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The COVID-19 Pandemic and S. Atlantic Fisheries

- Research Findings to Date -

April 2023 Meetings of the SAFMC Socioeconomic Panel

Edward W. Glazier, PhD, NOAA Affiliate
NOAA Fisheries SERO/SFD/Social Science Branch

Matthew McPherson, PhD, Social Science Branch Chief
NOAA Fisheries Southeast Fisheries Science Center

This presentation derives largely from NOAA Tech Memo F/SPO 233:

Marine Fisheries and the COVID-19 Pandemic: Calendar Year 2020 Survey Data and Analysis

Edward Glazier, Matthew McPherson, Michael Jepson, Eric Thunberg, and Lisa Colburn

[also Manoj Shivlani, Juan Agar, Brent Stoffle, Anthony Mastitski, and Felix Martin]

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About the Presentation

- Pandemics, Marine Fisheries & the COVID-19 Pandemic
- NMFS' Pandemic Research: Approach & Select Findings
- Discussion and Conclusions
- Ideas for further research?

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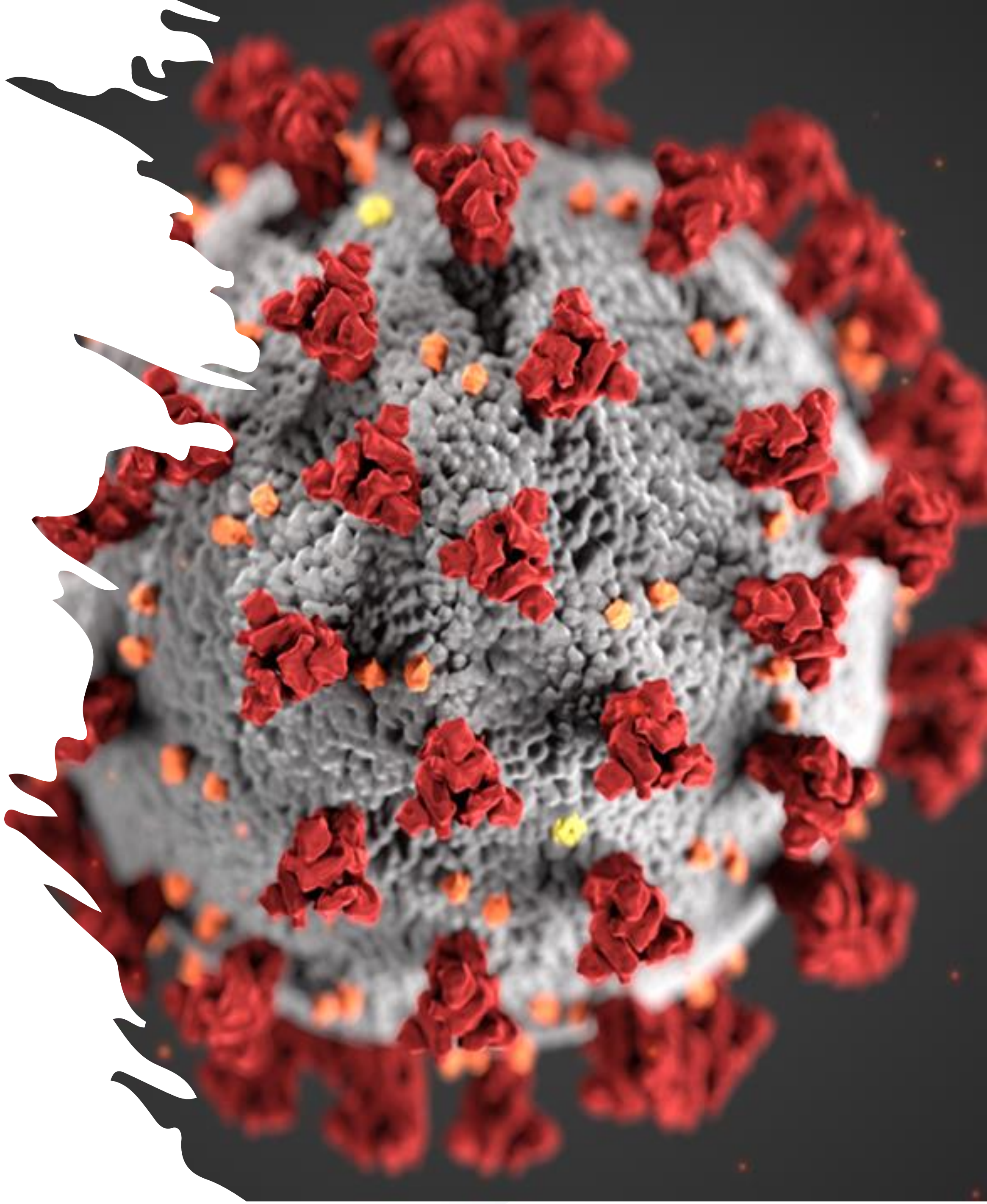
Pandemics and Marine Fisheries

