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**Alaska  
Fisheries  
Science  
Center**

# Economic Status of the Groundfish Fisheries off Alaska, 2017

Presented by:

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AFSC Economics and Social Sciences  
Research Program (ESSRP)

Apr. 02, 2019



# Presentation Content

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Structure of the Economic Groundfish SAFE

Summary of status and trends in 2017

Overview of new content: Ex-vessel Price Projections and Community Profiles

# The Economic Groundfish SAFE

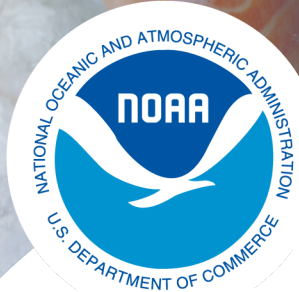


# Economic Status Report, 2017: Core Content

- Executive Summary: 2017 highlights
  - Report Card Metrics
  - Plan Team Reports
- Overview of the Economic Data Tables
- Economic Data Tables
  - All Alaska summary Tables (1-8)
  - BSAI data Tables (9-24)
  - GOA data Tables (25-40)
  - Halibut data Tables (H1-H10).

# Economic Data Tables

<p>All Alaska Summary Tables 1 – 8</p>	<p>Catch (total and retained) Ex-vessel catch and real revenue of all AK fisheries 1<sup>st</sup> wholesale production and real revenue of all AK fisheries Summarized discards and PSC Vessel counts</p>
<p>Bering Sea and Aleutian Islands Tables 9 – 24</p>	<p><b><u>Ex-vessel:</u></b> Retained catch, prices and value (with specific flatfish and rockfish species). Retained catch by target. Value metrics by fleet</p> <p><b><u>1<sup>st</sup> wholesale:</u></b> Production, prices, and value (with specific flatfish and rockfish species). Production value metrics by processor group</p>
<p>Gulf of Alaska Tables 25 – 40</p>	<p><b><u>Effort:</u></b> Vessel counts, average length, tonnage, CV and CP fishing weeks, CV and CP crew weeks.</p>
<p>Pacific halibut Tables H1 – H10</p>	<p>Catch PSC Ex-vessel value, price 1<sup>st</sup> wholesale production, value and price Effort: vessel counts, vessel days, crew days</p>



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# Economic Status Report, 2017:

- Economic Performance Indices
- Wholesale and **ex-vessel (new)** price projections
- **Market Profiles (revised)**
- Catch share performance metrics (revised)
- Amendment 80 Economic Data Report
- Amendment 91 Economic Data Report
- **Communities Section (revised)**
- Recent and ongoing ESSRP research and publications
  
- **Gulf Trawl Economic Data Report (next year)**

New or revised content in **RED**. Planned content in **GREEN**.

## New topics in Economics SAFE

- Ex-vessel price projections added for select species.
- Community Participation section extensively revised.

### Overview following Status and Trends.

- Market Profiles section revised.
  - Summary of forthcoming report. The information is new but the topics are the same.

# Economic Performance Reports (EPR)

- BSAI: pollock, Pacific cod, flatfish complex, rockfish, Atka mackerel.
- GOA: pollock (ESP next year), Pacific cod, flatfish, rockfish.
- Combined: sablefish (ESP).

Provide a summary of key economic data covering three broad market categories: ex-vessel, first wholesale, and global markets.

Narrative and context for the state of markets.

EPRs are a useful tool for conveying economic information.

EPRs merging with the Ecosystem and Socioeconomic Profiles (ESP). ESP workshop in May.



# Status and Trends



# Alaska FMP Groundfish Fisheries 2017

\$2.52 billion

2.29 million tons

81% of all AK fish landed

51% of all US fish landed (2016 )

Bering Sea

BSAI FMP GF Fisheries

~85% of FMP GF landings & value



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# Alaska's Groundfish Fisheries in 2017

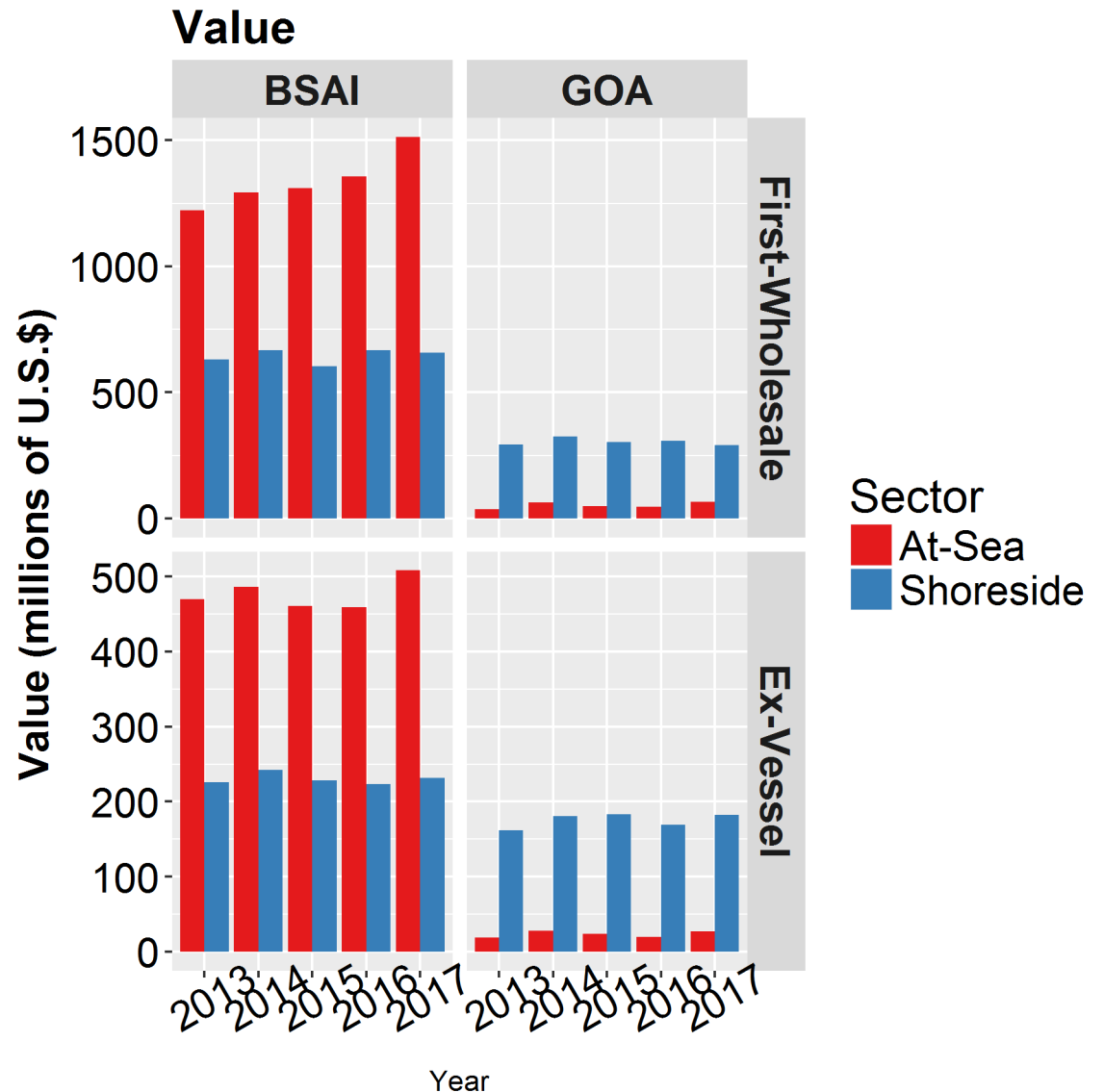
Total catch: 2.3 million t  
(decrease < 1%)

