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# APAIS 2013/2014 Design Changes

John Foster

MRIP Calibration Workshop #2

Charleston, South Carolina  
8 September 2014

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# APAIS 2013/2014 Design Changes

- Background
- APAIS 2013 Design
- 2013 Design Adjustments
- APAIS 2014 Design
- Interviewing Productivity

# Background

- Concerns with MRFSS Intercept from NRC 2006 report
  - Coverage gaps (nighttime, off-peak daytime)
  - Deviations from formal probability sampling – Sampler Discretion
    - Alternate site visits
    - Variable sampling times while on-site
    - Variable sampling from alternate modes
- MRIP NC Pilot Project 2009
  - Develop new intercept design
  - Field tested alongside MRFSS in NC, 2010
  - New design feasible but interviewing productivity reduced
  - Few significant differences in catch estimates between Pilot and MRFSS

# APAIS 2013 Design - Major Changes

- Full Temporal Coverage
  - 4 six-hour strata replaced variable sampling times
  - 8AM-2PM, 2PM-8PM, 8PM-2AM, 2AM-8AM
- Sub-State spatial stratification
- Site clusters
  - Predetermined clusters of 1-3 sites with fixed visit order and duration replaced alternate sites
- Interview cap eliminated
  - MRFSS 30 interview cap per site visit
- Alternate mode sampling eliminated

# APAIS 2013 Design - Implementation

- New APAIS design implemented in March (Wave 2)
  - LA-ME (not implemented in HI, PR)
  - Shore, Private Boat, Charter Boat (separate design for Headboats)
- Addressed NRC 2006 concerns
- Allowed for fully design-based sample weighting and estimation
- Performance Issues
  - Decreased interviewing productivity
  - Charter boat mode impacted disproportionately

# 2013 Design Adjustments

- Lower interviewing productivity
  - Poor weather through March and into April
  - Concerns from State partners continued as weather improved
- Work on adjustments began mid-April with initial implementation in May APAIS assignment draw
- Initiated weekly calls with subset of State partners to discuss adjustments and monitor changes in productivity
  - June 3<sup>rd</sup> through remainder of 2013

# 2013 Design Adjustments - Overview

- Goals
  - Improve interviewing productivity
  - Improve spatial and temporal sample distribution
  - Maintain same temporal and spatial coverage
- Productivity
  - Adjustments to site/cluster pressures – measures of expected fishing activity used in PPS sampling
  - Changes to site clustering rules
  - Adjustment to kind-of-day (WD, WE) strata
  - Shifts in sample allocation among modes of fishing
- Sample Distribution
  - Addition of temporal and spatial sorting variables to assignment draw
  - Adjustments to site/cluster pressures

# 2013 Design Adjustments - Details

- 2013 APAIS design changes
  - May – cluster size calculation changed from total to average size
  - June
    - New replication-based draw program implemented
    - Minimum pressure for single site cluster changed from 5 to 4
    - High productivity “flagged” site adjustment
  - July – added sorting variables to improve sample distribution over space and time
  - August
    - All sites with pressure categories 4+ included in “flagged” site adjustment
    - Max sites per cluster reduced from 3 to 2
    - Changed Friday from weekday to weekend kind of day
    - Shifted sample (25%) from Shore to Charter



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# 2013 Design Adjustments - Details

- September
  - Minimum pressure for single site cluster changed from 4 to 3
  - Pressure category 3 sites added to “flagged” site adjustment (select cells)
  - Shifted more Shore and Private boat sample to Charter boat (select cells)
- October
  - Site order randomized in frame instead of sample draw
  - Cluster size calculated as weighted average, PR and CH modes only
  - Better representation of higher productivity times (more efficient sampling)

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# 2013 Design Adjustments - Conclusions

- Effectiveness of 2013 Changes
  - Substantive improvements in interviewing productivity
  - Improvements to Charter mode not satisfactory
  - Increased clustering of data by site in some strata
- Additional changes warranted in 2014

# APAIS 2014 Design

- Major questions at the end of 2013
  - How can we better target sample to productive times of day but still maintain full temporal coverage?
  - What else can be done for Charter mode?
- 2 Primary changes
  - Peak interval – Wave 2 start
  - Mixed boat sampling – Wave 3 start

