understand television viewing habits. The survey was given to 2,029 American adults age 18 and older, of whom 1,958 watch television programming. Of interest was how Americans watched television –72% watch cable TV while 33% watch on a device (tablet, smartphone, computer). Describe the W's for the information given.
  - Who:  
American adults aged 18 and older
  - What:  
Television viewing
  - When:  
June 2013
  - Where:  
United States
  - How:  
Online survey
  - Why:  
to analyze how Americans watch television

2. The following tables display some of the demographic data collected in a recent (2012) Nielsen Global Survey analyzing Asian American purchasing behaviors and television viewing patterns. List the variables in the data set. Indicate whether each variable is categorical or quantitative. If the variable is quantitative, give the units.

<i>Household Income Ranges</i>	<i>% Total U.S. Households</i>	<i>% Asian-American Households</i>
< \$25,000	24%	20%
\$25,000–\$34,999	11%	8%
\$35,000–\$49,999	16%	13%
\$50,000–\$74,999	20%	18%
\$75,000–\$99,999	12%	14%
\$100,000+	18%	29%

<i>Age Distribution</i>	<i>% Total U.S. Households</i>	<i>% Asian-American Households</i>
0–9	13%	12%
10–17	11%	10%
18–24	10%	10%
25–34	13%	16%
45–54	14%	14%
55–74	20%	14%
75+	6%	4%

<i>Types of Expenditure</i>	<i>Asian-Americans</i>	<i>Total U.S. Market</i>
Housing	\$20,800	\$16,900
Transportation	\$10,100	\$9,000
Food	\$8,000	\$6,600
Personal Insurance and Food	\$7,800	\$5,600
Apparel	\$2,400	\$1,700

Categorical: Household Income Ranges, Age Distribution, Types of Expenditure  
Quantitative: % Total Household, % Asian-American Households, % Age Distribution-Total U.S. and Asian-American, Expenditures of Asian-Americans (\$), Expenditures of Total U.S. Market (\$)

3. In addition to the variables listed above, data were also collected on the variables listed below. Indicate whether each is nominal or ordinal.

- *Region* (NE, NW, MW, SW, SE)

Nominal

- *Education* (Less than High School, High School, Some College, College +)

Ordinal

- *Marital Status* (Single, Widowed, Divorced, Married)

Nominal

4. For each of the following, indicate whether the data are cross-sectional or time series:

- *Monthly spending on household goods*

Time Series

- *Change in population for 5 consecutive years*

Time Series

- *Composition of types of Asian American families in the most populated U.S. cities.*

Cross-Sectional

- *Monthly demand for a technology item*

Time Series

- *Percentage of adults who purchase goods online*

Cross-Sectional

**Chapter 1: Data and Decisions – Quiz B**

Name \_\_\_\_\_

**1.1.1 Identify various aspects of studies and experiments and/or classify variables.**

1. *Consumer Reports Health* routinely compares drugs in terms of effectiveness and safety. In summer 2008 they reviewed drugs used to treat arthritis. Information was reported on convenience of use (how many pills required each day), possible side effects (e.g., dizziness, stomach upset), cost, and ratings of effectiveness in relieving symptoms (very effective, somewhat effective, not effective). Describe the W's for the information given.

- Who:
- What:
- When:
- Where:
- How:
- Why:

**1.2.1 Identify various aspects of studies and experiments and/or classify variables.**

2. List the variables reported in the *Consumer Reports Health* article on drugs used to treat arthritis. If the variable is quantitative, give the units. If the variable is categorical, indicate whether it is nominal or ordinal.

**1.2.2 Identify various aspects of studies and experiments and/or classify variables.**

3. The Human Resources Department of a large corporation maintains records on its employees. The table displays some of these data. List the variables in the data set. Indicate whether each variable is categorical or quantitative. If the variable is quantitative, give the units. If the variable is categorical, indicate whether it is nominal or ordinal.

<i>Age</i>	<i>Employment Category</i>	<i>Education</i>	<i>Participates in Wellness Program?</i>	<i>Paycheck Benefit Deductions</i>
32	Clerical	High School	Yes	\$250
52	Professional	College	No	\$120
60	Professional	Junior College	Yes	\$0
28	Clerical	High School	No	\$120

**1.2.3 Identify various aspects of studies and experiments and/or classify variables.**

4. For each of the following, indicate whether the data are cross-sectional or time series:

- *Company quarterly profits*
- *Percentage of American adults who work full time*
- *Historical closing stock prices*

---

**Chapter 1: Data and Decisions – Quiz B – Key**

1. *Consumer Reports Health* routinely compares drugs in terms of effectiveness and safety. In summer 2008 they reviewed drugs used to treat arthritis. Information was reported on convenience of use (how many pills required each day), possible side effects (e.g., dizziness, stomach upset), cost, and ratings of effectiveness in relieving symptoms (very effective, somewhat effective, not effective). Describe the W's for the information given.

