MRIP Evaluation and Updates to the MRIP Index

Katie Drew, ASMFC

Recreational Data Collection: MRIP

- Combination of two types of surveys:
  - Effort surveys: how many trips taken per year?
  - Angler-intercept survey: how many fish were caught per trip?
    - Species composition, disposition, length frequencies

MRIP Changes Since 2010

- Changes to the angler-intercept survey to provide more consistent sampling
- Changes to estimation method to account for clustered sample design
- Changes to the effort survey to counteract declining response rates and demographic changes in surveyed population

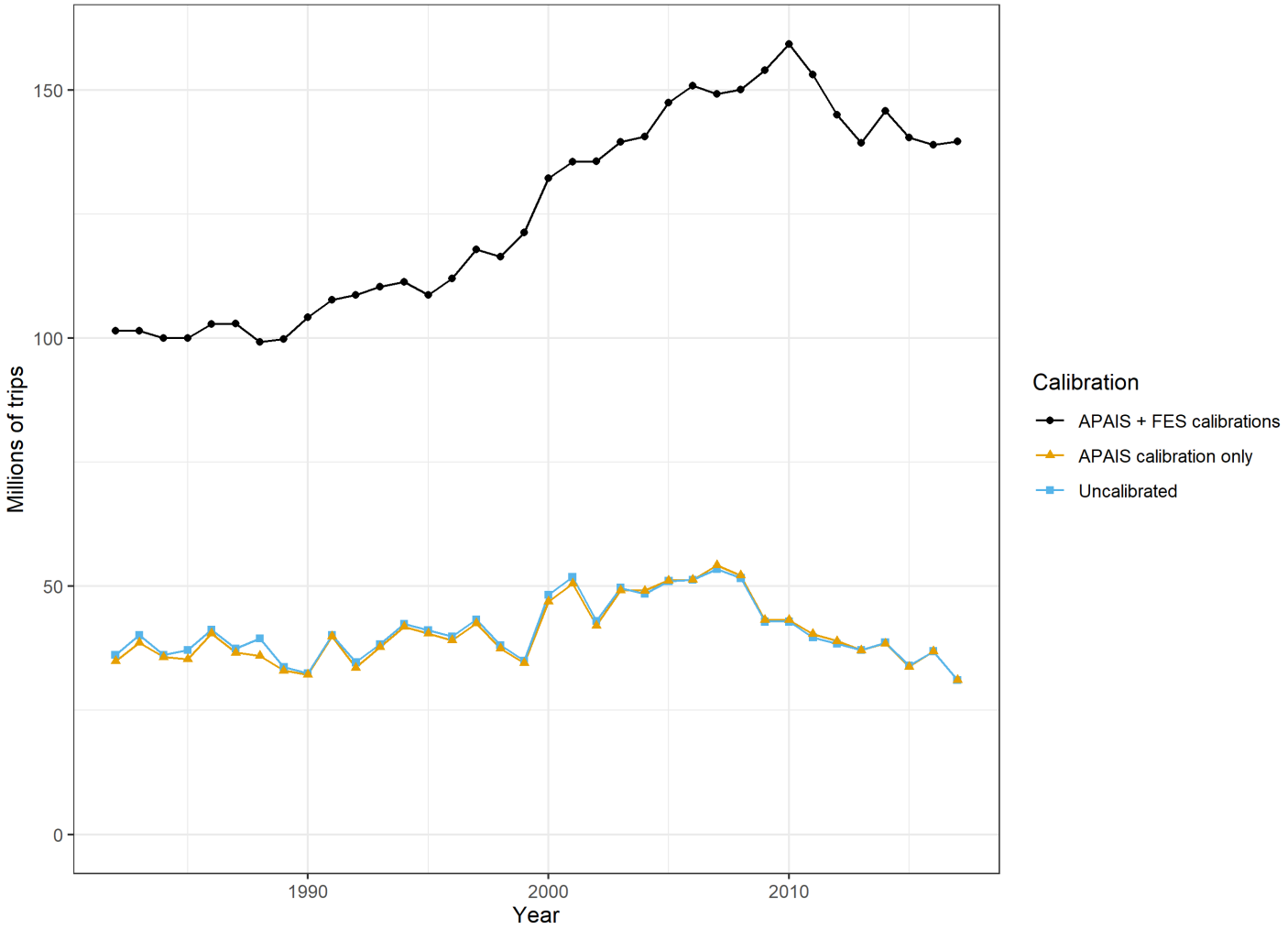
MRIP Effort Survey Changes

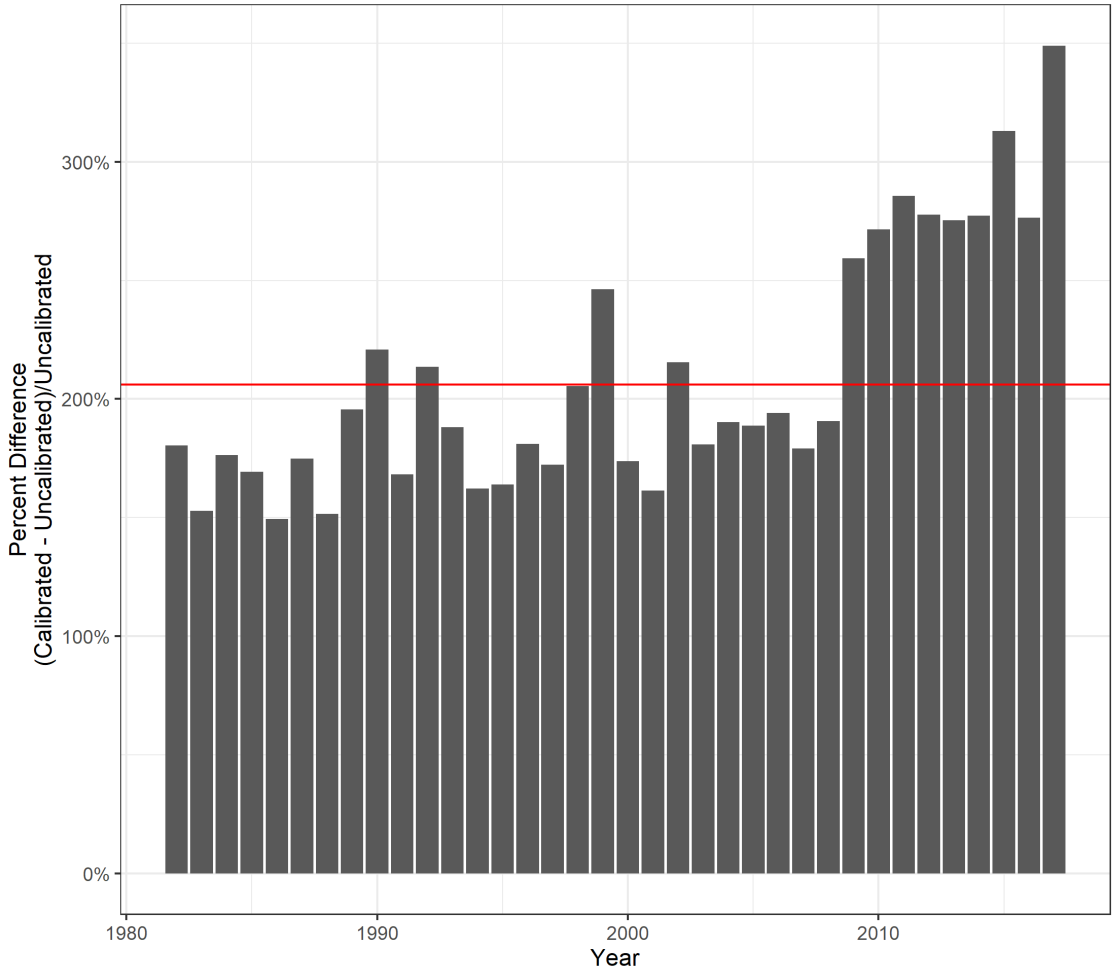
- In 2018, MRIP fully transitioned from the original Coastal Households Telephone Survey (CHTS) to estimate effort to a mail-based Fishing Effort Survey (FES)

- FES estimates of effort were consistently higher than CHTS
  - Due to: “Cold call” effect, gatekeeper effect, landline-only demographics

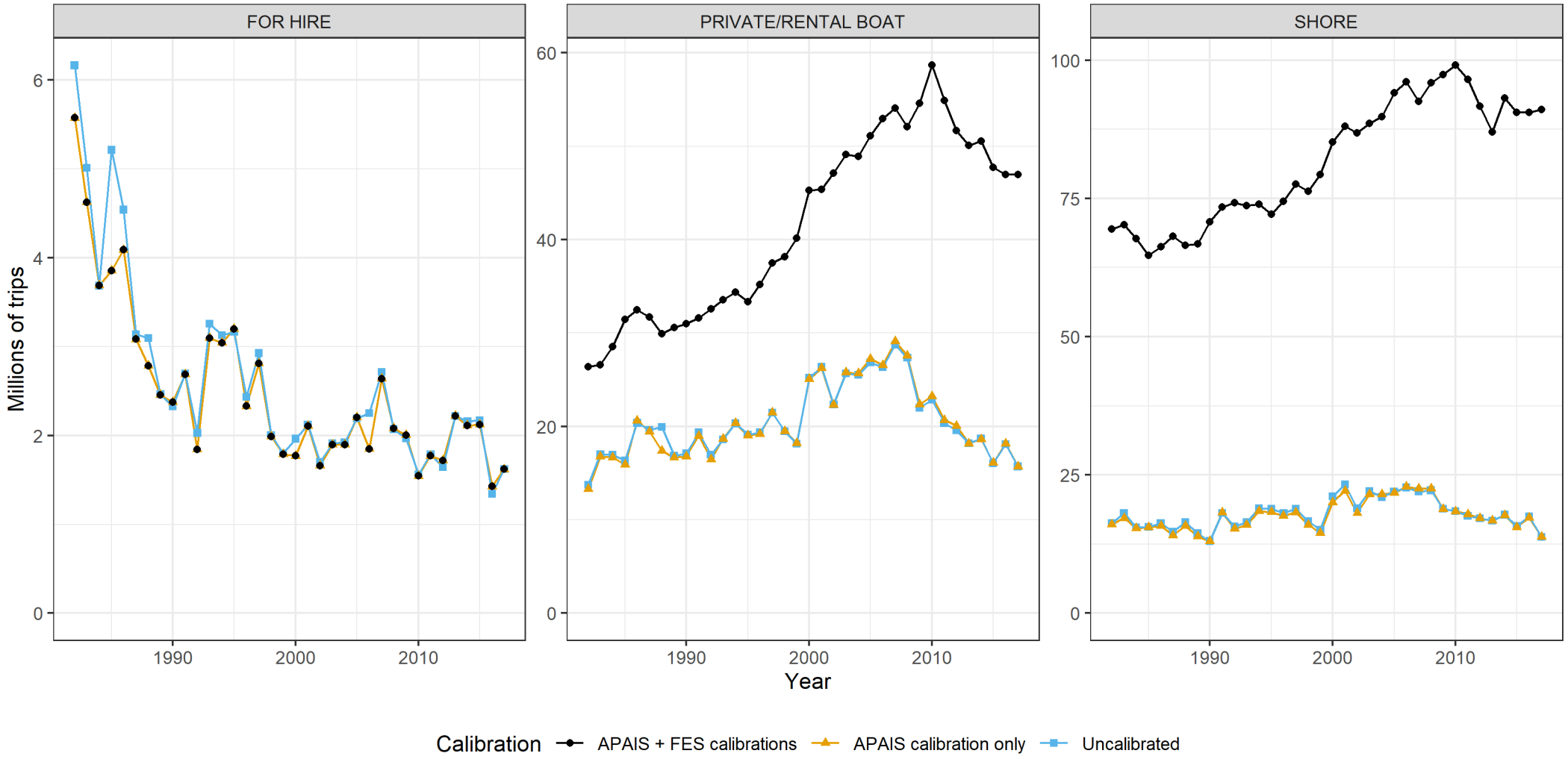
- Resulted in significant changes in total effort and total catch on the Atlantic coast
  - Different patterns by state and mode