# APAIS 2014 Design: Peak Interval

- Create a new sample interval that more closely corresponds to peak fishing activity
- Minimize disruption to existing design
- P:11AM-5PM
  - 6-hour interval
  - Covers 2nd half of B interval and 1st half of C interval



# APAIS 2014 Design: Peak Interval

- P:11AM-5PM
  - Included majority of daytime (8AM-8PM) trips in 2013
  - Charter: 59%(DE) – 95%(MS) (most states over 75%)
  - Private: 59%(NH) – 78%(NY) (most states in 60-69%)
  - Shore: 46%(RI) – 69%(CT) (most states in 50-59%)

# APAIS 2014 Design: Peak Interval

- No changes to Night sampling intervals (8PM-2AM,2AM-8AM)
- Keep existing B and C intervals
  - Maintain full coverage 8AM-8PM
- Overlapping Intervals
  - Possible to draw same site/3-hr time block/date in two intervals
  - Requires adjustments to sample weights, strata definitions
  - Requires special field procedures



# APAIS 2014 Design: Mixed Boat Sampling

- Increase interviewing productivity in Charter mode
- Increase sampling efficiency for guide boats
- Allow samplers to interview both Private boat and Charter boat anglers during the same assignment
- Change how fishing mode is handled in design and estimation
- Site group stratification



# APAIS 2014 Design: Mixed Boat Sampling

- Shore mode sampled using APAIS 2013 method
- Existing PR and CH mode strata replaced with site groups
  - Site groups are exclusive – a site can only belong to one group
  - Site groups are still related to mode
    - CH site group (only CH, primarily CH, or high CH activity)
    - PR site group (only PR, all other sites not in CH site group)
- Site groups have independent clustering, sample allocation, draws