Value increasing or stable across most regions and sectors.

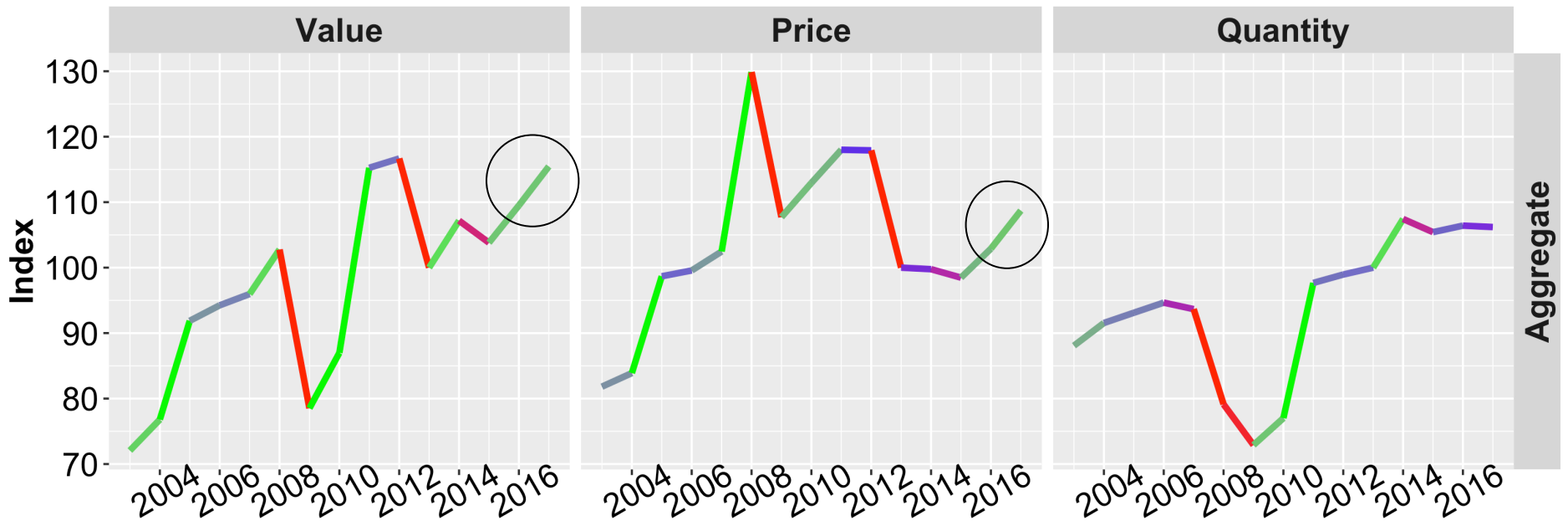
Wholesale value:  
\$2.52 billion (up 4%)

Ex-vessel value:  
\$947 million (up 7%)

Percent change adjusted for inflation.



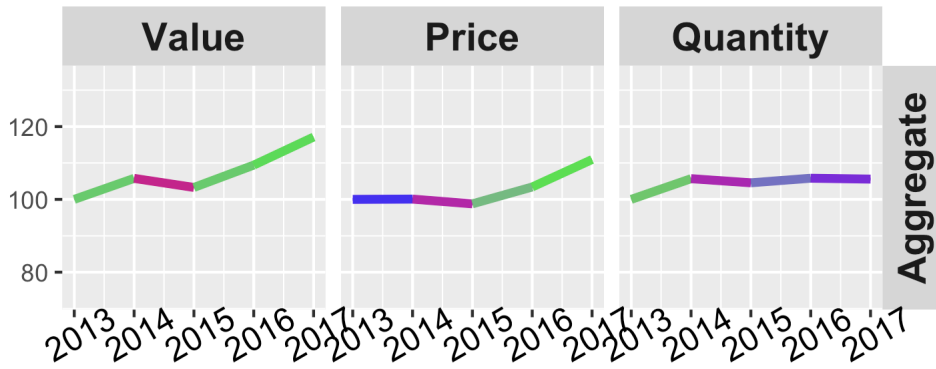
# Alaska First Wholesale Market: Aggregate Economic Indices (2003-2016)



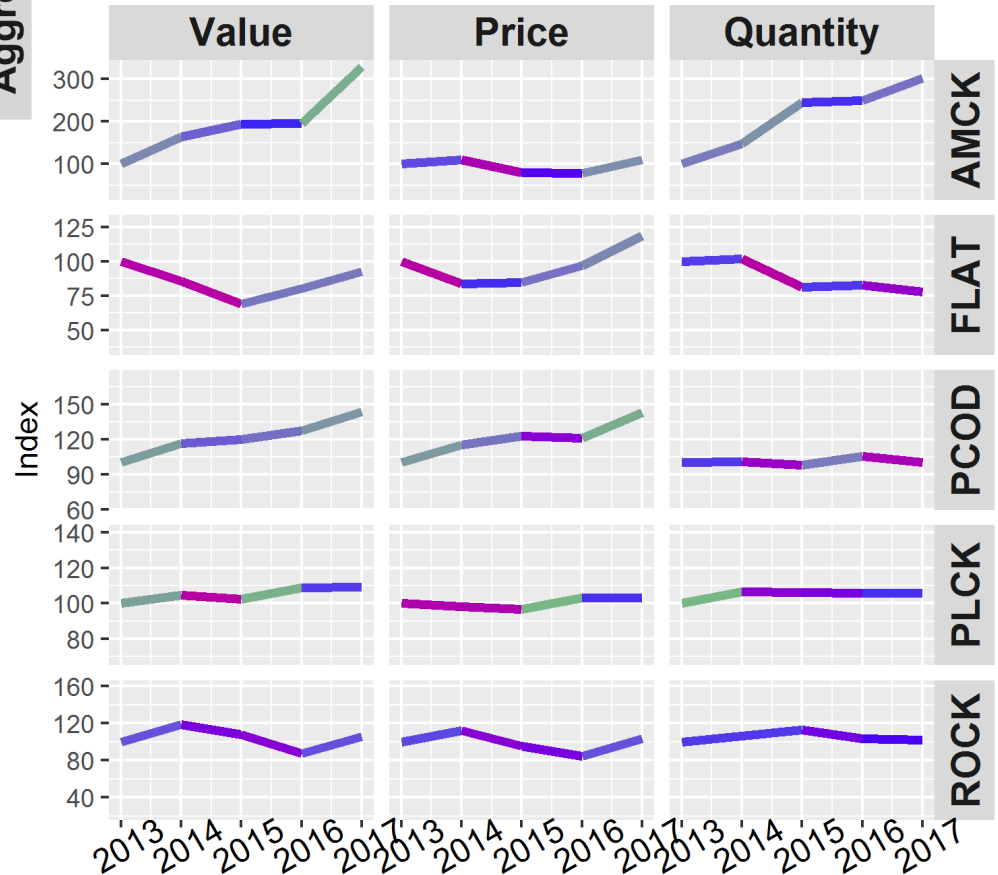
2016 value up with both production and price

