Review of MRIP Design Changes and Evaluation of Potential Impacts

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MRIP Update

- Overview of Access Point Angler Intercept Survey (APAIS) design changes in 2013
- Evaluating potential effects of APAIS design changes
- Overview of Future Changes

Overview of APAIS Design Changes

- Design changes made to address:
  - Coverage gaps (nighttime, off-peak daytime)
  - Lack of formal probability sampling for all sites
    - Alternate site inclusion probabilities not easily known
  - Variable time intervals covered for each site visit
    - Difficult to expand data to represent a full day
- New Design provides:
  - Full temporal coverage
  - Formal probability sampling of all sites and fixed time intervals for all site visits
    - Sample drawn from a list of “site clusters” comprised of 1 or 2 sites
    - Order of site visits within a cluster randomized and fixed
    - Interviewers not allowed to change time on site or move to other sites
  - Inclusion probabilities known for all site/time units in the sample
  - No opportunistic sampling of trips in alternate fishing modes
    - Inclusion probabilities for alternate mode trips difficult to determine

Overview of APAIS Design Changes

- Six-hour assignments
  - Four time-block strata
  - Replaced variable length assignments under MRFSS
  - Eliminated difficulty of expanding data to represent a full day
- No limit on number of interviews per site visit
  - Replaced MRFSS 30-interview cap
- Direct design-based weighting of sample data
  - Eliminated need to model any weighting components

Evaluating Potential Effects of Changes

- What design changes are relevant?
- How can we evaluate potential effects?
- What have we been able to do in the short term?
- What longer term efforts could provide stronger conclusions?

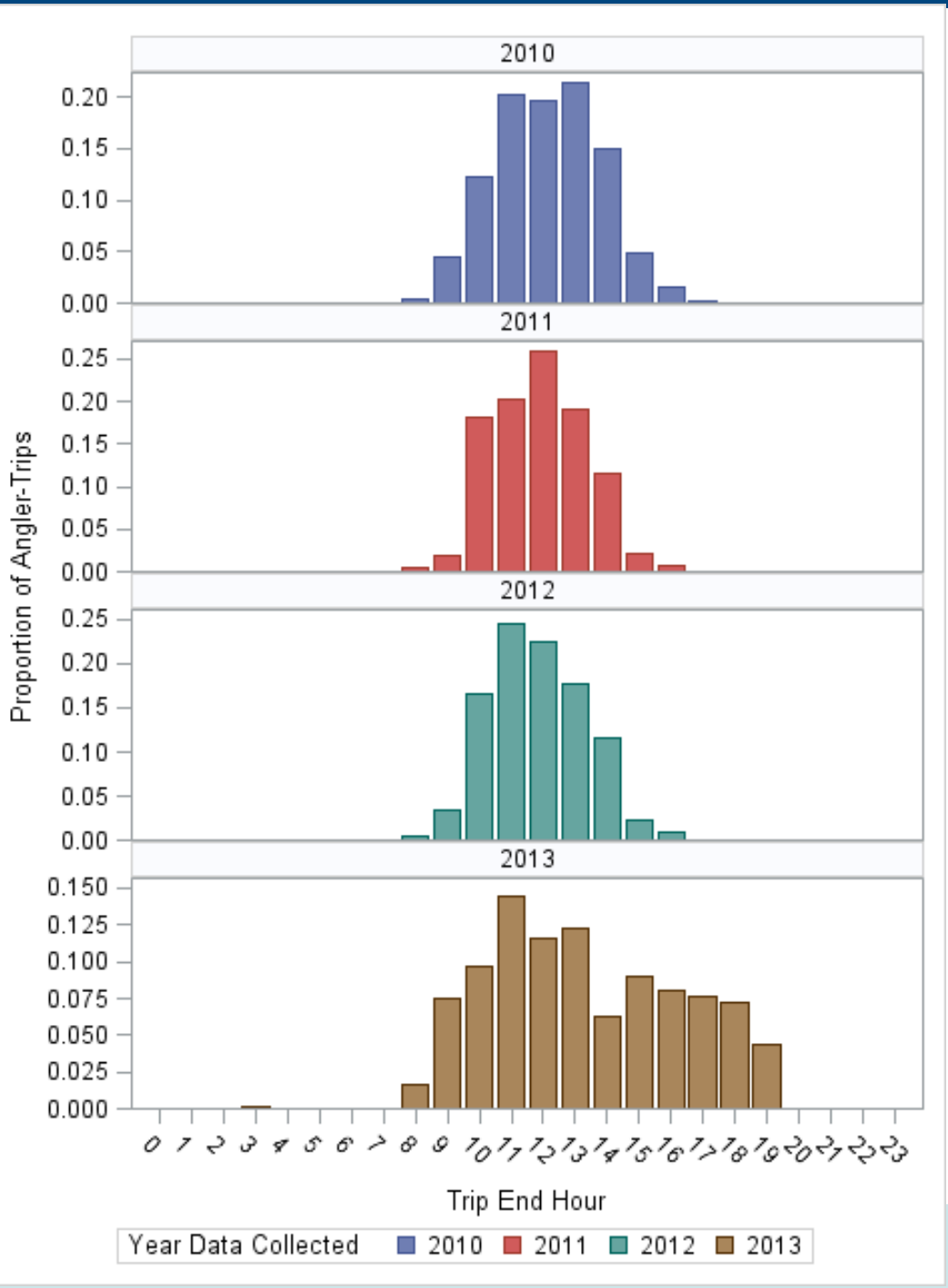
What Changes are Relevant?