- Outbreaks → Epidemics → Pandemics
- Pandemics – ancient societal phenomena
- Indigenous populations in the Americas heavily impacted over centuries
- High rates of infection, morbidity, and mortality typical among societies not previously exposed
- Increasingly likely and difficult to mitigate
- A unique (ubiquitous) form of disaster

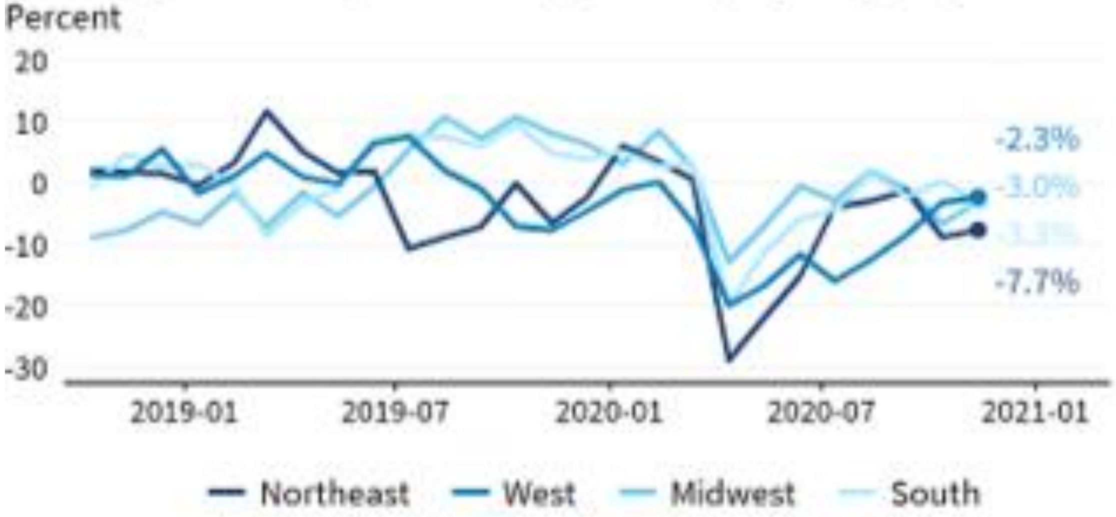
SARS-CoV-2 (COVID-19)

- Profound early uncertainty and fear about the disease along with actual disease and death = highly disrupted social interaction = “Anthropause” (in what has become the “Anthropocene”
- Policy-making bodies across the country initially abridged normal patterns of social and economic activity for multiple months



