



Stratified Variable Appraisal

User Guide

Revision 1 – May 5, 2017

Purpose

This program performs a stratified variable appraisal on a data file previously created by the user based on information gathered from a stratified random sample. Variable sampling is used to estimate quantitative characteristics. For each sampling unit the user obtains one or more numeric pieces of information about an event or item. The user has the option of obtaining and appraising from one numeric piece of information per sample item (e.g., Examined amount) to as many as three pieces of information per sample item (i.e., Examined, Audited and Difference amounts). If the user decides to appraise all three pieces of information, only two of the pieces of data may be entered and the third will be calculated by the program. The variable appraisal program assumes that some variation exists between values. The user normally selects stratification to improve sample efficiency. The area of interest, for example, may be placed into segments (strata) based on value of items (e.g., high and low dollar value of transactions) or the sensitivity of items reviewed (e.g., entertainment and payroll costs). The program allows for a maximum of 50 strata to be appraised. The user must know the universe size of each stratum in order to use this methodology.

Input Screen

Stratified Variable Appraisal

File Help

Audit/Review Name:

Data Format Options:

☐ Examined
☒ Examined / Audited

☐ Audited
☐ Audited / Difference

☐ Difference
☐ Examined / Difference

Output Options:

☐ XLS File
☐ Text File

☐ CSV File
☐ View In Web Browser

Size Input Preview Table:

	B	C
1	Universe Size	Sample Size
2	1	1
3	9	9
4	20	10
5	30	10
6	40	10
7	50	10
8	60	10
9	70	10
10	80	10
11	90	10

Open Size Input:

Select Sheet:

Example 2 Sizes

Set Input Row Start:

1

Set Universe Column:

A

Set Sample Column:

A

No Data Available

Open Data Input:

Select Data Sheet:

Example 2 Data

Set Data Row Start:

1

Set Examine Column:

A

Set Audit Column:

A

Set Difference Column:

A

Data Input Preview Table:

	B	C
1	Examined Values	Audited Values
2	963.09	963.09
3	5,278,193.57	0
4	1,779,532.7	1,779,532.7
5	19,161,376.21	0
6	339,977.5	0
7	4,281,305.84	4,281,305.84
8	2,823.4	0
9	16,803,188.94	16,803,188.94
10	1,207,452.06	1,207,452.06
11	16,690,388.26	16,690,388.26

Validation Console

WARNING: You have NOT selected an output type for the results. Assuming screen display only.

ERROR: The cell at A1 in the size input preview table appears to contain non-numeric data: Strata

ERROR: The cell at B1 in the size input preview table appears to contain non-numeric data: Universe Size

ERROR: The cell at C1 in the size input preview table appears to contain non-numeric data: Sample Size

ERROR: The cell at A1 in the data input preview table appears to contain non-numeric data: Sample Number

ERROR: The cell at B1 in the data input preview table appears to contain non-numeric data: Examined Values

ERROR: The cell at C1 in the data input preview table appears to contain non-numeric data: Audited Values

NOTE: This example is for illustrative purposes only. The sample size may not conform to the organization's minimum sample size standards.

Help

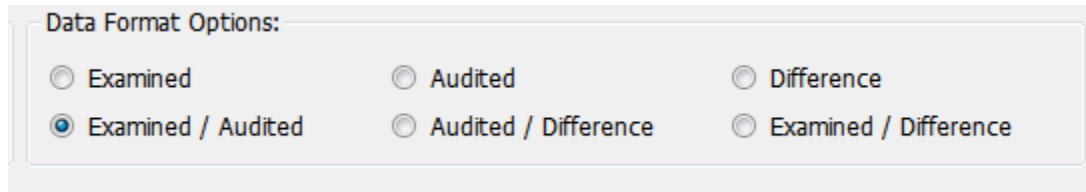
Execute

Exit

Audit/Review Name

This program allows the user to enter a brief description of the audit or purpose of the evaluation.

Data File Format



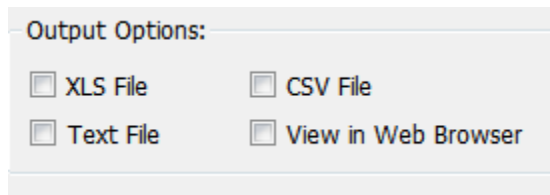
The screenshot shows a dialog box titled "Data Format Options:". It contains six radio button options arranged in two rows. The first row has "Examined", "Audited", and "Difference". The second row has "Examined / Audited", "Audited / Difference", and "Examined / Difference". The "Examined / Audited" option is selected, indicated by a filled blue circle.

