# Predicting Population Outcomes

1. Population:
   A group of people or objects
2. You can use samples to predict population outcomes using proportions.
3. An unbiased sample is proportional to the actual population.
4. A proportion is an equation that states that two ratios are equivalent.

5. The test results from a serology study of 3300 Santa County, California residents were recently released . Fifty antibody tests were positive. Based on these results, predict the outcome of positive antibody tests for the population of California, which is about 3,950,000.

$$\frac{\text{\# of positive tests in sample}}{\text{Total \# of people/tests involved in sample}} = \frac{\text{predicted \# of people with positive tests in population}}{\text{total \# of people in a population}}$$

$$\frac{50}{3300} = \frac{x}{3{,}950{,}000}$$

X=59,848.48 estimated people with positive tests in the population

6. Remember that people and whole objects cannot be reflected as a decimal part. Therefore, round the number up by one. We can estimate that about 59,849 people will have positive antibody tests in California, based on this study.
7. Tables and graphs can also be used when predicting population outcomes.
8. The data shows the survey results of 75 randomly selected students.

| Age middle school students started using social media | |
|---|---|
| **Age in years** | **Number of Students** |
| 9 or younger | 6 |
| 10 | 10 |
| 11 | 34 |
| 12 | 23 |
| 13 | 2 |

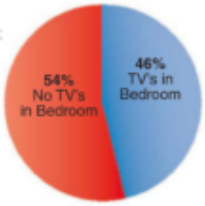
The school has 300 students total. Based on the results of the poll, how many of the school's students should be expected to have started using social media at age 11?

$$\frac{\text{\# of students who have started using social media at age 11 in sample}}{\text{Total \# of students involved in sample}} = \frac{\text{predicted \# of students who have started using social media at age 11 in population}}{\text{Total \# of students in population}}$$

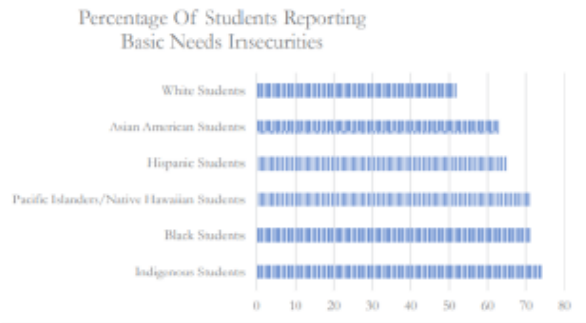
_____ = _____

# Practice: Predicting Population Outcomes

**The circle graph shows the results of a survey in which children ages 8 to 12 were asked whether they have a television in their bedroom. Predict how many out of 1,725 students would not have a television in their bedroom.**




Use the percent proportion to make a prediction.




According to a survey, about 73.8% of Black college students reported basic needs insecurities. If there are about 13,200 Black students enrolled at Georgia State University, how many are predicted to report a basic needs insecurity?

The data shows the results of 29 randomly selected students. If there are 96 students on Team 7D, predict how many students would choose TikTok as their favorite social media platform: