

The Gulf Headboat Collaborative: Preliminary Findings from Year 1

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A personal introduction

- Associate professor (with tenure) at Arizona State University
 - Ph.D. in Resource Economics from UC Davis
- 10 years of research experience in fisheries economics and policy and 20 peer-reviewed journal publications
 - Fisheries research in Gulf of Mexico, Alaska, US Great Lakes, Gulf of California, etc.
- Joint research with a number of NMFS colleagues in multiple regions and science centers
- Research program focused on evaluation of policy impacts in fisheries and recreational fishery management (including for-hire sector)
 - Papers on for-hire sector management published in 2009
- Listed in the EFP as the researcher of record for the socioeconomic portion of the research

Evaluating the EFP: comparisons

- Ideal comparison: “what happened under the EFP *relative to what would have happened* under the most policy-relevant baseline without the EFP?”
 - Obviously we don’t observe the “what would have happened...” scenario
 - So we impute this as best we can from existing data
 - But what *is* the “policy relevant baseline”?
- Current comparisons:
 - GHC vessels vs. non-GHC pre-2014 vs. post-2014
 - Currently very limited by aggregation of data for non-GHC vessels
 - More to come...
 - GHC vessels in 2014 vs. pre-2014
 - The bulk of this presentation
- *Neither comparison should necessarily be considered the “causal effect” of the EFP without further scrutiny*

Available data

1. 2003-2014 logbook data for vessels owned by GHC members (2003-2014)
2. Aggregated 2003-2014 logbook data by region/year (TX, LA/MS, AL, NWFL, SWFL)
 - Data censored if <3 operations present by region/year to preserve confidentiality
3. Partially disaggregated data at the region/week scale
 - Data censored if <3 vessels present by region/week for confidentiality

Available data

4. Surveys of GHC vessel owners

- Winter/Spring 2014: Pre-EFP price & cost data, and expectations about their business strategy under the EFP
- Round 2 will occur shortly to gather baseline data for new vessels and 2014 data for EFP participants

Available data

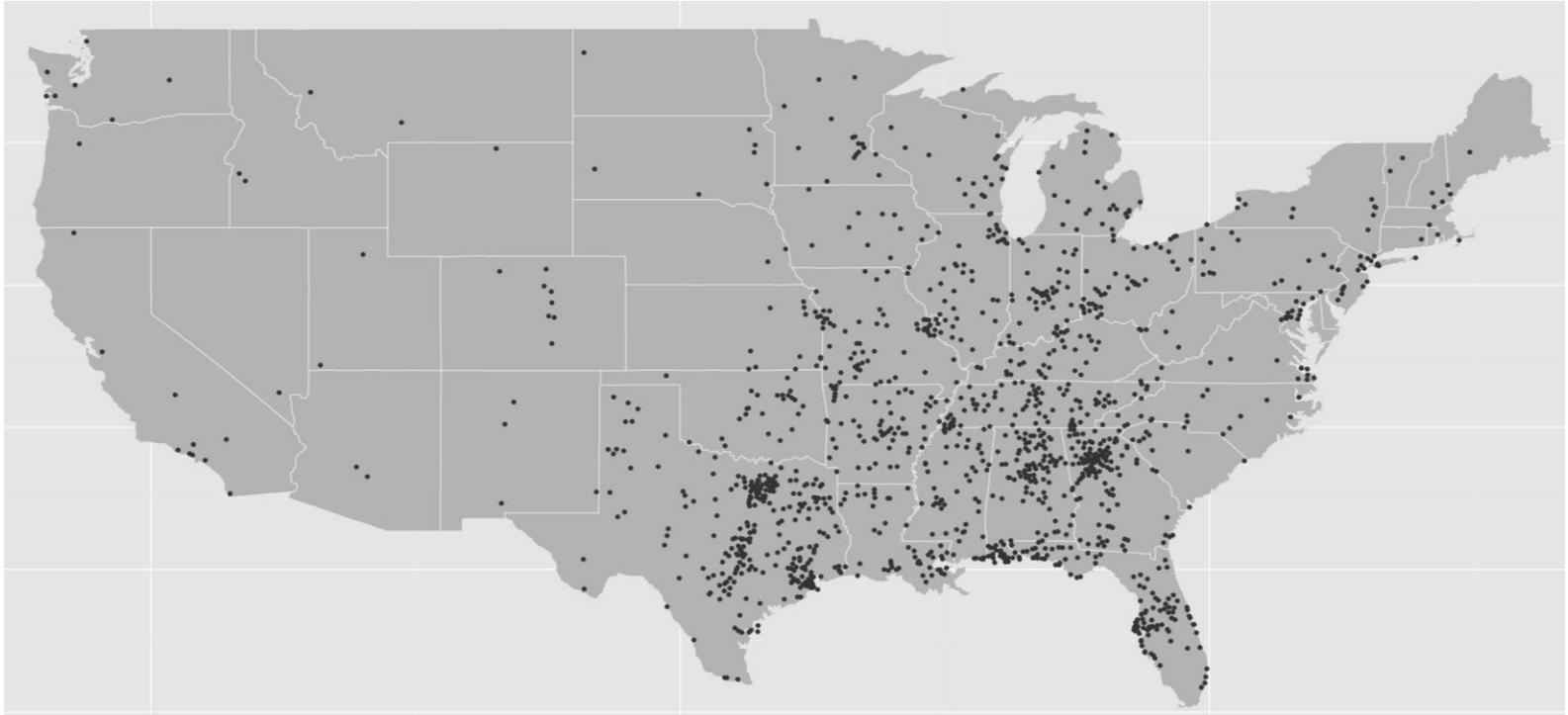
5. Surveys of GHC customers

- 2 page paper survey administered by crew on EFP and non-EFP trips throughout the 2014 and 2015 seasons
 - Subject to confidentiality protections and oversight by ASU Institutional Review Board
- Data on income, gender, age, zip code, fishing experience, trip catch composition, pricing, etc.
- Respondents also voluntarily provide their email

6. Online customer survey (in development)

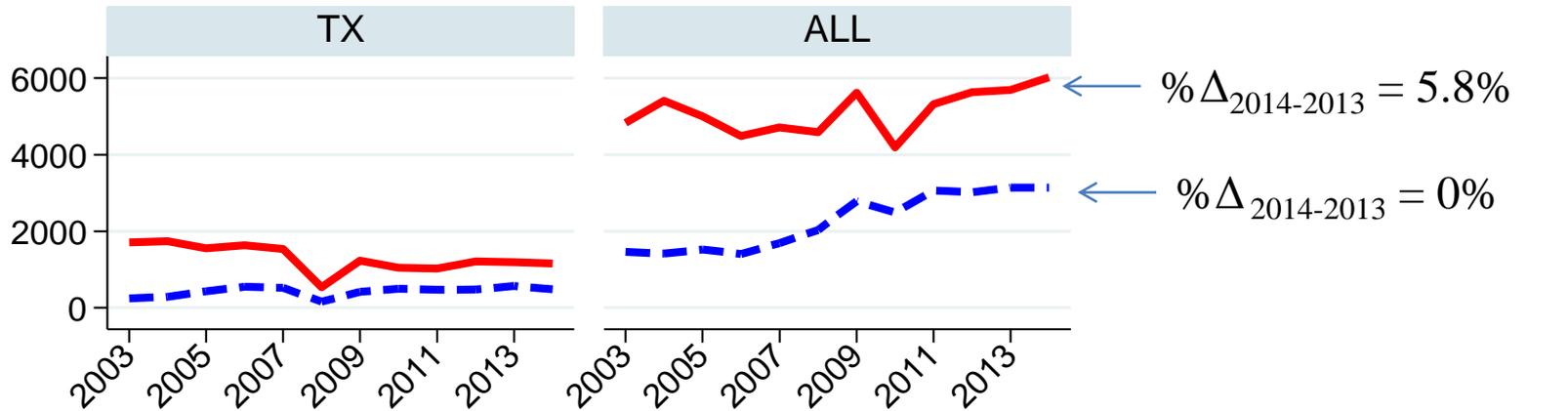
- Uses email contact information from 2 page survey
- Data in 2 page survey helps control for non-response bias
- Uses choice experiment format to evaluate anglers' willingness to pay for more flexible management options for red snapper & gag
- Gets at “angler value” (i.e. consumer surplus) provided by the EFP and any potential extensions

