

# Weighing the Benefits and Risks of Seafood Consumption in Alaska

Chung Nim Ha, MPH  
Environmental Public Health Program

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“What white men do for sport and recreation and money, we do for life: for the life of our bodies, for the life of our spirits, and for the life of our ancient culture.”

- Walter Meganack Sr., former tribal chief of Port Graham, Alaska
- Referring to the Exxon Valdez oil spill on March 24, 1989 as “Coping with the Time When the Water Died”

Pre-spill household surveys showed *per capita* annual consumption of subsistence foods ranging from 200 to 600 pounds coming from 19 to 25 different subsistence foods, such as shellfish, finfish, ducks, and seals.



## Bottom Line

- Most Alaska fish have low mercury levels, so health risk for sensitive populations is low.
- Benefits from eating fish and other seafood outweigh potential risks from mercury exposure, especially for subsistence populations.
  - More nutritious, less costly than replacement foods
  - Better health outcomes for children and adults
  - Maintain traditional way of life, culture, spiritual wellbeing



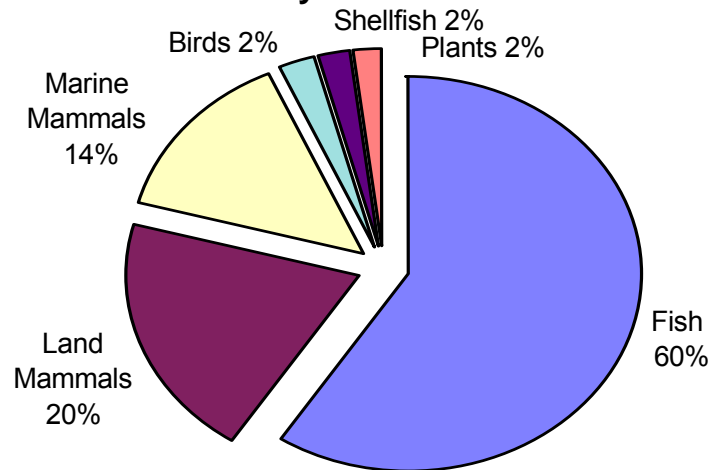


## Alaska's population (2005)

- 663, 661 total population
- 45% maternal and child health population
- 16% Alaska Native/American Indian (~2/3 rural)
- 226 Alaska Native tribes
  - 200+ villages
  - 20 languages
  - Most have less than 200 people



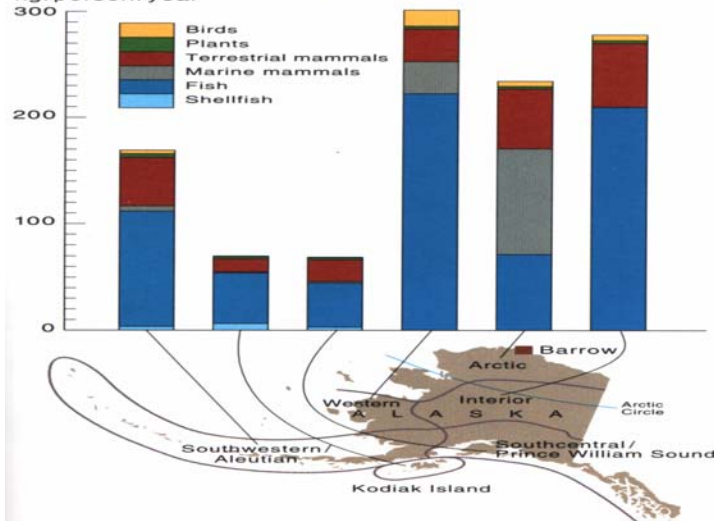
## Composition of Subsistence Harvest by Rural Residents