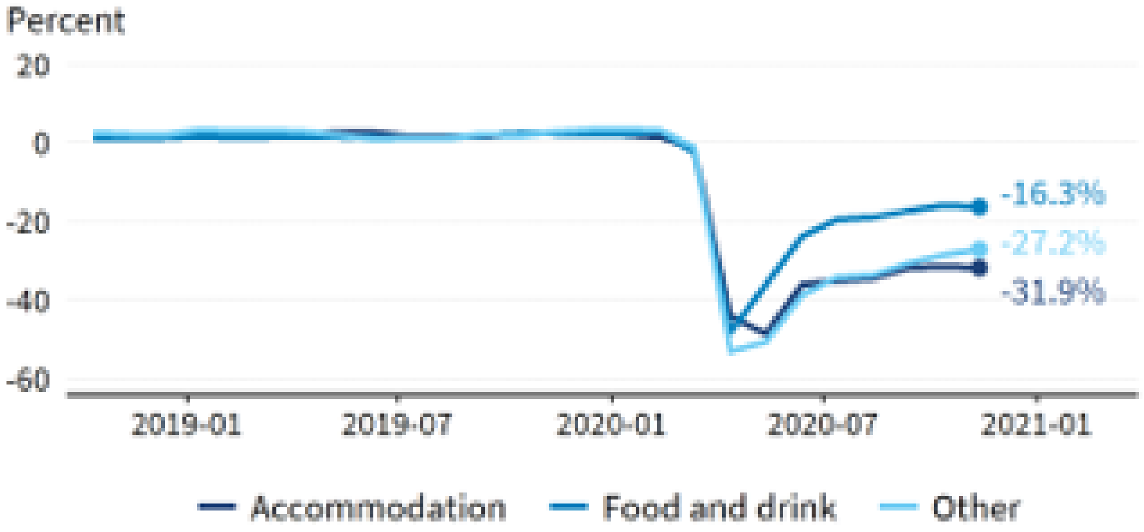
Widespread Economic Change

Figure 4: Change in working self-employed by region



Change relative to 12 months prior.
Source: Current Population Survey; BLS, Census, and IPUMS

Figure 7: Change in leisure and hospitality employment



Change relative to 12 months prior.
Source: Source: Current Employment Statistics, BLS

Rapid Change in Domestic Fisheries

- Closures and stay-at-home orders early in 2020 triggered a series of economic shockwaves across the seafood industry

- For example, domestic commercial landings revenue in total fell 19% below the March average for the previous five years

- The situation continued to deteriorate across the nation's commercial fisheries into mid-summer, with landings revenue diminishing to 45% below the five year average in July

- A $200 billion industry recently employing some 1.7 million workers had essentially stalled

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The “Anthropause”

(2020 shutdowns, Eastern Seaboard, Gulf of Mexico)

State (north to south)	Stay-at-Home Orders/Mandates*	Initial Strictures on Travel from other States
Maine	April 2 to May 31	Mandatory quarantine
New Hampshire	March 27 to May 31	Mandatory quarantine
Massachusetts	March 24 to May 18	Mandatory quarantine
Rhode Island	March 28 to May 20	Mandatory quarantine
Connecticut	March 23 to May 20	Quarantine recommended
New York	March 22 to May 28	None
New Jersey	March 21 to June 9	None
Delaware	March 24 to May 31	Mandatory quarantine
Maryland	March 30 to May 15	Mandatory quarantine
Virginia	March 30 to June 10	None
North Carolina	**March 30 to May 22**	**None**
South Carolina	**April 7 to May 3**	**Limited quarantine**
Georgia	**April 3 to April 30**	**None**
Florida	**April 3 to April 30**	**Limited quarantine and screening**
Alabama	April 4 to April 30	None
Mississippi	April 3 to April 27	None
Louisiana	March 23 to May 15	None
Texas	April 2 to April 30	Limited quarantine

