

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

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LEAD, NATIONAL RESOURCE USE MONITORING (TPO & HARVEST UTILIZATION)

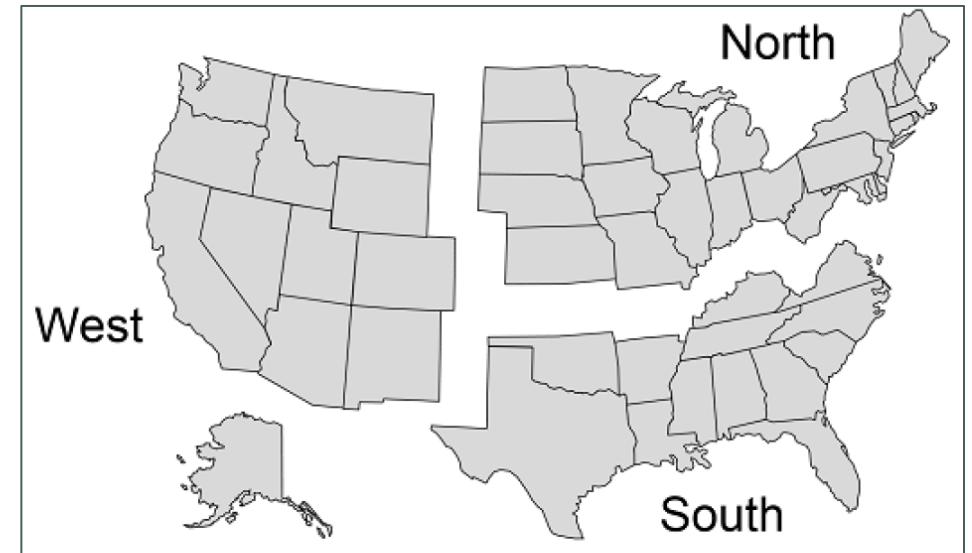
USDA FOREST SERVICE, SOUTHERN RESEARCH STATION, FOREST INVENTORY AND ANALYSIS

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

