



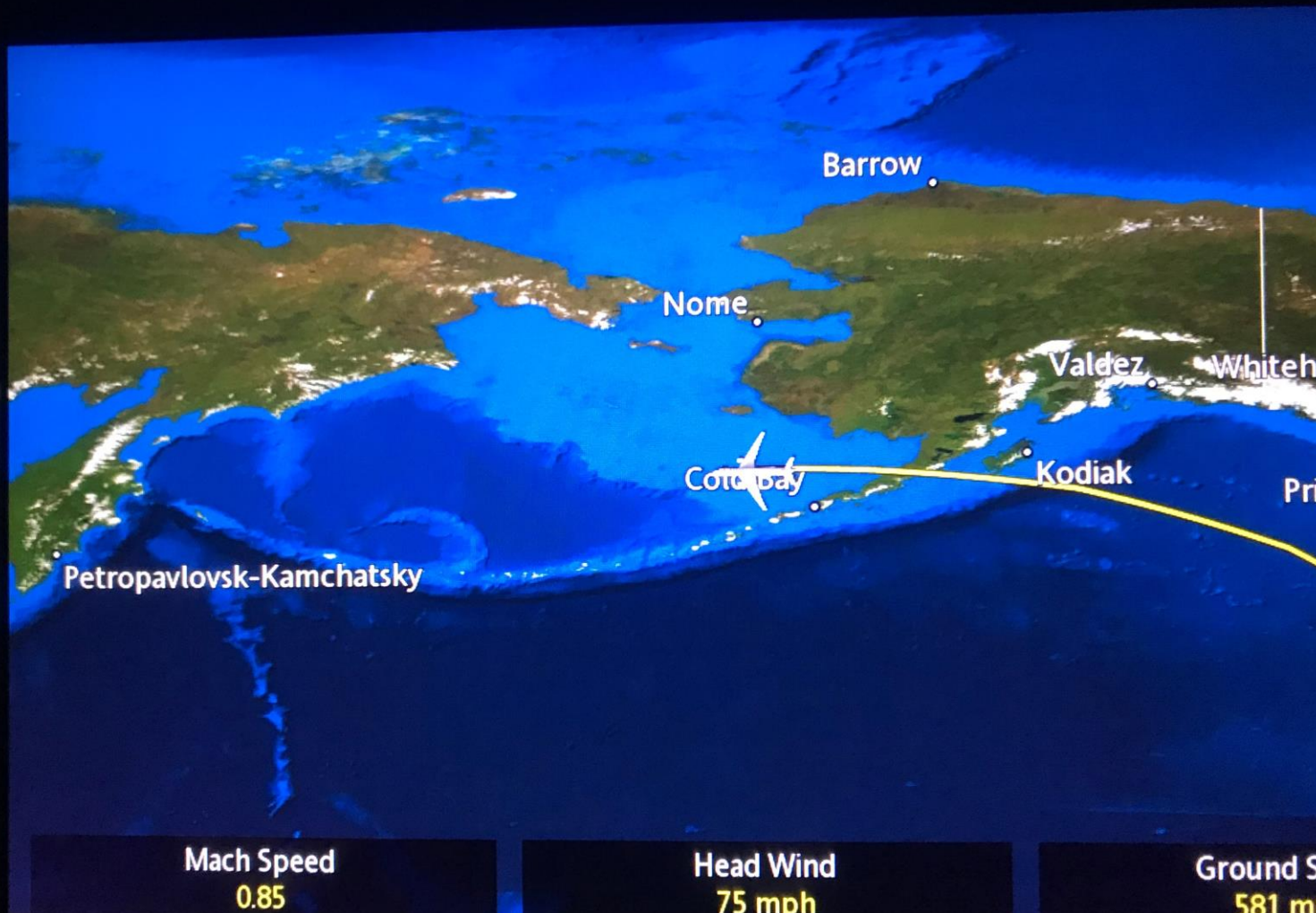
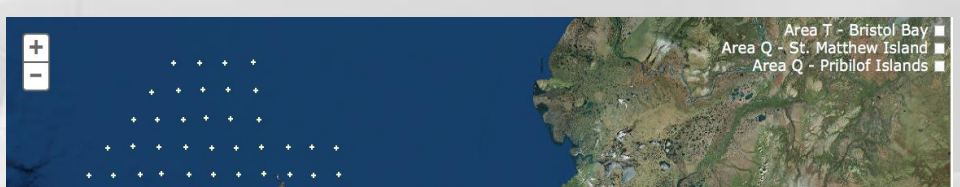
Allocating Quota to Processors on the US West Coast

