Evaluation of APAIS 2013 Design Changes

Descriptive Analysis Part 1: Methods and Results for Temporal Distributions and Effort Components

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MRIP Calibration Workshop #2

Charleston, South Carolina
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Outline

- Overview of Evaluation Project Phases
  - Descriptive Analysis
  - Simulation Study
- Descriptive Analysis Methods
- Results for Temporal Distributions of Angler-Trips
- Results for MRIP Estimation Components
  - Area fished proportions
  - CHTS coverage adjustment
  - FHS coverage adjustment
- External Results

Descriptive Analysis

- Describe differences between 2013 MRIP APAIS and recent MRFSS APAIS years:
  - Temporal distributions of angler-trips
  - MRIP estimation components
- Investigate contributions of year and design change effects on differences
  - Limitation: year and design change confounded
- Provide basic guidance on presence of design change effects

Simulation Study

- Address central limitation of Descriptive Analysis – confounding of year and design change
- Side-by-side sampling of simulated populations using MRFSS APAIS and 2013 MRIP APAIS designs
- In development with MRIP consultants at CSU

Descriptive Analysis Methods

- Weighted estimation components from APAIS
  - Area fished proportions (Inland, STS, EEZ)
    - Private boat (PR) and Shore (SH) modes
  - Coastal county resident proportions
    - Proxy for CHTS coverage adjustment
    - PR and SH modes
  - Proportions of Charter boat (CH) trips on FHS frame
    - Proxy for FHS coverage adjustment
  - Catch rates (mean catch-per-trip)
    - Analysis limited to mean landings-per-trip

Descriptive Analysis Methods

APAIS Estimation Component	EXAMPLE Change Direction	Effect on PR, SH EFFORT Estimates	Effect on CH EFFORT Estimates	Effect on PR, SH CATCH Estimates	Effect on CH CATCH Estimates
Catch rate	↑	None	None	↑	↑
Area prop's[a] Inland	↓	↓	None[b]	↓	None[b]
STS	↑	↑	None[b]	↑	None[b]
EEZ	↑	↑	None[b]	↑	None[b]
Coastal county resident trip proportion	↑	↓	None	↓	None
FHS on-frame trip proportion	↑	None	↓	None	↓

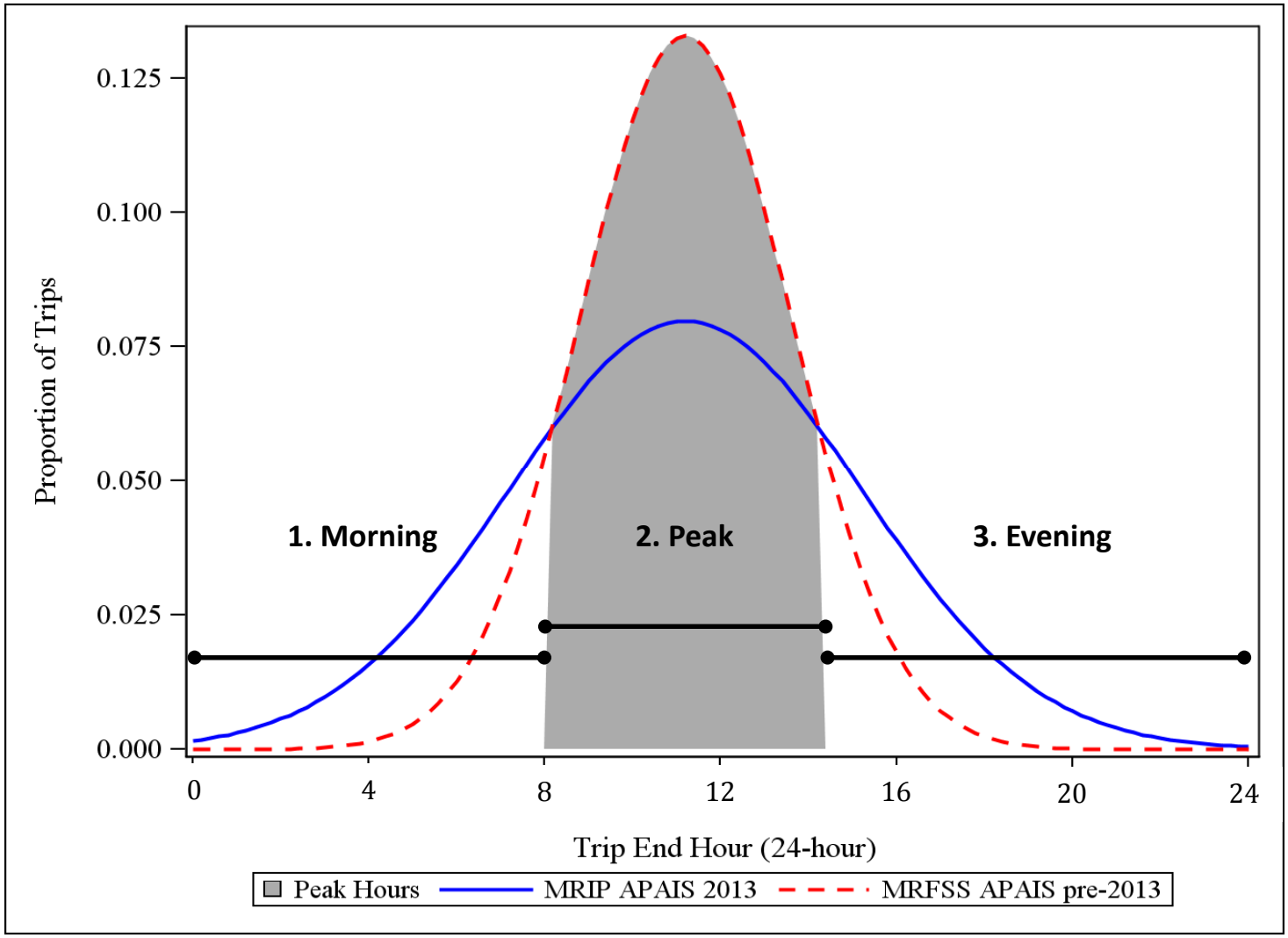
[a] Area fished proportions sum to 1 so that any increases must be offset by a corresponding decrease – i.e., there cannot be increases or decreases in all area categories.
[b] Area fished information for CH mode comes from the For-Hire Survey, not the APAIS.

Descriptive Analysis Methods

- Temporal Coverage
  - MRFSS APAIS pre-2013 incomplete temporal coverage
  - MRIP APAIS 2013 full temporal coverage
  - Systematic differences possible if additional trips covered in 2013 very different from trips covered in prior years

- Define time blocks for Temporal Coverage
  - **Morning**: Trips not fully covered prior to 2013
  - **Peak**: Trips fully covered prior to 2013 (assumption)
  - **Evening**: Trips not fully covered prior to 2013
  - **Total (full day)**: M+P+E

Time Blocks – Graphical Illustration



Descriptive Analysis Methods

- Comparisons by Sub region, State, Mode of Fishing,(Area fished) and Time Block
  - Peak 2013 with Peak in prior years (2010-2012)
  - Total (full day) in 2013 with Peak in 2013
- Assumptions
  - Peak most comparable – differences among years due to year effects
  - For 2013, differences between Peak and Total (full day) give some indication of design change effect
    - Peak in 2013 comparable to Peak in prior years
    - Peak in prior years equivalent to full day in prior years

Results – Temporal Distributions

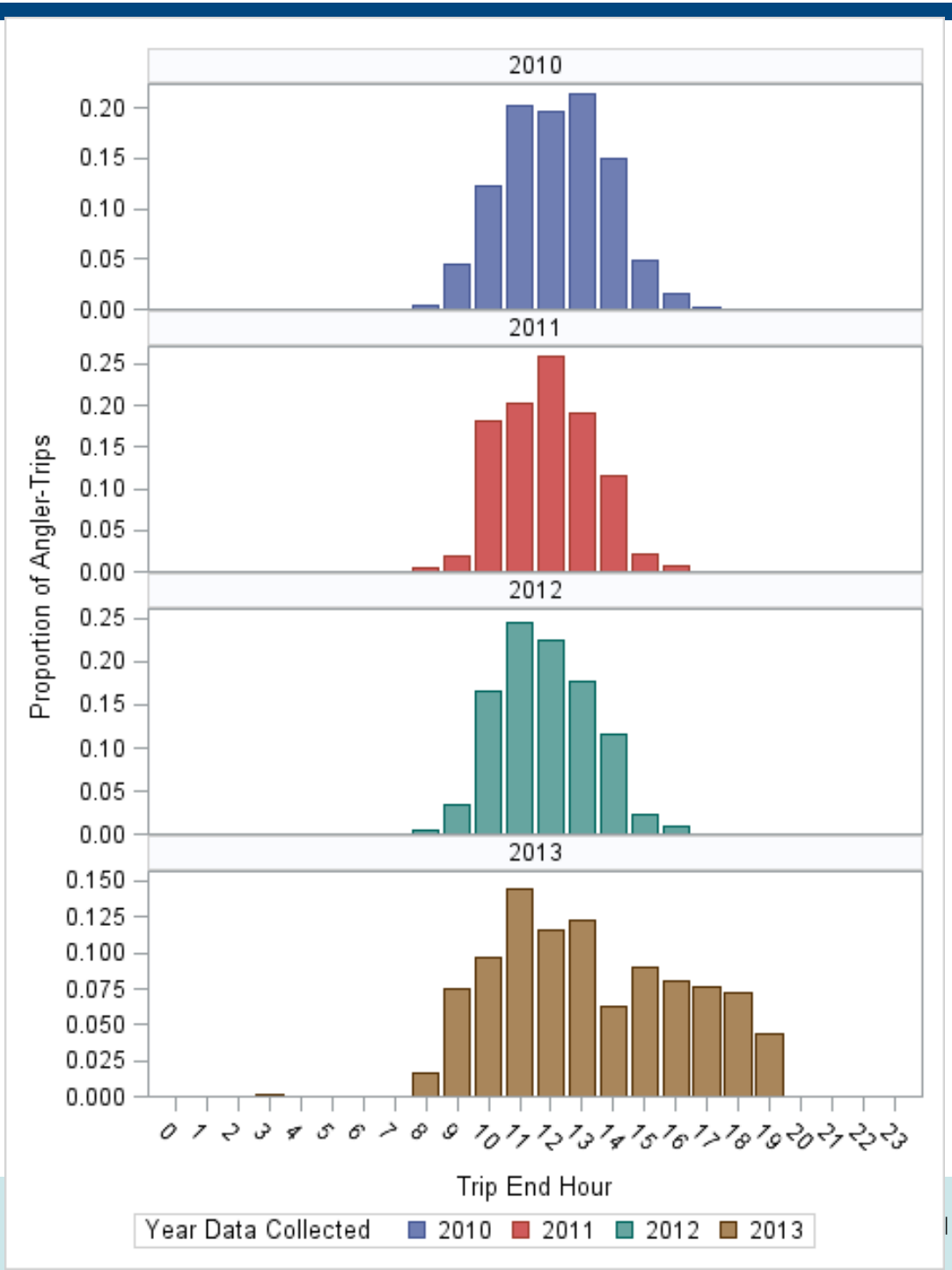
- Comparing weighted distributions of angler-trips
  - Sub region, state, mode of fishing, time block
  - MRIP APAIS 2013 vs MRFSS APAIS 2010-2012

- Summarize over states to sub region level

- Reductions in 2013 Peak trips ~ 20-40%
- Corresponding increases in (primarily) Evening and Morning trips