Anglers on GHC vessels



I. GHC vs. non-GHC:
comparisons across time

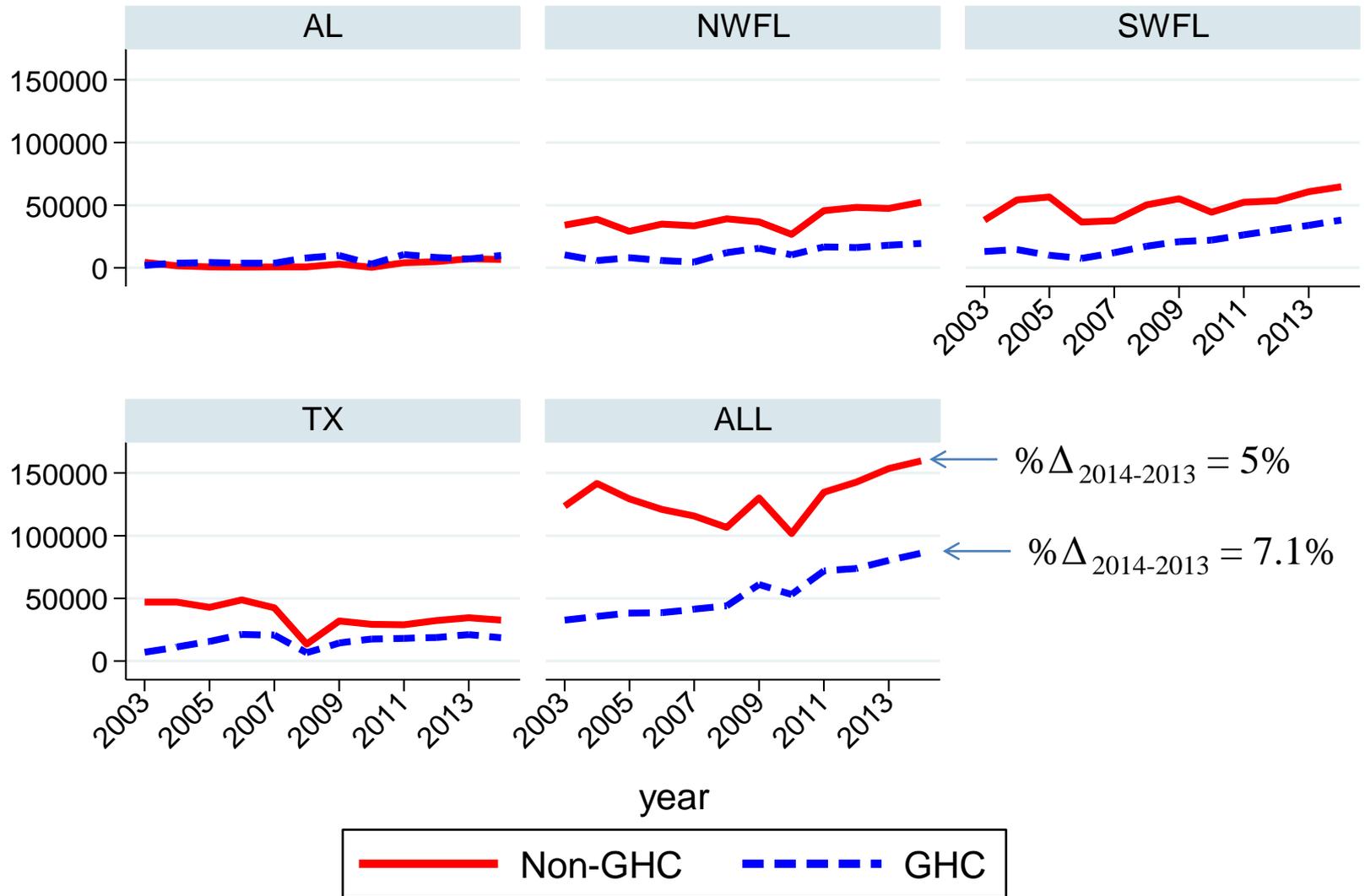
Number of Total Trips



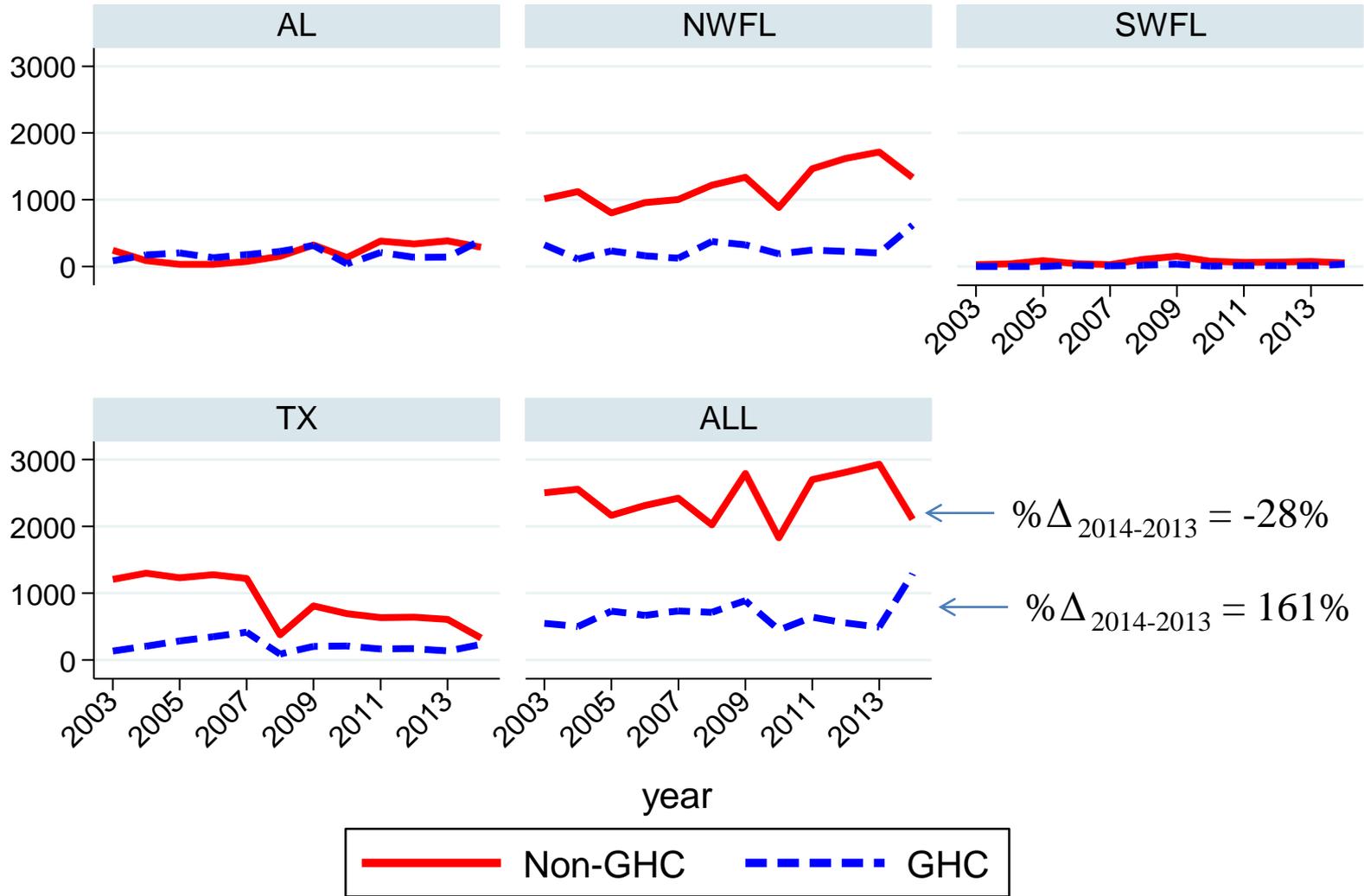
year



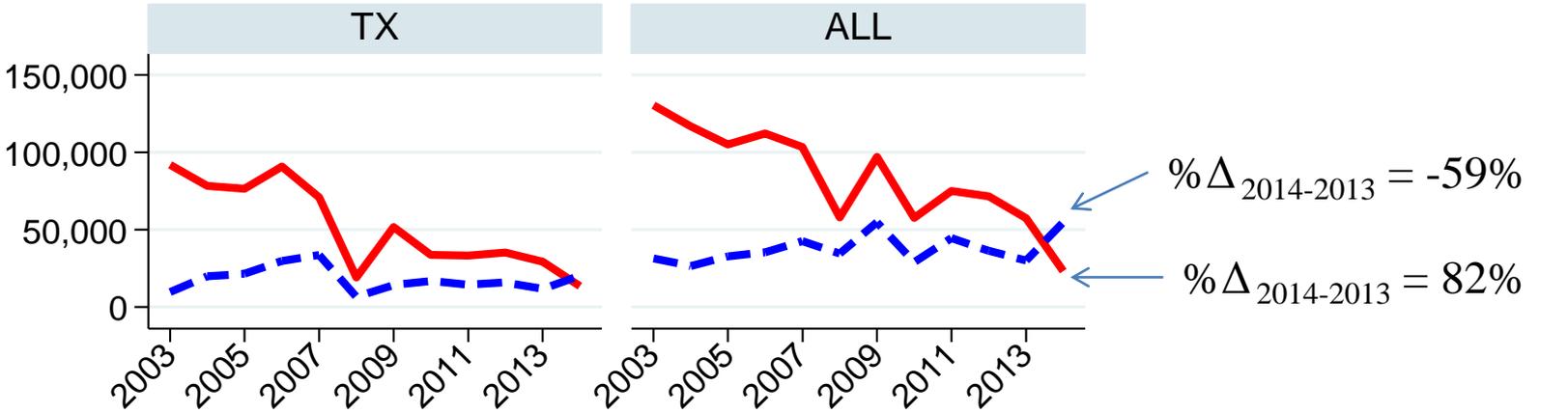
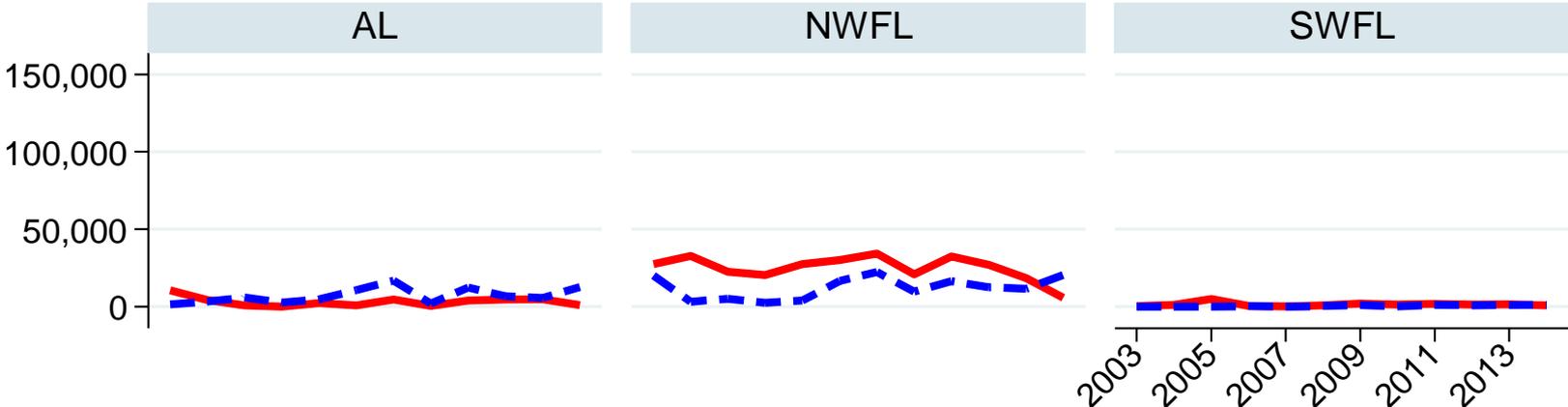
Number of Total Angler-Days