Source: ADFG, *Subsistence in Alaska: A Year 2000 Update*

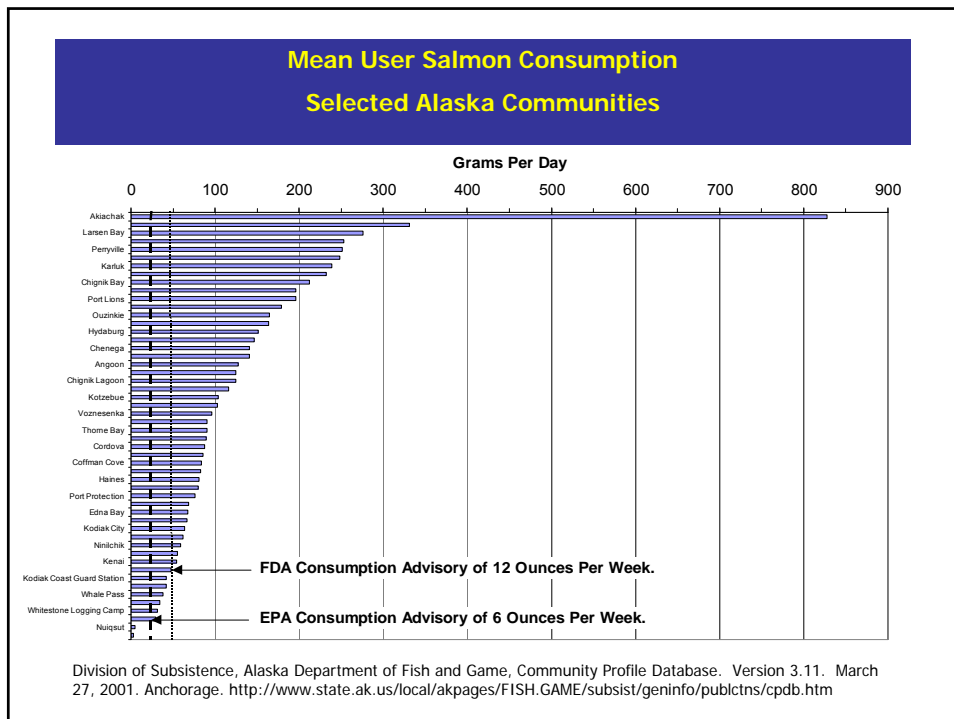
## Alaska Subsistence Food Harvest

Harvest of subsistence food, small and mid-size communities, Alaska, kg/person/year




## Traditional Food Intake: Alaska EARTH Study (2004-06)


- 20% men, 25% women reported getting all or almost all of their food from traditional foods.
- Another 34% men, 29% women reported getting half of their food from traditional foods.
- Fish was the most commonly eaten traditional food (80%).






## Risks of Eating Fish

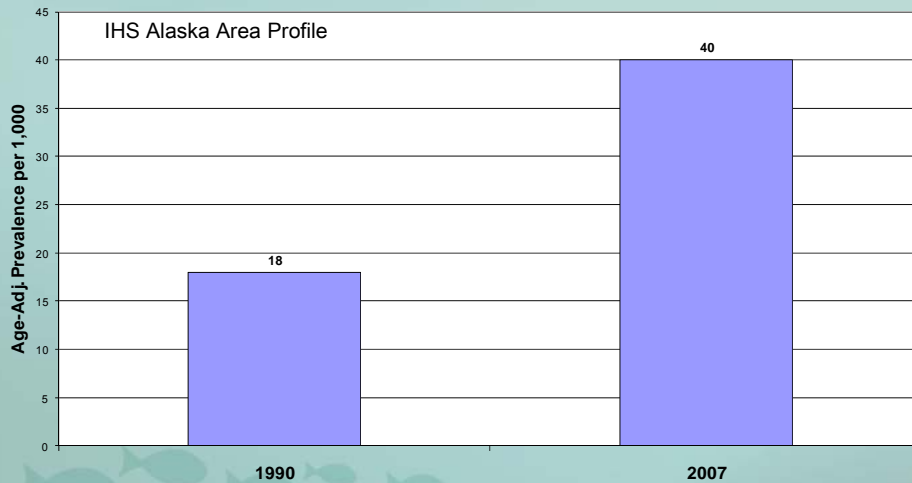
- Mercury is main contaminant of concern for Alaska fish/seafood.
  - Natural and man-made sources in Alaska
  - Methyl mercury is a neurotoxin:
    - affects brain and nervous system development
    - can cause permanent learning and behavior problems
  - Vulnerable populations: fetuses, young children, women of child-bearing age
- 



## Risks of Not Eating Fish and Other Traditional Foods

- Loss of nutritional and health benefits
  - Health risks associated with alternative foods:
    - ↑ saturated fat, ↑ carbohydrates →
    - ↑ diabetes, ↑ overweight/obesity
  - High cost of replacement foods
  - Social, cultural, and economic consequences from the breakdown of subsistence
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## Diabetes in Alaska Natives: 117% increase from 1990 to 2007