- Who:  
drugs to treat arthritis currently on the market
  
- What:  
convenience of use, side effects, cost, effectiveness ratings
  
- When:  
summer 2008
  
- Where:  
not specified, probably United States
  
- How:  
testing on drugs
  
- Why:  
information for potential consumers/patients

2. List the variables reported in the *Consumer Reports Health* article on drugs used to treat arthritis. If the variable is quantitative, give the units. If the variable is categorical, indicate whether it is nominal or ordinal.

Categorical: Side effect (nominal), effectiveness rating (ordinal)

Quantitative: Convenience of use (number of pills), Cost (\$)

3. The Human Resources Department of a large corporation maintains records on its employees. The table displays some of these data. List the variables in the data set. Indicate whether each variable is categorical or quantitative. If the variable is quantitative, give the units. If the variable is categorical, indicate whether it is nominal or ordinal.

<i>Age</i>	<i>Employment Category</i>	<i>Education</i>	<i>Participates in Wellness Program?</i>	<i>Paycheck Benefit Deductions</i>
32	Clerical	High School	Yes	\$250
52	Professional	College	No	\$120
60	Professional	Junior College	Yes	\$0
28	Clerical	High School	No	\$120

Categorical: Employment Category (nominal), Education (ordinal), Participation in Wellness Program? (nominal)

Quantitative: Age (years), Paycheck Benefit Deductions (\$)

4. For each of the following, indicate whether the data are cross-sectional or time series:

- *Company quarterly profits*

Time Series

- *Percentage of American adults who work full time*

Cross-Sectional

- *Historical closing stock prices*

Time Series



## Chapter 1: Data and Decisions – Quiz C

Name \_\_\_\_\_

## 1.1.1 Identify various aspects of studies and experiments and/or classify variables.

1. *Consumer Reports National Research Center* routinely compares products and services. A poll of more than 1,800 U.S. residents was conducted shortly after the 2008 holiday season. What they found was that fewer people than in the previous year tipped their service providers (newspaper carrier, barber, mail carrier, hairdresser, garbage collector) or the amount that consumers tip for specific services was reduced. Information was reported on the type of service, whether a tip or gift was given, and the median total value of the tip. Describe the W's for the information given.

- Who:
- What:
- When:
- Where:
- How:
- Why:

## 1.2.1 Identify various aspects of studies and experiments and/or classify variables.

2. List the variables reported in the *Consumer Reports Magazine* article on tipping. If the variable is quantitative, give the units. If the variable is categorical, indicate whether it is nominal or ordinal.

## 1.2.2 Identify various aspects of studies and experiments and/or classify variables.

3. Businesses in a U.S. city were surveyed about information to provide to prospective employees after graduating from business school. The table displays some of these data. List the variables in the data set. Indicate whether each variable is categorical or quantitative. If the variable is quantitative, give the units. If the variable is categorical, indicate whether it is nominal or ordinal.

<i>Employment Category</i>	<i>Require an MBA Degree?</i>	<i>Prefer Graduates with Work Experience?</i>	<i>Median Salary of New Graduates</i>
Sales	No	No	\$35,000
Management	Yes	Yes	\$47,000
Accounting	No	Yes	\$52,000
Advertising	No	No	\$45,000

## 1.2.3 Identify various aspects of studies and experiments and/or classify variables.

4. For each of the following, indicate whether the data are cross-sectional or time series:

- *Dow Jones Index*
- *Eating habits by age group*
- *Attitudes toward abortion over past 10 years*
- *Voting behavior data for a particular neighborhood*

**Chapter 1: Data and Decisions – Quiz C – Key**

1. *Consumer Reports National Research Center* routinely compares products and services. A poll of more than 1,800 U.S. residents was conducted shortly after the 2008 holiday season. What they found was that fewer people tipped their service providers (newspaper carrier, barber, mail carrier, hairdresser, garbage collector) than in the previous year or the amount that consumers tip for specific services was reduced. Information was reported on the type of service, whether a tip or gift was given, the level of tipping, and the median total value of the tip. Describe the W's for the information given.

