

This survey asks a variety of questions of college students. Suppose you were an online university interested in studying the habits of college students in general. Consider the following questions:

1. How well do the results collected from this survey represent the market for undergraduate college students?
2. How well do the results represent American undergraduate college students? [Hint: Compare the profile on the questions shown below with data showing typical characteristics of American undergraduate students.]
3. How well do the results represent American business students?
4. Can the data be stratified in a way that would allow it to represent more specific populations? Explain your answer.

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Courtesy of Qualtrics.com

A researcher who wants to investigate a population with an extremely small number of population elements may elect to conduct a census rather than a sample because the cost, labor, and time drawbacks would be relatively insignificant. For a company that wants to assess salespersons' satisfaction with its computer networking system, circulating a questionnaire to all twenty-five of its employees is practical. In most situations, however, many practical reasons favor sampling. Sampling cuts costs, reduces labor requirements, and gathers vital information quickly. These advantages may be sufficient in themselves for using a sample rather than a census, but there are other reasons. The Research Snapshot on page 317 describing the origins of the Gallup poll describe its very practical origins. Ultimately, sampling is a practical matter.

Accurate and Reliable Results

Another major reason for sampling is that most properly selected samples give results that are reasonably accurate. If the elements of a population are quite similar, only a small sample is necessary to accurately portray the characteristic of interest. Thus, a population consisting of 10,000 eleventh-grade students in all-boys Catholic high schools will require a smaller sample than a broader population consisting of 10,000 high school students from coeducational, public, secondary schools.

A visual example of how different-sized samples allow one to draw conclusions is provided in Exhibit 12.1. A sample is similar to a jigsaw puzzle that isn't solved yet. Even without looking at the box cover, the puzzler probably doesn't have to wait until every piece is in place to draw a conclusion of what the picture will be. However, as more pieces are put in place, which is analogous to more units being sampled, conclusions can be made with greater confidence. Thus, larger samples allow conclusions to be drawn with more confidence that they truly represent the population.

A sample may even on occasion be more accurate than a census. Interviewer mistakes, tabulation errors, and other nonsampling errors may increase during a census as workers suffer from burnout, fatigue, incompetence, or dishonesty. In a sample, increased accuracy may sometimes be possible because the fieldwork and tabulation of data can be more closely supervised. In a field survey, a small, well-trained, closely supervised group may do a more careful and accurate job of collecting information than a large group of nonprofessional interviewers who try to contact everyone. The U.S. Census Bureau conducts surveys on samples of populations as a way of checking the accuracy of the actual census of those populations. If the conclusions drawn from the sample disagree with the census results, the census is deemed inaccurate and becomes a candidate to be redone because an accurate census is required by law every ten years.