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Explaining Differences Between the CHTS and the FES

Standing, Reef Fish, Mackerel,
Ecosystem, & Socioeconomic MRIP SSC
Meeting

Presentation Outline

- I. Comparison of CHTS and FES Designs
- II. The Degradation of the CHTS
- III. Coverage Error
- IV. The Gatekeeper Effect
- V. FES Estimate Plausibility



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CHTS Overview



- **Random digit dial telephone survey**
- Sample frame: a list of full-time residential **households with landline telephone service in coastal counties**
- Sampling design: Stratified by **state and county**
- Sample selection: **simple random sampling** of households in each stratum
- Administered from 1981-2017



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FES Overview



- **Self-administered mail survey**
- Sample frame: a comprehensive directory of **residential addresses serviced by USPS**
- Sampling design: Stratified by **state, proximity to coast and fishing license status** (addresses matched to the National Saltwater Angler Registry)
- Sample selection: **simple random sampling** of households in each stratum
- Replaced CHTS in 2018



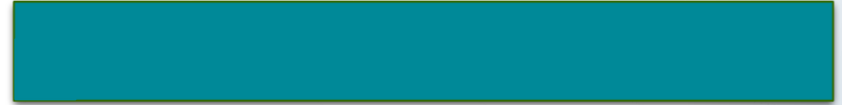
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CHTS



- Random-digit dial survey of households in coastal counties.
- Asks initial respondent a series of questions about household-level fishing activity.
- Contacts households with no prior notice and expects immediate response.
- Requires trip-level reporting.
- Suffered from declining rates of coverage and response.

FES

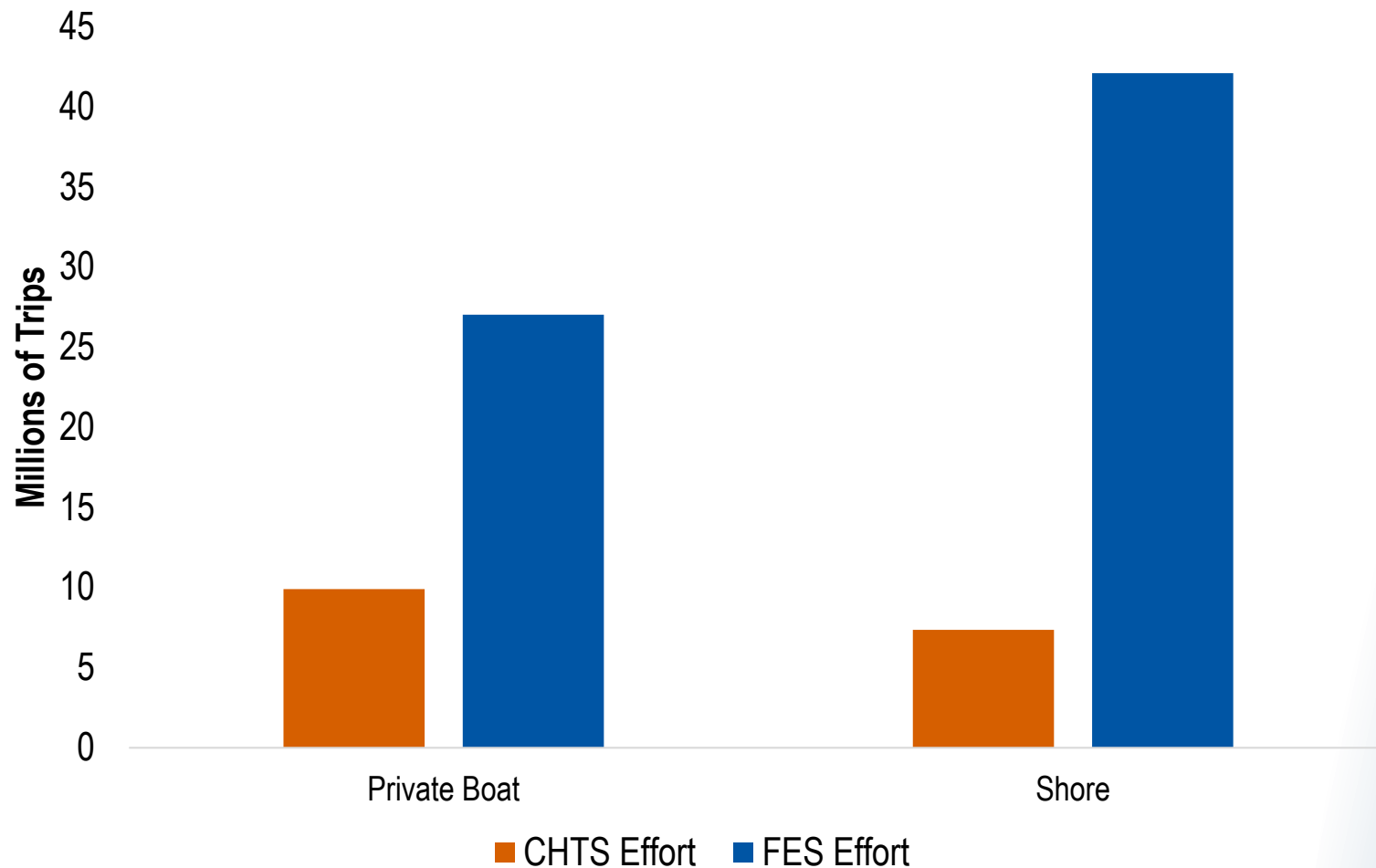


- Residential mail survey of addresses in coastal states.
- Gives respondents time to consider request, determine who should respond, and consult others.
- Includes cues that support cognitive processing and recall.
- Requires summary reports.
- Designed to maximize coverage and response.



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Gulf Fishing Effort Estimates (2017)

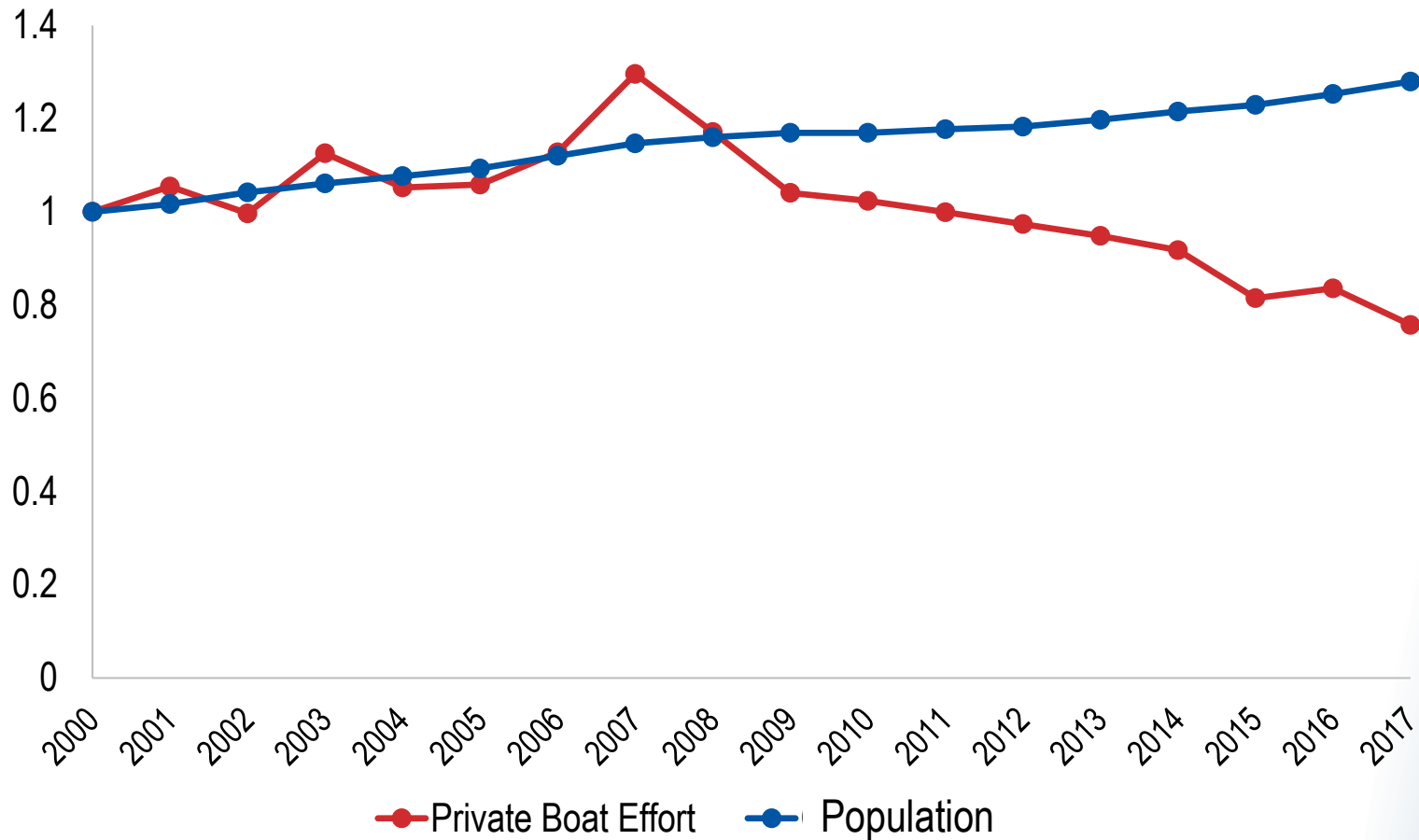


Estimates produced by the Fishing Effort Survey are much larger than estimates produced by the Coastal Household Telephone Survey.