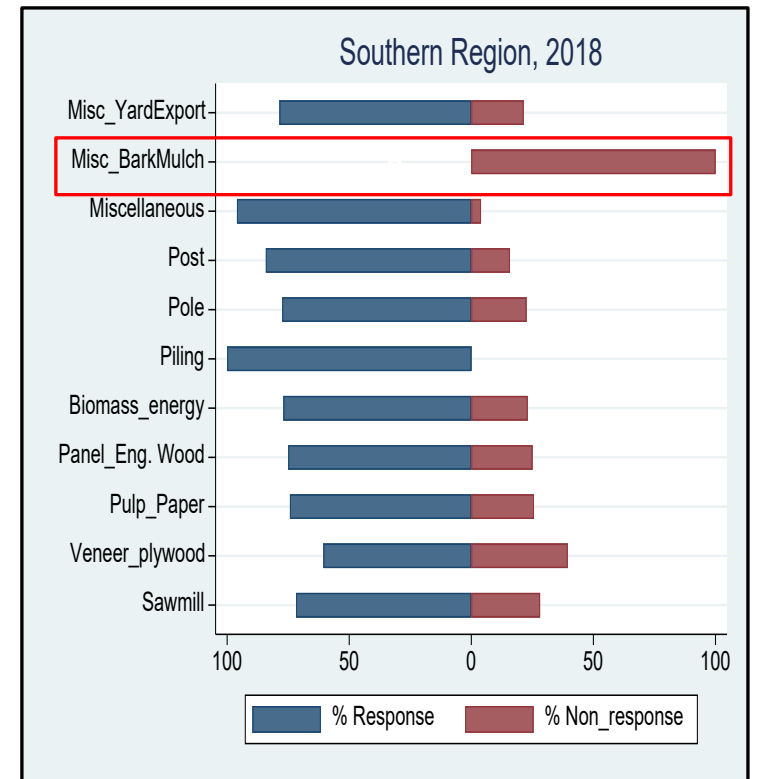
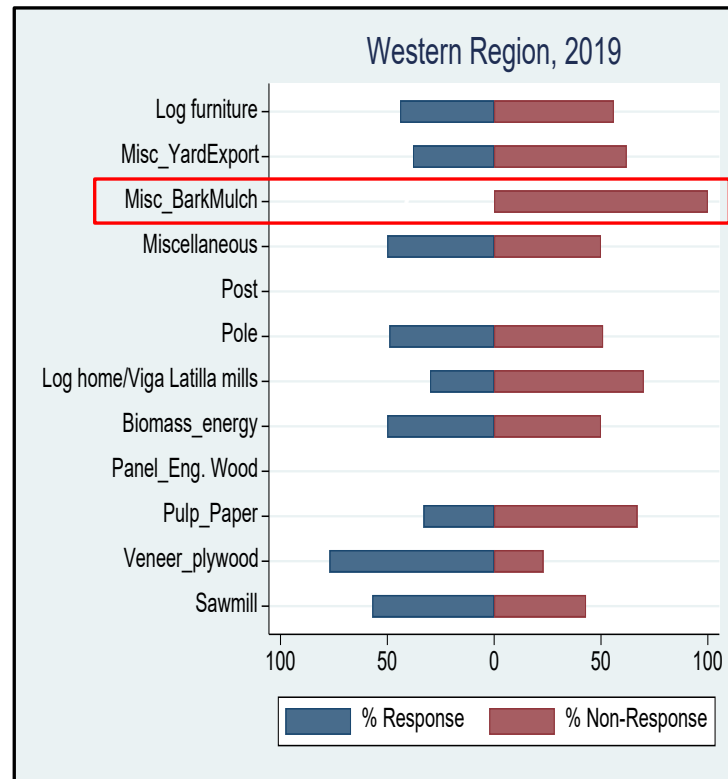
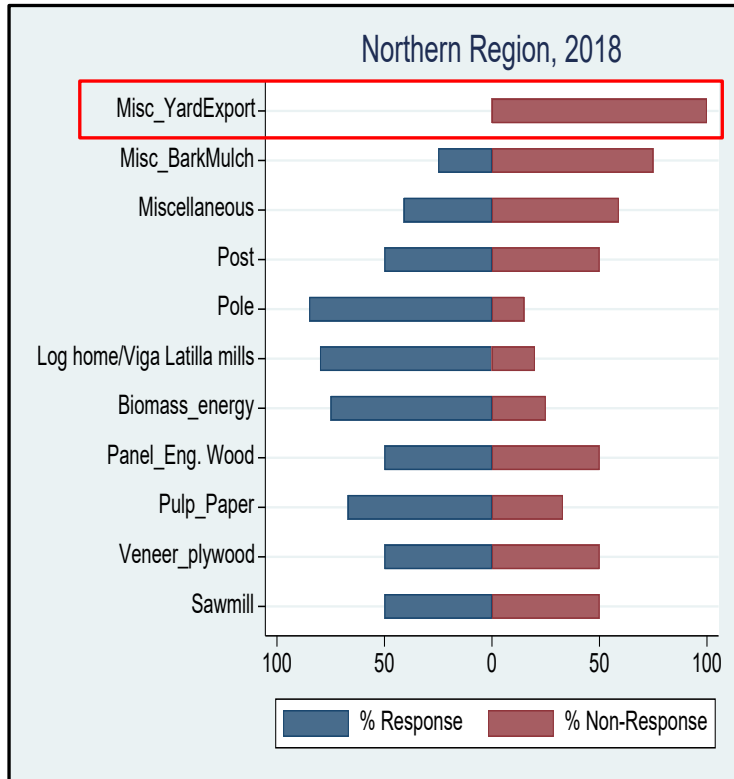
- Sample Frame
 - Error from over/under coverage (4% of sample were ineligible mills, how many in frame?)
 - Added effort to update sample frame
- Mill response
 - Potentially affected by increased survey frequency (2021 average sample size @49%)