- Who:

U.S. residents, most likely adults although not specified

- What:

Amount of tipping and type of tipping for service providers during the holiday season for this year and the previous year

- When:

shortly after the holiday season 2008

- Where:

United States

- How:

A poll – not specified what type

- Why:

investigate consumer behavior in tipping service providers

2. List the variables reported in the *Consumer Reports Magazine* article on tipping. If the variable is quantitative, give the units. If the variable is categorical, indicate whether it is nominal or ordinal.

Categorical: Whether or not someone tipped this year and/or previous year (nominal), type of tipping—gift or money (nominal), service provider who was tipped (nominal), level of tipping—low, medium, high (ordinal)

Quantitative: Median value of tip (\$),

3. Businesses in a U.S. city were surveyed about information to provide to prospective employees after graduating from business school. The table displays some of these data. List the variables in the data set. Indicate whether each variable is categorical or quantitative. If the variable is quantitative, give the units. If the variable is categorical, indicate whether it is nominal or ordinal.

<i>Employment Category</i>	<i>Require an MBA Degree?</i>	<i>Level of Work Experience Preferred?</i>	<i>Median Salary of New Graduates</i>
Sales	No	None	\$35,000
Management	Yes	Extensive	\$47,000
Accounting	No	Moderate	\$52,000
Advertising	No	None	\$45,000

Categorical: Employment Category (nominal), Require an MBA Degree? (nominal), Level of Work Experience Preferred? (ordinal)  
 Quantitative: Median Salary of New Graduates (\$)

4. For each of the following, indicate whether the data are cross-sectional or time series:

- *Dow Jones Index*

Time Series

- *Eating habits by age group*

Cross-Sectional

- *Attitudes toward abortion over past 10 years*

Time Series

- *Voting behavior data for a particular neighborhood*

Cross-Sectional

**Chapter 1: Data and Decisions – Quiz D – Multiple Choice**

Name \_\_\_\_\_

**1.1.1 Identify various aspects of studies and experiments and/or classify variables.**

1. In the fall of 2007, the *Pew Internet & Life Project* conducted telephone interviews with a sample of American adults aged 18 and older about online shopping. American adults aged 18 and older constitute the \_\_\_\_\_ of the study.

- A. Who
- B. What
- C. When
- D. Where
- E. How

**1.2.1 Identify various aspects of studies and experiments and/or classify variables.**

2. A few of the variables for which data were collected in the *Pew Internet & Life Project* study about online shopping include age, gender, income, and number of hours spent shopping online per month. Which of the variables is categorical?

- A. Age
- B. Gender
- C. Income
- D. Number of hours spent shopping online
- E. None

**1.2.1 Identify various aspects of studies and experiments and/or classify variables.**

3. The *Pew Internet & Life Project* study about online shopping asked respondents to indicate their education level on the following scale: *Less than High School, High School, Some College, College +*. Which of the following statements is (are) true?

- A. Education level is a categorical variable.
- B. Education level is nominal scaled.
- C. Education level is ordinal scaled.
- D. Both A and B
- E. Both A and C

1.1.1 Identify various aspects of studies and experiments and/or classify variables.

4. *Consumer Reports Health* routinely compares drugs in terms of effectiveness and safety. In summer 2008 they reviewed drugs used to treat arthritis. Among the information reported was convenience of use (how many pills required each day) and possible side effects (e.g., dizziness, stomach upset). Convenience of use and possible side effects constitute the \_\_\_\_\_ of the study.

- A. Who
- B. What
- C. When
- D. Where
- E. How

1.1.1 Identify various aspects of studies and experiments and/or classify variables.

5. What is the “Who” in a *Consumer Reports Health* study on the effectiveness and safety of drugs used to treat arthritis?

- A. drugs to treat arthritis currently on the market
- B. convenience of use and possible side effects
- C. summer 2008
- D. the United States
- E. testing on drugs

1.2.1 Identify various aspects of studies and experiments and/or classify variables.

6. A *Consumer Reports Health* study on the effectiveness and safety of arthritis drugs collected data on possible side effects. This is what kind of variable?

- A. Quantitative
- B. Categorical
- C. Nominal
- D. Both A and C
- E. Both B and C

1.2.1 Identify various aspects of studies and experiments and/or classify variables.

7. A *Consumer Reports Health* study on arthritis drugs takes into consideration cost. Cost is

- A. is a nominal variable.
- B. is a categorical variable.
- C. is a quantitative variable.
- D. is an ordinal variable.
- E. is an irrelevant variable.

**1.2.1 Identify various aspects of studies and experiments and/or classify variables.**

8. The Human Resources Department of a large corporation maintains records on its employees. Data are maintained of the following variables: *Age*, *Employment Category*, *Education*, *Whether or not the employee participates in a wellness program*, and *Paycheck benefit deductions*. Which of these variables are categorical?