- Only changes that could create systematic differences in the data are relevant
  - Example ➔ consistent difference in temporal coverage
- Variable or random differences do not generally introduce bias
  - Example ➔temporal distributions in sample will vary
- Complicating factors:
  - Limited data from new APAIS design (1 year)
  - Differences in sampler behavior over time within/among states

Alabama

All Waves
Private Boat
2010-2013

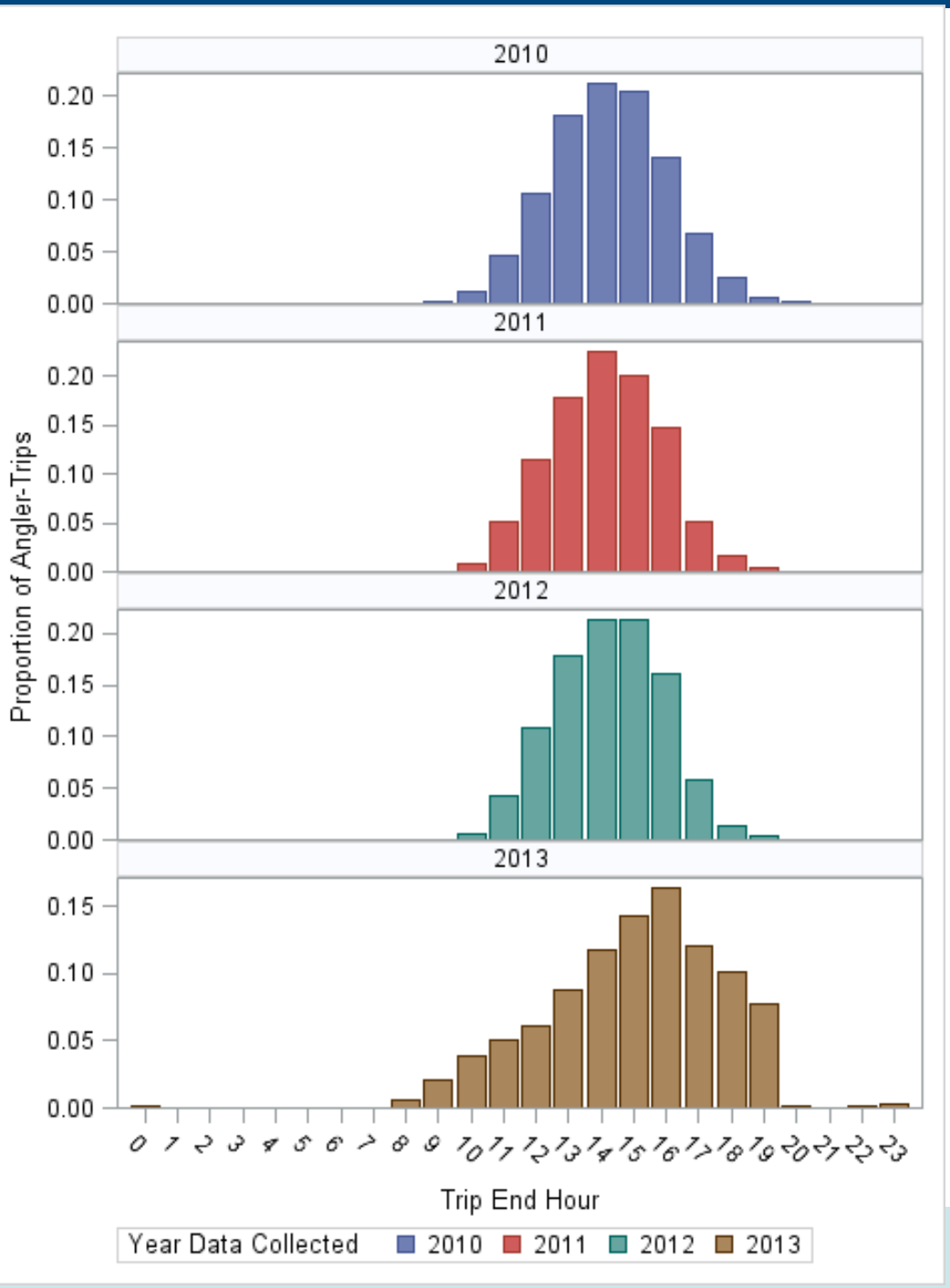
Significant change in temporal coverage!