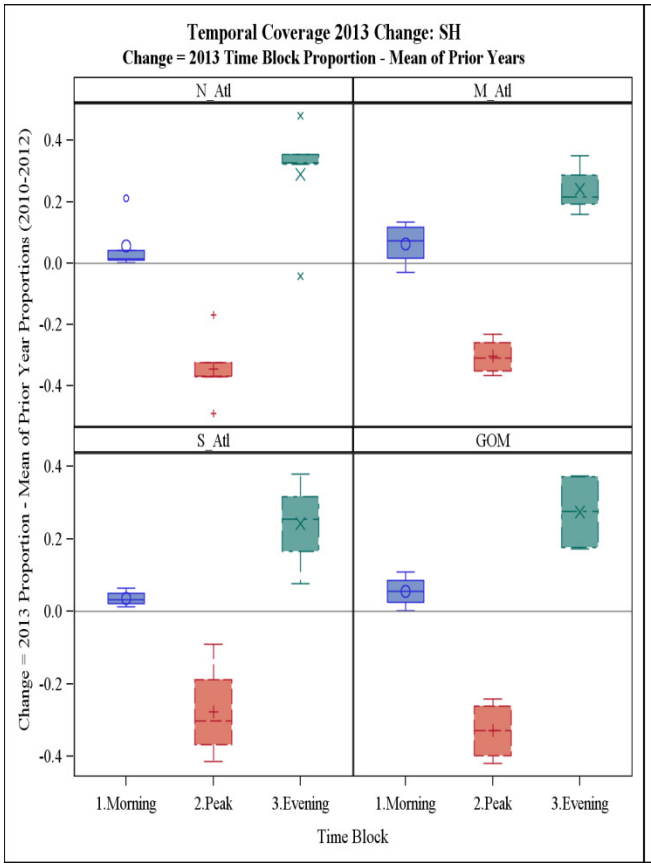
Proportions of Angler-Trips by Hour

Alabama
Private Boat
Annual
2010-2013

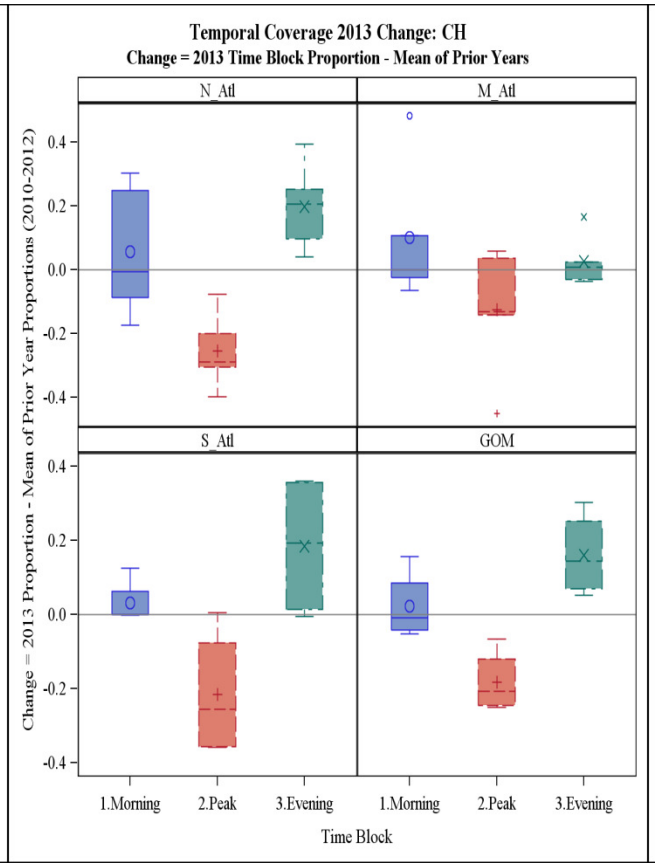


Results Temporal Distributions

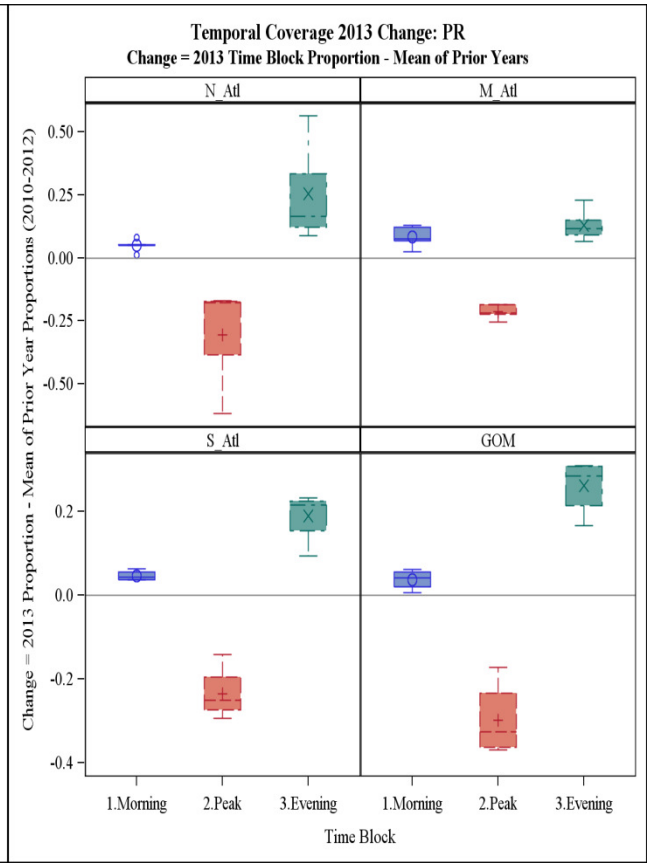
Shore mode



Charter boat mode



Private boat mode



- Consistent shift from Peak to Evening and Morning time blocks

Results – Area Fished Proportions

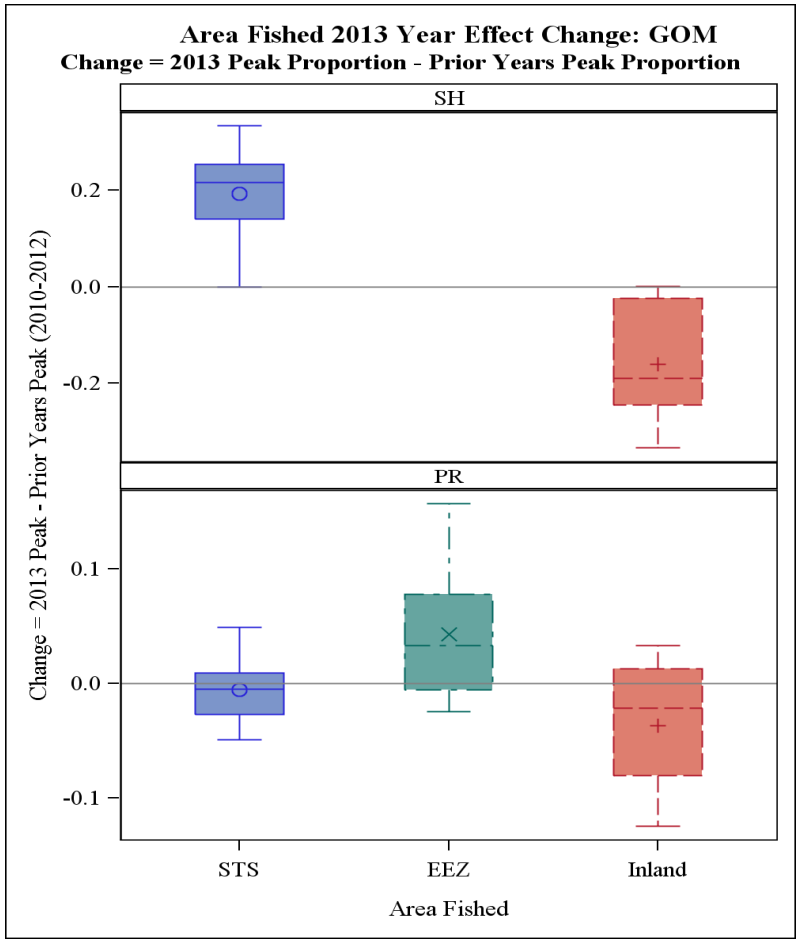
- Comparing weighted distributions of angler-trips
  - Sub region, state, mode of fishing, area fished and time block
  - MRIP APAIS 2013 vs MRFSS APAIS 2010-2012

- Summarize over states to sub region level

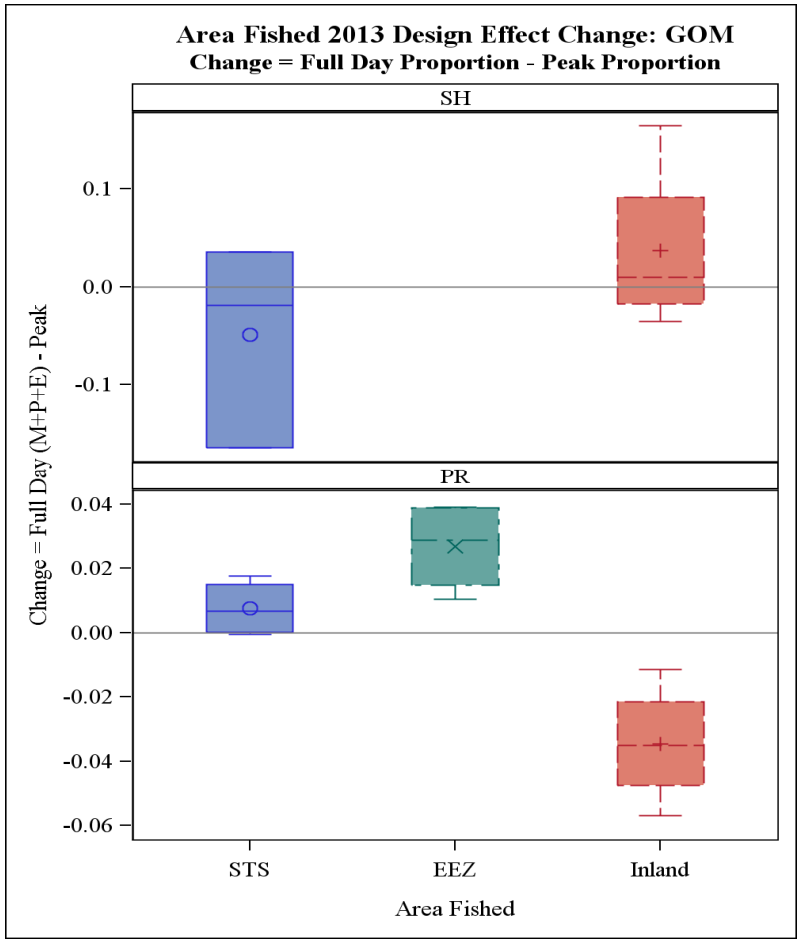
- Support for shift from Inland to EEZ in GOM, PR
- Results more variable in Atlantic sub regions