Calibrated vs Uncalibrated Effort: Coastwide

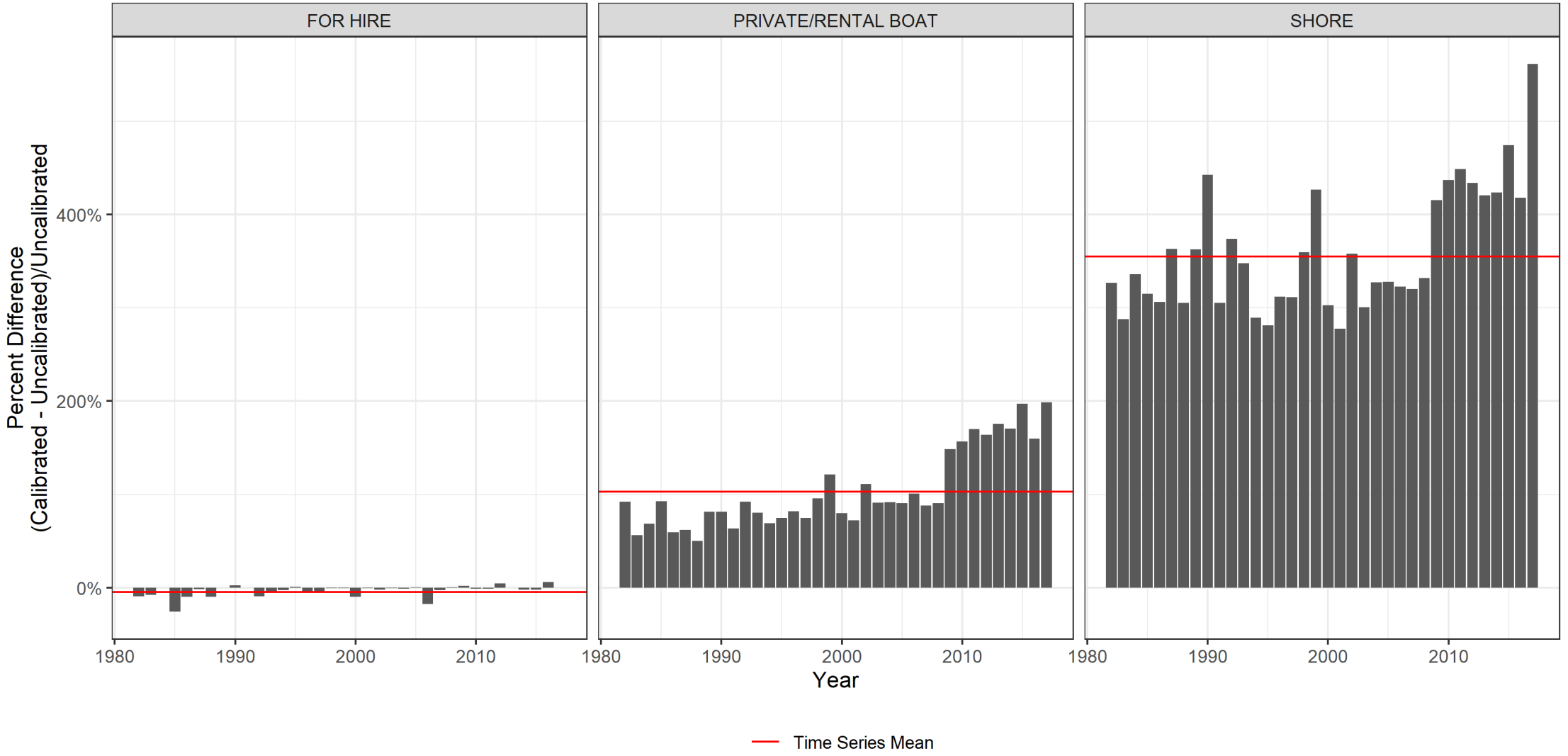




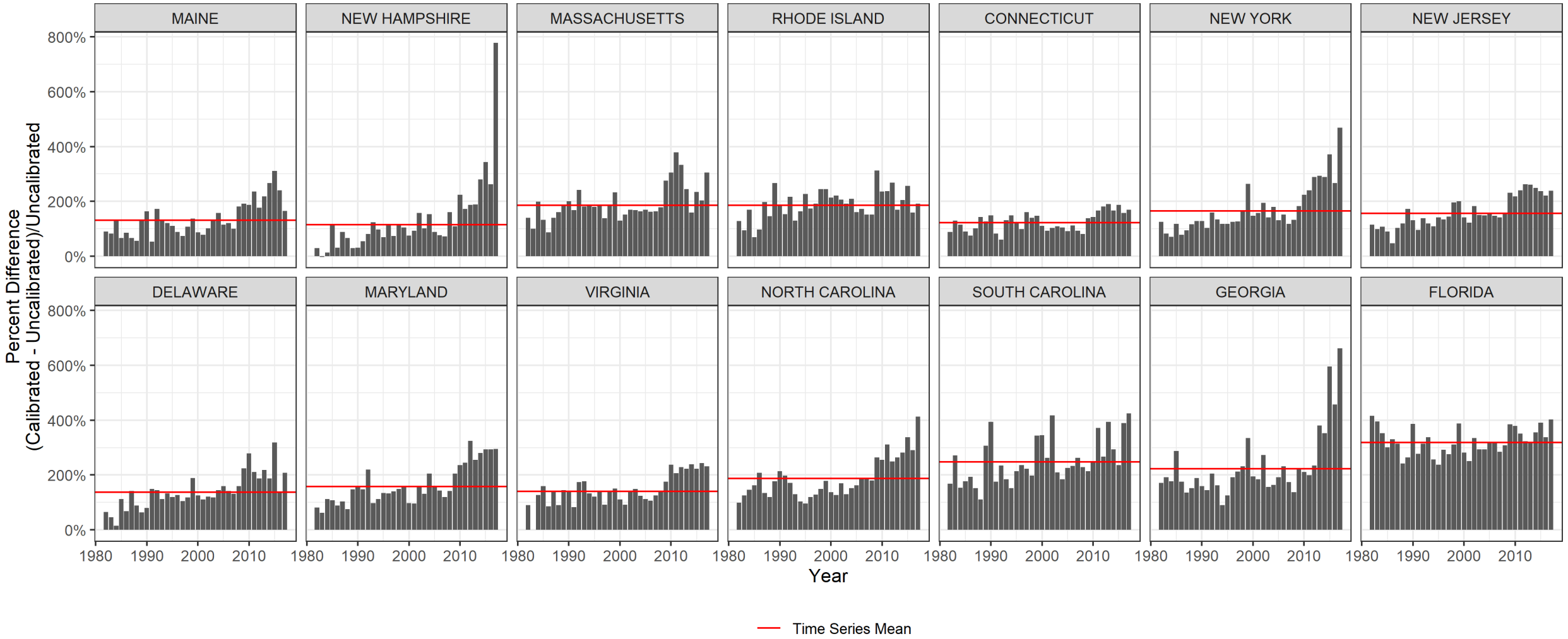
Calibrated vs Uncalibrated Effort: By Mode

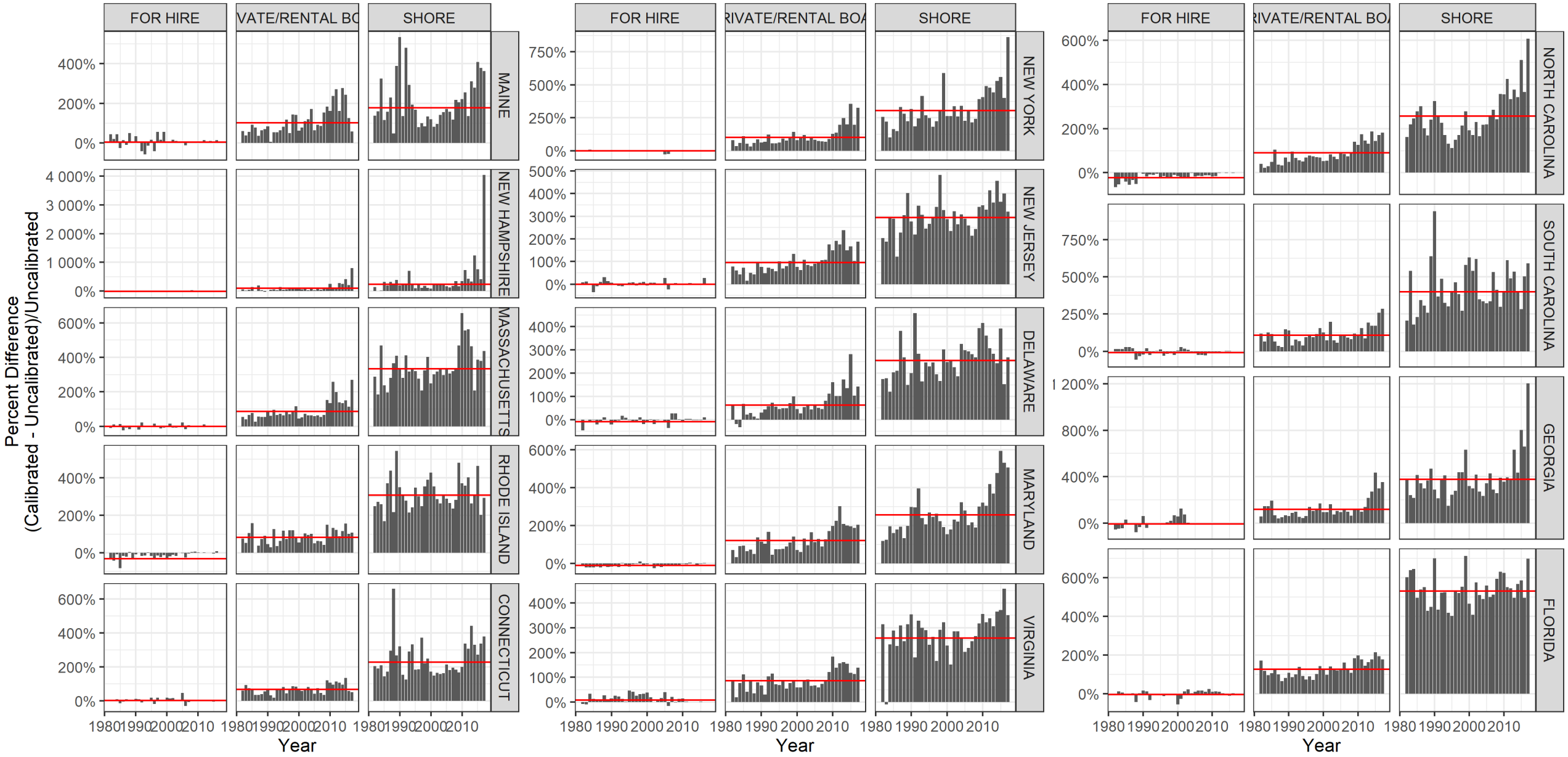


Calibrated vs Uncalibrated Effort: By Mode

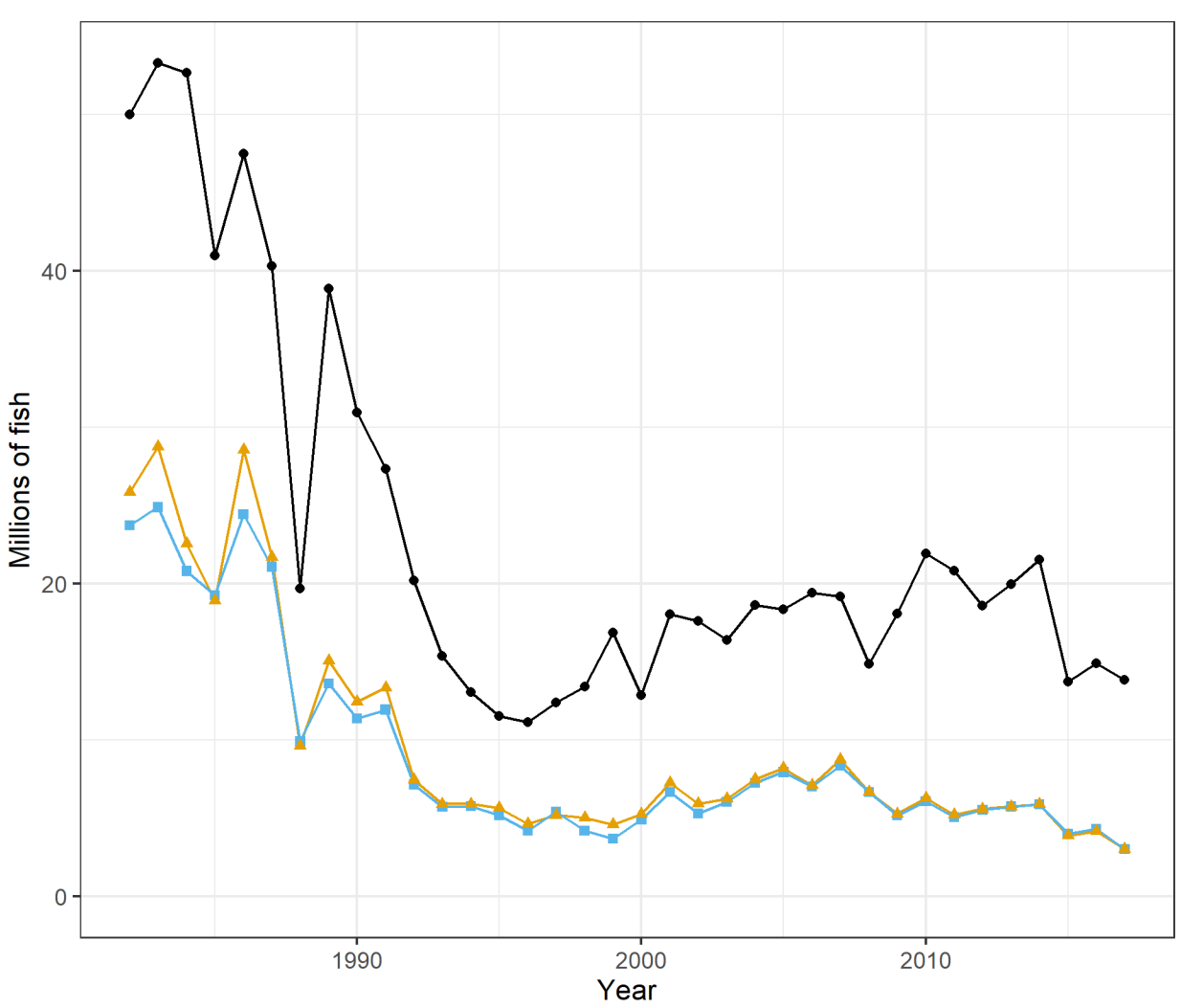


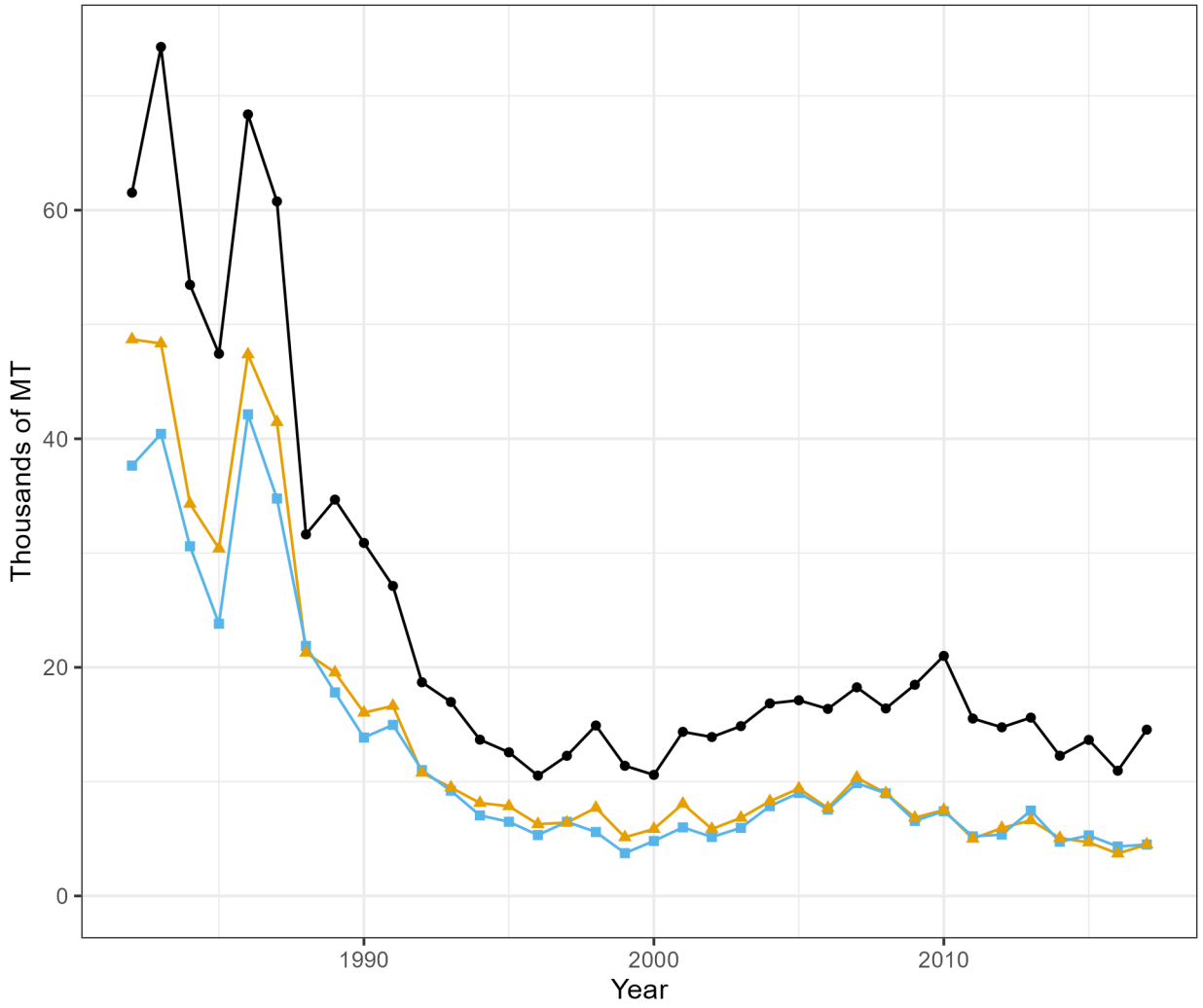
Calibrated vs Uncalibrated Effort: By State




FOR HIRE
VATE/RENTAL BO
SHORE
RIVATE/RENTAL BOA
MAINE
NEW HAMPSHIRE
MASSACHUSETTS
RHODE ISLAND
CONNECTICUT
NEW YORK
NEW JERSEY
DELAWARE
MARYLAND
VIRGINIA
NORTH CAROLINA
SOUTH CAROLINA
GEORGIA
FLORIDA
Percent Difference
(Calibrated - Uncalibrated)/Uncalibrated
Year
1980
1990
2000
2010

