



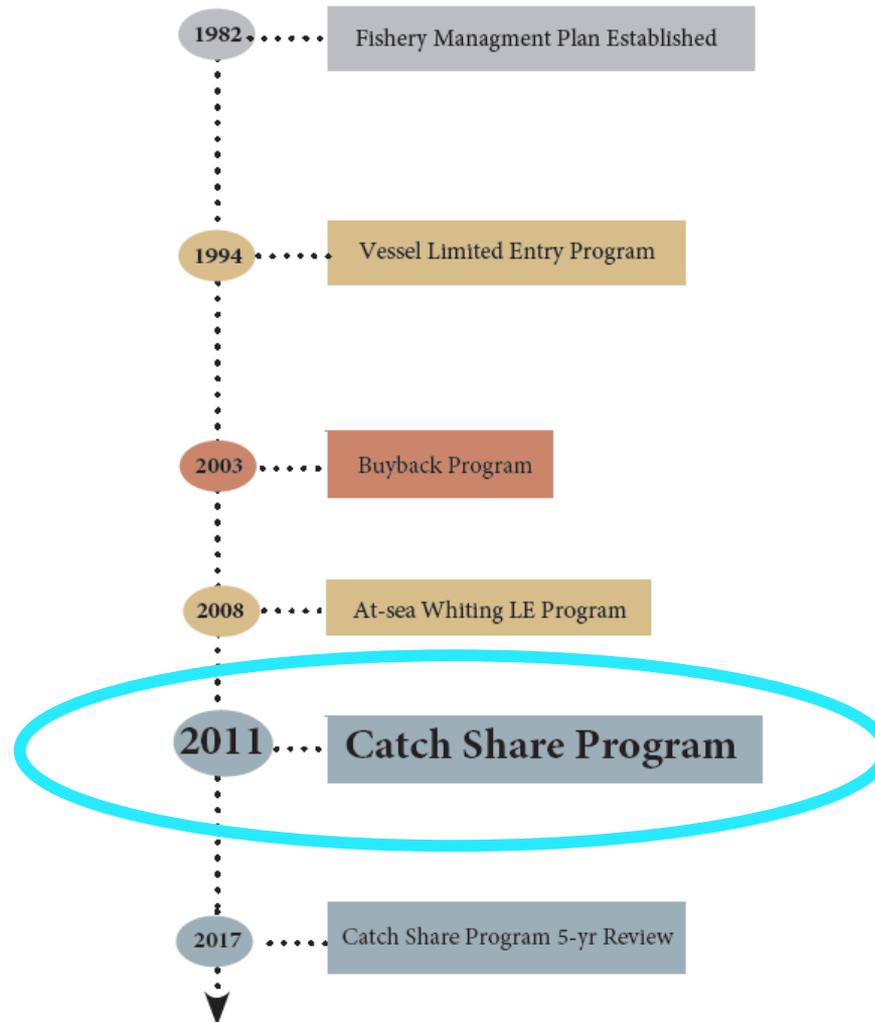
**NOAA
FISHERIES**

Economic Data Collection Program

Erin Steiner, and Marie Guldin

Economics and Social Science Research Program,
NOAA Northwest Fisheries Science Center

West Coast Groundfish Trawl Catch Share Program



What is the EDC?

- Catch share program was implemented in January 2011 with many economic objectives
- NWFSC was asked by Council to develop a data collection program
- Mandatory annual cost and earnings survey of all catch share participants
- Baseline: 2009-2010
- Catch Shares Data: 2011-2015 (currently collecting 2016 data)



Development of the EDC Program

- Cost Earnings Survey served as template
- The data collection and calculation methods were developed and tested over many years, with
 - Expert experience and advice
 - Industry collaboration
 - SSC and Council approval

EDC Team

- 1 FTE: Erin Steiner
- 1 part-time FTE: Marie Guldin
- 2 fulltime contractors:
 - Amanda Warlick
 - Melissa Krigbaum
- FISHEye contractor
 - Melanie Harsch



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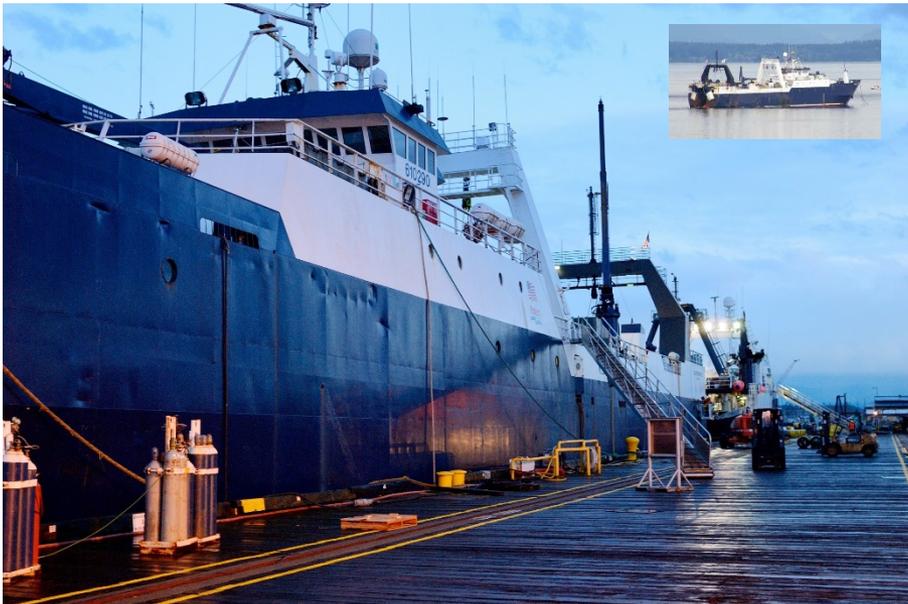
Survey Population

Who's responsible for filling out an EDC

- Anyone with a limited entry trawl permit
- Anyone with a first receiver site license

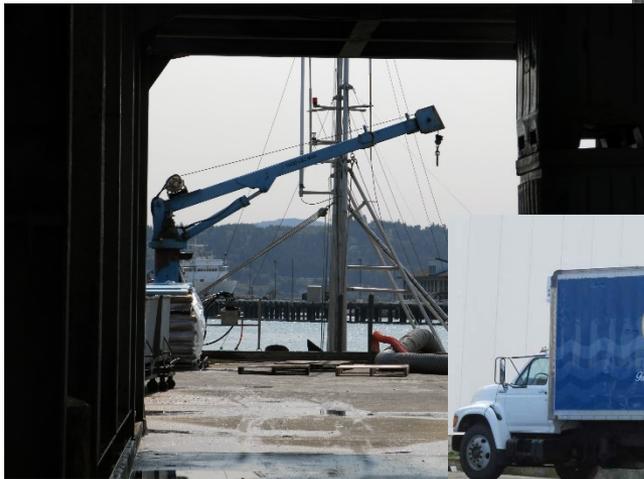
EDC Population

- Anyone with a Limited Entry Trawl Groundfish permit
 - Motherships
 - Catcher-processors
 - Catcher vessels