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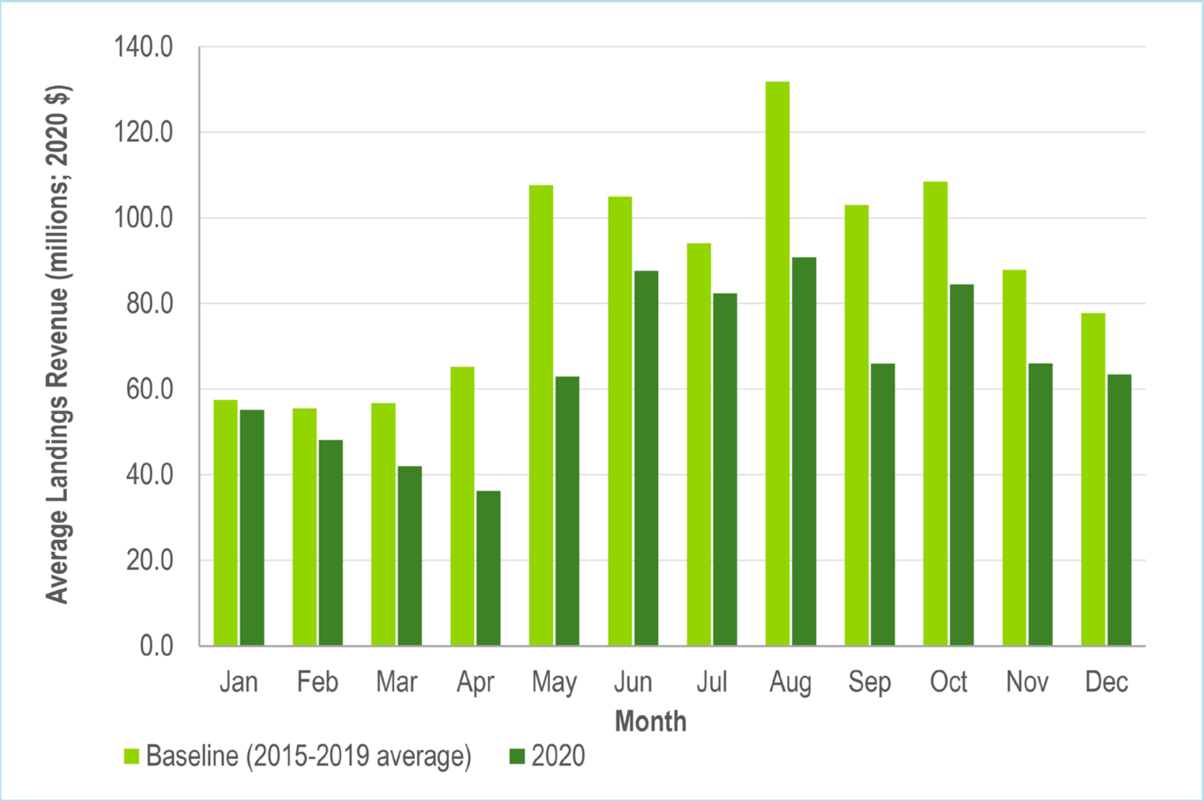
Declines in Southeast Fisheries Landings Revenue



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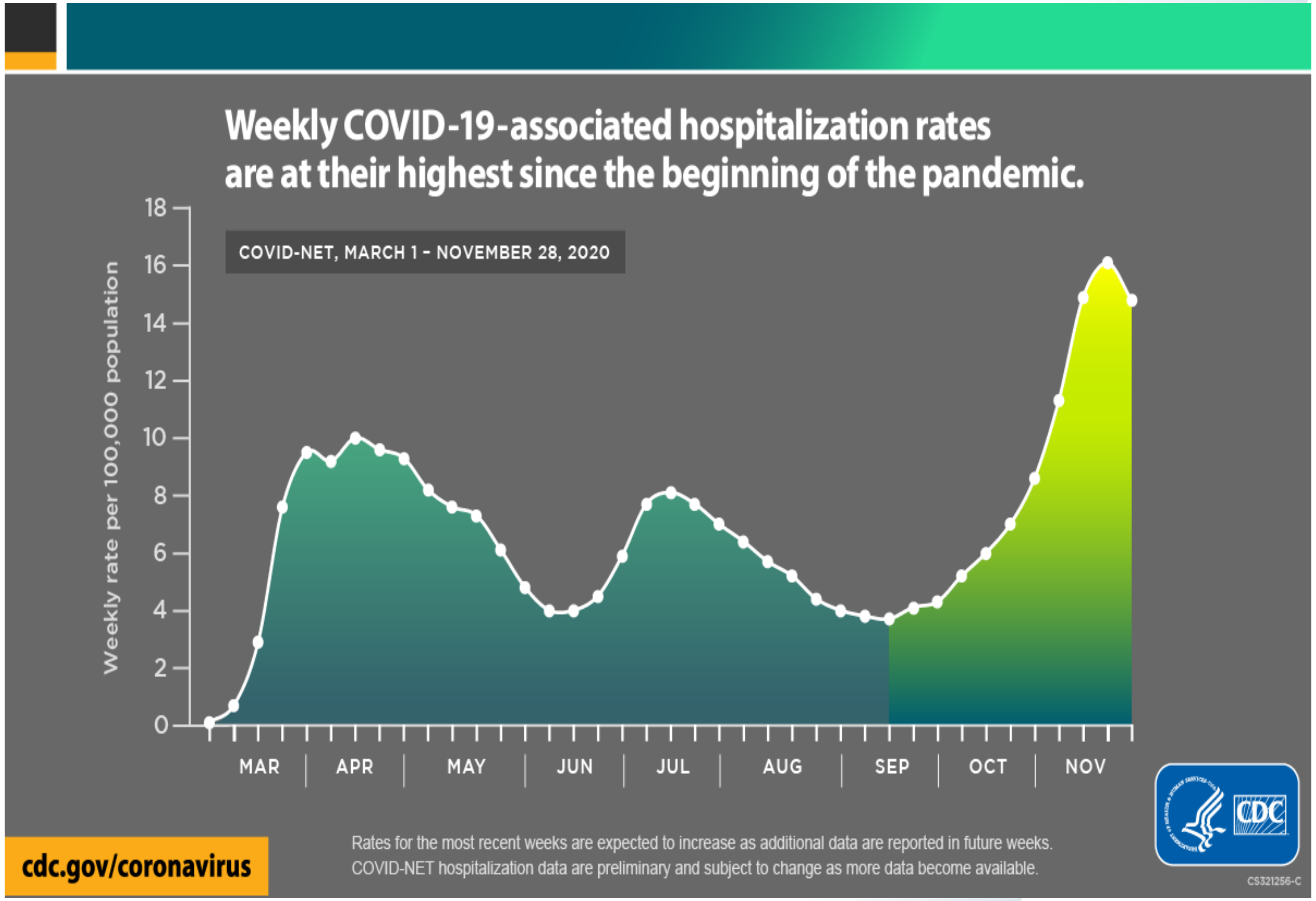
Specifically How Were Regional Fisheries Impacted in the US?

