EFFECTIVE DATE

(02-22-2021)

PURPOSE

(1)   This transmits revised IRM 4.47.3, Computer Audit Specialist, Statistical Sampling Auditing Techniques.

BACKGROUND

(1)   This IRM provides guidelines and procedures for the computer audit specialist (CAS) to follow when conducting an examination involving a statistical sample.

SCOPE

(1)   The changes in this IRM revision are limited to:

- Updating organizational terms and titles.
- Adding or correcting references and citations.
- Reorganizing basic internal control information.
- Removing outdated references.
- Updating program administration points of information needed for employees to do their jobs.

(2)   Certain portions of this IRM are under review and may be addressed in future guidance.

MATERIAL CHANGES

(1)   Renamed IRM 4.47.3.1, Program Scope and Objectives, in accordance with the internal control requirements described in IRM 1.11.2, Internal Management Documents System, Internal Revenue Manual (IRM) Process.

(2)   Added the following new subsections to IRM 4.47.3.1 and rearranged content to conform to the prescribed format:

IRM Section Number	Title
4.47.3.1.1	Background
4.47.3.1.2	Authority
4.47.3.1.3	Roles and Responsibilities
4.47.3.1.4	Program Goals
4.47.3.1.5	Training
4.47.3.1.6	Acronyms
4.47.3.1.7	Related Resources

(3)   IRM 4.47.3.1.3, Roles and Responsibilities: added statistical sampling coordinator duties for supporting campaigns and the Knowledge Base Library.

(4)   IRM 4.47.3.1.5, Training: added core training expected of statistical sampling coordinators and updated course number and description of CAS Phase IV.

(5)   IRM 4.47.3.3, General Instructions: updated to include a CAS manager's approval for a statistical sample developed in their group and mandatory requirements for statistical sampling coordinator involvement.

(6)   Editorial changes were made throughout the document.

EFFECT ON OTHER DOCUMENTS

IRM 4.47.3 dated July 15, 2011 is superseded.

AUDIENCE

The intended audience is computer audit specialists, statistical sampling coordinators, and all Services and Enforcement organization employees who request CAS services regarding statistical sampling.

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4.47.3
Statistical Sampling Auditing Techniques

Table of Contents

4.47.3.1 (02-22-2021) **Program Scope and Objectives**	(1)	**Purpose**: This IRM provides guidance for computer audit specialists and statistical sampling coordinators for developing a statistical sampling. It provides guidance for when it is appropriate to use statistical sampling, methods for developing sample and determining the proposed adjustment. This IRM defines the role of the statistical sampling coordinator and the requirements for requesting statistical sampling coordinator assistance.
	(2)	**Audience:** The intended audience is computer audit specialists (CAS), statistical sampling coordinators (SSC), and all Services and Enforcement employees who request CAS services regarding statistical sampling.
	(3)	**Policy Owner**: LB&I Policy under the Strategy, Policy and Governance office in the Assistant Deputy Commissioner Compliance Integration organization.
	(4)	**Program Owner**: Director, Field Operations (DFO) South Central in the Western Compliance Practice Area (WCPA) has program responsibility over the statistical sampling coordinators.
4.47.3.1.1 (07-15-2011) **Background**	(1)	The Office of the Chief Counsel and the Department of Justice have jointly analyzed the legal ramifications of utilizing probability-based sampling techniques in the examination of large accounts and have concluded that substantial authority exists for the determination of tax deficiencies based on statistical samples.
	(2)	Statistical sampling techniques are valuable examination tools where effective use of resources makes it uneconomical to audit voluminous accounting data. Proper use of statistical sampling substantially increases the quality of IRS examinations.
4.47.3.1.2 (02-22-2021) **Authority**	(1)	See IRM 4.47.1.1.2, Computer Audit Specialist Program (CAS), Authority.
4.47.3.1.3 (02-22-2021) **Roles and Responsibilities**	(1)	The DFO in coordination with the WCPA director will determine the number of SSCs and is responsible for the statistical sampling auditing techniques.
	(2)	The role of the SSC includes:

- Reviewing statistical samples conducted by other CASs
- Assisting the CAS in the development of complex sampling plans
- Assisting the CAS in the review of taxpayer's use of sampling
- Discussing complex statistical sample issues with internal and external legal counsel and outside experts
- Teaching Training Course #11025e, Statistical Sampling (CAS Phase IV)
- Developing and delivering training to other CASs in the form of team meetings, continuing professional education, technical conferences, etc.
- Drafting guidance on statistical sampling areas for issuance by the DFO.
- Providing support to the development or implementation of campaigns in LB&I, when requested,
- Developing and maintaining a statistical sampling Knowledge Base Library for LB&I.