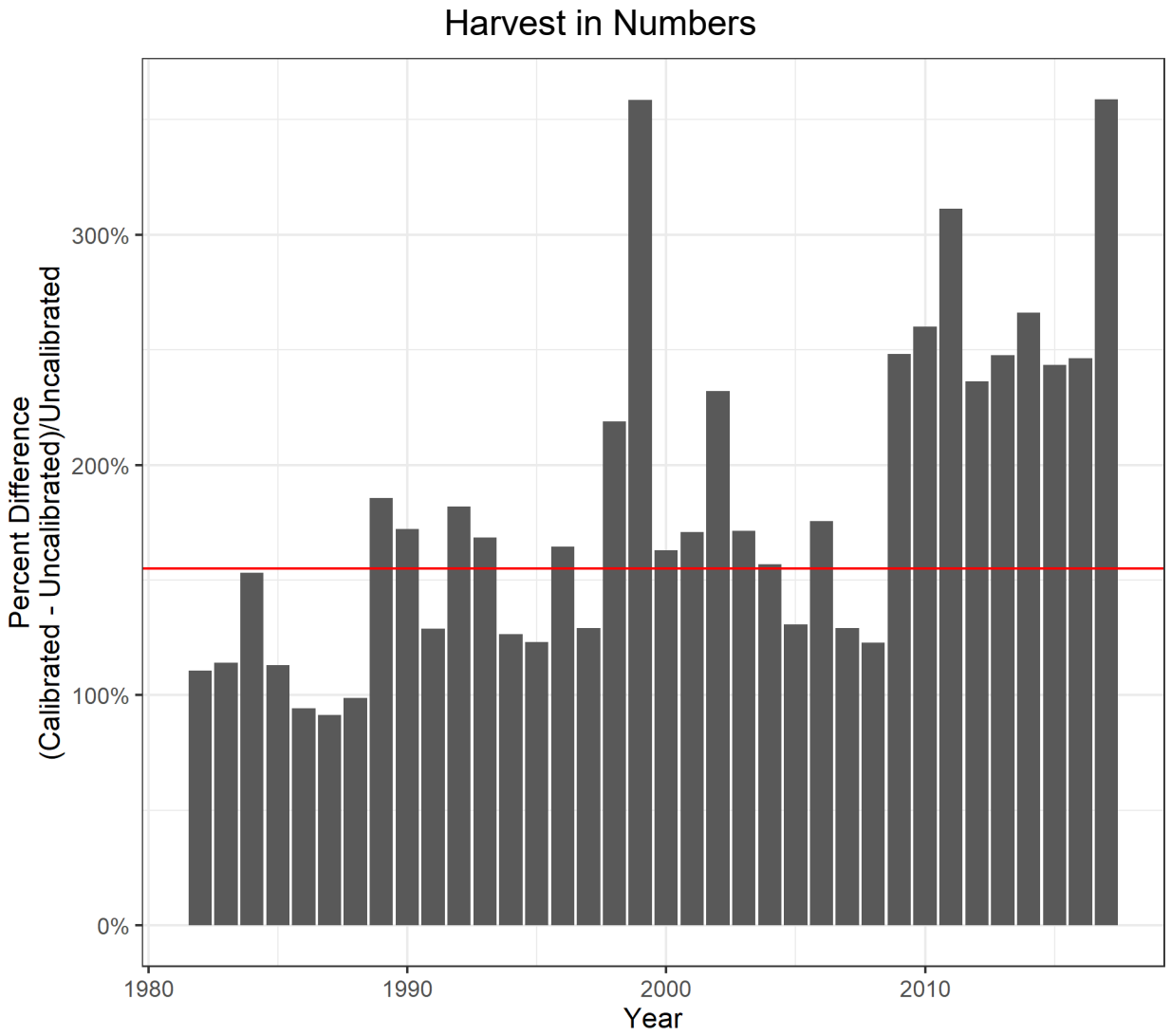
Calibrated vs Uncalibrated Harvest: Coast

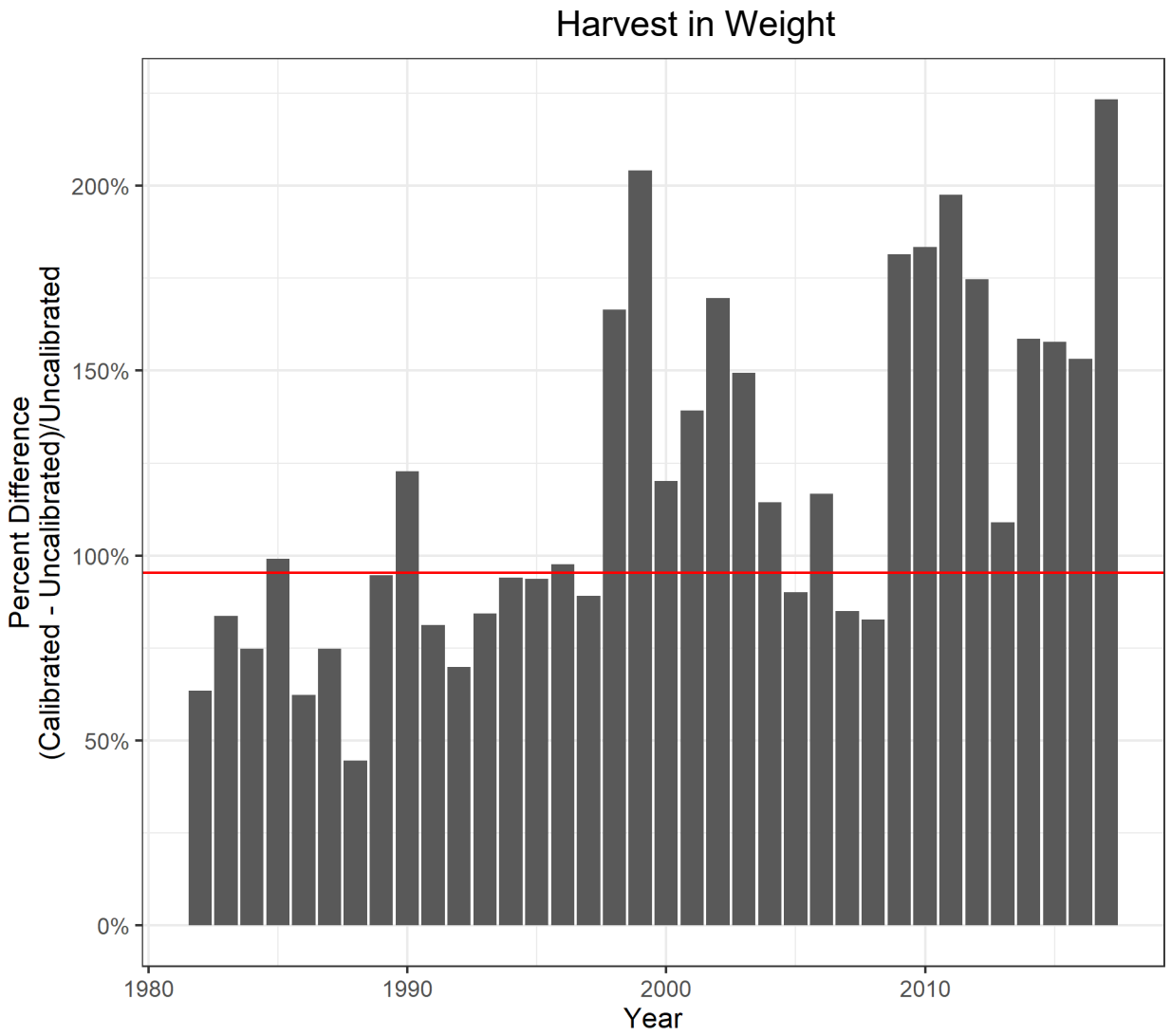




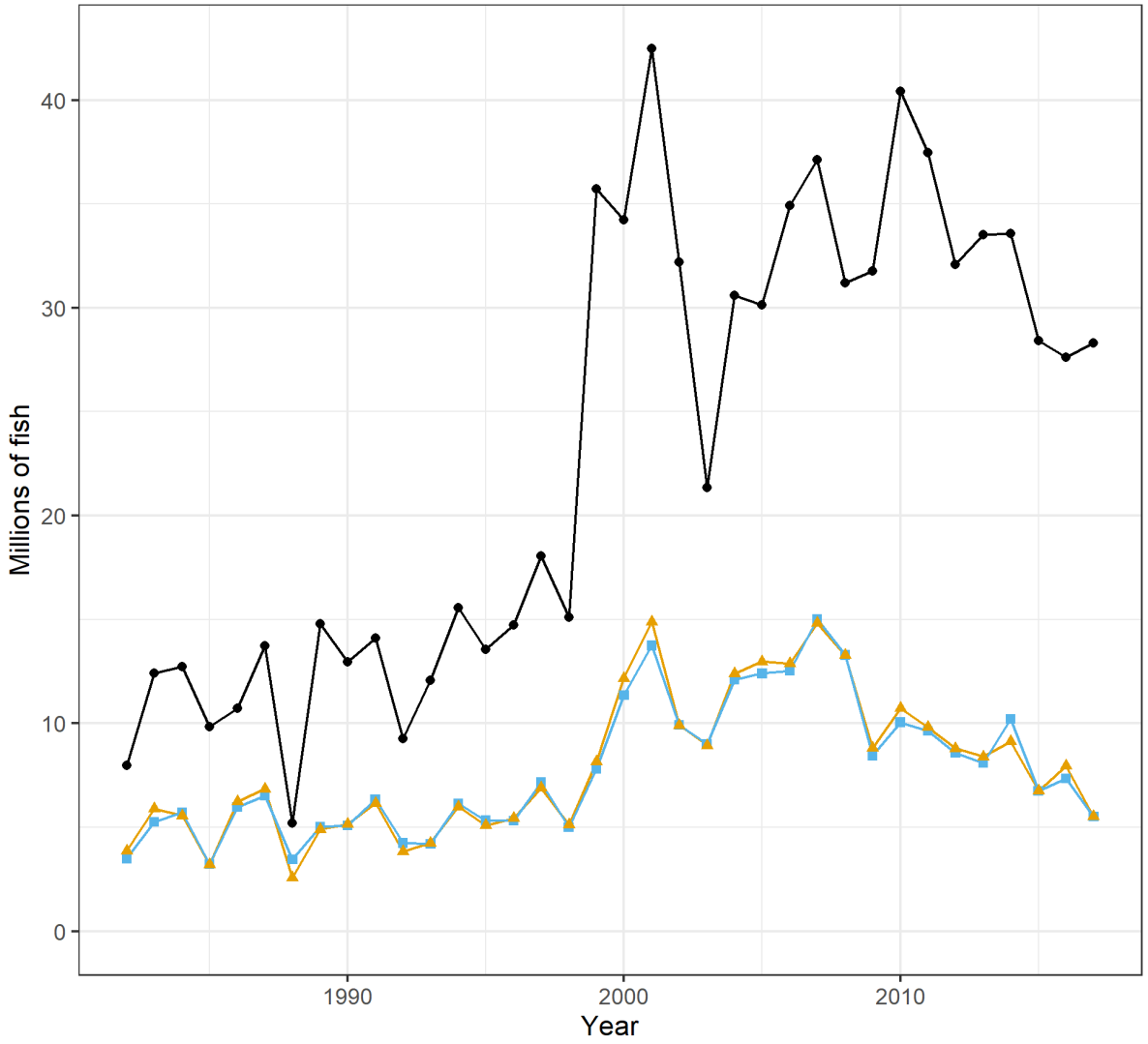
Calibration — APAIS + FES calibrations — APAIS calibration only — Uncalibrated