	All Alaska (millions US\$)	Average Price (\$/mt)	Quantity Produced (1000 mt)
2010 – 13 (Avg)	\$ 2,283	\$ 2,655	860
2014	\$ 2,346	\$ 2,406	975
2015	\$ 2,262	\$ 2,394	945
2016	\$ 2,379	\$ 2,445	973





## BSAI First-Wholesale Economic Indices

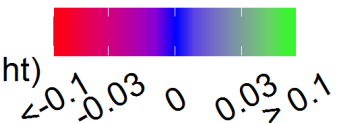


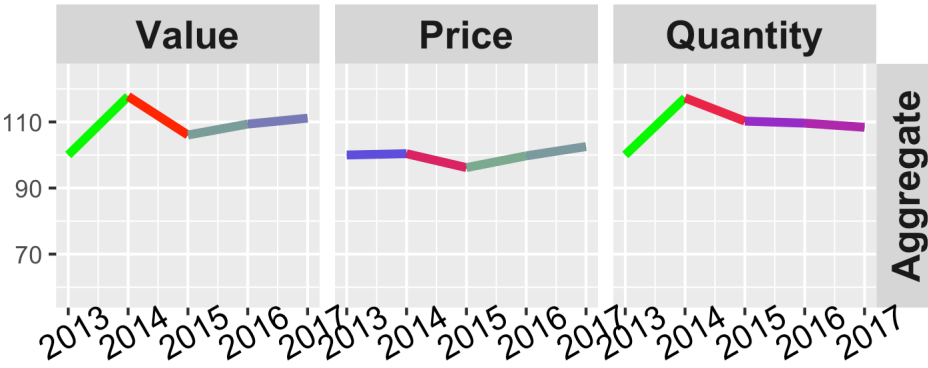
## Species

- Value stable:
  - Pollock
- Value increased:
  - Atka mackerel
  - Pacific cod
  - Flatfish
  - Rockfish

Indices are nominal (not adjusted for inflation)

(yr-on-yr % change)\*(share weight)





# GOA First-Wholesale Economic Indices

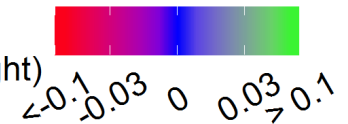


## Species

- Value decreases:
  - Pacific cod
  - Pollock
  - Rockfish
- Value increased:
  - Sablefish
  - Flatfish

Indices are nominal (not adjusted for inflation)

(yr-on-yr % change)\*(share weight)

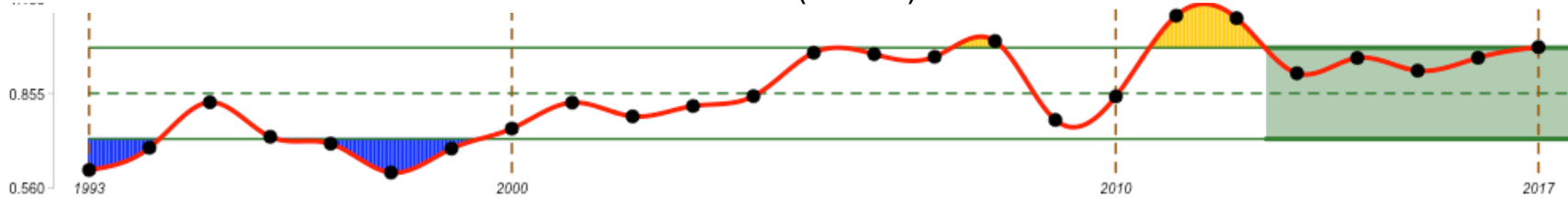


# Report Card Metrics

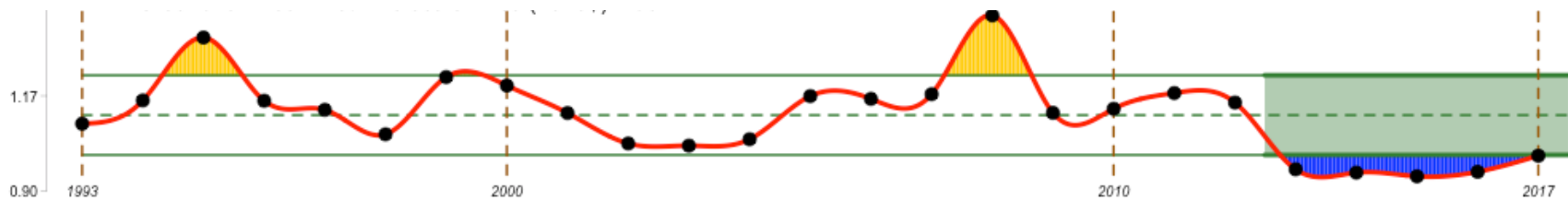
- Broad metrics to track the economic status of fisheries in aggregate (back to 1993) (Following executive summary).
  1. Real First-Wholesale revenue index
  2. Real First-Wholesale price index
  3. Real Effective Exchange rate index
  4. Alaska's effective share of pollock and cod catch
  5. Production Volume/Total catch
  6. Ex-vessel share of first-wholesale revenue
  7. AK resident share of shoreside ex-vessel value
  8. Share of shoreside value to top 5 communities
  9. Real first-wholesale value/fishing weeks
- Most indices remained relatively stable through 2017.
- Prices in 2017 were improved over 2016 both first wholesale and ex-vessel which resulted in modest improvement in most indices