- Initial round of surveys gauged impacts occurring by month-six, with a second phase assessing effects for all of 2020

- **Calendar Year One Study**:

New England, Mid-Atlantic, South Atlantic, and Gulf of Mexico fishery management regions



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Overall Sampling Approach

Accounting for incorrect or disconnected phone numbers resulted in an adjusted frame of 15,826 prospective respondents

4,016 fishery participants were ultimately contacted, with 1,828 persons participating in survey round two

~4,100 persons inform the overall analysis (round 1 + round 2 surveys)

Analysis further supplemented with archival research & direct observation of fishery impacts in coastal North Carolina, Virginia, and Maryland

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Summary of Sampling in the South Atlantic (Phase Two)

Summary of response rates

Region	Sector	Adjusted Frame	Completed/ % Rate	Refused	Refusal Rate	No Response/ % Rate
S. Atlantic	Dealer/Processor	**448**	55/12.3	86	19.2%	307/68.5
S. Atlantic	Commercial	**1,548**	200/12.9	278	18.0%	1,070/69.1
S. Atlantic	For-Hire	**1,108**	192/17.3	130	11.7%	786/70.9

Interview target outcomes

Study Region	Sector	Adjusted Frame	% of Frame Targeted	Number Complete	% of Target	% of Adj. Frame
S. Atlantic	Dealer/Processor	448	44.6	**55**	27.5	12.3
S. Atlantic	Commercial	1,548	12.9	**200**	100.0	12.9
S. Atlantic	For-Hire	1,108	18.1	**192**	96.0	17.3

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Characteristics of Sampled S. Atlantic Fishing Operations

Average number of years as vessel owner

- 28.2 Commercial harvesters (n=195)
- 24.0 For-Hire operators (n=187)
- Very similar to mean overall (n=721)

Percentage for whom fishing is the primary source of income

- 73.4% Commercial harvesters (n=199)
- 61.3% For-Hire operators (n=186)
- Similar to mean overall (n=1,499)

Number of fishing vessels owned by S. Atlantic respondents

- 40% commercial harvesters own one, 34% two, 26%>2
- 50% for-hire harvesters own one, 25% two, 16%>2
- 70% and 73% of New Englanders own 1 boat, respectively

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Characteristics of Sampled Operations (continued)

Average LOA among owners of single vessel

- 31.6’ Commercial harvesters (n=77) (34.5’ all regions)
- 29.5’ For-Hire operators (n=111) (32.5’ all regions)

Average number of crew employed

- 2.2 Commercial (n=118) (2.8 all regions; n=497)
  Std. dev. = 1.4 (5.0 all regions) (*Mid-Atlantic mean=4.3; n=115)
- 2.9 For-hire (n=76, S. Atlantic highest of regions)
  (2.4 all regions; n=334) Std. dev.=4.3 (3.1 all regions)

Characteristics of Sampled Fishing Operations (cont.)

