MTC
Sampling Software

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Why do we need It?

- 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?

- 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...

■ 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

a) “When people and organizations focus primarily on quality … quality tends to increase and costs fall over time”

b) “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)

- How to do it
- Training
- Auditor reluctance
- Taxpayer non-acceptance
- Difficulty
- Consult w/ experts
- MTC Sampling classes
- State policy / manuals
  - require quality auditing
  - (top down expectation)
- Proposed MTC Model Reg
- Software
Software Problems

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

- 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

- 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

- 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 …

- 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…

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

- Sales and use tax random sampling by state auditors
  - Non-electronic
  - Electronic
- MTC training classes
Who can use Software outside MTC Training?

- 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 …

- 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 …

- 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
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
Requirements…

- 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

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

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

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

- **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

- 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

- 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

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