

AuditSampler User Guide v3

Data Analytics Statistical Sampling

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1. Introduction

AuditSampler is a statistical sampling and data analytics software which enables efficient and effective audits based on statistical methods and the auditing standards (ISA/AU-C 530, ISA 315). Easy-to-use audit tool to calculate the sample size, select samples and evaluate the results for Attributes Sampling, Monetary Unit Sampling (MUS) and Classical Variables Sampling (CVS).

The confidence level, tolerable error and expected error can be quantified to determine the required sample size and statistically evaluate the results. Samples can be selected based on random, systematic, cell and value-weighted selection methods.

Query and filter data for exception reporting and analysis. Chart the analysis using graphs. Histogram and boxplot graphs to display the data distribution and detect outliers.

AuditSampler is a Windows desktop application. Multiple windows can be open for multitasking. A temporary SQLite table is created for each user session to query the data and the temporary table is automatically dropped or deleted when that session ends. The application does not store any data.

AuditSampler ×											
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File Edit Data Sampling Analysis Help											
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		۵	Datatable N	/US Random	Selection An	alysis					
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	2	1/	▶ 1	5360	20/1/2018	10005360	39055	Seattle	5	5.50	Ţ
	3	1/	2	48102	24/6/2018	10048102	37897	New York	3	4.25	1
	4	1/	3	44833	13/6/2018	10044833	27266	Seattle	5	5.50	
	5	1/	4	7612	28/1/2018	10007612	31551	New York	2	3.75	T
	6	1/	5	35286	9/5/2018	10035286	27523	Washington	5	5.50	T
	7	1/	6	22319	23/3/2018	10022319	34565	Honolulu	4	5.00	T
	8	1/	7	40535	28/5/2018	10040535	38299	Miami	3	4.25	
	9	1/	8	14014	20/2/2018	10014014	21773	Houston	3	4.25	
<			9	17382	5/3/2018	10017382	18219	Honolulu	5	5.50	
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ata	100k.cs	v	E 🛛 🖶	🗴 🔁 🗋	🕕 Sample l	Jnits: 200 Reco	ords: 198 Ran	dom Start: 582,5	574 Seed: 8957	00734	
	Dat50K.xlsx										

2. Installation

2.1 System Requirements

Operating systems: Windows 10, 11 (64-bit), Windows Server 2019 Memory: 4GB RAM or more

2.2 Register and Install License Key

ĥ	💱 AuditSampler-3.0-x64.exe							
		Open						
	9	Run as administrator						

- i. Right-click on the AuditSampler-3.0-x64.exe file and select "Run as administrator".
- ii. Select if you want to install for only you or all users (requires administrator privileges).
- iii. Read and accept the license agreement.
- iv. You will be prompted, "The license is not activated. Would you like to Register now". Click "Yes" to register immediately.
- v. At the "Register License Key" screen, enter your name, company/organization and the licence key (case sensitive). Click "OK" to activate.

💱 Register License Key 🔰 🗧							
Registration							
Name (Max. 30 characters)							
Your Name							
Organization (Max. 30 characters)							
Your Company/Organiztion							
License Key (Case Sensitive)							
XXXXXXXXXXXXXXXXXXXXXXX							
OK Cancel							

2.3 Update License Key

To update or enter a new license key after expiry, right-click the AuditSampler program icon or shortcut and select "Run as administrator". From the Help menu, select Registration Information and click on the link <u>Register License Key</u>. Enter your details and the new license key.

2.4 Uninstall License Key

To uninstall and delete the license key if no longer in use, right-click the AuditSampler program icon or shortcut and select "Run as administrator". From the Help menu, select Registration Information and click on the link <u>Uninstall License Key</u>. Select OK to confirm or Cancel.

3. File

3.1 Import Data

Data can be imported from Excel, Csv/Txt and SQLite files. Import up to 20 million rows and 30 columns.

- Excel workbook (.xlsx)
- Csv comma delimited (.csv)
- Text tab delimited (.txt)
- SQLite database (.db)

Column name requirements

All files must have a header row that contains names for each of the columns. The column names must meet the data table requirements:

- No special characters such as % . , & / \ : ; () * % #.
- Does not start with a number.
- Contain only alphanumeric characters and the underscore character "_".

When the file is imported, any special characters are automatically removed and spaces are replaced with an underscore.

File > Import Data

12 A	💱 AuditSampler — 🗆 🗙											
File	File Edit Data Sampling Analysis Help											
	🗁 Import Data 🔸 🕅 Excel Workbook (*.xlsx)											
3	Export Data	•	×a	CSV (Comma d	elimited)(*.cs	v)						
	Save Sampling	•		Text (Tab delim	ted)(*.txt)	ode	Unit Price	Qty	Amount	^		
	Save Analysis	•		SQLite Databas	e (*.db)	5	5.50	7	38.50			
Þ	Exit		₽ ₽	Join Tables (*.dl)	1	3.50	21	73.50			
	19999993	30/12	/2019	29999993	19536	4	5.00	30	150.00			
	19999994	30/12	/2019	29999994	11498	3	4.25	22	93.50			
	19999995	30/12	/2019	29999995	17638	2	3.75	23	86.25			
	19999996	30/12	/2019	29999996	26163	3	4.25	40	170.00			
	19999997	30/12	/2019	29999997	47272	3	4.25	13	55.25			
	19999998	30/12	/2019	29999998	47715	4	5.00	13	65.00			
	19999999	30/12	/2019	29999999	17675	4	5.00	3	15.00			
	20000000 30/12/2019 3000000 10268 2 3.75 25 93.75									~		
i N	H ◀ 20 ▶ H Σ ≟ ↓ 2 ∛ T ♥ ↔											
Recor	Records: 2000000 Data20million.csv											

Select Table/Sheet to list the columns in the box. Select up to 30 columns. The Scan setting is to enable automatic detection of the column data types for Excel, Csv and Text files. Scan up to the first 200 rows in the file to detect the column type.

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🕡 Select Columns 🛛 🗙	🞲 Column Type	×
Table/Sheet Sheet1 ~	Column Type	^
	Date datetime	~
Select All (Max=30) Scan 5 V	Inv_No integer	~
Date ^	Cust_No integer	~
✓ Inv_No ✓ Cust No	City text	~
City	Item_Code integer	~
✓ Item_Code	Unit_Price real	~
Unit_Price	Qty integer	~ ~
Qty 🗸		
OK Cancel	ОК	Cancel

3.2 Export Data

Data imported into AuditSampler can be exported and saved as Excel workbook (.xlsx), Csv comma delimited (.csv) and SQLite database (.db) files.

121	AuditSampler						_		×		
File	Edit Data	Sampling	Analysis H	elp							
	Import Data	۰ ک									
6	Export Data		Excel Workboo	k (*.xlsx)							
8	Save Sampling Save Analysis		CSV (Comma d Text (Tab delimi		v) ode	Unit_Price	Qty	Amount	^		
					5	5.50	7	38.50			
Þ	Exit		SQLite Databas	e (".db)	1	3.50	21	73.50			
	19999993	30/12/2019	29999993	19536	4	5.00	30	150.00			
	19999994	30/12/2019	29999994	11498	3	4.25	22	93.50			
	19999995	30/12/2019	29999995	17638	2	3.75	23	86.25			
	19999996	30/12/2019	29999996	26163	3	4.25	40	170.00			
	19999997	30/12/2019	29999997	47272	3	4.25	13	55.25			
	19999998	30/12/2019	29999998	47715	4	5.00	13	65.00			
	19999999	30/12/2019	29999999	17675	4	5.00	3	15.00			
	20000000	30/12/2019	3000000	10268	2	3.75	25	93.75	*		
i H											
Reco	Records: 20000000 Data20million.csv										

File > Export Data or right click in the gridview

Large datasets (> 1 million rows) can be saved as tables in a SQLite database file for efficient access and reuse.

File > Export Data > SQLite Database

🞲 Export to SQLite 🛛 🗙
Sqlite Database
Create Tablename
New Database
 Existing Database
OK Cancel

- Create Tablename (specify a new table name).

- Select New or Existing database file.

3.3 Join Tables

Join two tables in the SQLite database file that have a common column (e.g. Cust_No). Return all rows in the Left Table with matching values in the Right Table.

File > Import Data > Join Tables (*.db)

🕡 Join Tables 🛛 🗙								
Left Tab Sales	le (T1)	Right Tab Master	le (T2)					
Left Colu	umn	Right Col	umn					
Cust_No	· · · =	Cust_No	~					
Selec	t All (Max=30)	1	× •					
Select	Column	Туре	^					
	T1.Date	datetime						
	T1.Inv_No	integer						
	T1.Cust_No	integer						
	T1.Item_Code	integer						
			*					
	[OK	Cancel					

3.4 Save/Print Results

The sample selection results can be saved as Excel workbook (.xlsx), Csv comma delimited (.csv) and PDF (.pdf) files. The results can also be output to printer or copy/paste to Excel and Word.