# Report Card Indices

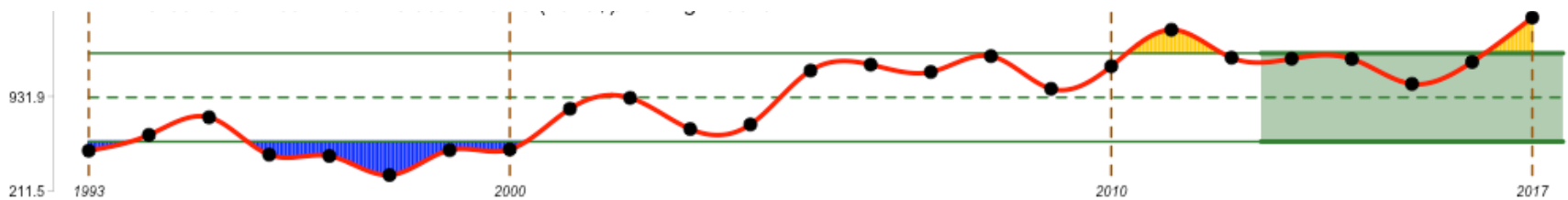
FMP Groundfish real first-wholesale revenue (2017\$) index



FMP Groundfish real first-wholesale price (2017\$) index



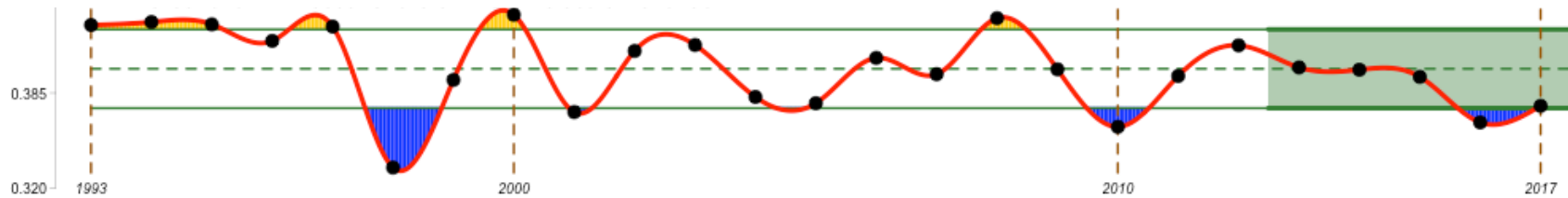
FMP Groundfish real first-wholesale revenue (2017\$)/fishing weeks



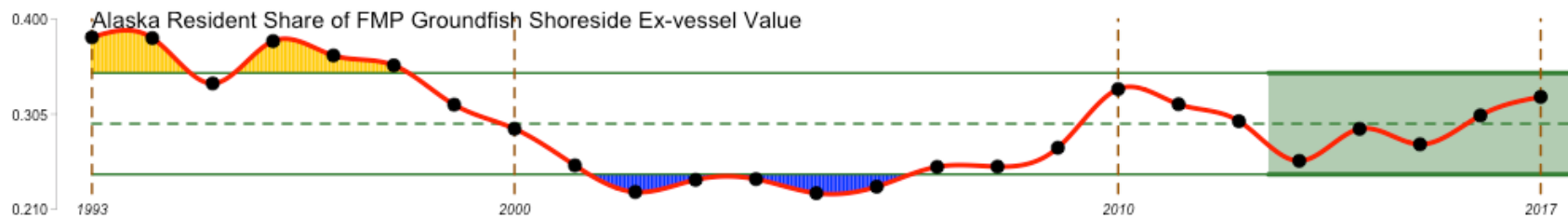


# Report Card Indices

FMP groundfish ex-vessel share of first-wholesale revenue



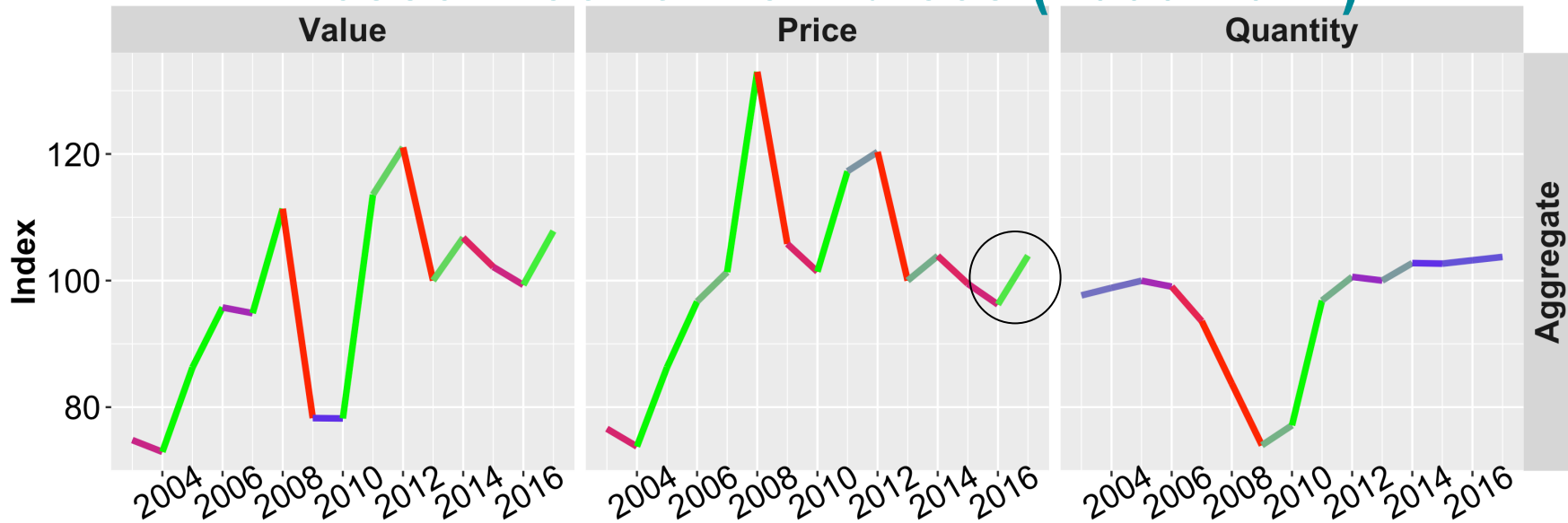
Alaska resident share of FMP groundfish shoreside ex-vessel value