Data Format Options:		
<input type="radio"/> Examined	<input type="radio"/> Audited	<input type="radio"/> Difference
<input checked="" type="radio"/> Examined / Audited	<input type="radio"/> Audited / Difference	<input type="radio"/> Examined / Difference

Prior to executing this program, the user must create a sample data file that contains certain identifying data and one or two pieces of information for each sample unit selected within each stratum. Each data line consists of a line number for that sampling unit followed by the first piece of information (a numeric value) the user wants to appraise (i.e., Examined, Audited, or Difference value). If two or more pieces of information will be appraised and the examined amount is one of the values, then the examined amount must be the first piece of data entered for each sampling unit. If only the audited and difference amounts are being appraised, then the audited amount must be the first piece of data entered. The second piece of information may be the numeric difference between the examined value and the amount accepted by the user or the audited amount if the examined amount was the first piece of data entered.

Output Options

The program supports four output types:



The screenshot shows a dialog box titled "Output Options:". It contains four checkbox options arranged in two rows. The first row has "XLS File" and "CSV File". The second row has "Text File" and "View in Web Browser". All checkboxes are currently unchecked.

Output Options:	
<input type="checkbox"/> XLS File	<input type="checkbox"/> CSV File
<input type="checkbox"/> Text File	<input type="checkbox"/> View in Web Browser

- 1) CSV (.csv extension) – Comma separated values
- 2) XLS (.xls extension) – Microsoft Excel 97+ output format
- 3) Text (.txt extension) – Evenly spaced readable text file
- 4) View in Web Browser (HTML) – Opens the output results into default web browser for viewing


If the user selects XLS, CSV or Text File then the "Save As" dialog will appear.

Universe / Sample Size Input Form

Size Input Preview Table:

	A	B	C
1	Strata	Universe Size	Sample Size
2	1	1	1
3	2	9	9
4	3	20	10
5	4	30	10
6	5	40	10
7	6	50	10
8	7	60	10
9	8	70	10
10	9	80	10
11	10	90	10
12	11	100	10

Open Size Input:

 Browse

Select Sheet:

Example 2 Sizes

Set Input Row Start:

2

Set Universe Column:

B


Set Sample Column:

C

This form is used to import the universe and sample size values. Use the “Browse” button to import a file, and then use the “Select Sheet”, “Set Input Row Start”, “Set Universe Column” and “Set Sample Column” drop-downs for the desired input configuration.

Sample Data Input Form

Open Data Input:

 Browse

Select Data Sheet:

Example 2 Data ▼

Set Data Row Start:

2 ▼

Set Examine Column:

B ▼

Set Audit Column:

C ▼

Set Difference Column:

A ▼

Data Input Preview Table:

	B	C
1	Examined Values	Audited Values
2	963.09	963.09
3	5,278,193.57	0
4	1,779,532.7	1,779,532.7
5	19,161,376.21	0
6	339,977.5	0
7	4,281,305.84	4,281,305.84
8	2,823.4	0
9	16,803,188.94	16,803,188.94
10	1,207,452.06	1,207,452.06
11	16,690,388.26	16,690,388.26
12	16,410,255.58	0

This form is used to import the data sample file. Use the “Browse” button to import a file, and then use the “Select Data Sheet”, “Set Data Row Start”, “Set Examine Column”, “Set Audit Column” and/or “Set Difference Column” drop-downs for the desired input configuration.

Validation Console

This form provides a method of error/exception prevention by displaying up-to-date warning and error messages. Execution may continue when only warnings exist but will be blocked by errors until they are fixed. When no errors nor warnings are detected the validation console is hidden.

Menu / Keyboard Shortcuts

Menu	Keyboard	Description
File -> New Window	Alt + N	Create a new instance of the program
File -> Recently Used	Alt + R	Load previous successful runs
File -> Import Input Data Sheet	Alt + D	Loads file dialog to select data input
File -> Import Input Size Sheet	Alt + I	Loads file dialog to select size input
File -> Execute	Alt + E	Execute Function
File -> Exit	Alt + Q	Exit Program
Help -> About	Alt + A	Show “About” dialog
Help -> Help Topics	Alt + H	Show this help document

Supported Input Formats

Description	Extension
Microsoft Excel 97 – 2003 file format	.xls
Microsoft Excel 2007 and higher file format	.xlsx
Data Interchange file format	.dif
Comma separated values file format	.csv
Space/tab separated values file format	.ssv, .txt or .dat