Jurisdictional areas in which survey participants conduct their fishing operations

Council Region	State Waters Only		Federal Waters Only		Both Zones		valid *n*
	Commercial	For-Hire	Commercial	For-Hire	Commercial	For-hire	
South Atlantic	**57.1%** (*n*=198)	**33.2%** (n=190)	**3.5%** (n=198)	**4.7%** (*n*=190)	**36.4%** (*n*=139)	**62.1%** (*n*=190)	388
All Regions	47.4% (*n*=778)	31.0% (*n*=731)	6.2% (n=778)	6.4% (*n*=731)	50.1% (*n*=996)	62.5% (*n*=731)	1,509

Pandemic Impacts - Commercial & For-Hire Sectors

% of S. Atlantic Sample Reporting Pandemic Impacts

- 87.8% Commercial (n=189) (87.7% across regions; n=766)
- 87.5% For-hire (n=192) (86.6% across regions; n=729)

% of Commercial and For-hire operators who ceased fishing due to pandemic (for any amount of time)

- 84.9% Commercial (n=166) (82.0% across regions; n=667)
- 86.9% For-hire (n=168) (86.4% across regions; n=642)

Pandemic Impacts on Commercial & For-Hire Sectors (cont.)

Incidence/duration of *no fishing*: Commercial operators

- 48.9% **Commercial** ceased fishing for 1-3 months (n=67); 51.2% all regions (n=273)
- 23.6% did so for >3 months; 24.8% all regions (n=38)
- 3.6% reported going out of business (n=5); 2.3% all regions

Incidence/duration of *no fishing*: For-hire operators

- 57.7% **For-hire** ceased fishing for 1-3 months (n=86); 59.2% all regions (n=325)
- 30.9% did so for >3 months (n=46); 23.0% all regions (n=126)
- 1.3% reported going out of business (n=2); 2.2% all regions (n=12)

Pandemic Impacts on Commercial & For-Hire Sectors (cont.)

Reported % reduction in business *activity* during 2020 as a whole

- -56.6% **Commercial** (n=158); 57.1% all regions (n=620)
- -59.3% **For-hire** (n=155); 55.4% all regions (n=581)

Reported changes in business *performance* between July and December 2020

- 45.7% **Commercial** "worsened" (n=74); 43.2% all regions (n=283)
- 48.8% **For-hire** "improved" (n=81); 41.6% all regions (n=264)

- Notable difference: 42.5% of New England commercial operators reported "improved" business performance during latter part of 2020

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Pandemic Impacts on Commercial & For-Hire Sectors (cont.)

Principal factors impacting Commercial operations during 2020

- Loss of crew members: 25.3% (n=79); 25.6% all regions (n=308)
- Reduced number of trips: 22.8% (n=79); 18.8% all regions (n=308)
- Gov't restrictions: 19% (n=79); 13.6% (n=308)

Principal factors impacting For-hire operations during 2020

- Gov't restrictions: 35.4% (n=65); 39.4% all regions (n=274)
- Loss of crew members: 16.9% (n=65); PPE costs 16.1% (n=274)
- PPE Costs & finding bait both 12.3% (n=65); loss of crew 12.4% (n=274)

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Hook

Pandemic Impacts - Commercial & For-Hire Sectors (cont.)

Commercial operators reporting revenue loss for 2020 vs. 2019

- 87.8% S. Atl. (n=164); 89.4% all regions (n=667)
- Ave. % reduction in revenue S. Atl.=45.7% (n=139); 45.4% all regions (n=555)
- Ave. loss S. Atl = $204k, σ $96k (n=137); $208k all regions, σ $107k (n=409)

For-hire operators reporting revenue loss for 2020 vs. 2019

- 85.5% S. Atlantic (n=166); 88.9% all regions (n=638)
- Ave. % reduction in revenue S. Atl.=48% (n=137); 45.4% all regions (n=548)
- Ave. loss S. Atl = $63k, σ $13k (n=100); $91k all regions, 'σ $52k (n=400)

- Ave. commercial harvest losses much higher in New England
- Ave. for-hire losses much higher in the Gulf of Mexico

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Characteristics of Sampled S. Atlantic Seafood Operations

- Most either seafood first receivers/wholesalers (35%) or first receivers/wholesalers/processors (35%); only 3.9% just processors (n=51)

- Av. yrs. experience=29 (highest); 24.5 yrs. on av. across all regions (n=395)