# AK First Wholesale Economic Indices (2003-2017)

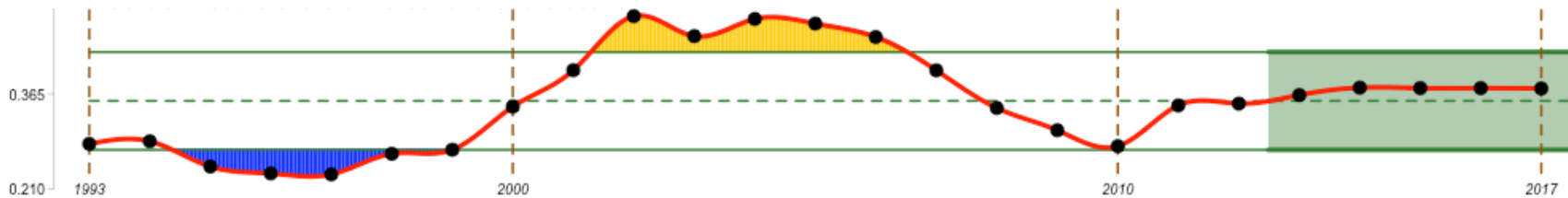


# AK Ex-vessel Economic Indices (2003-2017)

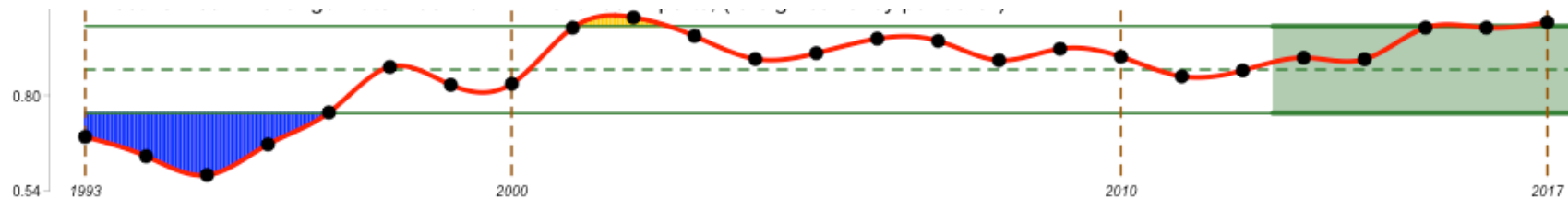


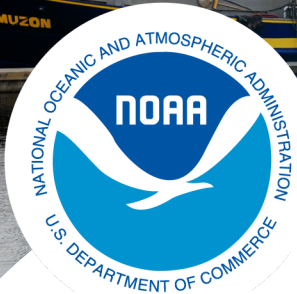
# Report Card Indices

Alaska's effective share of pollock and cod global catch



Effective real exchange rate index for AK fisheries exports (foreign currency per dollar)





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# Ex-vessel Price Projections

Uses unadjusted fish ticket information through Sept. 2018 to estimate an (adjusted) 2018 annual ex-vessel price.

Currently have seven estimates for:

- BSAI & GOA pollock trawl
- BSAI & GOA Pacific cod trawl and fixed gear
- GOA sablefish fixed gear

Can be coupled with catch to provide ex-vessel revenue estimates.

Price projections are getting used already (generally in preliminary or draft material).



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# Ex-vessel Price Projection Methods

Estimate a regression using data from 1992-2017

$$p_t^{safe} = \alpha + \beta p_t^{fishtix} + D + \epsilon_t$$

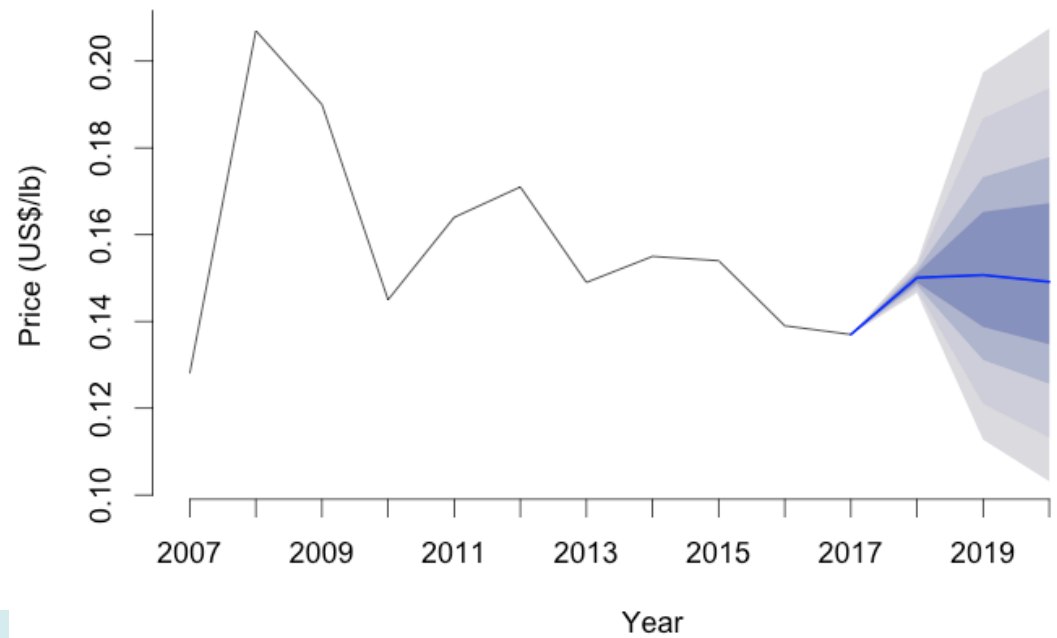
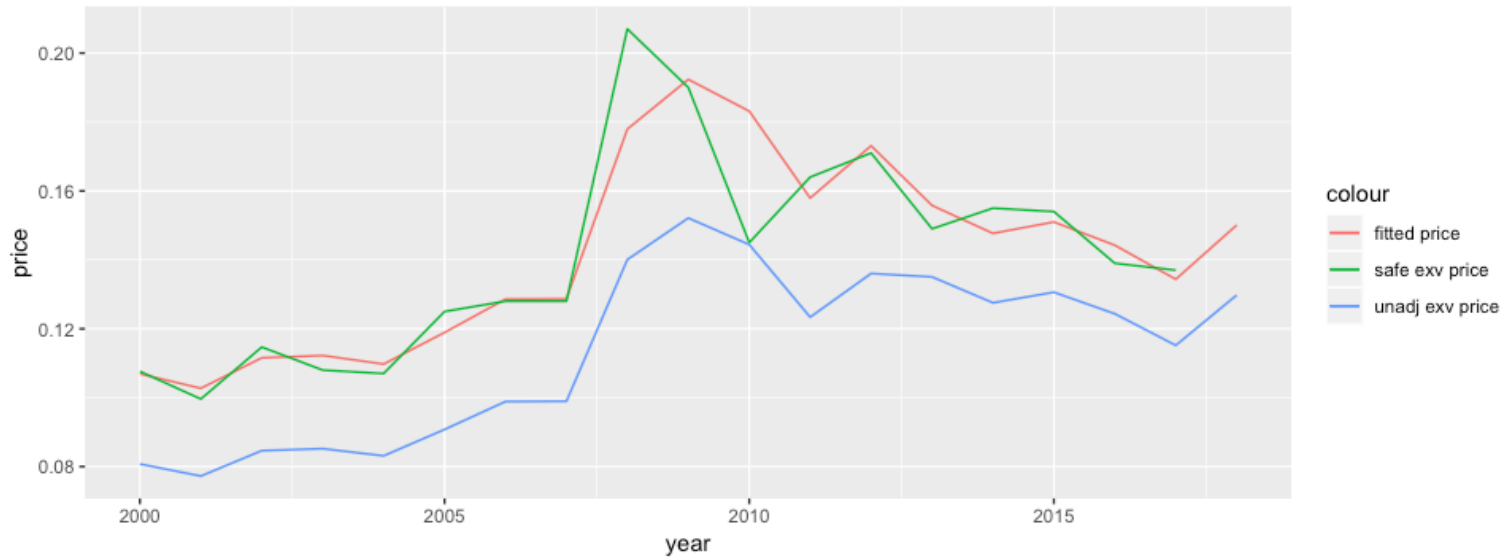
Where  $D$  is a set of dummies and structural breaks selected to improve model fit using AICc and BIC.  $R^2$  typically  $>0.9$ .