File > Save Sampling or bottom toolbar options or right click in the gridview

💱 AuditSampler – 🗆 🗙														
File	File Edit Data Sampling Analysis Help													
🖹 • 🗮 • 🥅 🐚 🗙 😧														
Datatable MUS Systematic Selection Analysis														
		Rec_No	Date	Inv_No	Cust_	No Item_Code	Uni	t_Price	Qty	Amount	Cumulative	_Total	Selected_Unit	^
•	1	827	4/1/2018	10000827	B	Сору		5.50	36	198.00	87,9	964.75	87,943	
	2	2811	11/1/2018	10002811		Select All		4.25	34	144.50	303,9	993.50	303,916	
	3	4782	18/1/2018	10004782	8	Save Sampling	•	XII Ex	cel Work	book (*.xlsx)		07.00	519,889	
	4	6738	25/1/2018	10006738		Page Setup		CS	SV (Com	ma delimited)	(*.csv)	16.75	735,862	
	5	8716	1/2/2018	10008716		Print Preview		🔁 PC)F (*.pdf))		41.25	951,835	
	6	10630	8/2/2018	10010630		Print		5.50	42	231.00	1,167,9	999.75	1,167,808	
	7	12564	15/2/2018	10012564		Clear		5.50	47	258.50	1,383,9	973.00	1,383,781	
	8	14519	22/2/2018	10014519	309	06 5		5.50	20	110.00	1,599,8	340.00	1,599,754	
	9	16502	2/3/2018	10016502	389	59 4		5.00	45	225.00	1,815,9	935.00	1,815,727	
	10	18448	9/3/2018	10018448	214	68 3		4.25	24	102.00	2,031,7	768.50	2,031,700	~
🔟 🝺 🖶 🕼 🌠 📜 🚯 Sample: 51 Seed: 353009109 Random Start: 87,943 Sampling Interval: 215,973														

4. Edit

4.1 Datetime Display

Select the datetime display format. The default is Short Date (e.g. MM/dd/yy) or change to Full Datetime (yyyy/MM/dd HH:mm:ss AM/PM).

Edit > Datetime Display

🎲 Datetime Display 🛛 🗙						
 Select Format Short Date Full Datetime 						
ОК	Cancel					

4.2 Delete Table

Delete a table in the SQLite database file.

Edit > SQLite Database > Delete Table

🕡 Edit Table	×
Select Table	
Master New Sales	
O Rename	
Delete	
OK Cancel	

4.3 Rename Table

Rename a table in the SQLite database file.

Edit > SQLite Database > Rename Table

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💱 Edit Table	×
Select Table	
Master	
New	
Sales	
Rename New	
○ Delete	
ОК	Cancel
UN	Cancer

4.4 Modify Table

Change the column type in the SQLite database table.

Edit > SQLite Database > Modify Table

🗊 Modify Table				×
Select Table	Sales			~
Column		Туре		^
Date		datetime	\sim	
Inv_No		integer	\sim	
Cust_No		integer	\sim	
Item_Code		integer	~	
Unit_Price		real	\sim	
Qty		integer	~	~
	М	odify	Cance	el -

5. Data

12 A	uditSam	pler						_		×
File	Edit	Dat	ta Sampling	J Analysis	Help					
i 📄 -	🔳 🕶 🛙	Σ	Statistics							
Datat	able S	H	Box Plot							
		12	Top 10 Reco	rds	Cust No	Item Code	Unit_Price	Qty	Amount	^
	99991	Ĵź	Sort Records		45039	- 5	5.50	12	66.00	
	99992	*7 ×	Query Filter		11546	2	3.75	11	41.25	
	99993	×√	Undo Filter/		40094	4	5.00	16	80.00	
	99994	+8 ×7	Add Colum		23800	5	5.50	23	126.50	
	99995	E× ⊕	Delete Colur Move Colun		28663	4	5.00	9	45.00	
	99996		Rename Col		38610	4	5.00	49	245.00	
	99997		30/12/2018	10099997	30578	4	5.00	35	175.00	
	99998		30/12/2018	10099998	44661	1	3.50	48	168.00	
	99999		30/12/2018	10099999	18647	1	3.50	39	136.50	
1	100000		30/12/2018	10100000	26118	4	5.00	4	20.00	~
i N	▲ 1	Þ		:↓ <u></u> *7 *7	Ð					-
Record	ds: 10000	0	Sales100)k.xlsx						

5.1 Query Filter/Sort

Data can be query and filtered on Numeric/Text/Date columns with the following operators. In SQL queries, datetime and text strings must be enclosed within a pair of single quotes:

Operator	Description	Criteria
>	Greater than	Amount > 5000 Inv_Date > '2017-03-28 00:00:00'
<	Less than	Amount < 500 Inv_Date < '2017-03-28 00:00:00'
>=	Greater than or equal to	Amount >= 5000 Inv_Date >= '2017-03-28 00:00:00'
<=	Less than or equal to	Amount <= 500 Inv_Date <= '2017-03-28 00:00:00'
=	Equal to	Item_Code = 3 City = 'Boston' Inv_Date = '2017-03-28 00:00:00'
!=	Not equal to	Item_Code != 3 City != 'Boston' Inv_Date != '2017-03-28 00:00:00'
Like	Specific pattern in values	Cust_No Like '23%' Cust_No Like '%23'
In	List of values	Item_Code In (1, 3, 5)

		City In ('Boston', 'New York', 'Miami')
Between	Range of values	Amount Between 3000 And 5000 Inv_Date Between '2017-01-01' And '2017-06-30'
And	Filter more than one condition	Item_Code = 3 And Unit_Price != 4.25 Inv_Date Between '2017-01-01' And '2017-06-30' And Amount > 5000
Or	Filter more than one condition	Amount = 0 Or Amount = " Qty > 100 Or Amount > 5000

Select the column, specify the operator/condition and enter the value to filter. The filter criteria can also be typed directly into the filter expression box.

Data > Query Filter Records

😨 Query Builder				×
🖻 🔒 🗅 🛄	8			
Filter Sort				
= != < >	<= >	= And	Or In	Ŧ
Filter Expression	on			
Amount > 2500	0			
Available Colun	nns:			
Column	Туре			^
Unit_Price	real			
Qty	intege	r		
Amount	real			~
		ОК	Canc	el

For Date columns the value must be in the datetime format '**yyyy-mm-dd 00:00:00**' together with the opening and closing single quotes.

🕡 Query Builder		×
i 🗀 🔒 🗅 🗋 🕄		
Filter Sort		
= != < >	<= >= And	Or In 💂
-Filter Expression		
Inv_Date > '2018- 25000	-03-08 00:00:00' A	nd Amount >
Available Column	15:	
Column	Туре	^
Date	datetime	
Inv_No	integer	
Cust_No	integer	~
	ОК	Cancel

The query can be Sort By column, Asc (Ascending) or Desc (Descending). Select the column and specify the sort order. The sort criteria can also be typed directly into the sort expression box.

Data > Sort Records

💱 Query Builder	Х
i 😑 🔒 🗅 📮 🕑	
Filter Sort	
Sort Expression	
Order By Date Asc, Amount Desc	
Column Order	_
Date V Asc V	
Amount V Desc V	
+ Add 🖕 Clear	
OK Canc	el

5.2 Top 10 Records

Filter and display the Top or Bottom 10 records.

Data > Top 10 Records

🕡 Top 10 Filter		×
Show Top V 10 🗭 by	Amount	~ Cancel

5.3 Statistics

Statistics and aggregate functions on numeric/value columns: Count (negative/zero/blank values), Sum (total value), Min (minimum value), Max (maximum value), Avg (average value), Stdev (standard deviation), Z-score (+/- 3 standard deviations from the mean) and Skewness (positive right-skewed or negative left-skewed). The further the skew value is from zero, the greater the skew.

Data > Statistics

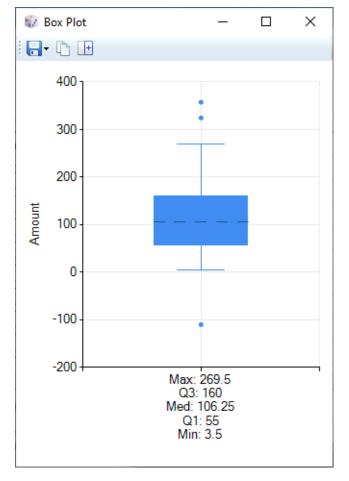
atistics X	💱 Statistics —	
Column	i 🚺 🗈 🗙	
Amount ~	Statistics	Amount
	# of Records	100000
ect All	# of Negative items	0
ount (negative values)	# of Zero items	0
ount (zero values)	# of Blank items	0
unt (blank values)	Positive value 3	32703038.5
n Total Value	Negative value	0
n Value	Population value 3	32703038.5
x Value	Minimum value (Min)	9.5
g Value	Maximum value (Max)	1000
ev, Z-score, Skewness	Mean value (Avg)	327.03
OK Cancel	Standard Deviation	206.98
Cancer	Z-Score (+3)	947.97
	Z-Score (-3)	-293.91
	Skewness	-1.318823

5.4 Box Plot

A boxplot (box and whisker plot) displays the center and spread of a data set based on quartiles and the five-number summary which consists of: the minimum value, lower quartile, median, upper quartile and the maximum value. It can identify outlying values (Outliers) that are very far away from the quartiles and the other values in the data.

