

Chapter 1. Statistics and Data Solutions

1.
 - a. The population is all iPhone 4 users.
 - b. Sample statistics
2.

The value 35 is the estimated average age of the population. It is both costly and time consuming (likely impossible) to take a census of all video game players and compute the actual average age.
3.
 - a. The population is all students enrolled in the accounting class.
 - b. The value 3.29 represents the population parameter since we are not choosing a sample but drawing results from the actual population.
4.
 - a. The population is all marketing managers.
 - b. No, the average salary is a sample statistic computed from a sample, not the population.
5.
 - a. The population is all elderly people. The sample consists of 949 elderly people.
 - b. 22% and 17% represent the sample statistics.

6.

Date	Adj. Close Price
1/4/2016	27.99
2/1/2016	28.26
3/1/2016	30.83
4/1/2016	29.82
5/2/2016	29.31
6/1/2016	30.76
7/1/2016	30.43
8/1/2016	30.52
9/1/2016	29.17
10/3/2016	28.65
11/1/2016	30.29
12/1/2016	31.35

Source: Monthly Adj Close Price in 2016 from <http://www.finance.yahoo.com>. Retrieved March 19, 2017.

These numbers represent time series data. The adjusted close price of the stock grew over this 12-month period, ranging from a low of \$27.99 in January and increasing to \$31.35 by December.

7.

Note: Individual answers will vary. This is an example of what an answer may look like.

Accommodation	Monthly Expenses
Dorm	\$435
Dorm	\$480
Rental	\$505
Other	\$50
Rental	\$600
Dorm	\$425
Rental	\$525
Other	\$550
Other	\$325
Dorm	\$385
Rental	\$475
Dorm	\$400
Dorm	\$485
Rental	\$485
Other	\$475
Dorm	\$425
Rental	\$500
Dorm	\$375
Rental	\$625
Other	\$350

This data is cross-sectional data because it can be assumed to be taken at the same point in time. The monthly lodging expenses ranges from a low of \$50 to a high of \$625. The average expense is \$443.75.

8. *Note: The data for this website changes regularly. Therefore, individual answers will differ depending on the date the data is retrieved. This is an example of what the table may look like:*

Homes	Price	Number of Beds	Square Feet	Built
1	\$374,900.00	3	3073	2004
2	\$112,000.00	4	1788	2005
3	\$190,000.00	3	1467	2009
4	\$160,000.00	4	1891	2000
5	\$30,000.00	3	1026	1977
6	\$317,000.00	4	3465	2004
7	\$62,000.00	3	1362	1973
8	\$120,000.00	3	2005	2002
9	\$289,324.00	3	1705	2008
10	\$355,000.00	4	3648	2001
11	\$65,000.00	2	1296	1976
12	\$33,000.00	4	1696	1987
13	\$110,000.00	3	1376	2000
14	\$310,000.00	5	3716	2001
15	\$75,000.00	3	1230	2004
16	\$60,000.00	3	1285	2004
17	\$140,000.00	4	2217	2003
18	\$178,000.00	4	1967	1998
19	\$226,000.00	1	533	2006
20	\$128,000.00	3	1483	2006

Source: <http://zillow.com/>; Retrieved August 20, 2012.

The data above is cross-sectional data. The data represents characteristics of homes sold at approximately the same time of the year.

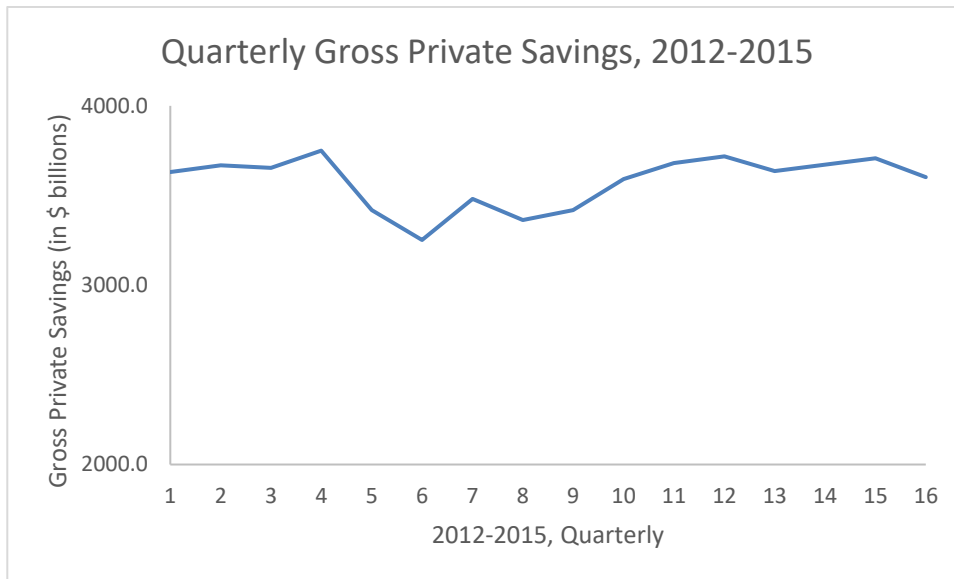
- 9.