(3)   All correspondence related to the program should be addressed to the attention of SE:LB:WC:SC.

| 4.47.3.1.4
(07-15-2011)
Program Goals | (1) | The objective of the statistical sampling auditing technique is to maximize the effective use of statistical sampling in IRS examinations, and at the same time: |

- Ensure that estimates of adjustments to tax liabilities resulting from statistical samples are statistically sound and legally defensible.
- Ensure the fair and equitable treatment of taxpayers examined by using statistical sampling techniques.

(2) To attain this objective, the DFO will:

- Explore and identify areas where statistical sampling may be used to improve the quality and effectiveness of examinations, investigations, and compliance projects.
- Identify and develop the tools necessary for implementing statistical sampling in examinations.
- Provide training recommendations and assist in the development of training for examiners at all levels.
- Coordinate and monitor the use of statistical sampling by providing mechanisms for distributing technical information and providing technical assistance.

4.47.3.1.5
(02-22-2021)
Training

(1) It is imperative that SSCs have the highest level of expertise. The core training for SSCs includes:

- Training course 11025e Statistical Sampling (CAS Phase IV)
- SAS Programming 1: Essentials
- SAS Programming 2: Data Manipulation Techniques
- Self-study using "Sampling: Design and Analysis, 2nd Edition " textbook
- Training in R programming

(2) Training Course #11025e, Statistical Sampling (CAS Phase IV), is primarily designed to train CASs who provide statistical sampling assistance to examiners. It contains an in-depth discussion of the basic concepts plus a discussion of more advanced statistical sampling auditing techniques and assumes a basic knowledge of computer concepts. This course is available to persons other than CASs only on an exception basis.

4.47.3.1.6
(02-22-2021)
Acronyms

(1) The table below contains commonly used acronyms:

Acronym	Term
CAS	Computer Audit Specialist
DFO	Director of Field Operations
SRS	Specialist Referral System
SSC	Statistical Sampling Coordinator
WCPA	Western Compliance Practice Area

4.47.3.1.7
(02-22-2021)
Related Resources

(1) Guidance on statistical sampling issues can be found on the *CAS Statistical Sampling* resource page.

4.47.3.2 (02-22-2021) **Requests for Assistance**	(1)	Requests for CAS assistance will be made through the LB&I Specialist Referral System (SRS).
	(2)	CASs can request assistance from a SSC by initiating a consultation request using SRS. Non-CAS employees should first work with a local CAS before requesting a SSC.
	(3)	The request for SSCs must be sent to the statistical sampling team manager responsible for the SSCs.

4.47.3.3 (02-22-2021) **General Instructions**	(1)	Projections obtained from examination of statistical (probability) samples of accounting records may be used as the basis for proposing adjustments to items reported on a tax return.
	(2)	Statistical sampling should be considered whenever a group of accounting entries or transactions has sufficient adjustment potential to warrant examination, but the examination of all such transactions is prohibitive in terms of time and resources. In any audit situation where it is reasonable to examine 100 percent of the items under consideration, statistical sampling techniques should not be used.
	(3)	The precision of any statistical sample, to some degree, is based on the sample size used. With estimation sampling plans, optimum sample sizes can be determined from a preliminary sample. Where feasible and within the examination constraints, preliminary samples may be used to estimate a supplemental sample size which when added to the original results will achieve the desired degree of precision required by the plan.
	(4)	The CAS manager or an SSC needs to review and approve IRS statistical samplings.
	(5)	An SCC referral is required when:

  a.   An IRS sample is designed with a projectable stratum with less than 30 items.
  b.   Reviewing and evaluating taxpayer statistical samples.
  c.   Developing a Return Preparer penalty statistical sample.