Results Area Fished Proportions GOM

Year Effects



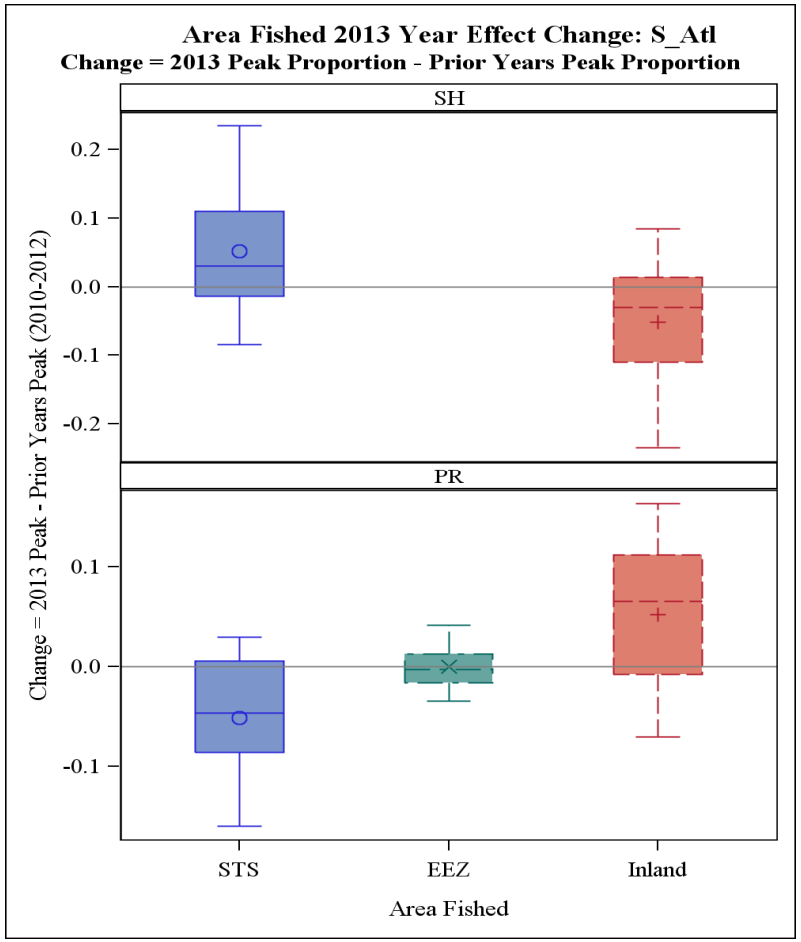
Design Change Effects



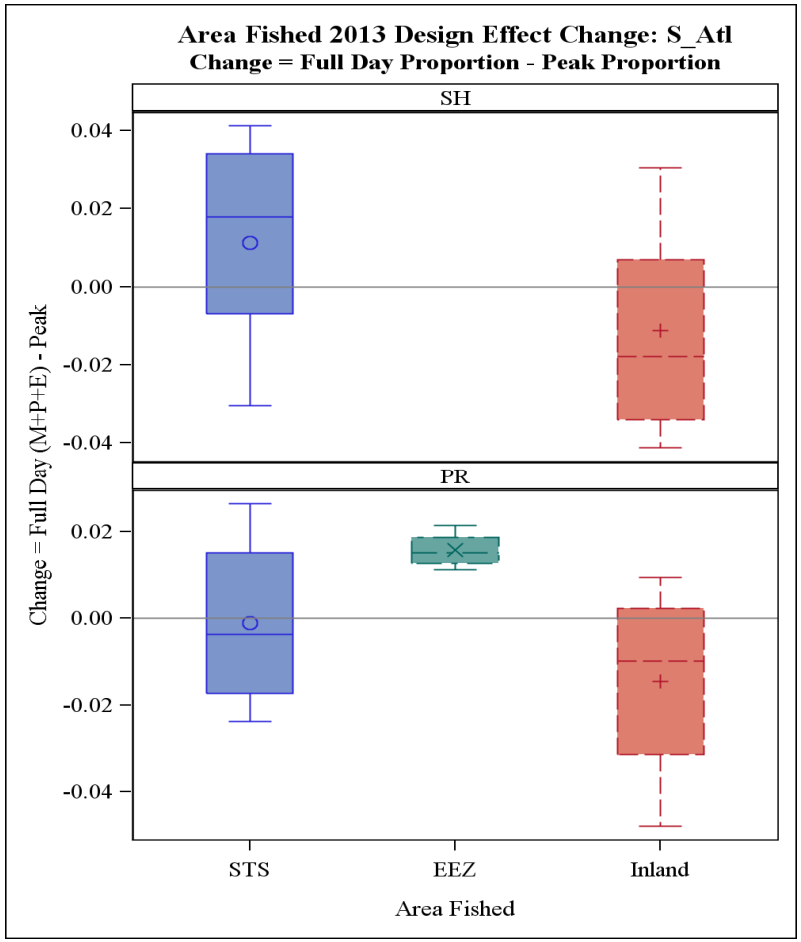
- Both “effects” suggest shift from Inland to EEZ in PR mode

Results Area Fished Proportions S. Atlantic

Year Effects



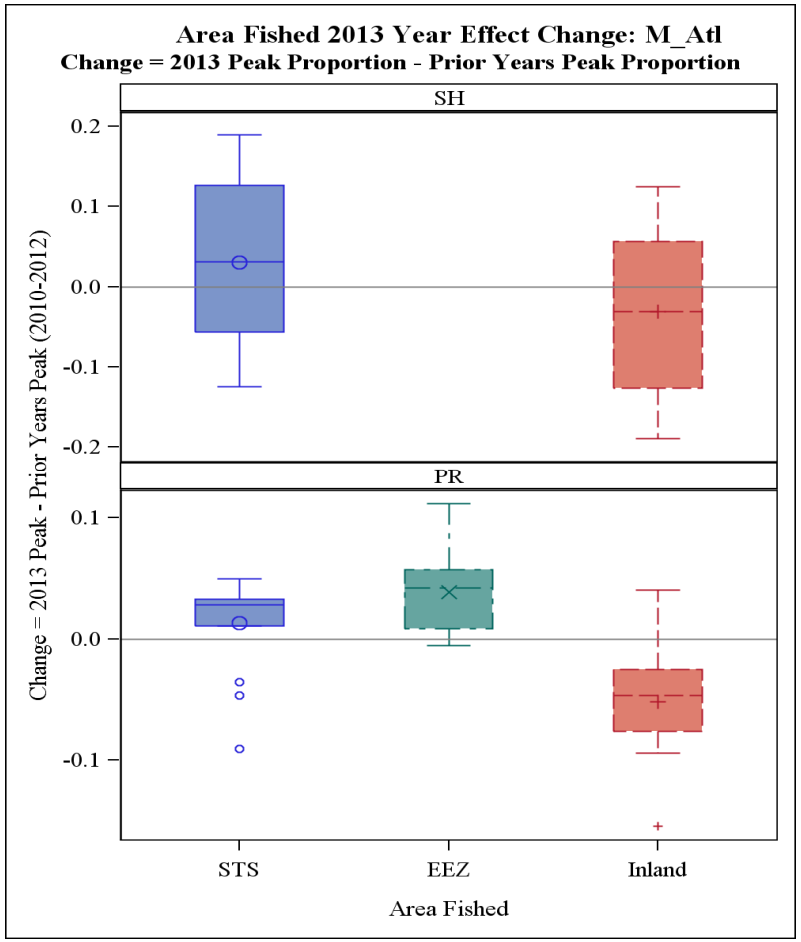
Design Change Effects



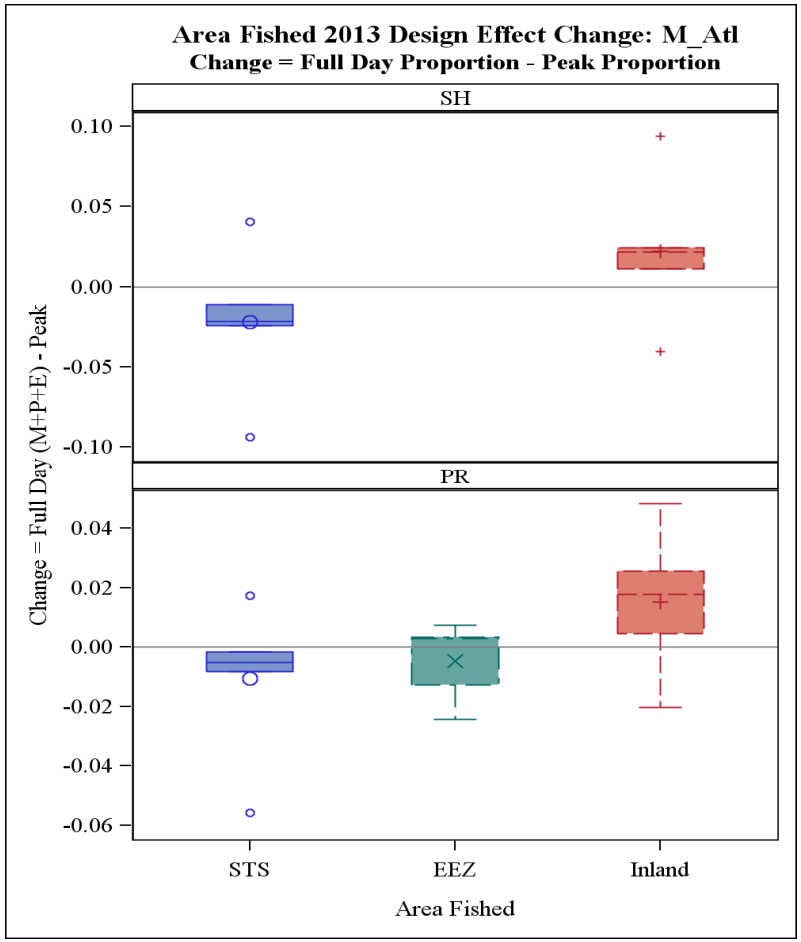
- Consistent effects for SH mode but variable for PR

Results Area Fished Proportions Mid-Atl.