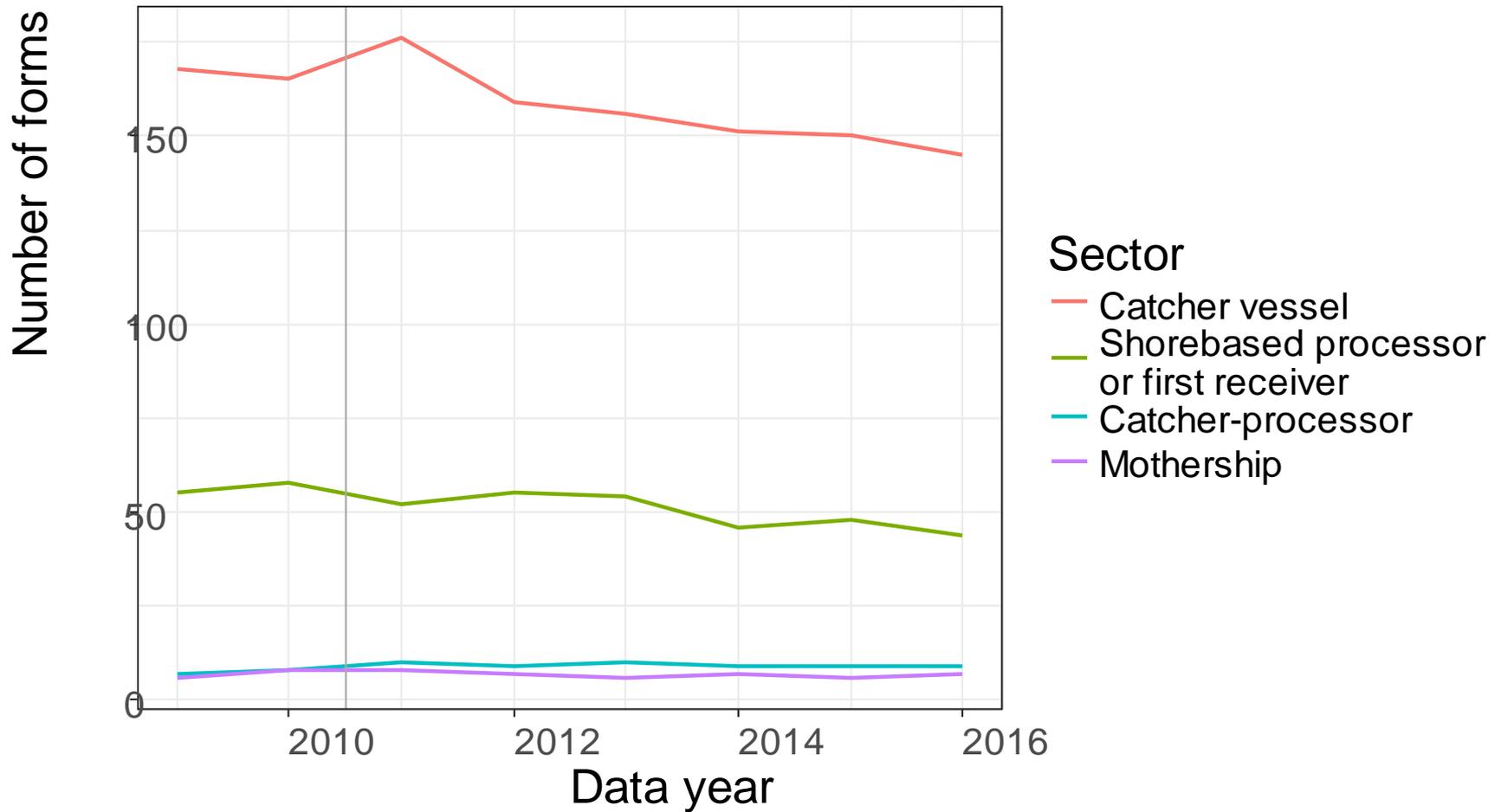


EDC Population

- All first receivers and shorebased processors that received unprocessed catch share species from a first receiver



Number of participants/forms



What costs do you collect for
vessels and processors?



2015 Economic Data Collection (EDC)
 West Coast Groundfish Trawl
 Catch Share Program

Preliminary
CATCHER VESSELS

ECONOMIC SUMMARY*

Vessel Average

\$486.9K revenue
 \$306.1K variable costs
 \$180.7K variable cost net revenue
 \$129.4K fixed costs
 \$51.3K total cost net revenue

\$5.5K variable cost net revenue
 per day

Fleet-wide Totals

97 vessels
 \$47.2M revenue
 \$17.5M variable cost net revenue
 \$5.0M total cost net revenue

ALASKA PARTICIPATION

Alaska: \$38.6M
 25 vessels, typically 24 trips
 to AK per year

SHORESIDE PARTICIPATION

Total value of catch share groundfish landings
 Vessel ports

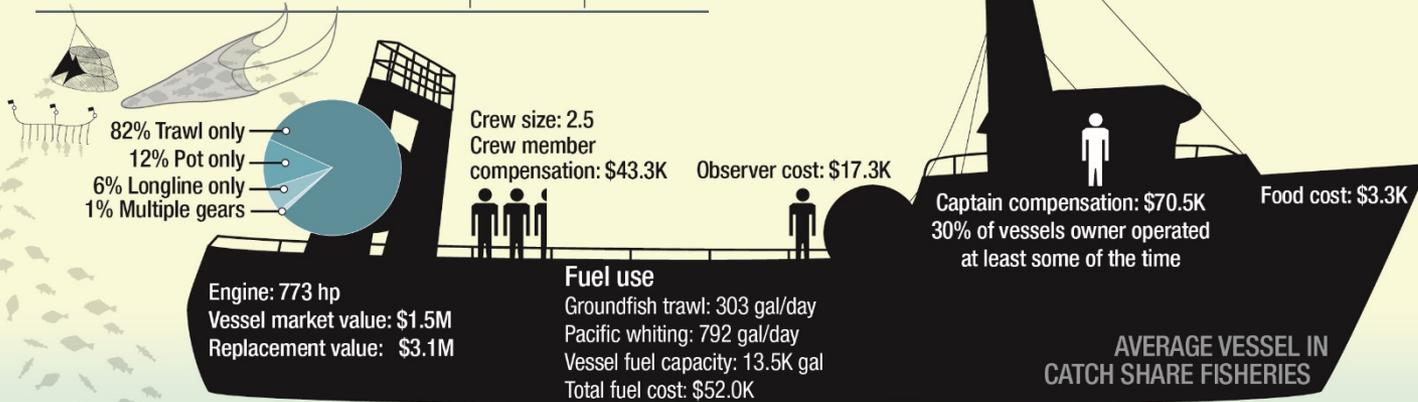
South & central Washington,
 Puget Sound: \$3.9M
 13 vessels

AT-SEA PARTICIPATION

At-sea: \$5.4M
 14 vessels

FISHERY PARTICIPATION

	Vessels	Avg Days at Sea	Total Landings (1000s mt)	
CATCH SHARE FISHERIES	At-sea Pacific whiting	14	41.7	
	Shoreside Pacific whiting	22	54.3	
	Non-whiting midwater	14	11.6	
	DTS trawl (with trawl endorsement)	51	34.5	
	Non-whiting, non-DTS trawl (with trawl endorsement)	46	25.0	
	Groundfish fixed gear (with trawl endorsement)	18	31.7	
	Groundfish fixed gear (with fixed gear endorsement)	9	27.6	
	Crab	52	28.8	
	Shrimp	47	70.3	
	Other fisheries	18	23.8	
	Alaska	25	368.8	
				111.4



69 ft average length

29% are < 60 ft

42% are 60-80 ft

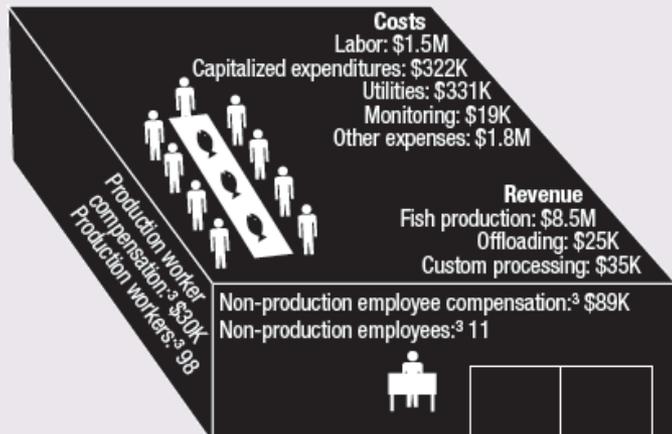
29% are > 80 ft



*Note that some off-board costs are not collected. Therefore reported net revenue is an overestimate of actual net revenue.