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CHTS Effort Estimates Private Boat Effort in Gulf States



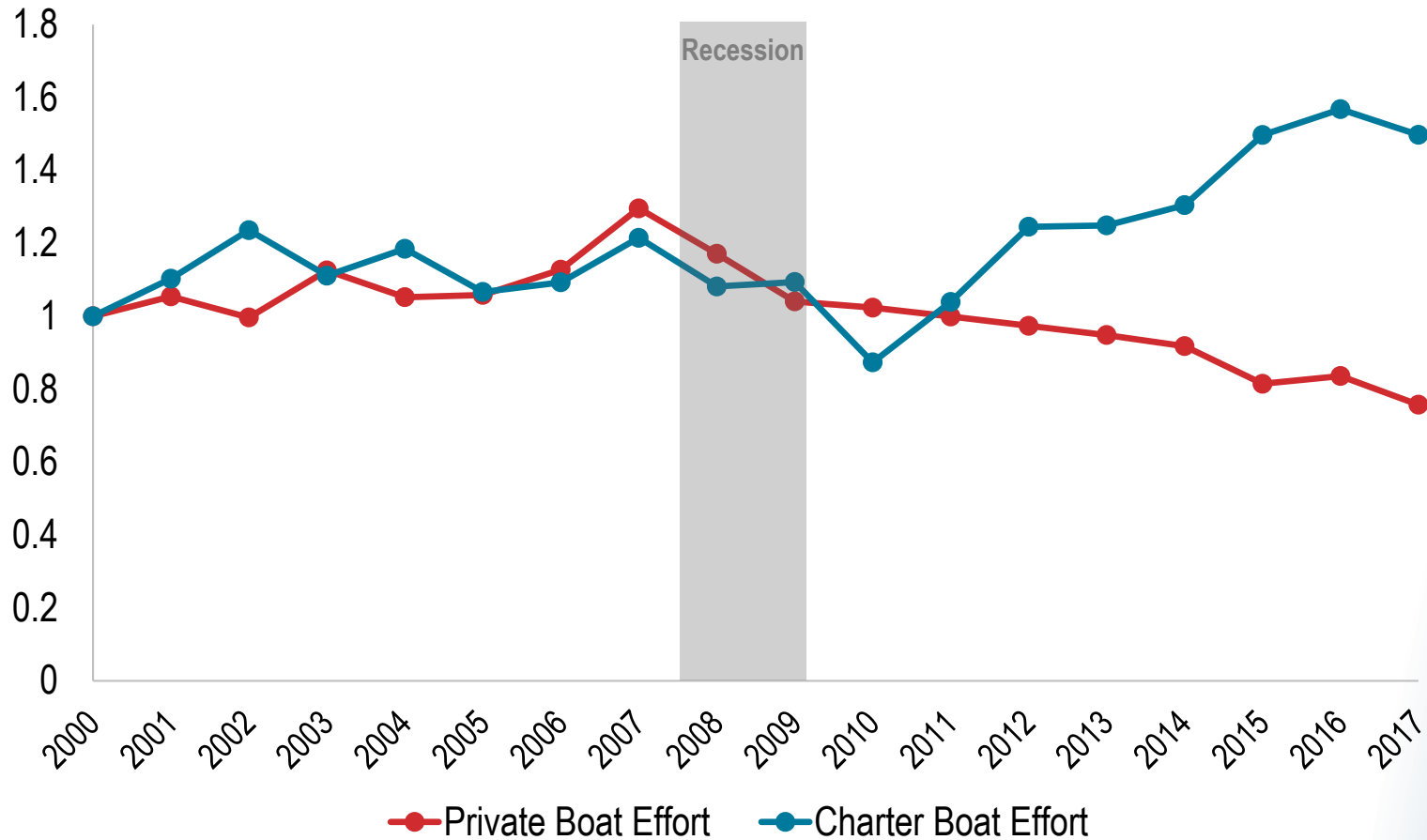
Does the decline in CHTS estimates reflect reality? Or is it an artifact of the survey's degrading design?

CHTS Effort Estimates Private Boat Effort in Gulf States



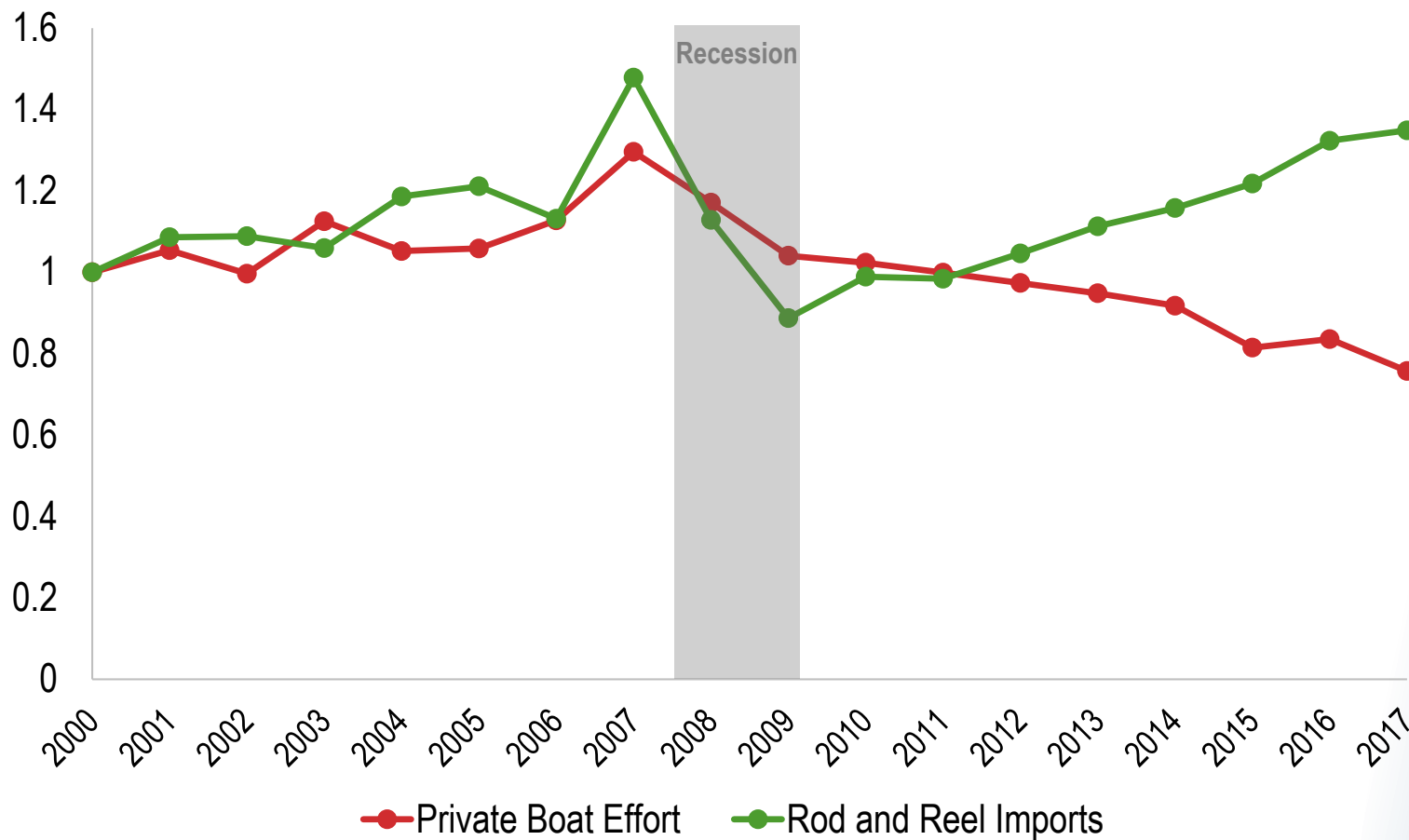
Some have attributed this decline in fishing effort to the recession. But economic conditions—and fishing activity—have recovered.

CHTS Effort Estimates Private Boat Effort in Gulf States



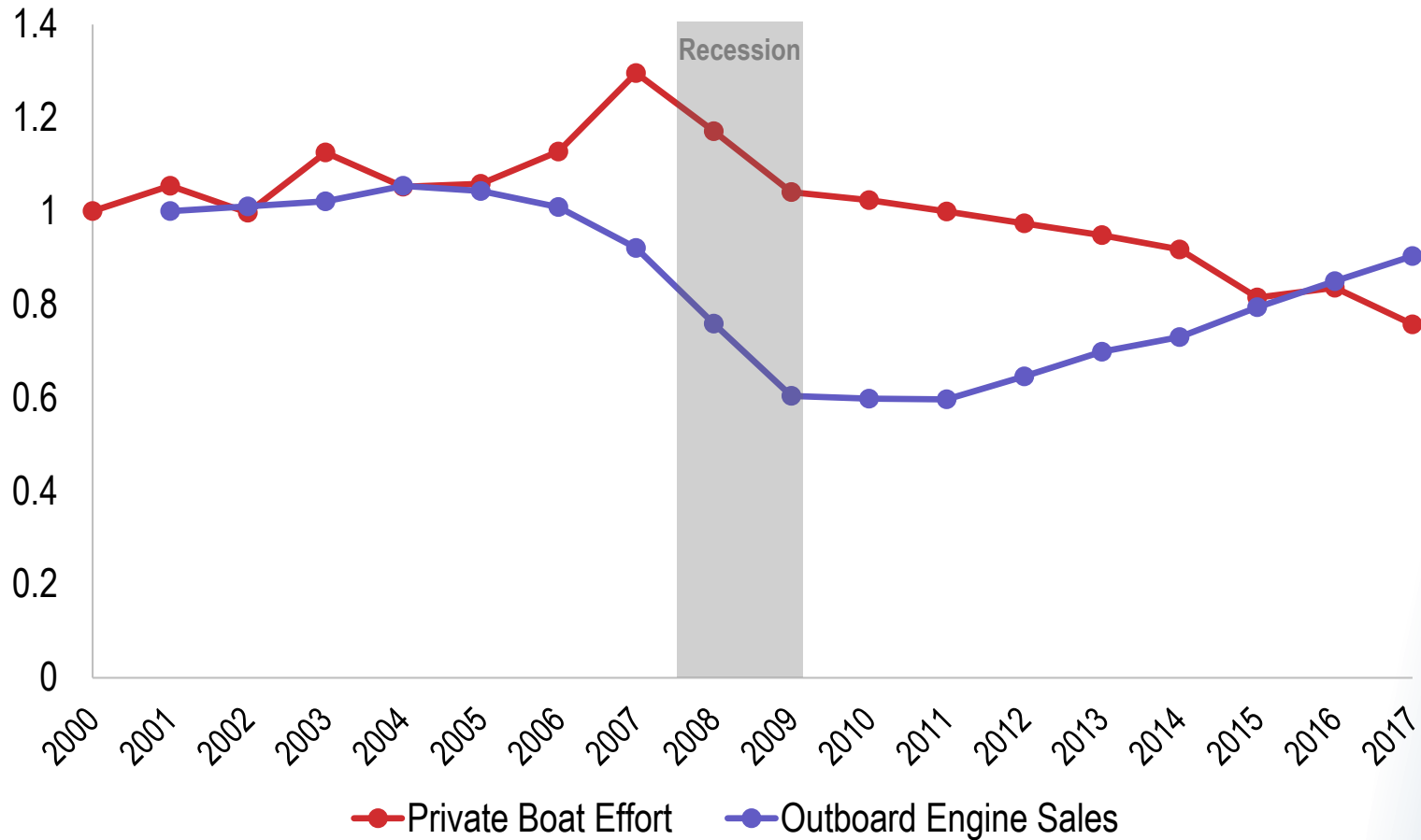
Charter boat trips declined during the recession, but have since recovered.