Number of Red Snapper Trips



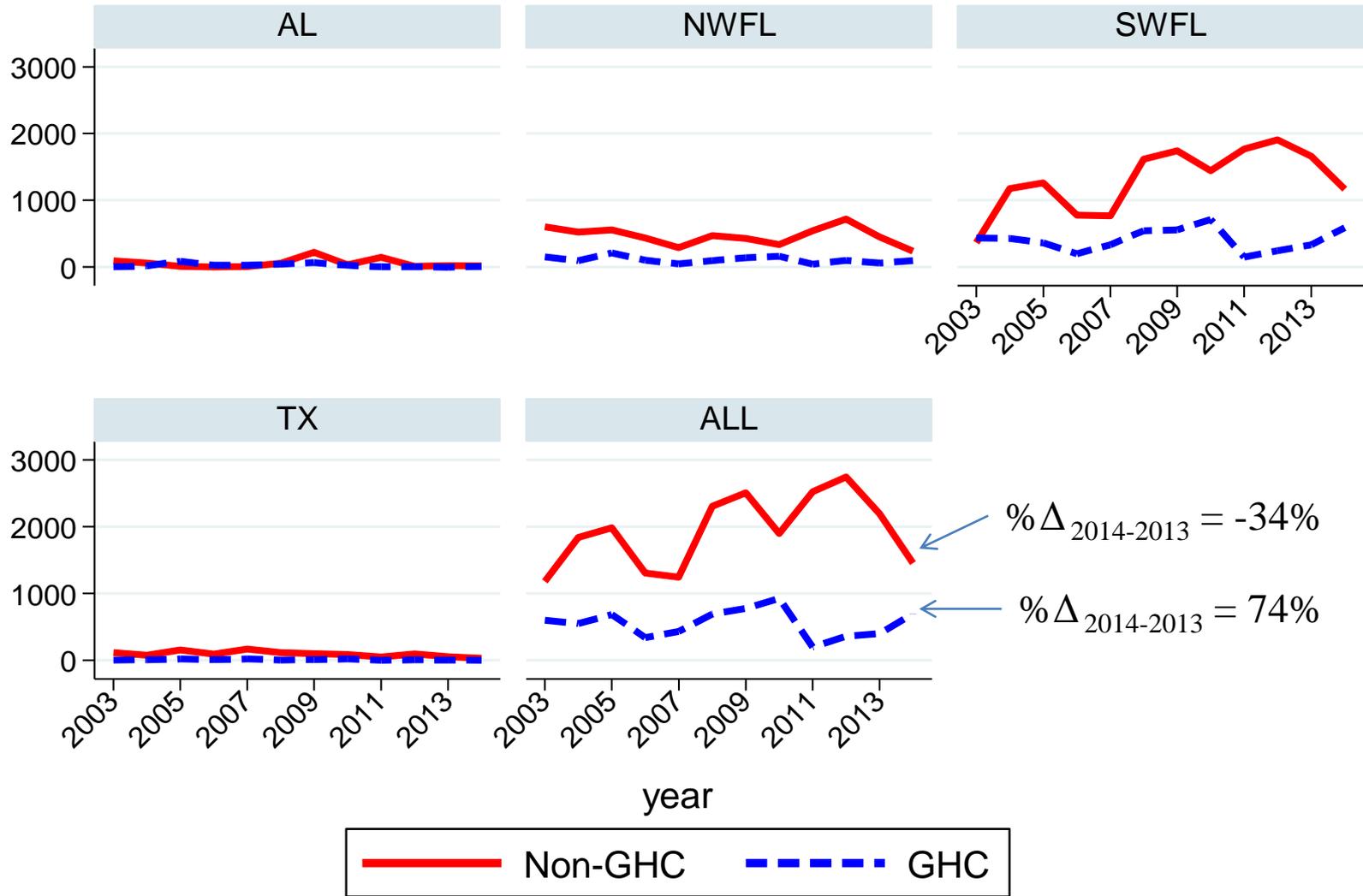
Red Snapper Landings



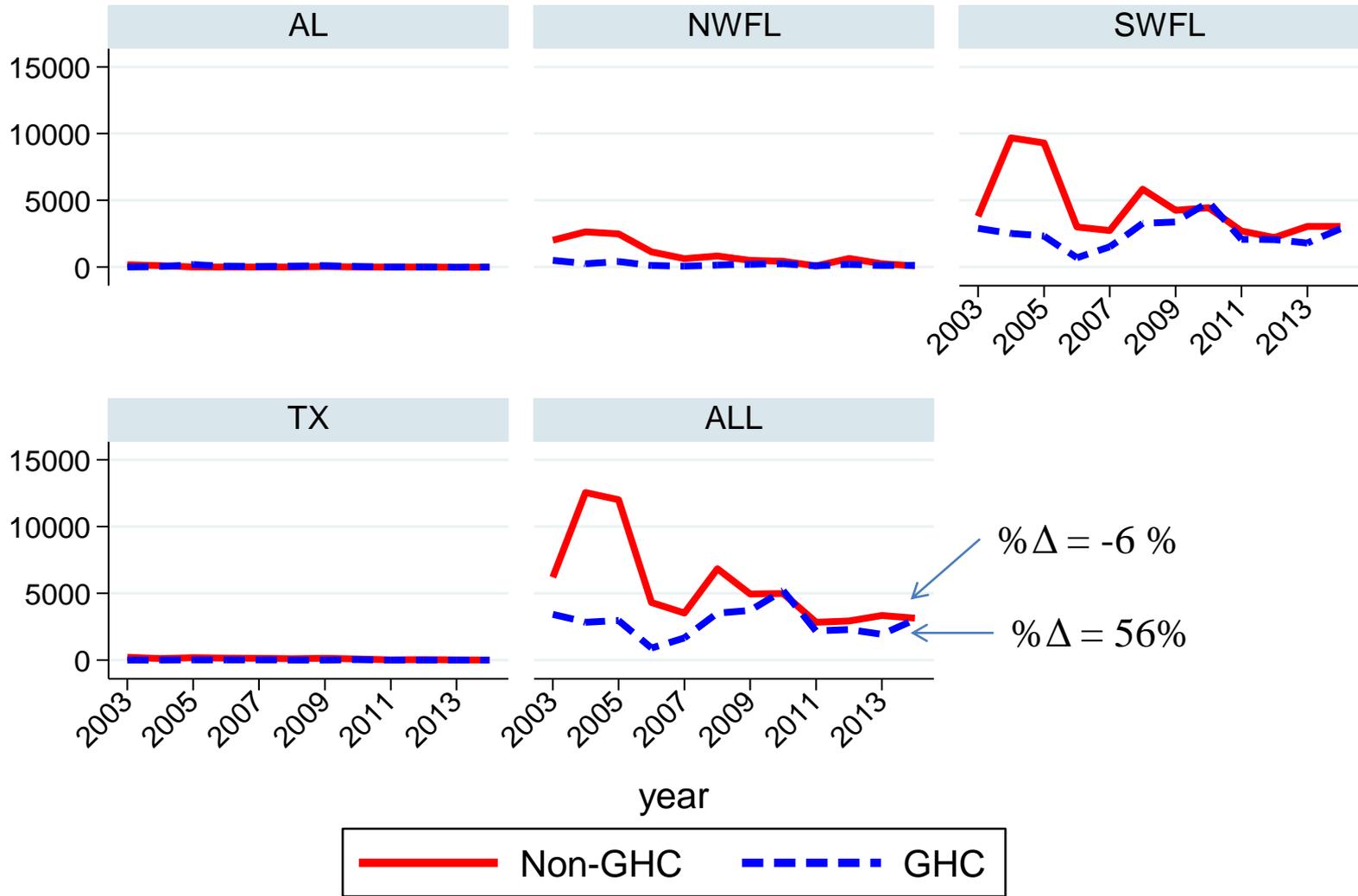
year



Number of Gag Trips



Gag Landings



Summary

- Stable trips for GHC vs. a 6% increase for non-GHC
- Similar trends in angler-days across the 2 groups
- Large increases in red snapper trips and increases in landings for GHC vs. large reductions in both for non-GHC
 - A very similar, but more muted pattern for gag

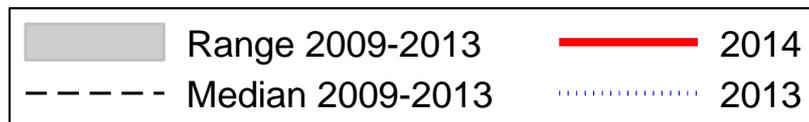
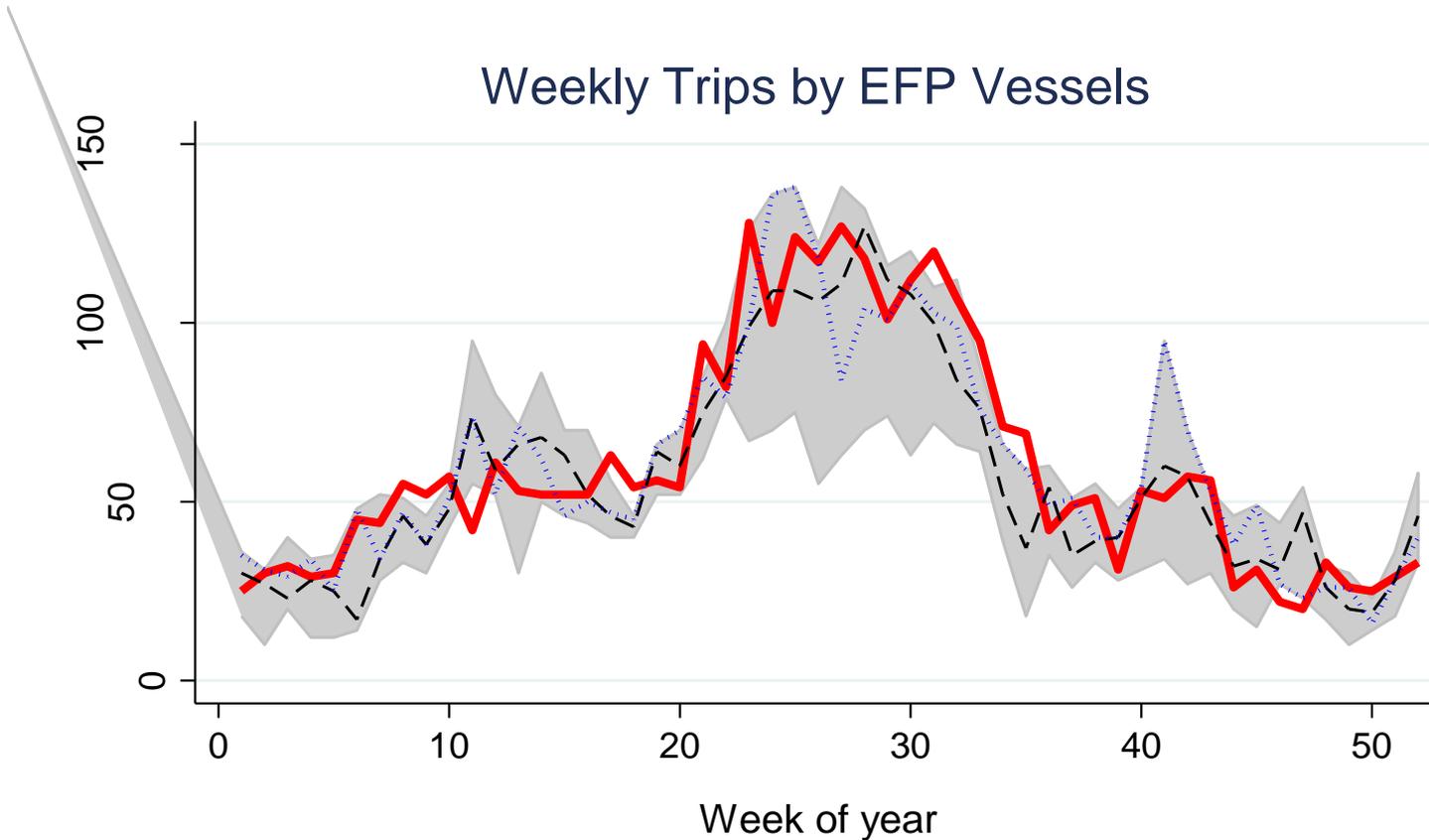
II. GHC vessels only: Comparisons through time

1. Allocation of trips/fish over the season
2. Allocation of fish per customer
3. Trip duration
4. Discards

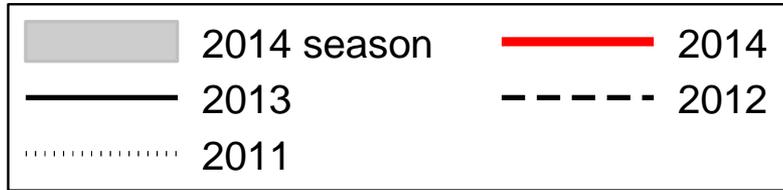
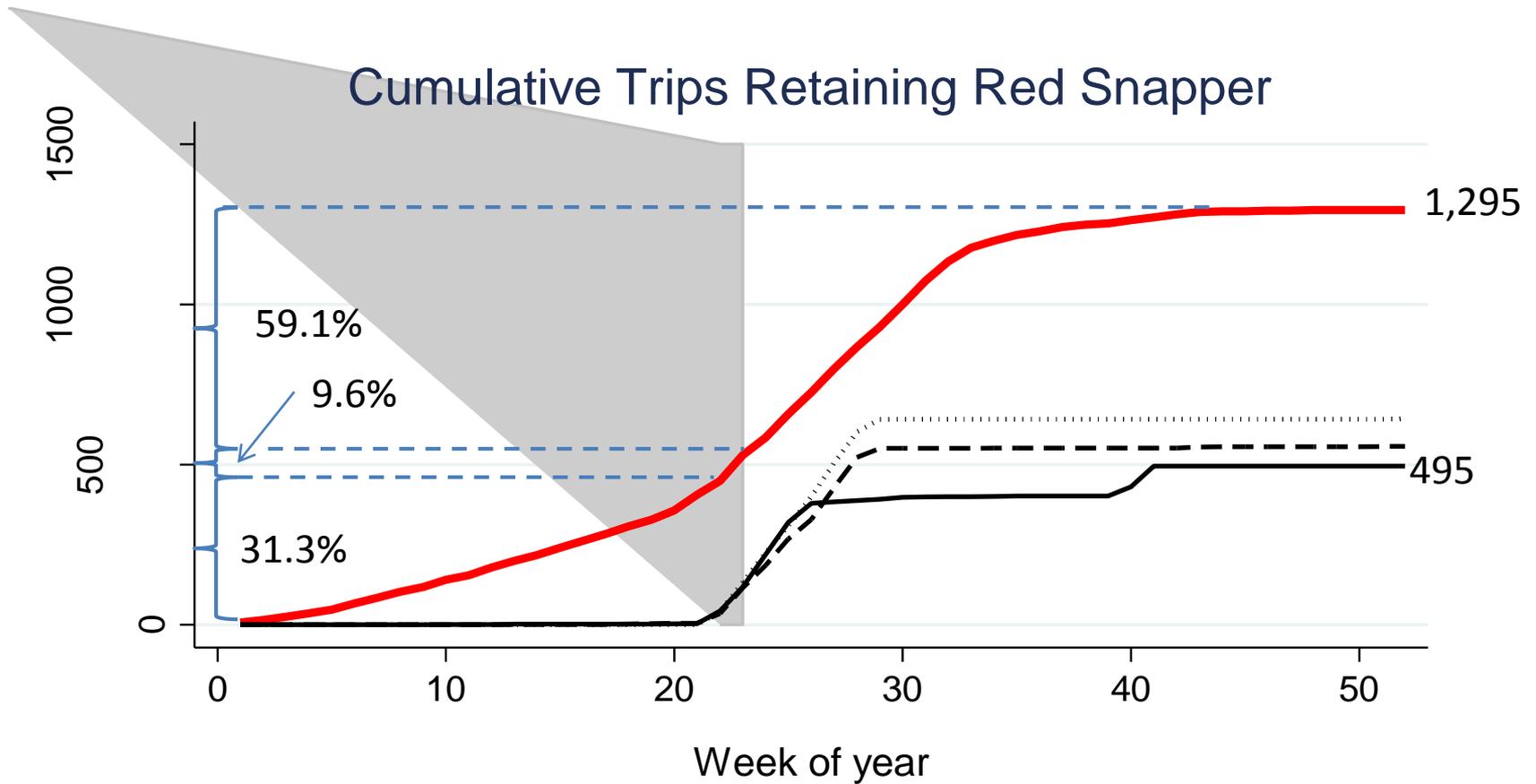
Allocation of trips and landings over time