2014 Economic Data Collection (EDC) West Coast Groundfish Trawl Catch Share Program

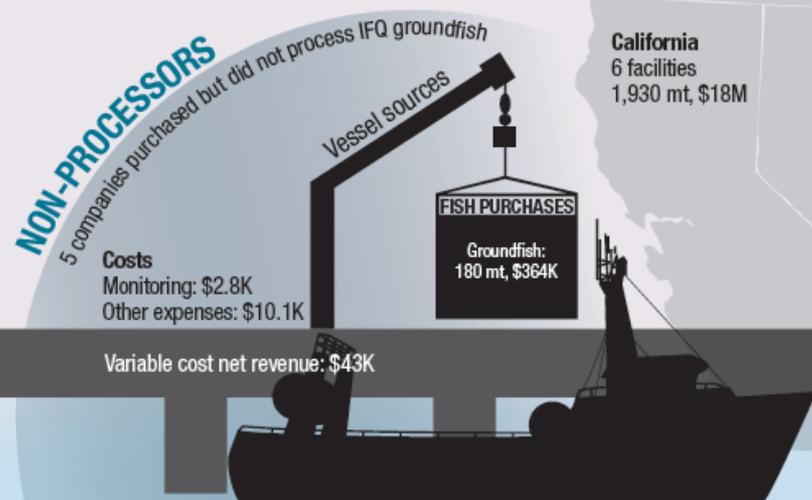
FIRST RECEIVERS & SHOREBASED PROCESSORS



AVERAGE COMPANY for
GROUNDFISH PRODUCTION

PROCESSORS

16 companies processed
IFQ groundfish
19 processing facilities
12 buying stations

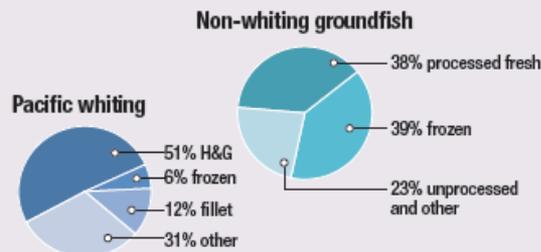


ECONOMIC SUMMARY¹

Company² Average

16 processors
 \$8.6M revenue
 \$7.3M variable costs
 \$1.3M variable cost net revenue
 \$641K fixed costs
 \$684K total cost net revenue

INDUSTRY-WIDE PRODUCT TYPES



PRODUCTION

	N (companies)	Weight (1000 mt)	Value (millions)
Pacific whiting	8	61.0	\$71
DTS	14	4.6	\$40
Other groundfish	15	4.1	\$18
Crab	15	6.5	\$96
Shrimp	11	16.2	\$77
Halibut	10	0.3	\$5
Salmon	12	3.7	\$38
Other	15	25.7	\$39

Value & weight of processed groundfish
of processing facilities



SHORESIDE PROCESSING

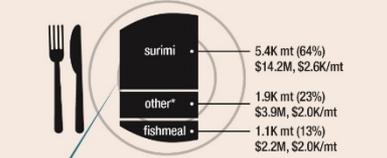
¹Note that some off-site costs are not collected. Therefore reported net revenue is an overestimate of actual net revenue.

²The unit of analysis is first receiver site license owner, or "company."

³Employment information is for all operations (groundfish and other species).

2015 Economic Data Collection (EDC) West Coast Groundfish Trawl Catch Share Program Preliminary MOTHERSHIP

PACIFIC WHITING FLEET-WIDE PRODUCTION SUMMARY



All products: 8.4K mt, \$20.3M, \$2.4K/mt

*other includes: minced, fillets, fish oil, head and gutted, and round, combined for confidentiality.

ECONOMIC SUMMARY*

Vessel Average
\$6.8M revenue
\$5.1M variable costs
\$1.6M variable cost net revenue
\$2.4M fixed costs
\$-0.8M total cost net revenue

\$30.3K variable cost net revenue per day

Fleet-wide Totals
3 vessels
\$20.3M revenue
\$4.9M variable cost net revenue
\$-2.4M total cost net revenue

ALASKA PARTICIPATION

WC vessels: 3
Total fleet-wide trips to Alaska:
Total purchases in Alaska: 109K

FISHERY PARTICIPATION

	Days at Sea
Average days processing and steaming on the West Coast	55
Average days steaming to and from Alaska	23
Average days operating in Alaska	120

TOTAL NON-TRIBAL US PACIFIC WHITING TAC

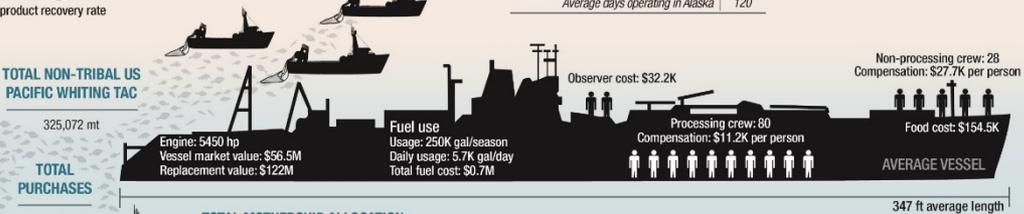
325,072 mt

TOTAL PURCHASES

27,500 mt, \$191/mt

TOTAL MOTHERSHIP ALLOCATION

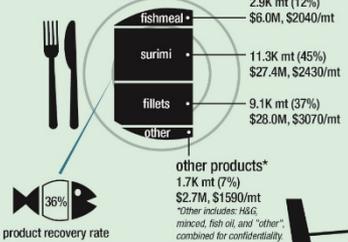
71,200 mt



*Note that some off-board costs are not collected. Therefore reported net revenue is an overestimate of actual net revenue.

2015 Economic Data Collection (EDC) West Coast Groundfish Catch Share Program Preliminary CATCHER PROCESSOR

PACIFIC WHITING FLEET-WIDE PRODUCTION SUMMARY



ECONOMIC SUMMARY*

Vessel Average
\$7.1M revenue
\$3.3M variable costs
\$3.9M variable cost net revenue
\$1.4M fixed costs
\$2.5M total cost net revenue

\$61.5K variable cost net revenue per day

Fleet-wide Totals
9 vessels
\$64.1M revenue
\$34.8M variable cost net revenue
\$22.5M total cost net revenue

FISHERY PARTICIPATION

	Days at Sea
Average days fishing, processing, and steaming on the West Coast	65
Average days steaming to and from Alaska	24
Average days in Alaska	145

TOTAL CATCH

68,483 mt

Annual production per vessel: 2.8K mt

WHITING ALLOCATION

Total Catcher Processor Allocation: 100,873 mt
Total Non-tribal US Pacific whiting TAC: 325,072 mt

CP ALLOCATION BY COMPANY

American Seafoods	49.4%
Trident Seafoods Corp	29.6%
Glacier Fish	21.0%

*Note that some off-board costs are not collected. Therefore reported net revenue is an overestimate of actual net revenue.
** PWCC Amendment 20 Catcher/Processor Cooperative Annual Report 2015 (http://www.pccouncil.org/wp-content/uploads/2016/06/IR2_CoopRep_CP_2015_PWCC_JUN2016BB.pdf)

ALASKA PARTICIPATION

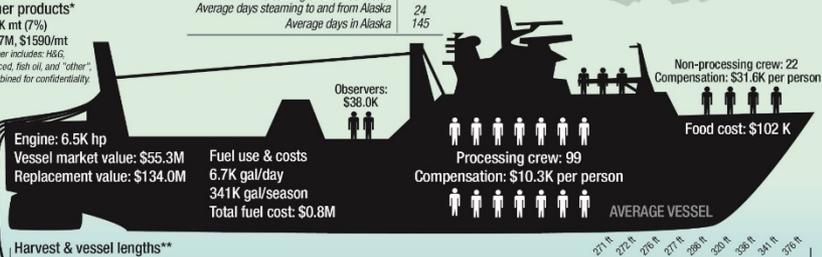
9 WC vessels

WC DELIVERY PORTS

of vessels offloading in each port

- Bellingham (4)
- Seattle* (4)
- Tacoma (3)

2.7K mt annual production per vessel
(*all nine catcher processors report Seattle as their home port.)