Data > Box Plot

🕡 Box Plot	×
Select Column Numeric Amou	nt ~
Show Avera	age (Avg)
- Interquartile Ran	ge (IQR)
Upper Limit	1.5*IQR ~
Lower Limit	1.5*IQR ~
ОК	Cancel



- Min: Minimum (lowest value excluding outliers).
- Q1: Lower Quartile (25th percentile).

- Med: Median value (50th percentile).
- Q3: Upper Quartile (75th percentile).
- Max: Maximum (highest value excluding outliers).

A boxplot displays a "box" with the bottom as the lower quartile (Q1), the middle as the median (Q2) and the top as the upper quartile (Q3). The "whiskers" are the lines that extend from the box to the minimum and maximum values (excluding outliers). Extreme values that fall outside the whiskers are designated Outliers and marked as dots in the boxplot.

The boxplot divides the data into 4 equal parts (quartile). The lower whisker represents the bottom 25% of the data, the lower half of the "box" represents the second 25%, the upper half of the "box" represents the third 25% and the upper whisker represents the top 25%.

Lower Quartile (Q1): The first quartile or 25th percentile¹. The bottom 25% of the data fall below this value.

Median (Q2): The second quartile or 50th percentile². The mid-point of the data shown by the dashed line that divides the "box" into two parts. 50% of the data fall below this value and 50% are above.

Upper Quartile (Q3): The third quartile or 75th percentile³. 75% of the data fall below this value and the top 25% are above.

Interquartile Range (IQR): The range between the lower and upper quartiles (Q3 - Q1) is called the interquartile range and is the highlighted "box" area which represents the middle 50% of data.

Lower Whisker: The whisker line that extends below the lower quartile to the minimum value and represents the bottom 25% of data.

Upper Whisker: The whisker line that extends above the upper quartile to the maximum value and represents the top 25% of data.

Minimum (Min): The lowest value that is within 1.5*IQR below the lower quartile (Q1 - 1.5*IQR) excluding outliers and represents the lower whisker limit.

Maximum (Max): The highest value that is within 1.5*IQR above the upper quartile (Q3 + 1.5*IQR) excluding outliers and represents the upper whisker limit.

Outliers: An extreme value that lies outside the lower or upper whiskers is designated an "Outlier". A value less than (Q1 - 1.5*IQR) or greater than (Q3 + 1.5*IQR) is considered a mild outlier. A value less than (Q1 - 3*IQR) or greater than (Q3 + 3*IQR) is considered an extreme outlier.

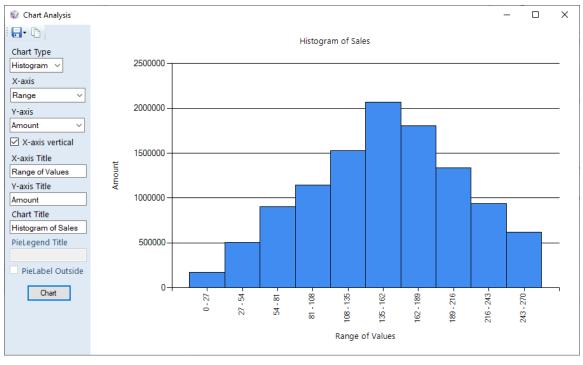
- ¹ 25th percentile = .25(N + 1)th data point.
- ² 50th percentile = .50(N + 1)th data point.
- ³ 75th percentile = .75(N + 1)th data point.
- * N = number of values in the data set (sorted from smallest to largest).

5.5 Histogram

A histogram displays the distribution of a data set by dividing the values into value ranges or intervals and is similar in appearance to a column chart. It can show the frequency of occurrence for each range of values.

Data > Histogram

🞲 Stratification 🛛 🗙									
-	X 🛛								
	Stratify								
	Column	Amount			~				
	Minimum	[3				
	Maximum				270				
	 Interva 	ls		10					
	O Increm	ent							
	O List of I	ntervals							
	🔿 Strata			5	A T				
	Number	of Cells		50	A T				
	Top Stratum								
	Bottom Stratum								
		ОК		Car	icel				





5.6 Add Column

Add a calculated column to the data table. Enter the column name and column type. Type Real is for double/decimal values.

Data > Add Column

🕡 Add Column		×						
Column Name Column Type Expression	calc_amount real	~						
	= != < > <	= >= 💡						
Qty * Unit_Price Available Columns:								
Column	Туре	^						
Unit_Price	real							
Qty	integer							
Amount	real	*						
	ОК	Cancel						

5.7 Delete Column

Delete a column from the data table.

Data > Delete Column

Delete Column X								
Select Column								
Inv_No	~							
Cust_No								
City								
Item_Code								
Unit_Price								
Qty								
Amount								
calc_amount Y								
OK Cancel								

5.8 Move Column

Move and change the column position up or down in the data table.

Data > Move Column

💱 Move Column	×
Select Column	<u>~ ~</u>
Date	
Inv_No	
Cust_No	
City	
Item_Code	
Unit_Price	
Qty	
Amount	
ОК	Cancel

5.9 Rename Column

Rename and change the column name in the data table.

Data > Rename Column

💱 Rename Column 🛛 🗙 🗙									
Select Column									
Date Inv_No Cust_No City Item_Code Unit_Price									
Rename Date									
OK Cancel									

6. Analysis

AuditSampler								_		×
File Edit Da	ata Sampling	Ana	alysis Help							
: 🖻 • 📃 • 🔳	🗅 🗙 🔞		J Summarization							
Datatable Sampling Analysis			🛗 Group By Date							
Data II			Stratification		ł	m Codo	Unit Drice	Otv	Amount	
		31	Agin	9	- 1	n_Code	Unit_Price	Qty	Amount	
99991	30/12/2018	00	Outliers		- I	5	5.50	12	66.00	
99992	99992 30/12/2018 99993 30/12/2018 99994 30/12/2018		Chart Analysis			2	3.75	11	41.25	
99993			Duplicates → B Sequence Gaps			4	5.00	16	80.00	
99994						5	5.50	23	126.50	
99995	30/12/2018	_	10099995 28663			4	5.00	9	45.00	
99996	30/12/2018	1009	99996	38610		4	5.00	49	245.00	
99997	30/12/2018	1009	99997	30578		4	5.00	35	175.00	
99998	30/12/2018	1009	99998	44661		1	3.50	48	168.00	
99999	30/12/2018	1009	99999	18647		1	3.50	39	136.50	
100000	100000 30/12/2018		10100000 26118			4	5.00	4	20.00	~
N 4 1 →		↓a ×	7 7	Ð						•
Sales100k.xlsx	Records:	100000)							

6.1 Summarization

Summarize and group records. Select the Group By column and Total On column. Options to specify Statistics (Avg, Min, Max), Filter, Sort By (Descending or Ascending) and Limit (rows to display).

Analysis > Summarization

💱 Summarization 🛛 🗙								
Group Records								
Group By:	Cust_No ~							
Total On:	Unit_Price							
	Qty Amount							
Statistics	Avg Max Min							
Filter	SUM(Amount) > 500							
Sort By	SUM(Amount) ~							
	🗹 Desc 🗌 Asc							
Limit	30							
	OK Cancel							

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File	e Edit	t Data Sam	pling A	Analysis Help)						
🔁 • 🗮 • 🧮 🛅 🗙 😮											
Datatable Sampling Summarization											
		Cust_No	Count	%Count	SUM(Amount)				^		
۲	1	26864	<u>8</u>	0.01	4,159.50						
	2	24638	<u>Z</u>	0.01	3,960.75						
	3	17006	<u>9</u>	0.01	3,952.25						
	4	13492	Z	0.01	3,849.00						
	5	21295	<u>9</u>	0.01	3,782.75						
	6	22793	<u>9</u>	0.01	3,758.50						
	7	30026	<u>Z</u>	0.01	3,734.75						
	8	47129	<u>8</u>	0.01	3,727.50						
	9	12935	Z	0.01	3,724.75						
	10	32377	<u>9</u>	0.01	3,692.00				~		
x∎											
	100k.cs\										

6.2 Group By Date

Summarize and group records by date. Select group by Day, Week, Month or Year. Select the Date column, Total On column, month and year.

Analysis > Group By Date

🞲 Group By Date 🛛 🗙								
Group By ● Day ○ Week ○ Month ○ Year								
Date	Date ~							
Total On:	Amount ~							
Month	01 ~							
Year	2020							
	OK Cancel							

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	-	· 🖪 🛅 🗙	0							
Datatable Sampling Group By Date										
		Day	Count	Amount	%Amount					^
۲	1	2020-01-01	<u>274</u>	92,666.00	3.36					
	2	2020-01-02	<u>274</u>	89,193.75	3.24					
	3	2020-01-03	<u>274</u>	88,366.00	3.21					
	4	2020-01-04	<u>274</u>	90,164.75	3.27					
	5	2020-01-05	<u>274</u>	89,411.00	3.24					
	6	2020-01-06	<u>274</u>	88,025.50	3.19					
	7	2020-01-07	<u>274</u>	92,011.75	3.34					
	8	2020-01-08	<u>274</u>	91,283.50	3.31					
	9	2020-01-09	<u>274</u>	84,956.50	3.08					
	10	2020-01-10	<u>274</u>	78,894.00	2.86					~
x∎		1	<u>_</u>				<u>_</u>	<u>_</u>		

6.3 Stratification

Stratify records based on value ranges (intervals). Select the column to stratify and specify the range using intervals, increment, list or strata options. Strata to determine the optimal boundaries based on the cumulative square root of frequency.

