

Surveys & Sampling for Forest Products

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Outline

- Sampling techniques
- Probabilistic sampling
- Forest Products Survey
 - An example from my experience



Sampling Techniques

Probabilistic

Random selection
Statistically representative sample
Can generalize to population
Quantitative research

Non-Probabilistic

Non-random
Not representative of the population
Qualitative research



Probabilistic Sample

- Need a way to identify population
 - Need to draw a sample that is representative of population (to generalize)
- Sample size
 - Desired level of certainty (target error)
 - Costs per additional unit sampled
- Selection into sample is random
- Sample types
 - Simple Random; Systematic; Stratified; Clustered



THE U.S. TIMBER PRODUCTS OUTPUT SURVEY



Timber Products Output (TPO) Survey

- Program's objective
 - To report on roundwood's primary uses
- Programs Coverage
 - National program but organized by FS aggregated regions (3 large regions-North, West, and South)
- Implementation
 - Through a survey of active primary wood facilities (mills that use roundwood to produce a primary product such as lumber, veneer, plywood, wood pulp, etc.)
 - Up to 2017 data collection was periodic with all active mills surveyed (Census)
 - An annual mill sample was recently adopted (2018)



TPO Annual Mill Sample

Reasoning

- Generate roundwood use estimates more frequently and consistently across the Nation
- Generate sample errors for reported estimates

Approach

- Various sample designs were tested to select optimal method for TPO (easy to adopt and with minimal cost, while within FIA required standards)
 - Simple Random Sampling
 - Stratified Random Sampling
 - Probability Proportional to Size



Annual Mill Sample Process

- Selected method
 - Stratified random sample with stratum using mill size
 - Sample size set at minimum 40% of population
 - Aiming to capture largest share of volume possible...

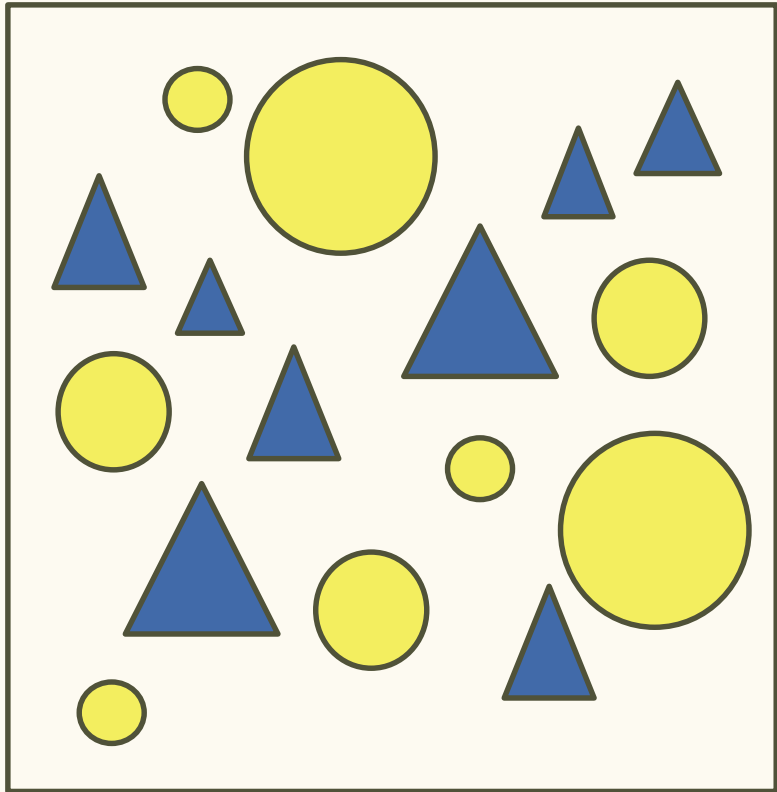
Stratified by

- State (geographical boundary)
- Product type (sawmills, veneer mills, panel mills, etc.)
- Size
 - Certainty units (All mills with capacity ≥ 10 million ft³)
 - Remaining mills split into strata by size and 2 unit are se per stratum

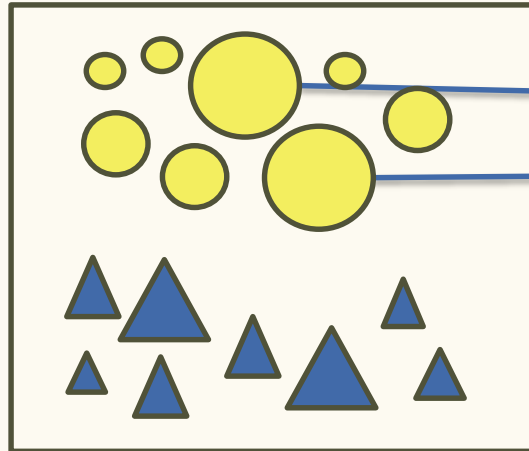


Selection diagram

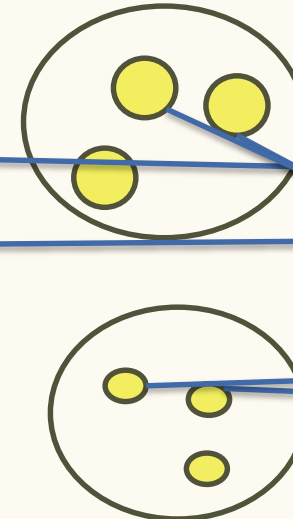
POPULATION



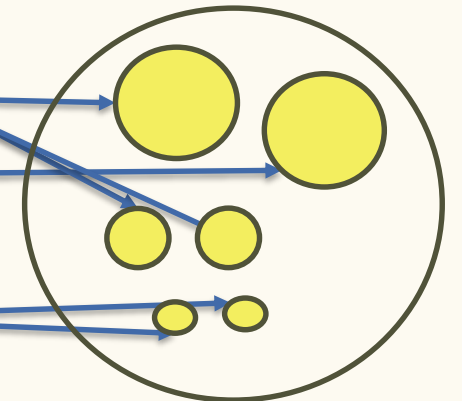
Stratified by type



Stratified by size



Selection into sample



Lessons Learned

- Evaluate sample designs incorporating non-response
- A good sample frame is essential
- Avoid singleton units at all cost...
- Select a design that allows some flexibility
- Be prepared to make changes to adapt



THANKS!

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