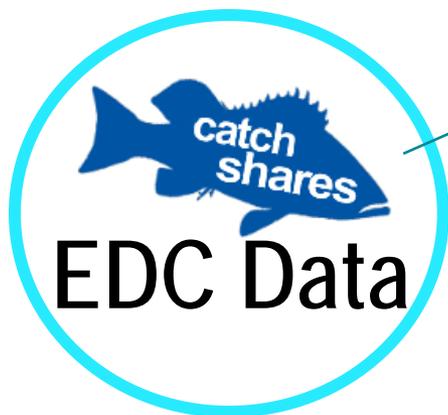
Harvest & vessel lengths**

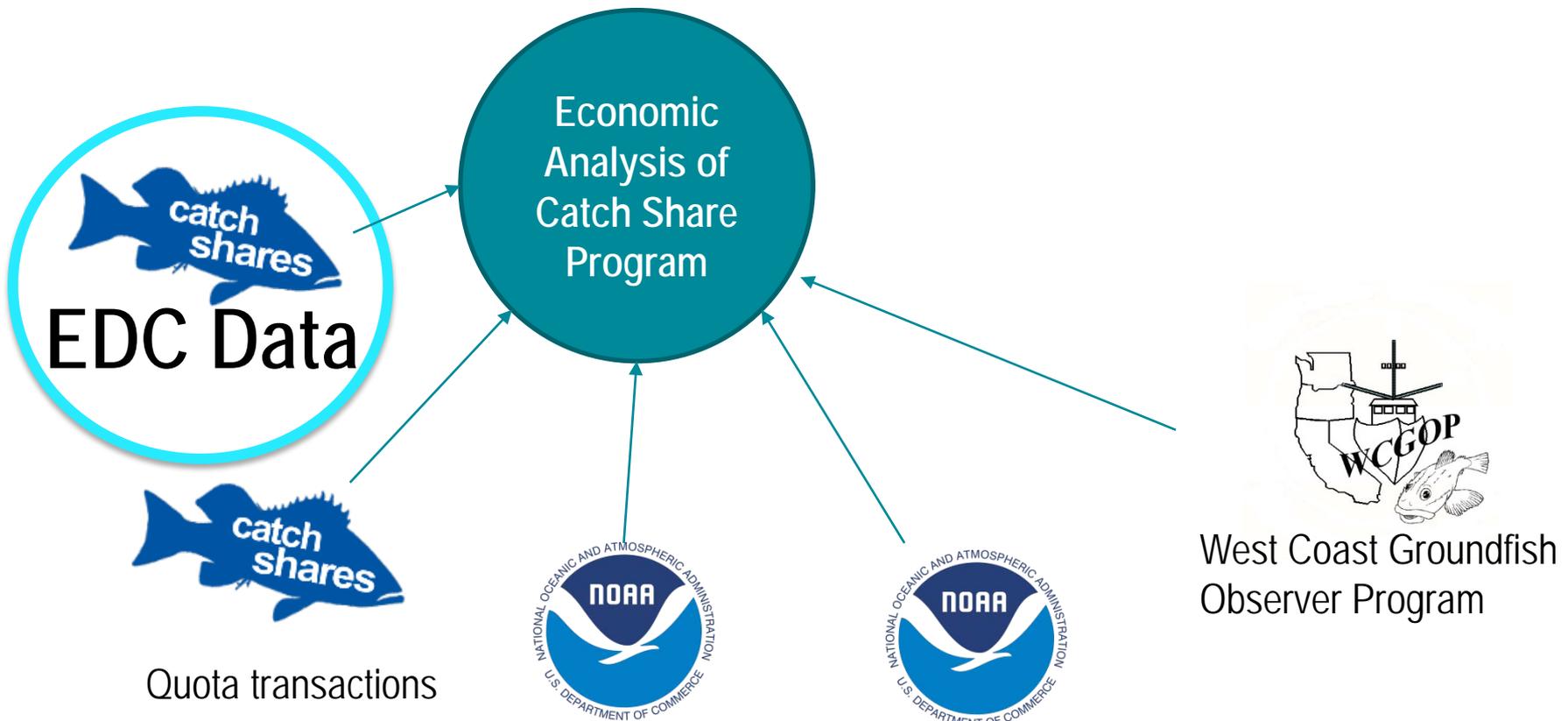
Vessel	Length (ft)
Alaska Ocean	10,243 mt
Northern Eagle	10,034 mt
Northern Eagle	4,887 mt
Alaska Enterprise	9,052 mt
American Triumph	7,267 mt
Alaska Enterprise	6,886 mt
Pacific Glacier	4,423 mt
American Dynasty	7,760 mt
Alaska Enterprise	5,691 mt

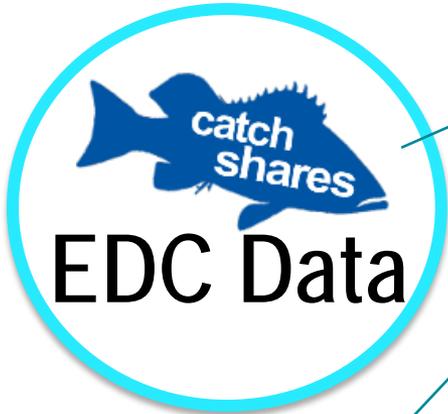


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Data Integration







Electronic monitoring



Quota transactions



Permits



At-Sea Hake Observer



West Coast Groundfish Observer Program

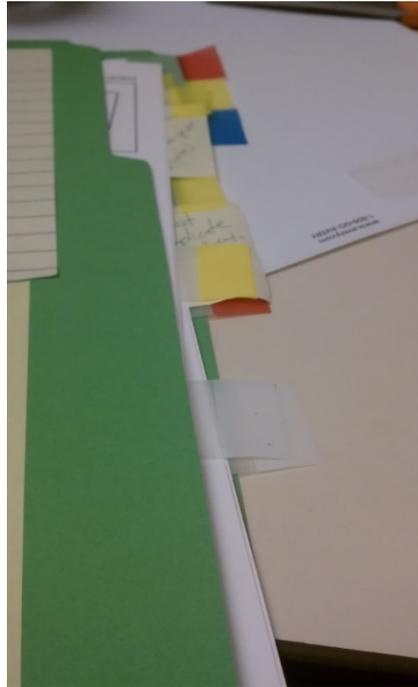
Data Integration, cont'd

- Goal: One complete data set for all economists to access
 - Analysis-ready data
 - Consistent data-cleaning
 - Collaboration between economists and observer program
 - Used for QAQC as well as analysis



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Administrative processes and QAQC



EDC Compliance Regulations

- All participants are required to submit a complete EDC form
- Consequences for failure to submit include
 - Applications are not considered complete until all required EDC forms are complete (Permit Office)
 - A potential violation of the MSA (OLE)

Response Rates

% of forms owed	Pre-Catch Shares	Catch Shares
Catcher vessel	90%	99%
First receiver	73%	96%
Catcher-processor	100%	100%
Mothership	100%	100%

% of total landings weight	Pre-Catch Shares	Catch Shares
Catcher vessel	98%	99.9%
First receiver	97%	99.8%
Catcher-processor	100%	100.0%
Mothership	100%	100.0%

Response Rates

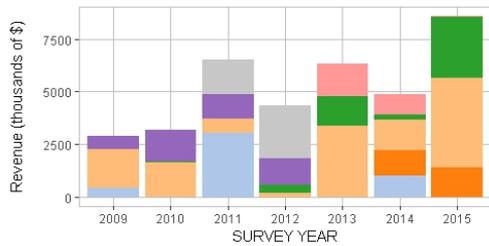
% of forms owed	Pre-Catch Shares	Catch Shares
Catcher vessel	90%	97%
First receiver	73%	93%
Catcher-processor	100%	100%
Mothership	100%	100%

% of total landings weight	Pre-Catch Shares	Catch Shares
Catcher vessel	98%	99.9%
First receiver	97%	99.8%
Catcher-processor	100%	100.0%
Mothership	100%	100.0%

QAQC

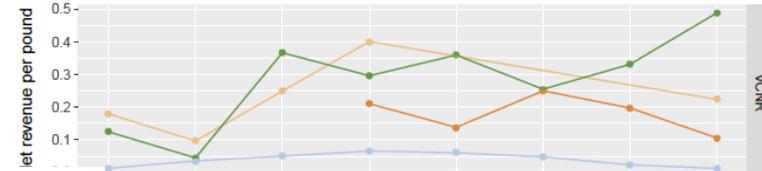
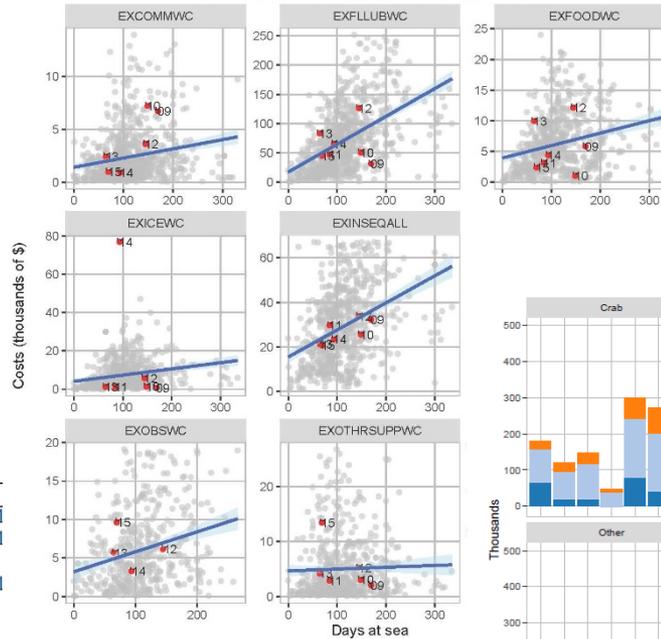
- Automated checks, e.g.
 - Completeness
 - Rates (e.g., wage:revenue, fuel prices, product recovery rates, markups)
- Visual Checks
 - Costs over time
 - Costs as rates
 - Net revenue per pound