CHTS Effort Estimates Private Boat Effort in Gulf States



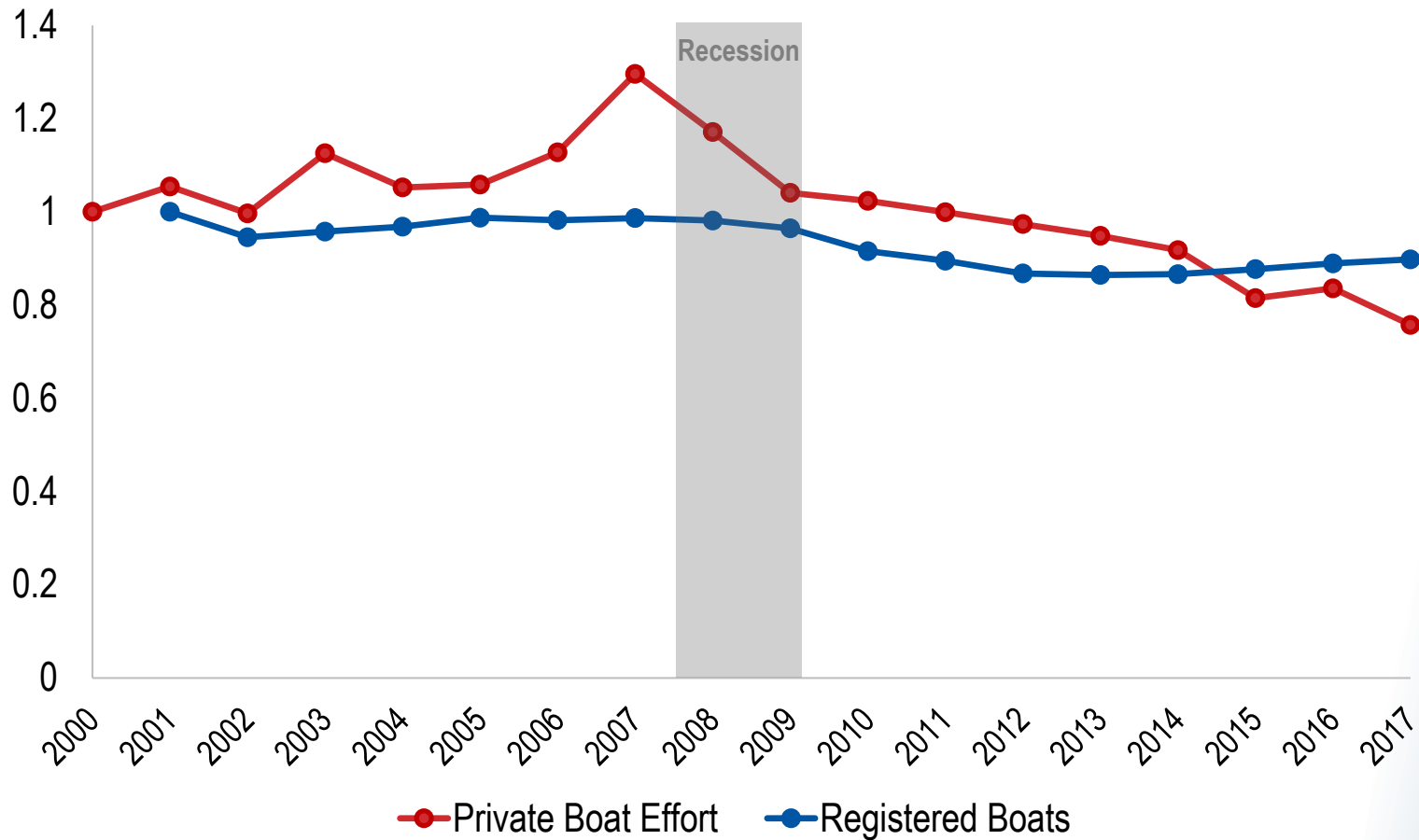
Rod and reel imports declined during the recession, but have since recovered.

CHTS Effort Estimates Private Boat Effort in Gulf States



Outboard engine sales declined during the recession, but have since recovered.

CHTS Effort Estimates Private Boat Effort in Gulf States



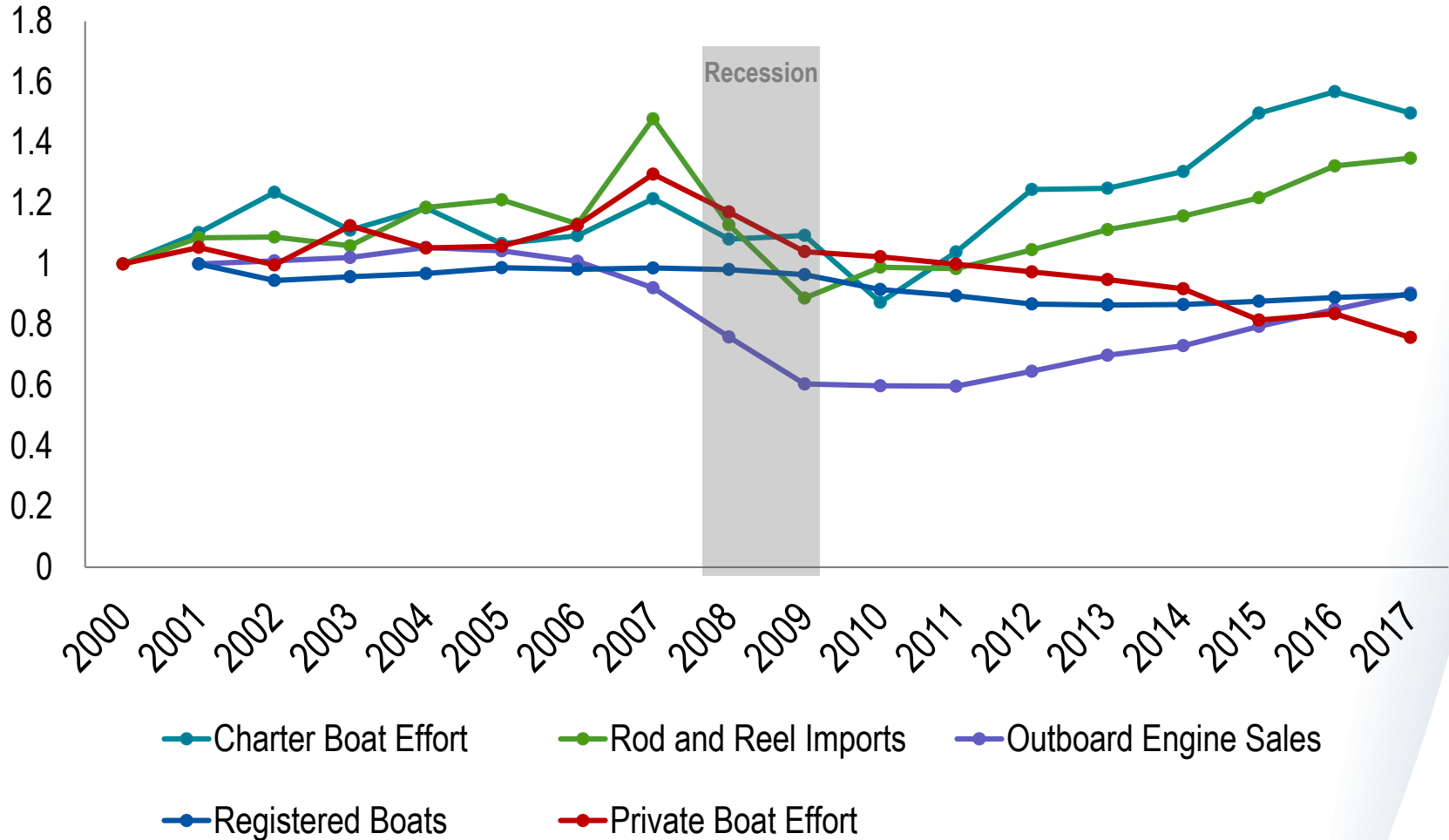
The number of registered boats in Gulf states has remained fairly consistent over time.



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CHTS Effort Estimates

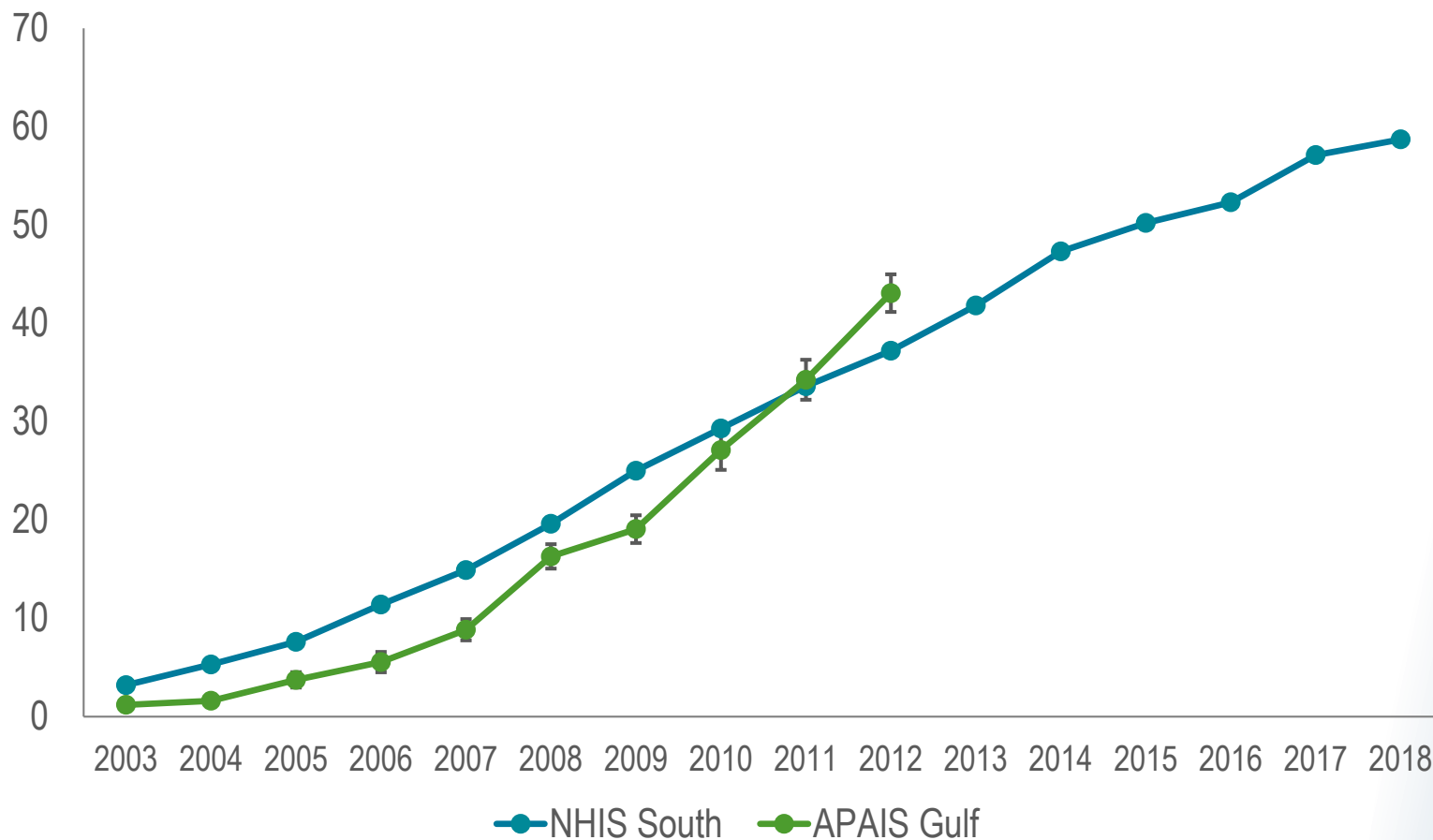
Private Boat Effort in Gulf States



Taken together, these data suggest the recession had a relatively short-lived effect on fishing effort.