# APAIS 2014 Design: Mixed Boat Sampling

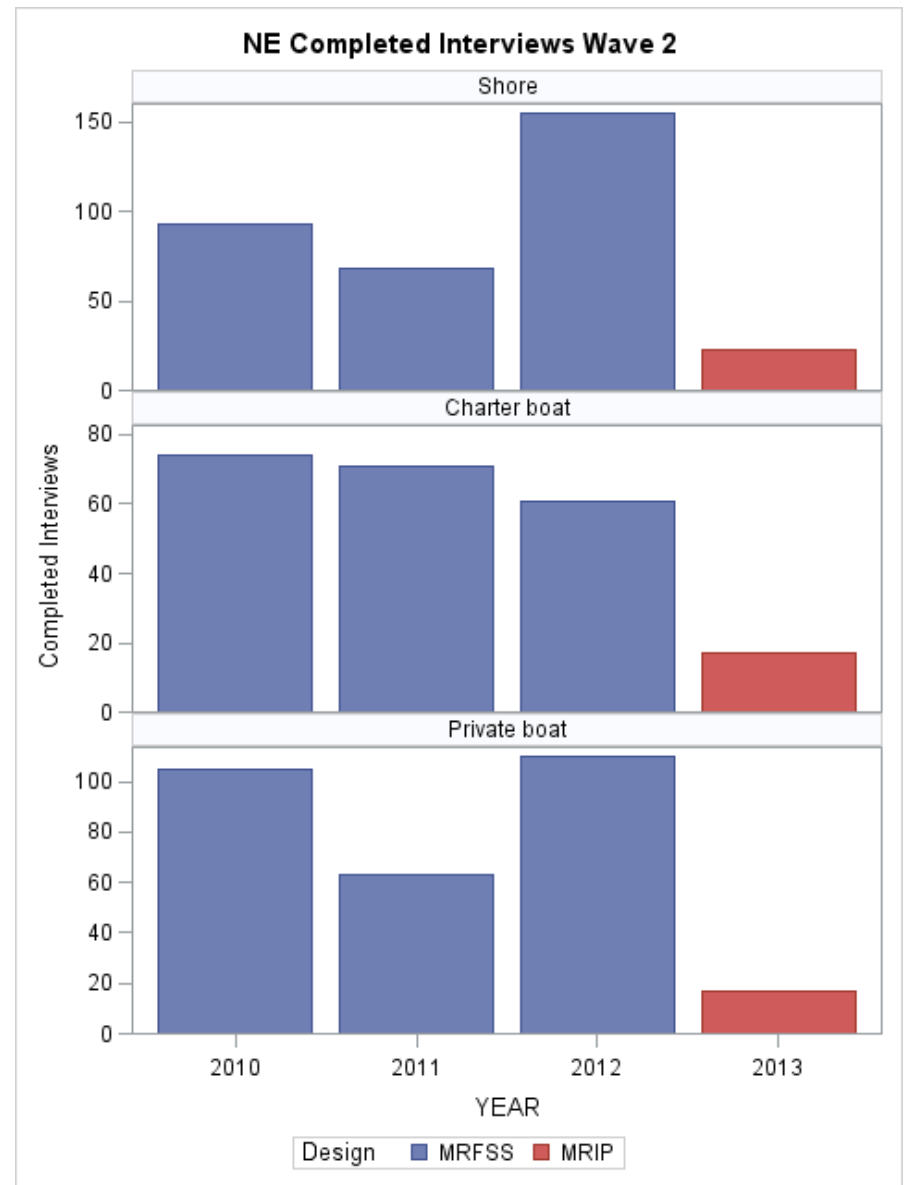
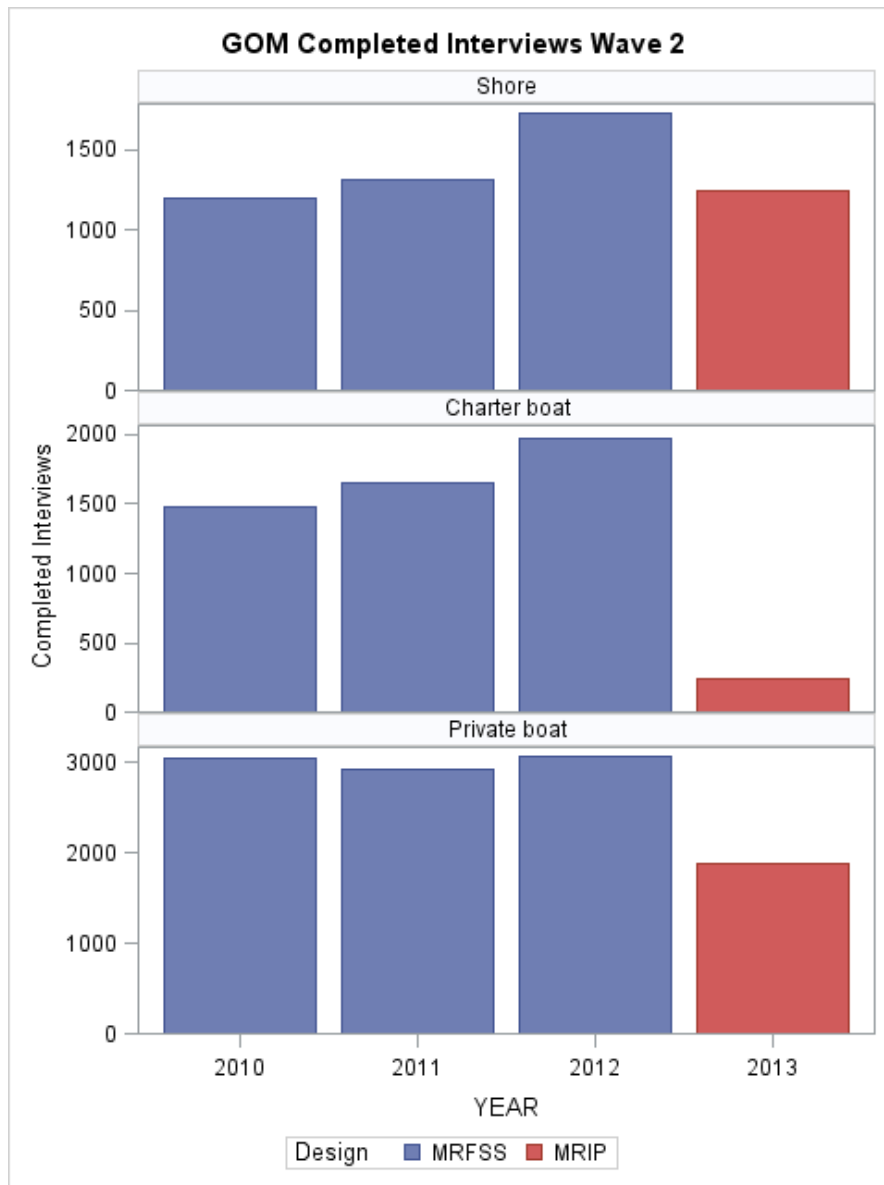
- Separate site group strata allow CH sites to be sampled at different rates from PR sites
- Catch and Effort estimates still available by same fishing modes as in previous years
  - Mode of fishing now domain variable only - like area fished