DATE	GPSAVE
Q1.2012	3631.8
Q2.2012	3667.5
Q3.2012	3653.8
Q4.2012	3750.2
Q1.2013	3417.8
Q2.2013	3252.1

Q3.2013	3480.8
Q4.2013	3362.5
Q1.2014	3418.6
Q2.2014	3591.7
Q3. 2014	3680.7
Q4. 2014	3719.2
Q1.2015	3635.9
Q2.2015	3672.4
Q3. 2015	3707.8
Q4. 2015	3602.9

Source: <http://research.stlouisfed.org/fred2/>;

Retrieved: March 19, 2017



These numbers represent time series data. Savings are relatively flat over this time period.

10.

State	Median Household Income in 2010 (\$)
Alabama	40,976
Arizona	47,279
California	54,459
Florida	44,243
Georgia	44,108
Indiana	46,322
Iowa	49,177
Maine	48,133
Massachusetts	61,333
Minnesota	52,544

Mississippi	37,985
New Mexico	45,098
North Dakota	51,380
Washington	56,253

Source: <http://www.census.gov/>; Retrieved August 20, 2012.

These data are estimates for 2010 – you may be able to obtain more recent estimates. These numbers represent cross-sectional data. They record the median income by family size for different states. In this particular group of states, Massachusetts has the highest median income by family size whereas Mississippi has the lowest median income. Also, states in the North such as Massachusetts, Minnesota and Washington have higher incomes than Southern states.

11. The front page of the New York Times website is likely to be textual (written reports) with multimedia contents (photographs etc.). The resulting data is unstructured in that it does not conform to a predefined row-column format.
12. Data on price and fuel economy of small hybrid vehicles can be specified in a predefined row-column format and, therefore, is structured.
13. The resulting data about online social media usage has a well-defined row-column format and is, therefore, structured. The data is cross-sectional since it is collected at the same point in time.
14. The data for different car rental car companies in Seattle, Washington, and Portland, Oregon is structured since it is specified in a well-defined row-column format. It represents time series since it covers car rental over several weeks in 2017.
15.
 - a. Quantitative; discrete
 - b. Qualitative
 - c. Quantitative; continuous

- 16.
- a. Qualitative
 - b. Quantitative; continuous
 - c. Quantitative; discrete
- 17.
- a. Nominal
 - b. Interval
 - c. Ordinal
- 18.
- a. Ratio
 - b. Ordinal
 - c. Nominal
- 19.
- a. Ratio
 - b. Interval
 - c. Ratio
- 20.
- a. Nominal scale of measurement. The values differ in name.
 - b.

Major	# of Students
Accounting	5
Economics	7
Finance	5
Marketing	3
Management	6
Undecided	4

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- c. An inspection of the data shows that Economics has the highest number of students whereas Marketing has the lowest.
- 21.
- a. The Year data is measured on an interval scale. The values can be ranked, categorized and measured when using this kind of scale. However, there is no true zero point so we cannot calculate meaningful ratios between years.

b.

Rating	Number of Companies
*	0
**	11
***	14
****	5
*****	0

The Morningstar's based rating system is measured on an ordinal scale. The values can be ranked and categorized but the differences between ranks are meaningless. The data shows that 25 of the 30 (approximately 83%) of the companies have a two or three-star rating. Only 5 of the 30 companies have a four-star rating. None of the companies has a one-star or a five-star rating.

- c. The Stock Price data is measured on a ratio scale. This type of scale is the strongest form of measurement. There is a true zero point which allows for the calculation of meaningful ratios between values.