$$\hat{p}_{2018}^{safe} = \alpha + \beta \hat{p}_{2018}^{fishtix} + D$$

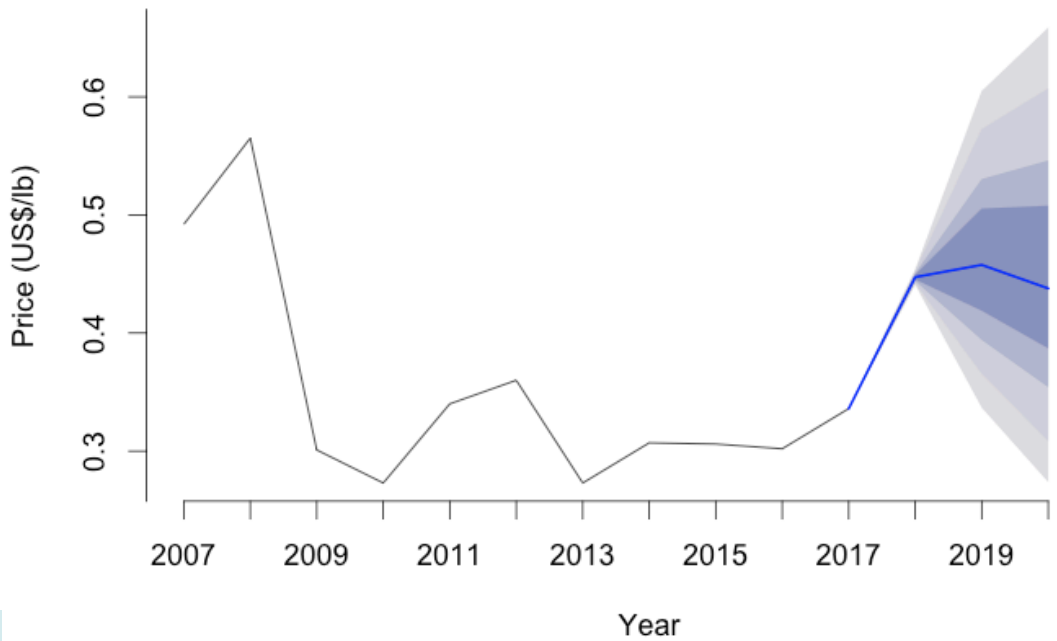
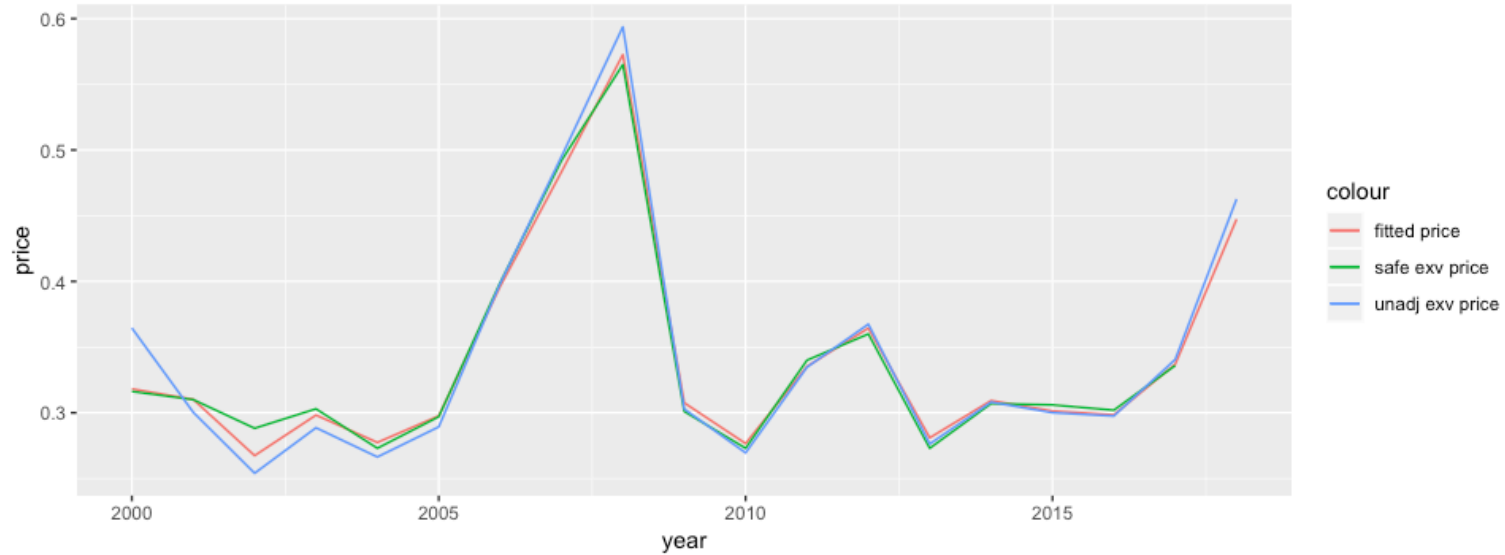
The range of estimated prices for 2019-2020 based on a suite of ARMA and ETS time series models of returns using residual resampling to characterize the projection distribution.