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Percent of Adults in Wireless-Only Households NHIS (South) and APAIS (Gulf)

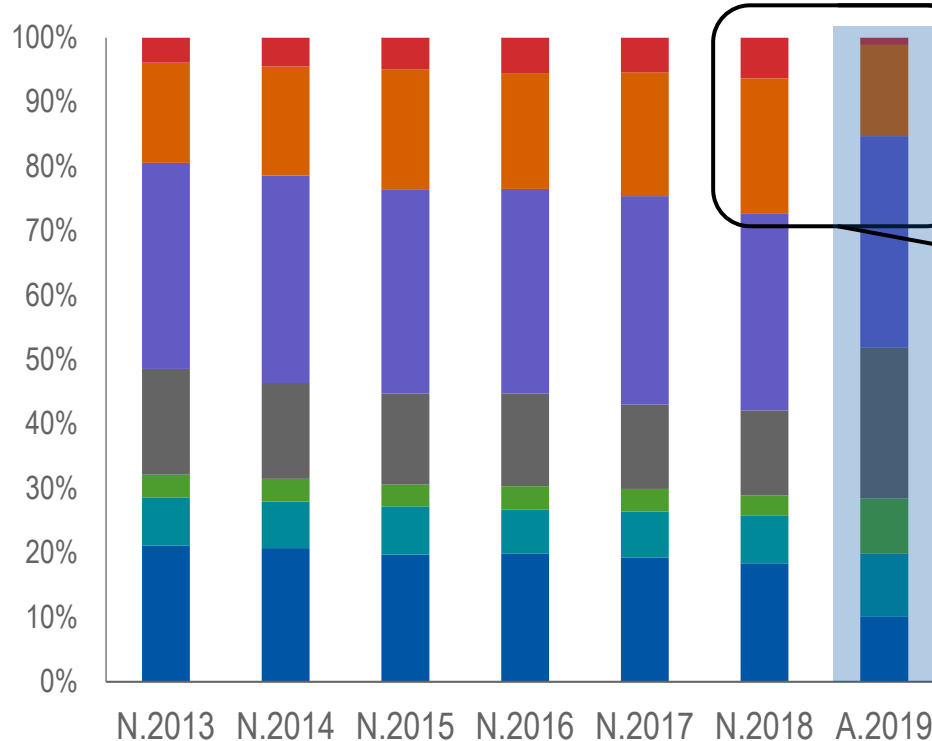


As the number of Americans living in wireless-only households has increased, so has the number of households effectively excluded from the CHTS sample frame.

Age Distribution: All Households

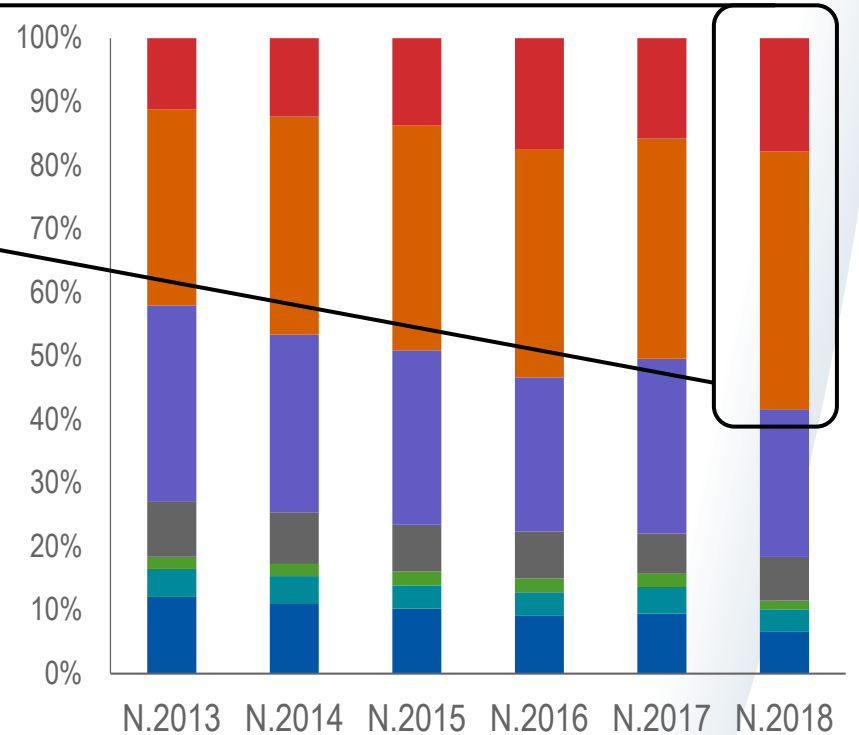
NHIS: South

APAIS: Gulf



Age Distributions: Landline Only/Mostly Households

NHIS: South

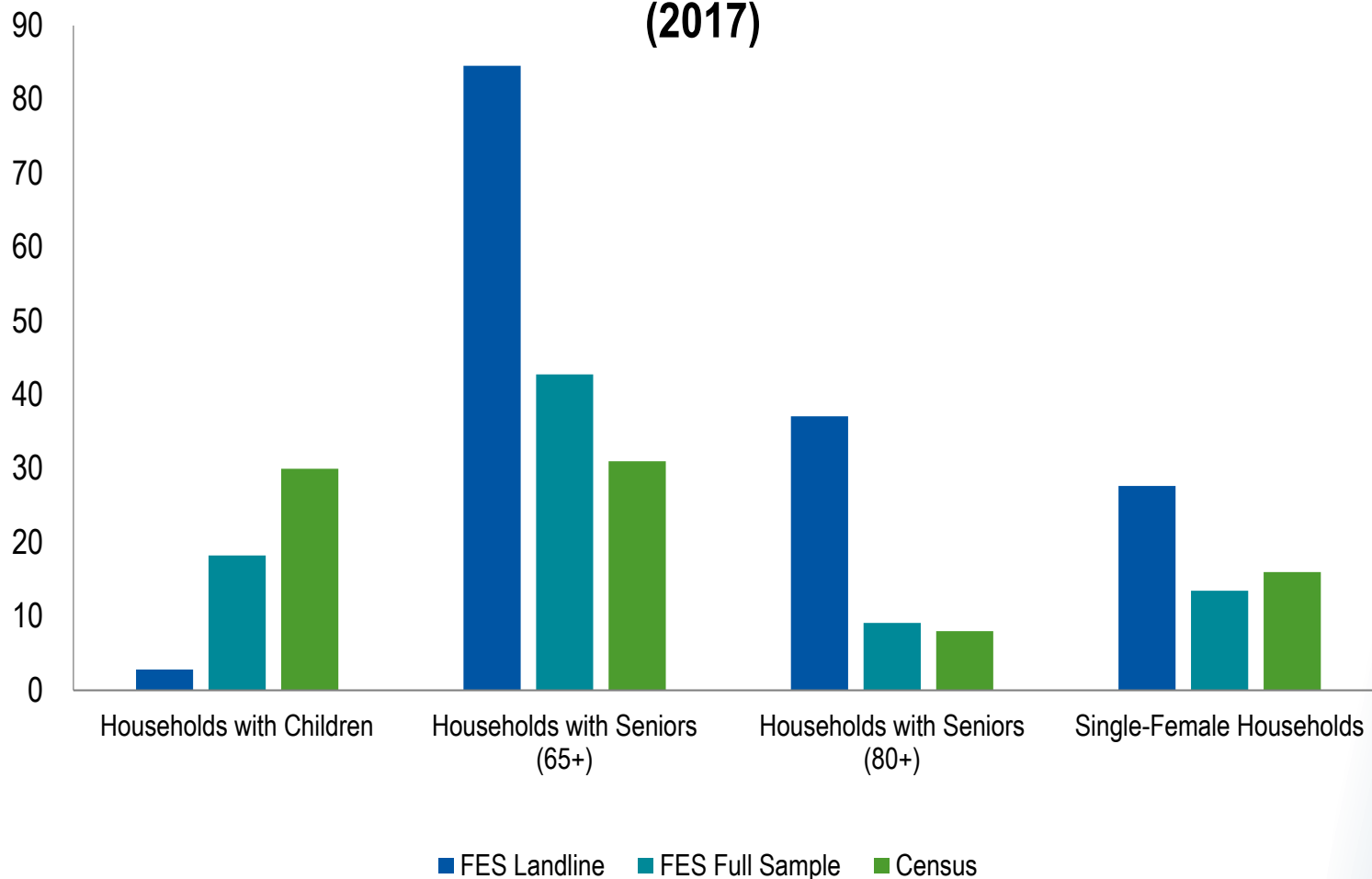


The landline population is older, and exhibits characteristics associated with poor health. The age distribution of anglers more closely resembles the age distribution of the full population.



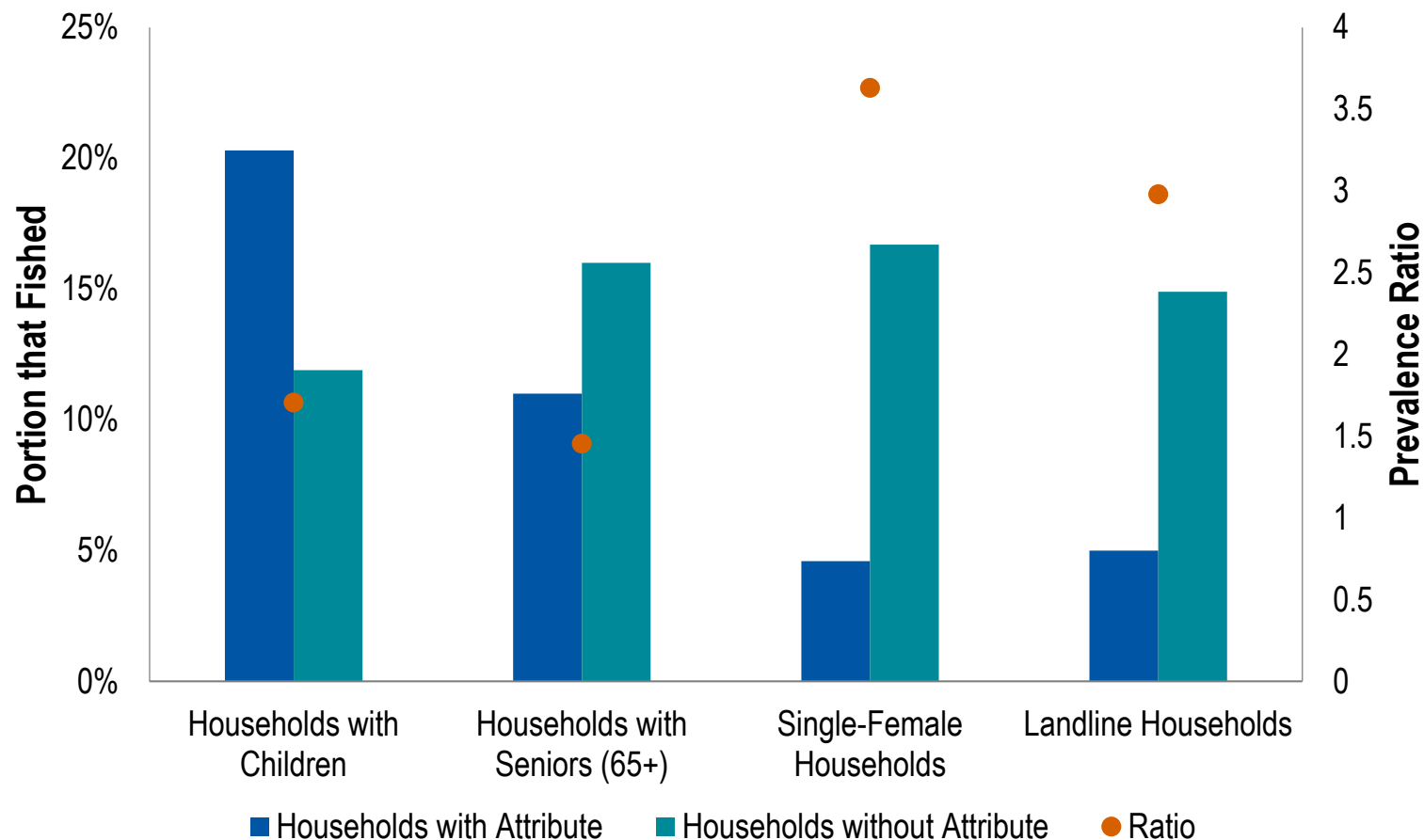
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Gulf of Mexico Household Demographic Characteristics (2017)