4.47.3.3.1 (02-22-2021) **Statistical Sampling Application**	(1)	The LB&I Statistical Sampling Application version 1.09272017 (or more current version) will be used by all CASs upon completion of their training on the use of the program. This application may be updated from time to time with technical corrections and enhancements. Updates of the program will be distributed to authorized users of the application by Information Technology. The SSC manager will be responsible for maintaining program documentation.
	(2)	This application will be used on all IRS initiated statistical samples and to test the validity of all taxpayer proposed statistical samples.
	(3)	If a taxpayer or their representatives request this application, the requestor should be advised to use the Freedom of Information Act process.
	(4)	All questions or requests for additional information regarding the application should be directed to a SSC.

4.47.3.3.2
(07-15-2011)
**Determination of
Proposed Population
Adjustment**

(1) The proposed population adjustment will be determined, such that, 95 percent of the time, it will not be greater than the actual adjustment obtainable by a 100 percent examination of the population. This applies regardless of whether the adjustment favors the government or the taxpayer.

(2) As a general rule, using the most conservative limit of the estimated population adjustment (point estimate) at the 90 percent two-sided confidence level will attain the above result. The most conservative limit will generally be computed by subtracting the sampling error from the point estimate. In making the computation, the following specific rules should be applied:

- If the point estimate is positive and greater than the sampling error, the proposed population adjustment is obtained by subtracting the sampling error from the point estimate.
- If the point estimate is positive and is less than the sampling error, either select additional sampling units to attempt to reduce the sampling error or abandon the sampling plan and propose only those adjustments specifically identified.
- If the point estimate is negative and the sampling error is less than the absolute value of this adjustment, the proposed population adjustment is obtained by adding the sampling error to the point estimate.
- If the point estimate is negative, and the sampling error is greater than the absolute value of this adjustment, either select additional sampling units to attempt to reduce the sampling error or abandon the sampling plan and propose only those adjustments specifically identified.

(3) Whenever two or more accounting populations for a particular tax return are combined and examined with the aid of a statistical sample, the sample result and sampling errors can be combined according to the rules for a stratified sample.

(4) When sampling the same accounts for multiple years, it is permissible to combine the accounts into one population. The combined result should be allocated in a reasonable method that is determined prior to the selection of the sampling units.

4.47.3.3.2.1
(07-15-2011)
**Exceptions to the
General Rule**

(1) The General Rule stated in 4.47.3.3.2(2) should be followed unless the Code or Regulations provide for determination of portions of a tax liability on what may of necessity be an estimated value (e.g., certain determinations of fair market value or inventory values).

(2) The General Rule stated in 4.47.3.3.2(2) should be followed unless the taxpayer and the government mutually agree on a specific methodology for projecting the sample result to the population.

(3) The General Rule stated in 4.47.3.3.2(2) should be followed unless the sampling error at the 95 percent confidence level is immaterial in relation to the point estimate. Immaterial is defined as a relative sampling error of 10 percent or less. The relative sampling error is the sampling error (i.e., the precision of the point estimate computed at a 95 percent, one-sided, confidence level) divided by the point estimate of the adjustment (including all 100% stratum values). Therefore, if the IRS uses a sample to estimate an audit adjustment for the population and achieves a relative sampling error of 10 percent or less, the point estimate of the adjustment may be used as the proposed population adjustment. Where the relative precision is less than 15%

and greater than 10% the estimate will be computed as an amount between the least advantageous 95% one-sided confidence limit and the point estimate determined as follows:

Estimate = Point Estimate (+ or -) (Relative Precision - .10)/.05 * (Point Estimate (= or -) Least Advantageous 95% One-Sided Confidence Limit)

(4) The General Rule stated in 4.47.3.3.2(2) should be followed unless the taxpayer does not carry their burden of recordkeeping by providing records sufficient to determine a reasonably accurate tax liability. This exception occurs when the taxpayer's records do not accurately support an amount reported as income, allowance, deduction or credit. A taxpayer's records will be considered not sufficiently accurate and an adjustment equal to the point estimate will be proposed if either of the following two conditions is met and the Statistical Sampling Team Manager reviews and approves the proposal.