Future Direction

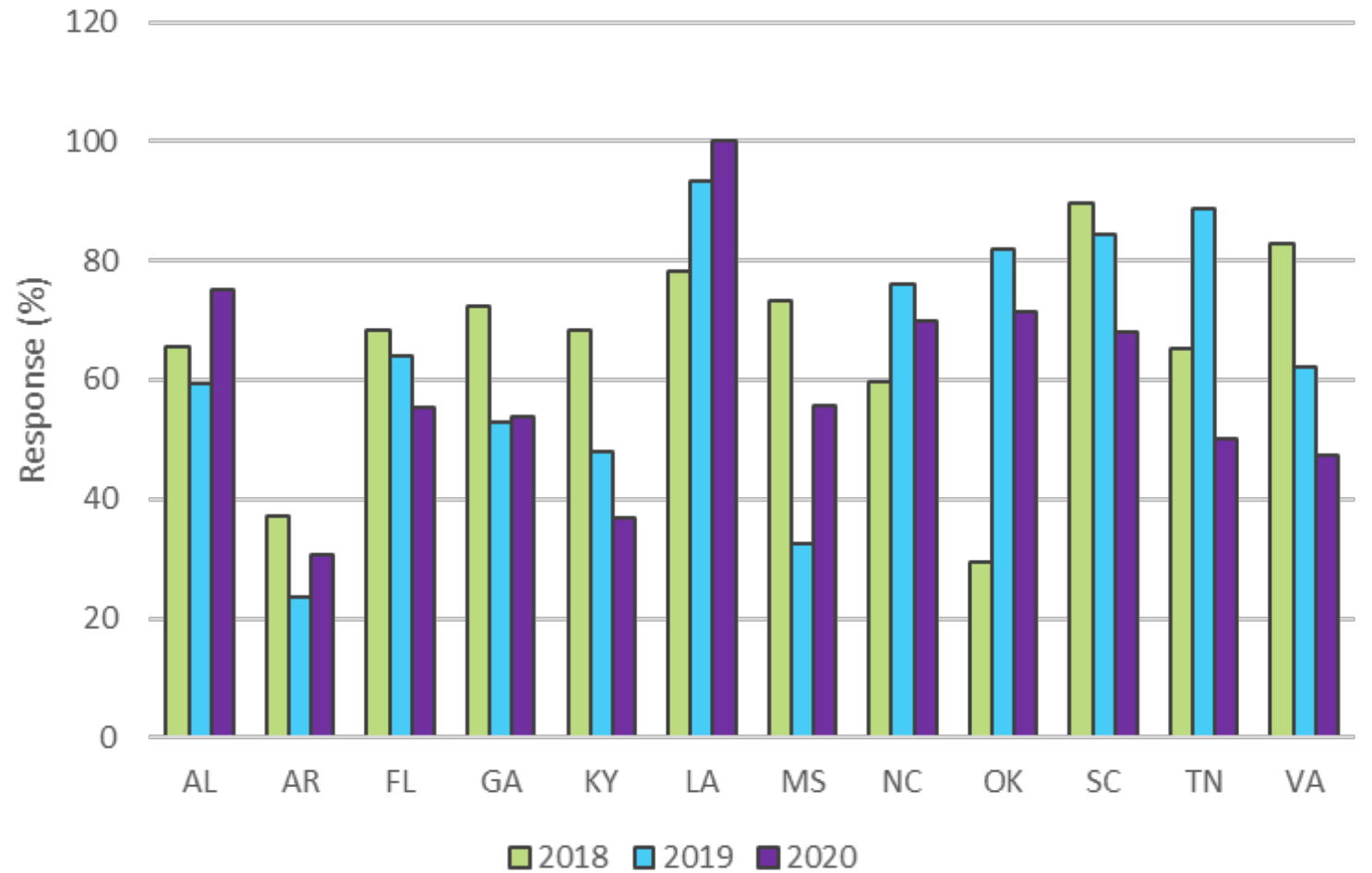


- **Under Consideration**
 - Exploring different frequencies for data collection (ex. 2 or 3-year cycles with a post-card survey (3-4 questions) every year to all mills; 2-year cycle staggering states, with post-card survey every year to all mills; etc.)
- **Research in Progress**
 - **Mill county draw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