Year Effects



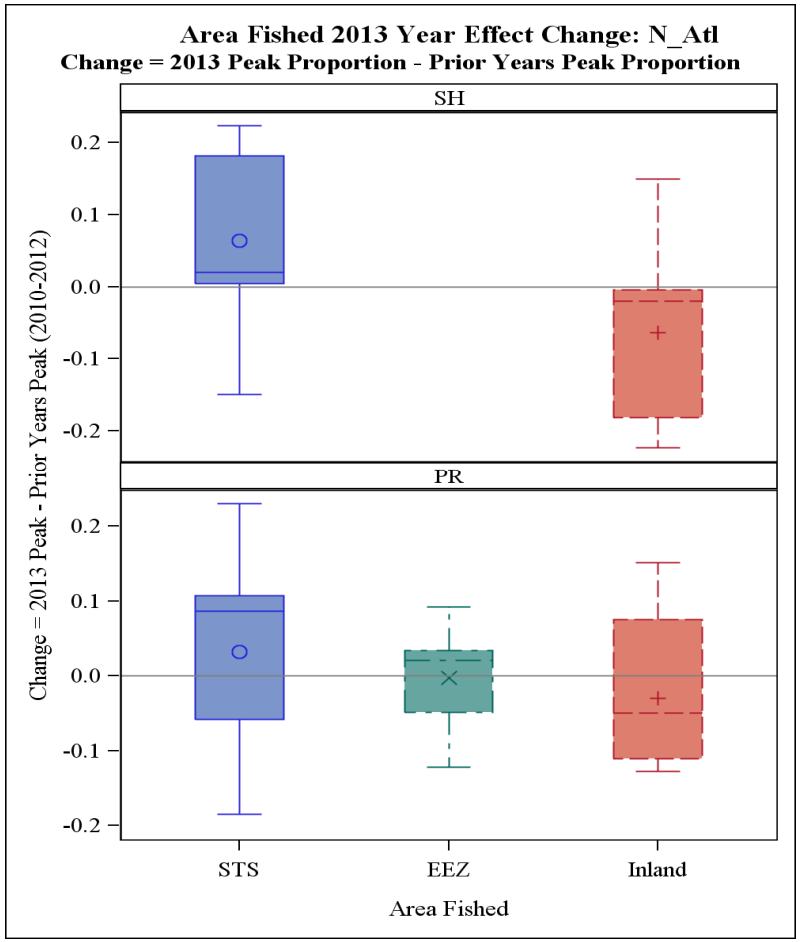
Design Change Effects



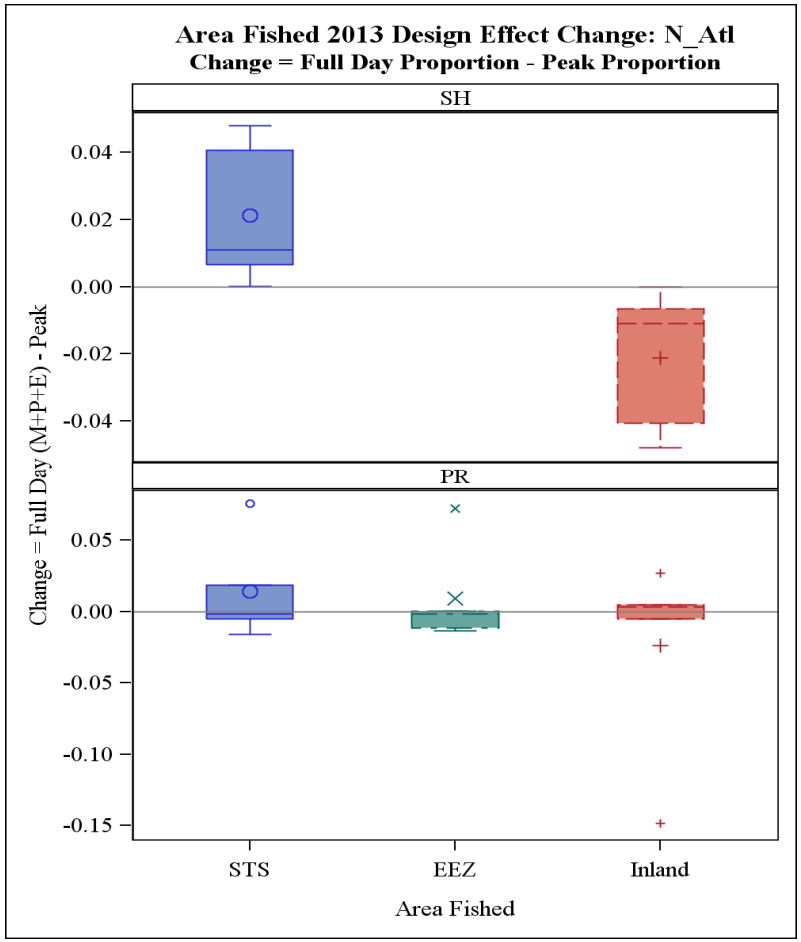
- Opposite effects across modes

Results Area Fished Proportions N. Atlantic

Year Effects



Design Change Effects



- Consistent effects in SH mode, minimal in PR mode

Results – CHTS Coverage Adjustment

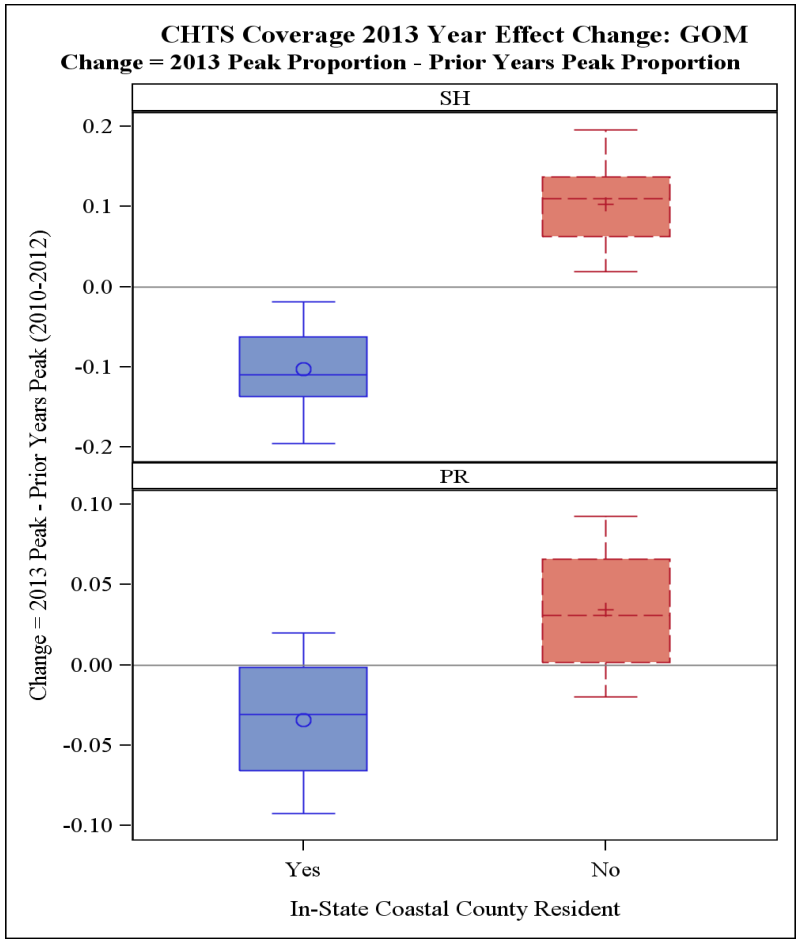
- Comparing weighted proportions of total angler-trips comprised by in-state coastal county residents
  - Sub region, state, mode of fishing, and time block
  - MRIP APAIS 2013 vs MRFSS APAIS 2010-2012

- Summarize over states to sub region level

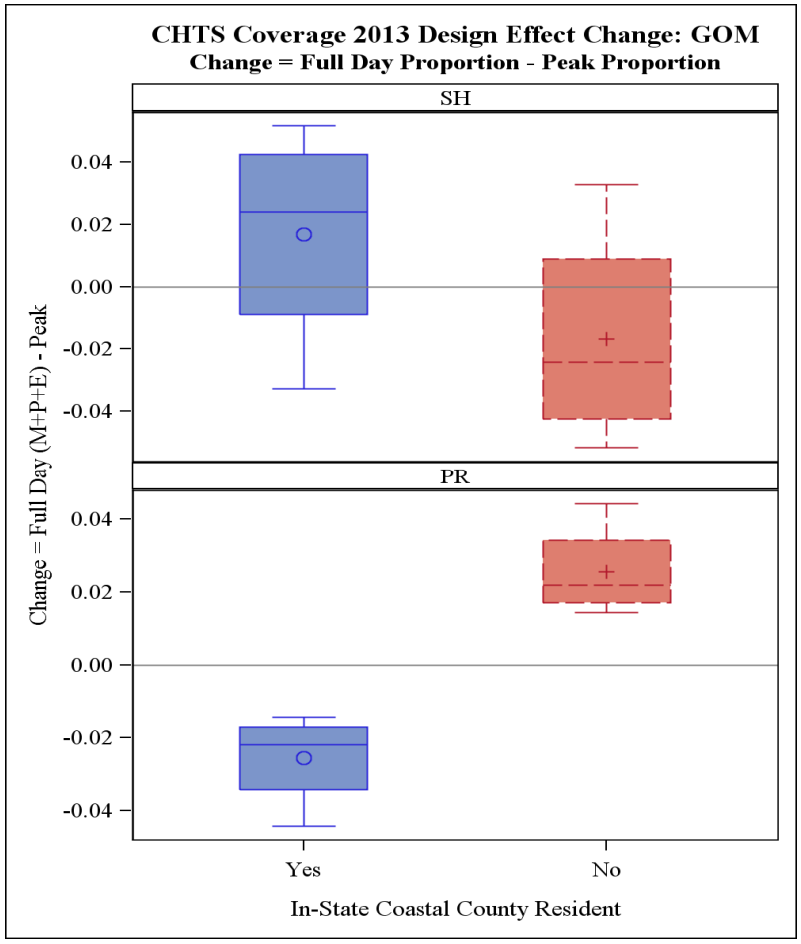
- Consistent effects may have increased PR effort in GOM
- Results more variable across Atlantic sub regions

Results CHTS Coverage Adjustment GOM

Year Effects



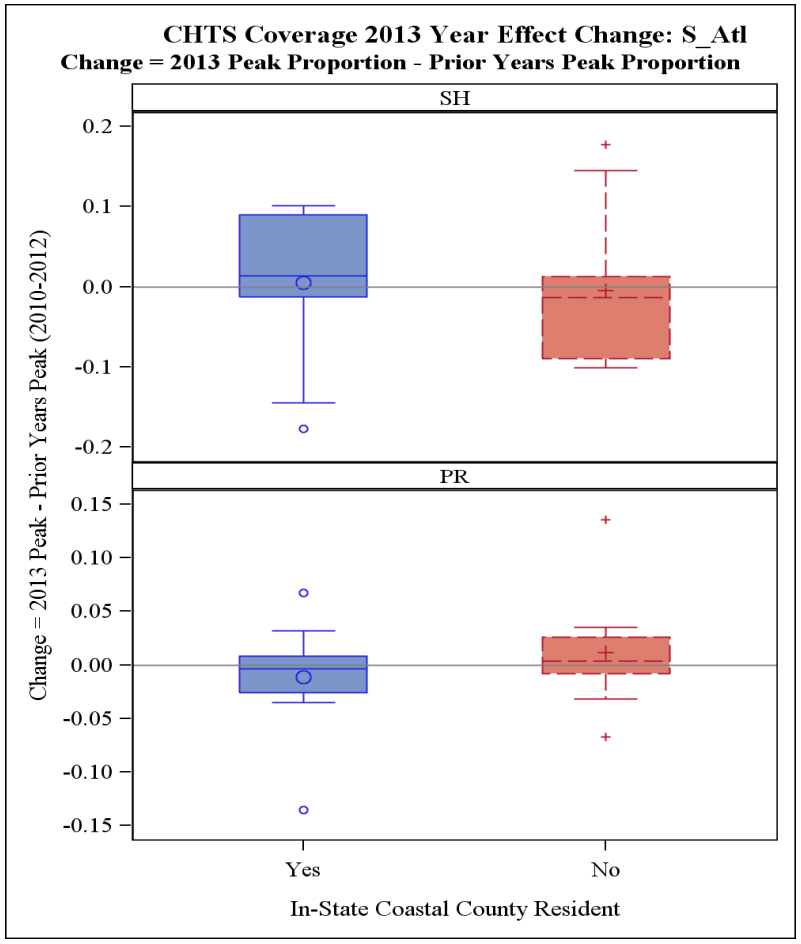
Design Change Effects



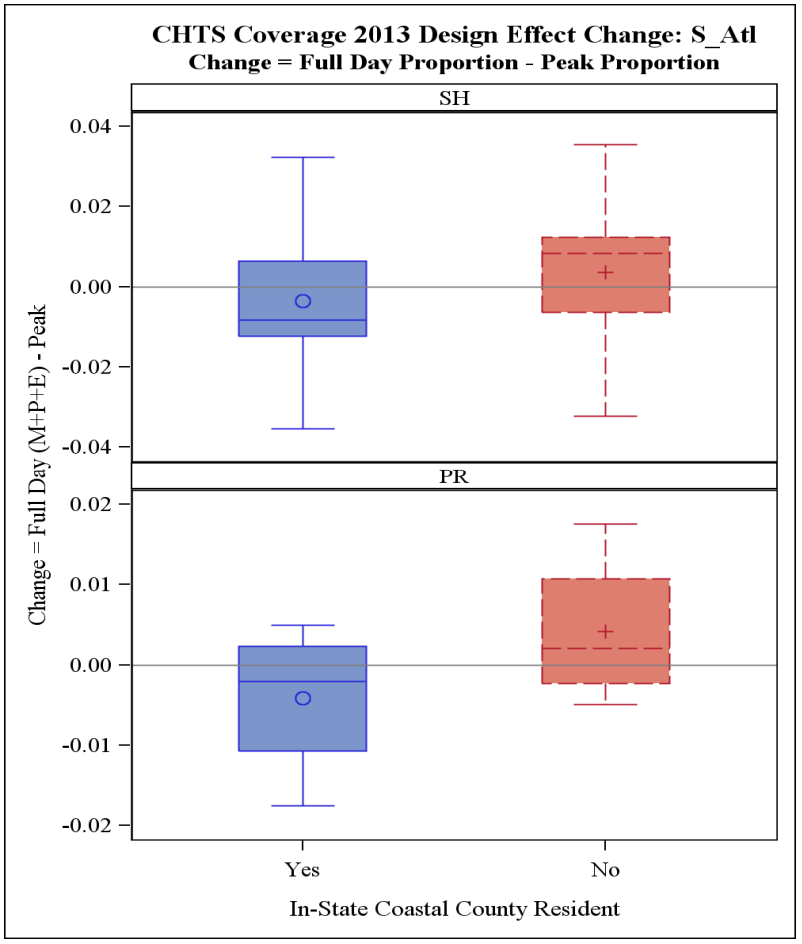
- Consistent “effects” in PR mode, opposite in SH mode