- There is a high proportion of errors in the sample or the population. This condition occurs when the number of sample units examined is of sufficient size and the number of sample units with errors is high. This condition also occurs when the 95% one-sided, lower confidence limit of the estimated number of errors in the population is large compared to the total number of population sampling units.
- There is a high error amount in the population. The taxpayer's methods of determining the income, allowance, deduction or credit are determined to be inaccurate, as evidenced by a large percentage of disallowance compared to the amount the taxpayer claimed.

(5) The General Rule stated in 4.47.3.3.2(2) should be followed unless the taxpayer does not make a reasonable effort to comply with the Internal Revenue Code. This exception occurs when the IRS performs a statistical sample to put the taxpayer into compliance.

4.47.3.3.3
(07-15-2011)
Sampling Procedures

(1) Sampling units should be selected for the sample based on random number selection techniques.

(2) Any unusually large transactions may be grouped into a separate stratum and examined in their entirety.

(3) In stratified sampling situations, a stratum could be deleted or added to the population without affecting the validity of the sample; however, there should be sound reasons for doing so.

(4) The examiner must come to a conclusion as to the correctness of each item in the sample. It is never valid to replace a sample item that is included in the sampling design with another sample item which is not included in the sampling design, merely because documentation is unavailable or difficult to obtain.

(5) The decision reached as to the validity of any sample item must be the same as the conclusion which would be reached if that item were encountered in a 100% examination.

4.47.3.3.4
(07-15-2011)
**Related Entries
Originating from a
Sampled Transaction**

(1) All business transactions generate a minimum of two accounting entries. Frequently, multiple entries are generated. The correctness of a particular entry, whether sampling is used or not, can only be determined by reviewing the transaction in its entirety.

(2) In analyzing individual entries generated by a transaction, the examiner must deal with two types of problems: determining the validity of an entry, and determining the associated adjustments to other accounts when errors are encountered. These problems must be properly dealt with in any audit; however, if sampling techniques are being used, special care must be taken.

4.47.3.3.4.1
(07-15-2011)
**Adjustments Within
Sampled Accounts**

(1) The examiner should review the basic documents supporting a sample entry in order to determine how the taxpayer handled the entire transaction. If the examiner feels the transaction was handled improperly, it must be decided how it should have been handled.

(2) The way the examiner allocates adjustments among the various entries must not be influenced by which entries are drawn in the sample and which are not.

(3) If, within a population which is to be sampled, errors in specific entries are known to exist beforehand, these entries, if substantial, should be separated into a separate stratum and examined in their entirety. However, if after the sample is drawn, specific adjustments to items not part of the sample are discovered, projections must be based only on items selected in the sample. This does not preclude making adjustments to related entries in other accounts that are not subjected to sampling; nor does it preclude the option of abandoning the sample and proposing only those adjustments specifically identified.

(4) No adjustment to a sample entry should be made unless that particular entry can be shown to be in error. The amount of the adjustment to a sample entry should not include any adjustment that properly belongs to some other entry.

(5) The conclusion reached in determining if an adjustment should be made to the value of a sample item should be the same as if a 100% examination of the population was conducted. For example, the value of a sample item that has been totally offset by a reversing entry is to be considered correct and should not be adjusted.

4.47.3.3.4.2
(07-15-2011)
**Adjustments Outside of
Sampled Accounts**

(1) Adjustments attributed to other accounts that are not part of any population being sampled can be proposed on an actual amount basis.

(2) The adjustment being proposed cannot duplicate any other adjustment on an actual or projected basis.

(3) The conclusion reached should be the same in a 100% examination.

4.47.3.3.4.3
(07-15-2011)
Associated Adjustments

(1) When adjustments are made to sample entries in an expense account, the normal procedure for making associated adjustments to asset accounts, depreciation, yearly allocations, etc., cannot be followed. As the adjustment to the sample items will be projected to a larger total, so must the associated adjustments be projected to a corresponding level.

(2) The associated adjustment should commonly be computed statistically based on whether the characteristic is either known or unknown in the population.

(3)   The estimation of the associated adjustment characteristic must address whether the original adjustment is being proposed at the point estimate or most conservative limit and produce an overall result equal to that answer.

(4)   Other reasonable methods of determining associated adjustments are permitted when justified.