Bering Sea/Aleutian Island Crab

Christopher M. Anderson
University of Washington

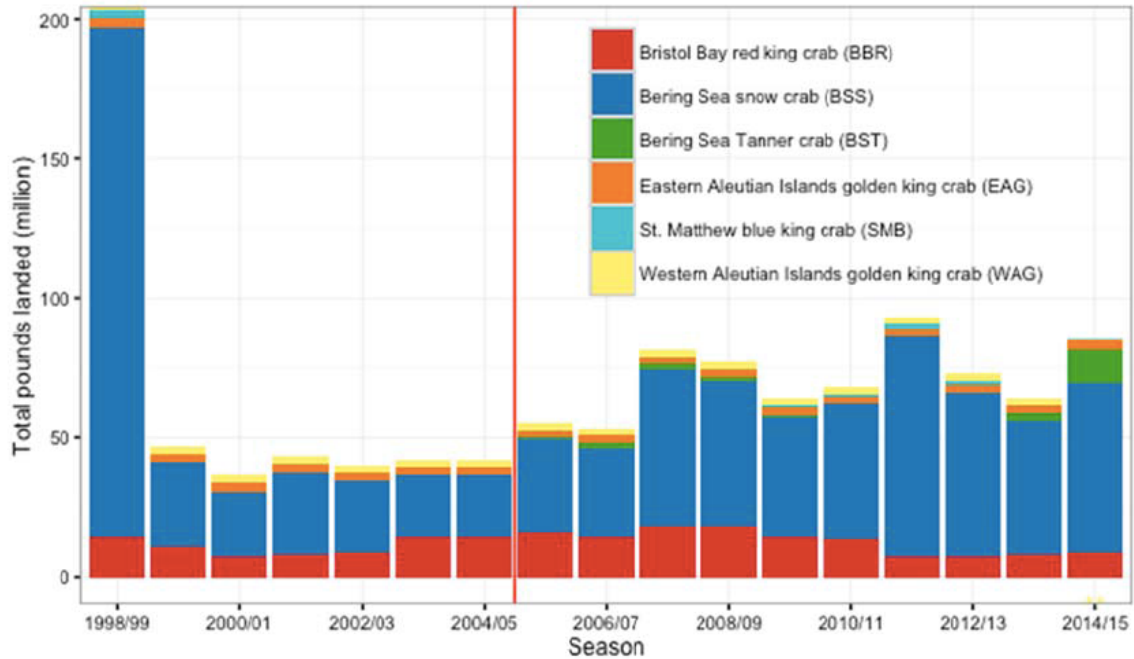


Alaska Crab



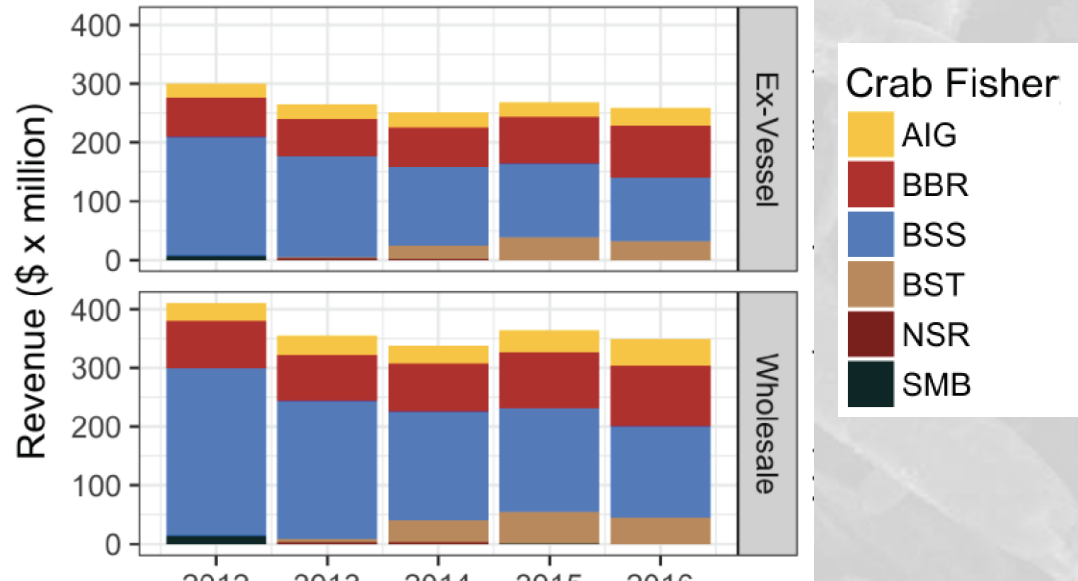
Landings

- High volumes of red king and snow crabs
- Very high value products
- Frozen cooked legs sold primarily in US, Japan (some reprocessing in China)