F/V Miss EDC

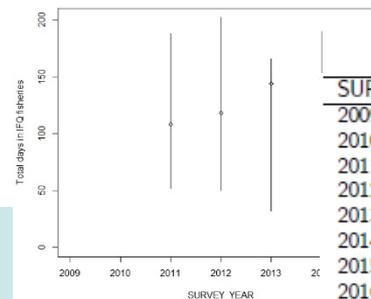
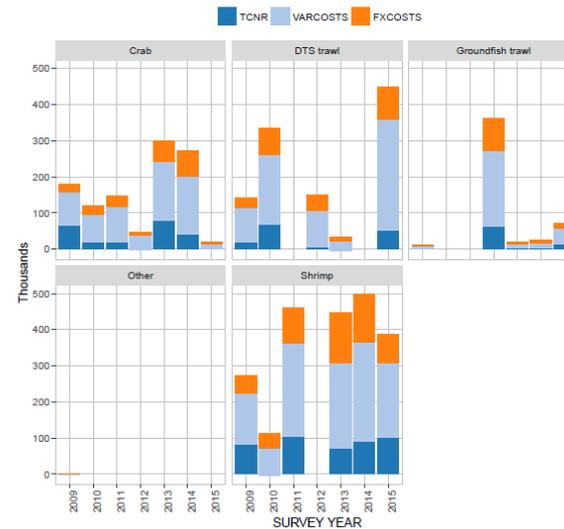


	2009	2010	2011									
EXFLUBWC	124,400	126,500	267,000	1								
EXCPTWGW	121,400	128,200	492,400	1								
EXCWWGW	125,000	134,900	0									
EXCXONBQ	169,700	201,678	140,900	1								
EXCXFRWC	67,100	78,000	69,800									
EXCXFRSHD	0	65,947	40,400									
EXQPLS	0	0	2,300		5,100	75,800	0	0				
EXQPPU	0	0	20,700		0	0	0	0				
EXQPPULS	0	0	0		0	0	28,700	175,700				
EXCOMMWC	2,200	2,800	25,500		1,600	2,300	2,900	2,300				
EXFOODWC	900	500	0		0	0	0	0				
EXICEWC	15,600	16,100	14,100		12,100	12,100	4,400	20,200				
EXINSEQALL	39,900	43,600	42,000		44,800	45,600	49,700	53,900				
EXMOORALL	4,600	5,600	10,400		12,000	4,400	9,200	2,900				
EXOBSWC	0	0	18,500		6,900	28,200	20,700	78,900				
EXOTHRSUPPWC	4,400	4,600	9,200		7,000	5,000	17,400	4,200				
EXVSSLALL	0	0	0		0	0	0	0				
EXBAITWC	0	0	0		0	18,600	8,900	1,500				
EXTRUCKWC	0	0	0		400	0	0	0				
EXCXPQSHD	0	0	0		0	0	0	0				
EXCXPQWC	0	0	0		0	0	0	0				
EXDEPRALL	274,700	189,700	169,200		150,900	129,200	119,400	85,400				
EXFADWC	0	0	0		0	4,700	15,353	8,700				
EXFRGTWC	0	0	0		0	0	0	0				
EXLEPPUFG	20,000	90,000	0		0	0	0	0				
EXLICFEESWC	0	0	6,900		4,400	2,000	2,100	2,700				
EXTRAVWC	2,200	1,500	3,400		9,200	0	9,900	900				

Costs that are disaggregated by days at sea



Total cost net revenue



SURVEY_YEAR	Fuel	Expenditures	fuelprice
2009	38200.00	75600.00	1.98
2010	47200.00	118200.00	2.50
2011	33049.00	129394.00	3.92
2012	42204.00	154700.00	3.67
2013	44500.00	146100.00	3.28
2014	40865.00	138900.00	3.40
2015	44524.00	52253.00	1.17
2016	32612.00	29628.00	0.91

Protecting Confidential Information

- Data summary rules
 - Rule of 3
 - 90-10 rule
- Restricts our ability to inform management
 - Council is interested in very small subgroups, e.g. one port and one gear type
 - With small sample sizes, “outliers” can drive the findings, but their effect on analysis can’t be discussed sufficiently

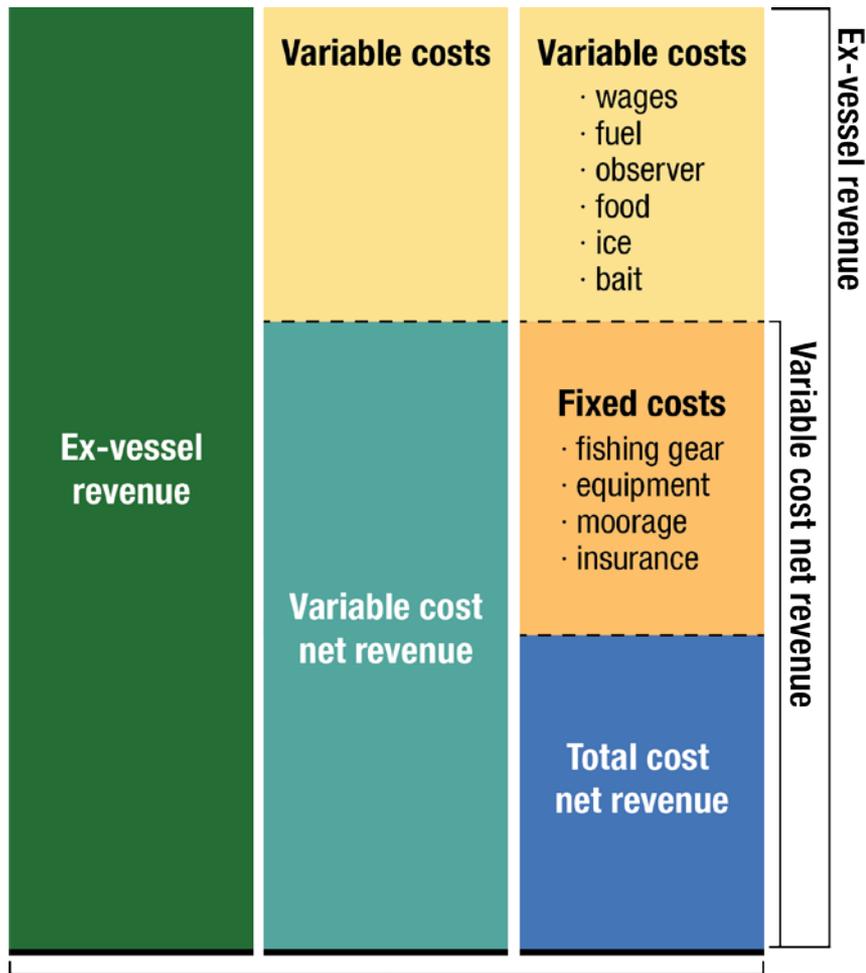


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Net Revenue Calculations

(for now)

EDC Measures of Net Revenue



EDC Measures of Net Revenue

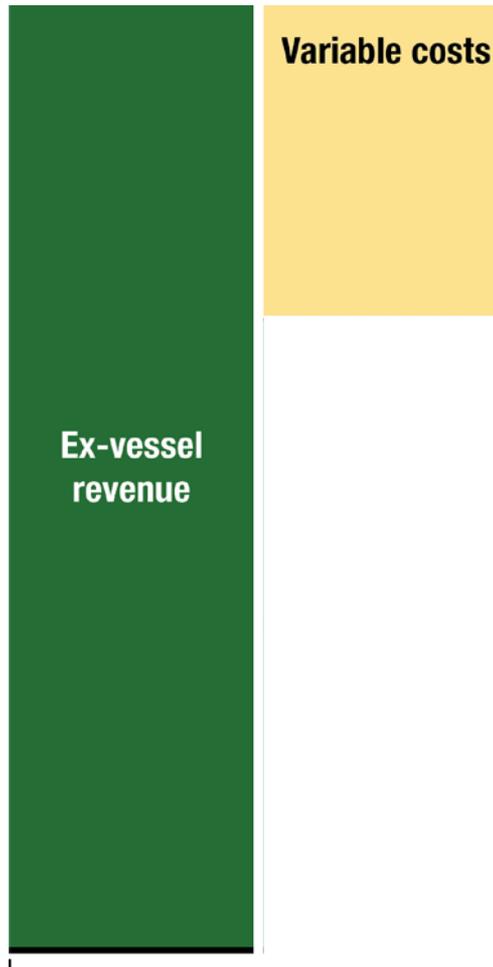


Revenue:

For vessels: total payments from buyers for fish

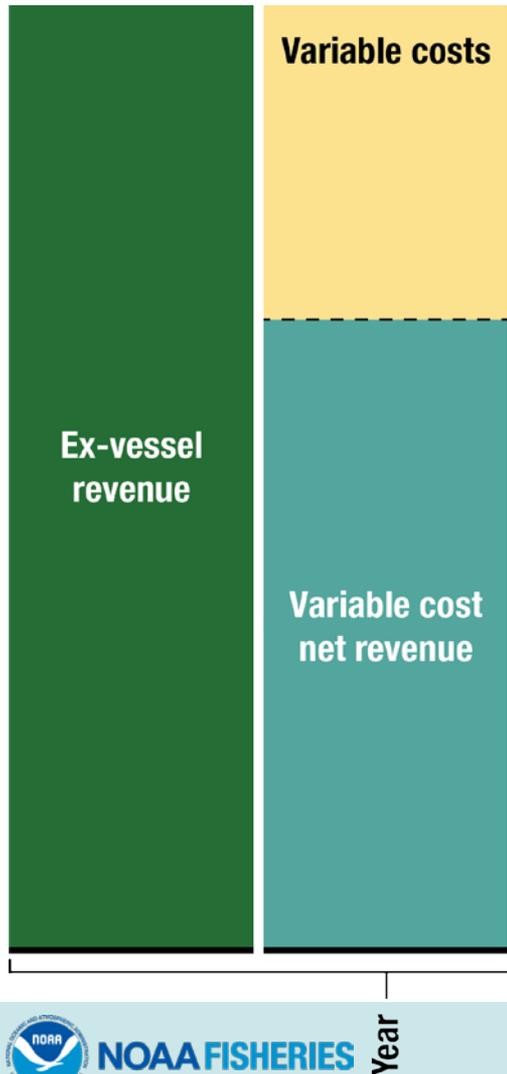
For processors or first receivers: production value

EDC Measures of Net Revenue



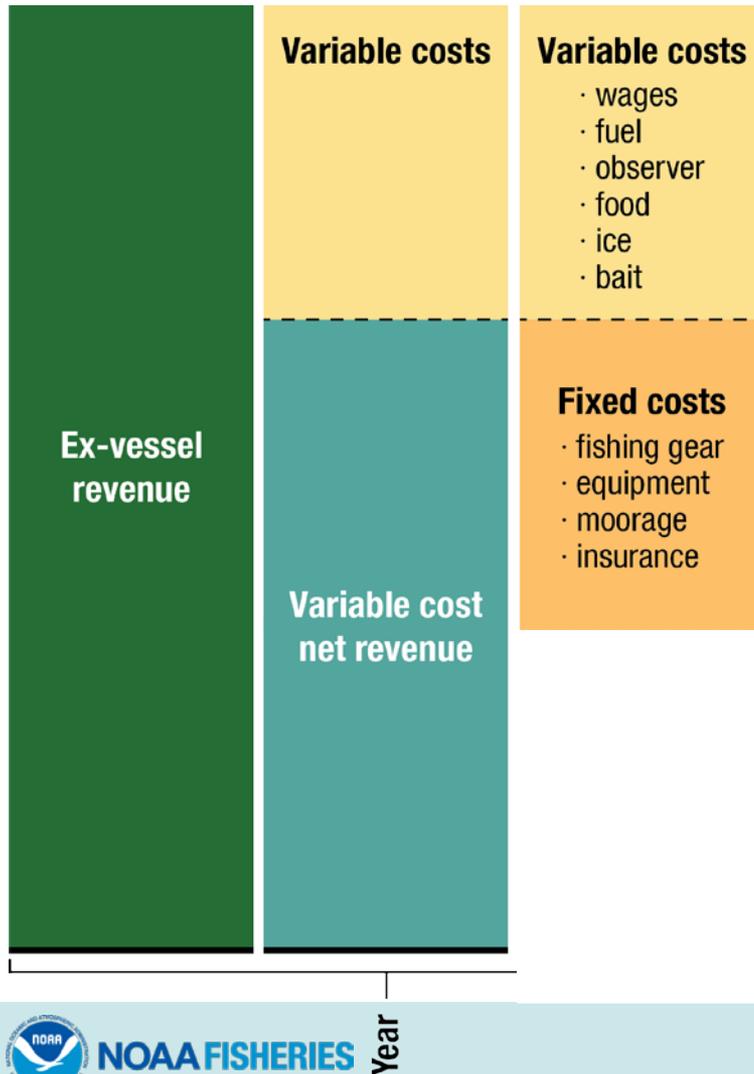
Variable costs – costs that vary with fishing effort; costs that vary with production

EDC Measures of Net Revenue



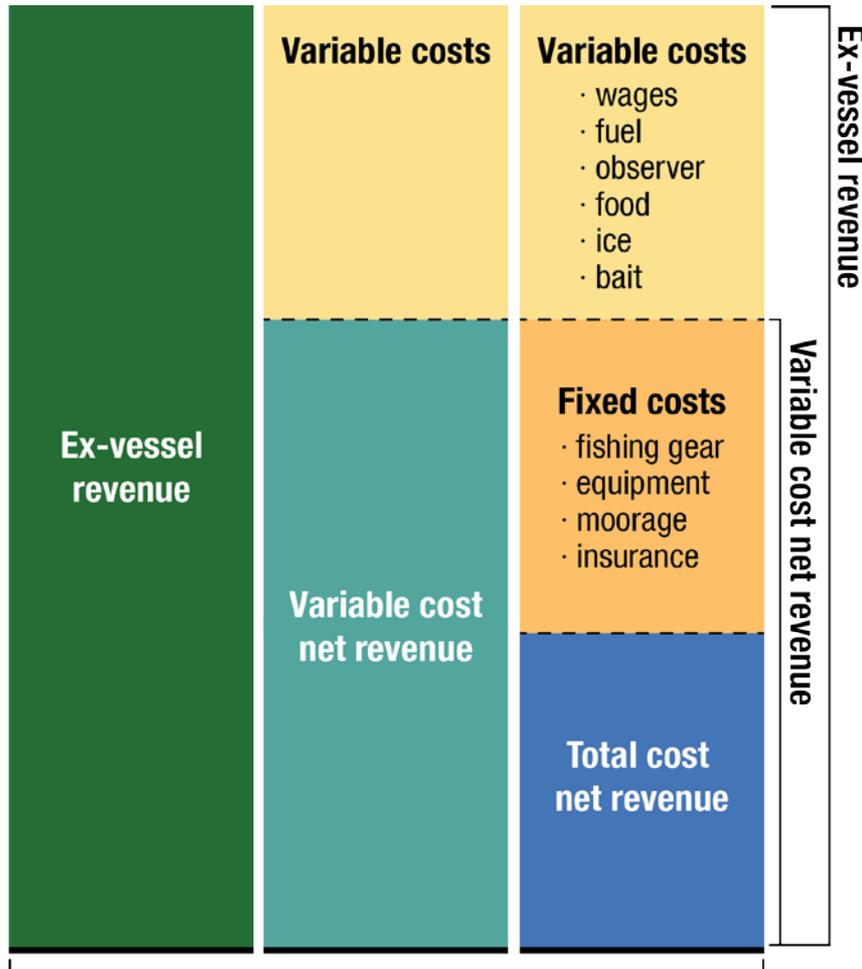
- Variable cost net revenue: measure of operating margins