Overall timing – all trips

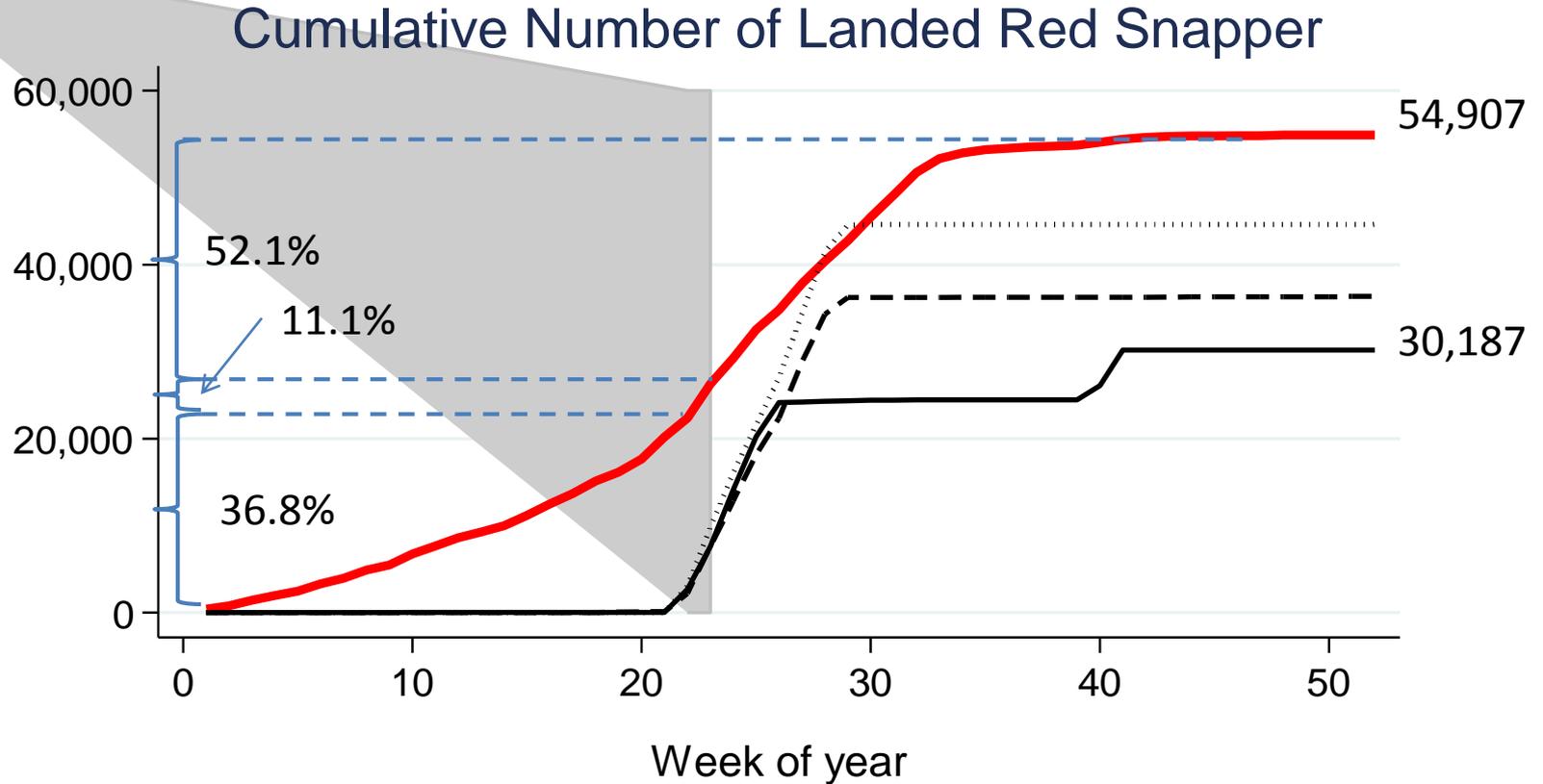
Weekly Trips by EFP Vessels



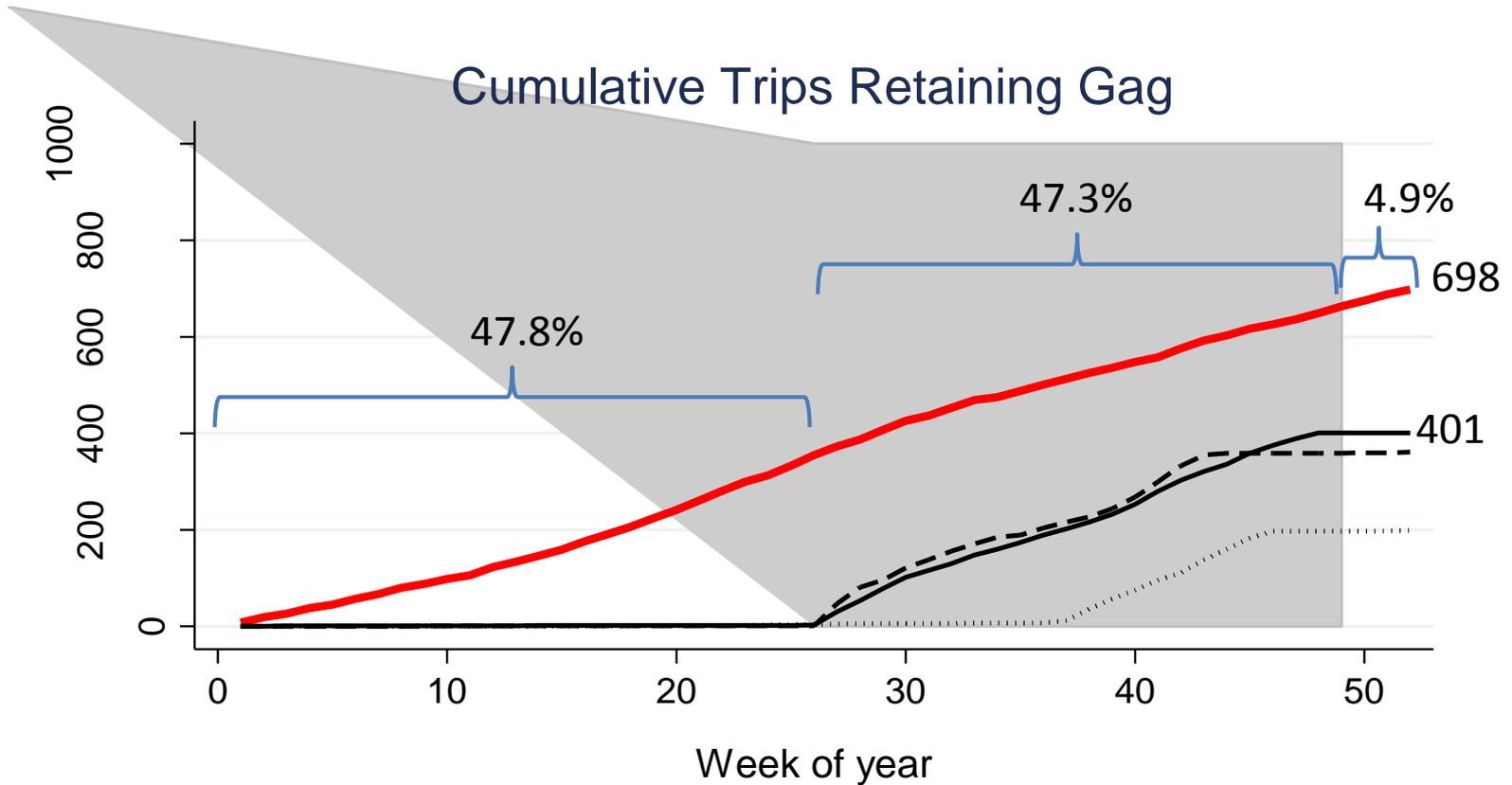
Trips retaining red snapper



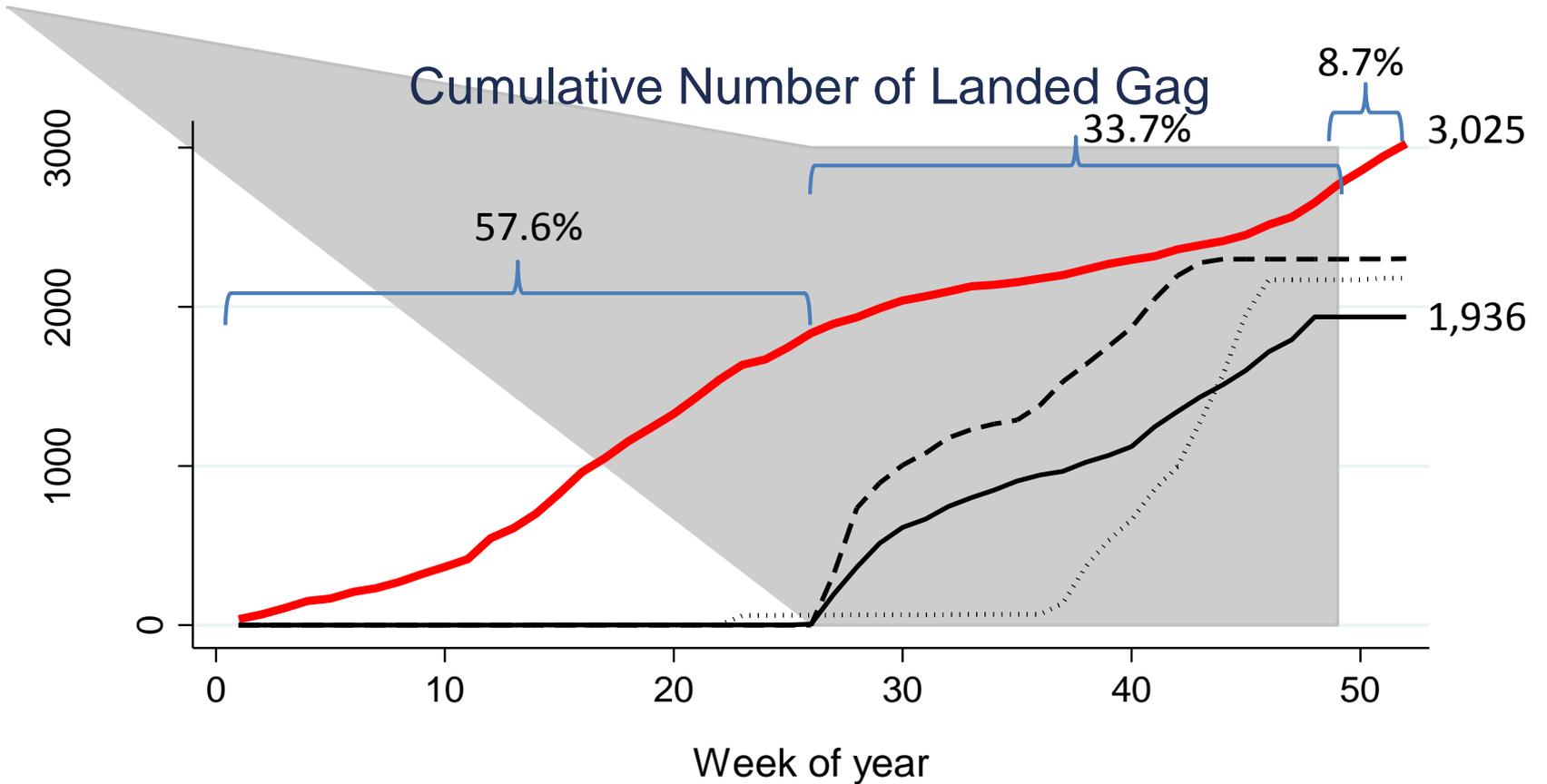
Allocation of red snapper landings



Trips retaining gag

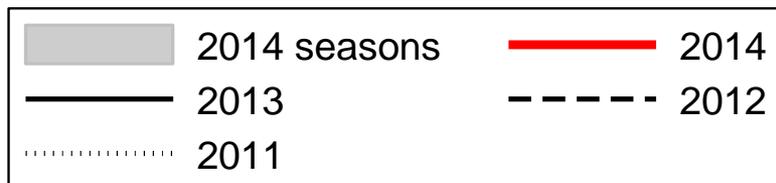
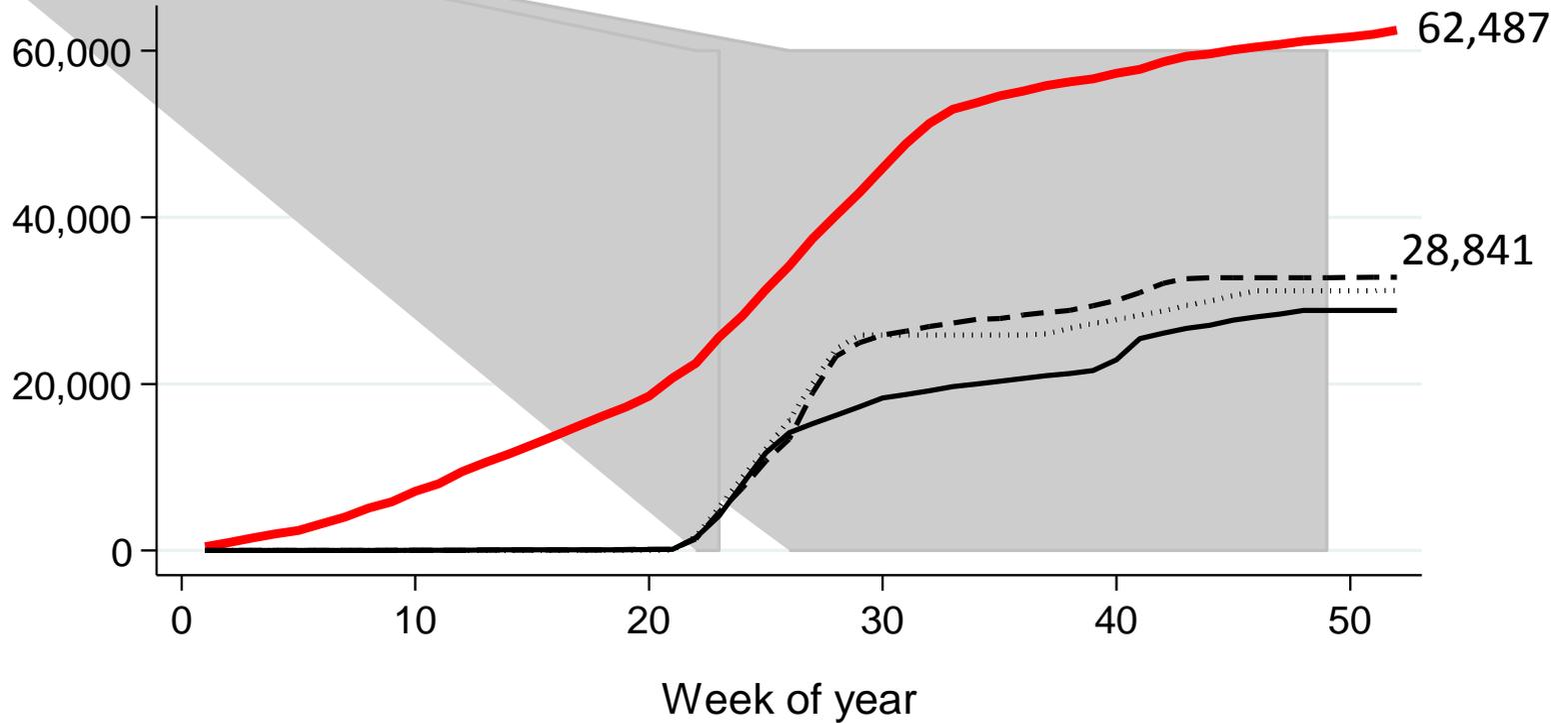


Allocation of gag landings



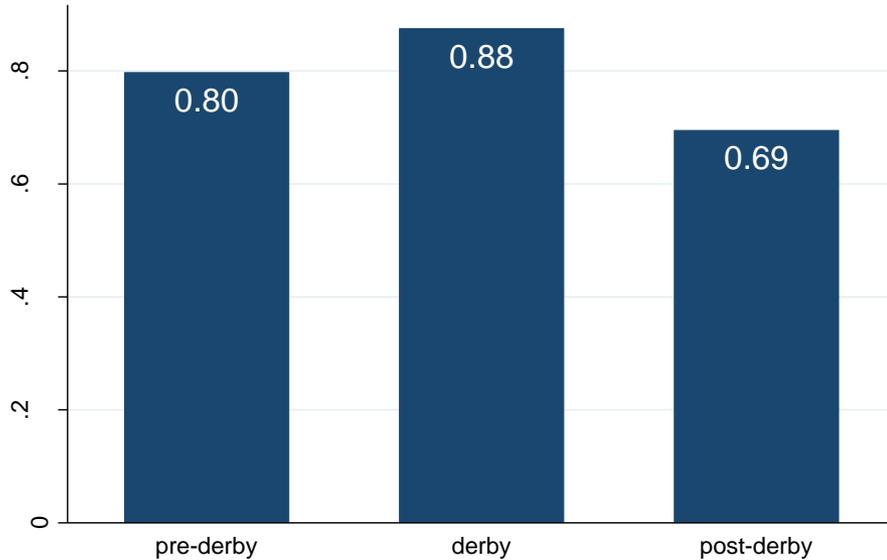
Access to all EFP species

Cumulative Anglers on Trips with Retained EFP Species

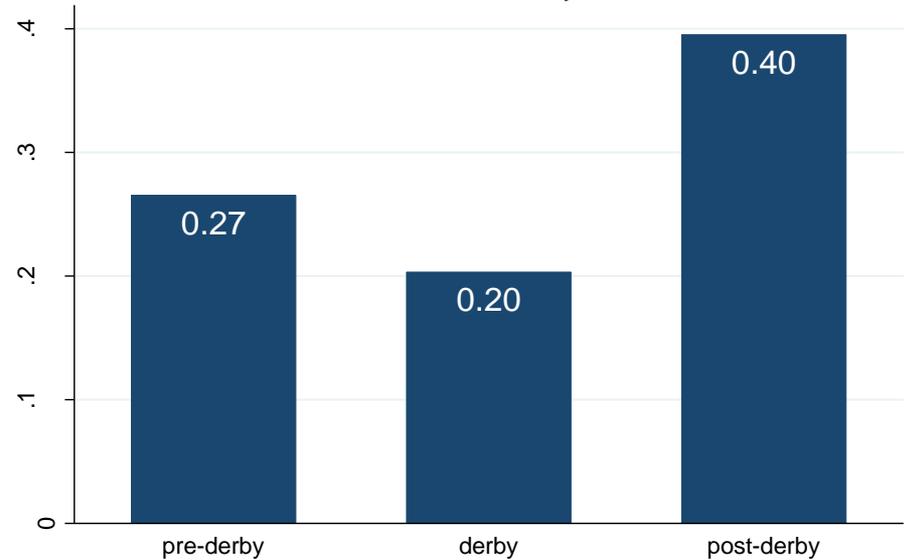


Probability of EFP species trips

Proportion of 2014 GHC trips retaining red snapper
No SW Florida



Proportion of 2014 GHC trips retaining gag