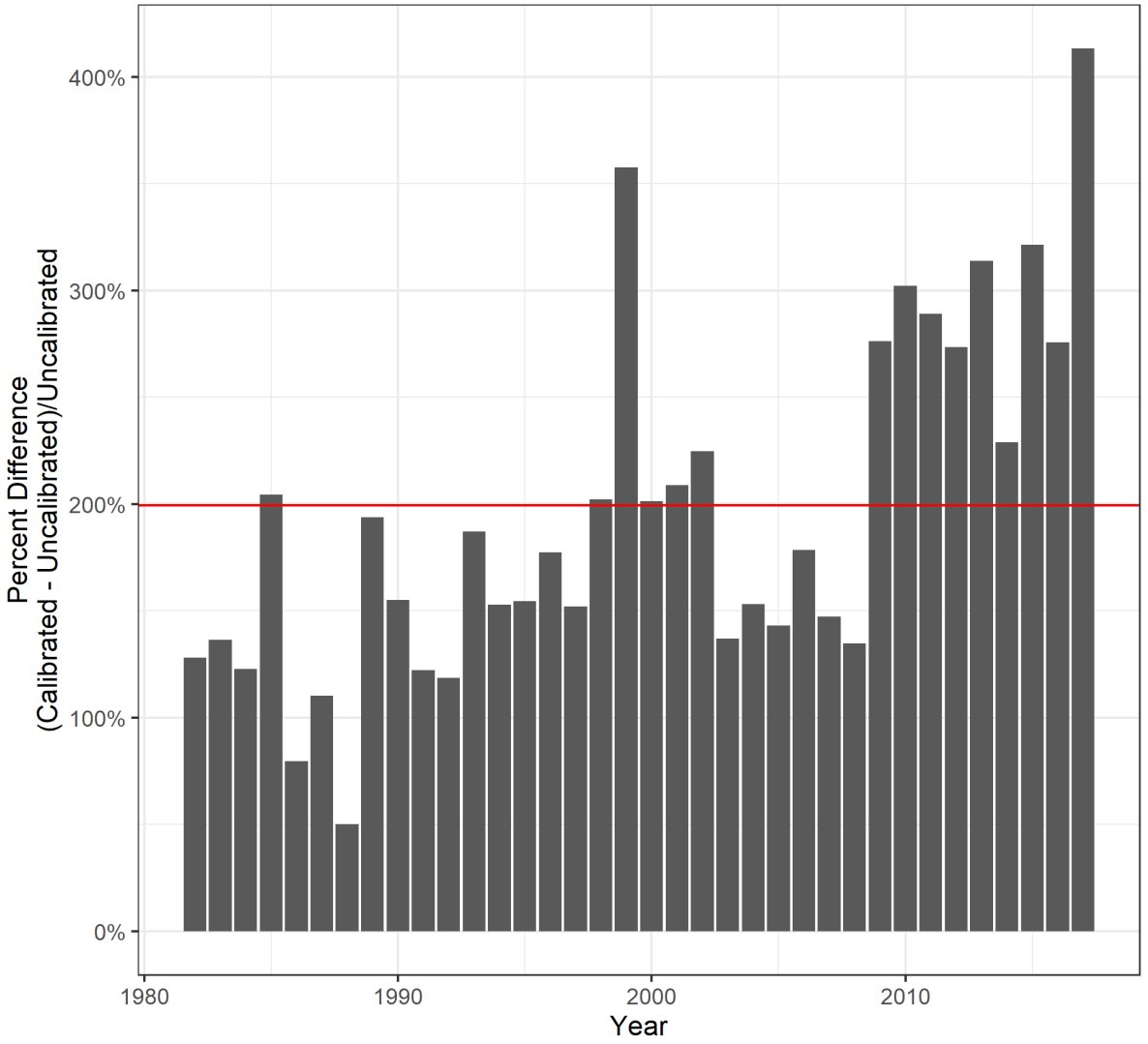
Calibrated vs Uncalibrated Harvest: Coast





Calibrated v Uncalibrated Live Releases: Coast

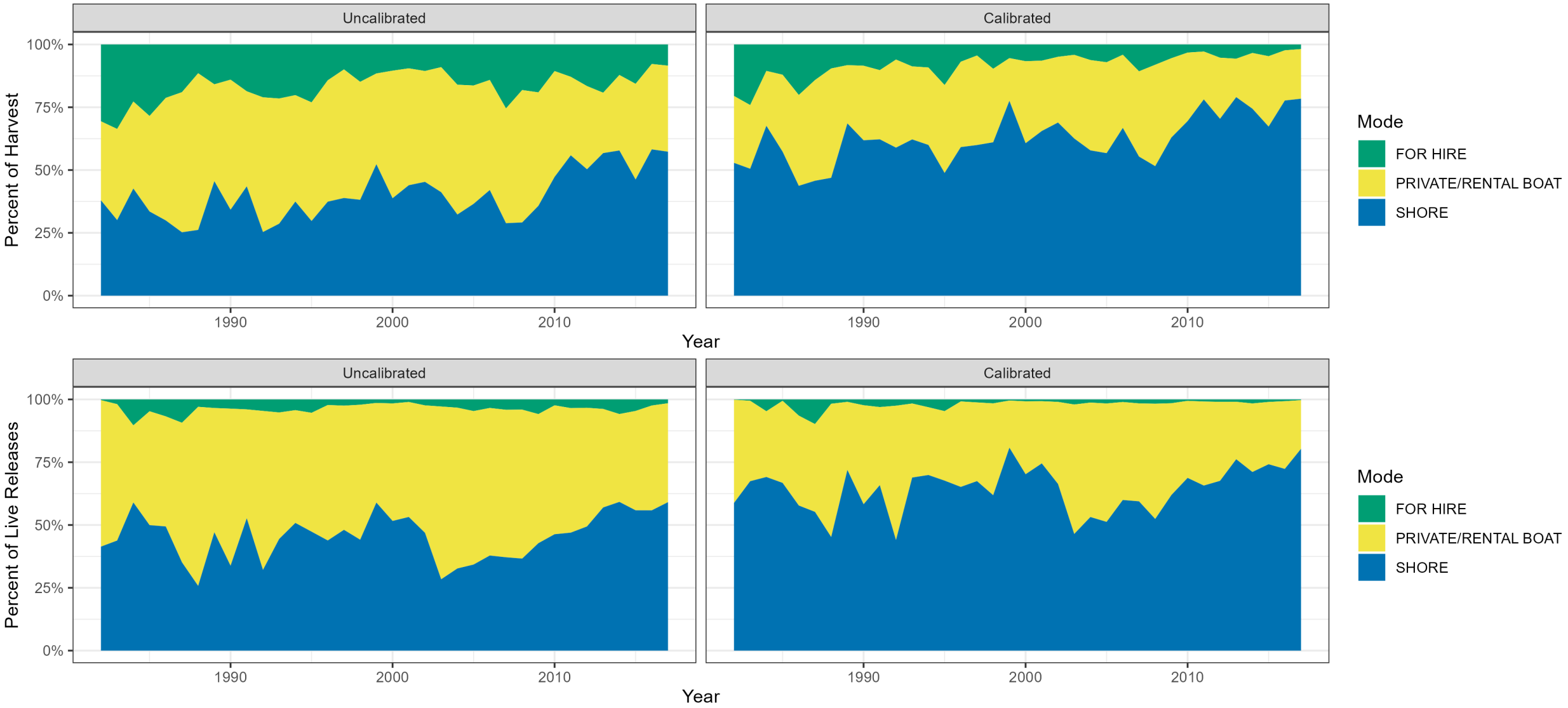




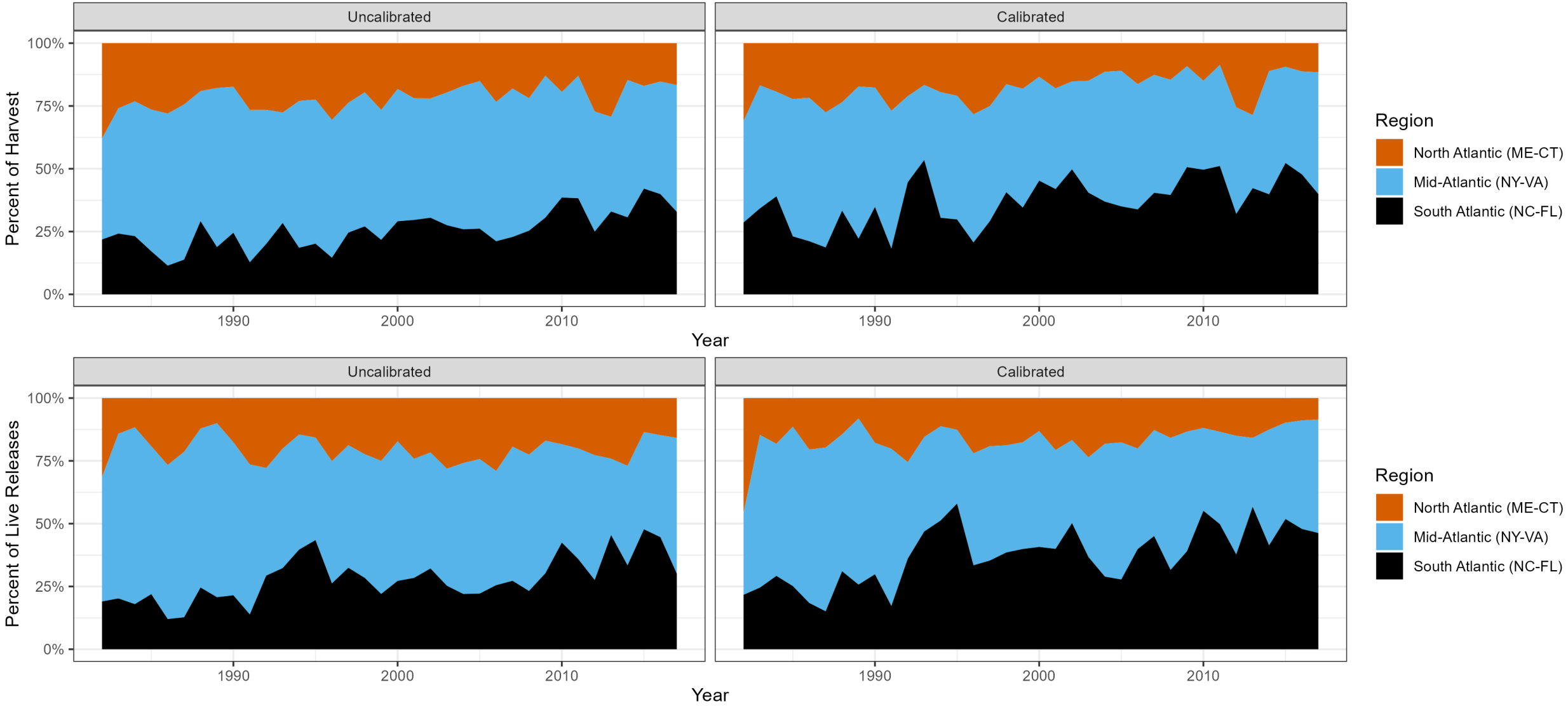
Calibration — APAIS + FES calibrations — APAIS calibration only — Uncalibrated