Response by Region & Roundwood Product



Total Mill Response by Survey Year



Non-Response methods

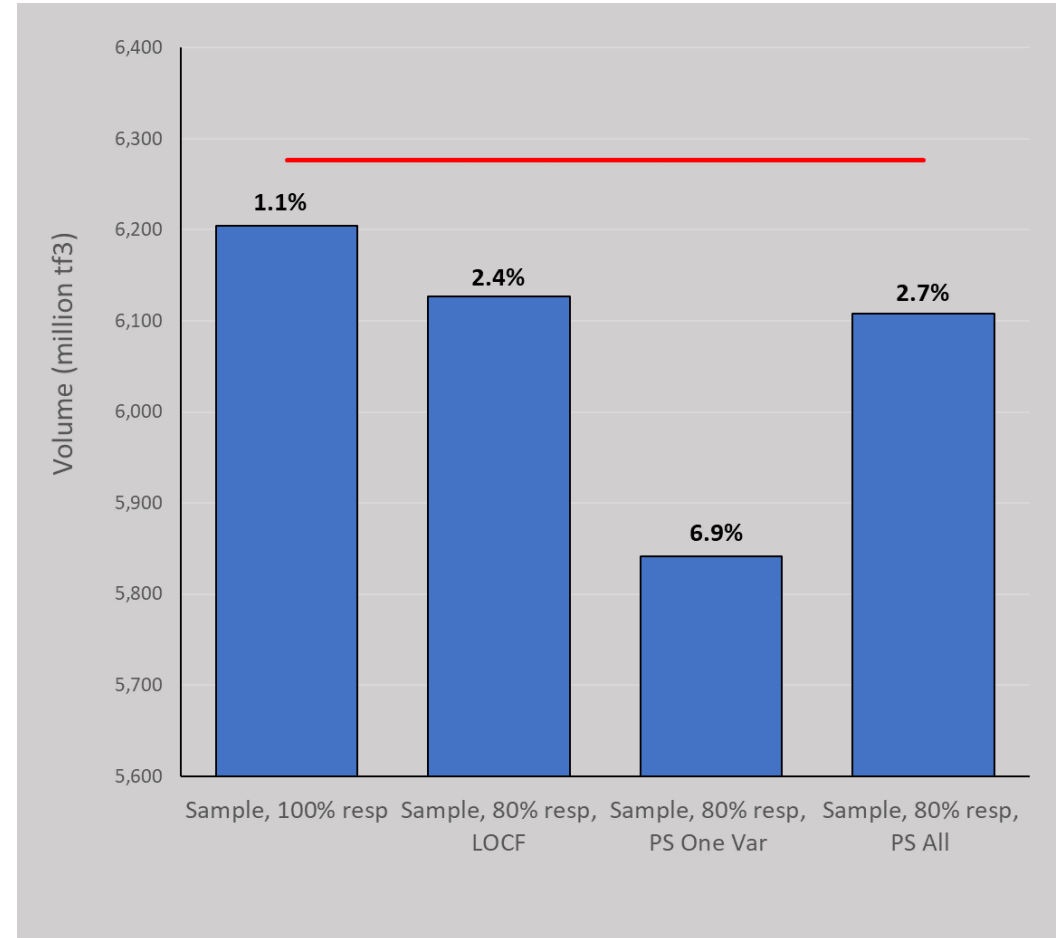
2017 data & observed response pattern

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

Data Delivery

Areas to be evaluated

- 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

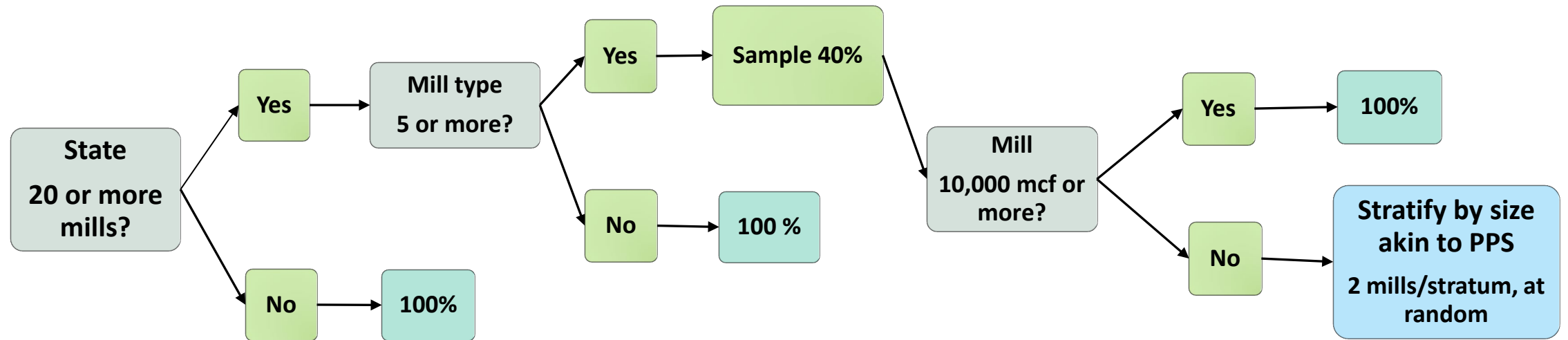


Questions

Thanks!

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Current Sampling Pattern



TPO Toolkit

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

The screenshot shows the website [fia.fs.fed.us/program-features/tpo/](https://www.fia.fs.fed.us/program-features/tpo/). On the left is a navigation menu with the following items: Owner Survey (NWOS), FIA Contributions to National & Global Reporting, Forest Resources of the U.S., Urban FIA, Carbon Estimation, FIA Data and Tools, FIA Library, FIA Stakeholder Mtg Links, Contact Us, Work With Us, Regulations.gov, Employee Search, Information Center, National Offices and Programs, Phone Directory, and Forest Inventory & Analysis National Office (1400 Independence Ave., SW, Washington, D.C. 20250-0003, (703) 605-4177). Logos for USDA, UAS, egov, and FIRST GOV are at the bottom left.

TPO Toolkit:

TPO One-Click Factsheet

The **Timber Products Output (TPO) One-Click Fact Sheets** allows visitors to view TPO fact sheets via an interactive experience. Click on the desired state on the map to produce a real-time fact sheet of that state based on current TPO data. Data include state-wide production, products, number of primary mills and types, roundwood exports/imports and retained production.

NOTE: The TPO One-Click Fact Sheets currently contain fact sheets for states processed utilizing the newest methodology. More states will be added in the future as data availability and resources permit.

Photo: Screen shot of TPO One-Click Factsheets

TPO Interactive Reporting Tool

The **Timber Products Output (TPO) Interactive Reporting Tool** allows visitors to view TPO data via an interactive experience. Click on the desired state(s) or counties on the map to produce TPO data based on the geographic area and year of interest. The TPO Interactive Tool includes estimates of timber products, logging residue, mill residue, residential fuelwood, and other removals based on the selected area.

NOTE: The TPO Interactive Reporting Tool currently contains data for states processed utilizing the newest methodology. More states will be added in the future as data availability and resources permit.

Photo: Screen shot of TPO Interactive Reporting Tool

TPO Explorer (Coming Soon)

The Timber Product Output (TPO) Explorer is the tool for investigating the spatial and temporal patterns in roundwood production, logging residue, mill residue, residential fuelwood, and other removals. Explore the latest surveys or go back in time and map county estimates by product or residue type, owner, species group or source. Track mill production (exported or retained) and receipts (imported or retained) by state, species group, and product. Pattern mill locations by type of production and major species group.

Photo by Tony Johnson, US Forest Service (Retired)