- Most sales in S. Atl. one state (60%); 38.2% national, 9% international (n=55)

- 22% and 45% in New England report international, national sales (n=72)

- Ave. # employees in S. Atlantic = 5.9 (fewest, n=46); 9.2 all regions (n=256), highest in Mid-Atlantic (12.8; σ =45.4; n=24)

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Pandemic Impacts - South Atlantic Seafood Operations

- 87% of distributor/processors impacted (n=54); 85% all regions (n=303)
- 48.9% ceased operating for some period (n=47); 50.2% all regions (n=257)
- 57.1% closed for between 1-3 months (n=21); 48% all regions (n=125)
- 4.8% closed permanently, 14.3% indefinitely vs. 3.2% and 9.6% all regions (n=125)
- Ave. % reduction in business 61.5% (n=45); 57.8% all regions (n=249)
- 37.2% reported worsening conditions 2nd half of 2020 (n=42); 39% overall (n=258) (highest Mid-Atlantic @ 45.8% (n=24)

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Pandemic Impacts - S. Atlantic Seafood Operations (cont.)

- Reduced hours, PPE costs, and gov't restrictions deemed most impactful (n=22)
- 43.5% lost employees (n=58) – 6.6 on average (n=17) (5.8 all regions, n=87)
- 87.2% reported revenue losses for 2020 (n=47); 83.5% all regions (n=255)
- Ave. reduction in revenue 2019 vs. 2020= 43.9% (n=39); 45.8% all regions (n=200)
- Absolute dollar losses greatest in New England, speaking to the volume of seafood handled by relatively large businesses, and least in S. Atlantic where relatively small/low volume operations dominate

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Pandemic Impacts - S. Atlantic Seafood Operations (cont.)

- Despite challenges, relatively few missed payments (17% of 47 missed in S. Atlantic)

- High % of respondents did not request assistance (38% in S. Atl. (n=40), 32% overall (n=229), exception - New Eng. (52% sought paycheck protection, n=54)

- Duration of cash-on-hand buffers shortest in S. Atlantic (3-4 weeks; n=42), highest in Mid-Atlantic (over 3 months; n=229)

Pandemic Impacts - S. Atlantic Seafood Operations (cont.)

Pandemic coping mechanisms deemed most helpful: seafood business sector

Council Region	% Distribution of Top 3 Coping Mechanisms		
	1. Family & Friends	2. Personal Savings	3. Government Assistance
Gulf of Mexico (*n*=55)	52.7%	23.6%	10.9
Mid-Atlantic (*n*=12)	50.0%	25.0%	8.3
New England (*n*=30)	56.7%	13.3%	16.7
South Atlantic (*n*=18)	**72.2%**	**11.1%**	**0.0**
Across Regions (*n*=115)	56.5%	19.1%	10.4

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Discussion

- Survey (and landings) data clearly indicate all sectors were heavily & widely impacted by the pandemic in the S. Atlantic & all study regions in 2020
- Apparent movement toward late year recovery in the for-hire sector and notable early response strategies in New England beg the question of whether 2021 was a better year for domestic fisheries
- Data are emerging to help answer this question, but clarity is presently absent in a context of many potentially intervening variables
- Cases-in-point: 2021 landings and revenue data, and experiment with data from leading landings communities in the South Atlantic

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Discussion (continued)

- For all commercial fisheries in the Southeast region, preliminary data indicate ex-vessel landings revenue increased by 17.0% for 2021 fishing season vs. 2020 season

- For species managed by ACL quotas, landings decreased by 3.1%, landings revenue decreased by 1.0%, and ex-vessel prices increased by 2.2% for 2021 vs. 2020 season

- For species managed by ITQ program, landings increased by 7.7%, ex-vessel revenue increased by 10.6%, and ex-vessel prices increased by 2.7% for 2021 vs. 2020 season

- Dolphin-wahoo landings decreased by 15.7%, ex-vessel landings revenue decreased by 3.0%, and average annual ex-vessel price increased by 15.0%.

- Gag grouper landings increased by 34.1%, ex-vessel landings revenue increased by 35.2%, and average annual ex-vessel price increased by 1.0%.