Results CHTS Coverage Adjustment S. Atlantic

Year Effects



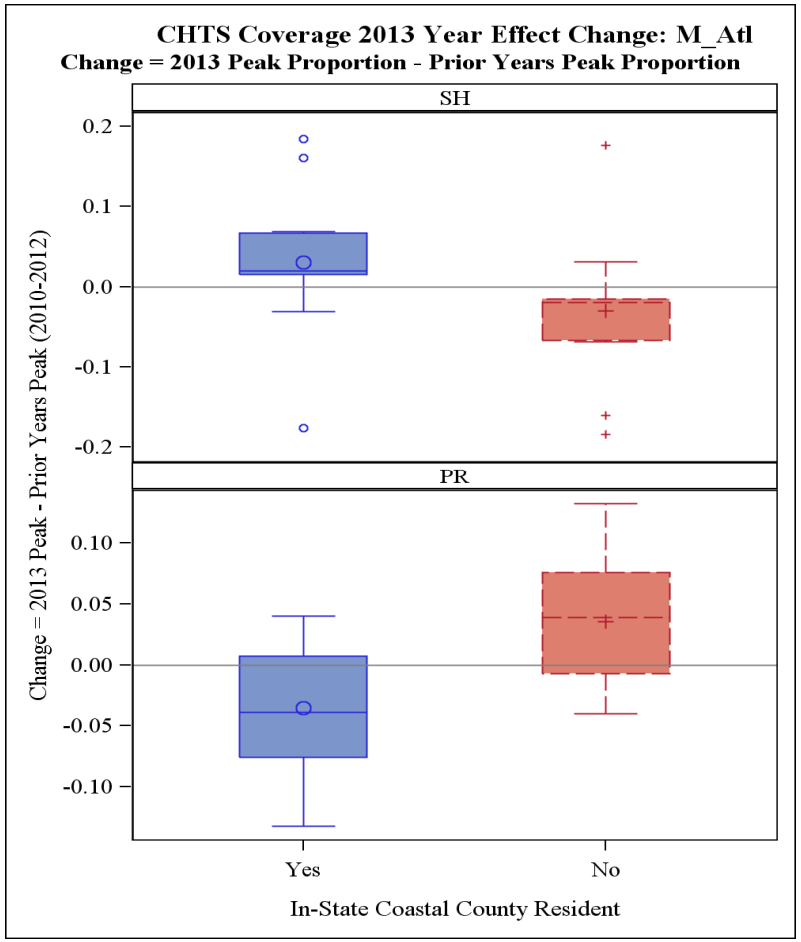
Design Change Effects



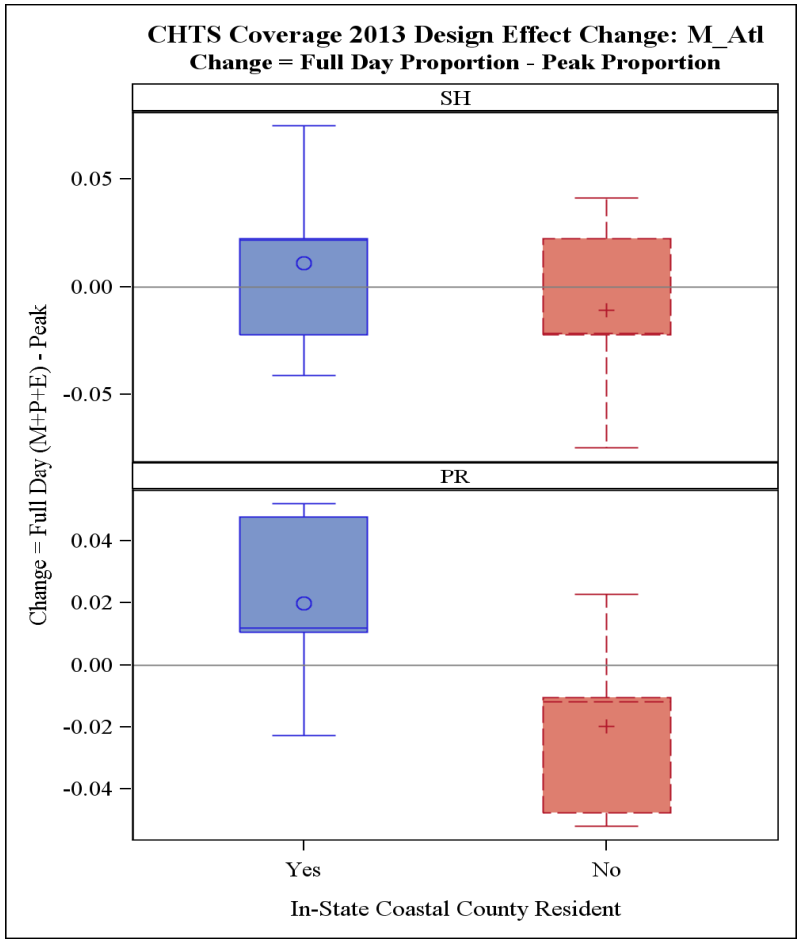
- Consistent effects for PR mode, opposite in SH mode

Results CHTS Coverage Adjustment Mid-Atl.

Year Effects



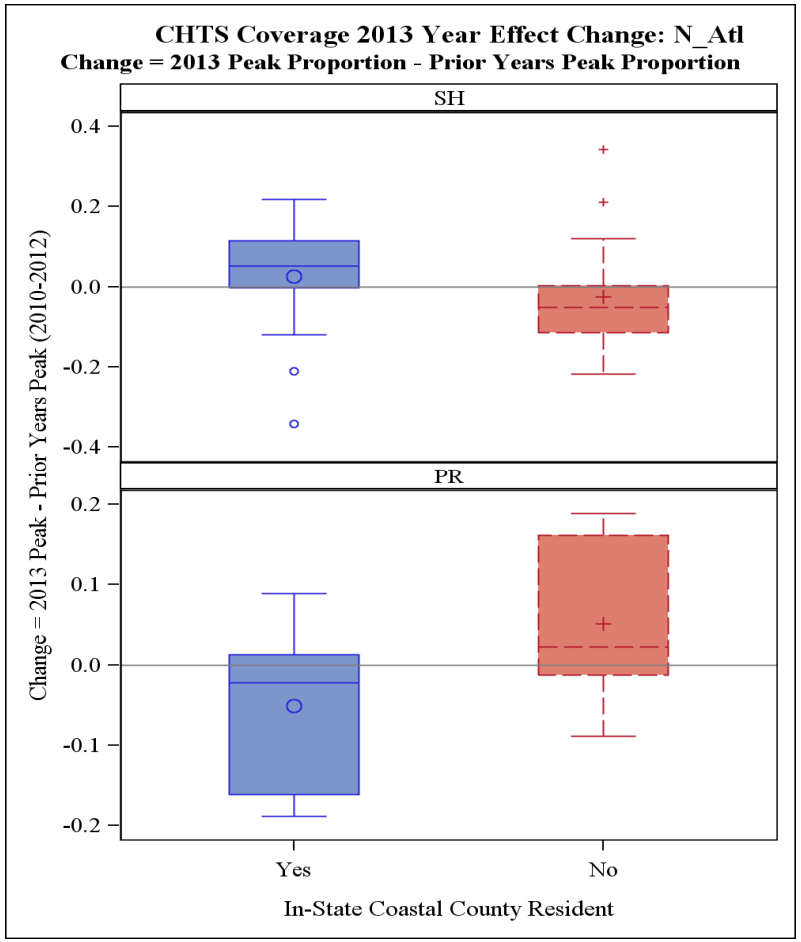
Design Change Effects



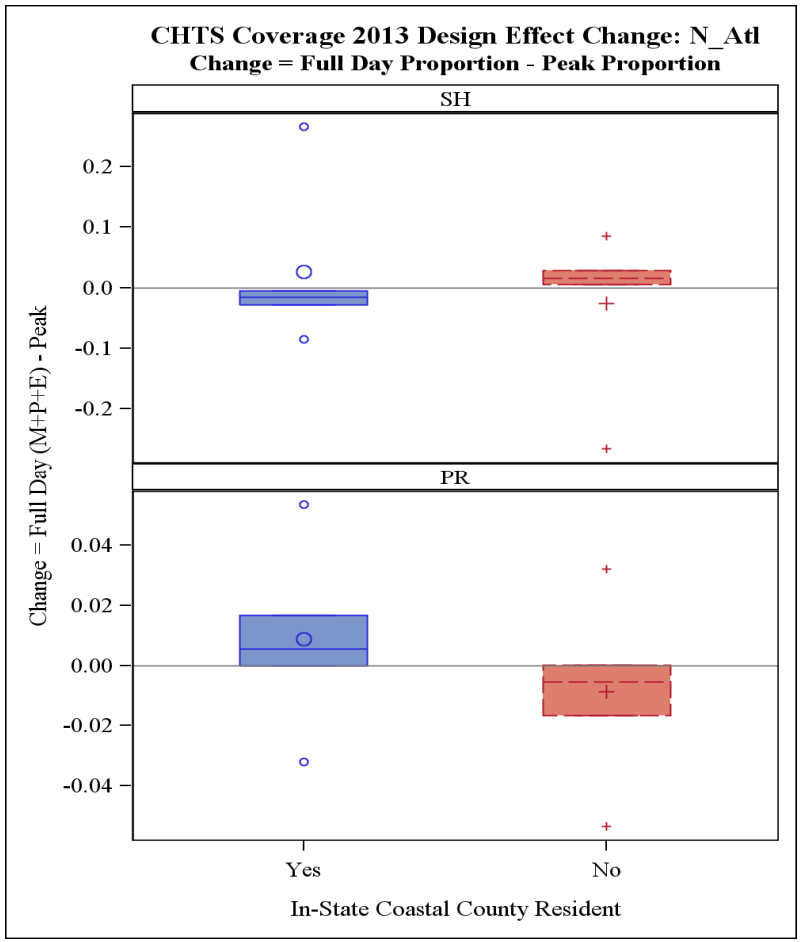
- Minimal design change in SH mode, opposite effects in PR mode

Results CHTS Coverage Adjustment N. Atlantic

Year Effects



Design Change Effects



- Opposite effects across modes, large differences for some SH cases

Results – FHS Coverage Adjustment

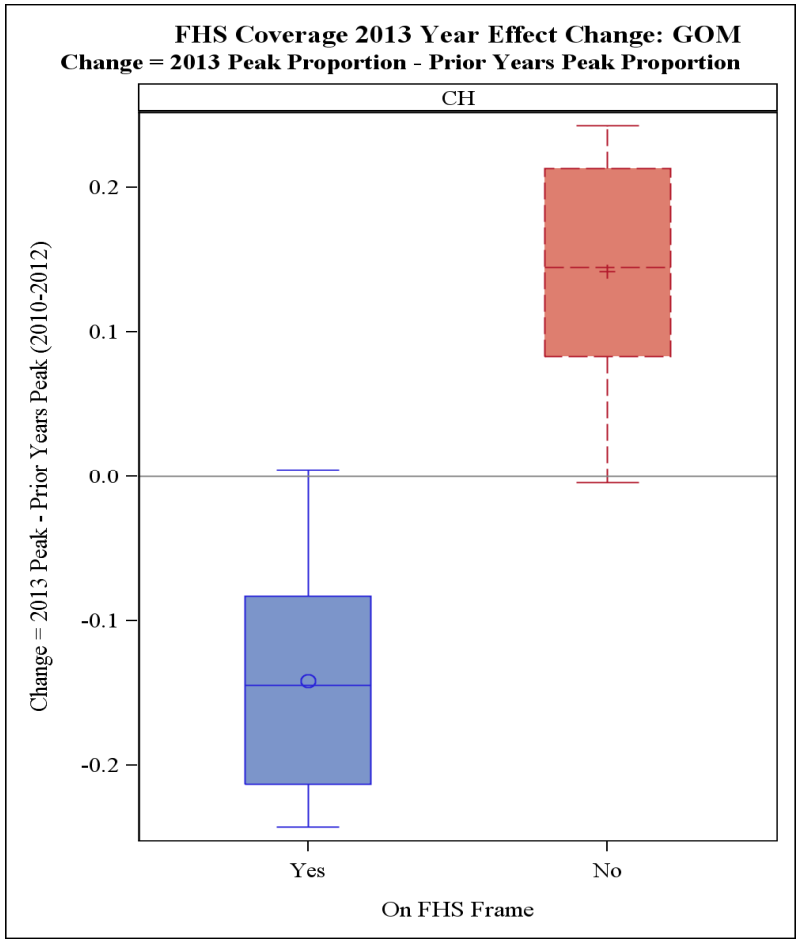
- Comparing weighted proportions of total CH mode angler-trips comprised by trips aboard FHS on-frame vessels
  - Sub region, state, mode of fishing, and time block
  - MRIP APAIS 2013 vs MRFSS APAIS 2010-2012