EDC Measures of Net Revenue



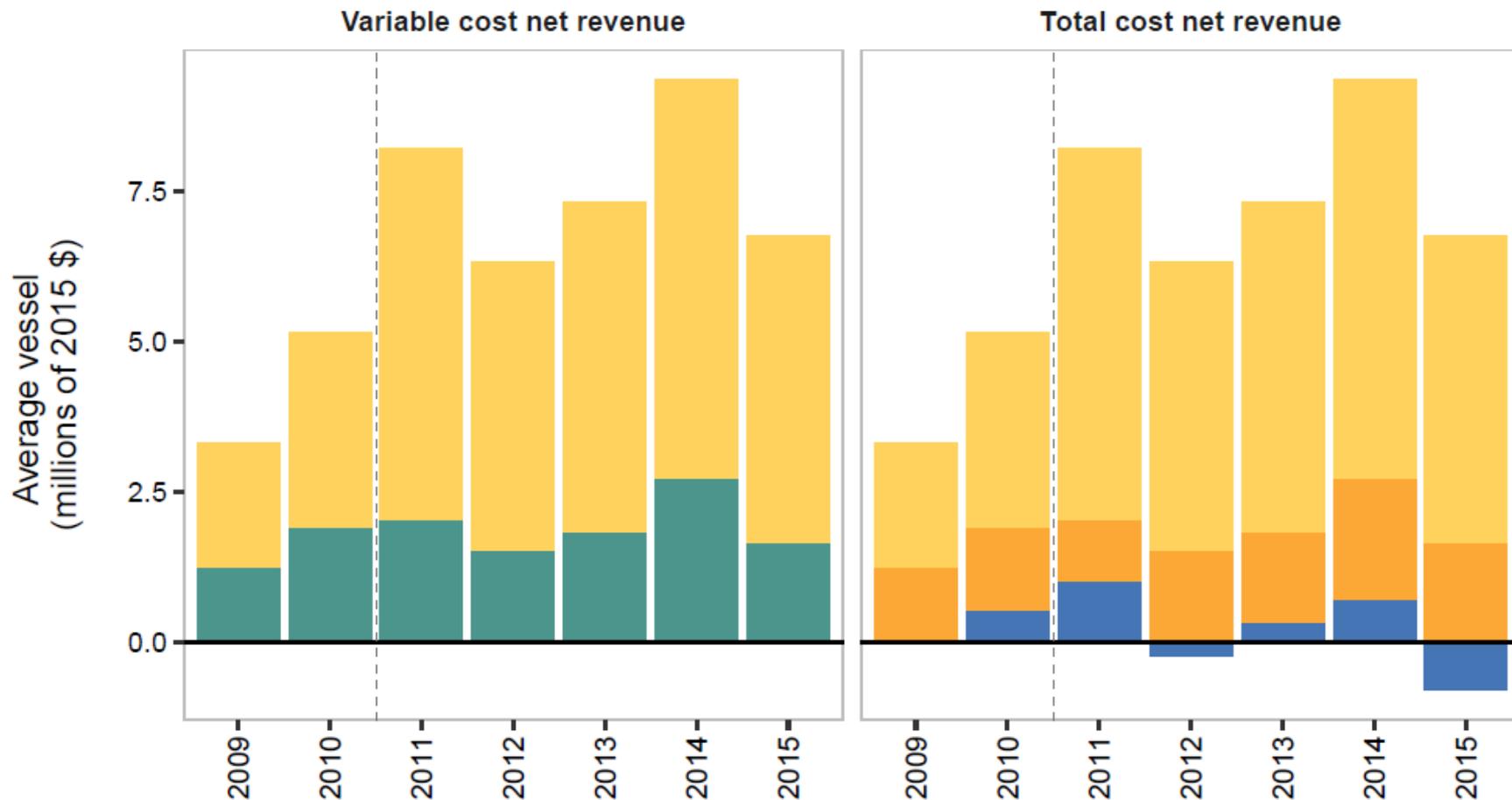
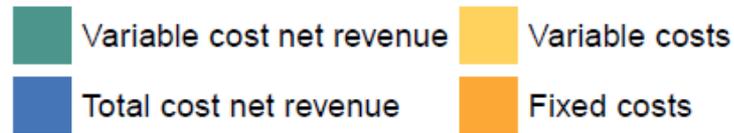
- **Fixed costs** – costs that do not vary with fishing or production effort

EDC Measures of Net Revenue



- Total cost net revenue measure of annual economic viability

Mothership Net Revenue

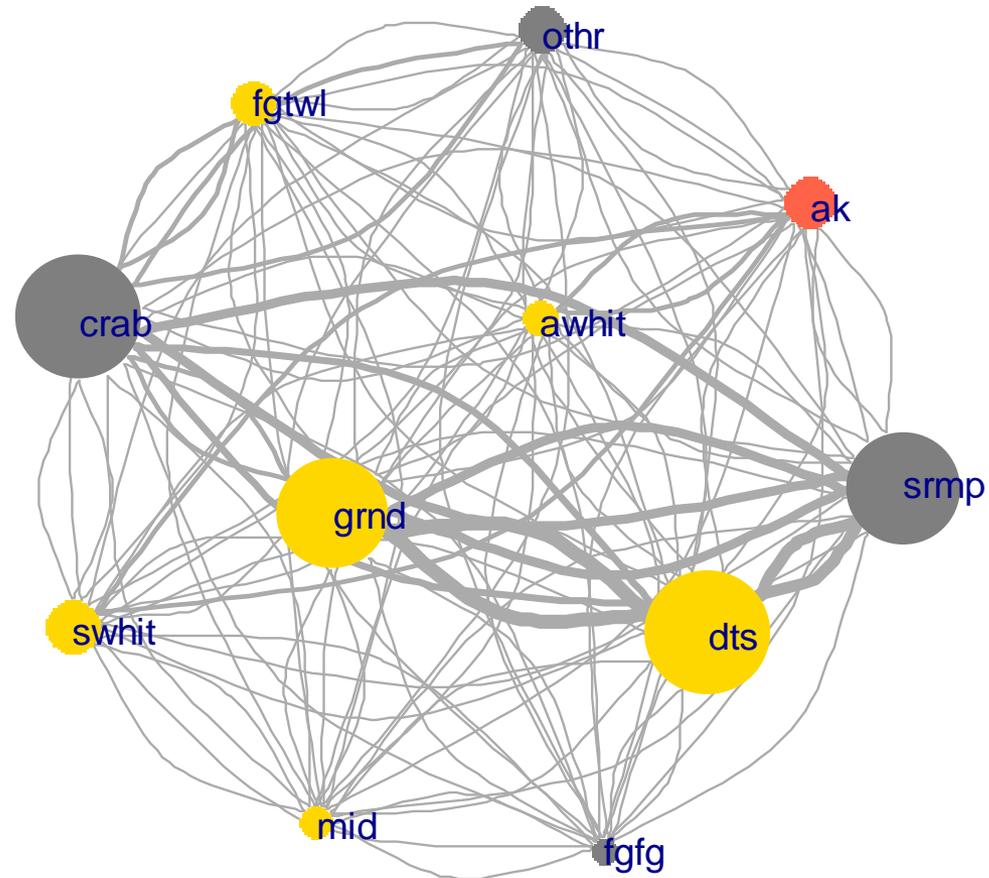




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Cost Disaggregation

All vessels participate in multiple fisheries



-  Catch Shares
-  Other West Coast
-  Alaska

Cost Disaggregation, methods:

- 3 properties for cost disaggregation method (Terry et al.1996)
 - Should be the same for all fisheries
 - Should be simple and easy to understand (in order to promote trust in the analysis)
 - Should be equitable
- 3 methods of implementation
 - Days at sea
 - Landings revenue
 - Landings weight

Terry, J. G. Silvia, D. Squires, W. Silverthorn, J. Seger, G. Munro, R. Marasco, D. Larson, J. Kirkley, L. Jacobson, S. Herrick, J. Gauvin. 1996. A. Gantan, S. Freese, and R. Baldwin, Fixed Costs and Joint Cost Allocation in the Management of Pacific Whiting - A Workshop Report, NMFS-SWFSC-234.