Source: NMFS AKRO RAM Division IFQ accounting database

Gross Revenue, All Fisheries by Sector



Management History

- Pre-1960
 - Development by Japanese and Russian fleets
- '60s
 - American investment in fishery
- 1976
 - Adoption of EEZs expels foreign fleets; American entry
- 1996
 - New entry moratorium to curtail overcapitalization
- 2000
 - Limited entry permits cap participation at incumbents, but still overcapitalized
- 2005
 - “Rationalization” with individual transferable harvest quota AND individual transferable processor quota
 - *Curtailed competitive, dangerous derby fishery*

General Management Measures

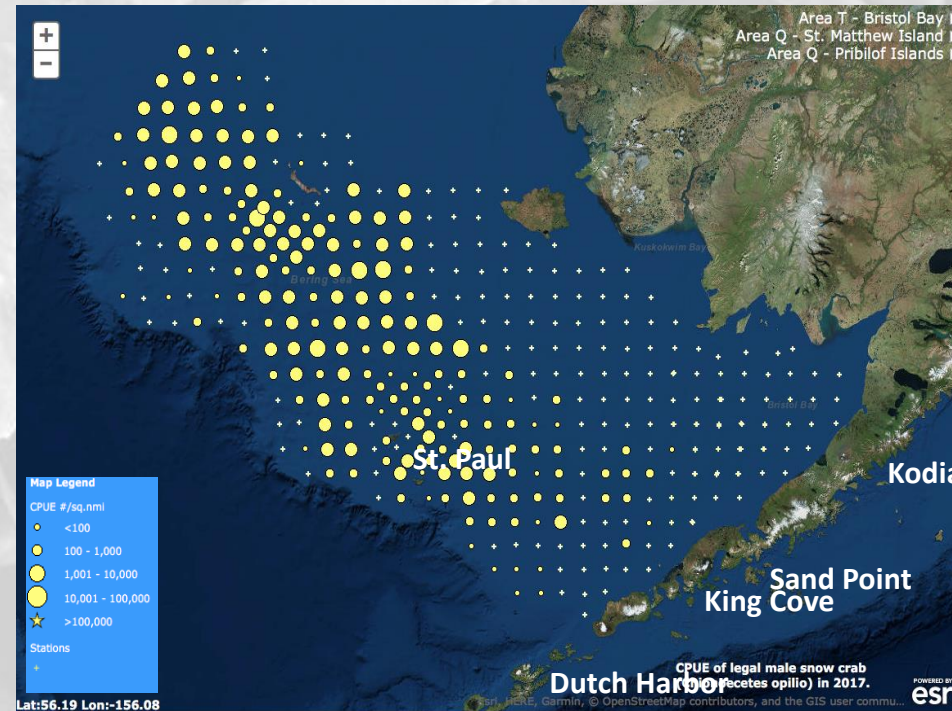
- North Pacific Fishery Management Council, with Alaska Department of Fish & Game
- Limited Licenses (limited access permits)
 - Held by various legal entities, typically families
- Technical gear restrictions
 - Escape rings, degradable panels, etc.
- Seasons
 - Red king opens Oct 15; snow is Dec-April
- TAC set based on stock assessment
 - Annual based on fishery and trawl survey data
 - Stock models provide reliable F_{MSY} estimates
 - ABC set based on harvest control rule

Harvester ITQ with Processor IPQ

- Implemented in 2005
 - Improve safety, reduce overcapacity
- Harvest quota share allocated based on LLP history
 - 10% for Community Development Quota (CDQ) groups
 - 87% for limited license owners
 - 90% A share (match with IPQ), 10% B share (no IPQ)
 - 3% C share for qualified crew (hired captains)
 - Quota is less restricted if join (processor-centered) cooperatives (almost all do)
- Processing quota share allocated based on history
 - Must match purchased landings with IPQ
 - Allows processors to maintain historic market share
 - Geographically restricted transfer—cannot trade out of north/south regions

Why Geographic Restrictions?

