

MTC Sampling Software

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Bob Schauer
360-666-3119
rschauer@mtc.gov

Why do we need It?



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- Part of larger effort
- Implement Statistical Sampling
- MTC / Other states started 10 years ago
 - *Some already did this*
 - *Most did block sampling all the time*
 - *Some still do block all the time*

Is Statistical Sampling Necessary?



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■ Some facts...

- Auditors will do sampling
- Sampling used to value assessments
- If accuracy is not a concern, you can be efficient by accepting any type of sampling
- Only way to measure accuracy is with statistical sampling
- Taxpayers expect accuracy

Is Statistical Sampling Necessary...



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■ Conclusion:

- Part of quality auditing
 - *If you agree quality = accuracy*
 - *Maybe some unconcerned about accuracy*
- Block sampling is still OK
 - *but maybe not always the first or only choice*

Quality: Quote from per W Edwards Deming



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- ② “When people and organizations focus primarily on quality ... quality tends to increase and costs fall over time”

- ② “However, when people and organizations focus primarily on costs, costs ... tend to rise and quality declines over time”

- *statistician, college professor, author, lecturer, and consultant*
- *Credited with improving production in the US during WWII*

Obstacle & Cure

(in applying statistical sampling)



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- | | |
|---------------------------|--|
| ■ How to do it | ■ Consult w/ experts |
| ■ Training | ■ MTC Sampling classes |
| ■ Auditor reluctance | ■ State policy / manuals <ul style="list-style-type: none">□ require quality auditing□ (top down expectation) |
| ■ Taxpayer non-acceptance | ■ Proposed MTC Model Reg |
| ■ Difficulty | ■ Software |

Software Problems



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- Free software not suited for specific needs
- Software not from “auditor’s perspective”
- Cumbersome packages

Examples of Software Awkwardness



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- Steps don’t make sense
 - *to the auditor*
- Not seamless with Excel
 - *where the auditor is at!*
- Upload batch or text files
 - *auditor required to know special skills*
- Extraneous Information
 - *Statisticians love statistics – auditors don’t always*

Goals of MTC Statistical Software



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- Encourage random sampling
- Make easier, w/o lessening quality
- Provide relevant information at right time
 - *to the auditor*
- Reduce/eliminate mundane tasks

Risks Dangers & Problems



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- Use validates process
 - *very bad assumption!*
- Replaces auditor's judgment
- Promote beliefs not supported by truth
- Misuse by auditors
 - *See first bullet point*
- Misuse by others
 - *See first bullet point*

Risks Dangers & Problems ...



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- Promote undesirable values:
 - *“Just give me the answer... I don’t want to know more than that”*
- Too specialized
 - *Automation of infrequent tasks*
- Spoon-feeding / Automation gone awry
 - *Lack of involvement with the process...*

Risks Dangers & Problems...



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- Deming on automation:
 - *“Robots painting robots”*
 - *Proponent of semi-automation over full automation*
 - *Promote involvement*
 - *Minimize mundane tasks*

Intended Use



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- Sales and use tax random sampling by state auditors
 - Non-electronic*
 - Electronic*
- MTC training classes

Who can use Software outside MTC Training?



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- Auditors who take MTC sample training
 - May include those who have taken training*
- MTC audit staff
- State sales/use auditors
 - Compact & Sovereignty states if their state approves the software*
- Non-government/others?
 - Not Decided*
- No distribution until testing completed

Restrictions ...



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- Not fully decided
- Likely no charge
- Development costs reimbursed through
 - Class fees
 - MTC Audit fees
- Distributions of software restricted to
 - Anyone taking class in class
 - Certain government users after class
 - MTC staff at any time
 - Compact/Sovereignty state auditors at any time

Restrictions ...



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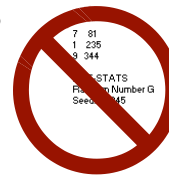
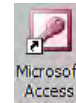
- Will likely have disclaimers on Non-MTC use
- **Non-MTC use will not be “supported”**
 - Must have internal programmers
 - External support difficult due to custom MS Office installs

What sets it apart

- Works totally in Excel
 - Macro based (VB/VBA programming)
 - Access/dBase files read directly into Excel
- No outside upload text files
- Automation on audit workpapers
- Stratification Analysis on one screen



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Requirements

- Windows XP or Vista
- Probably not work on Apple based computers
 - *Some VBA code is unique*
- Excel 2000 or 2003
- MS Jet Engine (almost always installed with any version of MS Office)
- Office VBA must be activated
- VBA Security must be able to be set by auditor



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Requirements...



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- Probably works in Excel 97
- Excel 2007 eventually
- Versions before Excel 97 incompatible
- **Necessary component reference libraries**
 - *or the ability to install by user/administrator*

Key Features



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- Very good random number generator
 - Mersenne Twister
- Time Period Sampling
- Automatically produces all sample workpapers
- Statistical evaluation within Excel's VBA

Key Features...



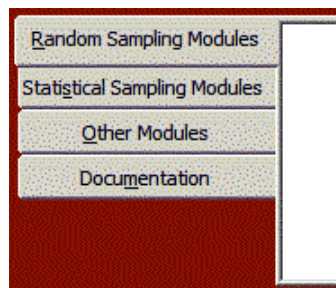
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- Stratified Samples taken all at once
- Detail stratum automatically inserted
- **Stratification Analysis**
 - Key decisions on one screen

Module Groupings



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- Non-electronic random sampling (*non-statistical sampling class*)
- Electronic sampling (*statistical sampling class*)
- Sampling tools and utilities (*other modules*)
- Documentation

Simple Random Sampling Modules



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- SRS
 - Random numbers between 1 and high #
- Time Periods
 - Days
 - Months
- Frames and Sets as is found in RAT-STATS +
 - More sets than RAT-STATS
 - Can mix sets/frame setups
 - *(not possible in RAT-STATS)*
 - Add labels to frames and sets
 - *(feature not in RAT-STATS)*

Electronic Data Sampling & Statistical Sampling Modules



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- Stratified Samples Excel Data
 - Restricted to Excel record limit (for a sheet)
 - *Excel 2007 limit very large*
- Stratified Samples database files directly *(from Excel)*
 - **Not** restricted to Excel record limit
 - *Data limited to MS Jet Engine limit*
 - dBase or MDB files
- Statistical Evaluation
 - One/Two sided
 - Multiple Confidence limits
 - Not state specific

Tools



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- All (except last one) taken from WA eSampling Tools
- Negative Matching (*Zapper*)
- Analyze Excel File
 - Profiles data in many files
- Combines Excel Files
 - Combine data into a single file
 - Also can send data to mdb file
- List or Compare Files
 - List contents of folders
 - Compare contents of two folders
- Sudoku Solver
 - The computer solves puzzle (*cheat*)

Documentation Modules



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- Evaluation help (*for statistical evaluations*)
- Background on Random Number Generation
- MTC Sampling Manual
- Notation and Formulae (*statistical sampling*)