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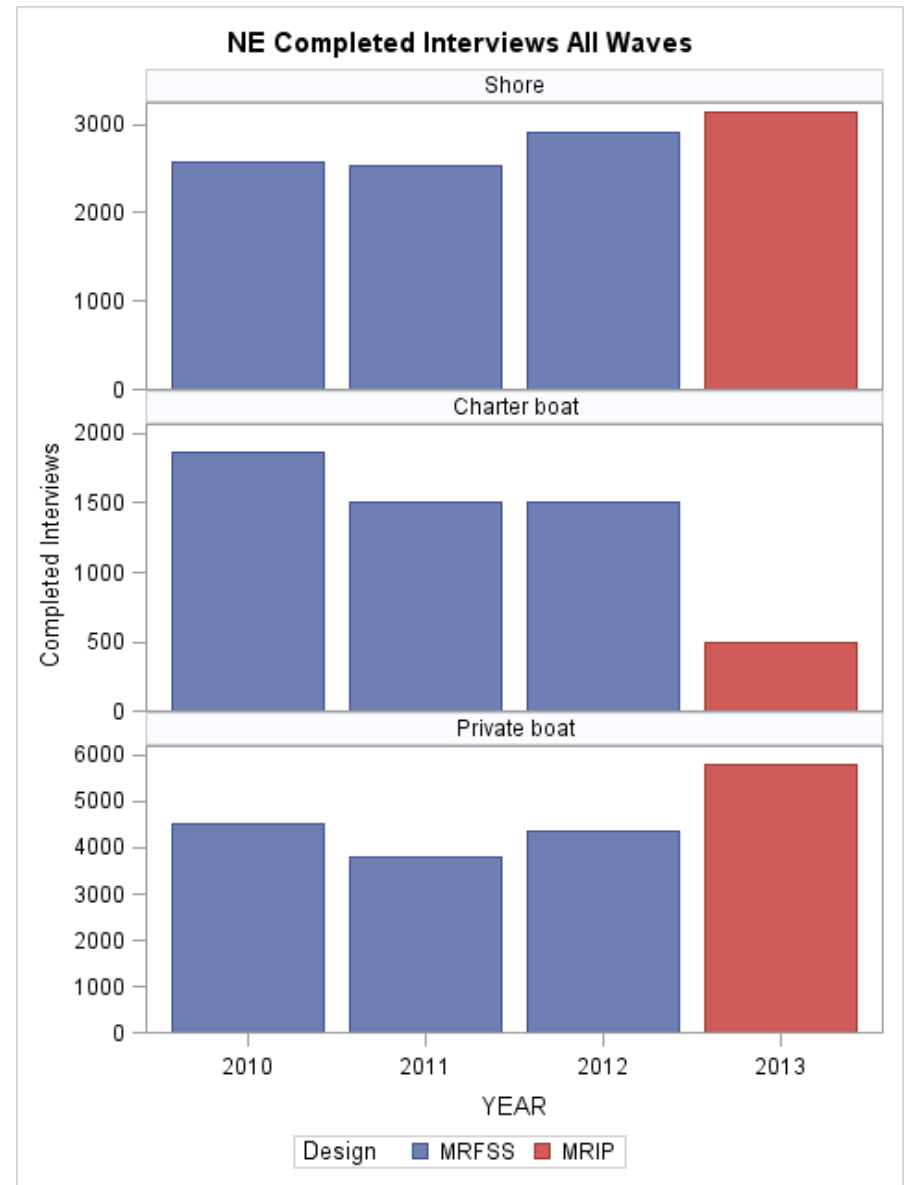
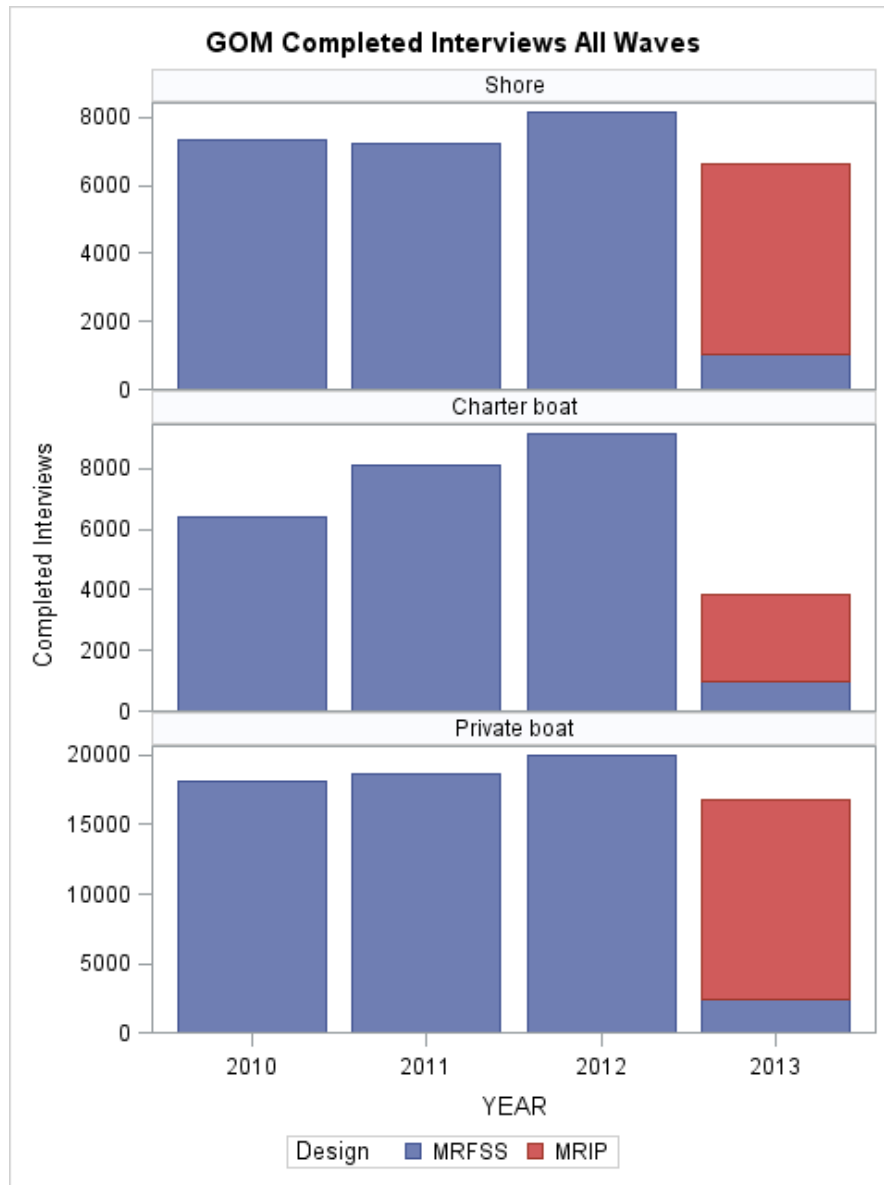
# Interviewing Productivity