Time Series Mean

Calibrated vs. Uncalibrated by Mode



Calibrated vs. Uncalibrated by Region



Questions

MRIP Recreational CPUE Index

Katie Drew, ASMFC

MRIP CPUE Index

- 2015 RT: directed trips method to identify bluefish trips
  - Research recommendation: explore a species association approach to develop the index

- 2022 RT: species association/guild approach used to identify bluefish trips

Trip Selection

- MRIP angler-intercept survey estimates overall catch-per-trip to estimate total catch
  - Not intended to track CPUE as a metric of abundance

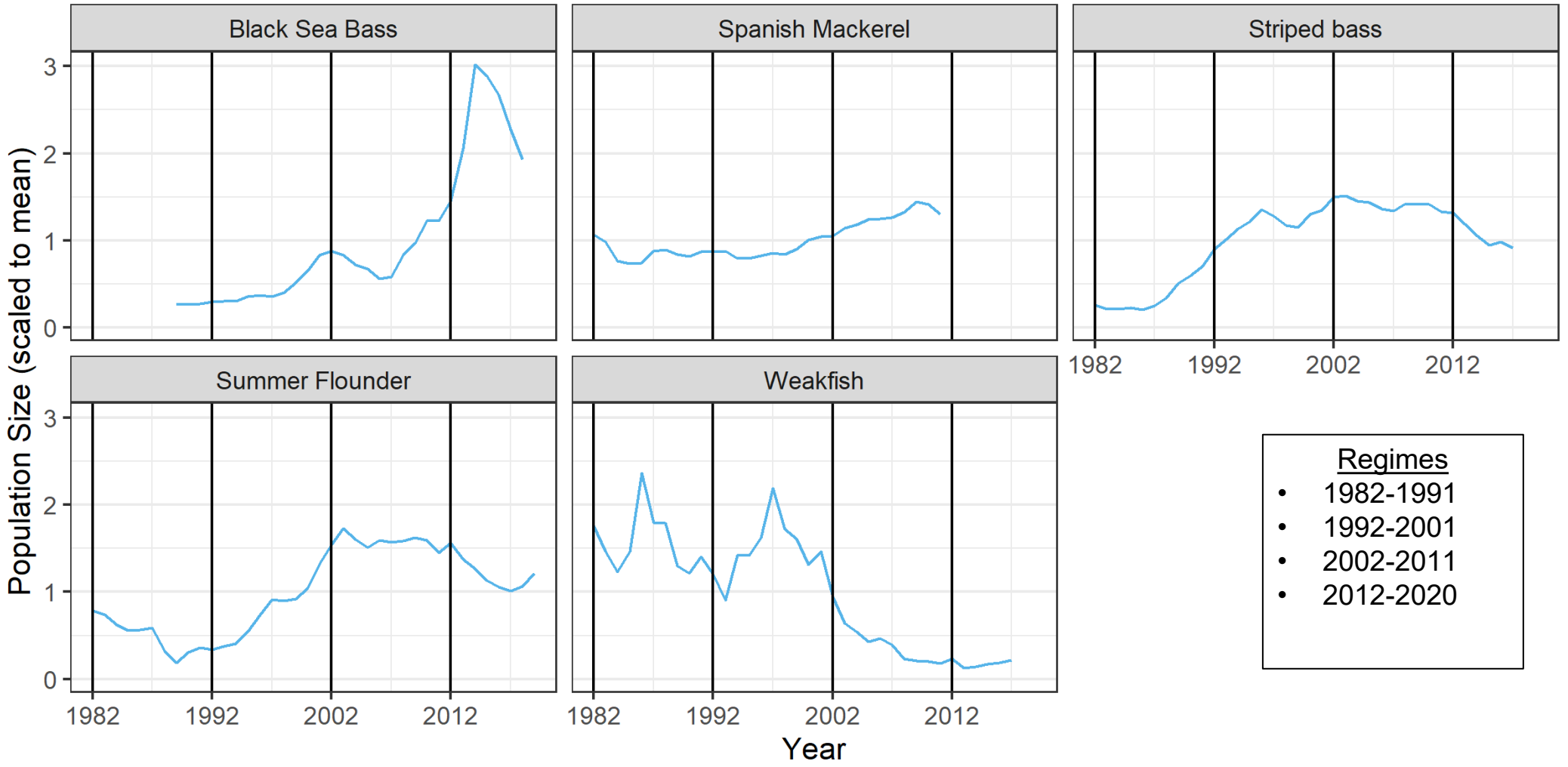
- Want to identify trips with meaningful zeros: trips where the angler did not catch bluefish but could have if bluefish were available/abundant that year

Guild Trip Selection

- Created species association matrices for bluefish and other commonly caught recreational species for each state from the MRIP angler-intercept data
    - “Commonly caught” = average of 10 intercepts per year per state

Guild Trip Selection

- Created 4 regimes based on trends in major associated species



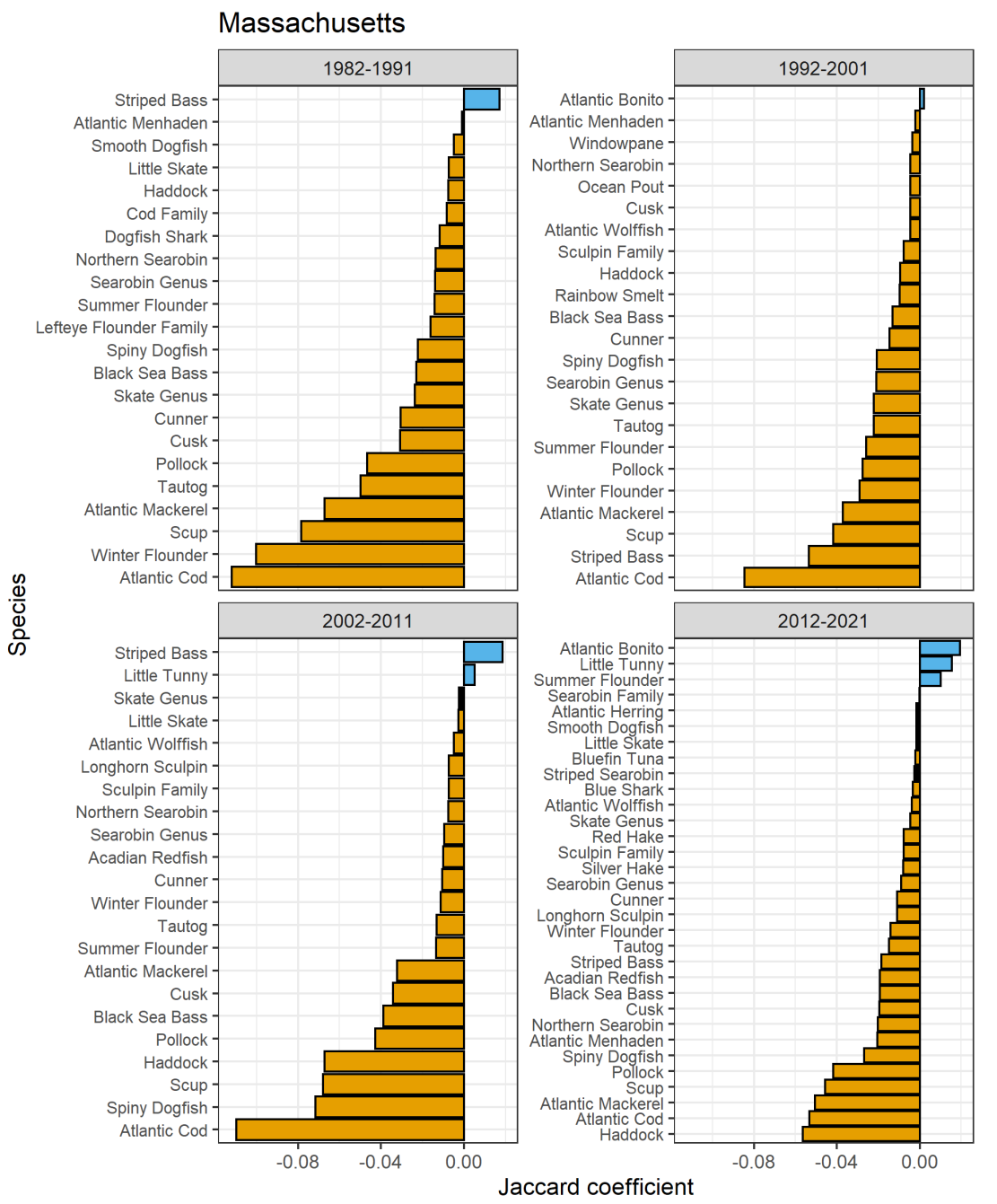
U.S.