## Overweight and Obesity in Alaska Natives

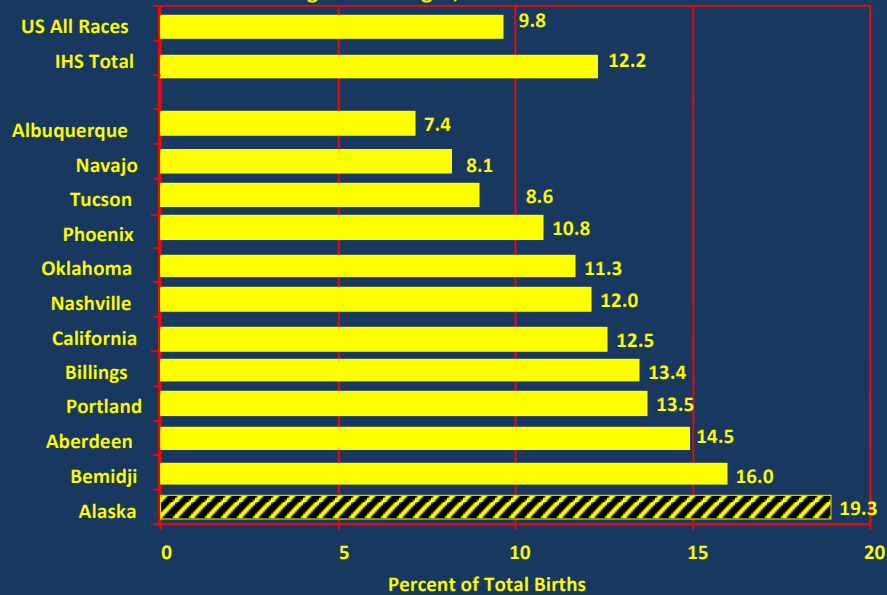
- 31% are obese, a 63% increase between 1991-92 and 2005-07.
- 72% of adult men and 66% of adult women are overweight or obese.
- Proportion of high school students AT RISK of overweight increased from 13% in 2003 to 21.4% in 2007.

## Benefits of Eating Fish for Early Childhood Development

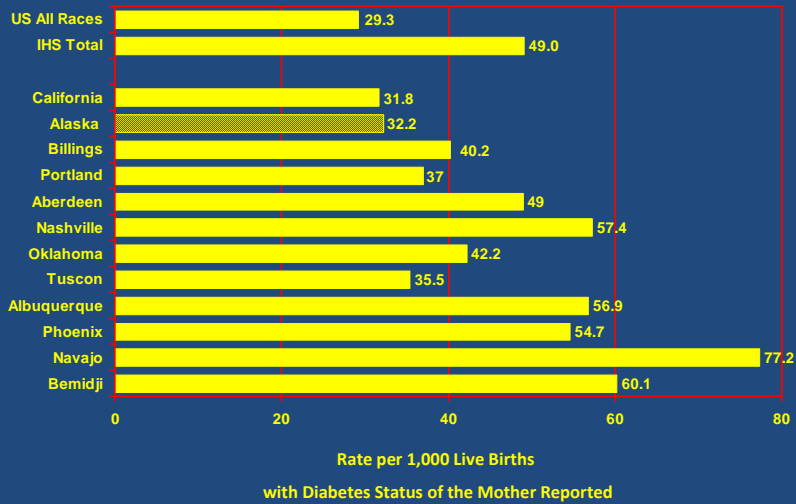
- Fish/seafood is main source of omega-3 fatty acids (EPA and DHA)
- Omega-3s essential for optimal neurodevelopment in fetuses and infants
  - Brain, vision, motor skills
- Reduce risk of premature and underweight babies