FL and AL only

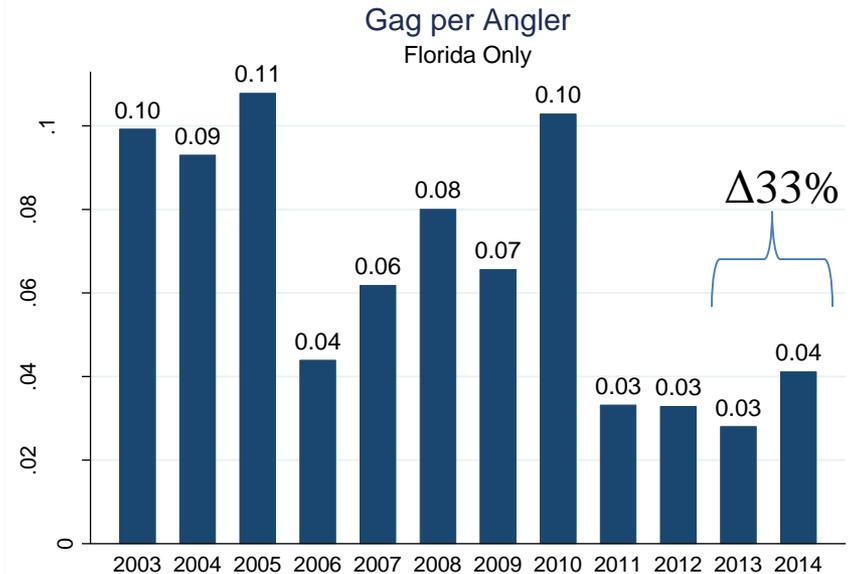
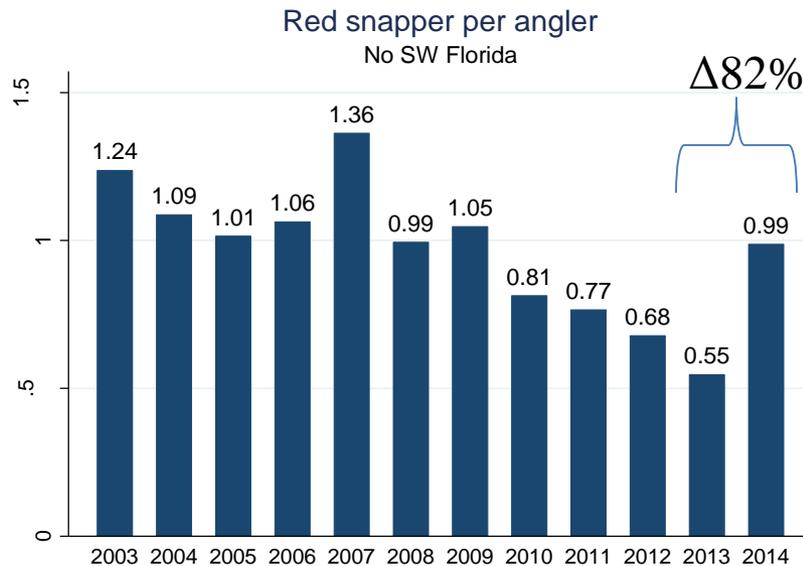


Summary

- The number and overall seasonal distribution of trips did not change much in 2014
- BUT
 - Landings (and trips) of EFP species are much more evenly spread across the year
 - Substantial winter/spring fishing for both red snapper and gag
 - Little red snapper fishing after late July, perhaps due to expectations of fishery closure as a result of MSA 407(d)
 - Substantial increases in the number of customers on EFP-retaining trips
 - Partially driven by the larger 2014 allocation
 - The plurality of red snapper and gag trips/landings occurred outside of their respective open seasons