Analysis > Stratification

× 🛛								
Stratify								
Column Amount	~							
Minimum	-31228							
Maximum	281449							
Intervals	10 韋							
 Increment 								
 List of Intervals 								
🔿 Strata	5 🜩							
Number of Cells	50 ≑							
Top Stratum								
Bottom Stratum								
ОК	Cancel							

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File	e Edit	t Data Samplin	g Analy	/sis Help								
Dat	Datatable Sampling Stratification											
		Range	Count	%Count	%Amount	Amount	Min	Max	Avg			
•	1	-32000 - 0	<u>1</u>	0.02	-0.03	-31,227.99	-31,227.99	-31,227.99	-31,227.99			
	2	0 - 32000	<u>4103</u>	82.06	44.54	42,201,078.71	2,002.81	31,981.40	10,285.42			
	3	32000 - 64000	<u>575</u>	11.50	27.18	25,755,988.46	32,000.14	63,994.89	44,793.02			
	4	64000 - 96000	<u>274</u>	5.48	23.20	21,985,187.63	64,006.16	95,721.43	80,237.91			
	5	96000 - 128000	<u>46</u>	0.92	4.81	4,555,655.73	96,013.32	101,962.66	99,035.99			
	6	128000 - 160000	<u>0</u>	0.00	0.00	0.00	0.00	0.00	0.00			
	7	160000 - 192000	<u>0</u>	0.00	0.00	0.00	0.00	0.00	0.00			
	8	192000 - 224000	<u>0</u>	0.00	0.00	0.00	0.00	0.00	0.00			
	9	224000 - 256000	<u>0</u>	0.00	0.00	0.00	0.00	0.00	0.00			
	10	256000 - 288000	<u>1</u>	0.02	0.30	281,448.38	281,448.38	281,448.38	281,448.38			
XI												
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* Range: >= Lower Limit and < Upper Limit.

For the List of intervals option, specify the start value of each interval and the end value of the last interval in the textbox (one per line):

Stratification		×
X 🕑		
Stratify		Start value of each interval and End value of the last
Column Amount	~	interval. (One per line)
Minimum	-31228	-32000 ^
Maximum	281449	32000 64000
 Intervals 	10 ≑	96000 128000
 Increment 		282000
 List of Intervals 		
🔾 Strata	5 븆	
Number of Cells	50 🗘	
Top Stratum		
Bottom Stratum		
ОК	Cancel	~ · · · · · · · · · · · · · · · · · · ·

AuditSampler v3 User Guide

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Fil	File Edit Data Sampling Analysis Help											
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Dat	Datatable Sampling Stratification											
		Range	Count	%Count	%Amount	Amount	Min	Max	Avg	Stdev		
۲	1	-32000 - 0	<u>1</u>	0.02	-0.03	-31,227.99	-31,227.99	-31,227.99	-31,227.99	0.00		
	2	0 - 32000	<u>4103</u>	82.06	44.54	42,201,078.71	2,002.81	31,981.40	10,285.42	7,107.51		
	3	32000 - 64000	<u>575</u>	11.50	27.18	25,755,988.46	32,000.14	63,994.89	44,793.02	7,997.31		
	4	64000 - 96000	<u>274</u>	5.48	23.20	21,985,187.63	64,006.16	95,721.43	80,237.91	9,118.11		
	5	96000 - 128000	<u>46</u>	0.92	4.81	4,555,655.73	96,013.32	101,962.66	99,035.99	1,807.66		
	6	128000 - 282000	<u>1</u>	0.02	0.30	281,448.38	281,448.38	281,448.38	281,448.38	0.00		
x		1										
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For the Strata option, specify the number of strata, cells and optionally the top/bottom stratum cutoff values.

Strata	5 븆
Number of Cells	100 ≑
Top Stratum	280000
Bottom Stratum	0

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Fil	File Edit Data Sampling Analysis Help												
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Dat	Datatable Sampling Stratification												
		Strata	Count	%Count	%Amount	Amount	Min	Max	Avg	Stdev			
►	1	< 0	<u>1</u>	0.02	-0.03	-31,227.99	-31,227.99	-31,227.99	-31,227.99	0.00			
	2	0 - 8400	<u>2092</u>	41.84	10.83	10,259,404.29	2,002.81	8,393.51	4,904.11	1,721.15			
	3	8400 - 16800	<u>1287</u>	25.74	16.13	15,284,162.35	8,415.95	16,798.97	11,875.81	2,375.50			
	4	16800 - 36400	<u>826</u>	16.52	21.26	20,139,258.46	16,823.68	36,355.13	24,381.67	5,394.74			
	5	36400 - 64400	<u>478</u>	9.56	23.85	22,595,258.37	36,441.62	64,377.33	47,270.42	7,076.00			
	6	64400 - 103600	<u>315</u>	6.30	27.67	26,219,827.06	64,406.32	101,962.66	83,237.55	10,554.57			
	7	> 280000	1	0.02	0.30	281,448.38	281,448.38	281,448.38	281,448.38	0.00			
X	1	4											
Sale	s.xlsx									.:			

6.4 Aging

Age outstanding records based on the due date. Select the Due Date column, Total On column and the report date.

Analysis > Aging

😨 Aging	×
Age By	
Due Date:	Due_Date ~
Total On:	Amount ~
Report Date	2018-12-31
Aging Periods	s (one per line)
0 30 60 90 120	
	OK Cancel

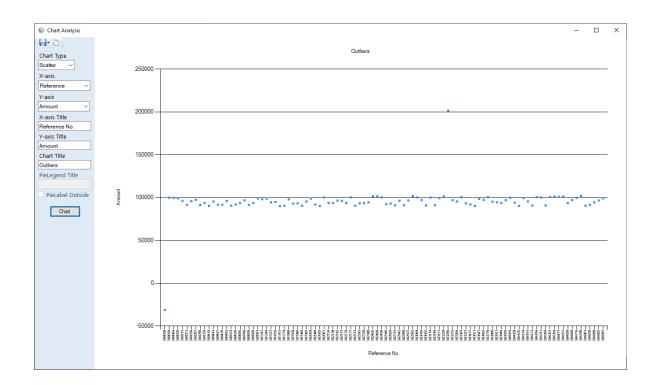
Ŵ.	AuditS	ampler						_		×	
File	e Ed	it Data	Sampling	Analysis	Help						
: 📄											
Sales Sampling Aging											
		Days	Count	%Count	%Amount	Amount					
	1	0 - 30	<u>8150</u>	8.15	8.23	904,833.75					
	2	31 - 60	<u>8250</u>	8.25	8.16	896,707.75					
	3	61 - 90	<u>8250</u>	8.25	8.29	911,071.50					
	4	91 - 120	<u>8250</u>	8.25	8.26	907,864.50					
►	5	>120	<u>67100</u>	67.10	67.07	7,373,549.00					
x∎		1									
										.::	

6.5 Outliers

Select the Value column and the outlier method, Interquartile Range (IQR) or Z-Score. The upper and lower limits for IQR can be set at 1.5*IQR, 1.7*IQR or 3*IQR. The upper and lower limits for Z-Score can be set from 2.0 to 5.

Analysis > Outliers	
---------------------	--

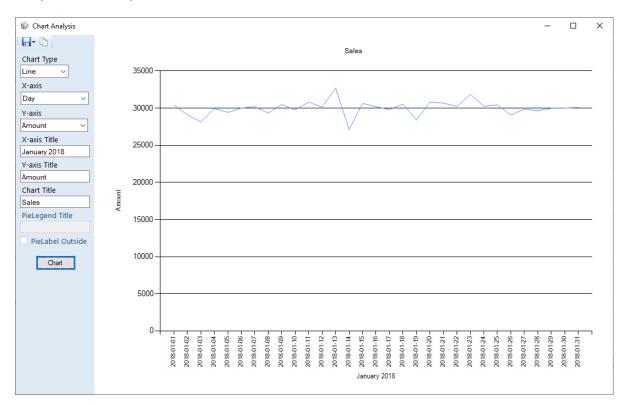
💱 Outliers 🛛 🗙	😨 Outliers 🛛 🗙
Select Column Value Amount ~	Select Column Value Amount ~
 Interquartile Range (IQR) 	O Interquartile Range (IQR)
Upper Limit 1.5*IQR 🗸	Upper Limit 1.5*IQR 🗸
Lower Limit 1.5*IQR 🗸	Lower Limit 1.5*IQR 🗸
○ Z-Score	I Z-Score
Upper Limit 3.0 🗸	Upper Limit 3.3 V
Lower Limit 2.0 🗸	Lower Limit 2.0 ~
OK Cancel	OK Cancel



6.6 Chart Analysis

Select the chart type (Column, Histogram, Line, Scatter, Pie, Doughnut), X-axis and Y-axis. Define the chart and axis titles.