The Fishing Effort Survey's landline sample includes older residents, fewer children, and more households comprised of single women.

Gulf of Mexico Fishing Prevalence by Household Attribute (2017)

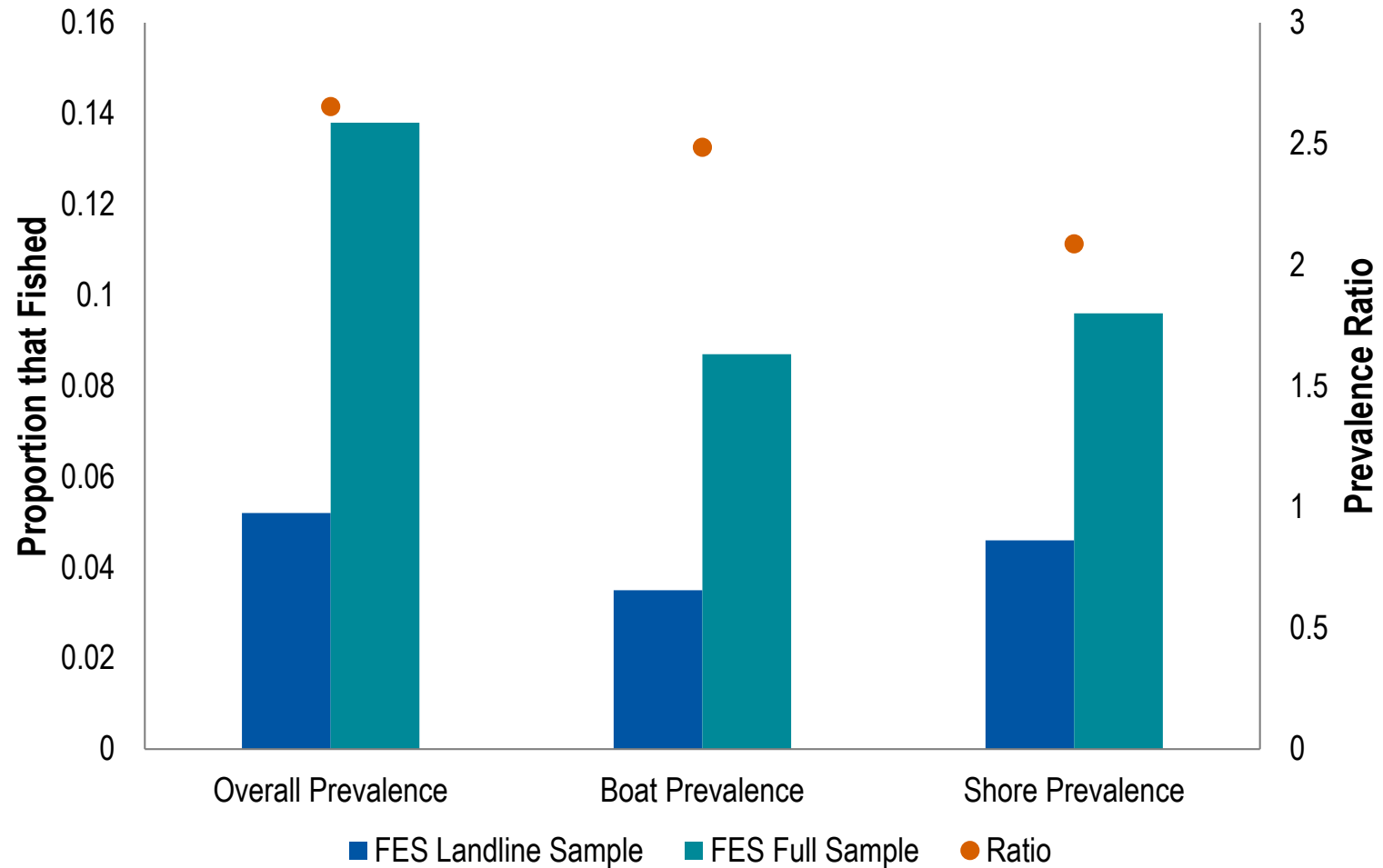


Demographic groups represented by the Fishing Effort Survey's landline sample are unlikely to participate in recreational fishing.



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Gulf of Mexico Fishing Prevalence (2017)

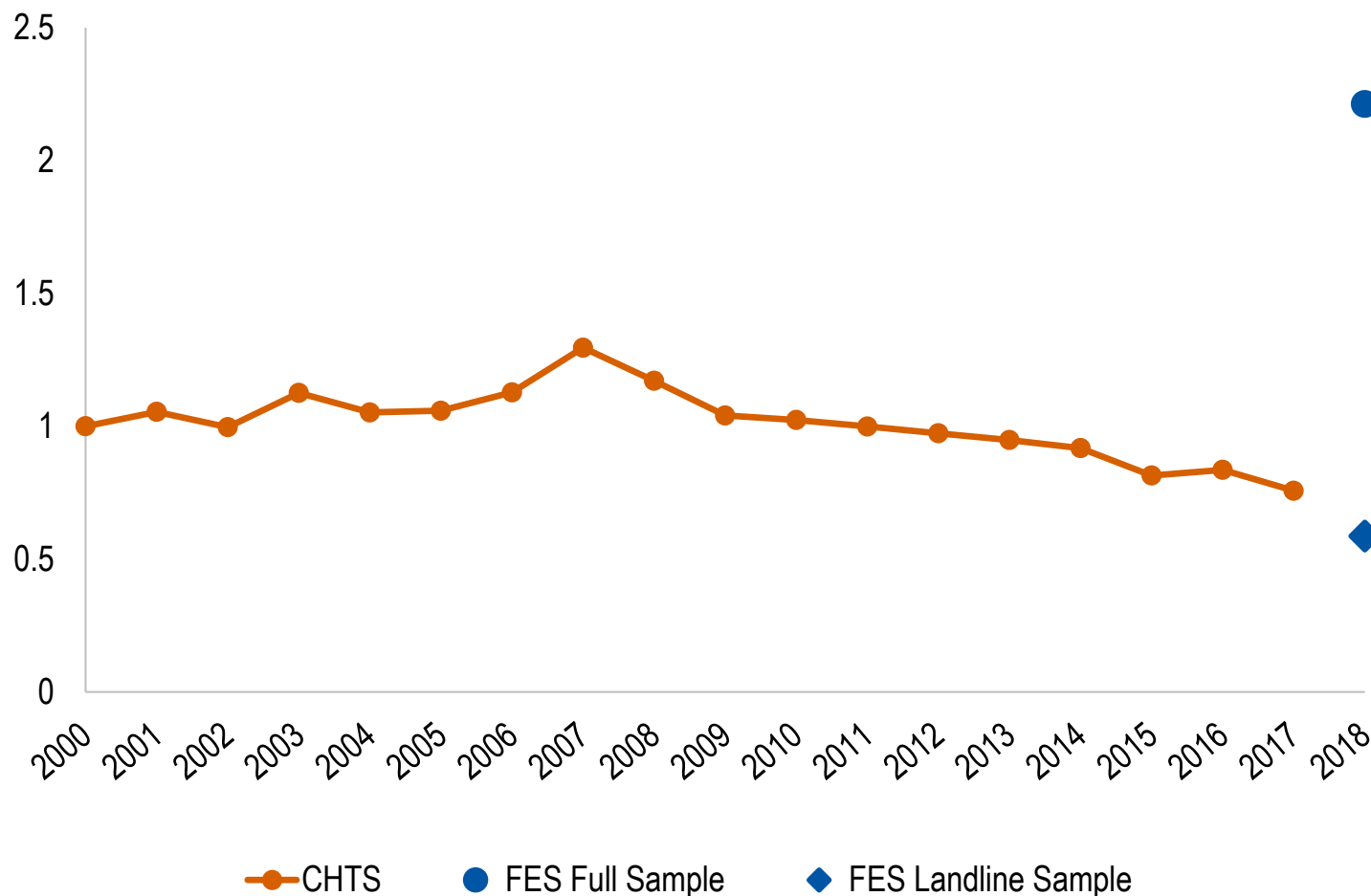


The Fishing Effort Survey's landline sample reports half of the fishing activity that is reported by the full sample.