Allocation of landings per customer

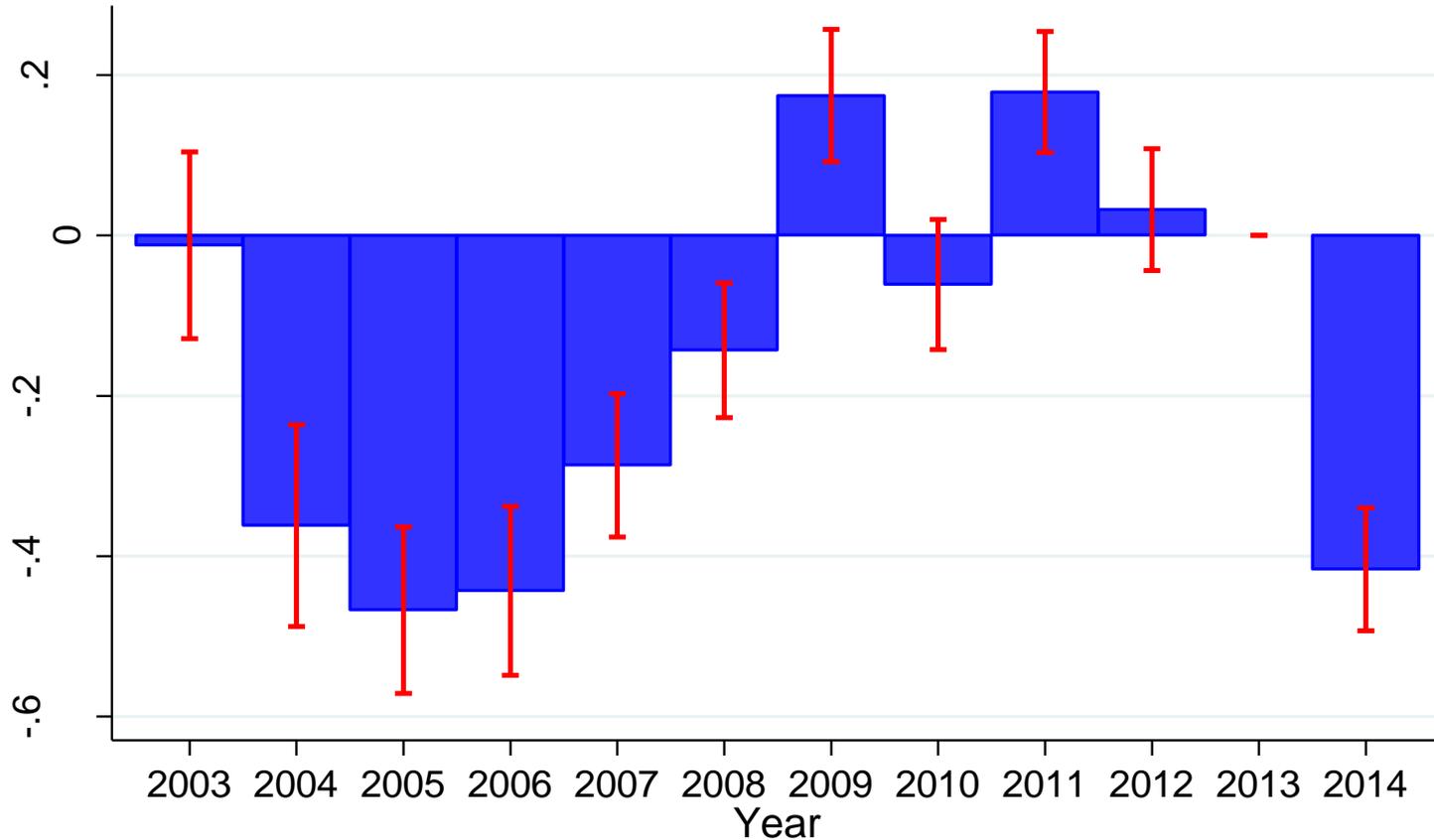
Overall fish per angler – all fishing



- These calculations include all trips, even if no red snapper or gag was retained
- 2014 increases can mostly be explained on the basis of 82% (red snapper) and 56% (gag) increases in total landings
- BUT trips retaining EFP species have increased by even more (161% for red snapper)
- So how are headboat owners closing the gap?

Red snapper/angler on red snapper trips

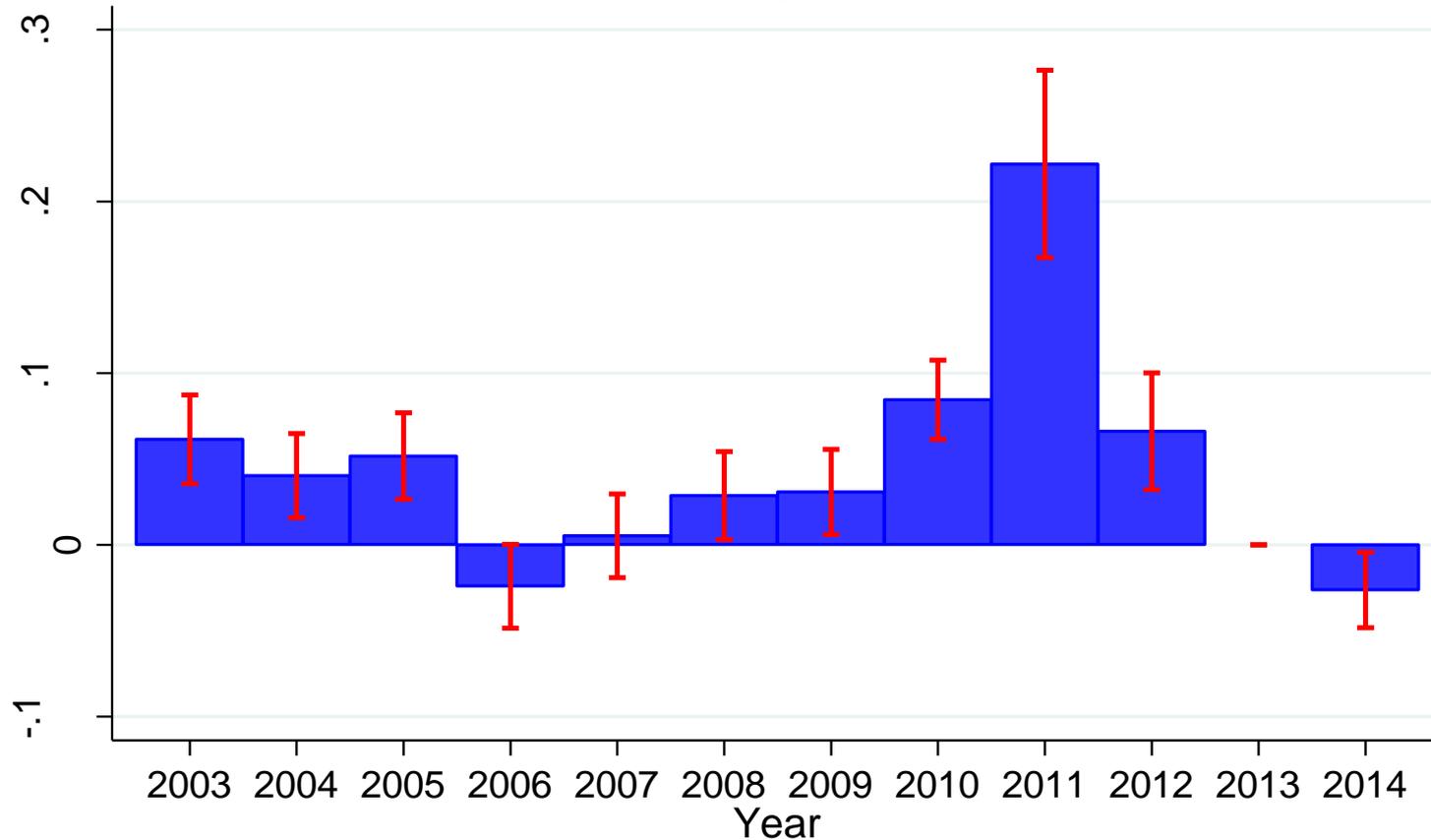
Red Snapper per Angler (base=2013)
All Red Snapper Trips



Estimates from regression model with vessel and month fixed effects. Weighted by anglers per trip

Gag/angler on gag trips

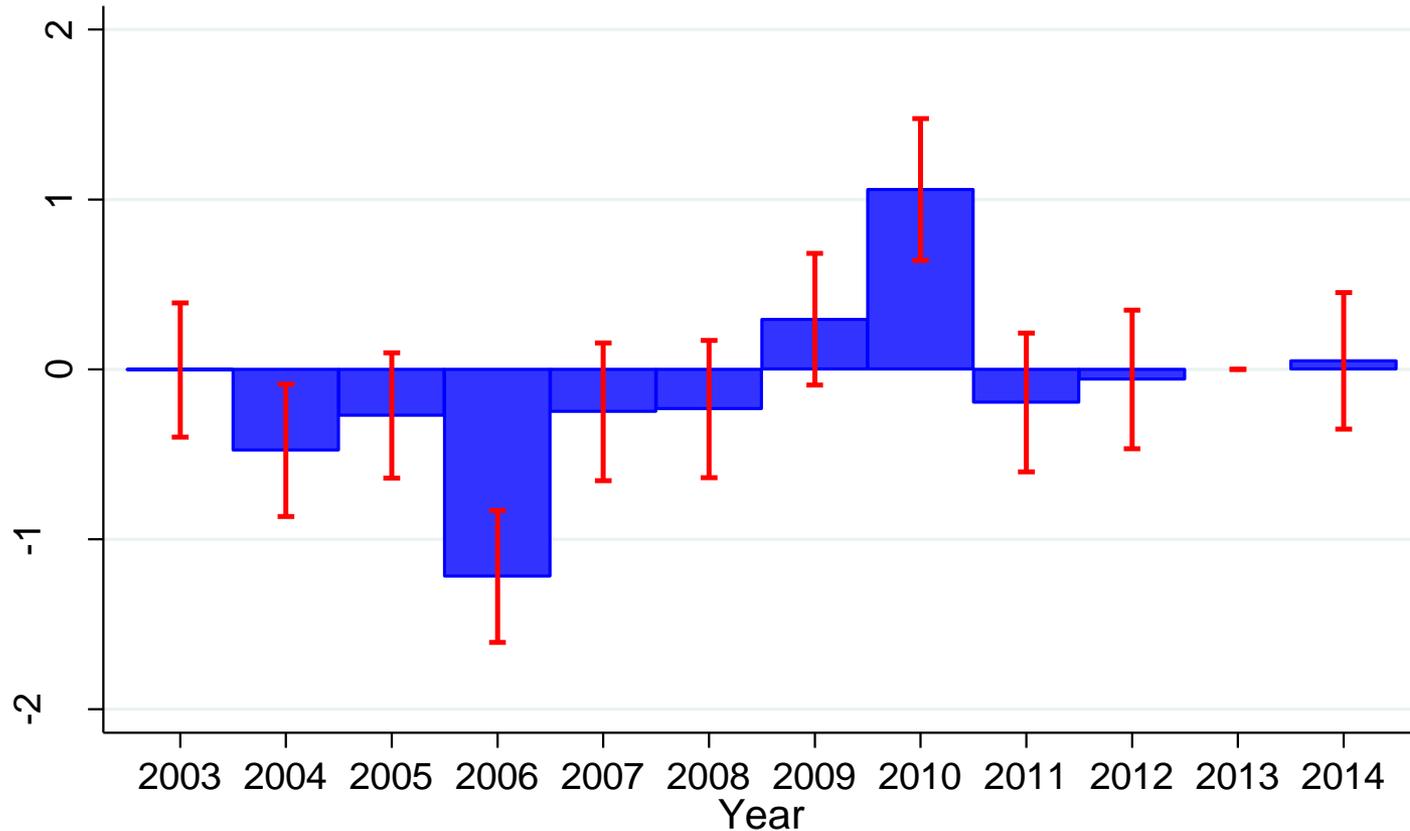
Gag per Angler (base=2013)
All Gag Trips



Estimates from regression model with vessel and month fixed effects. Weighted by anglers per trip

All landed fish/angler

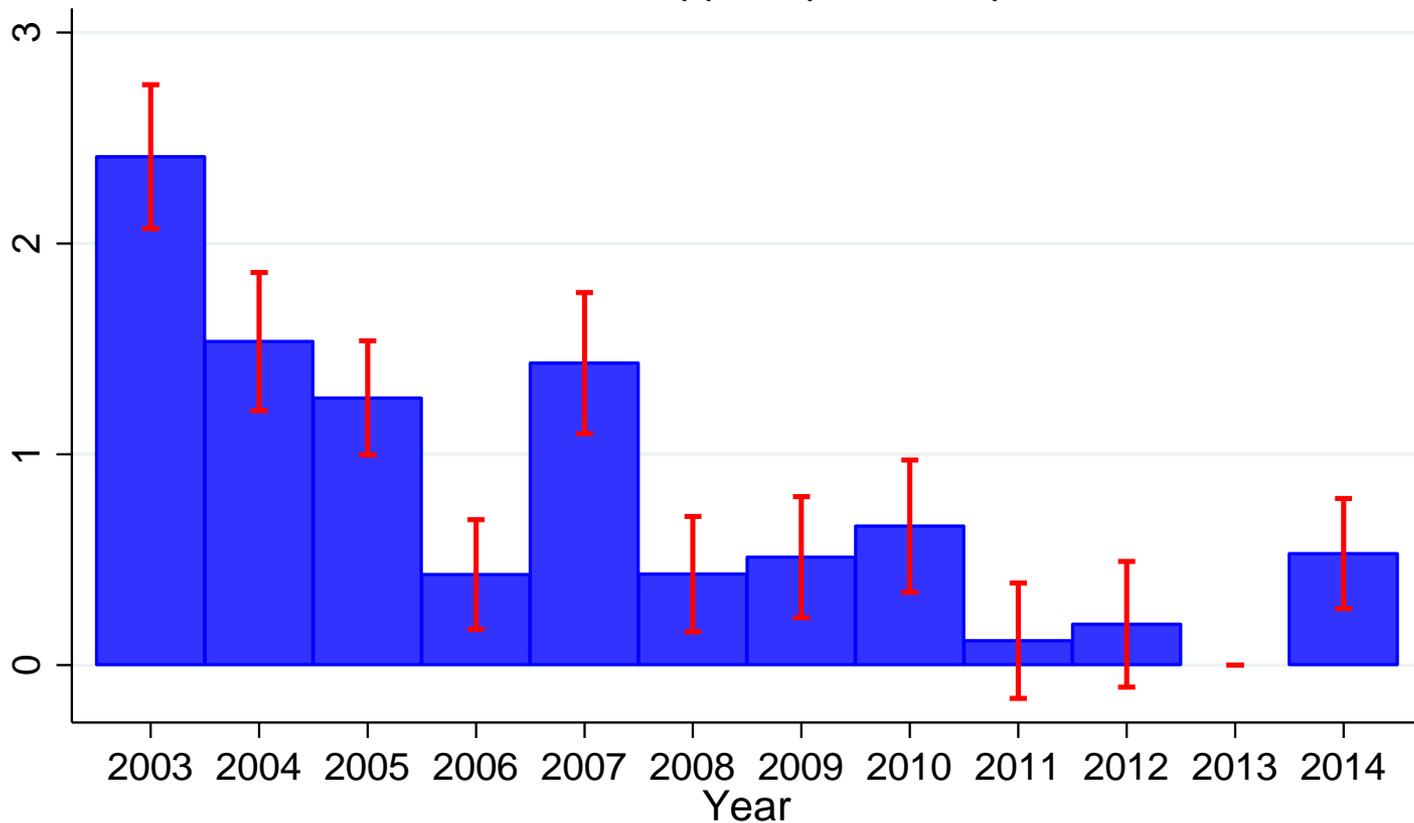
All Landings per Angler (base=2013)
All EFP Species Trips