Analysis > Chart Analysis



6.7 Duplicates

Select one or more columns to check for duplicate entries or values.

Analysis > Duplicates

Duplicates X	7
Select Columns	
Date Inv_No Cust_No City Item_Code Unit_Price	
OK Cancel	

	ampler				—		×
File Ed	lit Data Sampling	Analysis I	Help				
- -	- 🗉 🗅 🗡 🔞						
Datatable	Sampling Duplicate	s					
	Date	Inv_No	Item_Code	Unit_Price	no_of_dups		
▶ 1	2018-01-01 00:00:00	1000002	5	5.50		2	
×1 .	3						

6.8 Sequence Gaps

Select a numeric column to check for gaps in the number sequence.

Analysis > Sequence Gaps

🕡 Gaps		×
-Select Col Numeric		~
	ОК	Cancel

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File Ed	lit Data Sa	mpling	Analysis	Help		
: 🖻 • 🛛 🔳	- 🖪 🗅 🗙	0				
Datatable	Sampling S	equence (Gaps			
	Inv_No					
▶ 1	10000004					
2	10000011					
3	10000012					
	-					
	-					

7. Attributes Sampling

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1	File Ed	lit Data	Sampling A	nalysis Help						
8		- 🔳 🗅	Attribute:	s Sampling	•		Calculate Sa	mple Size		
D	atatable	Sampling	Monetary	Unit Sampling ((MUS) 🕨 🕨		Select Samp	e		
Г			Classical	Variables Sampli	ng (CVS) 🔹 🕨		Evaluate Res	ults		Qty ^
)	1	1/1/2018	10001	c Calculator			1	_	3.50	
	2	1/1/2018					5		5.50	
	3	1/1/2018		Random Number Generator					3.75	
	4	1/1/2018	10000004	14958	Miami		2		3.75	
	5	1/1/2018	10000005	17461	New York		1		3.50	
	6	1/1/2018	10000006	34878	Seattle		5		5.50	
	7	1/1/2018	1000007	33674	Boston		2		3.75	
	8	1/1/2018	1000008	31145	Washington		2		3.75	
	9	1/1/2018	1000009	10000009 25196 Miami 1 3.50						
<	[ĺ				> ~
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Sa	les100k.x	lsx	Records: 1000	00						.:

7.1 Sample Size

Sampling > Attributes > Calculate Sample Size

💱 Attributes - Sample Size 🛛 🗌	×
 🕞 • 🗅 📮 🛅 🝳 🖶 😨	
Sampling Distribution Binomial O Hypergeometric O Poisson	
Input Values	
Expected Error Rate (%) 1 0.00 to 18 %	
Tolerable Error Rate (%) 7 2 to 20 %	
Confidence Level (%) 90 🗸 50 to 99 %	
Population Size	
Results	
Expected Errors 1 OK	
Required Sample Size 55 Cancel	

Sample size can be calculated based on Binomial, Hypergeometric or Poisson distributions.

Input Values

Description

Expected Error Rate (%)	Expected rate of error in the population. From 0.00 to 18%.
Tolerable Error Rate (%)	Maximum acceptable rate of error in the population. From 2% to 20%.
Confidence Level (%)	The required level of assurance (1 - <i>risk of incorrect acceptance</i>). From 50 to 99%.
Population Size (Hypergeometric only)	Population size from 100 to 8 Million.
Results	Description
Number of Expected Errors	Expected number of errors in the sample.
Required Sample Size	Calculated number of items or records to sample. Maximum size is 3000.

7.2 Select Sample

Samples can be selected based on Systematic, Random or Cell selection methods.

Parameters	Description
Systematic	Based on a sampling interval which is calculated by dividing the number of items in the population with the sample size. A random start between 1 and the sampling interval is selected as the first sample. Subsequently, every n th item in the population which equals each increment of the sampling interval is selected.
Random	Random numbers between 1 and the total population size are picked as the selected items. The samples are the items in the population that match the selected random numbers.
Cell	Based on a cell interval which is used to divide the population into cells of equal size and a random number is picked from each cell as the sample item. The cell interval is calculated by dividing the number of items in the population with the sample size.
Sample Size	Number of samples to select. Maximum size is 3000.
Random Seed	A random seed value is used to generate the random values for the sample selection. The seed for a previous sample can be used to recalculate the same results for that sample.

Sampling > Attributes > Select Sample

💱 Select Sample			×
🔞 🗙			
Sampling Type Attributes	NUS	Samp	le On
-Sample Selection Pa	arameters –		
 Systematic 	Random	Seed	5283051
○ Random	Samp	e Size	55
🔾 Cell			
		ОК	Cancel

ŝ	🖟 Audit	tSampler						_	×
File Edit Data Sampling Analysis Help									
1		- 😐 🗅	X 🕄						
D	Datatable	e Systemati	c Selectio	on Analysi	s				
Γ		Rec_N	0	Date	Reference	Amount			^
	▶ 1		6	1/1/2016	P102006	3,639.70			
	2		24	1/1/2016	P102024	2,285.38			
	3		42	2/1/2016	P102042	9,003.55			
	4		60	3/1/2016	P102060	3,014.75			
	5		78	4/1/2016	P102078	16,197.73			
	6		96	5/1/2016	P102096	13,609.65			
	7		114	6/1/2016	P102114	5,750.30			
	8		132	6/1/2016	P102132	42,547.28			
	9		150	7/1/2016	P102150	4,817.22			
	10		168	7/1/2016	P102168	6,454.72			~
	5	🖶 🔯 🔁	L 0	Sample: 5	5 Seed: 5283051	Random Start: 6	Sampling Inte	erval: 18	
									.:

7.3 Evaluate Results

Sampling > Attributes > Evaluate Results

💱 Attributes - Evaluate Results	– 🗆 X
: 🕞 - 🗅 📮 🖻 🔍 🖶 🕑	
Sampling Distribution	
● Binomial ○ Hypergeometric () Poisson
Input Values	
Sample Size 55	Max = 3000
Number of Errors 3	Max = Sample Size
Confidence Level (%) 90 🗸	50 to 99 %
Tolerable Error Rate 7	2 to 20 %
Population Size	
Results	
Sample Error Rate (%)	5.45
Allowance for Sampling Risk (%)	6.29 OK
Upper Error Limit (%)	11.74 Cancel

Sample results can be evaluated based on Binomial, Hypergeometric or Poisson distributions.

The results are evaluated by comparing the Upper Error Limit (UEL) to the Tolerable Error Rate (TER). The upper error limit equals the sample error rate plus an allowance for sampling risk.

- If $UEL \leq TER$, the sample results indicate that the controls are effective.
- If UEL > TER, the sample results indicate that the controls are not effective.

Input Values	Description
Sample Size	Number of samples selected. Maximum size is 3000.
Number Errors in Sample	Number of errors found in the samples selected.
Confidence Level (%)	The required level of assurance (1 - <i>risk of incorrect acceptance</i>). From 50 to 99%.
Tolerable Error Rate (%)	Maximum acceptable rate of error for the sample results. From 2 to 20%.
Population Size (Hypergeometric only)	Population size from 100 to 8 Million.
Results	Description
Sample Error Rate (%)	The percentage of errors detected in the sample size.
Allowance for Sampling Risk (%)	The allowance for projection of the sample errors to the population.
Upper Error Limit (%)	The sample error rate plus an allowance for sampling risk.

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File Edit Data Sampling Analysis Help												
: 📄	-	· • •	Attrib	utes Sampli	ng	I	•					
Dat	atable	Sampling	📧 Mone	tary Unit Sa	mpling	(MUS) I	•		Calculate Sa	mple Size		
		Date		cal Variables	: Sampli	ng (CVS)	•	•	Select Samp	e	- H	Otre A
			Audit	Risk Calcula	ator			2	Evaluate Res	ults	H	Qty ^
	1	1/1/2018	📑 Audit	Risk Assess	ment W	orksheet		_	1		3.50	
	2	1/1/2018	999 Rando	m Number	Genera	tor			5		5.50	
	3	1/1/2018	100000	03	23798	Cnicago	_		2		3.75	
	4	1/1/2018	3 100000	04	14958	Miami			2		3.75	
	5	1/1/2018	3 100000	05	17461	New York			1		3.50	
	6	1/1/2018	3 100000	06	34878	Seattle			5		5.50	
	7	1/1/2018	3 100000	07	33674	Boston			2		3.75	
	8	1/1/2018	3 100000	08	31145	Washingto	n		2		3.75	
	9	1/1/2018	3 100000	09	25196	Miami			1		3.50	
<												>
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Sales	100k.xls	5X	Records: 1	00000								

8. Monetary Unit Sampling (MUS)

8.1 Sample Size

Sampling > MUS > Calculate Sample Size

🕡 MUS - Sample Size	- 🗆 ×	(
- 🕞 🖨 🗋 📑 🔍 🖶 😨		
Input Values		
Population Value 9	4,613,131 Max = 2000 Million	
Tolerable Misstatement	3,000,000 Max = 50% of PV	
Expected Misstatement	300,000 Max = 60% of TM	
Confidence Level (%)	75 🗸 10 to 99 %	
Results		
Tolerable Misstatement %	3.17	
Expected Misstatement %	0.32	
Ratio Expected/Tolerable	0.1	
Confidence Factor	1.61	
Required Sample Size	51	
Sampling Interval	1,855,159 OK	
Expected Sum of Taints	0.1617 Cancel	

The MUS sample size is calculated based on the formula n = R/P, which is derived from the Poisson probability distribution: where n is the sample size, R is the reliability factor (confidence factor) and P is the precision (tolerable misstatement rate).

