
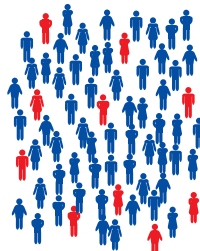


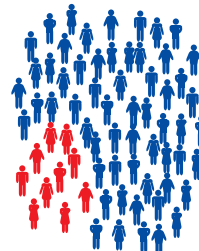
## Determining Whether a Sample is Representative

Statistical inference only applies when the sample is randomly chosen from the population. Even then, there may be other factors that make the sample unrepresentative. For a sample to be random, each member of the population must have an equal chance of being chosen.

Key:  
 = chosen



Random Sample



Nonrandom Sample

Obtaining a sample that is truly representative is a major problem faced by researchers, polling organizations, and market research departments.

### EXAMPLE 3 Analyzing How a Poll Can Go Wrong

Comment on the following article from NBC News.

“When there’s plentiful public polling and stable national trends to base their assumptions upon, their prognostications are usually more or less close to the mark. But politics is unpredictable, and pollsters use different methods to determine who’s up and who’s down. Every once in a while, they get it wrong.

The famous erroneous 1948 ‘Dewey defeats Truman’ banner headline in the first edition of the *Chicago Tribune* was the result of polls and conventional wisdom that turned out to be dramatically off base. After Los Angeles Mayor Tom Bradley’s unanticipated loss in the 1982 California governors’ race, many blamed racial bias undetected in public opinion polls. After Barack Obama’s dramatic win in the Iowa caucuses in 2008, the media’s overwhelming assumption that he would continue his march to victory days later in New Hampshire was due to polling. Those assumptions were shattered when Hillary Clinton wound up winning—prompting weeks of media navel-gazing and questions of ‘how did we get it so wrong?’”



On election night in 1948, the press deadline for the *Chicago Tribune* required that the first post-election issue go to press before the states had reported many of their results. Conventional wisdom, supported by polls, predicted that Dewey would win. So, the *Tribune* went to press with the incorrect headline “DEWEY DEFEATS TRUMAN.”

### SOLUTION

There are many reasons a poll can go wrong. Here are a few.

- The people being polled do not represent a random selection from the population.
- The questions in the poll can be leading or confusing, as in “Do you plan to vote for Proposition 4, which is against ownership of pit bulls?”
- The people being polled may not know how they will react to a product or how they plan to vote.

 **Checkpoint**

Help at [Math.andYOU.com](http://Math.andYOU.com)

What other reasons might cause a poll to go wrong?