Options for Cost Disaggregation

- Catcher Vessels (SSC reviewed April 2013)
 - Landings and delivery weight
 - Days at sea
 - Ex-vessel revenue
 - **Mixed method**
- Motherships (SSC reviewed April 2013)
 - **Fish purchases**
 - Days at sea
- Catcher Processors (SSC reviewed April 2013)
 - **Catch**
 - Days at sea
- First receivers and shorebased processors (SSC reviewed June 2016)
 - Fish input weight
 - Fish output weight
 - Value-added (value of fish sales less cost of purchasing that fish)
 - **Mixed method**

Products

- Reports
- Performance Metrics
- FishEYE
- 5-year review (Lisa speak to this later)

Reports

- Infographic
- Executive Summary
- Data Summaries
- Analysis Section
 - Cost disaggregation
 - Net revenue

Performance Metrics (Pfeiffer, Steiner, Guldin)

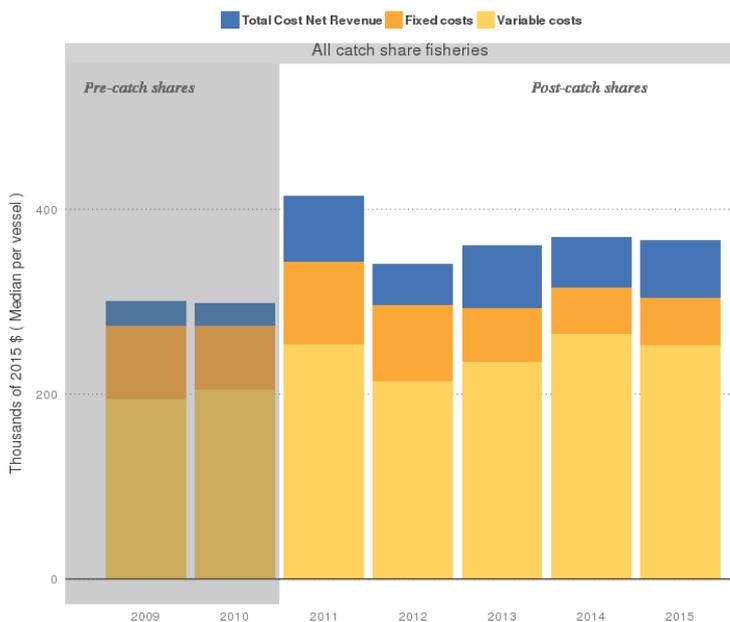
- Designed to:
 - measure the changes in economic performance of the catch share program
 - facilitate examination of changes occurring in the program
 - motivate more in-depth research

FishEYE

Summary Plots and Data | **Fleet-wide Variability Analysis** | Show Data Table | Explanation of this plot

Composition of Total Cost Net Revenue for West Coast Catcher Vessels

Group variable: Fisheries | Statistic: Median per vessel | Fished in AK included: TRUE | Fished for whiting included: T
 Total Cost Net Revenue = Revenue - Variable costs - Fixed costs



Catcher Vessels

Group vessels according to:

- Fisheries
- Homeport
- State of homeport
- Vessel length class

Select fisheries:

Select a fishery group, ⓘ

- All fisheries
- All catch share fisheries
- All non-catch share fisheries

or select fisheries individually: ⓘ

- All fisheries combined
- All catch share fisheries combined
 - Pacific whiting
 - At-sea Pacific whiting
 - Shoreside Pacific whiting
 - Groundfish with trawl gear
 - DTS trawl with trawl endorsement
 - Non-whiting, non-DTS trawl with trawl endorsement
 - Non-whiting midwater trawl
 - Groundfish fixed gear with trawl endorsement
- All non-catch share fisheries combined
 - Groundfish fixed gear with fixed gear endorsement
 - Crab
 - Shrimp

Statistic: ⓘ

Choose Median, Average, or Total ▾

- Median per vessel
- Median per vessel/day
- Median per vessel/metric-ton caught

Economic measures: ⓘ

- Revenue
- Variable costs
- Fixed costs
- Variable Cost Net Revenue
- Total Cost Net Revenue

Years:

- 2009
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015

Plot Options: ⓘ

- Economic measures side-by-side
- Composition of Variable Cost Net Revenue
- Composition of Total Cost Net Revenue

Bar ▾

Include vessels that fished in Alaska:
 By selecting this, you will include vessels that also participated in Alaskan fisheries. Data from their activities in Alaska are not included.



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EDC and Management

EDC Data and Management

- IO-PAC
- MSA mandated 5-year review of the catch share program
- Biennial Groundfish Harvest Specification

EDC Data and Management

- IO-PAC
- MSA mandated 5-year review of the catch share program
- **Biennial Groundfish Harvest Specification**

Biennial Groundfish Harvest Specifications

- For each management alternative:
 - Council input
 - Forecasts of landings weight by port and fishery
 - Forecasts of revenue by port and fishery
 - NWFSC output
 - Impact estimates
 - Net revenue estimates

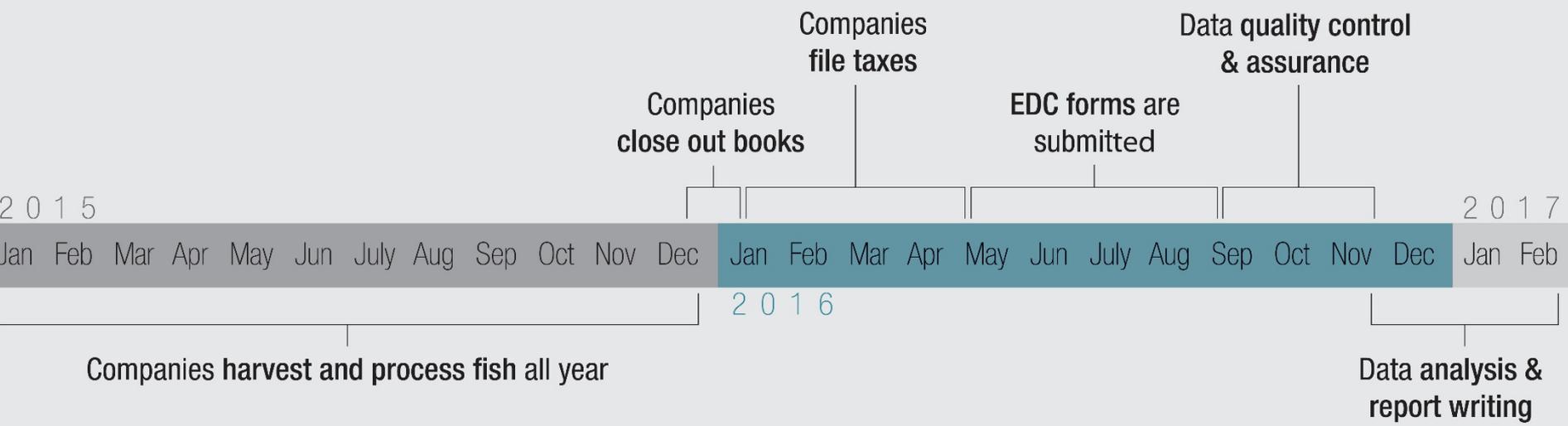
Biennial Groundfish Harvest Specifications

- For each management alternative:
 - **Council input**
 - Forecasts of landings weight by port and fishery
 - Forecasts of revenue by port and fishery
 - NWFSC output
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Biennial Groundfish Harvest Specifications

- For each management alternative:
 - Council input
 - Forecasts of landings weight by port and fishery
 - Forecasts of revenue by port and fishery
 - **NWFSC output**
 - Impact estimates
 - Net revenue estimates

TIMELINE OF THE DATA COLLECTION



Context in Management

- “Best available science” comparing economic performance over time and across vessels, processors, and groups
- Levels the playing field—all entities are represented
- Designed to analyze fishery, not individual profitability
- Current baseline is very short and fishery is very dynamic
- There are lots of limitations to analysis, but use stock assessments to help folks understand the value

Are we there yet?

- We have been presenting to Council/Council bodies since 2013
- It's taken time to introduce new economic concepts and help them understand:
 - value of our analyses
 - limitations of interpretation
- 5-year review has more people paying attention, asking questions, and making recommendations

Research on the horizon

Current and Future Research Projects

- Comparing profitability between gear types within the catch share program
- Examining the effects of catch share program on crew remuneration, in collaboration with Social Science Survey
- Economic performance of the catch share program (Weninger)
- Quota share ownership caps (submitted proposal)
- Extending EDC time series by incorporating cost earnings data (2003-2008) (submitted proposal)

EDC Program

EDC website: www.nwfsc.noaa.gov/edc

EDC reports:

www.nwfsc.noaa.gov/research/divisions/fram/economic/economic_data_reports.cfm

EDC forms:

www.nwfsc.noaa.gov/research/divisions/fram/economic/economic_data_forms.cfm

Data explorer:

dataexplorer.northwestscience.fisheries.noaa.gov/fisheye/