- A. *Age*, *Employment Category*, and *Education*
- B. *Employment Category*, *Education*, and *Whether or not the employee participates in a wellness program*
- C. *Education*, *Whether or not the employee participates in a wellness program*, and *Paycheck benefit deductions*
- D. All of the variables
- E. None of the variables

**1.2.3 Identify various aspects of studies and experiments and/or classify variables.**

9. Which of the following is (are) based on cross sectional data?

- A. Company quarterly profits
- B. Percentage of American adults who work full time
- C. Historical closing stock prices
- D. All of the above
- E. None of the above.

**1.2.3 Identify various aspects of studies and experiments and/or classify variables.**

10. Which of the following is (are) time series data?

- A. Weekly receipts at a clothing boutique
- B. Monthly demand for an automotive part
- C. Quarterly sales of automobiles
- D. All of the above
- E. None of the above

***Chapter 1: Data and Decisions – Quiz D – Key***

1. A
2. B
3. E
4. B
5. A
6. E
7. C
8. B
9. B
10. D

**Chapter 1: Data and Decisions – Quiz E – Multiple Choice**  
**Name** \_\_\_\_\_

**1.1.1 Identify various aspects of studies and experiments and/or classify variables.**

1. A university is interested in gauging student satisfaction in its online MBA program. A survey is designed and administered via the Internet to a sample of students currently active in the program. Which of the following would best describe the cases?

- A. Participants
- B. Respondents
- C. Experimental Units
- D. Subjects
- E. Variables

**1.2.1 Identify various aspects of studies and experiments and/or classify variables.**

2. In a survey undertaken by a university to gauge student satisfaction in its online MBA program, one question asked students to indicate their employment status (unemployed, employed part-time, employed full-time). Which of the following is true?

- A. This variable is categorical.
- B. This variable is quantitative.
- C. This is an identifier variable.
- D. Both A and C.
- E. Both B and C.

**1.2.1 Identify various aspects of studies and experiments and/or classify variables.**

3. In a survey undertaken by a university to gauge student satisfaction in its online MBA program, one question asked students to indicate the number of credits they had transferred into the program. Which of the following is true?

- A. This variable is categorical.
- B. This variable is transactional.
- C. This variable is quantitative.
- D. This is an identifier variable.
- E. This variable is nominal.



**1.1.1 Identify various aspects of studies and experiments and/or classify variables.**

4. Researchers in e-commerce design an experiment to determine what factors are most important to online consumers when completing a transaction via the Internet.

Individuals perform tasks on a set of Web sites and record their impressions about various attributes. Which of the following would best describe the cases?

- A. Participants
- B. Respondents
- C. Experimental Units
- D. Transactions
- E. Variables

**1.2.1 Identify various aspects of studies and experiments and/or classify variables.**

5. A popular travel magazine regularly reviews hotels worldwide. In a recent issue, it focused on hotels in Hawaii. Among the variables for which it provided data was whether or not the hotel included a spa. This is a

- A. quantitative variable.
- B. identifier variable.
- C. ordinal variable.
- D. categorical variable.
- E. transactional variable.

**1.2.1 Identify various aspects of studies and experiments and/or classify variables.**

6. A popular travel magazine regularly reviews hotels worldwide. In a recent issue, it focused on hotels in Hawaii. Among the variables for which it provided data was the price range for rooms with an ocean view. Which of the following statements is true?

- A. These data are transactional.
- B. This variable is quantitative and the units are \$.
- C. This variable is quantitative and the units are number of rooms.
- D. This variable is qualitative and ordinal.
- E. These data are time series.

**1.2.1 Identify various aspects of studies and experiments and/or classify variables.**

7. A mid-priced chain of hotels, *Hometown Suites*, strives to make its guests “feel at home” by providing amenities such as microwaves in every room. Comment cards are used to get feedback on the importance of such amenities by asking guests to rate them using the scale: \_\_\_ Essential \_\_\_ Important \_\_\_ Not Important. These data are

- A. qualitative.
- B. nominal.
- C. ordinal.
- D. both A and B.
- E. both A and C.

**1.3.1 Identify various aspects of studies and experiments and/or classify variables.**

8. A locally owned spa, *Alexander's*, is interested in adding a tea room that not only offers specialty teas but an organic lunch menu. In order to determine how many of its regular customers would be interested in such an addition, *Alexander's* sent out a short e-mail questionnaire. The source of these data is

- A. the Internet.
- B. transactional.
- C. a designed survey.
- D. a designed experiment.
- E. secondary.