- Processing centers in isolated communities close to fishing grounds *HAD* an advantage under derby
 - Despite being more expensive to operate there
- This advantage lost with ITQs
- If St. Paul is to continue historic participation, needs protection measures

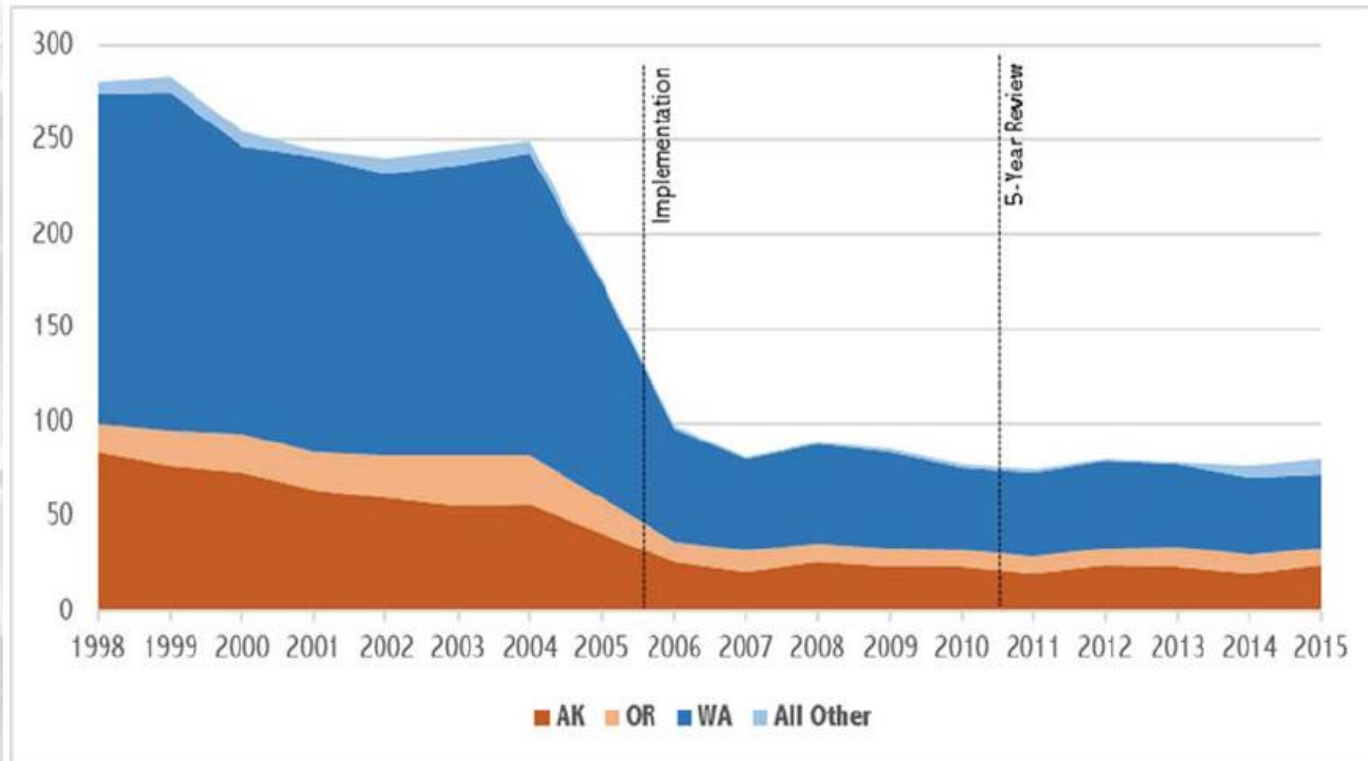


ITQ Effects Summary

- 70% reduction in vessels
- Crew deaths dropped from average of 1/year to zero between 2005 and 2016
- Number of crew jobs dropped proportionately
 - Nature of job changed
- Product form, and market prices did not change
 - Ex vessel prices now set by arbitrator
- CDQ groups purchase additional quota for fishing
- Harvest quota valuable: expensive to buy, lease
 - Crew complain transition to ownership is difficult

Effects of ITQ: Vessel Reduction

Figure ES-5 Number of unique BSAI crab vessels with earned ex vessel revenue, by state, 1998 through 2015



Note: Figure based on data from Table 1-13b.

