

# SAMPLING FOR INTERNAL AUDITORS

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What is it that internal auditors do?

- Assist in evaluating the entity's control environment.
- Assist in evaluating the entity's risks and priorities.
- Assist in evaluating the design of controls.
- Assist in evaluating the implementation of controls.
- Assist in evaluating the operating effectiveness of controls.

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Alpha Beta – is that a supermarket chain?

What is sampling?

- Why sampling?
- What are its weaknesses?

Want 100% reliability and 0% tolerance? Seek it elsewhere. Sampling is a game of compromise. It's all about cost-benefit.

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Two broad types of statistical sampling models, designed to achieve two very different goals:

- Attribute sampling seeks to assure you of the consistent presence (or absence) of an attribute in a population, acknowledging that exceptions complicate things. It's an all-or-nothing game.
- Variable sampling assigns an attribute as a given in a population, then seeks to estimate its magnitude, acknowledging that variability complicates things. It's a measurement game.

Which one is right for evaluating internal control?

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From here on out, we will focus on attribute sampling.

Three factors to consider when designing the sample:

- What percentage of the time must the sample be right when it gives assurances about the population? (Reliability)
- By how much can the population deviate from the way the sample predicts the population will behave? (Tolerance)
- How many exceptions will the sample have? (Stress)

These inputs dictate the sample size. Unapologetically.

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## 80% Reliability

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Tolerable Deviation	Sample Deviation			
	0.0%	0.2%	0.4%	0.6%
2%	81	95	113	139
3%	54	60	67	76
4%	41	44	48	52
5%	33	35	37	39

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90% Reliability				
Tolerable Deviation	Sample Deviation			
	0.0%	0.2%	0.4%	0.6%
2%	116	139	171	217
3%	77	87	99	114
4%	58	63	70	77
5%	47	50	54	58

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95% Reliability				
Tolerable Deviation	Sample Deviation			
	0.0%	0.2%	0.4%	0.6%
2%	150	184	232	300
3%	100	115	132	155
4%	75	83	92	103
5%	60	65	71	77

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Does the population size matter?

90% Reliability, No Sample Deviations				
Tolerable Deviation	Population Size			
	100	200	400	Unltd
2%	54	74	90	116
3%	44	56	65	77
4%	37	45	49	58
5%	32	38	42	47

What about IT-driven controls?

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Is the sample reflective of the population?

- The method of selection really, really matters.
- The “random” selection method. (Avoid the failings of bias).
- The concept of “reliability.” (Seek representation.)
- Risk and materiality. (Chase what matters.)
- Can you do everything right and get it all wrong?
- Can you “cheat” the rules to improve your outcome?

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What is stratification?

- Can you dissect a sample size designed for the whole?
- What is the nature of each stratum?
- What are some strategic reasons for choosing to stratify?

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How do you decide on the levels of reliability and tolerance?

- If performed pursuant to the requirements of a supervising regulator, has that regulatory body provided guidance?
- Back to basics. Evaluate the entity's risks and priorities. Then think in terms of risk and materiality. Resources aren't unlimited. It's all about cost-benefit.
- What are your peers doing? In this case, will it fly to say "everybody's doing it"? If you say it, can you prove it?
- What are outsourced resources doing?

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You've done the work. How do you report the results?

- Put yourself in the shoes of those charged with governance.
- Risk and materiality should govern your communications.
- Understand. Simplify. Interpret. Judge.
- Keep meticulous records. Be prepared to defend.