- Summarize over states to sub region level

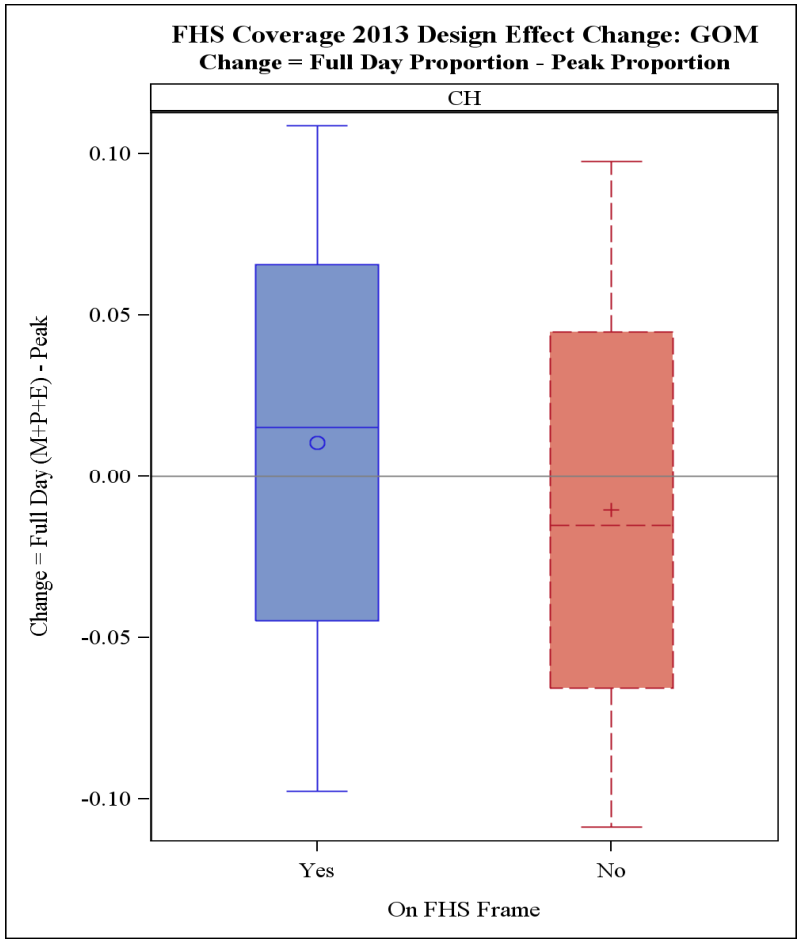
- Little consistency between year and design change effects
- More support for design change effects in Mid-Atlantic and North Atlantic sub regions

Results FHS Coverage Adjustment GOM

Year Effects



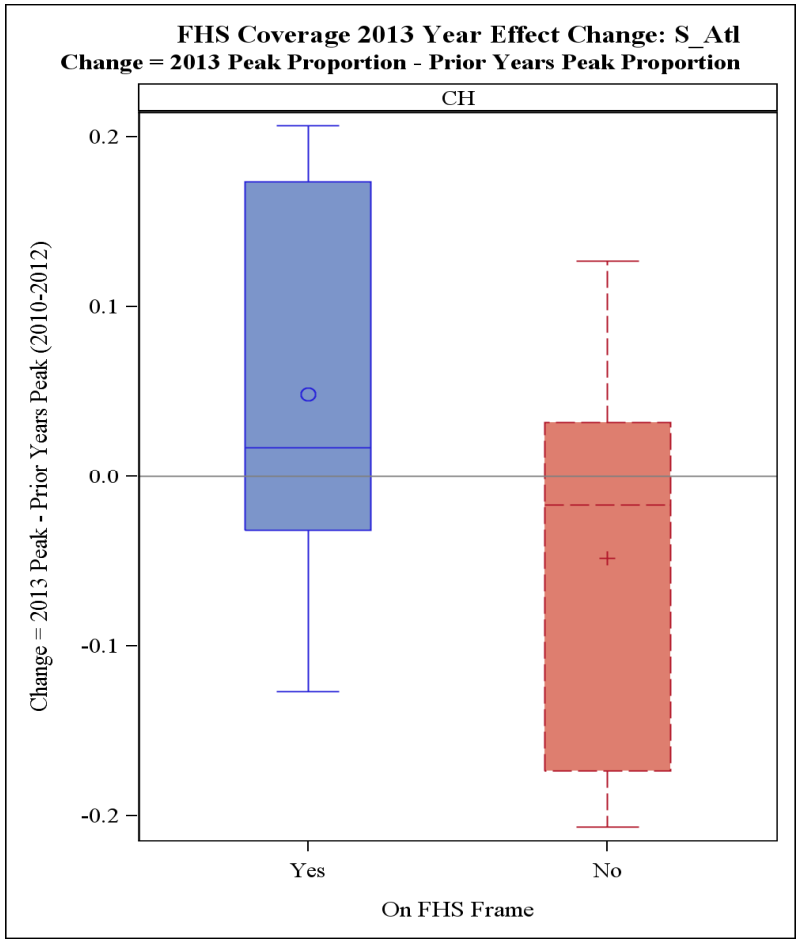
Design Change Effects



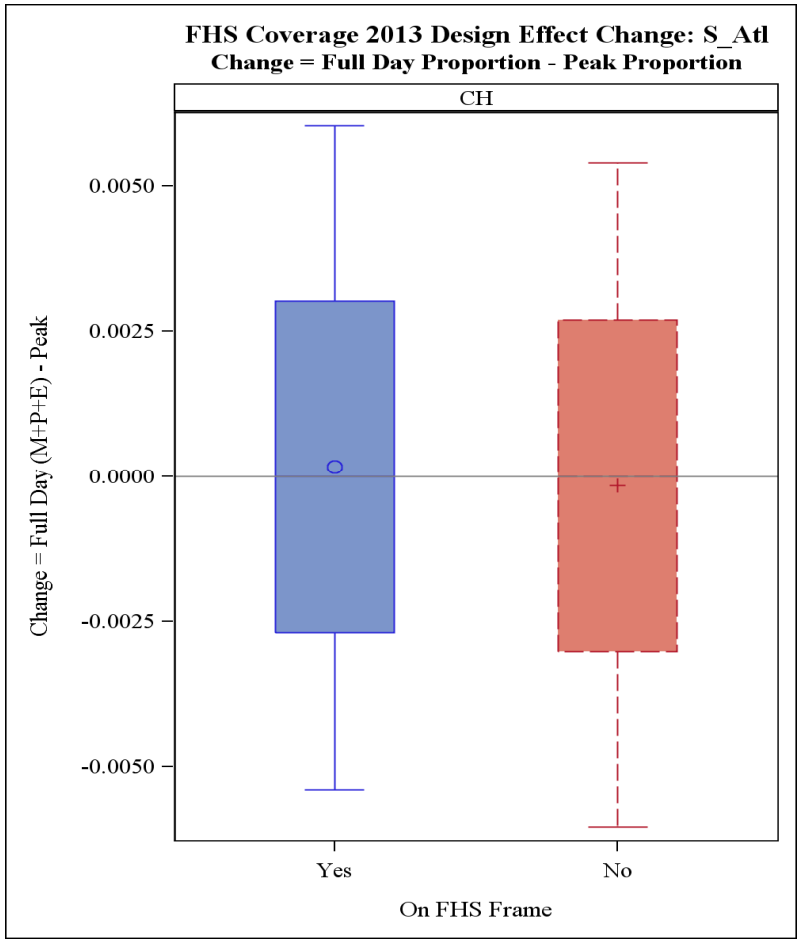
- Inconsistent “effects”, design change more variable

Results FHS Coverage Adjustment S. Atlantic

Year Effects



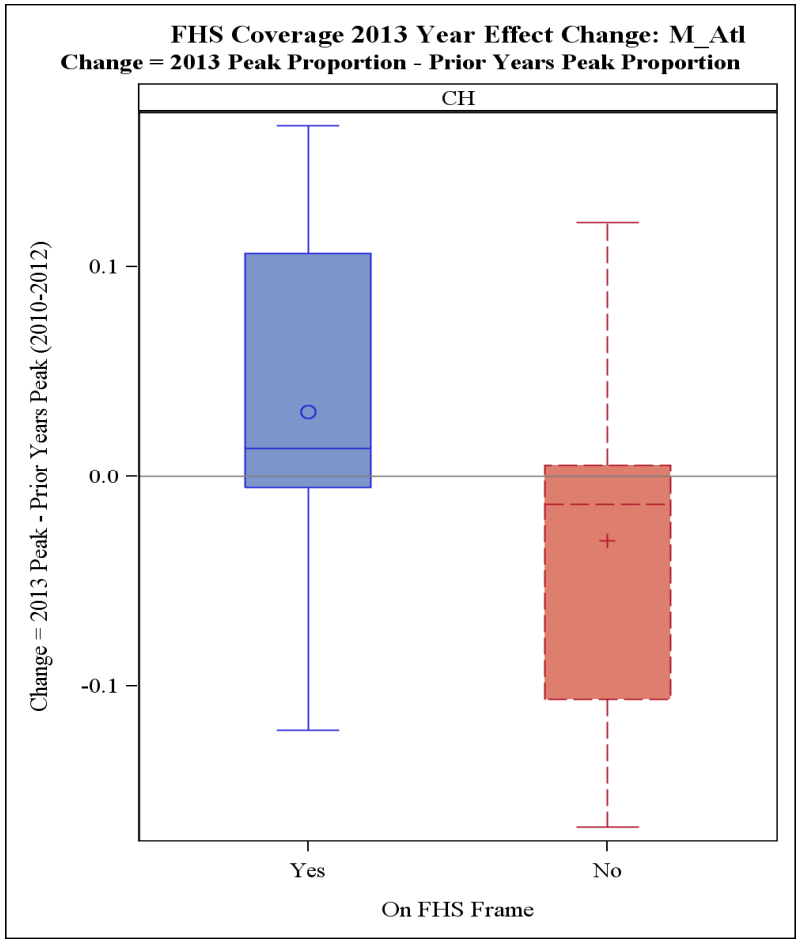
Design Change Effects



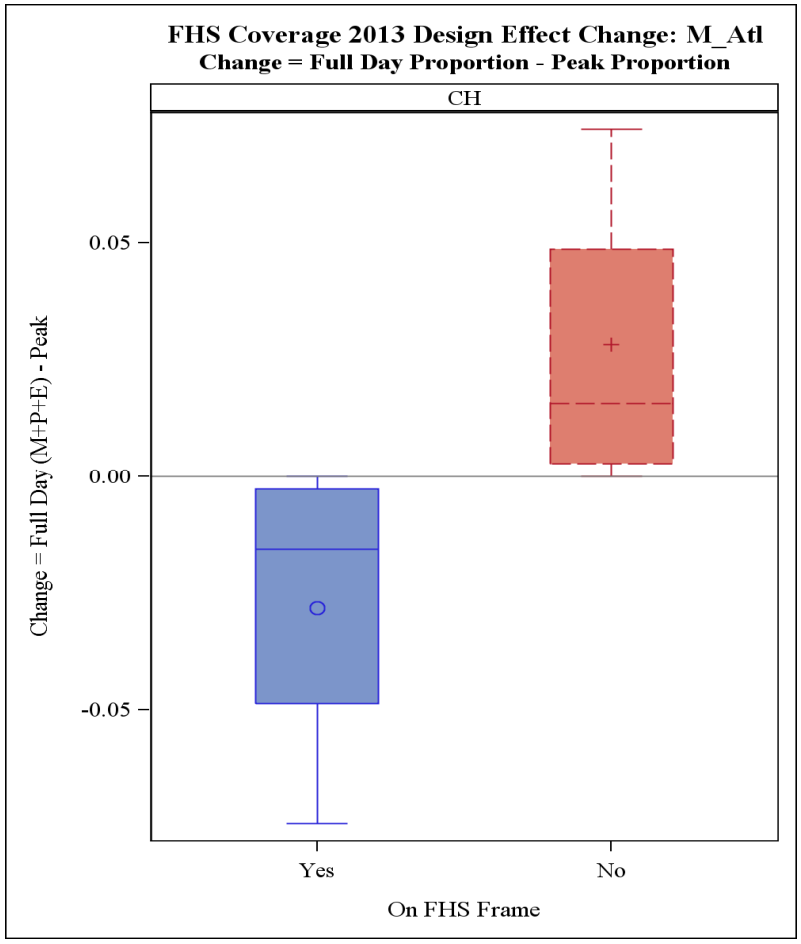
- Support for some year effects, design change effects minimal

Results FHS Coverage Adjustment Mid-Atl.