- Completed interviews
- Peak Interval
- Mixed Boat Sampling

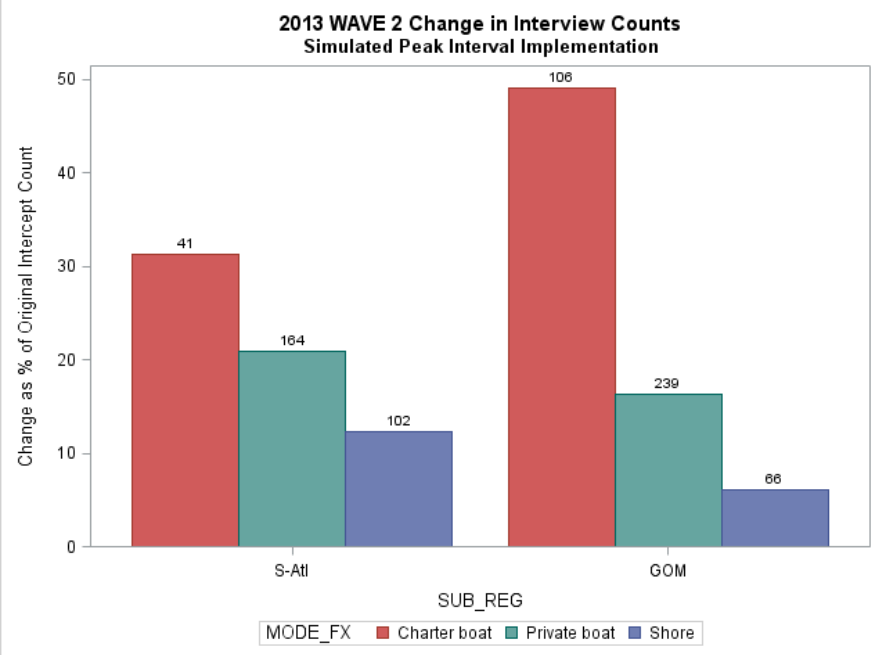