Estimates from regression model with vessel and month fixed effects. Weighted by anglers per trip

Non-EFP reef fish/angler

Non-EFP Reef Fish Landings per Angler (base=2013)
All Red Snapper Species Trips



Estimates from regression model with vessel and month fixed effects. Weighted by anglers per trip. Reef Fish are species managed under the Reef Fish FMP

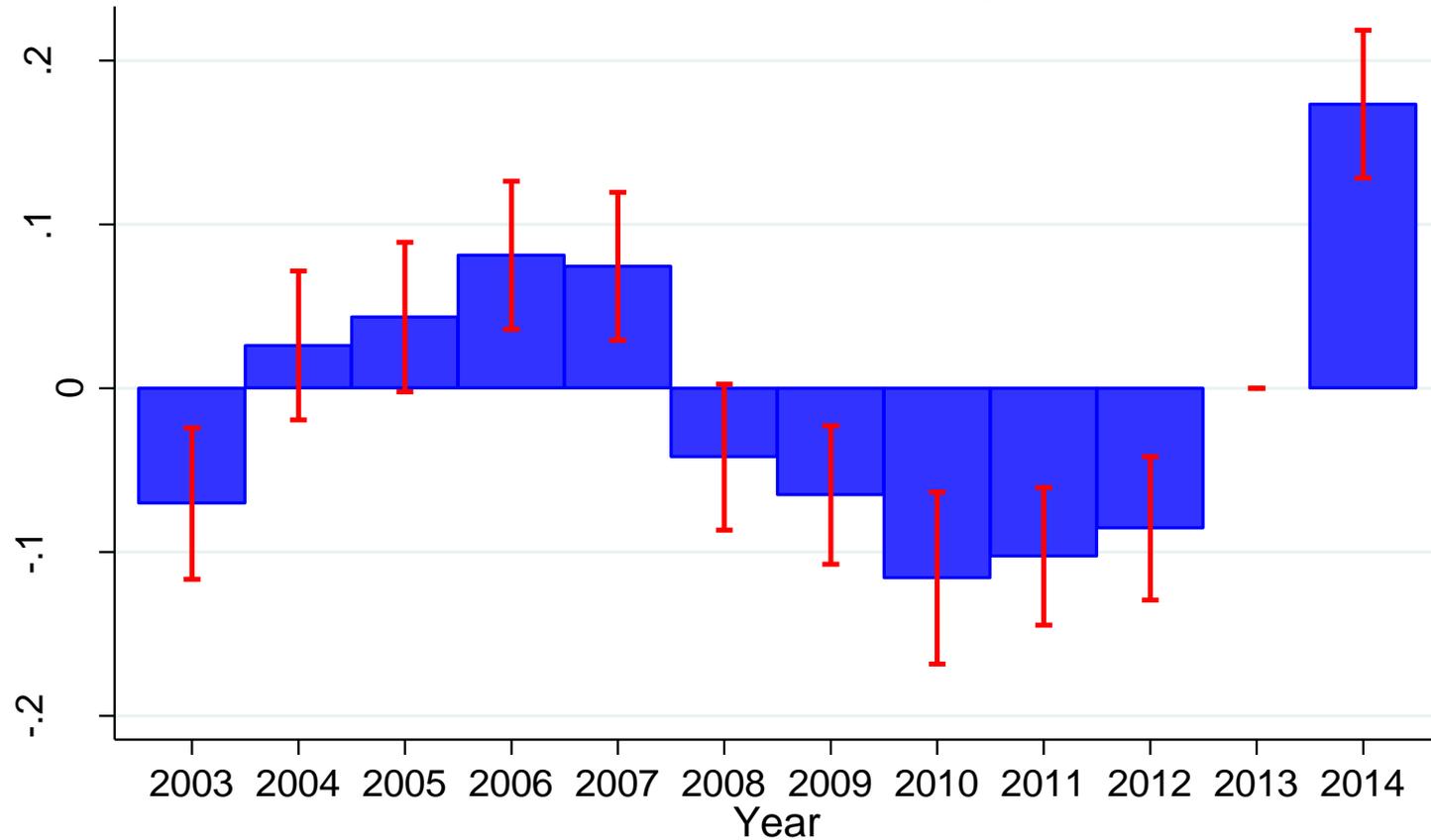
Summary

- Headboat owners have spread their allocations of red snapper over a larger number of anglers by reducing retention per angler on red snapper trips
 - Anecdotal evidence of limiting customers to 1 red snapper on special “out of season” snapper trips in exchange for retaining other species
- But the overall number of fish (and reef fish) per angler on these trips has remained stable

Changes in trip duration

Frequency of full-day trips

Change in Probability of a Daytrip (base=2013)
Red Snapper Trips Only



Estimates derived from a linear probability model with vessel, month and weekend fixed effects.

Discards of EFP species

$$\frac{\text{Discards}}{\text{Angler - hours}} = \frac{\text{Discards}}{\text{Catch}} \times \frac{\text{Catch}}{\text{Angler - hours}}$$

Discard per unit of fishing effort, or unit of recreational service provided

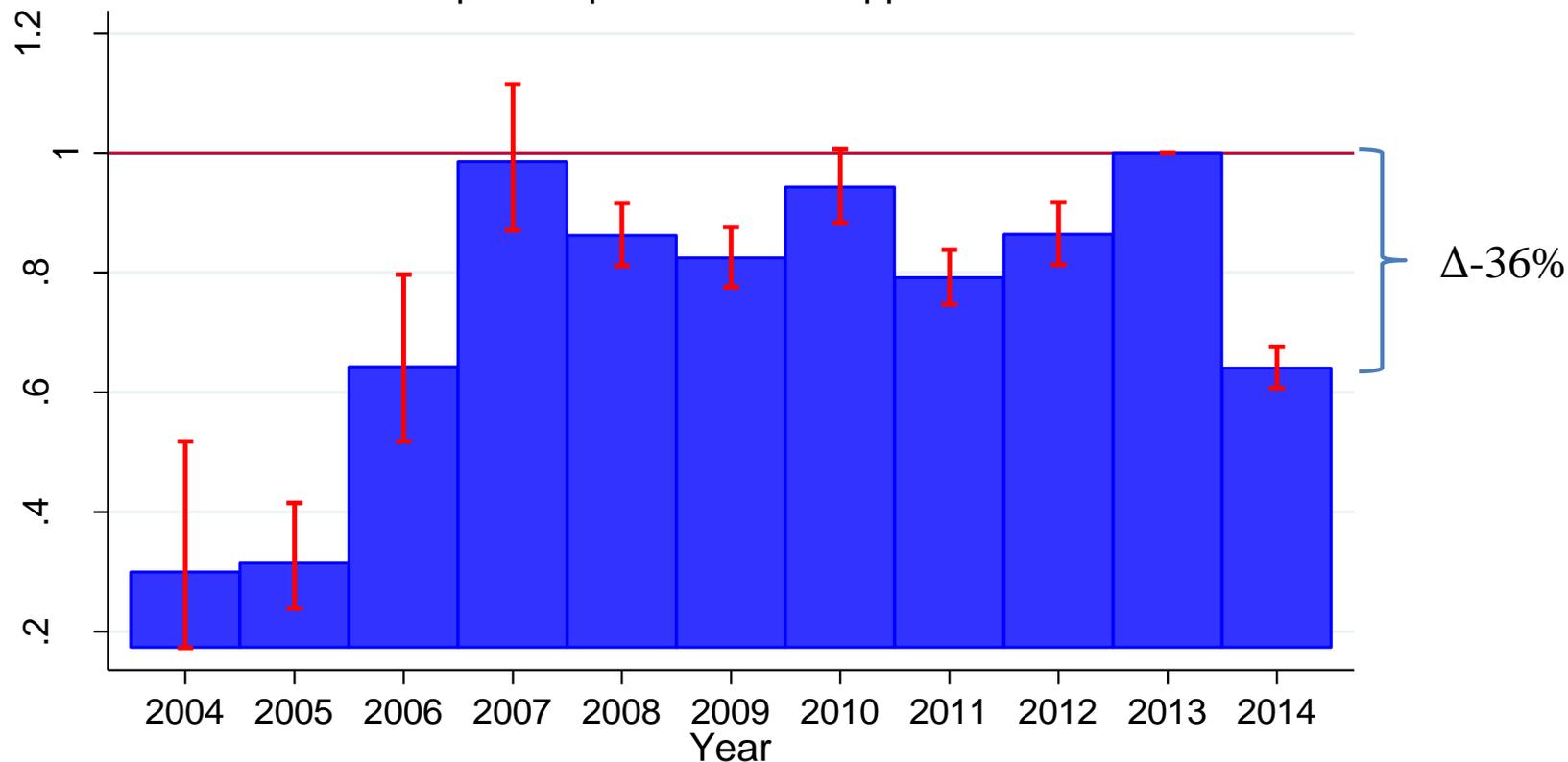
Discards per unit of catch (the discard rate)

Catch per unit effort

Red snapper discard rates (discard/catch)

Relative Discard Rate of Red Snapper (Discard/Catch)