Year Effects



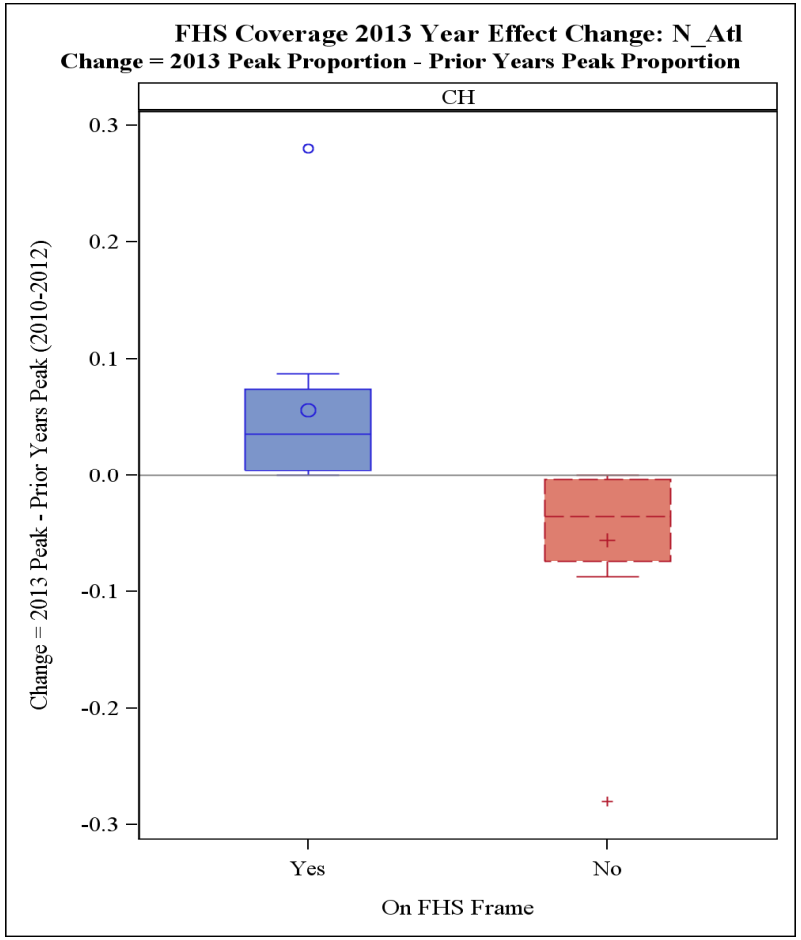
Design Change Effects



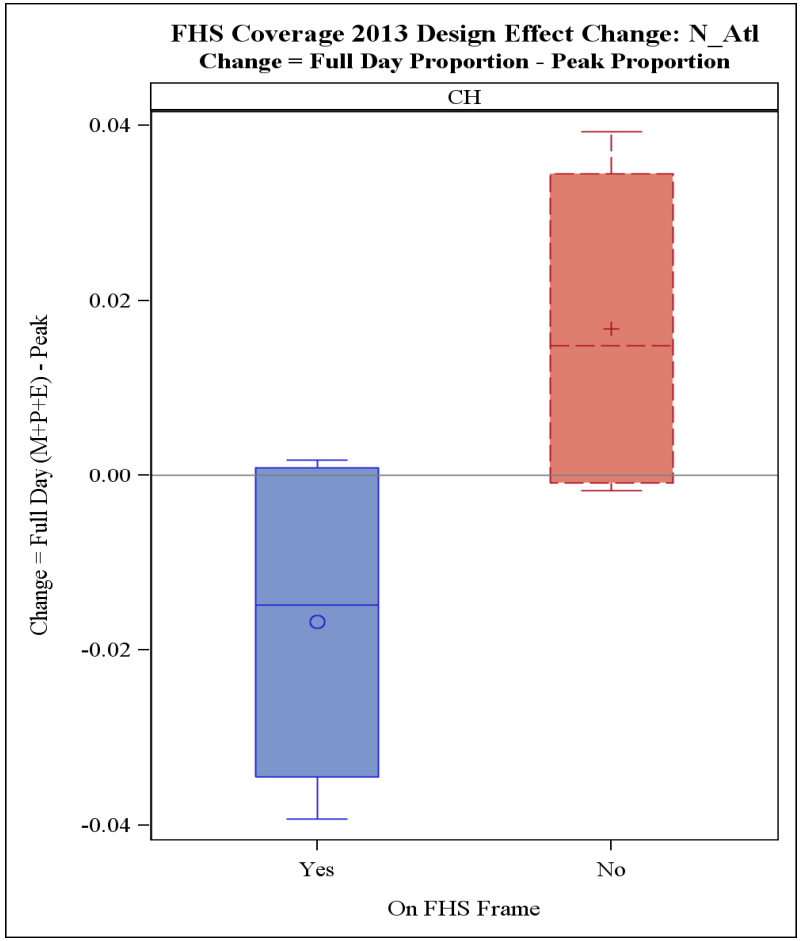
- Opposite effects

Results FHS Coverage Adjustment N. Atlantic

Year Effects



Design Change Effects



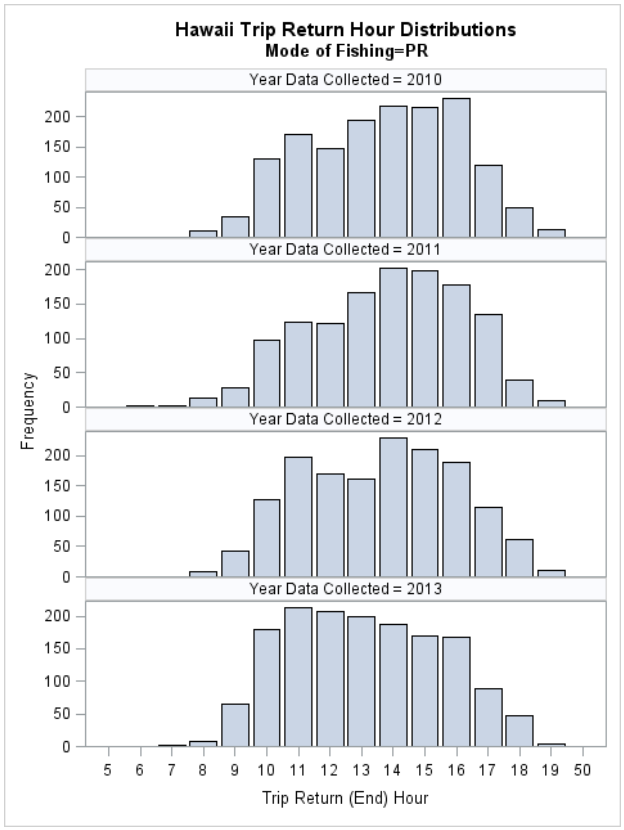
- Opposite effects

External Results

- Temporal trip distributions in Hawaii, Puerto Rico
  - Locations where MRFSS APAIS continued in 2013
- Temporal trip distributions in CHTS
  - 2013 CHTS design consistent prior years
- Spatial distributions

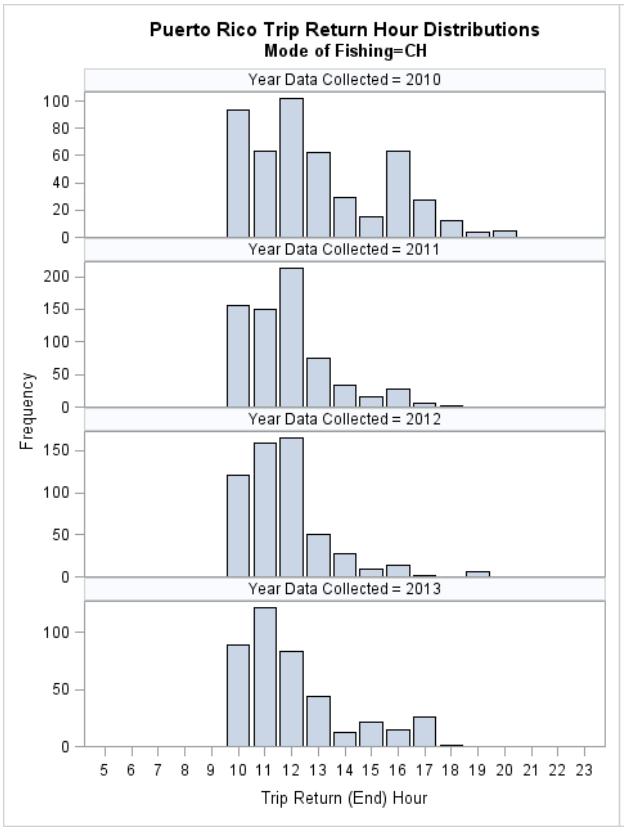
External Results HI, PR Temporal Distributions