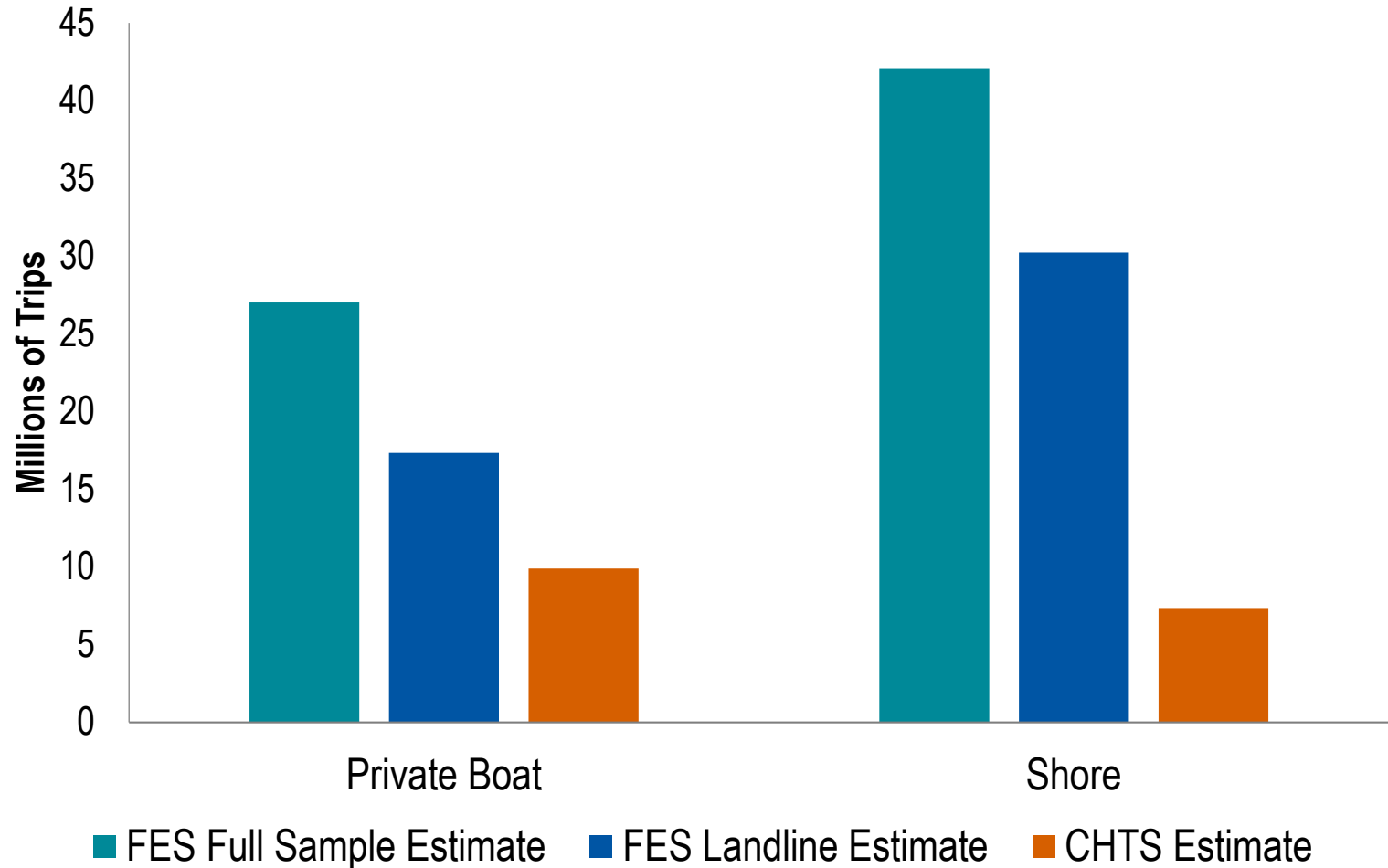
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Indexed Estimates of Gulf of Mexico Private Boat Effort



Private boat estimates from the Fishing Effort Survey's landline sample resemble private boat estimates derived from the CHTS in its final year.

Gulf of Mexico Fishing Effort



Coverage error explains a large portion of the differences between effort estimates, but other factors are also at play.



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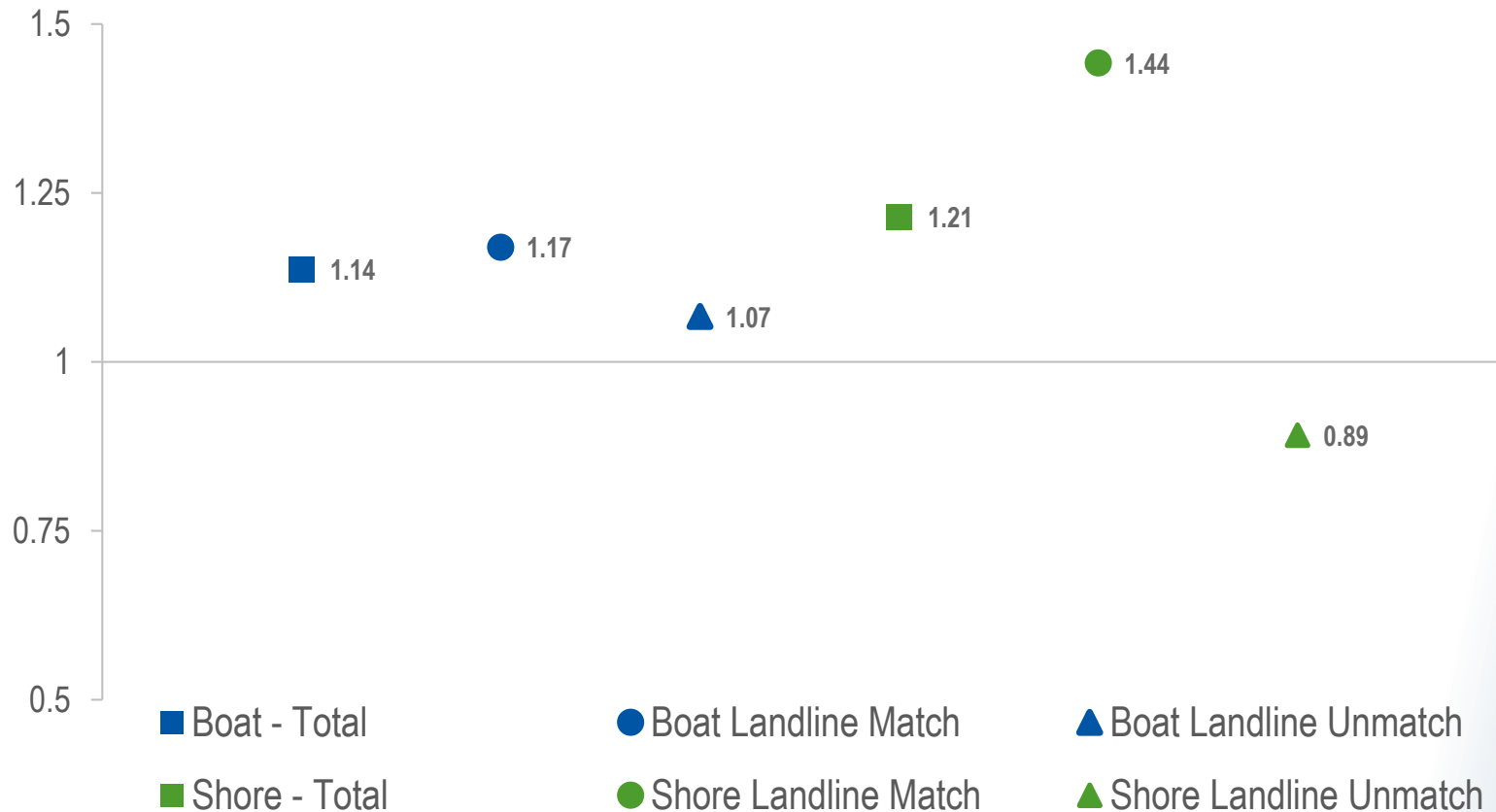
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CHTS Screener Questions

- How many people in this household go fishing?
- How many people in your household, including children and adults, have been recreational saltwater fishing in the past 12 months in the U.S. or a U.S. territory?
- How many people in your household have been recreational saltwater fishing in the past two months in the U.S. or a U.S. territory?

About two-thirds of the time, the “gatekeeper” answering these questions was female. Did our screening process exclude eligible households from the Coastal Household Telephone Survey?

Prevalence Ratios: Licensed Angler vs. Initial Respondent Screening



Reported fishing was higher when we asked to speak with the licensed angler by name. The magnitude of the Gatekeeper Effect is greater on reported fishing from shore.

The Gatekeeper Effect

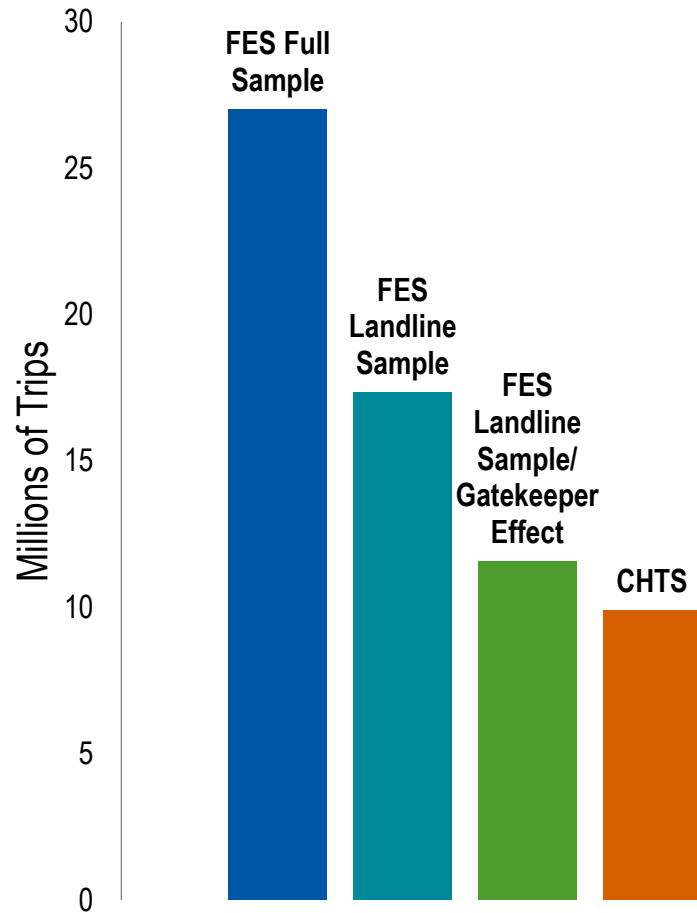
- Women are more likely to answer a landline phone and less likely to report household fishing activity.
- The Gatekeeper Effect is real—particularly when it comes to reported shore fishing.
- In this pilot, the Gatekeeper Effect resulted in an underestimate of fishing effort by as much as 30%.

The Gatekeeper Effect is real, and the initial respondent matters.

