

Nonprobability Sampling

What Auditors Need to Know About Non-Probability (Judgmental) Sampling

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Course Objectives

To familiarize participants with factors to consider in:

- deciding whether a nonprobability sample is appropriate, and
- selecting a nonprobability sample.

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Probability and Nonprobability Sampling

A sample is a subset of the population:

- Probability sample—a sample chosen so that each member of a population has a known, non-zero chance of being selected
- Nonprobability sample—a sample that is not a probability sample

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Features of Probability Sampling

- ◆ Can make statements about the population [generalize]
- ◆ Can quantify amount of error due to sampling
- ◆ May indicate presence and extent of condition in population
- ◆ Provide unbiased procedure for selecting cases

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Features of Nonprobability Sampling

- ◆ Can make statements only about the sample units selected
- ◆ May be a viable option when probability sampling not feasible
- ◆ May indicate presence but not extent of condition in population

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Probability or Nonprobability Sampling

If sample information is needed for a job:

- FIRST consider probability sampling
- If probability sampling is not appropriate or feasible, THEN consider nonprobability sampling

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Some Reasons to Use Nonprobability Sampling

- Need detailed, specific information
- Time or resource constraints

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Frequent Applications of Nonprobability Sampling

Select:

- ♦ Agency files
- ♦ Interview participants
- ♦ Site visit locations
- ♦ Regions or Field Offices

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Nonprobability Sampling

Goal is to select cases in a way that is:

- Systematic
- Carefully Considered
- Valid and Reliable

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Probability and Nonprobability Sampling : Example #1

- ◆ To what extent are Department of Defense airline travel purchases that are “premium” (business class or first class) not properly authorized or not properly justified?

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Probability and Nonprobability Sampling : Example #2

- ◆ What were the lessons learned from the Census 2000 Outreach and Promotion efforts?

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Steps to Take in Selecting a Nonprobability Sample (1)

- ◆ Define what your sample covers
- ◆ Determine which type of sample (probability or nonprobability)
- ◆ Specify the case/unit(s) of analysis

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Steps to Take in Selecting a Nonprobability Sample (2)

- ◆ Develop criteria to select initial group of cases
- ◆ Determine number of cases to select
- ◆ Consider ways to maximize the validity and reliability of your findings
- ◆ If a list of cases is not available, consider alternative means

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Nonprobability Sample Selection (1)

Methods based on using a Population List

- ◆ Best Case
- ◆ Worst Case
- ◆ “Bracketing”
- ◆ “Typical” case
- ◆ Intense Case
- ◆ Unique Case
- ◆ “Cluster”

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Nonprobability Sample Selection (2)

Techniques to Use When a List of the Population is Not Available

- ◆ Snowball
- ◆ Expert Referral
- ◆ Convenience

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Discussion Exercise

How well are small business being served by IRS?

- What factors, if any, complicate the interactions between small businesses and IRS
- How, if at all, is IRS responding to these factors.

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Reporting on Nonprobability Samples

- ◆ Provide information about nonprobability samples in
 - Audit products
 - Audit documentation
- ◆ Characterize and caveat results appropriately

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Describing Nonprobability Samples in Products (1)

- ◆ Appropriate language to describe how sample was selected
- ◆ Appropriate wording describing the cases
- ◆ Appropriate caveats in body of the report
- ◆ Detailed description is typically in sections discussing objectives or methods of report

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Describing Nonprobability Samples in Products (2)

- ◆ Footnote usually in body of report:
“Results from nonprobability samples cannot be used to make inferences about a population, because in a nonprobability sample some elements of the population being studied have no chance or an unknown chance of being selected as part of the sample.”

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Describing Nonprobability Samples in Products (3)

Refer to cases from a nonprobability sample in the body of the report as:

- “Our large grant study cases”
 - “The two largest grant programs”
 - “Grants for New York and Los Angeles”
- NOT
- “Large grant cases” or “Large grants”

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Characterizing Results from Nonprobability Samples

- Use accurate language and caveats to describe results
- Generally avoid percentages—use numbers instead
- Don’t generalize beyond nonprobability sample

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Documenting Nonprobability Samples

- ◆ Document details about what was done, including
 - how nonprobability sampling decision was made
 - selection criteria
 - other details, such as what nonprobability sample covers

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Nonprobability Sampling Examples

- ◆ <http://www.gao.gov>
- ◆ ESA Consultations (GAO-04-93)
- ◆ Review of Chapin Hall Study (GAO-03-956)
- ◆ Superfund Program (GAO-03-850)
- ◆ Stewardship Contracting (GAO-04-652)
- ◆ ESA Science (GAO-03-803)

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Nonprobability Sampling Examples

- ◆ Utilization of Woody Biomass (GAO-05-373)
- ◆ NPS Special Use & Photography/Filming Permits (GAO-05-410)
- ◆ Mercury Control Technologies (GAO-05-612)
- ◆ Small Business Subcontracting (GAO-05-459)
- ◆ Wind Power (GAO-05-906)

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In Conclusion

- ◆ Questions or Comments?

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Thank you . . .

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