# BSAI pollock trawl ex-vessel price projections



# GOA Pacific cod fixed ex-vessel price projections





# Community Participation in North Pacific Groundfish Fisheries

## Community Section

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## Revisions

- Updated existing database of communities to include those outside AK.
- Focused only on FMP groundfish species.
- Focus on those substantially engaged in groundfish fisheries from 2008-2017.
- Quantitative selection criteria were used to select communities with the most involvement in commercial groundfish fisheries.
- Addition of Community Sketches for deeper look (e.g.: Akutan)
- Addition of fish taxes



# Communities Substantially Engaged in Commercial GF Fisheries

## Commercial Processing

Table 1.2: Communities highly engaged in commercial processing for one or more years from 2008-2017\*.

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Akutan	2.11	2.22	2.34	2.21	2.19	2.21	2.15	2.25	2.30	2.85
Homer	1.39	1.56	1.45	1.34	1.37	1.34	1.31	1.41	1.47	1.49
Kodiak	3.43	3.41	4.00	3.81	3.82	3.62	3.65	3.79	3.57	3.41
Seward	0.67	0.91	0.73	0.82	0.99	0.99	0.93	1.04	1.01	1.19
Sitka	1.35	1.16	1.28	1.32	1.20	1.24	1.11	1.21	1.34	1.65
Unalaska/ Dutch Harbor	4.93	4.85	4.32	4.63	4.63	4.79	4.91	4.63	4.67	4.27

Notes: \*Shaded cells are index scores above one (which is one standard deviation above the mean of zero) for at least one year from 2008-2017.

## Community Harvesting


Table 1.4: Communities highly engaged in commercial harvesting for one or more years from 2008-2017.

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Homer	1.10	1.23	1.34	1.29	1.38	1.41	1.33	1.45	1.49	1.53
Kodiak	2.50	2.60	2.69	3.16	2.98	2.33	2.52	2.78	2.65	2.03
Petersburg	1.39	1.30	1.47	1.23	1.28	1.36	1.43	1.39	1.36	1.45
Sitka	2.23	2.63	2.66	2.54	2.59	2.61	2.74	2.56	2.79	3.02
Seattle MSA	8.29	8.17	8.07	8.00	8.03	8.24	8.13	8.09	8.08	8.15
Other Washington	1.24	1.18	1.13	1.03	0.98	0.99	0.99	0.91	0.90	0.86

Notes: \*Shaded cells are index scores above one (which is one standard deviation above the mean of zero) for at least one year from 2008-2017.

# Community Sketches

A deeper glance into a substantially engaged community



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Alaska Fisheries Science Center  
Economic and Social Sciences Research Program

*Stock Assessment and Fishery Evaluation Report*

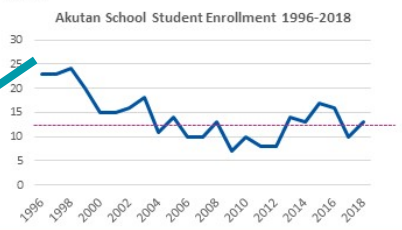
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### Community Sketch AKUTAN

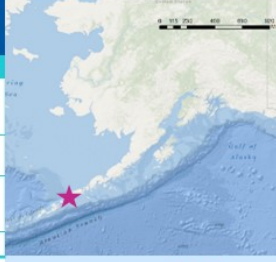
Demographics (self-identified, 2010 census)							
	Population	Gender pop. (%)	Pop. Over 18 (%)	Median household income (\$)	White	Am. Indian/AK. Native	Black or African Am.
AKUTAN	1027	23.1% female 76.9% male	98.3%	\$24,644	23.3%	5.5%	17.9%
	Below poverty level (%)	Housing units	Pop. Over 65 (%)	High school graduate or higher (%)	Asian	Native Hawaiian	Hispanic or Latino
	15.1%	44	3.3%	76.6%	43.3%	1.5%	20.8%

**Area Description**  
Akutan is located on Akutan Island, one of the Krenitzin Islands of the Fox Island group in the eastern Aleutians. Located 35 miles east of Unalaska and 766 miles southwest of Anchorage, the area occupies 14m<sup>2</sup> of land and 4.9m<sup>2</sup> of water. The Aleuts of the region were the first to be involved in North Pacific fisheries. Historically, salmon, cod, herring, and other fish were targeted throughout the Aleutian chain. During World War II, Akutan residents were evacuated and many original residents did not return. Akutan was incorporated as a Second-class city in 1979 and is under the jurisdiction of the Aleutians East Borough. According to the 2010 census, the average household size is 2.25 (a decrease from 2000), and there were a total of 44 housing units. Of the households surveyed in 2010, 30% were owner-occupied, (74% in 2000), 61% were renter occupied (16% in 2000), 9% were vacant (11% in 2000), and zero houses were seasonally occupied. Group quarters with the processing plant houses 937 people, up from 638 in 2000. There are approximately 100 year round residents; however between 2008-2017 the number of residents eligible for the PFD increased by 139.74%.

**Infrastructure & Transportation**  
Akutan's airport opened in 2012 and is located seven miles east on Akun Island, servicing the community by helicopter. The state ferry serves Akutan biweekly from May to September. Akutan has a 100-foot public dock and a 58-vessel mooring basin. Trident Seafoods owns several commercial docks.<sup>2</sup> Water derives from a stream and dam constructed in 1927. A community septic tank treats sewage before discharge. Electricity depends on hydropower with diesel backup. Household heating relies on fuel oil and kerosene.<sup>3</sup> The Akutan School provides K-12 education. School enrollment has decreased to 13 students in 2018, hovering just above the state closure threshold for several years.<sup>4</sup>



Akutan School Student Enrollment 1996-2018



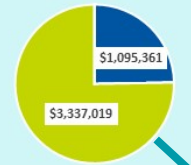
**Processing Engagement: HIGH**  
**Harvesting Engagement: LOW**  
Sea level rise: Probability of shoreline loss between 2 and 1 m/yr is 10-33%  
**Coastal hazards:** Erosion threat to community's water supply. Tsunamis, **EARTHQUAKES**, storm surges, **COASTAL EROSION**, coastal flooding, riverine erosion, and **VOLCANOES**.  
*\*Bold indicates high hazard potential*

**Native Associations & Corporations:**  
- Akutan Corporation  
- Aleut Corporation  
- Aleutian Pribilof Islands Association