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

- Fleet size decreased by 70%, an intended outcome
 - All of under-80 foot fleet left, but proportionate among larger vessel classes

Effects of ITQ: Crew Compensation

Table 5-21 Crew employment and earnings, aggregated over all CR Program fisheries - 1998, 2001, and 2004 through 2014 calendar year fisheries

Fishery	Year	Number of vessels	Total crew positions	Mean crew size	Mean vessel harvest (pounds)	Mean days at sea	Captain pay (\$)		Mean crew pay (excluding captain)	Crewmember pay (\$)	
							Mean	Median		Mean	Median
All CR Fisheries	1998	212	1266	6.0	1,017,733	96	117,276	115,785	249,780	40,249	39,744
	2001	211	1251	5.9	199,825	52	61,540	40,973	123,271	19,936	14,625
	2004	235	1395	5.9	192,605	32	73,609	66,613	154,847	25,541	22,138
	2005	169	1007	6.0	320,039	37	78,770	55,911	152,893	25,903	20,264
	2006	101	640	6.3	628,448	68	86,828	75,006	174,865	28,204	26,858
	2007	86	572	6.7	758,928	68	134,958	129,146	283,763	45,274	42,429
	2008	94	632	6.7	1,069,194	90	175,376	175,115	383,915	59,896	56,582
	2009	88	588	6.7	947,489	82	130,190	128,226	284,227	44,260	42,796
	2010	77	493	6.4	999,199	96	162,080	154,244	349,985	55,129	50,619
	2011	76	500	6.6	1,040,932	86	218,737	218,875	485,532	74,306	70,103
	2012	83	564	6.8	1,467,050	93	227,378	223,413	494,148	73,933	71,940
	2013	81	542	6.7	1,248,407	78	196,037	199,614	428,422	65,232	62,077
2014	76	513	6.8	1,259,443	93	202,485	184,286	443,124	66,892	63,681	

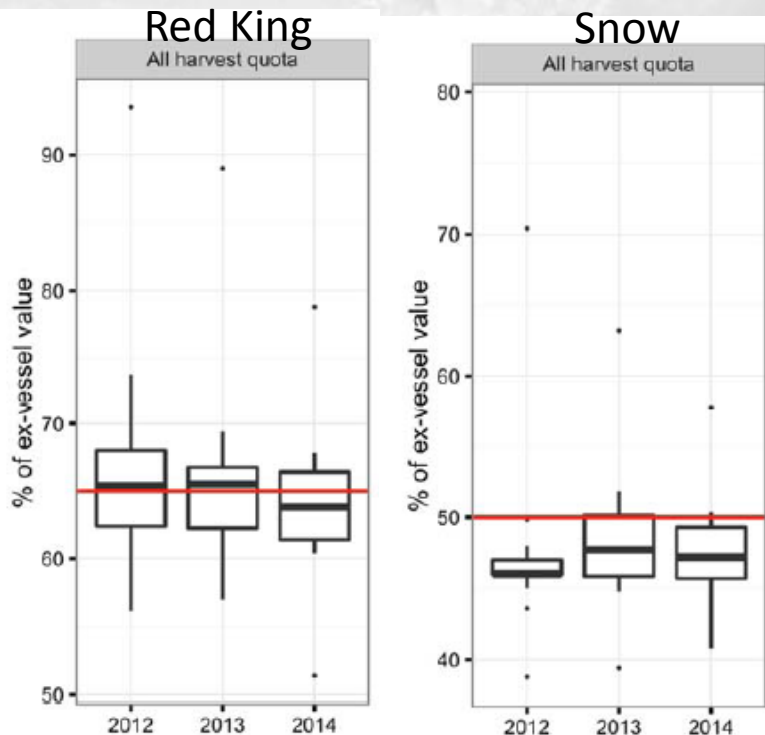
Source: NMFS AFSC BSAI Crab Economic Data Report (EDR) database, 2005 and later crew positions information from eLandings

- Very high paying crew jobs, though work is very hard and dangerous
- After IFQ, fewer jobs, but longer-term employment
 - Total pay to crew, wage per crew day did not change; tradeoff where days allocated to fewer people...professionalization of crewing

