



## ➤ Random Sampling: An Overview

Sampling is a technique employed to economically estimate some piece of *information* about a *total population*, such as all passenger name records (PNRs) prepared for a company. Topaz International uses a standard statistical formula found in many text books for estimating the size of a sample needed to meet certain stated conditions of accuracy. Our brief review of the sampling technique that we use is a simplified version of what can be found in these statistic text books. It is our effort to be as simple as possible in describing how we attain our sample size recommendations for our clients.

**Confidence Levels:** Clients usually make decisions about the desired accuracy of audit results based on business goals: the higher the required confidence level and precision, the larger the sample should be. But decisions must also consider how the results will be utilized. If audit results are applied as a negotiating tool, the confidence level and, especially, the degree of precision should be higher than if the results are used for a less demanding purpose.

By choosing any confidence level, for example 99%, you could make the statement “99% of the time the sample you choose would be accurate as if you tested 100% of the population, within the precision of the estimate”. Unless you check every PNR, it is difficult to determine what percent were offered or booked at the lowest available airfare; The terms *confidence level* and *degree of precision* help explain the sample process results when a total population cannot be tested. What does it mean to have a certain degree of precision?

**Precision of the Estimate:** Precision refers to the spread within which the “true” percent of PNRs with the lowest airfare offered or booked resides. If the above sample had been drawn to have a 0.5% degree of precision, the result would be 99%, plus or minus 0.5%. That means that we are confident that the “true” percent is somewhere between 98.5% (99% minus 0.5) and 99.5% (99% plus 0.5). If the sample had been drawn to have a 2% degree of precision, we would say that the “true” result was somewhere between 97% and 100%.

Topaz International has been using this scientific sampling method for over 20 years to assist our clients in meeting their goals.

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