Input Values	Description
Population Value	Book value or monetary value of the population. Maximum value of 2000 Million.
Tolerable Misstatement	Maximum acceptable amount of monetary misstatement in the population. Maximum limit is 50% of population value.
Expected Misstatement	Expected amount of monetary misstatement in the population. Maximum limit is 60% of tolerable misstatement.
Confidence Level (%)	The required level of assurance (1 - <i>risk of incorrect acceptance</i>). From 10 to 99%.
Results	Description
Tolerable Misstatement %	The tolerable misstatement divided by the population value.
Expected Misstatement %	The expected misstatement divided by the population value.
Ratio Expected/Tolerable	The expected misstatement divided by the tolerable misstatement.
Confidence Factor	The reliability factor that reflects the confidence level and the expected amount of misstatement.
Required Sample Size	The calculated number of monetary units to sample. Maximum size is 5000.
Sampling Interval	The population value divided by sample size. Interval used to systematically select the sample items.
Expected Sum of Taints	The expected misstatement (%) multiplied by the sample size.

8.2 Select Sample

Samples can be selected based on Systematic, Random or Cell selection methods.

Parameters	Description
Systematic	Based on a sampling interval which is calculated by dividing the population value with the sample size. A random start between \$1 and the sampling interval is selected as the first sampling unit. Each amount in the population is added to a cumulative subtotal. The first amount whose balance results in the subtotal equalling or exceeding the random start is selected as the first sample. Subsequently, each amount which causes the subtotal to equal or exceed each increment of the sampling interval is selected.
Random	Random values between \$1 and the total population value are picked as the selected dollar units. The samples are the amount balances in the population that contain the selected dollar units.
Cell	Based on a cell interval which is calculated by dividing the population value with the sample size. The cell interval is used to divide the population value into cells of equal size and a random value is picked from each cell as the selected dollar unit. The samples are the amount balances in the population that contain the selected dollar units.

Sample On	The monetary amount column to sample on.
Sample Size	The number of samples to select. Maximum size is 5000.
Random Seed	A random seed value is used to generate the random values for the sample selection. The seed for a previous sample can be used to recalculate the same results for that sample.

Sampling > MUS > Select Sample

💱 Select Sample			×
8 🗙			
Sampling Type O Attributes I	MUS	Samp	le On
Sample Selection P	arameters		
 Systematic 	Random	Seed	297164828
O Random	Samp	le Size	51
⊖ Cell			
		ОК	Cancel

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File	e Edit	Data Sam	pling Analys	is Help							
i 🗀 + 📃 + 🔟 🗅 🗙 📀											
Datatable MUS Systematic Selection Analysis											
		Rec_No	Date	Reference	Amount	Cumulative_Total	Selected_Unit	^			
►	1	39	2/1/2016	S00039	99,746.16	692,720.29	668,048				
	2	131	6/1/2016	S00131	4,524.19	2,523,533.77	2,523,207				
	3	258	11/1/2016	S00258	95,721.43	4,451,076.51	4,378,366				
	4	365	14/1/2016	S00365	78,957.94	6,257,242.78	6,233,525				
	5	447	17/1/2016	S00447	91,640.10	8,131,306.43	8,088,684				
	6	550	20/1/2016	S00550	52,715.28	9,946,157.38	9,943,843				
	7	646	24/1/2016	S00646	38,408.49	11,820,243.48	11,799,002				
	8	738	27/1/2016	S00738	66,959.58	13,683,351.76	13,654,161				
	9	820	30/1/2016	S00820	47,863.15	15,528,832.67	15,509,320				
	10	916	4/2/2016	S00916	45,254.73	17,376,758.98	17,364,479	~			
		🛛 🔁 🛄	🕕 Sample Ui	nits: 51 Records:	51 Random St	art: 668,048 Interval: 1,8	55,159 Seed: 29716	4828			
Sales	s.xlsx										

8.3 Evaluate Results

Sampling > MUS > Evaluate Results

💱 MUS - Evaluate Results									_	×
- 🗅 🗋 🖻 🔍 🖶 🛛										
Input Values		N	lissta	atemen	its (Max=50) —				
Population Value	94,613,131					Book	Audited		Book Value	
Tolerable Misstatement	3,000,000					Value	Value		Audited Value	
Sample Size	51	j 📮		-		,000.00	50,000.00		Addited value	
Confidence Level (%)	75 ~					,000.00	75,000.00			
				3	99	,000.00	89,000.00		Add De	
Results										
#	Book Value	Audited Value		Tainted %		Sampling Interval	Projected Misstatement	Incremental Confidence Factor	Misstatement Bound	^
Overstatements:										
#0						1,855,159		1.39	2,578,671	
#1	60,000.00	50,000	0.00	16.	67	1,855,159	309,255	1.31	405,124	
#2	85,000.00	75,000	0.00	11.	76	1,855,159	218,167	1.23	268,345	
#3	99,000.00	89,000	0.00	10.	10	1,855,159	187,371	1.18	221,098	
Total Overstatement Bou									3,473,238	
(-) Projected Understate										$\mathbf{\vee}$
Lower Misstatement Bound (L	MB)	1,863,8	78	Upper	Mi	sstatement	Bound (UMB)	3,473,238		
UMB > TM, the account bala	nce is mater	ially mi	ssta	ted (ov	ers	tated).		OK	Cancel	

The sample results are evaluated by comparing the Upper Misstatement Bound (UMB) and Lower Misstatement Bound (LMB) to the Tolerable Misstatement (TM). The upper and lower misstatement bound equals the upper error limit for overstatements and understatements.

- If UMB and LMB ≤ TM, the sample results indicate that the account balance is not materially misstated.
- If UMB or LMB > TM, the sample results indicate that the account balance is materially misstated.

Input Values	Description
Population Value	Book value or monetary value of the population. Maximum value of 2000 Million.
Tolerable Misstatement	Maximum acceptable amount of misstatement for the sample results. Maximum limit is 50% of population value.
Sample Size	The number of samples selected. Maximum size is 5000.
Confidence Level (%)	The required level of assurance (1 - <i>risk of incorrect acceptance</i>). From 10 to 99%.
Misstatements	Sample items with a difference between the book value and the audited value (overstatement or understatement). Maximum number of misstatements is 50.
Results	Description
Tainting %	The misstatement amount divided by the sample item's book value. A tainting % is calculated for each misstatement if its book value is less than the sampling interval. If the book value is greater than the sampling interval, the projected misstatement and bound will equal the error/misstatement amount.
Sampling Interval	The population value divided by sample size.
Projected Misstatement	The tainting % multiplied with the sampling interval.
Incremental Confidence Factor	The incremental change in the confidence factor for each misstatement, e.g. the increment in the confidence factor from misstatement #1 to #2.
Misstatement Bound	The projected misstatement multiplied by the incremental confidence factor.
Upper Misstatement Bound	Total overstatement bound (basic precision + misstatement bound for each overstatement) less any projected understatement.
Lower Misstatement Bound	Total understatement bound (basic precision + misstatement bound for each understatement) less any projected overstatement.

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: 📄	-	🔳 I 🗅	Attributes	Sampling	•					
Dat	tatable	Sampling	💷 Monetary	Unit Sampling ((MUS)				_	
		Date	Classical	/ariables Sampli	ng (CVS) 🔹 🕨		Stratified Sar	mple	e	Qty ^
▶ 1			Audit Risk	Calculator			Evaluate Res	ults	3.50	Quy
P	-	1/1/2018	📑 Audit Ris	Assessment Wo	orksheet	-	1			
				Number Generat	or	-	5		5.50	
	3	1/1/2018			Chicago	·	2		3.75	
	4	1/1/2018		14958	Miami		2		3.75	
	5	1/1/2018	10000005	17461	New York		1		3.50	
	6	1/1/2018	1000006	34878	Seattle		5		5.50	
	7	1/1/2018	1000007	33674	Boston		2		3.75	
	8	1/1/2018	1000008	31145	Washington		2		3.75	
	9	1/1/2018	1000009	25196	Miami		1		3.50	
<										>
i H	▲ 1	► H	$\Sigma \xrightarrow{1}{2} \downarrow_Z^A$	*7 *7 ়						•
Sale	s100k.xls	5X	Records: 1000	00						

9. Classical Variables Sampling (CVS)

Classical Variables Sampling (CVS) is used to estimate the total audited amount or the total misstatement of a population. Each amount or item in the population is a sampling unit and the population is stratified by value for random sampling. CVS uses the normal distribution theory, standard deviation and confidence interval to evaluate the characteristics of the population.

