

1.1 Assess Your Understanding

1. (a) III (b) VIII (c) IV (d) VII (e) I (f) VI (g) II (h) V
2. (a) V (b) IV (c) VI (d) II (e) I (f) III
3. The group to be studied as defined by the research objective is the population. Any subset of the population is a sample.
4. parameter 4. statistic 5. quantitative
6. qualitative 7. quantitative 8. qualitative
9. continuous 10. discrete 11. ordinal
12. interval 13. nominal 14. ratio
15. Population: all United States households. Sample: 50,000 households surveyed
16. Population: women 27 to 44 years of age with hypertension. Sample: 7373 women 27 to 44 years of age with hypertension
17. Population: full-time students enrolled at the community college. Sample: the 128 full-time students surveyed
18. Individuals: Alabama, Colorado, Indiana, North Carolina, Wisconsin
Variables: minimum age for driver's license (unrestricted), mandatory belt use seating positions, maximum allowable speed limit on rural interstates
Data for minimum age for driver's license: 17, 17, 18, 16, 18
Data for mandatory belt use seating positions: front, front, all, all, all
Data for maximum allowable speed limit on rural interstates: 70, 75, 70, 70, 65 (mph)
The variable *minimum age for driver's license* is continuous; the variable *mandatory belt use seating positions* is qualitative; the variable *maximum allowable speed limit on rural interstates* is continuous
19. (a) To determine if application of duct tape is as effective as cryotherapy in the treatment of common warts
(b) People with warts; the 51 patients with warts
(c) 85% of the patients in group 1 and 60% of the patients in group 2 had complete resolution of their warts.
(d) Duct tape is significantly more effective in treating warts than cryotherapy.
20. (a) To determine the proportion of adults, aged 18 and older, living in all 50 U.S. states and the District of Columbia who think investing \$1000 in the stock market is a good idea or bad idea.
(b) Adults, aged 18 and older, living in all 50 U.S. states and the District of Columbia
(c) 1018 adults, aged 18 and older, living in all 50 U.S. states and the District of Columbia
(d) Of the 1018 adults surveyed, 46% believed it was a bad idea to invest \$1000 in the stock market.
(e) Gallup is 95% confident that the percentage of adults, aged 18 and older, living in all 50 U.S. states and the District of Columbia, who believe it is a bad idea to invest \$1000 in the stock market is between 42% and 50%.
21. (a) Nominal (b) Ordinal (c) Ratio
22. (a) To determine whether season of birth affect mood or not.
(b) 400 people (c) Qualitative
(d) People born in summer are prone to anger. People born in winter are less likely to be irritable.
(e) Season of birth plays a role in one's temperament.
23. Qualitative variables describe characteristics of individuals. Quantitative variables provide numerical counts or measures of individuals.
24. A discrete variable is a quantitative variable that has a finite or countable number of possible values. A discrete variable cannot take on every possible value between any two possible values. Continuous variables are also quantitative variables, but there are an infinite number of possible values that are not countable. A continuous variable may take on every possible value between any two values.

25. A variable is at the nominal level of measurement if the values of the variable provide a naming scheme in which the values of the variable cannot be ranked or put in a specific order. A variable is at the ordinal level of measurement if it has the characteristics of the nominal level of measurement and the naming scheme allows the values of the variable to be ranked or placed in a specific order. A variable is at the interval level of measurement if it has the properties of the ordinal level of measurement and the difference in the values of the variable has meaning. A value of zero does not mean the absence of the quantity. Arithmetic operations such as addition and subtraction can be performed on the values of the variable. A variable at the ratio level of measurement has the properties of the interval level, and the ratio of the values of the variable has meaning. A value of zero at the ratio level means the absence of the quantity. Arithmetic operations such as multiplication and division can be performed on the values of the variable.

26. This means that the values of the variable change from individual to individual. In addition, certain variables can change over time for certain individuals. Because data vary, two different statistical analyses of the same variable can lead to different results.

27. (1) Identify the research objective, (2) collect the data needed to answer the question(s) posed in the research objective, (3) describe the data, (4) perform inference (extend the results of the sample to the population and report a level of confidence in the results).

28. No. We measure age to as much accuracy as we wish.