NOAA FISHERIES

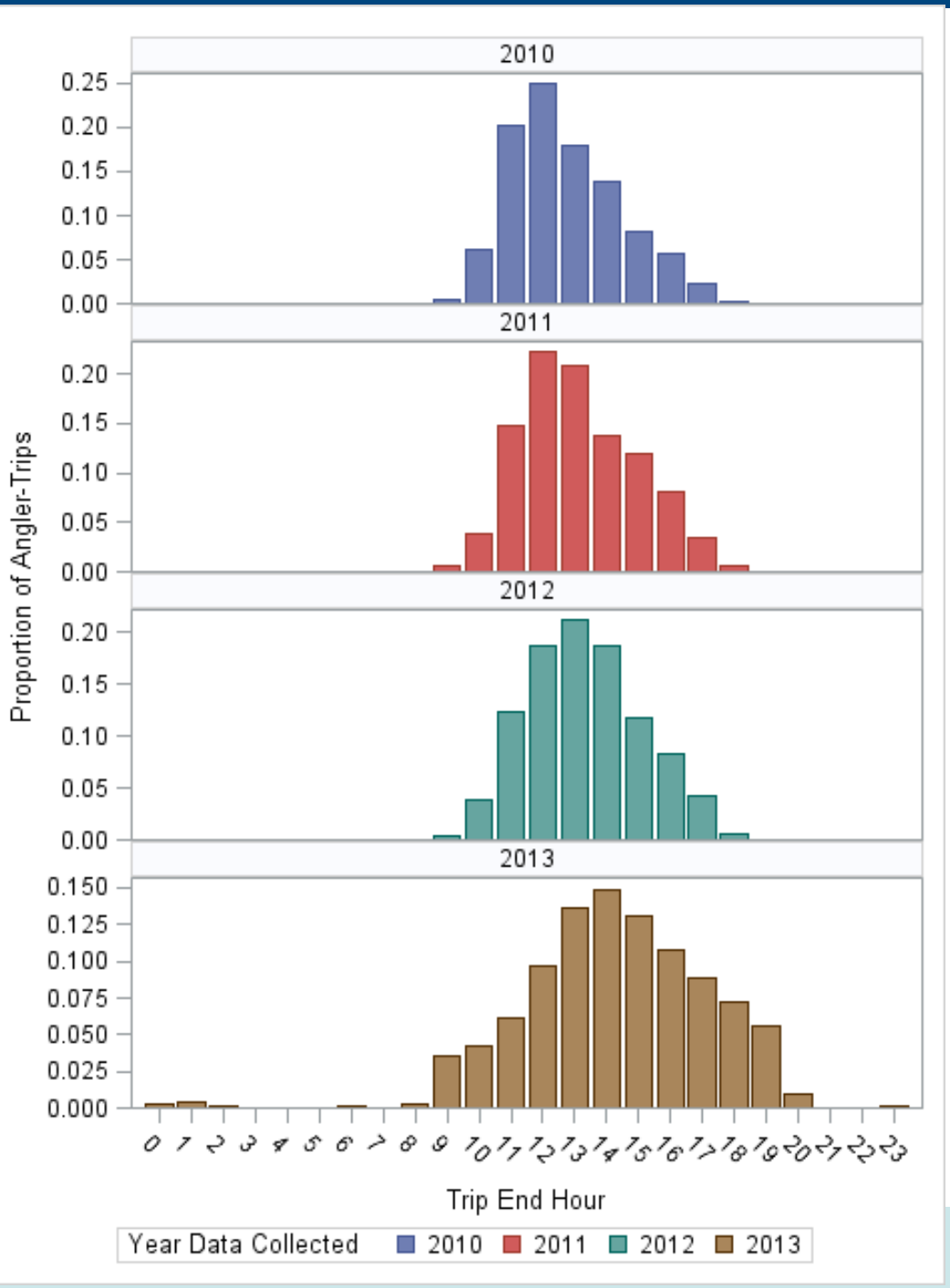
North Carolina

All Waves
Private Boat
2010-2013



Florida-East

All Waves
Private Boat
2010-2013



How to Evaluate Potential Effects?