Hawaii - PR mode

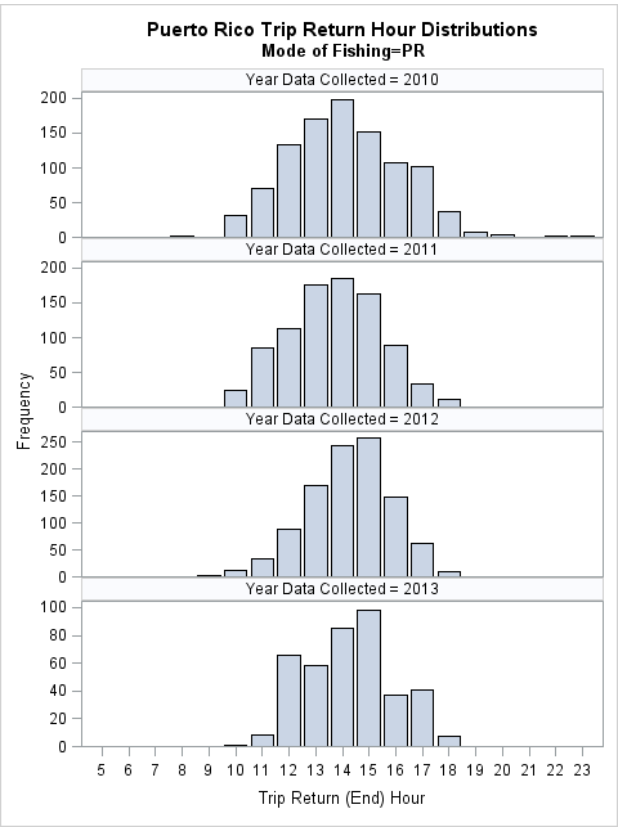


Puerto Rico

CH mode



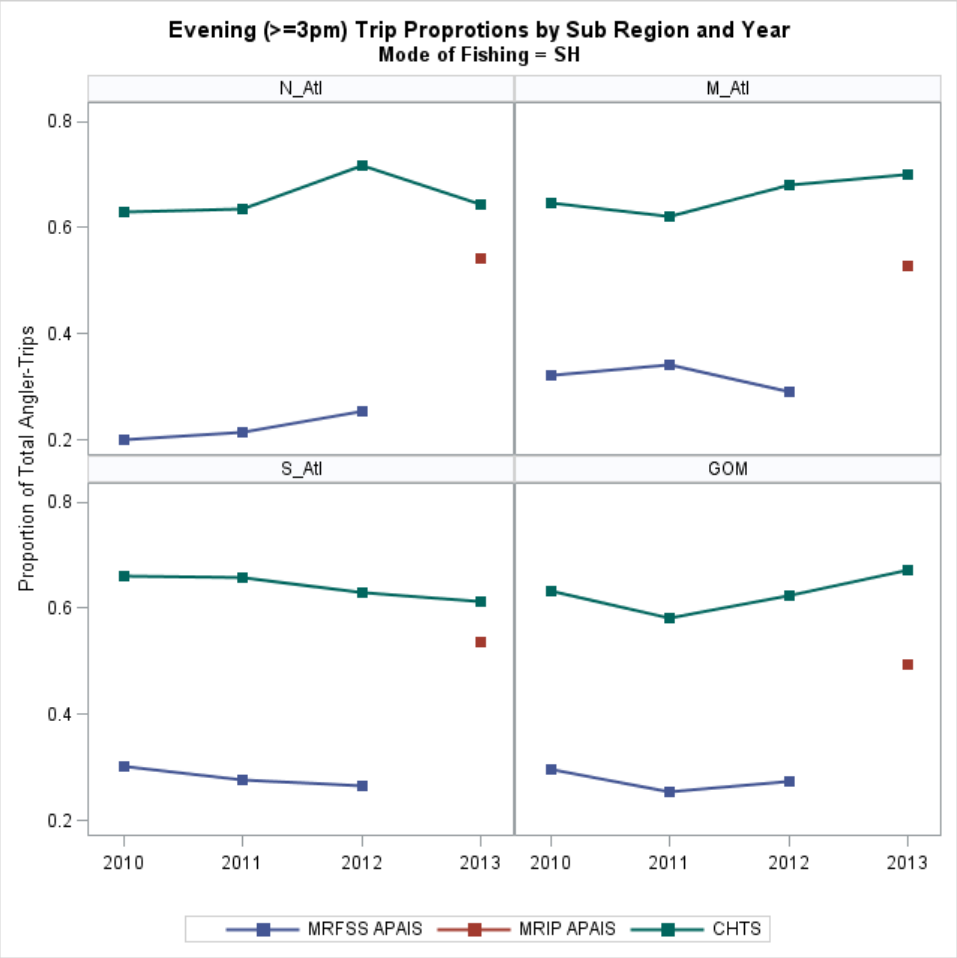
PR mode



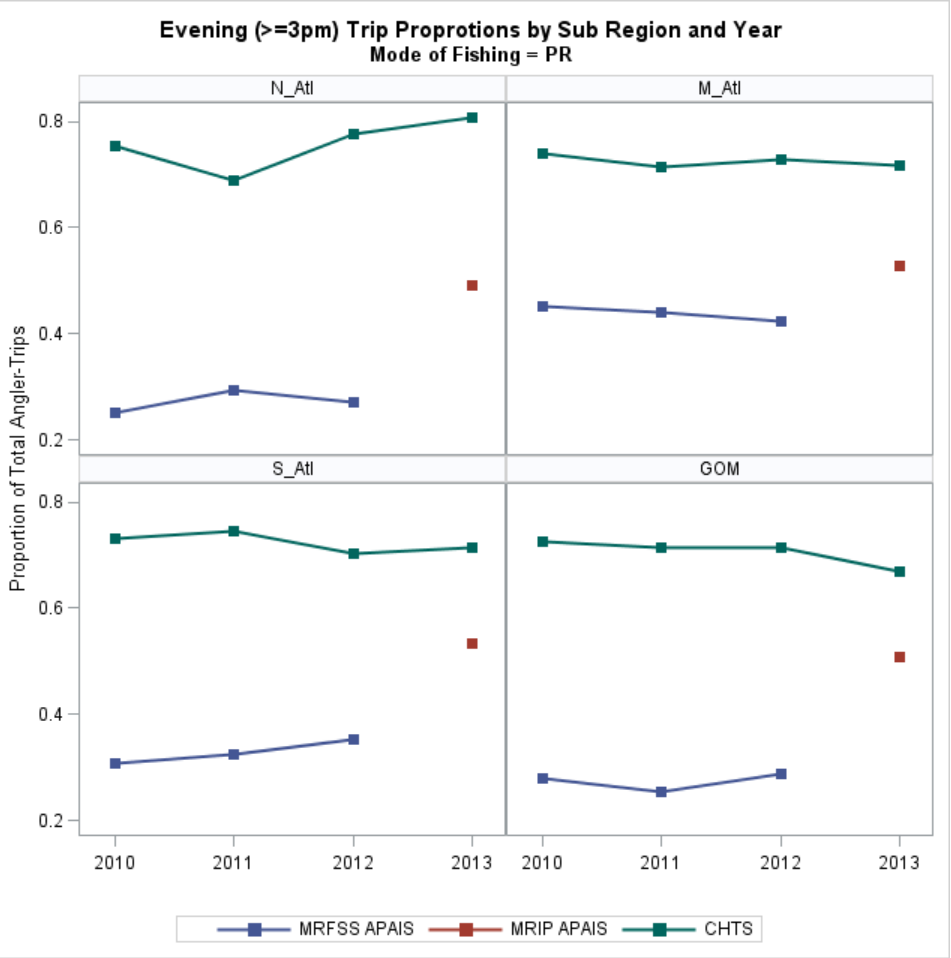
- 2013 temporal distributions similar to prior years

External Results CHTS Temporal Distributions

Shore mode



Private boat mode



- CHTS proportions fairly consistent across years, MRIP APAIS similar to CHTS

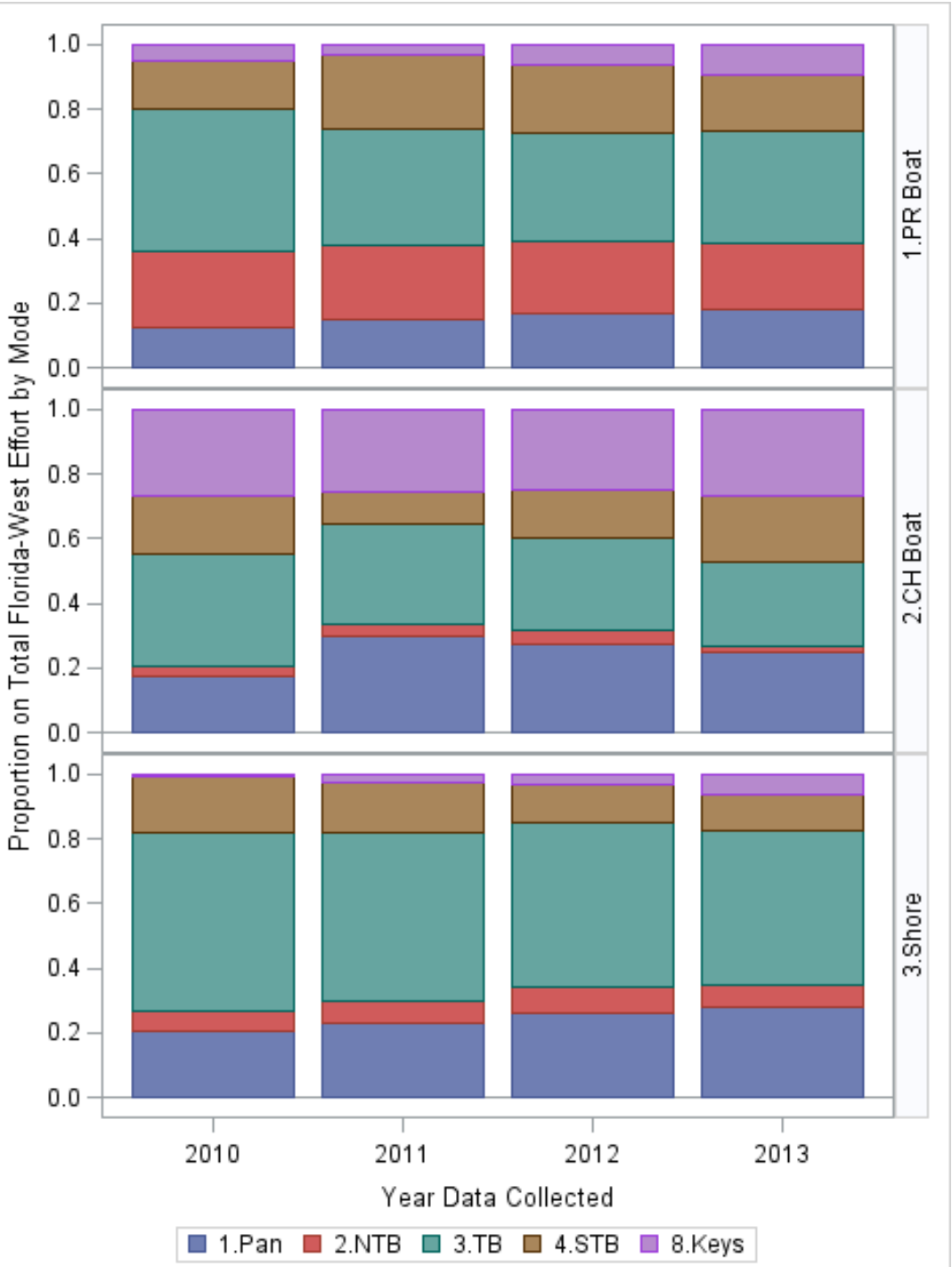
External Results Spatial Distributions

- Sub-state stratification added to APAIS 2013 in LA and FLw
  - LA – 4 regions
  - FLw – 5 regions (including Monroe County - Keys)

- No change in spatial coverage

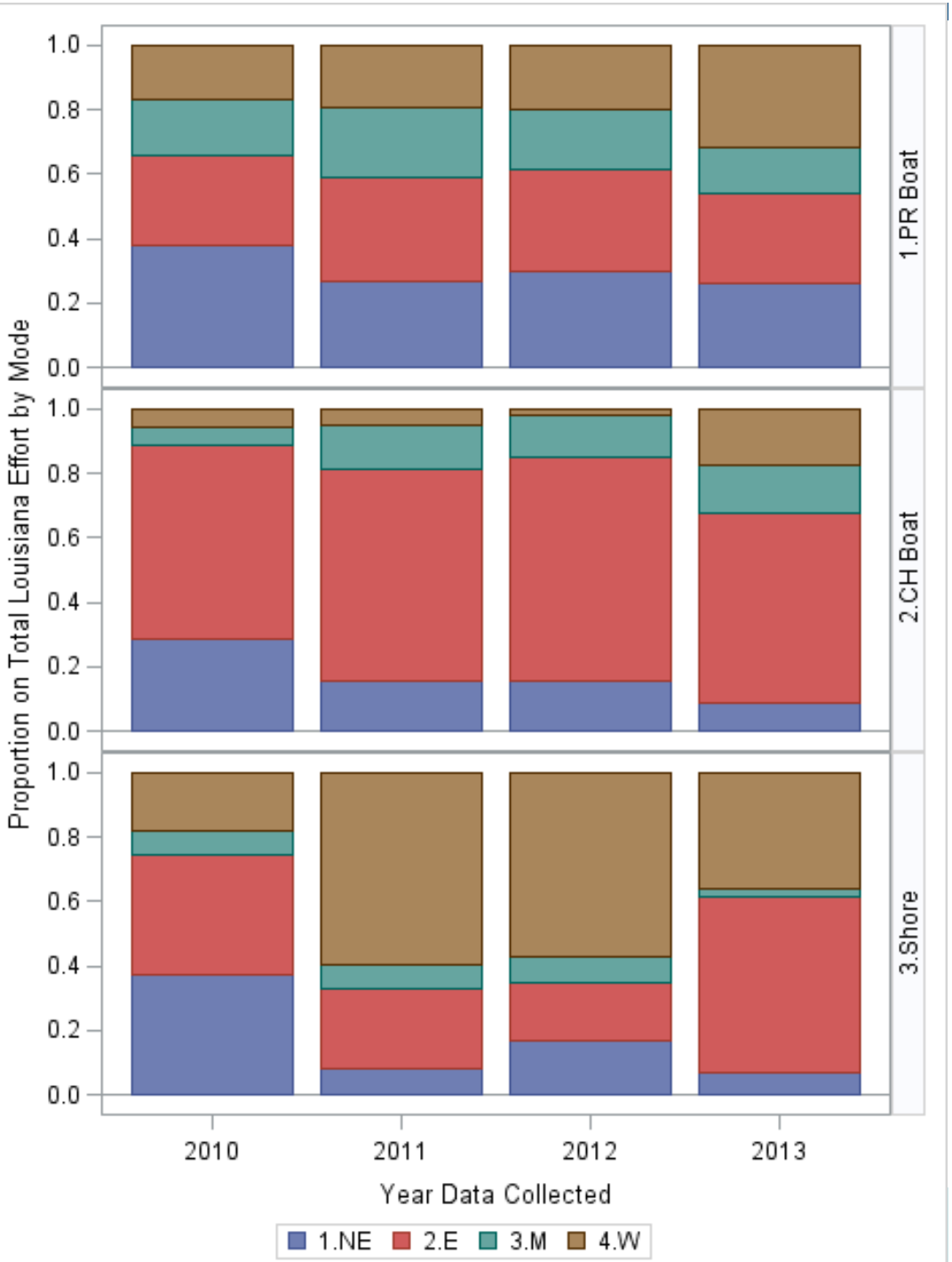
FLw

- Proportions of Angler-Trips
  - By Mode, Year, and Sub-state Region
    - 1. Panhandle
    - 2. North of Tampa Bay
    - 3. Tampa Bay
    - 4. South of Tampa Bay
    - 8. Monroe County/Keys
- No sign of large year or design change effects



LA

- Proportions of Angler-Trips
  - By Mode, Year, and Sub-state Region
    - 1. Northeast
    - 2. East
    - 3. Middle
    - 4. West
- Support for year effects (2010-12)
- 2013
  - SH shows shift to East



Results Summary

- Widespread changes in temporal distributions of angler-trips from 2010-2012 to 2013
- Changes consistent with change in temporal coverage associated with transition from MRFSS APAIS to MRIP APAIS in 2013
- Support for variable but generally smaller design change effects on MRIP effort estimation components

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John Foster

MRIP Calibration Workshop #2

Charleston, South Carolina
8 September 2014