Timber Products Output (TPO) Data: Methodology Changes & Direction Moving Forward

CONSUELO BRANDEIS
LEAD, NATIONAL RESOURCE USE MONITORING (TPO & HARVEST UTILIZATION)
USDA FOREST SERVICE, SOUTHERN RESEARCH STATION, FOREST INVENTORY AND ANALYSIS

2022 SOFAC ANNUAL MEETING, DURHAM, NC. AUGUST 9-10, 2022
What is TPO?

Component of FIA’s Resources Use Monitoring

◦ How are harvest removals utilized?
  How much is utilized, for what primary products, and how much left in site?

◦ TPO– Survey of primary wood processing mills
  Sawmill, veneer & plywood mills, pulp & paper mills, etc.

◦ Prior to 2019 (or 2018 survey year)...
  ◦ Surveys were sent to all active mills
  ◦ Implementation varied by FIA region
    South every other year across all participating Southern States
    North and West longer time between surveys, staggering states
TPO Methodology changes

2019 forward (2018 survey year)
1. Using a sample of active mills
2. Annual survey
3. Same approach across all FIA regions

Why that change?
◦ To Provide Nationally Consistent TPO Estimates (+error) on an Annual Basis

Plans for future?
New Methodology – Areas impacted

Data collection

Data Processing

Data Delivery
New Methodology – Areas impacted

Data collection

- **Sample Frame**
  - Error from over/under coverage (4% of sample were ineligible mills, how many in frame?)
  - Added effort to update sample frame

- **Mill response**
  - Potentially affected by increased survey frequency (2021 average sample size @49%)

Future Direction

- **Under Consideration**
  - Exploring different frequencies for data collection (ex. 2 or 3-year cycles with a post-card survey (3-4 questions) every year to all mills; 2-year cycle staggering states, with post-card survey every year to all mills; etc.)

- **Research in Progress**
  - Mill county draw and detailed species
  - Simplify the survey form address item non-response
  - Non-Response pattern & adjustment
  - MAR or MNAR? – Assessment through Sensitivity Analysis and using respondent/late respondent analysis
  - Adjustments? – Evaluating Weight Adjustments, post-stratification, imputation, and propensity score adjustment

Data collection
Total Mill Response by Survey Year
Non-Response methods

2017 data & observed response pattern

Sampled from 2017 subpopulation of respondents (1,212 mills)
  ◦ Sample from 531 mills

Assumed ~80% random response (based on state, mill type, and size)

Non-response adjustment using the LOCF, and a propensity score under two scenarios (one and all available variables)
New Methodology – Areas impacted

Data Processing

**AIM = Consistent TPO Data**

But processing differs by regions...

Are estimates comparable?

What variables can be estimated similarly?

How are the different methods impacting reported data?
New Methodology – Areas impacted

- County level estimates (improved by post-stratification?)
- Volume by roundwood type and species group
- Reported residue use
Summary

Annual Survey of mill sample implemented across all regions

Next steps
- Implement Non-response adjustments
- Re-examine survey frequency
- Assess sample frame impacts on various TPO estimates (county, species group, residues)
- Examine regional methods and ways to increase consistency
Questions
Thanks!

CONSUELO.BRANDEIS@USDA.GOV
Current Sampling Pattern

- **State 20 or more mills?**
  - Yes:
    - Mill type 5 or more?
      - Yes: Sample 40%
      - No: 100%
  - No: 100%

- **Mill 10,000 mcf or more?**
  - Yes: 100%
  - No:
    - Stratify by size akin to PPS 2 mills/stratum, at random
TPO Toolkit

https://www.fia.fs.fed.us/program-features/tpo/