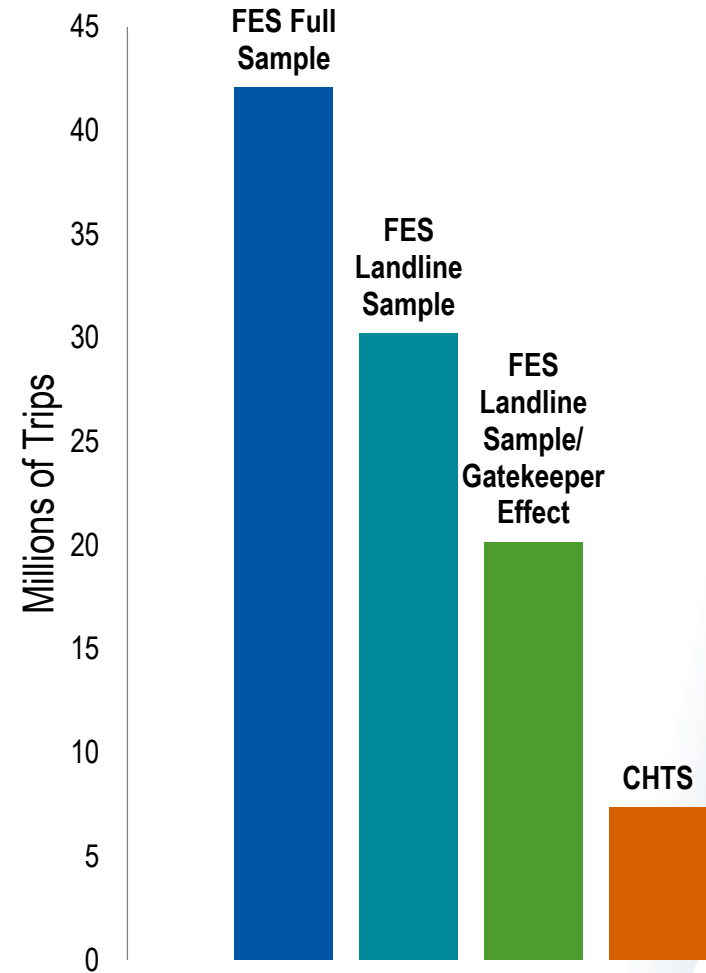


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Gulf of Mexico Private Boat Fishing Effort



Gulf of Mexico Shore Fishing Effort



Under-coverage and the Gatekeeper Effect explain almost all of the differences between estimates of private boat effort, and about 60% of the differences between estimates of shore effort.



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Gulf of Mexico Fishing Effort July-August 2019

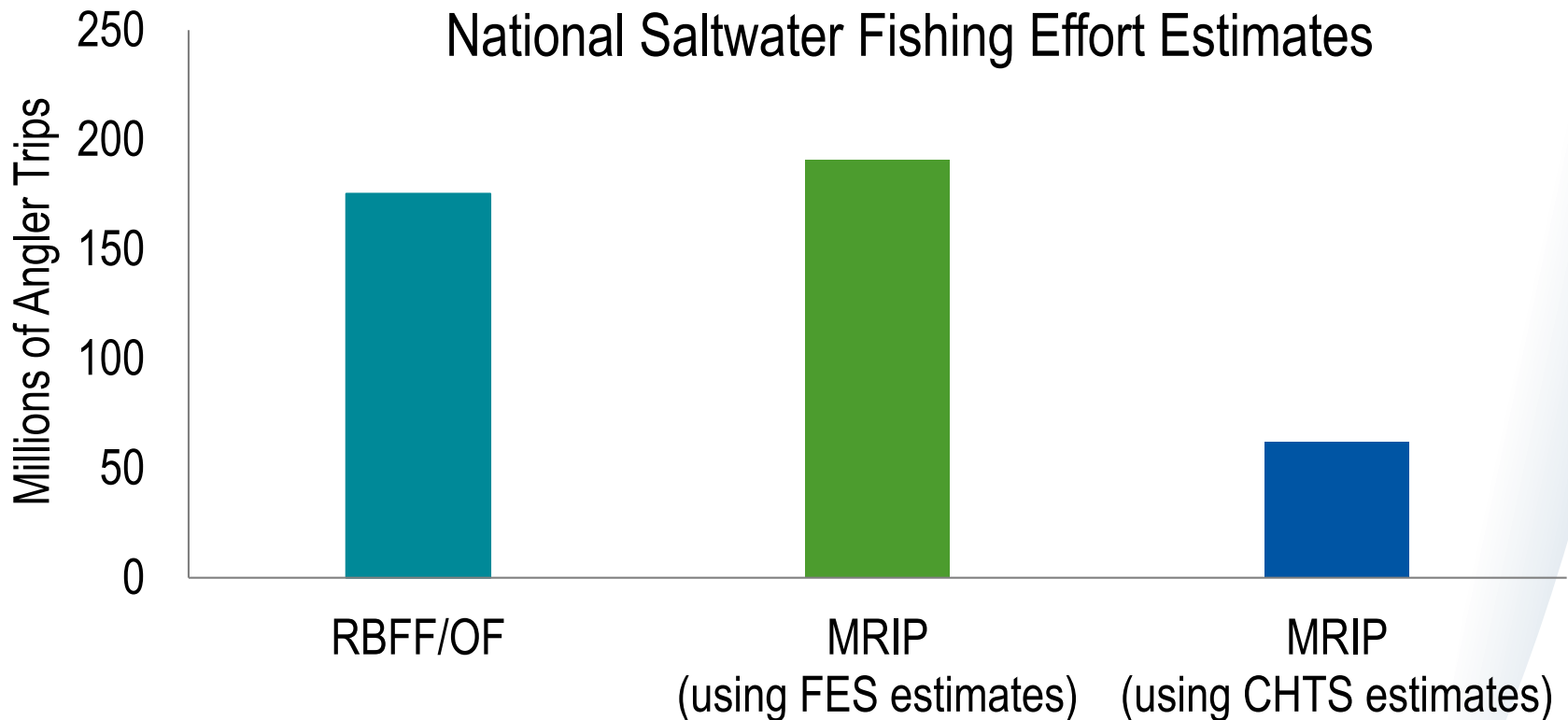
	Percent of Residents Who Reported Fishing	Average Angler Trips
Shore	5.9%	3.3
Private Boat	5.2%	3.9
All Fishing Effort	7.9%	5

Even during periods of high fishing activity, Fishing Effort Survey estimates show a relatively small proportion of the population reporting fishing.



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When we compare estimates produced with the FES to external data, we see similar trends:



RBFF/OF: National 2018 estimates

MRIP using FES (plus state and regional data): 2018 estimates

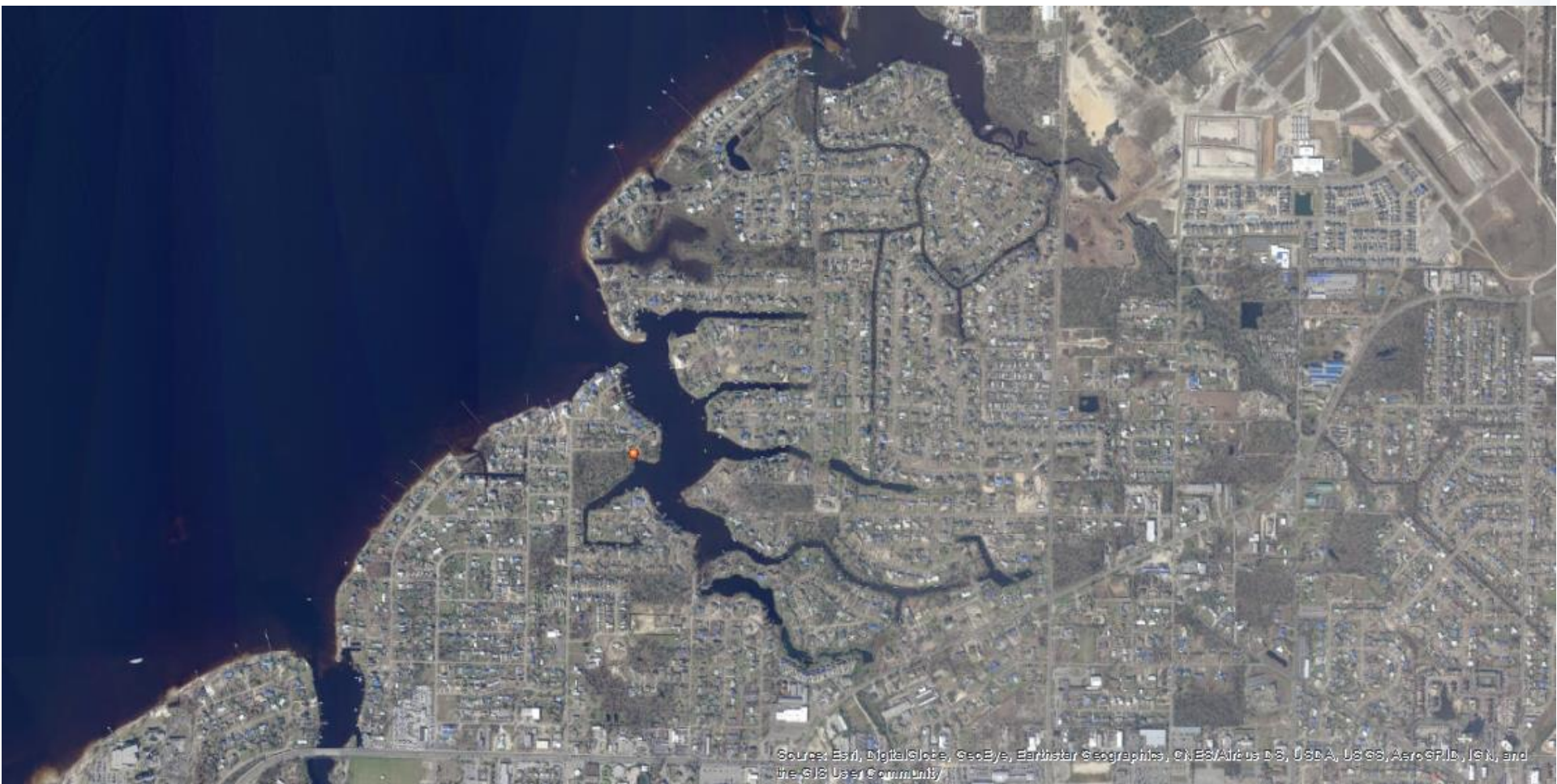
MRIP using CHTS (plus state and regional data): 2016 estimates



Does this level of fishing effort reflect what anglers can see from their boats or the shore?