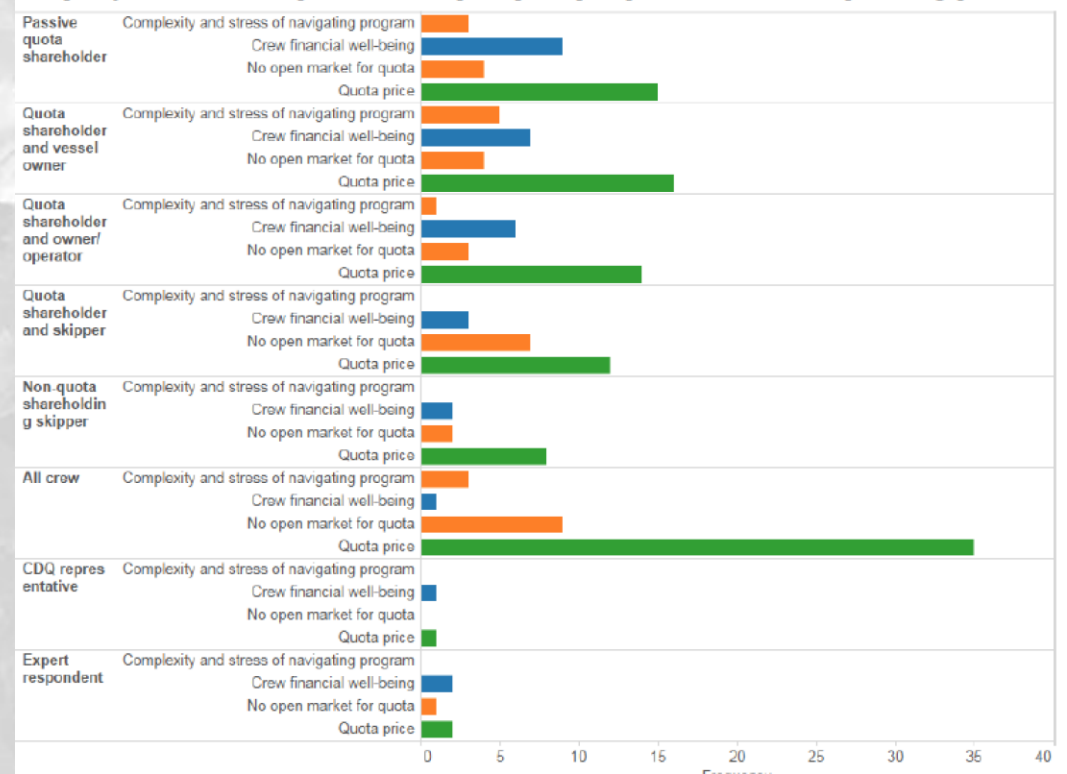
Effects of ITQs: Quota Accessibility

- Lease rates for quota are high
 - Holders prefer to keep income, rather than sell as they retire
- Quota is expensive
 - Leasing is lucrative; CDQ groups well capitalized and purchase
- Crew complain transitioning to right owner is prohibitive
 - Voluntary lease rate caps and ROFO for quota sales have been adopted by major cooperatives

Lease Rates



- Frequency count of coded responses related to participants' perceptions of the barriers to purchasing quota shares



Processor Quota

- Price of ex vessel crab is not set by competitive market
 - Set by arbitrator to preserve historic division of rents
- St. Paul has maintained its market share
 - CDQ group purchased harvest quota it leases with provision it be landed in St. Paul
- Kodiak has lost market share
 - With reduction in local fleet that delivered last load locally, no CDQ group, in region of dominant processors
- Some losses in other Aleutian communities as individual plants fall below critical mass of crab and fish to operate
 - Regional restriction waivers sometimes granted
 - Communities have “right of first offer” to ensure IPQ does not leave them, but difficult to capitalize

Accessibility of Quota

- Quota, like any other asset, is priced based on the annual stream of profits it brings to holder
 - It is expensive to buy into profitable fisheries
 - Could reduce quota cost by making fishery less profitable
 - *May* reduce quota cost by devaluing it to sellers through owner-on-board provisions
- What is the counterfactual comparison?
 - Vessel-cost entry of fishery development/open access is not a realistic comparison
 - A valuable limited entry permit will also reflect profit potential (and be less divisible)
 - What portion of crew become vessel owners in past anyhow? What tenure/experience did it take?

Potential of Processor Quota

- Processor rights insulate processing communities from adverse effects of market (quota and ex vessel) forces
 - They do this by preserving market share, with tradeoff of reducing competition in the ex vessel market
- Processors can have long-term capital investments in fisheries
 - Gives an incentive to ensure sustainability
 - MSA takes care of that in Alaska, but elsewhere
 - A dominant processor/coalition of processors can monitor catch levels
- More profitable processors need not lead to higher payments to fishermen