**ALASKA NATIVE MATERNAL-INFANT HEALTH STATUS**  
High Birthweight, CY 1999-2001



### ALASKA NATIVE MATERNAL-INFANT HEALTH STATUS Birth Rates among Mothers with Diabetes, CY 1999-2001



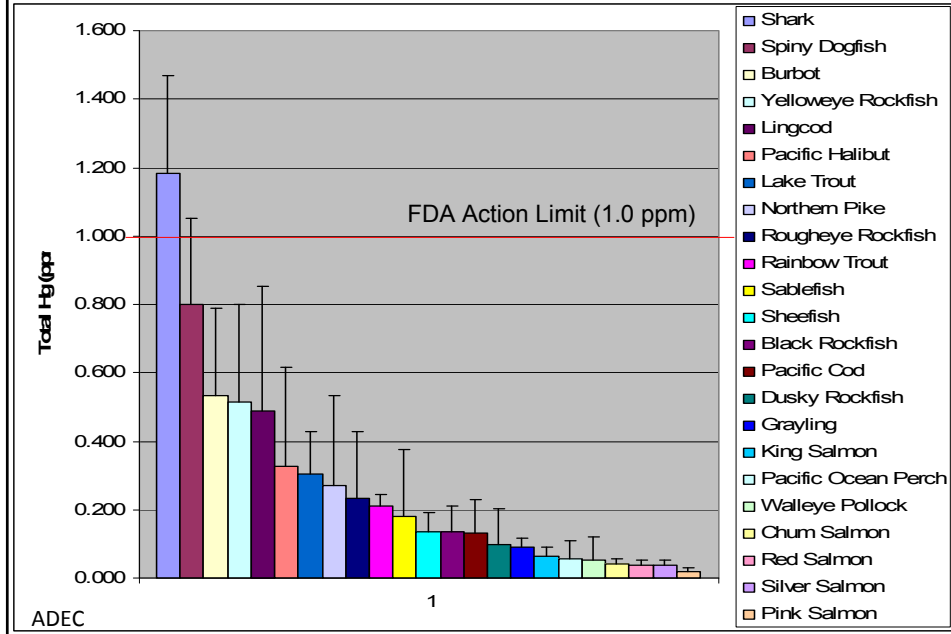
Regional Differences in Indian Health, 2002-2003 Edition

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## Studies Support Eating Fish for Children's Health

- Higher maternal fish consumption associated with children showing better neurological function than those whose mothers ate low amounts of or no fish during pregnancy (Hibbeln, et al. *Lancet* 2007).
- Higher fish intake during pregnancy and longer breastfeeding independently linked to better physical and cognitive development in infants (Oken, et al. *Am J Clin Nutr* 2008).

## Mean Total Mercury: mg/kg (ppm)



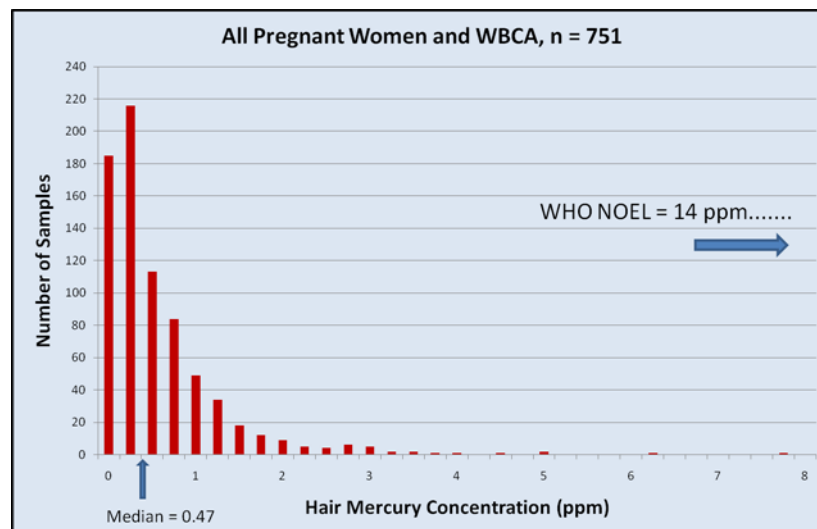
## Guidelines for Women & Children (# meals per week of Alaska fish)

Unlimited	4	3	2	1
Pacific cod Walleye pollock Black rockfish Pacific ocean perch King salmon Chum salmon Pink salmon Red salmon Silver salmon Halibut < 20 lb. Lingcod < 30 in.	Sablefish Rougheye rockfish Halibut 20 - 39 lb. Lingcod 30 - 39 in.  Includes: halibut from stores and restaurants	Halibut 40 - 49 lb.	Yelloweye rockfish Halibut 50 - 89 lb. Lingcod 40 - 44 in.	Salmon shark Spiny dogfish Halibut ≥ 90 lb. Lingcod ≥ 45 in.

Everyone else can eat as much Alaska fish as they would like.

## Hair Mercury Biomonitoring Program

- Free program for any woman of child-bearing age (usually 15-45) in Alaska
- Women can know their own hair mercury levels
- Follow-up investigations on levels over 5 ppm



## Bottom Line

- Pregnant and nursing women should continue to eat fish and other traditional foods.
- Fish is brain food. Fish provides essential nutrients needed for optimal brain development in fetuses and young children.
- Most Alaska fish is low in contaminants.
- Eat smaller fish. When in doubt, eat salmon.
- If mercury exposure is a concern, get your hair tested.

Thank you!