9.1 Sample Size and Selection

Sampling > CVS > Sample Size and Selection

🕼 CVS	- Sample Size a	and Selection						_	×
XI 🗅] 🕄								
Stratifi	ied Sample Siz	e							
Book V	/alue Amoun	it ~	Allocation:	Optimal C) Proportiona	I	Seed	62807	6812
Popula	ation Value	30,145,612 N	umber of S	Strata	5 韋 Sa	mpling Meth	od	Ratio	~
Popula	ation Size	5,000 N	umber of C	Cells	50 🛨 1	or 2-Sided Int	terval	2	~
High 1	00% Cutoff	C	onfidence L	evel (1-Alpha)%.	90 ~ Ex	pected Misst	atement	% 0.20) ~
Low 10	00% Cutoff	Po	ower (1-Bet	a)%	80 ~ To	50	0,000		
	Stratum	Boundary	Count	Amount	Mean Std Dev		CV	Sample	
•	1	58 - 2818	1965	2,506,544.50	1,275.60	729.90	0.57	11	
	2	2818 - 6130	1185	5,113,119.75	4,314.87	963.25	0.22	9	
	3	6130 - 9994	883	6,886,901.25	7,799.44	1,081.20	0.14	7	
	4	9994 - 16618	597	7,703,704.25	12,904.03	1,870.71	0.14	9	
	5	16618 - 27650	370	7,935,342.50	21,446.87	3,459.41	0.16	10	
CV 2	5% P/T 0.	.661 Precision	330,50	00 Sample Size	46	Stratify	Sel	ect Car	ncel

The sample size can be calculated based on stratified difference, ratio or mean estimation. The stratum boundaries or intervals for the stratification are determined using the cumulative square root of frequency method. The sample size is allocated to the strata using either the optimum Neyman allocation or proportional to the stratum total value.

Note: The sample size must be greater than the number of strata (e.g. number of strata = 5, sample size > 5).

Input Values	Description
Book Value	Book value column to select for sampling.
Sampling Method	Estimation method to compute sample size (difference, ratio or mean-per-unit estimation).
Allocation	Allocation of sample size based on the Optimal (Neyman) method or Proportional to Total Value.
Population Value	Book value or monetary value of the population. Maximum value of 2000 Million.
Population Size	Total number of items in the population
Minimum Value	Minimum value of the recorded amounts in the population.
Maximum Value	Maximum value of the recorded amounts in the population.
Number of Strata	Number of intervals for the stratification. From 1 to 12.
Number of Cells	Number of cells (smaller in size than intervals) used for preliminary stratification. From 20 to 100.
Confidence Level (1-Alpha)	The level of confidence that the sample estimate is accurate (1 – alpha risk of incorrect rejection). 1 or 2-sided (80 to 99%).
Power (1-Beta)	The power of the test to detect a significant difference (1 – beta risk of incorrect acceptance). From 50 to 99%.
1 or 2-sided Interval	1 or 2-sided confidence interval (lower/upper tails).

High 100% Cutoff		Upper 100% cutoff. All items above this limit are selected.
Low 100% Cutoff		Lower 100% cutoff. All items below this limit are selected.
Expected Misstate	ement %	Estimated proportion of misstatement in the population. From 0.05 to 20%. An error rate must be entered for the calculation.
Tolerable Misstate	ement	Maximum acceptable amount of monetary misstatement in the population. Maximum limit is 50% of population value.
Seed		A random seed value is used to generate the random values for the sample selection. The seed for a previous sample can be used to recalculate the same results for that sample.
Results	Description	

Stratum	Sequence number for each stratum.
Boundary	The lower and upper limits (boundaries) for the stratum.
Count	Number of items or records in the stratum.
Amount	Total value of the recorded amounts in the stratum.
Mean	Average value of the recorded amounts in the stratum.
Std Dev	Standard deviation of the recorded amounts in the stratum.
CV	Coefficient of variation (ratio of the standard deviation to the mean).
Sample	The number of items or records to sample in the stratum.
Ratio P/T	Precision as a fraction of tolerable misstatement related to α and β . (P/T = Z _{\alpha} / Z _{\alpha} + Z _{\beta})
Precision	Allowance for sampling risk (P/T * tolerable misstatement).
Sample Size	The total number of items to sample. Maximum size is 5000.

The samples are randomly selected from each stratum based on a random seed (stratified random selection).

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atatable S	tratified Rand	dom Selectior	Analysis								
	Stratum	Rec_No	Date	Inv_No	Cust_No	City	Item_Code	Unit_Price	Qty	Amount	1
31	4	1574	23/4/2021	10001574	22110	Boston	5	170.25	60	10,215.00	
32	4	2934	29/7/2021	10002934	17808	Houston	7	350.00	43	15,050.00	
33	4	263	19/1/2021	10000263	13248	Honolulu	5	170.25	62	10,555.50	
34	4	2857	24/7/2021	10002857	42832	Chicago	7	350.00	34	11,900.00	I
35	4	658	16/2/2021	10000658	31212	Chicago	5	170.25	62	10,555.50	
36	4	4592	24/11/2021	10004592	24535	Honolulu	7	350.00	31	10,850.00	
37	5	3485	6/9/2021	10003485	21441	Miami	7	350.00	76	26,600.00	
38	5	4674	30/11/2021	10004674	37568	Washington	6	230.50	78	17,979.00	
39	5	797	26/2/2021	10000797	19275	Houston	7	350.00	78	27,300.00	I
40	5	1319	5/4/2021	10001319	28478	Miami	7	350.00	52	18,200.00	l
41	5	4572	23/11/2021	10004572	16023	Honolulu	6	230.50	77	17,748.50	
42	5	3201	17/8/2021	10003201	48901	Houston	7	350.00	69	24,150.00	
43	5	740	22/2/2021	10000740	11496	Chicago	7	350.00	66	23,100.00	
44	5	3701	22/9/2021	10003701	41277	Chicago	6	230.50	74	17,057.00	
45	5	2591	5/7/2021	10002591	23256	New York	7	350.00	57	19,950.00	
46	5	3229	19/8/2021	10003229	19548	New York	7	350.00	65	22,750.00	
🖻 🔎 🖶	🛛 🔁 🛄	1 Sample	Size: 46 Seed:	923718250							
stdata.csv											

9.2 Evaluate Results

Sampling > CVS > Evaluate Results

🖗 C\	/S - Evaluat	e Results										-		×
-6	b b	🖹 🔍 🖶	0											
Conf	idence Lev	vel (%) 80	✓ Precision Lim	its E	Both	~			E	valuation	Method	Ratio	5	~
Stra	ta				San	npl	es (Book/	Audit Value	e) —					
	Stratum	Total Items	Population Value	^	ĥ	Γ		Stratum		Book Value	Audite Value		Differen	CE ^
	1	1,965	2,506,545				1	1	1	,811.25	1,811	.25	0.	.0(
	2	1,185	5,113,120				2	1	1	,014.00	1,014	.00	0.	.0(
	3	883	6,886,901				3	1		468.00	468	.00	0.	0(🗸
	4	597	7,703,704	¥		<								>
				ו							t	5		
Resu	ults								_					
St	tratum	Sample Ratio	Sample Estimate	Standard Deviation		Stand: Erro			Summary Population Value		Total 30,145,612.25		25	
1		0.996452	2,497,651.28		15.4	18	9,14	45.73			Amount:	30,143,012.23		-
2		0.999586	5,111,002.92		18.4	15	7,20	60.02		Lower L	imit	30,0	58,063.6	57
3		0.998599	6,877,252.70		29.0	56	9,8	59.49		Point Es	timate	30,10	, 05,171.7	78
4		0.997872	7,687,310.77		39.3	10	7,72	22.03		Upper L	imit	30,1	52,279.8	39
5		0.999573	7,931,954.11		18.8	38	2,17	78.98		Misstate	ement:			
All			30,105,171.78				36,10	66.25		Lower L	imit		37,548.5	58
T-va	lue df=41							1.30		Point Es	timate	-4	40,440.4	17
Prec	ision						47,10	08.11		Upper L	imit		6,667.6	54
											ОК	:	Can	cel

The sample results are evaluated by determining if the population value falls within the audited amount precision limits or the misstatement precision limits do not exceed the tolerable misstatement:

- If the population value falls within the audited amount precision limits, conclude that the account is likely fairly stated;
- If the misstatement precision limits do not exceed the tolerable misstatement, conclude that the account is not materially misstated;
- If the lower or upper misstatement precision limit is greater than tolerable misstatement, conclude that the account is materially misstated.