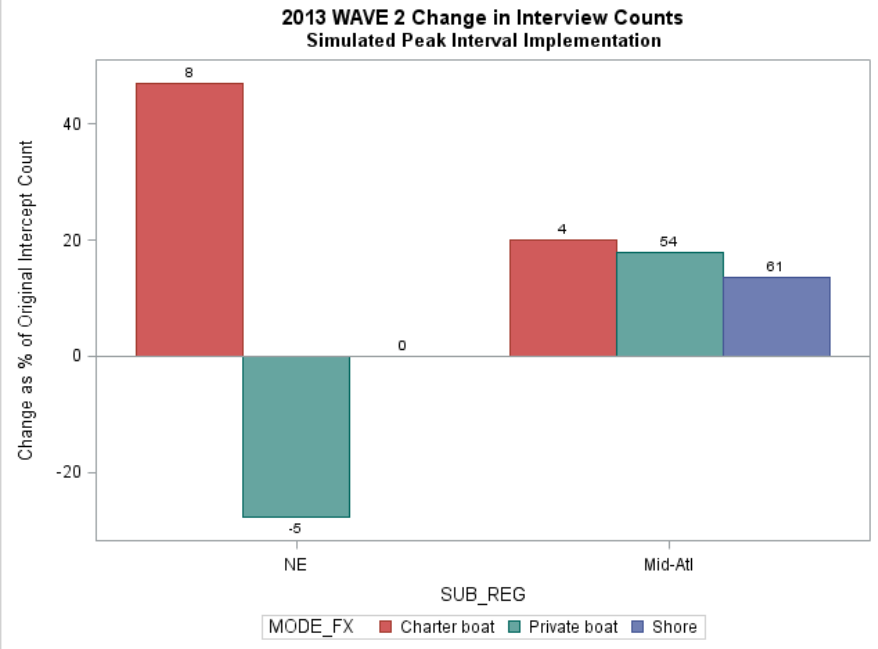
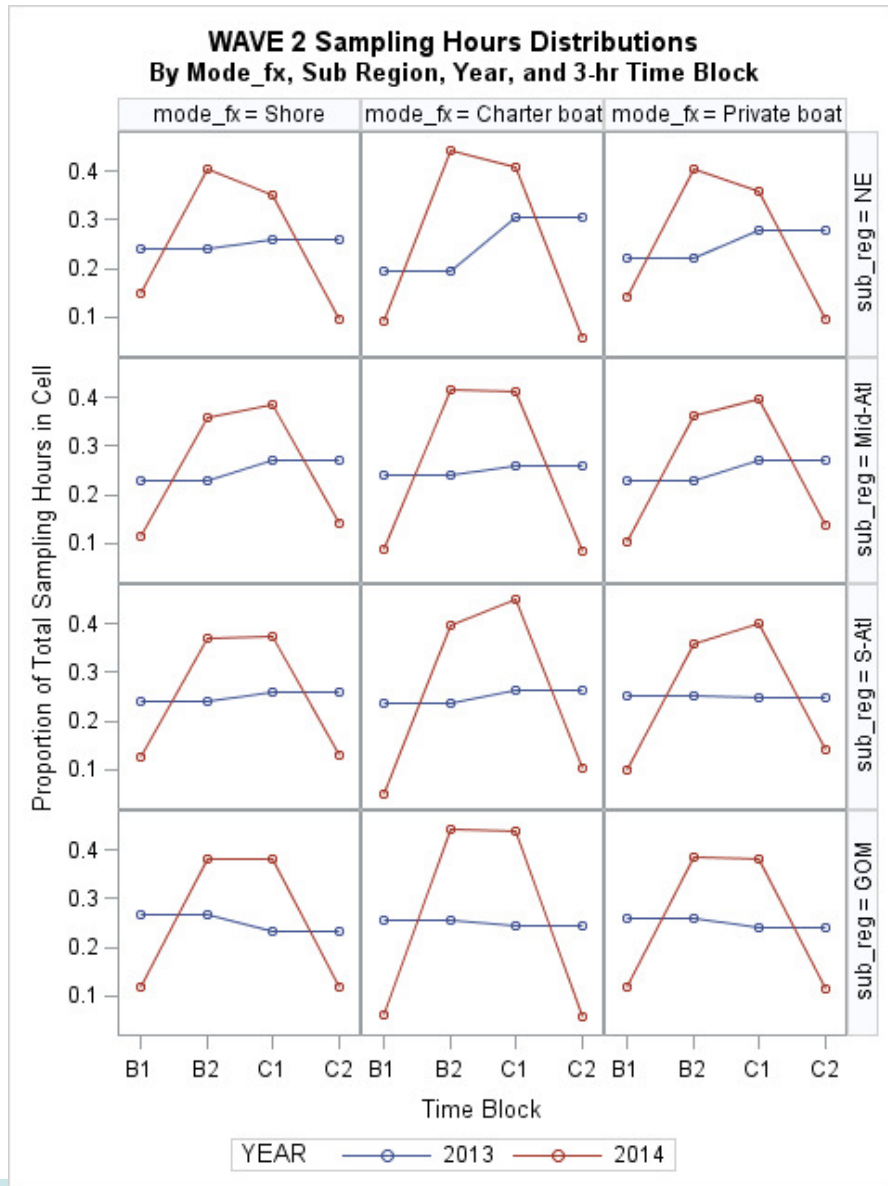
# Completed Interviews – Wave 2