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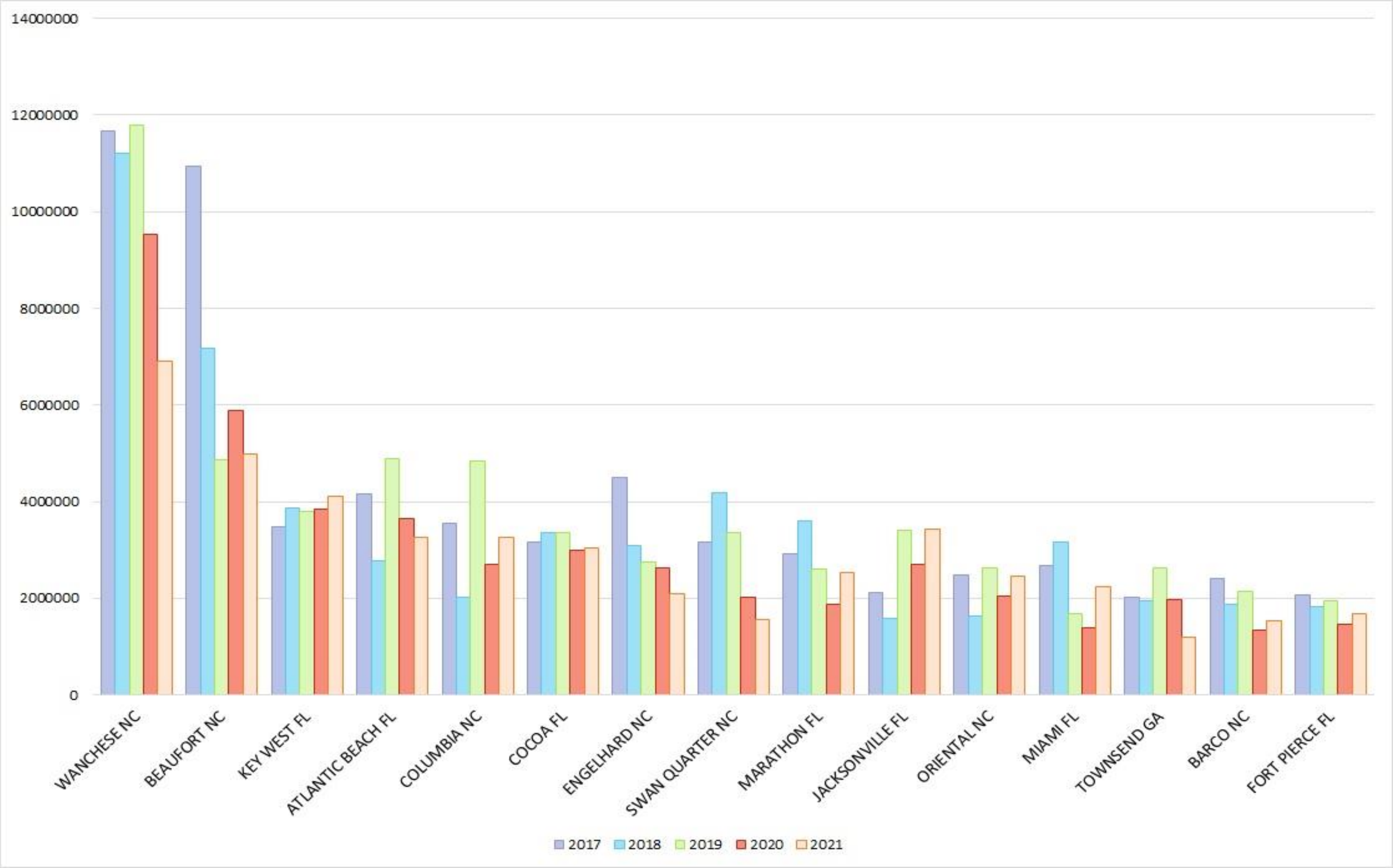
Discussion (continued)



Conclusions

- Unique, unsurpassed, indeterminate, and encompassing human impacts
- Initial economic shock was profound across the fishery management regions
- Variability in preexisting context matters: New England and Southeast
- Pandemic = a disrupted culture of distance between people
- Cyclic phases of disaster: (1) preparedness (2) incident/event, (3) response; (4) recovery, (5) prevention & mitigation
- We continue to straddle the incident and response stages of the disaster
- What lessons are we learning; fisheries-specific pandemic planning?
- Complexity and science-in-progress; continued assessment essential

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Ideas for further research?