Input Values	Description
Population Value	Book value or monetary value of the population. Maximum value of 2000 Million.
Confidence Level (%)	The desired level of confidence (1 - <i>risk of incorrect acceptance</i>). From 50 to 99%.
Precision Limits	Evaluate both precision limits (2-sided) or upper limit (1-sided) or lower limit (1-sided).
Evaluation Method	Estimation method to evaluate sample results (difference, ratio or mean-per-unit estimation).
Strata	Stratum number, total items in the stratum and population value. Maximum is 20 rows.
Samples (Book/Audit Value)	The book and audited values for all the samples (including the High 100% and Low 100% cutoff items). Maximum number of items is 5000.
Results	Description
Stratum	Sequence number for each stratum.
Difference	Non-zero differences in the sample (audited value - book value).
Mean Difference	Mean of the sample differences (misstatements / sample size).
Sample Ratio	Ratio of the sample differences (misstatements / audited amounts).
Sample Mean	Mean of the audited amounts (audited amounts / sample size).
Sample Estimate	Sample estimate of the misstatement or audited amount (total items * sample mean).
Standard Deviation	Standard deviation of the sample (measure of the variance within the sample).
Standard Error	Standard deviation of the sampling distribution (standard error of the estimate).
Precision	Allowance for sampling risk (standard error * critical T-value for the confidence level).
Point Estimate: Audited Value	Sample estimate of audited amounts (or population book value + sample estimate of misstatement).
Point Estimate: Misstatement	Sample estimate of misstatement + High 100% + Low 100%.
Lower Limit	Lower precision limit (point estimate - precision value).

Upper Limit

Upper precision limit (point estimate + precision value).

10. Audit Risk Calculator

Sampling > Audit Risk Calculator

🕡 Audit Risk Calculator				_	
AR = IR x CR x DR	Н	L	M	H	VH
	70%	21%	35%	49%	70%
Overall Audit Risk (AR) 5 Inherent Risk (IR) 70 Control Risk (CR) 30	M	L	M	M	H
	50%	15%	25%	35%	50%
Risk of Material21%Misstatement (RMM)24%Detection Risk (DR)24%	Control Risk (CR) %07 7M	L 12%	L 20%	M 28%	M 40%
Substantive Assurance	С	L	L	L	M
(100% - DR) 76%	20%	9%	15%	21%	30%
	VL	VL	L	L	L
	20%	6%	10%	14%	20%
		L 30%	M 50% Inherent	H 70% Risk (IR)	VH 100%

The calculation is based on the Audit Risk Model ($AR = IR \times CR \times DR$), where the audit risk consists of three components i.e. inherent, control and detection risks.

Input Values	Description
Audit Risk (AR)	The overall acceptable level of audit risk. From 1 to 5% (default at 5%).
Inherent Risk (IR)	The susceptibility of an account balance or class of transactions to material misstatement, assuming there are no related controls. From 30 to 100%.
Control Risk (CR)	The risk that the internal controls will fail to prevent or detect material misstatements. From 20 to 100%.
Results	Description
Detection Risk (DR)	The risk that the audit procedures will fail to detect material misstatements.
Substantive Assurance	The assurance required from substantive tests (complement of detection risk i.e. 100% - DR).

11. Audit Risk Assessment Worksheet

Sampling > Audit Risk Assessment Worksheet

😥 Auc	lit Risk Assessment Worksheet								-		×
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Accoun	t Balance/Class of Transactions	Identified Risks		Information System	Information System Control Activites						
Fixed A	ssets - Land & Buildings		nd titles to loss or theft	Non-complex commercial application		Safekeeping of land and pr		es			
Asserti	ons (CEAVO) CEAVO	Changes in marke	t value or fair value	Simple automated reporting		Annual review of property fa	air value				
Overall	Audit Risk (AR) 5 🜩										
Inherer	t Risk (IR) 30 ✓										
		Complex accounti		 Non-complex commercial application 		Formal business plans and	l hudente				
	f Material	Complex financial	instrument or product	Mid-size and moderately complex com		Risk management framew	ork				î
	ement (RMM)		of account balance or transactions sets to misappropriation or theft	Large or complex commercial applicat Complex ERPs with significant custom		Standard operating proced Risk assessment procedur					
Detecti	on Risk (DR) 56%	Susceptibility of as	ssets to obsolescence	Custom developed application	200011	Risk register and risk repor	ting				
	+ 🖓 🛅 🔚 🔺 🖌 📓 RMM	Changes in marke Changes in techno	et value or fair value blogy or industry	 In-house developed application Web-based transactions 	~	Management oversight of Management oversight of					~
	Account Balance/Class of Transactio	nc Accortions	Identified Risks	Information System	Control Activities		AR	IR	CR	RMM	DR
	Fixed Assets - Land & Buildings	CEAVO	Susceptibility of land titles to loss or theft	Non-complex commercial application		id and property titles	An	30	30	9%	56%
►	rixed Assets - Land & Buildings	CEAVO	Changes in market value or fair value	Simple automated reporting		property fair value					3076
	Fixed Assets - Furniture & Computer	CEAV	Susceptibility of assets to loss or theft	Non-complex commercial application			5	50	30	15%	33%
	Equipment		Subjective recognition of depreciation	Simple automated reporting		ontrol procedures					
	Inventory	CEAV	Susceptibility of assets to loss or theft	Non-complex commercial application		ies in accounting manual	5	50	30	15%	33%
	inventory	CLAV	Susceptibility of assets to obsolescence	Simple automated reporting		onciliation of inventory			50	1570	3370
	Accounts Receivable AV		Size of account balances	Non-complex commercial application			5	50	50	25%	20%
			Subjective allocation of credit limits Subjective provision for doubtful debts	Simple automated reporting	Monitoring of overdue accounts and debtors aging						
	Investments - Certificates of Deposit	ΔV	Size and volume of transactions	Mid-size and moderately complex			5	50	20	10%	50%
	investments certificates of beposit		Susceptibility of assets to loss or theft	commercial application	deposit	ogotable certificates of		50	20	10/0	5070
					Stock-count and re	conciliation of					
	Investments - Bonds	AV	Size and volume of transactions	Mid-size and moderately complex	certificates Mark-to-market va	luction.	5			050/	2001/
	Investments - Bonds	AV	Changes in market value or fair value	commercial application		d performance and	5	50	50	25%	20%
					ratings						
	Investments - Securities	AV	Size and volume of transactions	Mid-size and moderately complex	Mark-to-market va		5	50	50	25%	20%
			Changes in market value or fair value	commercial application	Monitoring of prof	it and loss position					
	Volatility in stock market Vo				35%	14%					
			it and loss position			50	3370	14/0			
			Volatility in FX market		Monitoring of cut-						
	Investments - Derivatives	AV	Significant complex financial instruments	Complex commercial application	Mark-to-market va		5	100	70	70%	7%
			Changes in market value or fair value Volatility in derivatives market		Monitoring of prof	it and loss position folio value-at-risk					
L											

Input Values	Description
Account Balance / Class of Transactions	The significant account balances (e.g. receivables, inventory) or classes of transactions (e.g. sales, purchases).
Assertions (CEAVO)	The relevant assertions for the account balance which include Completeness, Existence, Accuracy, Valuation and Ownership.
Identified Risks	The identified inherent and potential risks for the relevant assertions before considering any related controls.
Information System	The information system or IT environment used to process and record the financial transactions and prepare financial reports.
Control Activities	The controls related to the identified risks such as authorizations and approvals, reconciliations, physical or logical access controls to computer programs and data files, and segregation of duties.
Audit Risk (AR)	The overall acceptable level of audit risk. From 1 to 5%.
Inherent Risk (IR)	The susceptibility of an account balance or class of transactions to material misstatement, assuming there are no related controls. From 30 to 100%.
Control Risk (CR)	The risk that the internal controls will fail to prevent or detect material misstatements. From 20 to 100%.
Results	Description
Risks of Material Misstatement (RMM)	The combined inherent and control risks ($RMM = IR \times CR$).
Detection Risk (DR)	The risk that the audit procedures will fail to detect material misstatements. The amount of substantive assurance required is the inverse of detection risk, i.e. 100% – DR.

12. Random Number Generator

Sampling > Random Number Generator

💱 Random Number Generato			tor	_		×
i 🔒 - 🗅 i 🛙	1 🖸	0	0			
-Input Value	25					
Start Value	•	102001		Min = 1		
End Value		103000		Max = 2000 Million		
Sample Siz	ze		55	Max = 3	000	
Random	Seed	51	56925			
Results						
	Rando	m_No				^
▶ 1	1	02889				
2	1	02622				
3	1	102411				
4	102743					
5	102305					
6	1	02006				¥
Sort Results			(ОК	Cance	:

The random numbers are generated based on a random seed to ensure that each set of numbers is randomly generated.

Input Values	Description
Start Value	The starting value to randomly generate unique numbers. Must be greater than 0 and less than the end value.
End Value	The ending value to randomly generate unique numbers. Must be greater than the start value and not exceed 2000 Million.
Required Sample Size	The number of samples to select. Maximum size is 3000.
Random Seed	A random seed value is used to generate the random numbers for the sample selection. The seed for a previous sample can be used to recalculate the same results for that sample.
Results	Description
Sort Results	Determines if the results are sorted in sequential order when displayed. The default is not to sort the results.