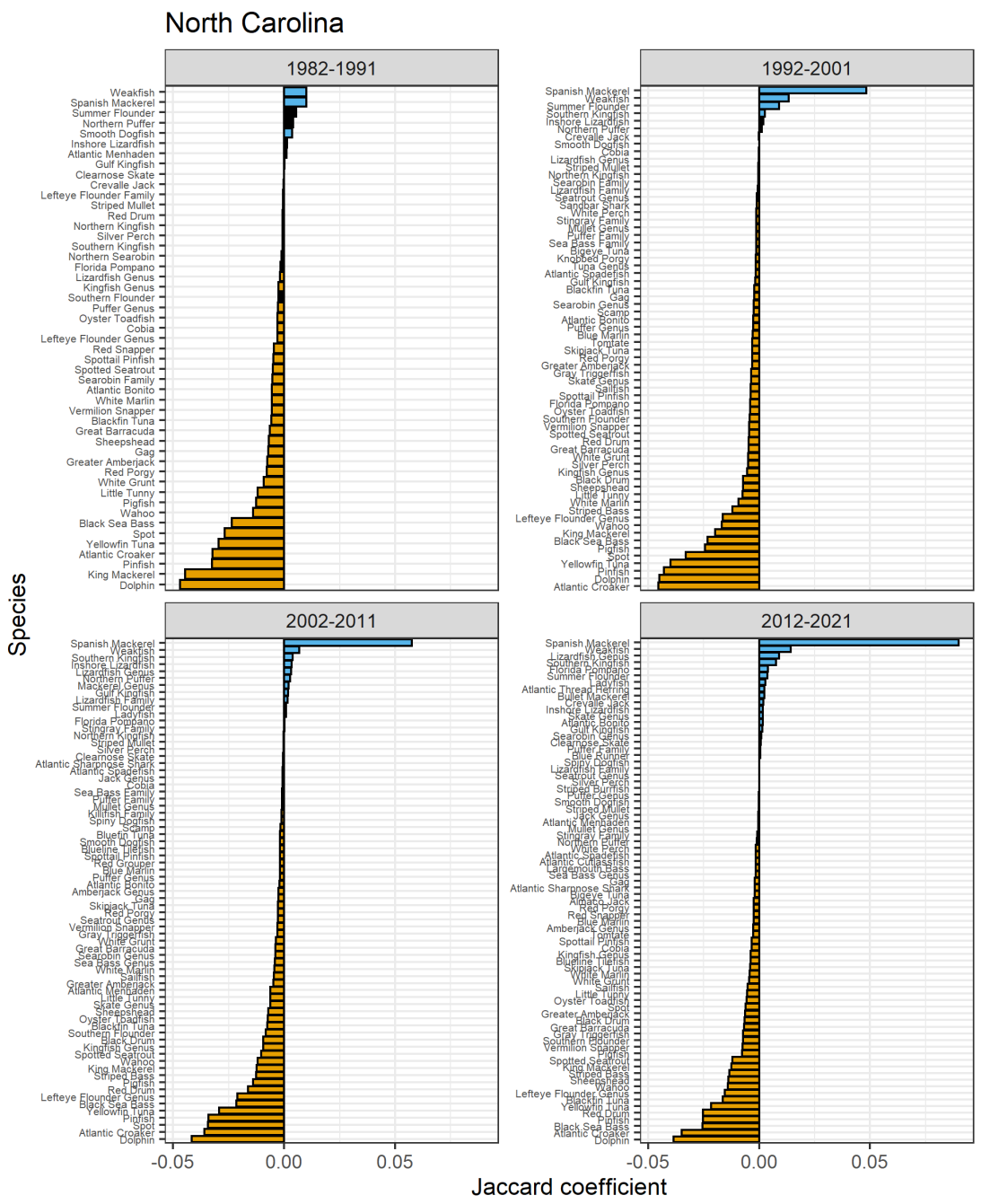
Guild Trip Selection

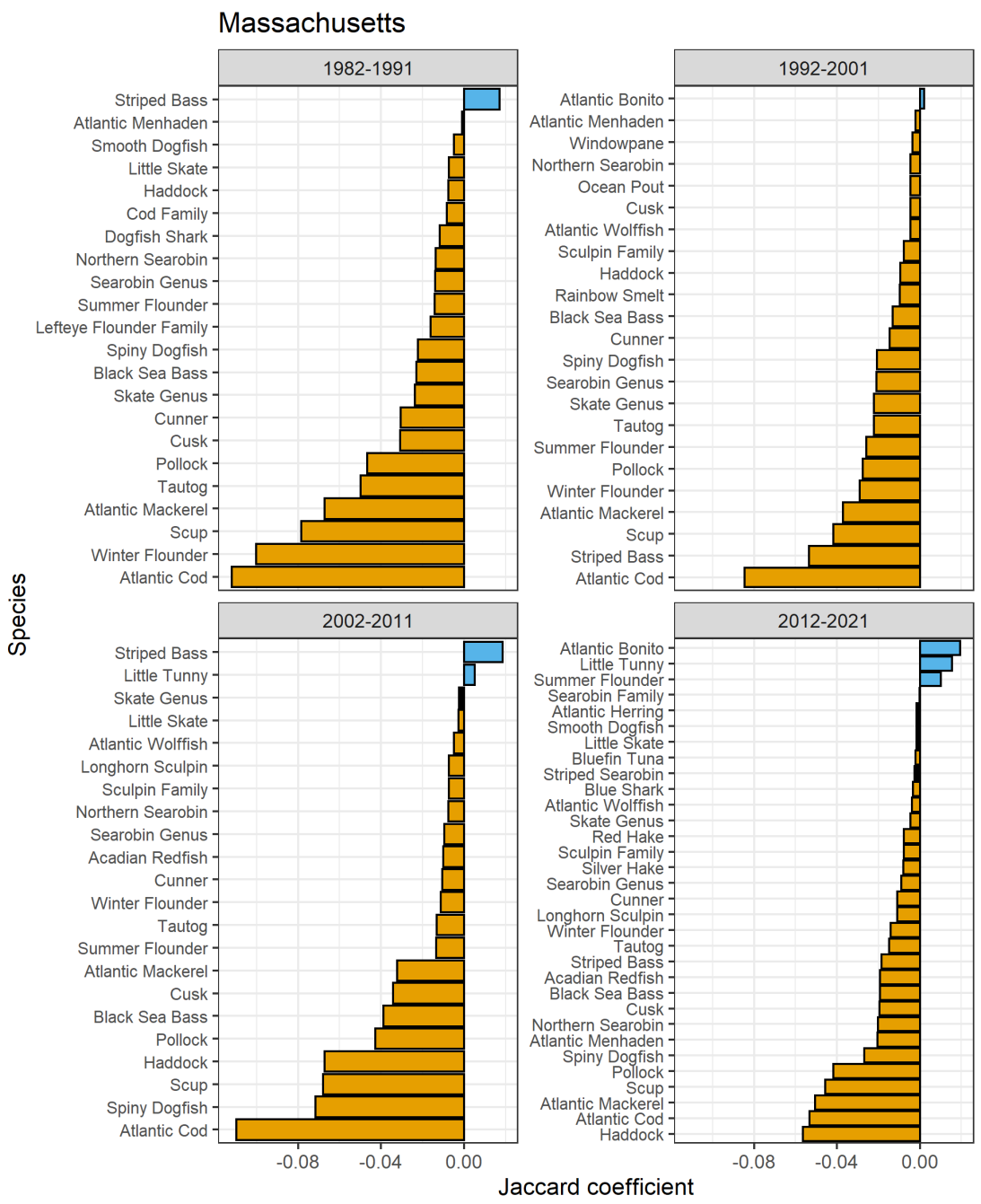
- Used the *jaccard* package in R to identify species with significant positive associations with bluefish

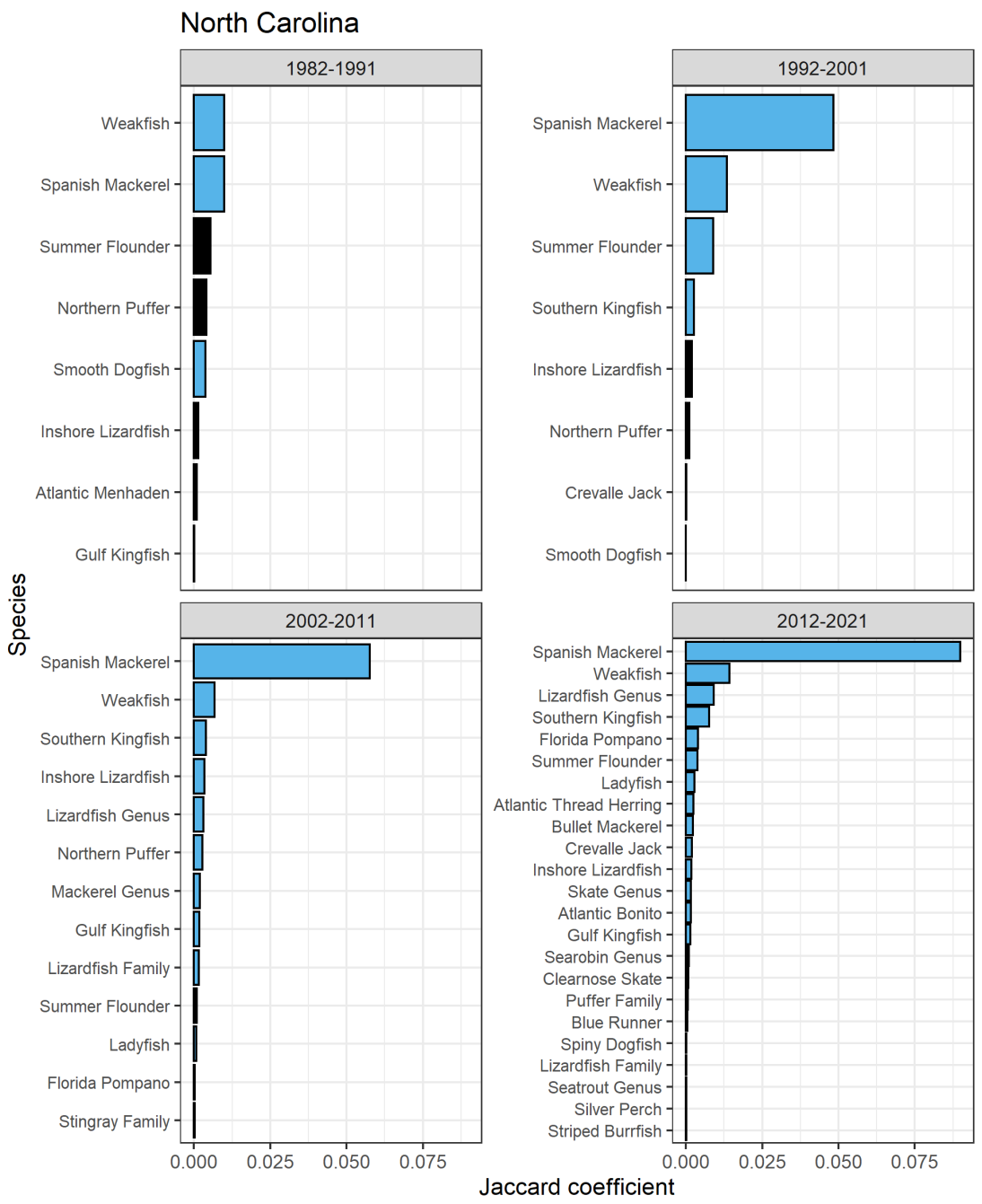
- *jaccard* uses a simulation/re-sampling approach to identify species that are more commonly caught with bluefish than you would expect from chance alone