**1.2.3 Identify various aspects of studies and experiments and/or classify variables.**

9. A locally owned spa, *Alexander's*, is interested in adding a tea room that not only offers specialty teas but an organic lunch menu. In order to determine how many of its regular customers would be interested in such an addition, *Alexander's* sent out a short e-mail questionnaire. One question asked its customers to indicate how much they spend monthly on all natural, organic products. These data are

- A. cross-sectional.
- B. time series.
- C. categorical.
- D. transactional.
- E. experimental.

**1.2.3 Identify various aspects of studies and experiments and/or classify variables.**

10. A mid-priced chain of hotels, *Hometown Suites*, collects data on monthly occupancy rates for forecasting and planning purposes. These data are

- A. cross-sectional.
- B. time series.
- C. categorical.
- D. transactional.
- E. experimental.

***Chapter 1: Data and Decisions – Quiz E – Key***

1. B
2. A
3. C
4. A
5. D
6. B
7. E
8. C
9. A
10. B

**Chapter 1: Data and Decisions – Quiz F– Multiple Choice**

Name \_\_\_\_\_

**1.1.1 Identify various aspects of studies and experiments and/or classify variables.**

1. In June, 2013, Viamedia sponsored an online survey to sample a group of American adults aged 18 and older about watching television. American adults aged 18 and older constitute the \_\_\_\_\_ of the study.

- A. Who
- B. What
- C. When
- D. Where
- E. How

**1.2.1 Identify various aspects of studies and experiments and/or classify variables.**

2. A few of the variables for which data were collected in the Viamedia survey about television viewing include age, gender, income, and type of device used to watch television. Which of the variables is categorical?

- A. Age
- B. Type of device used to watch television
- C. Income
- D. All
- E. None

**1.2.1 Identify various aspects of studies and experiments and/or classify variables.**

3. The data collected in a recent (2012) Nielsen Global Survey analyzed Asian American demographics. Which of the following statements is (are) true?

- A. Education level is a categorical variable.
- B. Education level is nominal scaled.
- C. Education level is ordinal scaled.
- D. Both A and B
- E. Both A and C

**1.1.1 Identify various aspects of studies and experiments and/or classify variables.**

4. *Businesses* are interested in the work experience of recent graduates from a local business school. Whether or not the graduates have work experience constitutes the \_\_\_\_\_ of the study.

- A. Who
- B. What
- C. When
- D. Where
- E. How

1.1.1 Identify various aspects of studies and experiments and/or classify variables.

5. What is the “What” in a *Consumer Reports Tipping* study on the level of tipping during the current holiday season compared to the last holiday season?

- A. whether or not tipped
- B. amount of tip compared to last year
- C. the type of tip
- D. the United States

1.2.1 Identify various aspects of studies and experiments and/or classify variables.

6. A *Consumer Reports* survey on the level of tipping for service providers. This is what kind of variable?

- A. Quantitative
- B. Ordinal
- C. Nominal
- D. Both A and C
- E. Both B and C

1.2.1 Identify various aspects of studies and experiments and/or classify variables.

7. A *Consumer Reports* study on tipping takes into consideration median amount of tipping for service providers. Tipping is

- A. is a nominal variable.
- B. is a categorical variable.
- C. is a quantitative variable.
- D. is an ordinal variable.
- E. is an irrelevant variable.

1.2.1 Identify various aspects of studies and experiments and/or classify variables.

8. The Human Resources Department of a large corporation maintains records on its employees. Data are maintained of the following variables: *Age*, *Employment Category*, *Education*, and *Whether or not the employee has an advanced degree*. Which of these variables are categorical?

- A. *Age*, *Employment Category*, and *Education*
- B. *Employment Category* and *Education*
- C. *Education* and *Whether or not the employee has an advanced degree*
- D. All of the variables
- E. None of the variables

1.2.3 Identify various aspects of studies and experiments and/or classify variables.

9. Which of the following is (are) based on cross sectional data?

- A. Company quarterly profits
- B. Percentage of American adults who work full time
- C. Dow Jones Index
- D. All of the above
- E. None of the above.

1.2.3 Identify various aspects of studies and experiments and/or classify variables.

10. Which of the following is (are) time series data?

- A. Monthly receipts at an apparel shop
- B. Monthly demand for a technology item
- C. Dow Jones Index
- D. All of the above
- E. None of the above

***Chapter 1: Data and Decisions – Quiz F – Key***

1. A
2. B
3. E
4. B
5. B
6. B
7. C
8. B
9. B
10. D