- Empirical methods
- Simulation methods

Empirical Methods

- Descriptive Analysis of Estimation Components
- Post-stratification
  - Make 2013 sample distributions resemble those in prior years (or vice versa) by adjusting sample weights
    - Examples: Time distributions, Site distributions
  - Relatively quick to perform
  - Difficult to determine if differences attributable to sample design changes
  - Data limitations may exclude important characteristics from analysis
    - Example: some sites may be present in data for some years but not all
  - Results confounded by real changes in fishery among years (changes in fish stocks, changes in regulations, changes in angler behavior, etc.)
- Modeling
  - Regression, Time-series, etc.
  - Not feasible right now given only one year of data for APAIS design

Simulation Methods

- Create a population of angler-trips
- Sample repeatedly using:
  - 2013 MRIP APAIS design
  - pre-2013 MRFSS APAIS design
- Look for systematic differences in cpue's and effort adjustments
- Takes considerable time and effort to develop
  - Create multiple populations, varying distributions of important trip characteristics (e.g., return time, site, area fished, catch)
  - Identify numerous MRFSS sampling scenarios representing different patterns in sampler behavior
- Results not confounded by year-to-year changes in angler behavior
- Analysis does not require additional years of APAIS data

Progress to Date

- Descriptive Analysis of Estimation Components
  - Four series of Estimation Components calculated from APAIS
    - Catch rates
    - Area fished proportions
    - Effort adjustment factors
    - Trip proportions by region
  - Four temporal domains: Morning, Peak, Evening, All
  - Comparing 2013 to 2010-2012
  - Expect preliminary results in May for GOM
  - Start on South Atlantic after GOM

Progress to Date

- Post-stratification evaluation methods
  - Programs for adjusting sample weights and re-estimating catches developed
  - Optimal method for estimating bias in prior years not known at this time
  - Results confounded by real differences between years
    - Due to changes in regulations, weather, and other fishery conditions
- Simulation approach
  - May 27th kick-off meeting with MRIP statistical consultants at CSU
- MRIP Teams
  - Transition Team
  - Technical Team

Next Steps

- Extend Descriptive Analysis to remaining sub regions
- Develop simulation model
- Mine intercept data from MRFSS and MRIP designs
  - Identify distributions for important trip characteristics needed to build angler-trip populations
  - Identify patterns in sampler behavior needed to create sampling scenarios under MRFSS design
- Conduct simulation evaluations of MRFSS vs. MRIP
- Determine best approach for Post-stratification evaluations
- Provide recommendations for any needed adjustments to past estimates

Future Changes

- APAIS
- Effort Surveys

Future Changes - APAIS

- 2014
  - New “Peak” 6-hr time interval (11am-5pm)
    - First implemented in Wave 2 (March/April)
  - Site group stratification for PR and CH modes
    - Change allows for mixed mode sampling for PR and CH modes (PR and CH intercepts eligible on same assignment)
    - First implemented in Wave 3 (May/June)
- 2015
  - Offshore site group stratum (likely for GOM subregion)
  - Potential site group stratum for SH mode
- Changes to APAIS stratification
  - No change in survey coverage
  - Should not expect systematic effects on estimates

Future Changes – Effort Surveys

- 2015
  - Fishing Effort Survey (FES)
    - PR and SH effort estimates
    - Dual-frame mail survey
      - U.S. Postal Service list of addresses
      - National Saltwater Angler Registry
  - Replacement for Coastal Household Telephone Survey (CHTS)

MRIP Transition Team
Terms of Reference

- Develop/recommend standardized process for transitioning from historical estimates to estimates derived from improved sampling and estimation designs. Process will describe/provide consistent approaches and methods for Councils, Commissions, and Regions to apply for:
  - Setting annual catch limits;
  - Monitoring catch against catch limits;
  - Assessing needs for and selection of accountability measures; and
  - Conducting analyses leading to adoption of recreational fishing regulations.
- Develop/recommend methods to be used to compare legacy estimates to estimates produced with new or modified MRIP designs in a statistically robust manner.

MRIP Transition Team
Terms of Reference

- Determine when calibration or other means of linking legacy data sets with MRIP-derived data sets are feasible and necessary, and identify requirements and methods for making such linkages.
- To minimize disruptions to stock assessments, catch monitoring, and management regulations, establish guidelines, in consultation with Regional Implementation Teams, to facilitate decisions on when and how implementation of changes to MRIP survey methods are introduced.
- Report to MRIP Executive Steering Committee (ESC) on status of transition and any impediments to progress, along with suggestions for overcoming impediments, at least on an annual basis.
- Submit all recommendations to MRIP ESC for approval/conveyance to NMFS Science and Regulatory Boards.

MRIP Transition Team
Membership

- Co-Chairs:
  - Galen Tromble (NMFS/SF)
  - Dave Van Voorhees (NMFS/ST)
- Representatives:
  - NMFS Regional Offices
  - NMFS Science Centers
  - Councils
  - Interstate Commissions/States
- Supported by Technical Work Group(s) as Needed

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