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**Current Economy**  
Akutan's economy is primarily based on commercial fishing and subsistence harvest. Subsistence is vitally important to the community as a source of food and cultural identity. The main employer is the processing facility. The Trident Seafoods' Akutan plant is the largest facility in North America, processing over three million pounds of product per day and capable of housing up to 825 employees.<sup>3</sup> In 2016, the median household income was estimated to be \$40,067 and per capita income \$28,335, up from \$34,375 and \$20,099 in 2010 respectively.<sup>2</sup> The unemployment rate was an estimated 3.6% in 2016, up from 2.7% in 2010. In 2017, fish related tax brought in \$1.1 million (25%) of the total municipal tax revenue, funding needed services for the community.<sup>5</sup>

**Akutan 2017 Tax Revenue**



■ Fish Tax    ■ Property Tax  
■ Sales Tax    ■ Other Tax  
■ Other Shared Tax

Demographic overview

Processing & harvesting engagement

School enrollment

Taxes

# Community Sketches

A deeper glance into a substantially engaged community

Fishing history & regulatory background

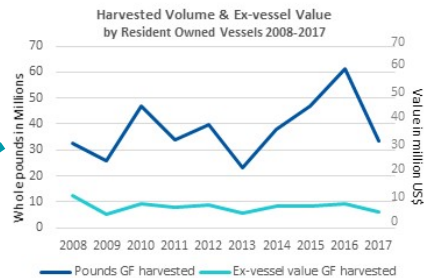
Harvest volume & ex-vessel value (2008-2017)

## Community Sketch

## AKUTAN

### Fishing History and Regulatory Background

Historically, Aleuts harvested salmon, cod, herring, and other species around Akutan. Subsistence harvest continues to be important. Commercial fisheries began in the late 1800s, and today Akutan is one of the busiest fishing ports in the world.<sup>3</sup> Crab fisheries began in 1930 and accelerated in size and scope in the 1950s, when king crab fisheries developed in the Bering Sea. King crab harvests peaked in the 1970s and early 1980s, today, crab harvests remain at comparatively low levels. Akutan's proximity to the Bering Sea brought the processing industry in the late 1940s, first through floating processors, followed by a shore-based processing plant in the 1980s by Trident Seafoods.<sup>2</sup> The Akutan community comprises two distinct subgroups: long term residents who live in the village year-round and processing plant employees who live in group quarters. This dichotomy is evident in the village's successful campaign to participate in the Community Development Quota program (represented by the Aleutian Pribilof Islands Community Development Association).<sup>8</sup> Akutan is located in Federal Reporting Area 519, International Pacific Halibut Commission (IPHC) Regulatory Area 4B, and the Aleutian Islands Sablefish Regulatory Area.



### Citations:

- <sup>1</sup> American Fact Finder, Retr'd 10/1/2018 <https://factfinder.census.gov>
- <sup>2</sup> Himes-Cornell, et al. (2013). *Community profiles for North Pacific fisheries - Alaska*. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-259, Volume 1
- <sup>3</sup> Fey, M. et al. (2016) *Fishing Communities of Alaska Engaged in Federally Managed Fisheries*. NPFMC.
- <sup>4</sup> School enrollment statistics compiled from AK, Dept. of Education & Early Development. Retrieved 08/30/2018 at <http://www.wednet.edu>
- <sup>5</sup> Tax data from AK, Dept. of Revenue, Annual Reports 2008-2017. Retr.' 10/15/2018 from <http://tax.alaska.gov/programs/sourcebook/index.aspx>; Dept. of Commerce AK Taxable Database, AK Division of Community & Regional Affairs. Retr.' 10/20/2018 <https://www.commerce.alaska.gov/cra/craresponse/Pages/AlaskaTaxableDatabase.aspx>
- <sup>6</sup> Alaska Community Survey, Alaska Fisheries Science Center 2013
- <sup>7</sup> Alaska Fisheries Information Network (AKFIN) (2018). Commercial Comp. AK [dataset]
- <sup>8</sup> The Aleutian Pribilof Islands Association website. Retrieved 12/01/2018 at <https://www.apia.org/pibes/akutan/>
- <sup>9</sup> Trident Seafoods website. Retrieved on 09/01/2018 @ <http://www.tridentseafoods.com/Our-Story/Our-Plans>

### Harvesting Engagement

LOW

Due to the small number of participants, some data are considered confidential. For this reason, data were aggregated to include adjacent communities within the Aleutians East Borough (AEB). Between 2008-2017, the number of pounds groundfish harvested increased by just under 1 million pounds (an increase of 3%); however the ex-vessel value declined substantially during the same time period, falling from \$12 million to \$6 million (over 50%). Very few vessels are owned by Akutan residents. The small portion of vessels owned by Akutan residents has steadily decreased from six in 2008 to only one in 2017. There have been no groundfish fishing vessels owned by Akutan residents since 2014.

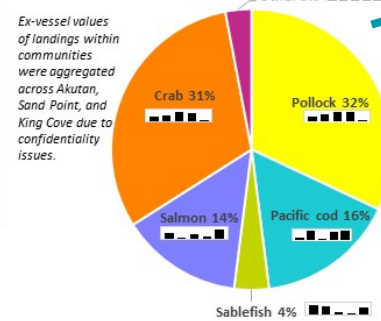
### Processing Engagement

HIGH

Akutan has the largest seafood production facility in North America.<sup>2</sup> During peak seasons in the winter and summer, the plant can accommodate 825 employees and the processing sector is the largest employer in the community.<sup>9</sup> The top species landed are pollock, Pacific cod, crab, halibut, and sablefish. Due to the small number of participants, some data are considered confidential. The combined processing sectors of Akutan, Sand Point, and King Cove landed a total volume of 686 million pounds of groundfish in 2017, a 53% increase from 2008. The associated ex-vessel value of total landings decreased by \$104 million, (down 16%) since 2008. Pollock value dropped most, declining 18%. In 2017, groundfish made up 15% of total landed volume and 48% ex-vessel value within the region's processing sector, which is a slight decrease from 41% in 2008.<sup>7</sup>

### Share of revenue landed by species

Akutan, Sand Point, King Cove combined 2013-2017 average



Bar charts represent 2013-2017 ex-vessel values (2017\$) by species landed in community. The scale of the y-axis is specific to the species.



# Seeking review and comments on:

- Ex-vessel price projections
- Community participation section (Sarah W. *et al.*)

Other topics of your choosing



# Thanks

- Economic Groundfish SAFE is a product of the Economics and Social Sciences Research Program (ESSRP)
- Authors: Ben Fissel, Michael Dalton, Brian Garber-Yonts, Alan Haynie, Stephen Kasperski, Jean Lee, Dan Lew, Anna Santos, Chang Seung, Kim Sparks and Sarah Wise.
- Alaska Fisheries Information Network (AKFIN) provided database programming, data management services and support.