Florida has approximately 1,500 intercept sites



In a 4.3-square-mile part of Panama City, Florida, there is **one public fishing access site...**



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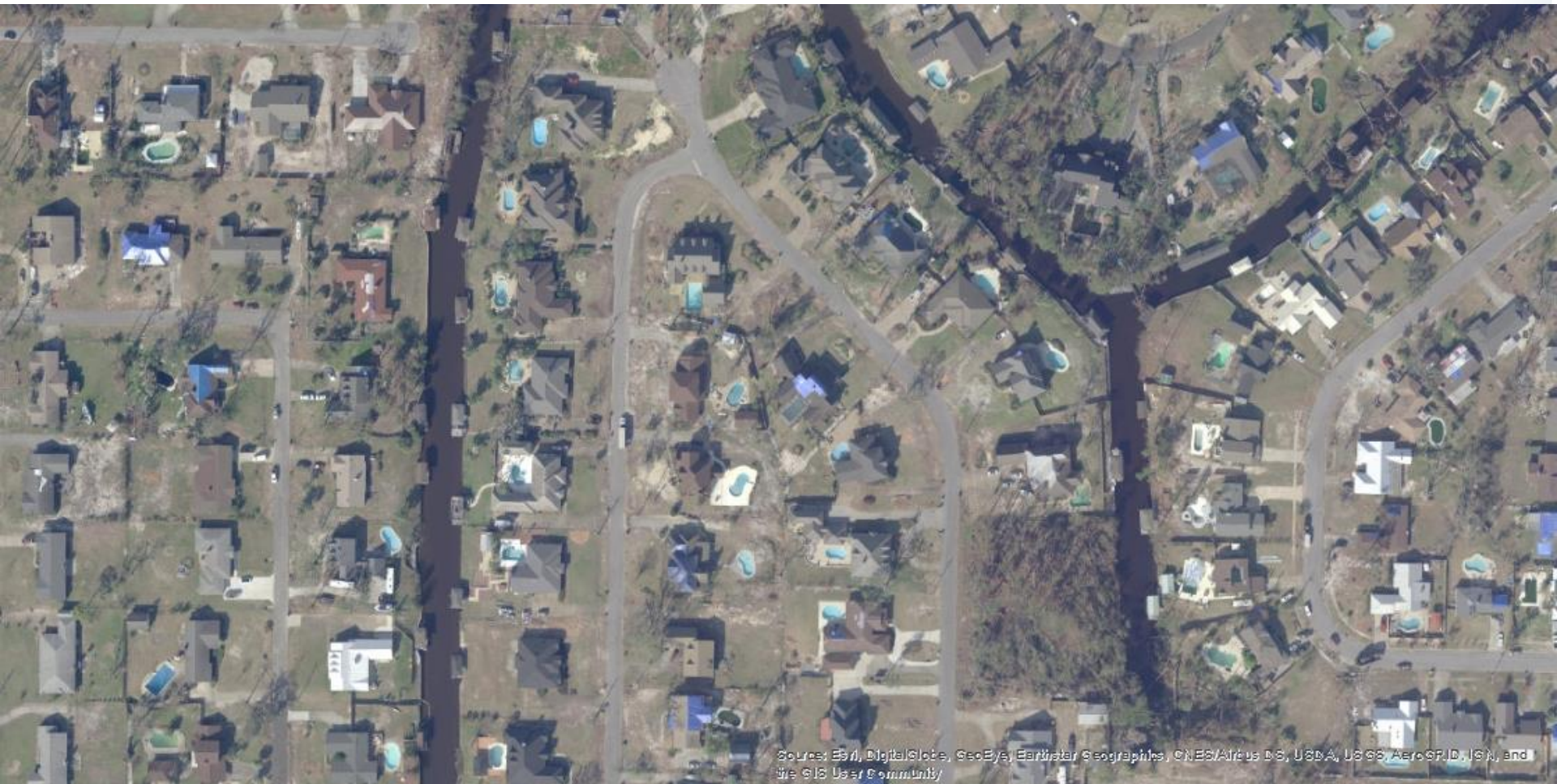


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

...and 410 private fishing access sites.



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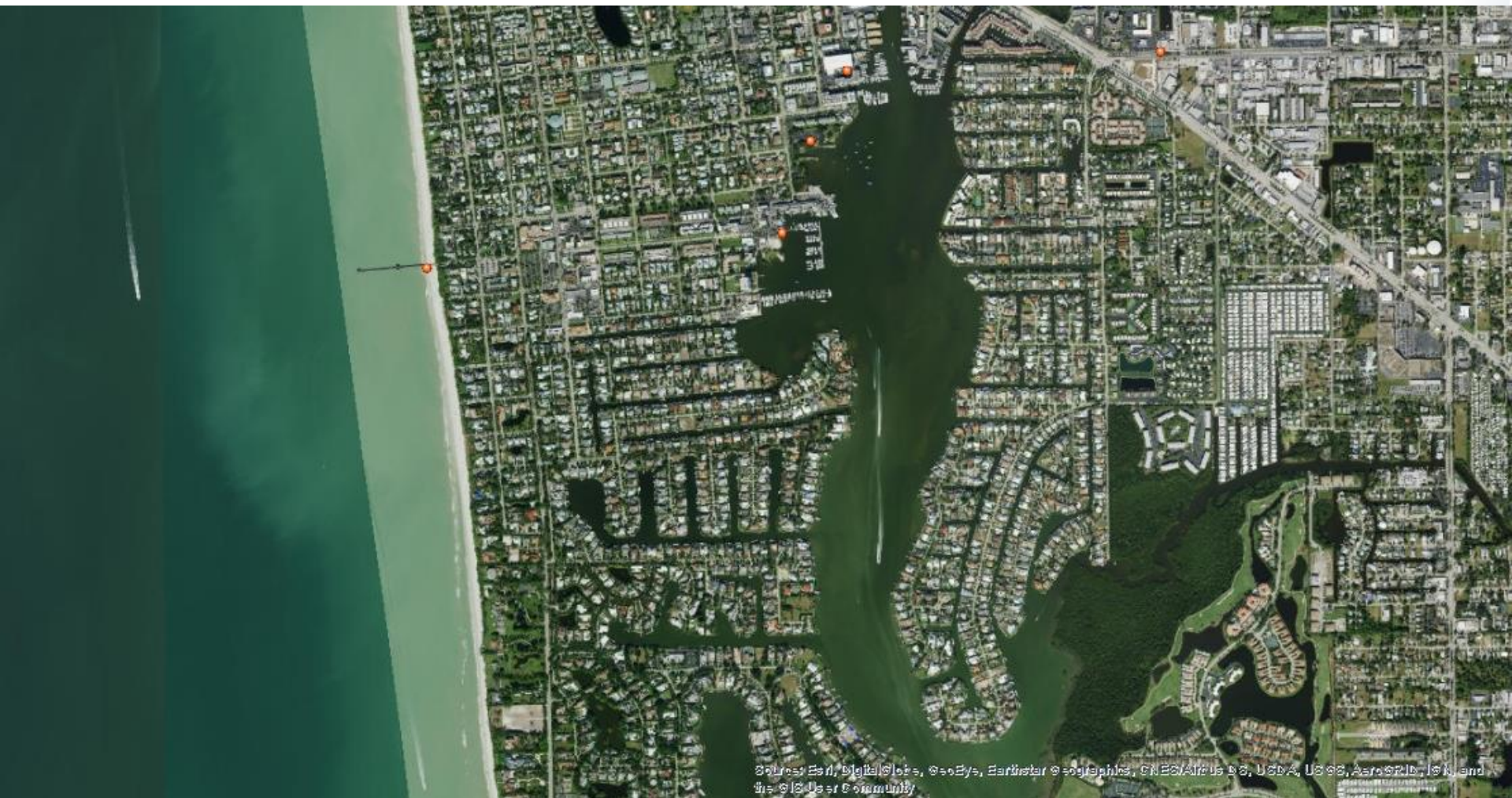


Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Almost every resident waterfront parcel has a dock.



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Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

In a 5-square-mile part of Naples, there are **five public fishing access sites...**



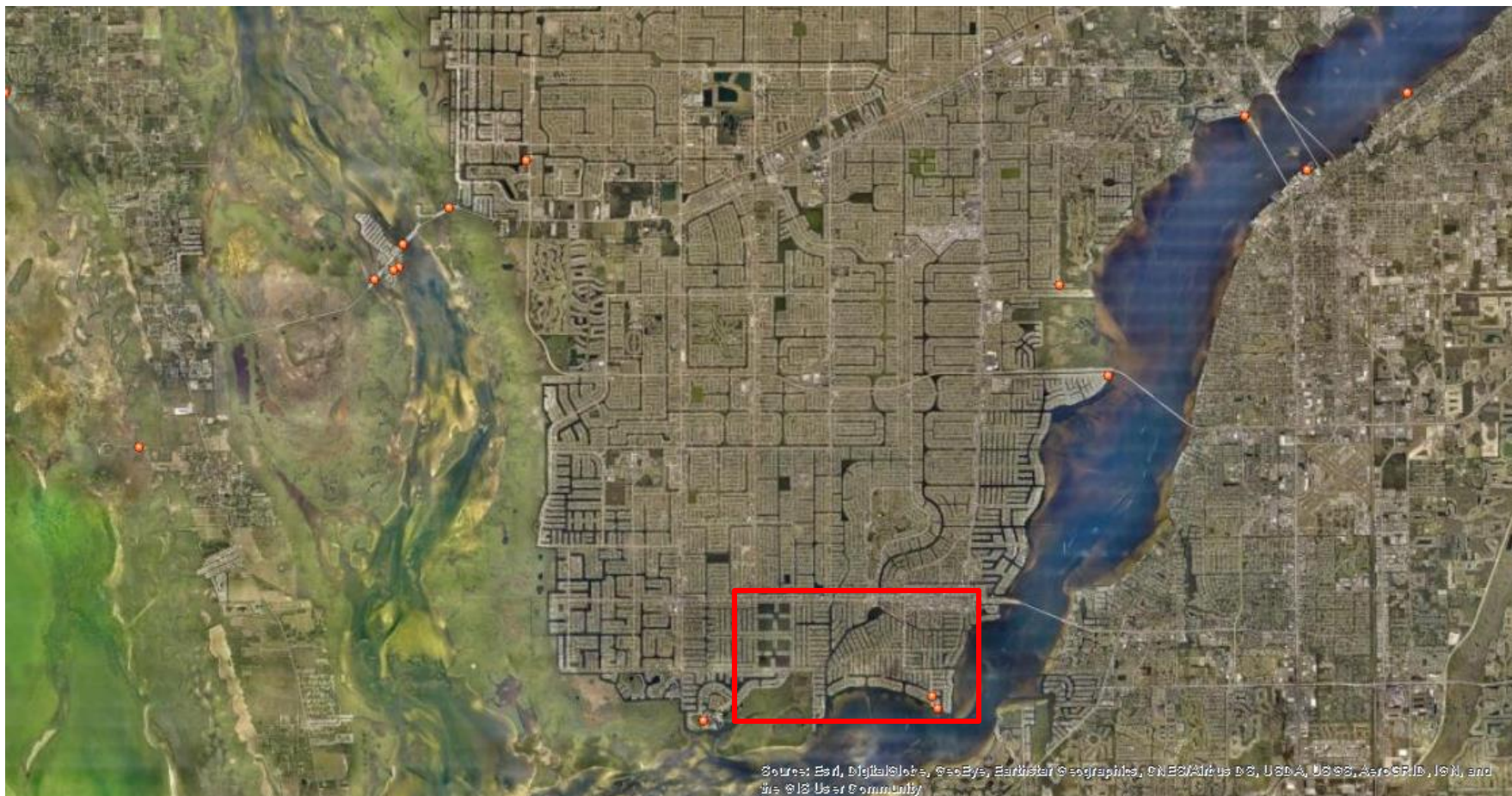
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...and more than 3,000 private fishing access sites.



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Cape Coral has 400 miles of navigable canals.



In one 6.8-square-mile part of Cape Coral, there are **two public fishing access sites...**



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...and 4,500 residential waterfront parcels.



Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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Taken together, these images show:

- People want to live on the coast.
- There is an **enormous number of private fishing access sites** along our waterways.



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Summary

- In its later years, the declining coverage of the CHTS led to severe under-estimates of fishing effort.
- Screening errors in the CHTS also resulted in under-estimates of fishing effort.
- Coverage error and the Gatekeeper Effect explain a significant amount of the differences between FES and CHTS estimates.
- Despite larger estimates, the FES still characterizes fishing as a rare event.
- The potential magnitude of “hidden fishing trips” is enormous.



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