Program Output

Sample Type:	Difference Values (Summary)		
Audit Name:	Variable - Stratified		
Universe Size:	550		
Sample Size:	100		
Nonzero Count:	46	Std. Err. Mean:	680,007.14
Creation Date:	May 5, 2017	Std. Err. Total:	374,003,929
Creation Time:	10:07:40 PM	Point Estimate:	1,888,703,555
Created By:	windows		
		Confidence Levels	
	80%	90%	95%
Lower:	1,409,398,235	1,273,521,836	1,155,669,325
Upper:	2,368,008,875	2,503,885,273	2,621,737,785
Precision Amount:	479,305,320	615,181,718	733,034,230
Precision Percent:	25.38%	32.57%	38.81%
z-Value:	1.281551565545	1.644853626951	1.959963984540
Sample Type:	Stratum 1 - Examine Values	Mean:	963.09
Audit Name:	Variable - Stratified	Skewness:	0.00
Universe Size:	1	Kurtosis:	0.00
Sample Size:	1	Std. Deviation:	0.00
Nonzero Count:	1	Std. Err. Mean:	0.00
Creation Date:	May 5, 2017	Std. Err. Total:	0
Creation Time:	10:07:40 PM	Point Estimate:	963
Created By:	windows		
		Confidence Levels	
	80%	90%	95%
Lower:	963	963	963
Upper:	963	963	963
Precision Amount:	0	0	0
Precision Percent:	0.00%	0.00%	0.00%
t-Value:	0.000000000000	0.000000000000	0.000000000000

For the examined, adjusted, and difference sections of the output, the following pieces of information will be displayed. The precision information is given at the two-sided 80%, 90%, and 95% confidence levels.

(**NOTE:** The output format structure will be the same regardless of output option selected)

Mean: The average value for the sample items appraised. It is obtained by summing the items in the sample and dividing the result by the number of items in the sample

Universe: The quantity of the items from which the sample was drawn. The results of the sample will be projected to the universe using this value.

Standard Deviation: A measurement of the variation of the sample items about the average value (mean).

Standard Error (Mean): A measurement of the variation of the estimated universe means with respect to all possible estimated means for this universe and sample size.

Standard Error (Total): A measurement of the variation of the estimated universe total with respect to all possible estimated totals for this universe and sample size.

Kurtosis: A measure of the peakedness or flatness of the frequency distribution of the sample values.

Point Estimate: A single estimate for the universe total based on the sample mean multiplied by the universe size.

Skewness: A measure of the symmetry of the frequency distribution of the sample items. Accounting universes are usually right-skewed (majority of items have a low value while a few items have a high value)

Confidence Level: The confidence (80%, 90%, 95%) associated with the ability of the corresponding interval to contain the true mean (or universe total).

Precision Amount: A measurement of the closeness of the sample estimate of the universe total and the corresponding unknown universe value. The precision amount is calculated by multiplying the standard error by the universe size and multiplying the result by the appropriate factor ("t" value) corresponding to the desired confidence level.

Precision Percentage: The result of dividing the precision amount by the point estimate and stating the result as a percentage.

Lower Limit (Total/Percent): The lower boundary of the confidence interval. The limit is shown as both a number and percentage of the universe. The confidence levels are 80%, 90%, and 95%.

Upper Limit (Total/Percent): The upper boundary of the confidence interval. The limit is shown as both a number and percentage of the universe. The confidence levels are 80%, 90%, and 95%.

Stratum Precision Amount: A measurement of the closeness of the sample estimate of the universe total and the corresponding unknown universe value. The precision amount is calculated by multiplying the stratum standard error by the stratum universe size and multiplying the result by the appropriate factor (“t” value) corresponding to the desired confidence level. For the examined (reviewed) appraisal, the stratum total may be known and should be reviewed by the user to see if, in fact, the actual value does fall within the confidence interval.

Overall Precision Amount: A measurement of the closeness of the sample estimate of the universe total and the corresponding unknown universe value. The precision amount is calculated by multiplying the overall standard error by the appropriate factor (“Z” value) corresponding to the desired confidence level. For the examined (reviewed) appraisal, the universe total may be known and should be reviewed by the user to see if, in fact, the actual value does fall within the confidence interval.

Precision Percent: The result of dividing the precision amount by the point estimate and stating the result as a percentage.

t-Value Used: The t-percentile value used to construct the confidence interval.

z-Value Used: The standard normal percentile value used to construct the confidence interval.