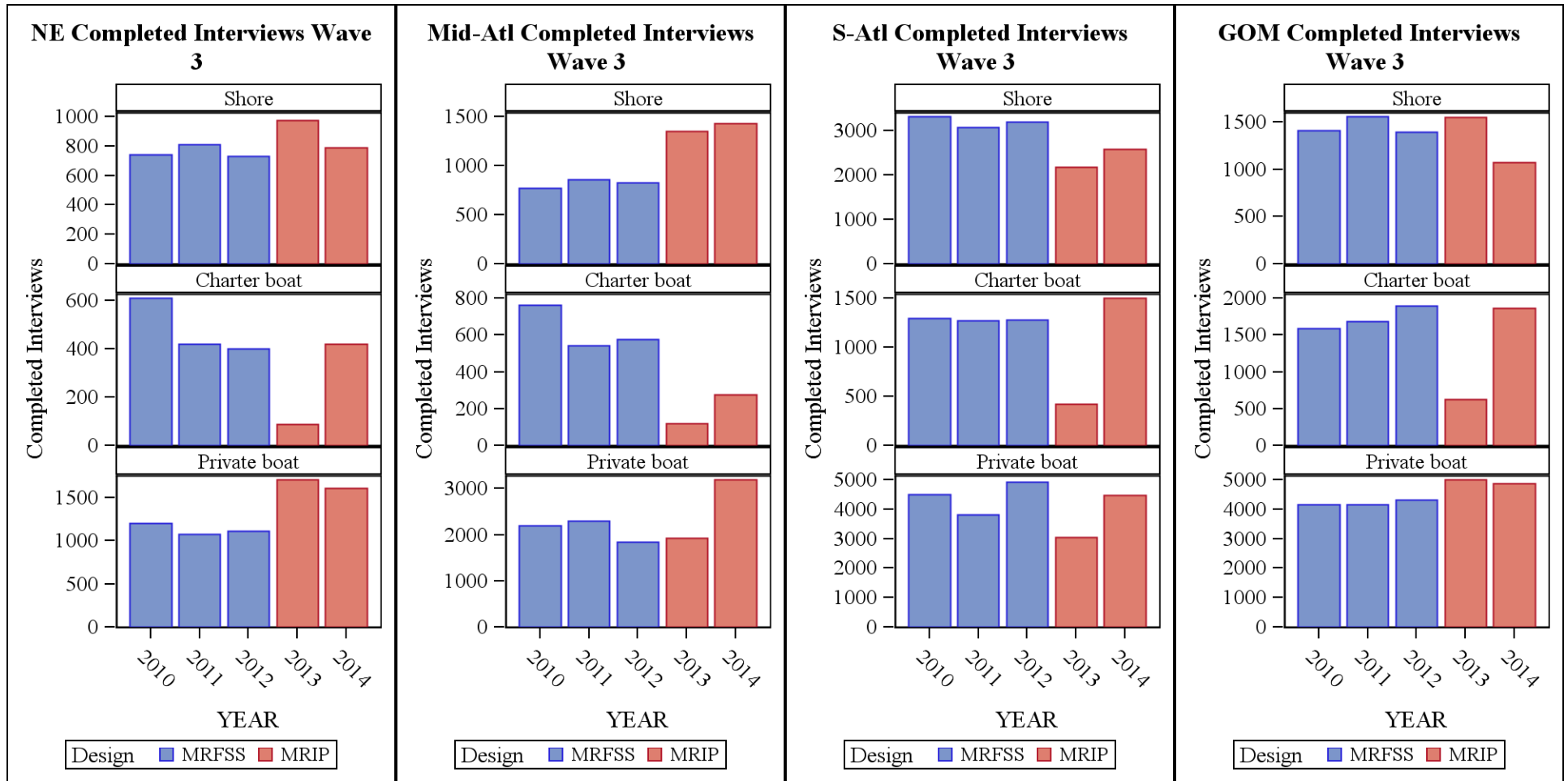
# Completed Interviews – All Waves



# Peak Interval – W2



# Mixed Boat Sampling – Wave 3



# Mixed Boat – 2014 Wave 3

## APAIS Wave 3 PR/CH Interview Counts by Sub Region and Site Group and Mode

Sub Region	Site Group	Interviews Obtained		%CH Int Total	%PR Int Total	SG Total	% SG Total (CH Int)	% SG Total (PR Int)
		CH	PR					
NE	CH	349	373	83	23	722	48	52
NE	PR	72	1234	17	77	1306	6	94
	Total:	421	1607					
Mid-Atl	CH	194	507	71	16	701	28	72
Mid-Atl	PR	81	2684	29	84	2765	3	97
	Total:	275	3191					
S Atl	CH	1354	222	90	5	1576	86	14
S Atl	PR	144	4239	10	95	4383	3	97
	Total:	1498	4461					
GOM	CH	1579	360	85	7	1939	81	19
GOM	PR	284	4513	15	93	4797	6	94
	Total:	1863	4873					



# Summary

- APAIS 2013 design implementation addressed significant NRC concerns but substantially reduced interviewing productivity
- Subsequent adjustments and changes have not changed temporal or spatial coverages
- Interviewing productivity at/near pre-2013 MRFSS design levels in most strata



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