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Summary

Employment and Income Impacts of Alaska Commercial Fisheries: Some Rules of Thumb

by

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Fish Harvesting Employment

1. *Full-time equivalent (FTE) employment* in fish harvesting, also referred to as *average annual employment*, is usually significantly lower than the total number of people who work in commercial fishing, because most Alaska fisheries are open for only part of the year.
2. No data are regularly collected on Alaska fishing employment. The most recent detailed estimates of FTE employment by fishery, prepared in 1986, estimated total FTE employment at about 12,000.
3. The most common approach to estimating FTE fishing employment is as follows:
$$\text{FTE employment} = (\text{Number of boats}) \times (\text{average crew size per boat}) \times (\text{fraction of year that fishery is open})$$
4. There is no consistent relationship between the total volume of fish harvests and employment in fish harvesting, even for a given species and area. This is because the same number of fishermen, working for the same period of time, can catch widely varying volumes of fish in different years.
5. In limited entry fisheries, changes in harvest volume or prices have little or no effect on fish harvesting employment. In these fisheries, the numbers of vessels, average crew sizes, and season lengths are essentially constant, which means that harvesting employment is essentially constant, except for drastic volume declines which cause boats to cease fishing altogether.
6. In non-limited entry fisheries, changes in harvest volume are more likely to result in changes in fish harvesting employment, because the number of vessels and/or the season length is more likely to increase or decrease in response to the harvest volume.
7. In non-limited entry fisheries, changes in harvest prices are less likely to affect FTE employment. A price increase may cause more vessels to enter the fishery, but the season length is likely to be reduced as a result.

Fish Processing Employment

8. Fish processing employment is reported by the Alaska Department of Labor. In recent years total statewide fish processing employment has fluctuated from a low of about 5,000 in the

winter to a high of about 20,000 in the summer. Annual average employment increased from about 8,000 in 1988 to about 11,000 in 1992.

9. The table below shows some simple rules of thumb for estimating fish processing employment per million pounds of fish harvests, which were estimated from historical data on harvests and employment.

Species	Estimated employment per million pounds harvested	Source of Estimate
All Species	1.7	Ratio of average statewide employment to average statewide harvests, all species, 1988-90
Salmon	5	Time series regression analysis of statewide processing employment vs. landings of salmon, groundfish, and all other species, 1974-1989.
Bottomfish	0.2	
Other species	11	

10. Year-to-year fluctuations in harvest volumes probably have a less than proportional effect on fish processing employment, because many plants have excess capacity and employees' total work hours can be adjusted by increasing or reducing overtime. Longer-term harvest fluctuations are more likely to result in proportional employment changes as firms increase or reduce capacity or hire more or fewer workers.

11. There is little reason to expect changes in ex-vessel prices to affect processing employment. However, changes in the relative wholesale prices of different fish products--for example relative prices of canned and frozen salmon--may cause plants to produce different mixes of products--resulting in a change in overall employment.

Employment in Other Industries.

12. "Direct" employment in fish harvesting and fish processing is "multiplied" as it creates additional employment in other sectors. "Indirect employment" is generated by expenditures by the fish harvesting and fish processing industry, for example in transportation of fish products. "Induced employment" is generated by expenditures by direct and indirect workers, for example in restaurants or barbershops.

13. Each Alaska job in fishing and fish processing creates between .2 and 1.0 jobs in other sectors in Alaska. The actual number of jobs created in other sectors may vary significantly between fisheries, depending on factors such as the residency of harvesting and processing workers and the extent to which fishermen and processors buy supplies in Alaska or outside Alaska. Direct fishing and fish processing employment is usually more significant than employment generated in other sectors.

Residency of Employment

14. Non-Alaska residents account for about one-fifth of fish harvesting employment and about one-half of fish processing employment statewide. These non-resident shares vary widely by species and region.

Fish Harvesting Income

15. All income earned in fish harvesting is derived from the ex-vessel value of harvests, after subtracting expenses such as assessments, food, fuel, insurance and repairs. Income of crew members is based upon crew factors, which vary widely between fisheries. The remaining

income goes to the boat owner, representing the return to the investment in the boat and any limited entry permits as well as the boat owner's labor.

16. In limited entry fisheries, an increase in harvest volume or price causes net income of crew and owners to increase *more than proportionately to the change in harvest volume or prices*, because many costs of harvesting are fixed.

17. In non-limited entry fisheries, an increase in harvest volume or price is less likely to lead to disproportionate changes in net income of crew or owners, because costs of harvesting increase or decrease as vessels enter or leave the fishery.

18. Increases in harvest volume or ex-vessel prices, if anticipated to continue, may cause permit prices to rise, resulting in capital gains for permit holders. Decreases in harvest volume or ex-vessel prices, if anticipated to continue, may cause permit prices to fall, resulting in capital losses for permit holders. These effects on permit values can greatly amplify the income effects of price or harvest volume changes on permit holders.

Fish Processing Income

19. In 1992, annual wages per FTE employment in fish processing averaged \$24,000 statewide and ranged from \$18,000 in Ketchikan Gateway Borough to \$33,000 in Bristol Bay Borough.

20. Processors margins fluctuate less than ex-vessel prices. As a result, income earned in fish harvesting changes less in response to world market conditions than does income earned in fish harvesting.

Income in Other Industries

21. Direct income earned in fishing and fish processing creates additional indirect and induced income. Each dollar of income from fishing and fish processing generates between \$.20 and \$1.00 in income in other sectors. As with employment, direct fishing and fish processing income is usually more significant than income generated in other sectors.