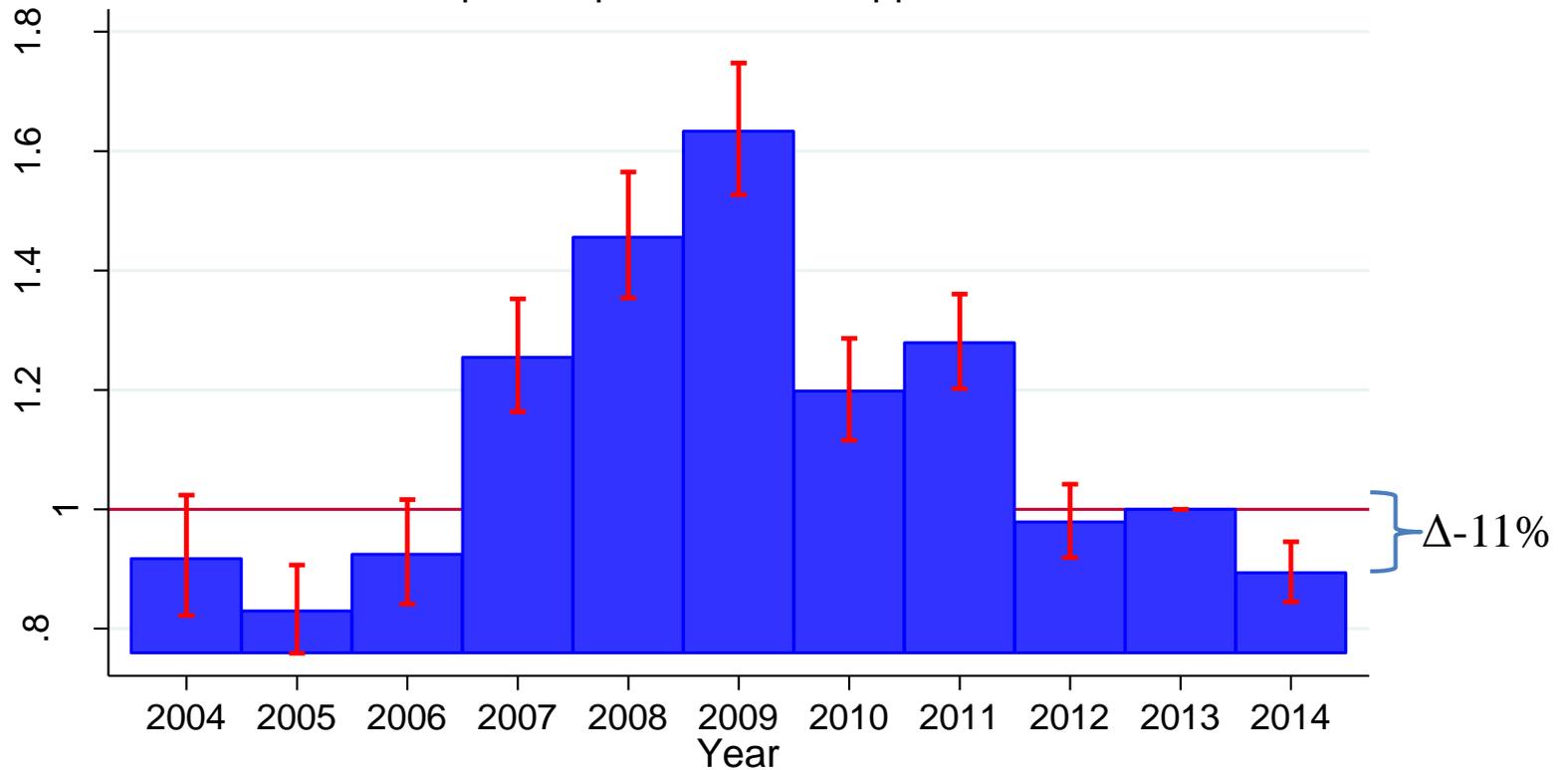
Trips with positive red snapper catch



Estimates derived from a Poisson regression model with vessel fixed effects and total red snapper catch as an exposure variable.

Red snapper CPUE (catch/angler-hour)

Relative Catch Rate of Red Snapper (Catch/Angler Hour)
Trips with positive red snapper catch



Estimates derived from a Poisson regression model with vessel fixed effects and estimated angler-hours as an exposure variable.

Red snapper (discards/angler-hours)

$$\frac{\textit{Discards}}{\textit{Angler - hours}} = \frac{\textit{Discards}}{\textit{Catch}} \times \frac{\textit{Catch}}{\textit{Angler - hours}}$$

57% of 2013
levels

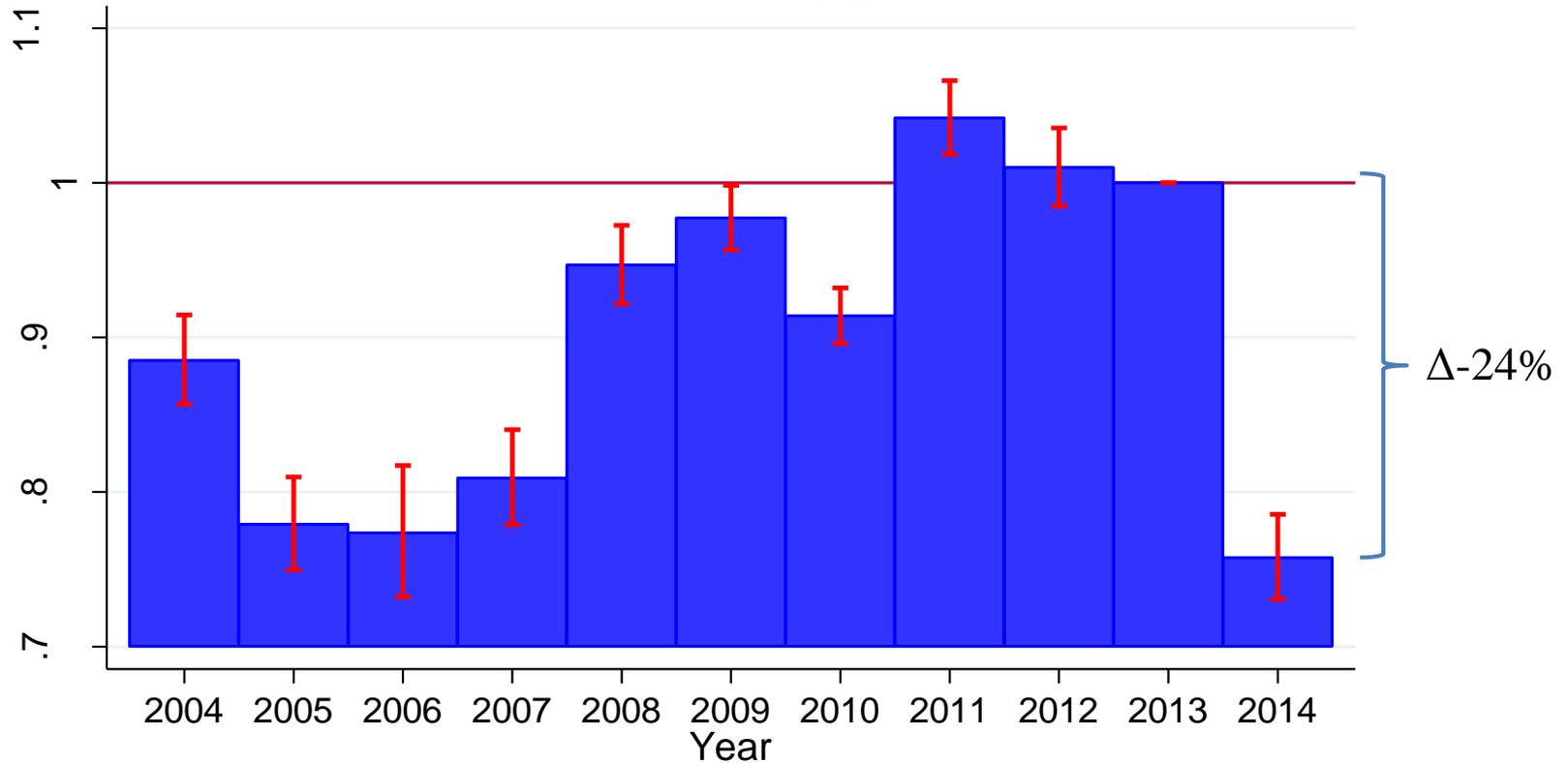
64% of 2013
levels

89% of 2013
levels

Gag discard rates (discard/catch)

Relative Discard Rate of Gag (Discard/Catch)

Trips with positive gag catch

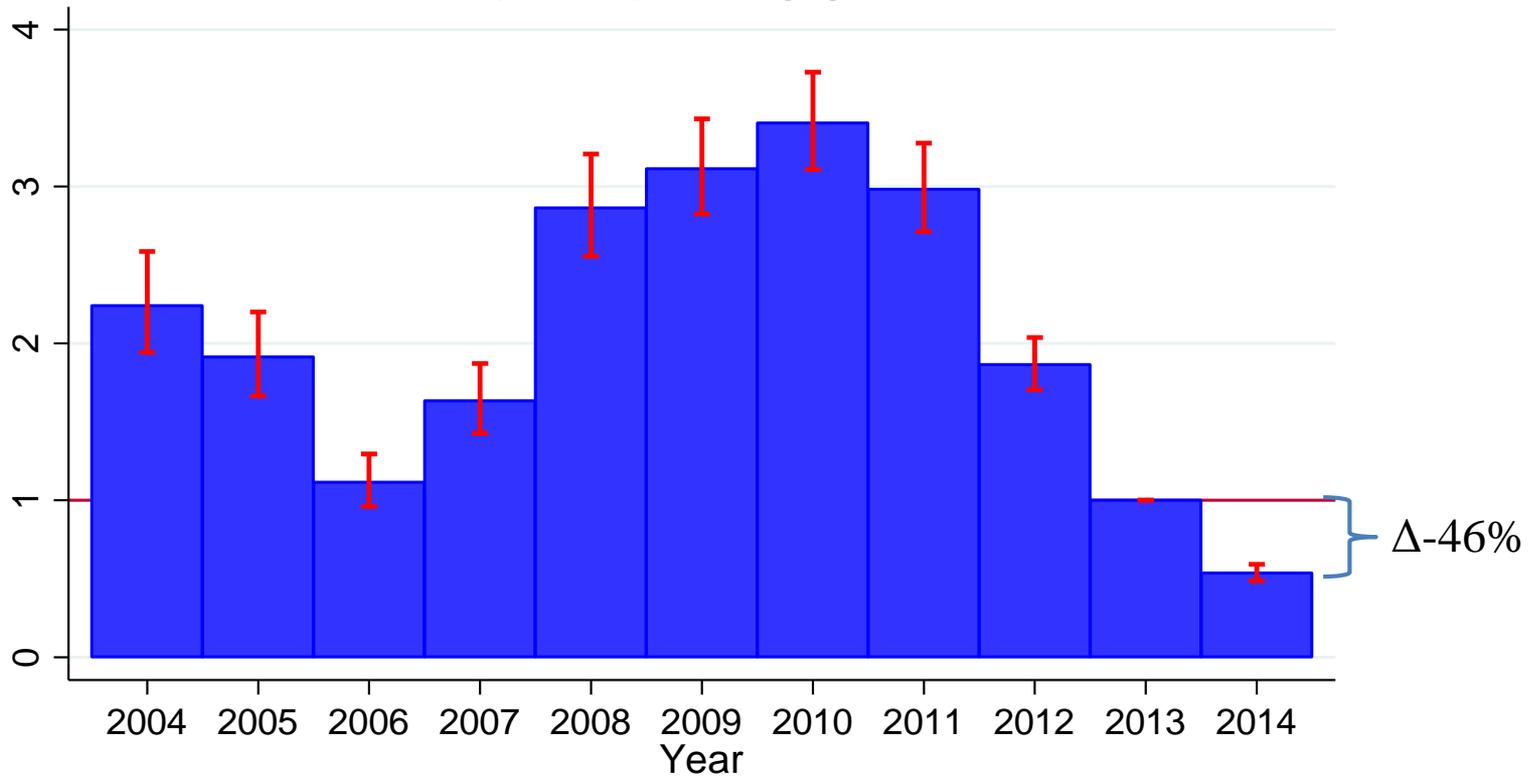


Estimates derived from a Poisson regression model with vessel fixed effects and total gag catch as an exposure variable.

Gag CPUE (catch/angler-hour)

Relative Catch Rate of Gag (Catch/Angler Hour)

Trips with positive gag catch



Estimates derived from a Poisson regression model with vessel fixed effects and estimated angler-hours as an exposure variable.

Gag (discards/angler-hours)

$$\frac{\textit{Discards}}{\textit{Angler - hours}} = \frac{\textit{Discards}}{\textit{Catch}} \times \frac{\textit{Catch}}{\textit{Angler - hours}}$$

41% of 2013
levels



76% of 2013
levels



54% of 2013
levels



Summary

- Discard per unit of angler effort has fallen dramatically since 2013
 - Red snapper: -43%
 - Gag: -59%
- Reduced discards have been achieved through
 - Increasing the proportion of EFP catch that is landed
 - Reducing the amount of EFP catch per unit effort

Conclusion

Conclusions

There is strong preliminary evidence that, relative to recent seasons, the EFP has:

1. Dramatically spread out the allocation of EFP species across the season
2. Provided many more anglers with the opportunity to fish for EFP species
3. Reduced discards of EFP species
4. Allocated landings of EFP species over a broader population of anglers (due to lower landings per angler)
5. Increased the share of non-EFP reef fish species in landings relative to in previous derby seasons

Changes in revenues/profits?

- An ongoing topic of research
 - Cost/revenue survey for 2014 (ongoing)
- Little obvious evidence of *overall* increases in customer demand (i.e. more anglers/trips)
- BUT
 1. Out-of-season trips are now of a higher potential quality to anglers and *could* command a higher price
 2. The shift toward more day trips may enhance net revenues
 - Higher fees with less than proportional increases in fuel costs

Ongoing research

- More rigorous treatment of the without-EFP counterfactual for GHC boats
 - Focusing on revenues and variable profits
- Changes in trip-taking behavior with respect to weather?
- Pre-test of online angler survey using 2014 data
 - Estimation of consumer surplus from EFP and possible extensions
 - 2015 season data currently being gathered for the final survey

Thank you