- A bluefish trip = a trip that caught bluefish or a species that was significantly positively associated with bluefish for that state & regime


Massachusetts
1982-1991
1992-2001
2002-2011
2012-2021
Species
Striped Bass
Atlantic Menhaden
Smooth Dogfish
Little Skate
Haddock
Cod Family
Dogfish Shark
Northern Searobin
Searobin Genus
Summer Flounder
Lefteye Flounder Family
Spiny Dogfish
Black Sea Bass
Skate Genus
Cunner
Cusk
Pollock
Tautog
Atlantic Mackerel
Scup
Winter Flounder
Atlantic Cod
Atlantic Bonito
Windowpane
Northern Searobin
Ocean Pout
Atlantic Wolffish
Sculpin Family
Rainbow Smelt
Tautog
Little Tunny
Summer Flounder
Searobin Family
Atlantic Herring
Bluefin Tuna
Striped Searobin
Blue Shark
Red Hake
Silver Hake
Acadian Redfish
Longhorn Sculpin
Atlantic Menhaden
Spiny Dogfish
Haddock
-0.08
-0.04
0.00
Jaccard coefficient
Significant
No
Yes - Negative
Yes - Positive


North Carolina
1982-1991
1992-2001
2002-2011
2012-2021
Species
-0.05
0.00
0.05
Jaccard coefficient
Significant
No
Yes - Negative
Yes - Positive





Significant No Yes - Negative Yes - Positive

Significant No Yes - Positive

Guild Trip Selection

- ME and NH had no positive species associations with bluefish in any regime
  - Overall catch of bluefish in ME and NH is low and intermittent
  - Dropped those states from the index

- MD and CT did not have positive species associations for all regimes
  - Substituted “directed trips” for those states for regimes without positive associations

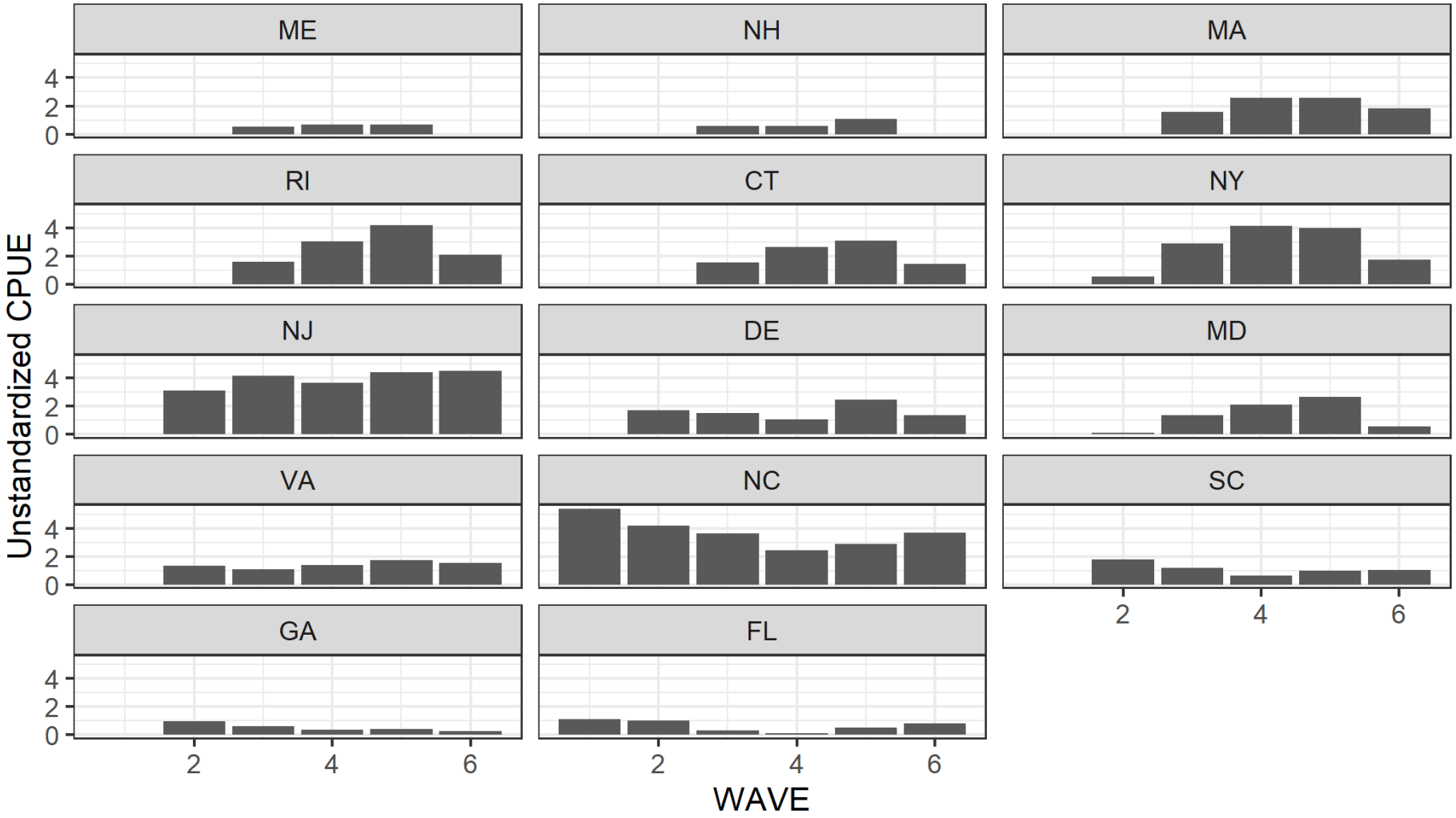
Index Standardization

- **2022 RT: Zero-altered negative binomial model with log of effort (angler-hours) as an offset and a state-wave interaction**

CPUE ~ Year + Wave + Mode + State + Avidity + Area Fished + Kind of Day + State*Wave

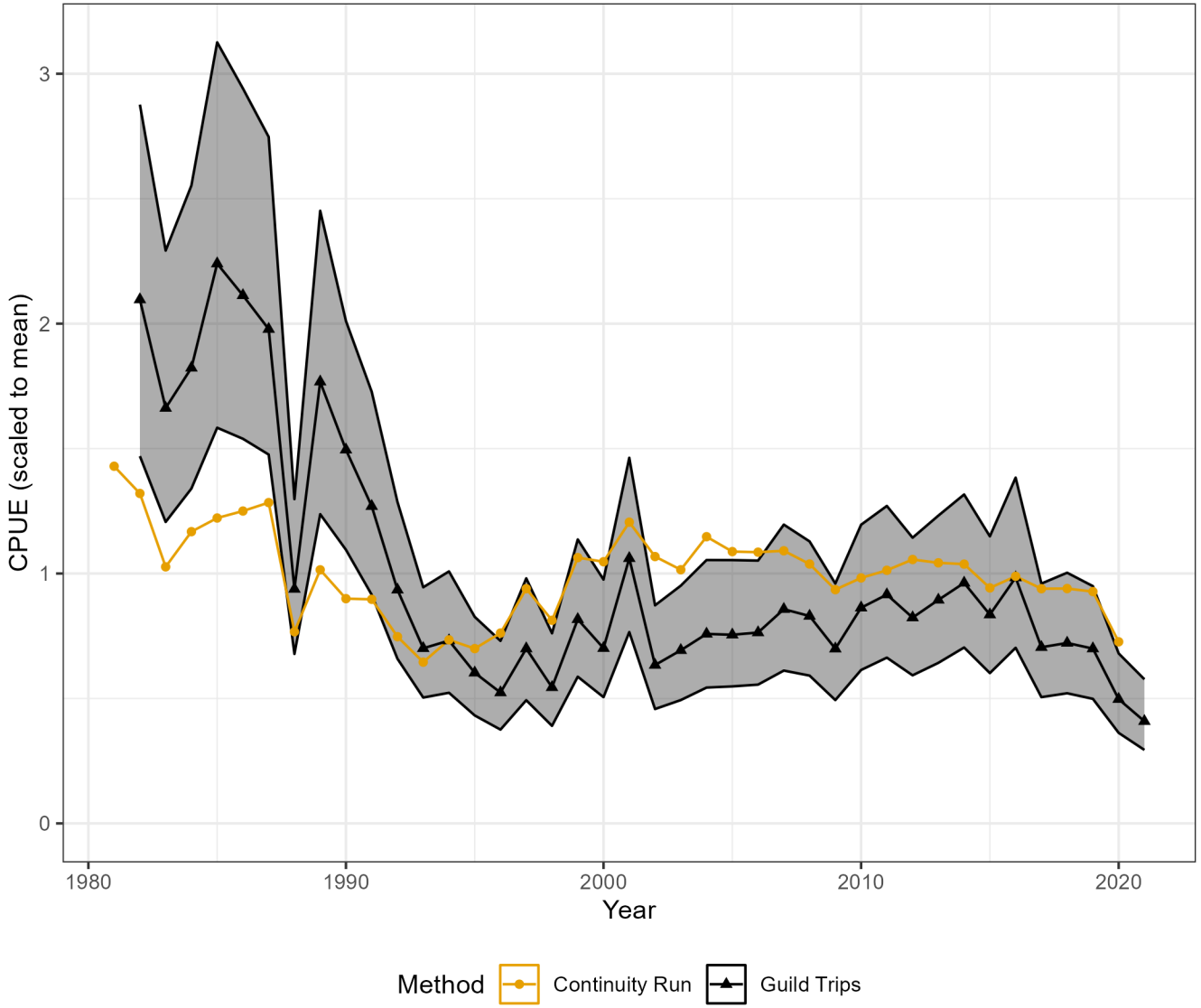
State-Wave Interaction

Different patterns of CPUE by wave for different states



Results

- Guild trips approach results in a index with more contrast than the directed trips approach



Questions